

**Bridging the gap between clinical research  
evidence and practice: Implementing the South  
African National Evidence-Based Asthma  
Guideline in Private and Public Practice in the  
Cape Metropole.**

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# Declaration

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Signature:

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Full name in print:

Date: 22 August 2014

To the memory of two remarkable human beings,

**Benedict and Johanna Pather,**

who inspired me

and gave without measure

***How Great Thou Art***

**To my loving wife, Patricia,**

who had near fatal asthma during repeated episodes of acute status asthmaticus  
while expecting our first child.

**To Jody, Micaela and Vania**

for being such good children all along and who endured the challenges of living  
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May this work serve as a stimulus to use all the talents you have been blessed  
with.

***To God be the Glory Great things He has done***

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## **ABSTRACT**

### **Background**

A need for primary care practitioners to utilise clinical research evidence in practice has been identified and is well described. However a chasm between evidence and practice still exists in primary health care (PHC). Although clinical practice guidelines have been shown to improve the quality of clinical practice and attempt to bridge the gap between evidence and practice, practitioners are often not aware of practice guidelines and fail to access, adopt or adhere to evidence-based recommendations contained in them.

### **Central question**

How can the implementation of clinical research evidence, using the example of the national evidence-based guideline on asthma, be improved in the PHC sector in the MDHS of the Cape Town metropole?

### **Aim**

This research aimed to improve the implementation of clinical research evidence in PHC, by learning from the specific example of the national evidence-based asthma guideline in PHC practice in the Metro District Health System (MDHS) of the Cape Town metropole, and to make recommendations to key stakeholders regarding the future implementation of evidence-based guidelines.

### **Objectives**

- To gain insight into the current quality of asthma care in PHC in the MDHS of the Cape Town metropole.
- To determine whether the process of implementation of the new asthma guideline contributed to an improvement in the quality of care in the MDHS.
- To explore ways of improving the process of implementation of the national asthma guideline in PHC in the MDHS.
- To gain insight into the perceptions, attitudes and knowledge of asthmatic patients regarding their asthma management.
- To explore how EBP is understood and perceived by doctors in PHC.

- To understand how PHC doctors in the public and private health sectors gain access to and use guidelines.
- To explore the experiences, perspectives and understanding of family physicians (FPs) (academic, private and public sector) with regard to EBP and the implementation of guidelines in PHC practice.
- To gain insight into the understanding of FPs regarding the perceived problems and main barriers to EBP and their views of the process of guideline implementation in PHC.
- To gain insight into the knowledge, perceptions and attitudes of clinical nurse practitioners in the public sector with regard to EBP and the process of guideline implementation.

## **Methodology**

This study was conducted in the PHC setting of the Cape Town metropole. This research was conducted in three phases and used cross-sectional surveys, quality improvement (QI) cycles, qualitative research methods, such as interviews with FPs, and participatory action research (PAR).

**Phase 1** involved a cross-sectional survey, which looked at the knowledge, awareness and perspectives of doctors, regarding evidence-based practice (EBP) and guideline implementation using the national evidence-based asthma guideline published in 2007. It also involved QI cycles conducted over a period of five years to assess the baseline quality of asthma care in the PHC sector and to evaluate improvement in asthma care as a result of the QI cycles and associated educational workshops.

**Phase 2** involved interviews conducted with FPs in academia as well as in the private and public health care sectors who were responsible for clinical governance in PHC in the Cape Town metropole. During this phase of the research the experiences, perspectives and understanding of FPs (academic, private and public sector) with regard to EBP and the implementation of guidelines in PHC practice were explored.

**Phase 3** involved PAR with primary care practitioners at community health centres (CHCs) using a co-operative inquiry group (CIG) to improve asthma guideline implementation in PHC. The CIG investigated how to improve the implementation of the asthma guideline in their respective CHCs and completed

four cycles of planning-action-observation-reflection. The four cycles focused on implementation of an asthma self-management plan (ASMP), exploring the capability of clinical nurse practitioners to implement the guidelines, exploring the views of patients on their asthma care and implementing better patient education. A final consensus of the CIG's learning was then constructed.

## **Results**

### **With regard to quality improvement of asthma care in PHC:**

The **first objective** of the study was largely addressed through the baseline audits conducted in 2007 and 2008. This showed that the baseline quality of asthma care, with specific reference to the assessment of the patient's level of control, measuring the patient's peak expiratory flow rate (PEFR), assessing the patient's inhaler/ spacer technique, recording the smoking status, the adequate prescription of controller and reliever metered dose inhalers (MDI) refills during visits and particularly the issuing of an ASMP during visits, was poor.

The **second objective** was addressed through the annual audits conducted in 2007, 2008, 2010 and 2011 during the period of implementation. This showed that although clear cause and effect reasoning cannot be inferred, overall statistically and clinically significant improvements in the quality of care occurred in conjunction with the process of asthma guideline implementation. Despite the improvement in structural and process criteria there was no corresponding improvement in the outcome criteria and in fact the utilisation of facilities for emergency visits significantly increased, while the hospitalisation of patients remained constant.

The **third objective** was to explore ways of improving the process of implementation of the national asthma guideline in PHC in the MDHS. This was largely addressed through the action-research process at selected CHCs. This showed that implementation could be improved by ongoing educational support and formal interactive training workshops with the staff members who were directly involved with patients. The development and use of educational aids and ASMPs based on the guideline recommendations were useful and encouraged patient participation in decision making regarding their care.

The **fourth objective**, specific to asthma care, addressed by means of a survey and showed that even though the majority of asthma patients participated in decisions regarding their asthma and felt satisfied with the quality of care they

received, the prevalence of smoking among asthma patients was high and opportunities for smoking cessation counselling were missed. Even though documentation of peak flow recordings and patients' knowledge of the difference between the reliever and controller MDIs were good, patients' perceptions with regard to education on the inhaler technique, the assessment of the level of control, the issue of written information regarding asthma and the use of ASMPs remained poor and could be improved.

**With regard to EBP and asthma guideline implementation in PHC:**

The **fifth objective** of the study was addressed by means of a survey which showed that the doctors in PHC used evidence in clinical decision making and agreed on the usefulness and importance of EBP in improving the quality of patient care in South Africa. There was a difference in the engagement with activities related to EBP between the public and private sector PHC doctors and there is a need for formal training in the skills and processes of EBP.

The **sixth objective** was addressed by means of a survey which showed that a good proportion of both public and private sector doctors in the Cape Town metropole were well aware of the asthma guideline, had used the guideline and had adopted, acted on and adhered to specific guideline recommendations. There was a high level of general awareness of the asthma guideline and recommendations were being adopted in practice, although the lack of formal disease registers, monitoring and evaluation of asthma care and the utilisation of an ASMP could be improved on.

The **seventh objective** was addressed by qualitative research which showed how the views and perspectives of FPs regarding EBP and the process of guideline implementation contributed to the development of a conceptual framework for the process of guideline implementation.

The **eighth objective** was addressed by qualitative research, which identified barriers present in each step of the implementation process. Time constraints, practitioner workload, lack of financial resources, lack of ownership, the lack of timeous organisational support and practitioner resistance to change were important barriers to guideline implementation in an already overburdened PHC setting. A conceptual model was developed which showed that the process of guideline implementation should be tailored to the barriers identified.



The **ninth** objective was addressed by means of a survey which showed that the concept of EBP was fairly new to CNPs in PHC and identified a need to learn more about it. CNPs agreed that clinical research evidence is useful in the daily management of patients, that their decision making is based on evidence, that evidence-based nursing can improve the quality of patient care, that there is a place for evidence-based nursing in their practices at their respective CHCs, that EBP will make a difference in the quality of care of their patients and that evidence-based nursing practice has an important role to play in South Africa. Although the awareness of CNPs with regard to the asthma guideline was poor, the vast majority reported that they personally educated patients on the difference between reliever and controller MDIs, recorded the smoking status of patients in the records, demonstrated the inhaler technique to all their asthma patients, assessed the level of control and agreed that inhaled corticosteroids are the mainstay of treatment in patients with chronic persistent asthma. However only a small minority (mainly at the CHCs where action research occurred) started issuing patients with ASMPs.

In answering the central question: **“How can the process of implementation of clinical research evidence, using the example of the national evidence-based guideline on asthma, be improved in the PHC sector in the MDHS of the Cape Town metropole?”**, this thesis concludes that the process of guideline implementation can be improved in the PHC sector by an in depth understanding and systematic approach to the whole process. A conceptual framework is provided as a model which attempts to guide and make sense of this process of guideline implementation. A stepwise approach is presented and provides a summary of the main research findings. The model shows that the initial process of evidence creation should not only deal with research evidence of high quality, but should incorporate research evidence that is relevant to the particular context of care. In addition the model shows that guideline development should be inclusive and involve a wider spectrum of stakeholders as well as patients; that guideline contextualisation, dissemination and implementation should be carefully planned. Special consideration should be given to local decision making about adoption or prioritisation of specific recommendations as part of ongoing quality improvement cycles and the conversion of published guidelines into practical tools for practitioners to use in

consultation, prior to dissemination. Implementation should anticipate that members of the PHC staff will differ in their readiness to change and that strategies should consciously embrace principles of behaviour change and build up a sense of ownership, choice and control over local adoption of the guidelines. Academic centres, such as universities and professional bodies, have a role to play in identifying, appraising and synthesising the evidence, and giving input into guideline development. They can also assist by innovating and evaluating practical tools as part of the contextualisation stage and by providing continuing education during implementation as part of their social responsibility. The health care organisation (HCO) should prevent unnecessary delays in guideline implementation by ensuring that policy, resources and recommendations are aligned during the contextualisation stage; that barriers encountered should be dealt with throughout the entire process, and that ongoing monitoring and evaluation of the quality of care occurs.

## **Conclusion**

This research used different methods and innovative PAR to bridge the gap between evidence and practice. A new conceptual model for guideline implementation is recommended for use to assist with implementation and knowledge translation in PHC locally, nationally and in similar Low Middle Income Countries (LMIC) in Africa.

## **ABSTRAK**

### **Agtergrond**

'n Behoefte om kliniese navorsingsbewyse in die praktyk te benut, is by primêre – sorg praktisyns geïdentifiseer en word goed beskryf. Daar bestaan egter steeds 'n gaping tussen bewyse en die praktyk in primêre gesondheidsorg. Alhoewel getoon kon word dat kliniese praktykriglyne die kwaliteit van kliniese praktyk verbeter, en poog om die gaping tussen bewys en praktyk te oorbrug, is praktisyns dikwels nie bewus van praktykriglyne nie, en faal daarin om toegang te verkry tot bewysgebaseerde aanbevelings wat daarin vervat is, asook om dit aan te neem en na te kom.

### **Sentrale vraag**

Hoe kan die implementering van kliniese navorsingsbewyse, deur die voorbeeld van nasionale bewysgebaseerde riglyne oor asma te gebruik, verbeter word in die primêre gesondheidsorgsektor in die Metropooldistrik – gesondheidstelsel van die Kaapstad – metropool?

### **Doel**

Die doel van hierdie navorsing was om die implementering van kliniese navorsingsbewyse in die primêre gesondheidsorg te verbeter, deur te leer vanuit die spesifieke voorbeeld van die nasionale bewysgebaseerde asmariglyne in die primêre gesondheidsorgpraktyk in die Metropooldistrik – gesondheidstelsel van die

Kaapstad - metropool, en om aanbevelings aan sleutel – rolspelers te maak aangaande die toekomstige implementering van bewysgebaseerde riglyne.

### **Doelwitte**

- Om insig te verkry in die huidige kwaliteit van asmasorg in die primêre gesondheidsorg in die Metropooldistrik – gesondheidstelsel van die Kaapstad – metropool.
- Om vas te stel of die implementeringsproses van die nuwe asmariglyne bygedra het tot 'n verbetering in die kwaliteit van sorg in die Metropooldistrik – gesondheidstelsel.

- Om maniere te verken om die implementeringsproses van die nasionale asmariglyne in die primêre gesondheidsorg in die Metropooldistrik – gesondheidstelsel te verbeter.
- Om insig te verkry in die opvattinge, houding en kennis van asmatiese pasiënte met betrekking tot hul asma – bestuur.
- Om te verken hoe bewysgebaseerde praktyk verstaan en deur dokters in primêre gesondheidsorg toegepas word.
- Om te verstaan hoe primêre gesondheidsorgdokters in die openbare - en privaatgesondheidssektore toegang tot, en die toepassing van riglyne verkry.
- Om die ervaringe, perspektiewe en begrip van gesinspraktisyns (akademies, privaat en openbare sektor) met betrekking tot bewysgebaseerde praktyk, en die implementering van riglyne in primêre gesondheidsorg, te verken.
- Om insig te verkry in die begrip van gesinspraktisyns met betrekking tot die probleme wat waargeneem is, hoofhindernisse tot bewysgebaseerde praktyk, asook hul persepsies van die proses van riglyn – implementering in primêre gesondheidsorg.
- Om insig te verkry in die kennis, persepsies en houding van kliniese verpleegpraktisyns in die openbare sektor, met betrekking tot bewysgebaseerde praktyk en die proses van riglyn – implementering.

## **Metodologie**

Hierdie studie is uitgevoer in die primêre gesondheidsorg - instellings van die Kaapstad – metropool. Hierdie navorsing is in drie fases uitgevoer, en het deursnee – ondersoek, kwaliteitverbeteringsiklusse, kwalitatiewe navorsingsmetodes soos onderhoude met gesinspraktisyns, en deelnemende aksienavorsing gebruik.

**Fase 1** het 'n deursnee – ondersoek behels oor die kennis, bewusmaking en perspektiewe van dokters met betrekking tot bewysgebaseerde praktyk en riglyn – implementering , deur die nasionale bewysgebaseerde asmariglyne te gebruik wat in 2007 gepubliseer is. Dit het ook kwaliteitverbeteringsiklusse behels wat oor 'n tydperk van vyf jaar uitgevoer is, om die basislyn – kwaliteit van asmasorg in die primêre gesondheidsorg te assesser, en om die verbetering in

asmasorg te evalueer as 'n uitvloesel van die kwaliteitverbeteringsiklusse en geassosieerde opvoedkundige werkwinkels.

**Fase 2** het onderhoude behels met gesinspraktisyns in akademia, sowel as in die privaat - en openbare gesondheidsorgsektore wat verantwoordelik was vir kliniese staatsbestuur in primêre gesondheidsorg in die Kaapstad – metropool. Gedurende hierdie fase van die navorsing was die ervaringe, perspektiewe en begrip van gesinspraktisyns (akademia, privaat – en openbare sektor) met betrekking tot bewysgebaseerde praktyk, en die implementering van riglyne in primêre gesondheidsorg, verken.

**Fase 3** het deelnemende aksienavorsing met primêre sorg – praktisyns by gemeenskaps – gesondheidsentrums behels, deur 'n koöperatiewe ondersoekgroep te gebruik om die asmariglyn – implementering in primêre gesondheidsorg te verbeter. Die koöperatiewe ondersoekgroep het ondersoek ingestel hoe om die implementering van die asma – riglyne in hul onderskeie gemeenskaps – gesondheidsentrums te verbeter, en het vier siklusse van beplanning – aksie – observasie – refleksie voltooi. Die vier siklusse het gefokus op die implementering van 'n asma – selfbestuurplan, die bekwaamheid van kliniese verpleegpraktisyns om die riglyne te implementeer te verken, die persepsies van pasiënte oor hul asmasorg te verken, en die implementering van beter pasiënt – opvoeding. 'n Finale konsensus van die koöperatiewe ondersoekgroep se studie was toe opgestel.

## **Resultate**

### **Met betrekking tot gehalteverbetering van asmasorg in primêre gesondheidsorg:**

Die **eerste doelwit** van die studie is hoofsaaklik aangespreek deur die basislyn – audit wat in 2007 en 2008 uitgevoer is. Dit het getoon dat die basislynkwaliteit van asmasorg, met spesifieke verwysing na die assessering van pasiënte se vlak van beheer, meting van die pasiënt se piek ekspiratoriese vloeitempo, assessering van die pasiënt se inhaleringstegniek, optekening van die pasiënt se rookstatus, die voldoende voorskryf van reguleerder - en verligter gemeterde dosis inhaleerderhervullers tydens besoeke, en veral die verskaffing van 'n asma – selfbestuurplan tydens besoeke, swak was.

Die **tweede doelwit** is aangespreek deur die jaarlikse ouditte wat uitgevoer is in 2007, 2008, 2010 en 2011 gedurende die periode van implementering. Dit toon dat, hoewel duidelike oorsaak en effek – argumentering nie afgelei kan word nie, algehele statisties en klinies - beduidende verbeterings in die kwaliteit van sorg voorgekom het, in samewerking met die proses van asmariglyn – implementering. Ten spyte van die verbetering in strukturele – en proseskriteria, was daar geen ooreenstemmende verbetering in die uitkomstriteria nie. In werklikheid het die benutting van fasiliteite vir noodbesoeke aansienlik verhoog, terwyl die hospitalisasie van pasiënte konstant gebly het.

Die **derde objektief** was om maniere te verken om die implementeringsproses van die nasionale asmariglyne in primêre gesondheidsorg in die Metropooldistrik – gesondheidstelsel te verbeter. Dit was hoofsaaklik aangespreek deur 'n aksienavorsingsproses by geselekteerde gemeenskaps – gesondheidsentrums. Dit het getoon dat implementering verbeter kon word deur deurlopende opvoedkundige ondersteuning en formele interaktiewe opleidingswerkswinkels met die personeellede wat direk betrokke was met die pasiënte.

Die ontwikkeling en gebruik van opvoedkundige hulpmiddels, en asma - selfbestuurplanne gebaseer op die riglyn – aanbevelings was nuttig, en het pasiëntdeelname in besluitneming rakende hul sorg, aangemoedig.

Die **vierde doelwit**, spesifiek met betrekking tot asmasorg, is aangespreek by wyse van 'n opname. Dit het getoon dat, alhoewel die meerderheid van asma – pasiënte deelgeneem het aan besluite rakende hul asma, en tevrede was met die kwaliteit van sorg wat hulle ontvang het, die voorkoms van rook onder asma – pasiënte hoog was, en geleenthede vir rookstaking – berading was gemis. Alhoewel dokumentasie van piekvloei – opnames en pasiënte se kennis van die verskil tussen die verligter en kontroleerder - gemeterde dosis inhaleerders goed was, was pasiënte se persepsies met betrekking tot opvoeding in die inhaleringstegniek, die assessering van die vlak van beheer, die uitreiking van geskrewe inligting ten opsigte van asma, en die gebruik van asma – selfbestuurplanne steeds swak en kon dit verbeter word.

### **Met betrekking tot bewysgebaseerde praktyk en asmariglyn – implementering in primêre gesondheidsorg:**

Die **vyfde doelwit** van die studie is aangespreek by wyse van 'n opname wat getoon het dat die dokters in primêre gesondheidsorg bewyse in kliniese

besluitneming gebruik het, en saamgestem het met die nuttigheid en belangrikheid van bewysgebaseerde praktyk in die verbetering van die kwaliteit van pasiëntsorg in Suid – Afrika. Daar was 'n verskil in omgang met aktiwiteite wat verband hou met bewysgebaseerde praktyke tussen die openbare – en privaatsektordokters. Daar is dus 'n behoefte aan formele opleiding in die vaardighede en prosesse van bewysgebaseerde praktyke.

Die **sesde doelwit** is aangespreek by wyse van 'n opname wat getoon het dat 'n goeie proporsie van beide openbare en privaatsektordokters in die Kaapstad- metropool wel bewus was van die asmariglyn en het spesifieke riglyn – aanbevelings aangeneem, daarop gereageer en nagekom. Daar was 'n hoë vlak van algemene bewustheid van die asmariglyn, en aanbevelings was aangeneem in die praktyk, alhoewel daar verbeter kon word op die gebrek aan formele siekteregisters, monitering en evaluering van asmaorg, en die benutting van 'n asma – selfbestuurplan.

Die **sewende doelwit** is aangespreek deur kwalitatiewe navorsing wat getoon het hoe die persepsies en perspektiewe van gesinspraktisyns ten opsigte van bewysgebaseerde praktyk en die proses van riglyn – implementering bygedra het tot die ontwikkeling van 'n konseptuele raamwerk vir die proses van riglyn – implementering.

Die **agste doelwit** is aangespreek deur kwalitatiewe navorsing, wat hindernisse in elke stap van die implementeringsproses identifiseer het. Tydbeperrings, praktisynswerklading, gebrek aan finansiële hulpbronne, gebrek aan eienaarskap, die gebrek aan tydige organisasie – ondersteuning en praktisynsweerstand ten opsigte van verandering, was belangrike hindernisse in riglyn – implementering in 'n reeds oorlaaide primêre sorg – omgewing. 'n Konseptuele model is ontwikkel wat getoon het dat die proses van riglyn – implementering aangepas moet word by die geïdentifiseerde hindernisse.

Die **negende doelwit** is aangespreek by wyse van 'n opname wat getoon het dat die konsep van bewysgebaseerde praktyk betreklik nuut was vir kliniese verpleegpraktisyns in primêre gesondheidsorg, en het 'n behoefte geïdentifiseer om meer hieroor te leer. Kliniese verpleegpraktisyns het saamgestem dat kliniese navorsing nuttig is in die daaglikse bestuur van pasiënte, dat hul besluitneming gebaseer moet wees op bewyse, dat bewysgebaseerde verpleging die kwaliteit van pasiëntsorg kan verbeter, dat daar 'n plek is vir bewysgebaseerde verpleging in hul praktyke by hul onderskeie gemeenskap –

gesondheidsentrums, dat bewysgebaseerde praktyk 'n verskil sal maak in die kwaliteit van sorg van hul pasiënte, en dat bewysgebaseerde verpleegpraktyk 'n belangrike rol kan speel in Suid – Afrika. Alhoewel die bewustheid onder kliniese verpleegpraktisyns met betrekking tot die asmariglyne swak was, het die oorgrote meerderheid verslag gegee dat hulle die pasiënte persoonlik opgevoed het oor die verskil tussen verligting – en beheerder gemeterde dosis - inhaleerders, die rookstatus van pasiënte in die verslae opgeteken het, die inhaleringstegniek aan al hul pasiënte gedemonstreer het, die vlak van beheer geassesseer het, en saamgestem dat geïnhalerde kortikosteroïede die staatmaker van behandeling is in pasiënte met chroniese, aanhoudende asma. Slegs 'n klein minderheid (hoofsaaklik by die gemeenskap – gesondheidsentrums waar aksienavorsing geskied) het egter begin om pasiënte van asma – selfbestuurplanne te voorsien.

In die beantwoording van die sentrale vraag: **“Hoe kan die proses van implementering van kliniese navorsingsbewyse, deur die voorbeeld van die nasionale bewysgebaseerde riglyne oor asma, verbeter word in die primêre gesondheidsorgsektor in die Metropooldistrik - gesondheidstelsel van die Kaapstad – metropool?”**, kom hierdie tesis tot die gevolgtrekking dat die proses van riglyn – implementering in die primêre gesondheidsorg verbeter kan word deur 'n in – diepte begrip en sistematiese benadering tot die hele proses. 'n Konseptuele raamwerk word voorsien as 'n model wat poog om te lei en sin te maak van hierdie proses van riglyn – implementering. 'n Stapsgewyse benadering word aangebied en verskaf 'n opsomming van die hoof – navorsingbevindinge. Die model toon dat die aanvanklike proses van bewyse – skepping nie slegs navorsingbewyse van hoë kwaliteit moet oorweeg nie, maar navorsingbewyse moet inkorporeer wat relevant is tot die bepaalde konteks van sorg. Boonop toon die model dat riglyn – ontwikkeling inklusief behoort te wees, en behels dit 'n wyer spektrum van rolspelers sowel as pasiënte; dat riglyn – kontekstualisering, verspreiding en implementering versigtig beplan behoort te word. Spesiale oorweging moet gegee word aan plaaslike besluitneming oor die aanneming of prioritisering van spesifieke aanbevelings as deel van volgehoue kwaliteitverbeteringsiklusse, en die omskakeling van gepubliseerde riglyne na praktiese hulpmiddels vir praktisyns om te gebruik in die konsultasiefase, alvorens verspreiding daarvan



plaasvind. Implementering behoort te verwag dat lede van die primêre gesondheidsorg sal verskil in hul gereedheid om te verander, en dat strategieë doelbewus die beginsels van gedragsverandering sal insluit en 'n gevoel kweek van eienaarskap, keuse en beheer oor plaaslike aanneming van die riglyne. Akademiese sentrums, soos universiteite en professionele liggame, het 'n rol om te speel in die identifisering, gehalteversekering en sintetisering van die bewyse, en om insette te lewer in die riglyn - ontwikkeling. Hulle kan ook behulpsaam wees deur praktiese hulpmiddels te innoveer en te evalueer as deel van die kontekstualiseringfase, en om deurlopende opvoeding te verskaf gedurende implementering as deel van hul sosiale verantwoordelikheid. Die gesondheidsorg - organisasies moet onnodige vertraging in riglyn - implementering voorkom deur te verseker dat beleid, bronne en aanbevelings in lyn is gedurende die kontekstualiseringfase; dat hindernisse wat teëgekomp word, regdeur die hele proses hanteer word, en dat volgehoue monitering en evaluering van kwaliteitsorg plaasvind.

### **Gevolgtrekking**

Hierdie navorsing het van verskillende metodes en innoverende deelnemende aksienavorsing gebruik gemaak om die gaping tussen bewyse en praktyk te sluit. 'n Nuwe konseptuele model vir riglyn - implementering word aanbeveel vir gebruik om behulpsaam te wees met die implementering en kennis -translasie in primêre gesondheidsorg plaaslik, nasionaal en in soortgelyke lae - en middel - inkomstelende in Afrika.

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## **LIST OF ABBREVIATIONS**

- AGIP Asthma Guideline Implementation Project
- ASMP Asthma Self-Management Plan
- BMJ British Medical Journal
- CHC Community Health Centre
- CIG Cooperative Inquiry Group
- CME Continued Medical Education
- CNP Clinical Nurse Practitioner
- DoH Department of Health
- EBM Evidence-based Medicine
- EBP Evidence-based Practice
- ERCHC Elsie's River Community Health Centre
- FGD Focus Group Discussion
- FP Family Physician
- GAC Guideline Advisory Committee
- HCO Health Care Organisation
- HCW Health Care Worker
- HISP Health Information Systems Project
- HPCHC Hanover Park Community Health Centre
- IOM Institute of Medicine
- MCHC Macassar Community Health Centre
- MDHS Metro District Health System
- MDI Metred Dose Inhaler
- mFGD mini Focus Group Discussion
- MPCHC Mitchells Plain Community Health Centre
- NCD Non Communicable Disease
- NGT Nominal Group Technique
- NHI National Health Insurance
- NHLBI National Heart Lung and Blood Institute
- PAR Participatory Action Research
- PAOR Planning Action Observation Reflection
- PC Primary Care
- PEFr Peak Expiratory Flow Rate
- PHC Primary Health Care

- PrvS Private Sector
- PubS Public Sector
- QI Quality Improvement
- RCHC Retreat Community Health Centre
- RCT Randomised Controlled Trial
- SAMJ South African Medical Journal
- SANPAD South African and Netherlands Partnership for Research and Development
- SD Standard Deviation
- SU Stellenbosch University

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## **CHAPTER ONE**

### **INTRODUCTION**

*"The guideline committee has met, the literature has been reviewed and the consultants have argued. The work is done; the guideline document is finished.*

*All done, right?"*

***Alan Kaplan, 2006.***

#### **1.1 SOCIAL VALUE OF THIS RESEARCH**

International studies have shown that there is room for doctors to improve the application of current research evidence in their clinical decision making and that evidence-based guidelines can assist in making evidence more available to busy practitioners and improve patient outcomes in primary health care (PHC) (Grimshaw JM, 1993; Shekelle P et al., 2012).

Global concern for chronic diseases is increasing and risk factors for non-communicable diseases (NCDs) have increased significantly (WHO, 2002; Beaglehole et al., 2008; Mayosi BM et al., 2009; Levitt NS et al., 2011). In this regard the global mortality related to NCDs is projected to increase from 28.1 million in 1990 to 49.7 million in 2020 (Murray CJ & Lopez AD, 1997) and that NCDs will cause seven out of every ten deaths in developing countries (Boutayeb A, 2006). In addition, the global need for change in practice has encouraged an evidence-based approach to health care problems and such an approach has been recognised as a key competency for health care professionals. The contention that every practitioner should use high quality information to inform clinical decisions in practice, is now rarely challenged (Reilly BM, 2004). However marked gaps exist between evidence and practice (between what is done and what should be done) in PHC and clinicians often fall short in achieving the targets for clinical practice recommended in evidence-based guidelines.

In Africa, high HIV/AIDs and malaria prevalence, chronic poverty, poor life expectancy, underdevelopment, and poor quality health services with limited access, are common. The PHC approach encourages comprehensive health care and emphasises the prevention of diseases and the promotion of health in communities, especially where health services are strained and depleted of funds

to care for patients with NCDs (UNAIDS, 1999). In addition, this approach encourages communities to become actively involved in identifying their health needs and in implementing programmes to address them. Although there is evidence to show that health services, especially PHC, can contribute to moving poor people towards a longer and healthier life (Starfield B, 1998), challenges to family physicians (FPs), as expert generalists, and other primary care practitioners, with regard to their role in implementing PHC, remain considerable.

In South Africa there remains an urgent need to deal with the burden of HIV/AIDS (Dorrington R & Moultrie TA, 2008) and TB, interpersonal violence, maternal and child mortality and the increasing incidence of NCDs, which place a severe strain on limited resources, and requires the effective and efficient utilisation of such resources. The WHO estimates the burden of NCDs to be 2-3 times higher in South Africa than in high income countries (DoH, 2011). Increases in morbidity and mortality related to NCDs have major implications for the delivery of acute and chronic health care services (Mayosi BM et al., 2009) and seriously threaten to undermine the ability of the South African health system to attain the health related Millennium Development Goals (MDG) (Chopra M et al., 2009). Furthermore serious shortcomings exist in the South African health care system, where important components of PHC are not in place (Coovadia H et al., 2009) and large numbers of citizens suffer poor health unnecessarily or even die prematurely in a health system which emphasises cure rather than prevention. Attempts at restructuring the health care system to improve health care outcomes are in progress. In South Africa gaps between the rich and poor have been on the increase as reflected in a GINI coefficient of 0.70 (Population Reference Bureau, 2012) and large disparities remain with regard to living conditions and health outcomes among the different ethnic groups in this country. Such disparities occur, despite the fact that health care is considered a basic human right and is entrenched in the constitution of South Africa.

In South Africa a National Health Insurance (NHI) scheme is presently being rolled out and piloted in ten selected districts country-wide. It seeks to provide universal coverage for an essential package of care and to reduce the burden of disease. There is an emphasis on disease prevention, health promotion and



quality of health care in a re-engineered PHC system. Quality improvement systems are being developed as part of this process and clinical practice guidelines are being made available. Quality improvement in the public sector is an essential prerequisite for NHI and in this regard evidence-based clinical practice guidelines are highly ranked in the hierarchy of evidence-based resources and can play an important role in making recommendations for decision making at the coalface of care (Haynes RB, 2006).

New clinical research information becomes available rapidly and busy primary care practitioners cannot keep abreast of all the research published daily. Their work is essentially to see patients, not read papers. In this busy context practitioners need to access research evidence quickly and in a user-friendly format. Where pre-appraised evidence does not exist, they should have the proficiency to access, critically appraise and apply evidence in the care of their patients. However, where pre-appraised evidence exists, as in the form of evidence-based recommendations from clinical practice guidelines, incorporation into decision making with patients is important even though such incorporation is often assumed and taken for granted.

In the Western Cape the Metro District Health Services (MDHS) emphasise the prioritisation of evidence-based interventions that have the greatest impact on health care outcomes in PHC. Even though evidence is emphasised, it is clear that delivering personal, clinical and continuing care to patients requires more than just evidence. Evidence must be blended with the ability to be person-centred and to address the individual complexity inherent in each consultation.

Implementation of evidence-based guidelines in routine primary care practice is complex. Furthermore well described barriers to guideline implementation still continue to affect the uptake of guideline recommendations in practice (Majumdar SR, 2004; Hickling J, 2005; Zwolsman SE et al., 2013). Guideline implementation, which drives evidence-based practice (EBP), is an important central pillar of clinical governance. Clinical governance and the need to improve quality have been identified as one of the key issues both provincially and nationally (Provincial Plan 2030; National Development Plan).

This thesis addresses the state of EBP in primary care and how to improve the implementation of evidence-based guidelines. It takes the implementation of a national asthma guideline (Lalloo U et al., 2007) as a specific example, from which to learn about the broader issues involved in guideline implementation.

This research should therefore contribute to ensuring that EBP becomes part of the day-to-day practice of primary care practitioners involved in asthma care in the Cape Town metropole. In addition this research will contribute to the overall understanding of guideline implementation and is likely to assist in further improving the implementation of other important clinical practice guidelines at primary care level and thereby influence the quality of care of patients at PHC level in South Africa. Moreover this research will contribute to the improved understanding of the role of participatory action research (PAR) as a vehicle to the improved utilisation and awareness of evidence in primary care practice. The argument for the scientific value of this research is fully presented in Chapter two.

## **1.2 CENTRAL QUESTION**

How can the implementation of clinical research evidence, using the example of the national evidence-based guideline on asthma, be improved in the PHC sector in the MDHS of the Cape Town metropole?

## **1.3 AIM**

To improve the implementation of clinical research evidence, by learning from the specific example of the national evidence-based asthma guideline in PHC practice in the MDHS of the Cape Town metropole, and to make recommendations to key stakeholders regarding the future implementation of evidence-based guidelines.

## **1.4 PRIMARY OBJECTIVES**

- To gain insight into the current quality of asthma care in PHC in the MDHS of the Cape Town metropole.
- To determine whether the process of implementation of the new asthma guideline contributed to an improvement in the quality of care in the MDHS.

- To explore ways of improving the process of implementation of the national asthma guideline in PHC in the MDHS.
- To explore how EBP is understood and perceived by doctors in PHC.
- To understand how PHC doctors in the public and private health sectors gain access to and use guidelines.
- To explore the experiences, perspectives and understanding of family physicians (FPs) (academic, private and public sector) with regard to EBP and the implementation of guidelines in PHC practice.
- To gain insight into the understanding of FPs regarding the perceived problems and main barriers to EBP and their views of the process of guideline implementation in PHC.

## **1.5 DEFINITIONS**

During this thesis a number of terms are intended to have a specific meaning and therefore these terms are defined below:

### **1.5.1 Clinical practice guidelines (CPG)**

Clinical practice guidelines have been defined as “systematically developed statements to assist practitioners’ decisions and patients’ decisions about appropriate health care for specific clinical circumstances” (Field MJ, & Lohr KN, 1990).

### **1.5.2 Dissemination**

“Communication of information to clinicians to improve their knowledge or skills, more active than diffusion, dissemination targets a specific clinical audience” (Davis DA & Taylor Vaisey A, 1997).

### **1.5.3 Evidence-based medicine (EBM)**

The term “*evidence-based medicine*” (EBM) first appeared in the scientific literature in 1991 (Guyatt GH et al., 1991). Guyatt’s original definition suggested that EBM involved “an ability to assess the validity and importance of evidence before applying it to day-to-day clinical problems” (Guyatt GH et al., 1991; Oxman AD & Guyatt GH, 1993).

This concept was further developed and later described as “the *conscientious*, explicit and *judicious* use of current best evidence in making decisions about the care of individual patients” (Sackett DL et al., 1996). Sackett later defined EBM as: “...the integration of best evidence with clinical expertise and patient values” (Sackett DL, 2000).

### **1.5.4 Evidence-based practice (EBP); Evidence-based Health Care (EBHC)**

The term ‘EBM’ has evolved into a larger concept, as increasing numbers of practitioners in various health science disciplines recognised the importance of evidence to inform all types of health care decisions. In recognition of the importance of a broader and united commitment to the principles of ‘best practice’, the term EBP or EBHC has been used (Dawes MG, 2005).but it is important to note that the key issue here is the movement from a focus on medicine to include all health related disciplines.

### **1.5.5 Evidence-based practice (EBP) process**

The five steps of EBP were first described in 1992 (Cook DJ, 1992) and most steps have now been subjected to trials that assess the effectiveness of teaching these steps to practitioners. For example:

1. The translation of uncertainty and knowledge gaps to focused answerable questions (Richardson WS et al., 1995).
2. The systematic searching and accessing of the best evidence available (Rosenberg WM et al., 1998).

3. The critical appraisal of the evidence for validity, clinical relevance and applicability (Parkes J et al., 2001).
4. The application and use of clinical research evidence in practice (Epling J et al., 2002).
5. The evaluation of performance in practice (Jamtvedt G et al., 2003).

### **1.5.6 Family Physician (FP)**

The following definitions have been used to define Family Physicians in the African context:

- "Family Physicians- Expert generalists who are required to support PHC as well as provide care at the district hospital" (Howe AC, Mash RJ & Hugo JF, 2013).
- "An 'all round specialist' who cares for the most common presentations, conditions and emergencies at the community health centre (CHC) and district hospitals ... and provides the role of supervision, mentoring, leadership and improvement of quality of care and health systems" (Moosa S et al., 2014).

### **1.5.7 Implementation**

"Putting a guideline in place, more active than dissemination, it involves effective communication strategies and identifies and overcomes barriers to change by using administrative and educational techniques that are effective in the practice setting" (Davis DA, Taylor Vaisey A, 1997).

### **1.5.8 Primary Care (PC)**

Primary care is primary in the sense that it is first and fundamental and has been defined as "... a multidimensional system structured by primary care governance, economic conditions, and a primary care workforce development, facilitating access to a wide range of primary care services in a coordinated way, and on a continuous basis, by applying resources efficiently to provide high quality care, contributing to the distribution of health in the population." (Kringos DS et al., 2010). WHO indicators of the quality of primary care include: "...accessibility utilisation and the degree of integration into a broad referral system and performance indicators for essential public health functions" (WHO,

2002). Barbara Starfield has found that "...countries with a strong primary care base to their health care system achieve better outcomes, and at lower costs than countries in which the primary care base is weaker" (Starfield B, 1998).

### **1.5.9 Primary Health Care (PHC)**

PHC has been defined as: "Essential health care based on practical, scientifically sound and socially acceptable methods and technology, made universally accessible to individuals and families in the community through their full participation and at a cost that the community and the country can afford..." (WHO1978; Dennill K et al., 2001).

## **1.6 RESEARCH PROCESS**

The research methodology is fully described in Chapter Three, but a brief summary is presented in Table 1.1, covering the different phases of the research in relation to the objectives, the research setting and the participants involved.

## **1.7 ETHICS**

The research proposal received ethics approval in 2008 (Project Number N07/03/066), and the research process started in January 2008 following permission from the office of the Deputy Director of Research in the MDHS (Reference Number 2007RP72). Ethical considerations are discussed more fully in Chapter Three.

**Table 1.1:** Summary of research process

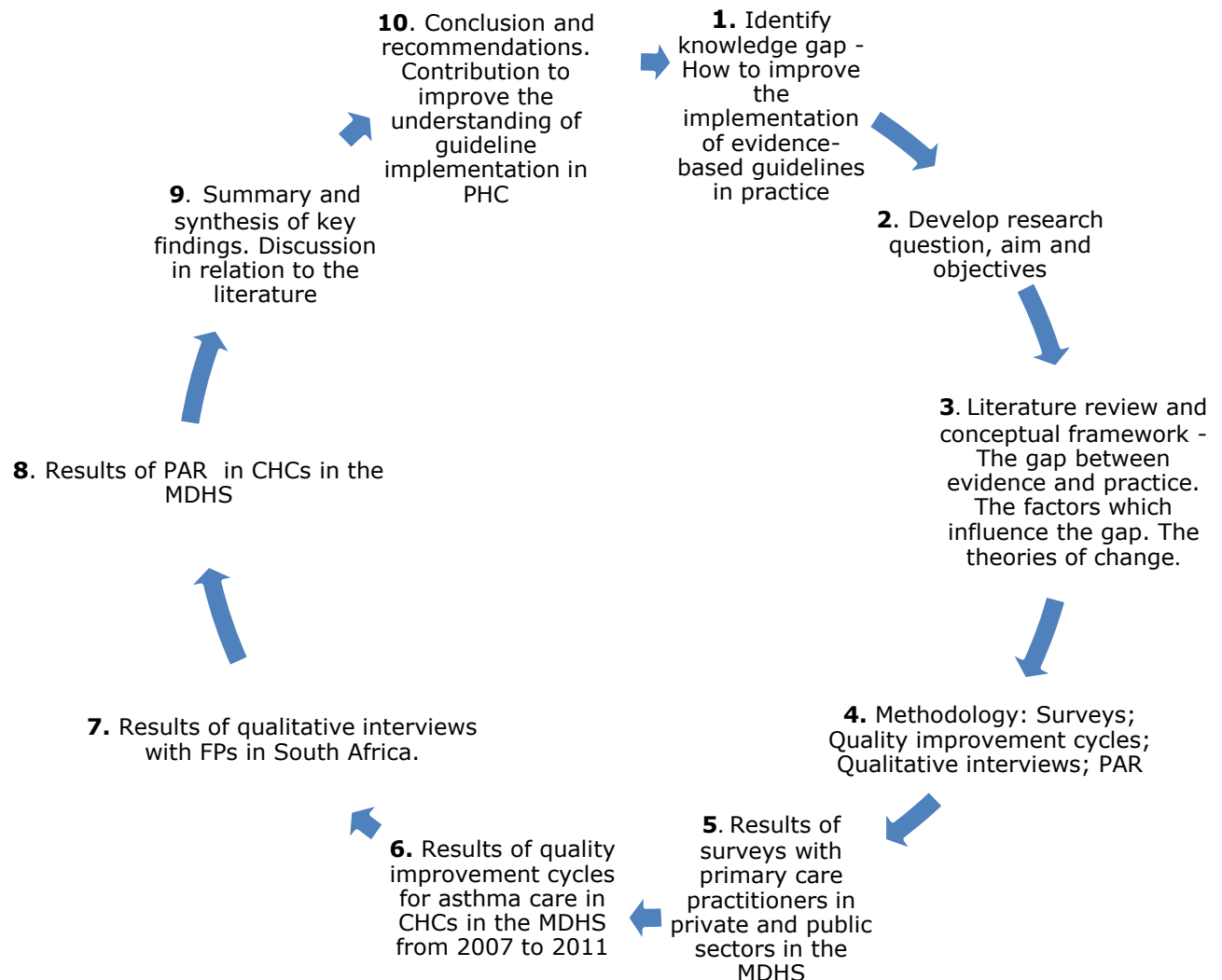
<b>METHODS</b>	<b>OBJECTIVES</b>	<b>SETTING</b>	<b>PARTICIPANTS</b>	<b>RESEARCH TEAM</b>
<b>Cross-sectional Survey 2008-2009</b>	<p>To explore how EBP is understood and perceived by clinical practitioners in PHC.</p> <p>To explore how PHC practitioners in the public sector and private health sectors gain access to and use guidelines.</p>	Cape Town metropole	Primary Care Practitioners: Private general Practice (n=161), public sector MDHS (n=193)	The researcher Research assistant Data capturer
<b>Quality improvement cycles 2007-2011</b>	<p>To gain insight into the current quality of asthma care in primary care in the Cape Town metropole.</p> <p>To determine whether the new asthma guideline implementation contributes to an improvement in the quality of care of asthma.</p>	MDHS	Records of patients attending selected health centres (n=1976)	The researcher Research assistant Dedicated asthma teams (Doctor and 2 Clinical Nurse Practitioners (CNPs) Data capturer
<b>Qualitative interviews 2007-2010</b>	<p>To explore the experiences, perceptions and understanding of family physicians (academic, private and public sector) with regard to EBP and the implementation of evidence in clinical practice.</p> <p>To gain insight into the understanding of family physicians regarding the perceived problems and main barriers to evidence-based practice and their views of guideline implementation in PHC practice.</p>	National	Academic family medicine experts and heads of Family Medicine at Universities in South Africa. Family physicians in the MDHS and Cape Town private sector (n=27)	The researcher
<b>Participatory action research 2011-2012</b>	To explore ways of improving the effective implementation of the national asthma guideline in primary care practice in the MDHS in the Cape Town metropole.	MDHS	Dedicated asthma teams at PHC consisting of family physician and 2 CNPs (3 per health centre; n=15))	The researcher Research assistant Transcriber Action research team

## **1.8 THESIS OVERVIEW AND CHAPTER OUTLINE**

In this section the chapter outline is presented and discussed in relation to Figure 1.1, which portrays an overview of the entire research process. As is depicted in Figure 1.1, at the central core of this research was the question of how to bridge the gap between evidence and practice (Step 1) and in particular how to improve the implementation of evidence in the form of an evidence-based guideline on asthma into practice. In this regard the researcher developed the central question, aim and objectives to investigate this question (Step 2). A literature review was conducted to further understand the gap between evidence and practice and discusses the factors and theories of change which influence this gap (Step 3). The researcher also decided on the methodology to best address the various objectives, and used four different methods within the study (Step 4). The results of the four methods are then presented (Steps 5-8). Thereafter key findings have been synthesised from the results and presented in relation to the current literature (Step 9). Finally conclusions and recommendations regarding guideline implementation are presented (Step 10).



**Figure 1.1:** Overview of this thesis (adapted from Trafford V and Leshem S, 2008)



### 1.8.1 Chapter 3

This chapter describes the research methodology. The proposal development and background to this research is discussed. A conceptual framework for the methods is presented, and the main methods and techniques utilised to address the aim and objectives are presented. This is followed by the ethical considerations applicable to the methods used in this research. This chapter concludes with a justification of the use of action research in investigating the implementation of evidence into practice.

### **1.8.2 Chapter 4**

This chapter presents the results of the cross-sectional survey that looked at knowledge, perceptions of EBM and guideline implementation in PHC.

### **1.8.3 Chapter 5**

This chapter presents the results of the quality improvement cycles (QIC) conducted from 2007 to 2011, which looked at the current level of asthma care in PHC in the MDHS and whether the implementation of the asthma guideline contributed to any improvement in the quality of care.

### **1.8.4 Chapter 6**

This chapter presents the results of the qualitative research that looked at an in-depth understanding of the experiences and perceptions of family physicians (FPs) regarding EBP and the implementation of guidelines in their clinical practice.

### **1.8.5 Chapter 7**

This chapter presents the results of the participatory action research (PAR) and what was learnt regarding how to implement the national asthma guidelines in PHC in the MDHS.

### **1.8.6 Chapter 8**

This chapter presents a synthesis and discussion of the main research findings in relation to the current literature. The chapter concludes with the main limitations encountered in the use of the different phases of the research.

### **1.8.7 Chapter 9**

This chapter presents the conclusions and recommendations with regard to guideline implementation and policy change.

### **1.8.8 Chapter 10**

This chapter presents the references related to this research using the Harvard scheme of referencing.

## **1.9 RESEARCHER BACKGROUND**

This section provides a very brief summary of myself in relation to the research conducted in an attempt to reflexively outline the potential predispositions, which could have influenced the way the research was planned and conducted. I worked in the PHC sector of the Cape Town metropole for a period of 20 years consecutively from 1986 to 2006. I started practicing as a junior medical officer immediately post internship and became a principal medical officer after 10 years. I rotated through many of the Community Health Centres (CHCs) in the Cape Town metropole and during this time became well aware of the scope of practice and areas of weakness in the health system.

Weaknesses that I noted included the wide variation in practice, opinion based practice (especially those of the older generation of practitioners), a paucity of formal guidelines to assist health care workers (HCW) in the management of diseases of chronic lifestyle, the inability to incorporate current evidence in decision making, even where evidence-based guidelines were available, the generally poor quality of care as perceived by patients and medical staff, the lack of continuity of care coupled with the ongoing frustrations of an ever increasing workload within a resource constrained context of practice. All of these weaknesses prompted me to pursue postgraduate studies in Family Medicine and Primary Care at Stellenbosch University (SU) where I completed a Masters degree in Family Medicine in December 1995. Subsequently many fellow medical officers employed in the MDHS considered and successfully completed postgraduate studies in Family Medicine and Primary Care, graduated as FPs and returned to practice in the MDHS.

I returned to the same practice environment and worked as a senior family physician at the Elsie River CHC (ERCHC) for a period of 10 years where I was mainly involved with training undergraduate and postgraduate students during family medicine training attachments. Here my main focus of teaching was EBP at the point of care.

I was appointed as a full time senior lecturer in the Division of Family Medicine and Primary Care, SU in January 2007. I spent time learning how to find relevant published research, becoming proficient at critical appraisal and applying research evidence in clinical decision making. As a proponent of EBM, I have been involved in the formal teaching of EBM to both undergraduate and post graduate medical students and of applied research methods for

postgraduate students in Family Medicine at SU since 1997. With the recent establishment of the new centre for Evidence-based Health Care I am now assisting with the teaching of guideline implementation in the MSc Clinical Epidemiology programme.

### **1.10 CONCLUSION**

This chapter gave an overview of the background to the study, the central research question, aim, main objectives, core definitions, a summary of the research process, chapter outline and description of the researcher's own background in relation to the research question. The next chapter presents an argument for the scientific value of the research through the presentation of a conceptual framework that clarifies what is already known about the evidence-practice gap and the main factors influencing the implementation of evidence into practice.

## CHAPTER TWO

### LITERATURE REVIEW

*"Between the health care we have and the care we could have, lies not just a gap, but a chasm"*

**(IOM Report, Crossing the Quality Chasm)**

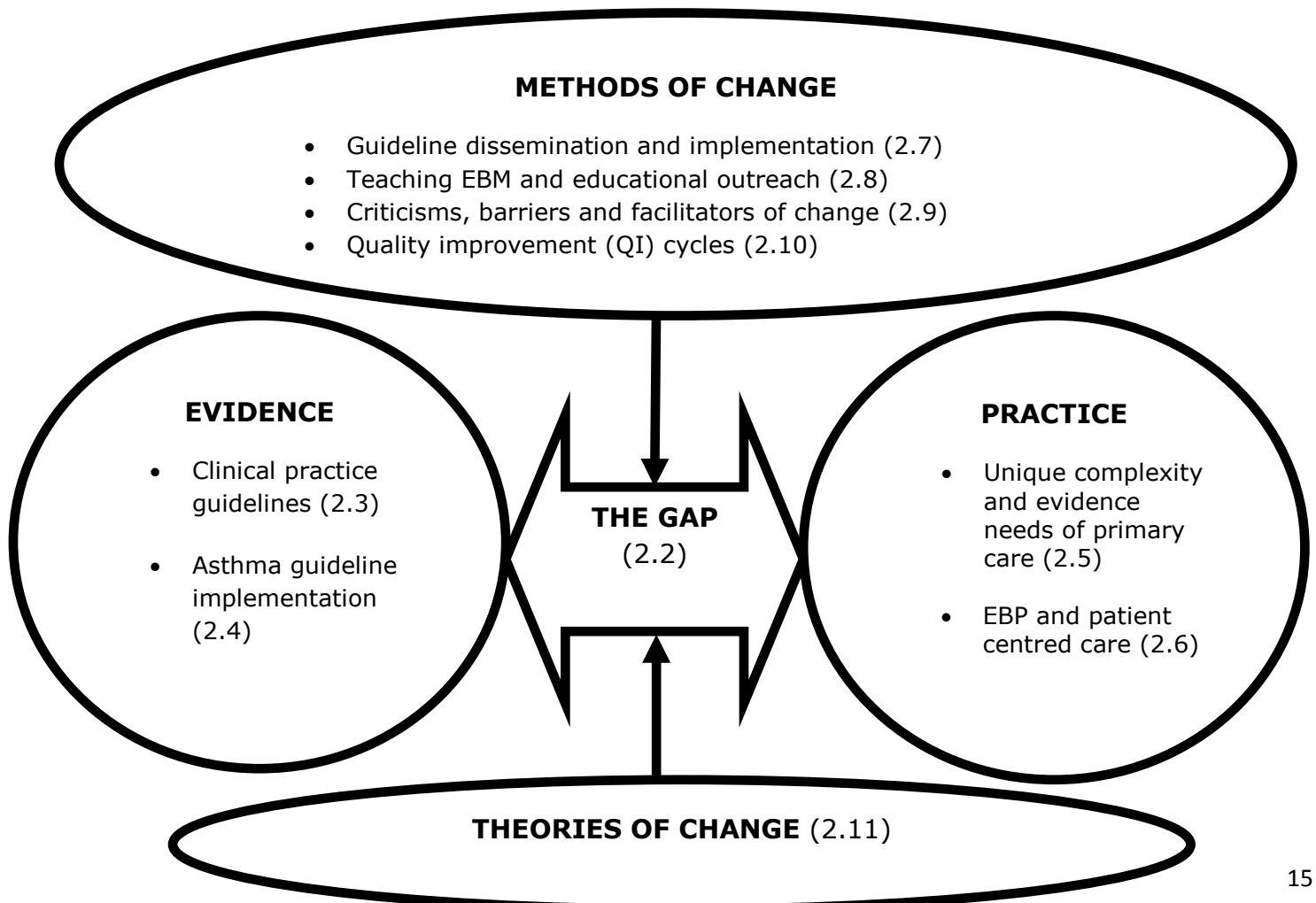
*"...it is not sufficient to simply appraise the evidence, but at the end we should ask 'what is the next action'."*

**Paul Glasziou**

#### 2.1 INTRODUCTION

This chapter presents a literature review that uses the conceptual framework shown in Figure 2.1 to discuss the different factors which influence the gap between evidence and practice. Although the review mostly includes international evidence, the researcher discusses its relevance to guideline implementation in South Africa and the local setting of the Cape Town metropole in particular.

**Figure 2.1:** Conceptual framework



## **2.2 THE EVIDENCE-PRACTICE GAP**

As shown in Figure 2.1 the gap between evidence and practice stands at the centre of the conceptual framework. The practice of medicine is becoming increasingly complex and uncertain, despite greater knowledge. A huge volume of evidence, which is often conflicting, is becoming available on a daily basis. Medical practice is changing, and the change, which involves using the medical literature more effectively in guiding medical practice, is profound enough that it can appropriately be called a paradigm shift (Kuhn TS, 1996). Change is driven by unsatisfied patients, easier access to the medical literature, mistakes and inefficiency in clinical practice and the fact that current practice methods are not leading to the intended outcomes.

Major challenges of EBP are knowledge translation, the integration of evidence into clinical practice, and ensuring that practitioners base their day-to-day decision making on the right principles and current best evidence (Davis DA and Taylor-Vaisey A, 1997). Practitioners are often more influenced by their peers and role models (Locock L & Dopson S, 2001) and are often unaware of the available evidence or fail to apply it. Even those who are aware of the evidence, risk making the wrong decisions at the individual level, if they do not involve their patients in the decisionmaking process (Guyatt G, 2004).

One of the most consistent findings in research of health services is the gap between evidence and practice (Bodenheimer T, 1999), which has long been described (Lomas J, 1988; Asch SM, 2006). Bridging the gap between evidence and practice is central to ensuring that beneficial interventions are used appropriately, and harmful interventions are avoided (Brocklehurst P & Mc Guire W, 2005). In addition, proponents of EBP have previously assumed that robust and rigorously prepared evidence would readily be implemented by clinicians. Such overly simplistic assumptions have been revised and reconsidered as it has become clear that the dissemination and implementation of evidence in clinical practice is far more complex than initially assumed (Blomkalns AL et al., 2007; Kiesling A & Henriksson P, 2011).

### **2.3 CLINICAL PRACTICE GUIDELINES**

One of the commonest ways of synthesising and presenting the latest evidence to clinicians is in the form of clinical practice guidelines (Figure 2.1). The greatest opportunity to improve outcomes for patients over the next quarter century will probably come not from discovering new treatments, but from learning how to deliver existing effective therapies, which are clearly outlined in clinical practice guidelines.

As EBP grew, more and more guidelines were prepared and disseminated, many for use in PHC. Clinical practice guidelines are useful in that they summarise the evidence and are usually prepared in response to a wide variation in practice, to contain excessive cost, improve substandard outcomes and in response to new evidence which could have a significant impact on patient management (Gross PA, 2001).

It is disturbing to note that some practitioners may follow guidelines even if they disagree with recommendations (Lenzer J, 2006). Furthermore, evidence for concerns that are important in primary care practice may be absent or available evidence may be conflicting. In such situations, consensus methods are used in the development of guidelines to deal with conflicting scientific evidence and its application to different clinical settings (Jones J & Hunter D, 1995).

Although there is evidence that primary care practitioners are being flooded with guidelines (Hibble A et al., 1998) and that primary care practitioners frequently fail to follow them (Siriwardena AN, 1995), clinical practice guidelines have been shown to change clinical practice and improve patient outcomes (Grimshaw JM & Russell IT, 1993). However the evidence that guidelines result in improved health outcomes is far from clear-cut. Although a quality evidence-based guideline has the potential to achieve this, it may only succeed if as much attention is paid to the dissemination and implementation phase as to its original development (Swinglehurst DA, 2005). When used wisely, however, they may have the potential to benefit health care systems, health care professionals, and most importantly, patients. This achievement however, relies on various factors

including the scientific validity of the guidelines and a dissemination strategy that promotes adherence (NHS Center for Reviews and Dissemination, 1994).

Policy makers are keen to make use of the potential benefits of guidelines in order to increase implementation of best evidence, reduce inappropriate variation in practice, improve efficiency and, ultimately, improve health outcomes for patients. Current evidence for the effectiveness of interventions to change health professionals' behaviour in developing countries is either scanty or flawed, due to poorly designed research (Siddiqi K, 2005). Unfortunately in South Africa, little is known about the attitudes and behaviour of PHC practitioners in the public or private sectors concerning the implementation of clinical practice guidelines.

The quality of care of patients is often adversely affected by unnecessary delays in the implementation of research findings (Haines A & Jones R, 1994). In most cases the interaction of a large number of factors determines whether or not implementation of a guideline is successful. Factors that can exert a powerful influence on the successful implementation of guidelines include features of the guideline itself; the nature of the target group of professionals or patients, the social setting, the financial resources available and the organisational context (Davis DA & Taylor-Vaisey A, 1997).

Implementation can be achieved and promoted in many ways. Traditionally, passive diffusion through the publication of research has been regarded as a way of closing the gap between research and practice. Dissemination, which is a more active strategy, involves targeting the message to defined groups. Implementation is an even more active, planned and tailored process, which addresses and overcomes barriers to change (Davis DA & Taylor-Vaisey A, 1997). Understanding the knowledge, attitudes and perspectives of practitioners with regard to the barriers to guideline implementation can improve their adherence to guideline recommendations (Sinuff T et al., 2007). More could be done to adapt guidelines to local settings (Al-Ansary LA, 2013). Focusing on individual institutions, practitioners and nursing staff and their specific concerns have been shown to make the uptake of guideline recommendations more likely (Doherty S, 2006).



## 2.4 ASTHMA GUIDELINE IMPLEMENTATION

This thesis is particularly concerned with the implementation of a national asthma guideline for the care of adolescent and adult patients (Figure 2.1). Many international and national evidence-based asthma guidelines have not been implemented (O'Byrne PM, 2005; O'Byrne PM, 2005; Tan WC & Ait-Khaled N, 2006) even though according to Bousquet J (2007) they "appear to be the best vehicle available to assist primary care practitioners and patients to receive the best possible asthma care" (Bousquet J, 2007). However there is also evidence that asthma outcomes do not improve despite guideline implementation and that only certain interventions such as educational workshops have been associated with improved asthma outcomes (Podjasek JC & Rank MA, 2013).

The evidence-based management of asthma remains an important public health goal (Rashidian A & Russell I, 2011). Asthma is one of the most common chronic diseases worldwide (Burr ML et al., 2006) and is the eighth leading contributor to the burden of disease in South Africa (Bradshaw D, 2003; Mash B et al., 2009). Not only is the burden of asthma increasing internationally (Masoli M et al., 2004; Burr ML et al., 2006; Braman SS, 2006; GINA Report 2011), but patients receive suboptimal care (Stempel DA et al., 2004; Rabe KF, 2004; Yawn BP & Yawn RA, 2006; Lallo U et al, 2007), levels of asthma control fall short of published guidelines (Rabe KF, 2004) and remain poor in the Western Cape province of South Africa (Mash B & Whittaker D, 1997; Mash B et al., 2009). This latter finding has been echoed by Green et al who demonstrated that: "there is under-treatment, inappropriate treatment and/or lack of patient education for asthma patients in South Africa" (Green R et al., 2008). Furthermore, they identified the central role of nurses in asthma patient education in rural areas of South Africa (Green RJ et al., 2001).

The incidence of asthma in children is increasing internationally (ISAAC, 1998), the prevalence in children internationally is high (Lai CK, 2009), and it remains a significant economic burden for many developed and developing countries (Cardarelli WJ, 2009). Thus effective primary care management is important to keep asthma related morbidity and mortality to a minimum (Wiener Ogilvie S et

al., 2008) especially in the primary care context where most of the burden of illness caused by asthma is managed (Gibson PG, 2000).

Asthma guidelines are developed with the central concern of helping practitioners make better decisions (Jackson R & Feder G, 1998), to reduce the evidence-practice gap and to provide a standard approach to the diagnosis and management of the condition. While it is clear that asthma care based on evidence-based guidelines can result in well controlled asthma (GINA, 2002; Lai CK, 2003; Bateman ED, 2004; Lemiere C, 2004), primary care practitioners adhere poorly to published guidelines (Sarrell EM et al., 2002) and many asthma guidelines have not been fully implemented in practice despite containing well established and accepted evidence-based recommendations (Lang DM, 1997; Well K et al., 2008). In addition control targets are often not met (Liciskai CJ et al., 2012) resulting in increased documentation of hospitalisation and emergency visits for exacerbations (Tsuyuki RT, 2005; Chapman KR, 2008).

Passive diffusion, which is the traditional way of mailing clinical practice guidelines to primary care practitioners has resulted in wide variations and differences in practice (Cabana MD, 1999) and produced little change in clinical practice (Oxman AD et al., 1995). In addition practitioners do not have time to read the guidelines and often their awareness of and adherence to recommendations in asthma guidelines remain low (GINA report 2011). New tools have been developed, which show that practitioners prefer the guideline format to be easy to read, practical, presented as flow charts and algorithms and in electronic format (Stone TT et al., 1999; Stone TT et al., 2005).

Despite clear and relatively straightforward recommendations presented in evidence-based clinical practice guidelines, QICs have revealed that large variations in practice still exist (Hart SR & Davidson AC, 1999). Even the implementation of well established guidelines in the UK's primary care services is considered to be "patchy" (Wiener Ogilvie S et al., 2008) and isolated events such as staff education are unlikely to be effective unless teamwork and organisation of care is also supported. Proper evidence-based dissemination and implementation strategies are key in the uptake of asthma guideline recommendations in practice. Such recommendations should be "tailored" and

staff education should utilise “individual learning styles” and “adult learning processes” (Bheekie A et al., 2006).

The Institute of Medicine (IOM) emphasised six goals for the future of health care, namely the provision of a health care environment that is; “safe, effective (evidence-based), patient centred, timely, efficient and equitable” (Reynolds T, 2001). One way of achieving effectiveness is to translate evidence into practice and take advantage of evidence-based guidelines. Where resources are in place, the implementation costs of evidence-based recommendations can be supported. It is becoming clear from cost effectiveness analysis in sub-Saharan Africa that evidence-based treatment options, especially low dose inhaled corticosteroids use for mild persistent asthma, reduce chronic respiratory disease burden at a relatively low cost (Stanciole AE et al., 2012) and that even if asthma control is not achieved, appropriate evidence-based treatment could still lead to improvements in quality of life (Bateman ED et al., 2002).

The Asthma Guidelines Implementation Project (AGIP) was established to improve the impact of the South African guidelines for chronic asthma in adults and adolescents in the Western Cape (Mash B et al., 2009). A project was launched to address the dissemination and implementation of the guideline (Lalloo U et al., 2007) in the Western Cape using Outcome Mapping as a methodology. Primary care practitioners identified the quality of asthma care as a major problem and the national asthma guideline was selected for formal implementation in order to improve the quality of asthma care. As members of the AGIP the researcher and supervisor identified the area of concern and the doctoral proposal was developed to further research the improved implementation of the asthma guideline in PHC in the Cape Town metropole.

Before any guideline is implemented the validity, applicability of recommendations and proposed changes should be assessed. The validity and quality of the national asthma guideline (Lalloo U et al., 2007) was assessed by the Guideline Advisory Committee of the Department of Health in the Western Cape using the AGREE tool (The AGREE Collaboration, 2003) and feedback was given to the guideline preparing body, prior to consideration for implementation. Evidence derived from RCTs and expert consensus was clearly linked to

recommendations contained in the guidelines, using the strategies recommended by the Global Initiative on Asthma (GINA, 2002) and the committee approved the guideline for use in the Western Cape.

## **2.5 THE UNIQUE COMPLEXITY AND RESEARCH EVIDENCE NEEDS OF PRIMARY CARE**

As shown in the conceptual framework (Figure 2.1) one of the characteristics of PHC is its complexity and uniqueness, and the principles of EBM are not as easily applied in this setting as in the biomedical and more disease-centred context of secondary care where the process of EBM was originally developed (Sackett DL, 2000). Major difficulties arise in introducing the innovations of thousands of RCTs into routine daily practice. Both patients and policy makers might want practitioners to try and base as many of their interventions as possible on evidence from clinical trials. However evidence emanating from clinical trials cannot always fulfill the needs of practitioner's decision making and often other research paradigms are required to assist in answering questions of a different nature.

Primary care practitioners need to keep up to date (MacAuley D, 1998) and yet they struggle to keep up with improvements as the volume of medical literature, new medical knowledge and information is increasing and becoming available more rapidly (MacAuley D, 1994). Ideally they need evidence from and about the types of patients that they encounter. The primary care setting has specific needs for research. This setting is contextually complex, with patients who present with a broad range of signs and symptoms and undifferentiated disease patterns. Uncertainty in this practice setting is common. Therefore practitioners need research evidence for the whole range of diagnostic, prognostic, interventional, and phenomenological questions which arise within this context (Van Weel C & Knottnerus JA, 1999). In addition the research evidence is often of poor quality (Hannes K et al., 2005), resulting in a paucity of sound evidence that is relevant for use in this context (McColl A et al., 1998; Taylor J et al., 2002; Trevena LJ et al., 2007). Too many gaps in the evidence base may limit the usefulness of EBM and the quality of care patients receive.

For evidence to be implemented in primary care it must be accessible and relevant to the individual patient (Sackett DL et al., 1996; Micken S & Askew D, 2006). Concern has been raised that research is often conducted in areas outside of primary care (Jacobson LD et al., 1997) with limited applicability or generalisability to the primary care context. Furthermore, evidence derived from RCTs constitutes only a portion of the real knowledge that is needed in primary care (Micken S & Askew D, 2006). Questions are therefore raised as to whether large scale RCTs provides evidence relevant to primary care (Iggo N, 1995; Mant J, 2006). In this regard pragmatic trials have long been considered more desirable to inform practice in real-world conditions (Zwarenstein M & Treweek S, 2009).

Human life issues are complex and not all human life issues can be reduced to a measurable unit of data in a RCT and therefore a wide range of study designs should be utilised. When it comes to knowledge translation and decision making in practice, RCTs and systematic reviews cannot tell us how interventions or clinical practice guidelines should be implemented. Such questions and those related to patient experiences, attitudes, perceptions and processes, constitute a separate class of clinical questions which require a different form of engagement and different types of research evidence (Glasziou P et al., 2004).

Complexity has influenced the philosophical discourse of family medicine and provides tools to understand and deal with uncertainty and nonlinearity in the consultation (Innes D et al., 2005). Furthermore, it provides a framework for a generalist understanding of health, illness and disease as "interconnected and context-dependent states of human experience" (Strumber JP et al., 2014). In addition it supports the view that illness and health result from complex, dynamic and unique interactions between different components which influence illness and health (Wilson T & Holt T, 2011).

Primary health care is complex and uncertainty is common (Rosser WW, 1996). Patients with complex health needs are increasingly the focus of health systems redesign (Peek CJ et al., 2009; Grant RW et al., 2011). In addition, knowledge of complexity is critical in the management of patients with comorbidity in PHC practice (Hewner S et al., 2014; Risor MB et al., 2013) and makes both research

and delivery of care particularly challenging (Grembowski D et al., 2014; Woodard LD et al., 2012). However, complexity is not just restricted to issues related to comorbidity, but involves interactions between behavioural, socioeconomic, cultural, environmental and biological forces and medical care as health determinants, which exert profound influences on processes and outcomes of care for chronic medical conditions (Monika M et al., 2007).

As populations age the expected number of patients with comorbidities increase (Brilleman SL & Salisbury C, 2013; Pillay M et al., 2014) and is associated with reduced quality of life for patients, increased use of resources (Harrison C et al., 2013), health care cost (Valderas JM et al., 2009), workload (Salisbury C et al., 2011) and complex care needs (Min L et al., 2013). Studies examining the prevalence of comorbidity have focused mostly on older populations (Hoffman C et al., 1996; Starfield B et al., 2003) while some have focused on multimorbidity (Britt HC et al., 2008; Van den Akker M et al., 2008). Patients with comorbidity have higher consultation rates and less continuity of care compared with patients without comorbidity (Salisbury C et al., 2014). Furthermore the existence of an inverse relationship between comorbidity and quality of life (QOL) has been described (Fortin M et al., 2004). However knowing the patient is crucial when dealing with comorbidities (Risor MB et al., 2013) and the complexity of care in managing patients with such comorbidities is best handled in the primary care setting by primary care practitioners (Fortin M et al., 2004; Harrison C et al., 2013).

The development and application of clinical practice guidelines and the care of patients with multiple problems lie in the zone of complexity (Plsek PE & Greenhalgh T, 2001). Although guideline quality is generally good, their relevance to patients with comorbidity may be limited (Fortin M et al., 2011) especially in older people with chronic disease (Vitry A & Zhang Y 2008) and few guidelines actually provide guidance for making trade-off decisions either to individual health care providers or to health systems (Van Weel C & Schellevis FG, 2006; Durso SC et al., 2006; Fortin M et al., 2011). Furthermore, guidelines tend to focus on single diseases and not on the needs of complex patients, including patients with comorbidity (Tinetti ME et al., 2004; Durso SC et al., 2006). Guidelines for the care of complex patients are therefore needed and

disease specific guidelines could at least consider how complexity might influence recommendations with guidance for trade-offs (Monika M et al., 2007). The uncritical adherence to guidelines, rules or protocols may even be harmful and ways of dealing with complexity such as clinical judgment may be useful. Tools for assisting decision making in the complex zone have been described and include: using an empirical trial of treatment (Sackett D et al., 1991); decision making on the basis of experience, evidence and knowledge of the patient's story (Greenhalgh T, 1999); plan-do-study-act cycles (Langley CJ et al., 1996) and using problem solving techniques (Mynors-Wallis L et al., 2000). Effective clinical decision making therefore requires a holistic approach which accepts unpredictability and uncertainty, good communication skills and good judgment to balance competing interests (Salisbury C et al., 2011).

Current quality measures do not incorporate complexity (Tunetti ME et al., 2004). Health systems are largely planned for individual diseases rather than comorbidity (Barnett K et al., 2012) and complementary strategies are required to support primary care practitioners to provide personalised, comprehensive continuity of care, especially in socioeconomically deprived areas. Clinical quality improvement strategies that adopted ideas from complexity science proved more successful than the traditional linear approaches (Miller WL et al., 2001).

Qualitative and action research methods address research questions that are different from those considered by clinical epidemiology. Qualitative research can investigate practitioners' and patients' attitudes, beliefs and preferences and the question of what constitutes evidence and how evidence is turned into practice. Professional action research on the other hand focuses on improving clinical practice and may enable the uptake of research evidence. Qualitative methods therefore can help bridge the gap between scientific evidence and clinical practice and can help us understand the barriers to using EBM. For example it can help us understand the limitations of the available evidence in terms of assisting practitioners with decisions about treatment (Green J & Britten N, 1998) or help identify which intervention is useful and why (Cochrane Group, 2003).

Frequently encountered positivist objections to qualitative research include context specificity and reduced generalisability of qualitative research findings. However the value of qualitative methods lies in their ability to pursue systematically the kinds of research questions that are not easily answerable by experimental methods and to contribute to the cumulative development of knowledge. The definition of Sackett (2000), a seminal author of EBM, which is offered in the previous chapter, clearly allows for and recognises different kinds of information to influence clinical decisions and not just high quality clinical trial evidence (Sackett DL, 2000). In this regard the nature of evidence and what constitutes evidence has been debated and it is clear that no one research method has dominance over another (Davies S, 1999).

Epidemiology, biostatistics and information technology from the positivist sciences form the fundamental pillars of EBM. More and more attention is given to finding common ground between the disciplines of epidemiology, public health and primary care practice (Martin-Misener R, 2012; Valaitis R, 2012) and the need for primary care practitioners to be familiar with the basic epidemiological and biostatistical principles in order to critically appraise and interpret the scientific literature (MacAuley D, 1994). Increasing attention has been placed on critical reading which includes, searching for, selecting and critically appraising clinical research literature (Jones R, 1991).

## **2.6 EBP AND PATIENT CENTRED CARE.**

As shown in Figure 2.1, the views, beliefs and concerns of patients are acknowledged and incorporated in evidence-based decision making (Sackett DL, 2000), even though this remains challenging in practice. Incorporating patient preferences into the clinical decision making process is also central to the provision of patient centred care (Sheikh A, 2002), even though patient centred care and EBP have often been seen as two opposing ideas (Burman ME, 2013). More emphasis needs to be placed on understanding and incorporating patients' values (which often differ widely from those of their carers) into the process and working together towards a mutual evidence-based decision regarding their care (Lockwood S, 2004).



Patients consider it to be important for practitioners to give attention to patient values rather than just to the disease process (Curtis JR et al., 2001). Patients' choices are influenced by their perception of the practitioner's competence, his or her listening skills and the quality of the doctor-patient relationship (Douglass J, 2004). The eminent physician William Osler (1849-1919) wrote "it's more important to know what sort of person this disease has, than what sort of disease this person has" (Corke CF et al., 2005). This view is well known and probably even more pertinent today, especially with the vastly increasing range of possible treatments that can be offered. Sackett DL et al (2000) defined patients' values as "the unique preferences, concerns and expectations each patient brings to a clinical encounter and which must be integrated into clinical decisions if they are to serve the patient". Such ideas, concerns and expectations of patients must be factored into decision making and more actively considered during consultation with patients.

Finding ways to engage patients in clinical decision making in PHC poses a great challenge to clinical practice in South Africa. Setlhare notes that in some African communities the patient-centred model seems to be too Eurocentric in its individualistic emphasis. African patients have a more communal understanding of decision making and may be uncomfortable being included in decision making in practice as this is not part of traditional health practice (Setlhare V, 2014). Ensuring decisions are consistent with patient values is challenging (Rohrbacher R et al., 2009). Questions remain regarding which patients clinicians should discuss personal values with and with whom they should present and discuss the likely outcomes of different courses of action based on evidence.

Primary care practitioners are busy, overloaded with patients, work in resource constrained areas and often barely have the time to do the necessary history and examination (Gafni A et al., 1998). Despite being busy, practitioners should not neglect the central role of patients as decision-makers in their own care. It is the responsibility of practitioners to communicate objective evidence in a jargon free and user-friendly manner, which allows patients to make informed choices and thus be part of decision making regarding their health care.

Shared decision making, in which patients and health professionals join in both the process of decision making and ownership of the decision made, has attracted considerable interest as a means by which patients' preferences can be incorporated into clinical decisions (Coulter A, 1997). Practitioners frequently underestimate patients' need for information (Berry C, 1997) and patients vary in the extent of their desire for partnership in making medical decisions (Dickinson D & Raynor DK, 2003). Patients, whose doctors are ignorant of their values and preferences, may receive treatment that is inappropriate to their needs (Coulter A, 1994; Cockburn J & Pit S, 1997). This is particularly so where doctors focus on technical medical issues and place much less emphasis on patient issues such as functional status, values, wishes and fears (Corke CF et al., 2005).

## **2.7 CLINICAL PRACTICE GUIDELINES DISSEMINATION AND IMPLEMENTATION**

Clinical practice guidelines are tools to assist evidence-based decision making and can assist in addressing the gap between evidence and practice (Figure 2.1). However despite the fact that clinical practice guidelines can improve health processes and outcomes and are "one of the foundations of attempts to improve health care" (Eccles MP et al., 2012; Woolf S et al., 2012; Shekelle P et al., 2012), recent publications have shown that the process of clinical practice guideline development is often weak (Nabyonga Orem J et al., 2012), associated with poor dissemination and implementation efforts and remains underutilised (FitzGerald JM et al., 2006; Francke AL et al., 2008; Gagliardi AR, 2012; Gagliardi AR & Brouwers MC, 2012). Furthermore, developed guidelines not only have limited advice or guidance on implementation (Gagliardi AR & Brouwers MC, 2012), but dissemination is often not followed by active implementation (Francke AL et al., 2008) and in some countries "activities of dissemination and implementation have actually decreased" (Kryworuchko J et al., 2009).

Poor dissemination of guidelines results in poor availability at the point of care where it is intended to assist with evidence-based decision making in practice (Shekelle P et al., 2012) and to inform health care delivery (Gagliardi AR & Brouwers MC, 2012). Such availability at the point of care has been shown to be even worse in developing countries. Nabonga Orem et al (2012) demonstrated

that “over 60% of guidelines available at central level were not available at the service delivery level” (Nabyonga Orem J et al., 2012).

It is not clear on whom the responsibility for implementation should fall. Should this responsibility rest on the guideline developer, managers of health organisations or practitioners in practice? Gagliardi AR (2012) suggests that a mandate for implementation seems to vary from organisation to organisation and that dedicated staff in health organisations are too few to take responsibility for implementation. He further suggests that to “empower” and “engage” users of research in implementation, is not only the least costly, but “the most relevant and actionable approach” (Gagliardi AR, 2012). Moreover Shekelle et al (2012) suggest that “whilst guideline developers have some responsibility for guidelines dissemination, they rarely have responsibility for implementation”. However the process of guideline implementation remains challenging and complex (Miller M & Kearney N, 2004; Graham ID, 2006; Blomkalns AL et al., 2007; Kim SH & Cho SH, 2012) and while there are calls to standardise implementation strategies across organisations (Gagliardi AR, 2012) the most useful or effective strategies for implementation in practice remain unknown. How to best achieve implementation of guidelines still remains unclear, even more so in South Africa and other middle and low income countries (Bheekie A et al., 2006). For example “multifaceted interventions, previously thought to be more effective than single interventions, were found to be no more effective than single interventions” (Grimshaw JM et al., 2004; Wright, 2003). This is further compounded by the fact that resource funding for guideline implementation is often limited or inconsistently available and few members of staff at the point of care are involved with implementation of guidelines. Thus to improve guideline utilisation and uptake in practice, improvement in the process of implementation is of fundamental importance. Furthermore, major deficiencies in research demonstrating the usefulness and effectiveness of guideline implementation in primary care exists and important opportunities for research have been identified (O’Byrne PM, 2005). This research seeks to address such deficiencies in PHC in the MDHS.

## **2.8 THE EVIDENCE FOR EBM TEACHING AND EDUCATIONAL OUTREACH.**

One of the ways of closing the evidence-practice gap, shown in the conceptual framework (Figure 2.1), is the teaching of EBM. Ironically the question is often posed as to what the current evidence base is for teaching EBM. Strong direct evidence in this regard is scanty, but on the increase. For example there is controlled trial evidence, which demonstrate a modification in health behaviour of students (Patrick K et al., 2014). In addition studies show that educational outreach can help modify the behaviour of health professionals (Gilbody S et al., 2003; Bheekie A et al., 2006; O'Brien MA, 2007). Despite a paucity of evidence, EBM is here to stay and will continue to be widely applied and play a central role in decision making with patients. Its wise application is not easy and requires much consideration in the individual patient, who may also be different to those who participated in the original clinical trials. It is however not the final solution for all the problems encountered by managers and public health physicians (Grahame-Smith D, 1998).

The UK licensing body has recommended that medical graduates should be able to "gain, assess, apply and integrate new knowledge and have the ability to adapt to changing circumstances throughout their professional life" (Gen Med Council, 2002).

A highly effective way of teaching this concept is by integrating learning with clinical decision making at the coal face of practice (Khan KS & Coomarasamy A, 2006). Unless we improve our current teaching, understanding, application and communication of evidence (Maggio LA et al 2013), we risk denying patients the potential benefits derived from their peers who participated in research and of those researchers who have worked hard to publish it (Summerskill W, 2005). It is thus important to incorporate EBM teaching into clinical practice. Such teaching would require a sustained effort (Coomarasamy A & Khan KS, 2004) and consistent presence and emphasis in undergraduate training programmes (Hershenberg R et al., 2012).

Educational outreach (or academic detailing) (Soumerai SB & Avorn J , 1990; Nardella A et al., 1995; O'Brien MA , 2007) has long been described as a

promising method of changing health professional behaviour and practice in the context of clinical decision making and involves delivering focused educational messages by trained personnel. Such training is usually provided by a “trusted outsider” and done “face-to-face in practice” (Boissel JP, 2003; Shaw B, 2005). Local and international use of this form of educational outreach in primary care has been shown to be effective and could be applied to other care problems locally (Fairall L et al., 2005; Bheekie A et al., 2006; Zwarenstein M et al., 2007; Kang MK, 2010) even though similar success has not been demonstrated elsewhere (Will KE & Geller ES, 2004).

## **2.9 CRITICISMS, BARRIERS AND FACILITATORS TO EBM**

Criticisms and barriers can retard or impede the uptake of evidence in practice as shown in the conceptual framework (Figure 2.1). Standard criticisms of EBM are well described and include that:

- “the concept of diagnosis in EBM is too narrow and biomedical and inappropriately reduces the complexity of clinical problems” (Bradley F & Field, 1995).
- “there is too much reliance on the RCT, which is a simplified experimental design and is not applicable to many particular patients” (Iggo N, 1995).
- “EBM measures only that which is measurable” (Cassell EJ, 1995).

Such criticisms can act as potential barriers to the formal implementation of EBP. The critics of EBM have observed that, medicine itself is “more than the application of scientific rules” (Naylor CD, 1995).-They argue further that clinical experience, based on personal observation, reflection, and judgment, is also needed to translate scientific results into treatment of individual patients. Moreover they further claim that an important assumption of this new paradigm is that physicians whose practice is based on an understanding of the underlying evidence will provide superior patient care. They emphasise that making evidence from scientific studies available to clinical practice has been expected to directly improve quality of care. This expectation however remains difficult to prove with formal research and has not yet been realised (De Maeseneer JM et al., 2003).

Implementing the principles and process of EBM is not easy and many barriers have recently been identified in a wide range of research studies at primary care level (Van Dijk N, 2010; Solomons NM & Spross JA, 2011; Zwolsman S et al., 2012). Among the most frequently described barriers to guideline implementation are time constraints, lack of motivation and clinical inertia (Majumdar SR et al., 2004; Hickling J et al., 2005). In a recently published systematic review, Zwolsman et al (2012) describe the barriers to the use of EBM in primary care practice as "those related to the actual evidence itself; the expertise and preferences of the general practitioner; the general practitioner's and the patient's situation; and to the general practitioner's clinical setting" (Zwolsman S et al., 2012).

Facilitators on the other hand can assist in bridging the gap between evidence and practice (Figure 2.1). Well described enablers or facilitators of guideline implementation include feedback, educational outreach, face to face training of practitioners by professional experts, and quality improvement cycles (Davis D, 1998; Doumit G et al., 2007; O'Brien MA et al., 2007).

## **2.10 QUALITY IMPROVEMENT (QI) CYCLES**

One approach to bridging the evidence-practice gap (Figure 2.1) is through the use of quality improvement cycles. Muir Gray JA (2001) and Glasziou P et al (2011) described EBM and quality improvement (QI) as focusing on different components of the same problem. They point out that whereas EBM focuses on "doing the right things", QI emphasises "doing things right" and together they assist us to "do the right things right" (Muir Gray JA, 2001; Glasziou P et al., 2011).

The demand for high quality of care is increasing. Several quality improvement cycles have been implemented throughout primary care in the Cape Town metropole (Govender I et al., 2012). Even though audit has been viewed by some as "dull, tedious, delegated to unskilled juniors, easily shelved and rarely acted on" (Godlee F, 2010), it forms part of the process of EBM and is one of the fundamental pillars of the clinical governance framework. Moreover some examples of QIC even suggest that in our local context significant improvement in technical quality is possible with very simple interventions in a short space of

time (Cornoc N & Mash B, 2012; Kande CN & Mash B, 2014). Presently QICs are performed as annually but still conducted rather inconsistently. The challenge is to ensure that this practice becomes embedded into the organisational culture as an ongoing cyclical approach to improving quality.

To improve the quality of primary care, caregivers need to know what to do, how they are doing, and be able to improve the process of care (Pronovost PJ et al., 2004). Changes in clinical practice are only partly within doctors' control; the prevailing professional and organisational culture regarding innovation and change may also determine the outcome to a large extent (De Maeseneer JM et al., 2003). A local study (Mash B et al., 2013) suggests that organisational culture in public sector primary care does not yet nurture or support innovation, experimentation and learning. They further suggest that to improve quality of care, the organisation would have to transform leadership and develop a style that is more conducive to a culture of evolution and experimentation.

Furthermore, it has long been suggested that quality cannot be judged by health care professionals alone, but must include the patient's views and preferences as well as those of society in general (Donabedian A, 1990).

## **2.11 THEORIES OF CHANGE**

The lack of theoretical understanding and scientific support for the process of changing clinical practice especially in relation to guideline implementation in health care is often striking and Greenhalgh et al (2004) have stressed the need for research on implementation strategies in health care to be supported by appropriate theories of change and better use of theoretical assumptions (Greenhalgh T et al., 2004).

Understanding different theories of organisational and professional change can help with the planning of approaches to closing the evidence-practice gap (Figure 2.1). Different approaches to the implementation of guidelines can be observed, each based on different assumptions and theories of human and organisational behaviour. According to Grol & Grimshaw (2003) a variety of different approaches may contribute to improving implementation and may all need to be considered to devise a good strategy for implementation (Grol R & Grimshaw JM, 2003). Some theories focus on change within the professionals,

others on change within the social setting or within the organisational and economic context (Grol R, 2001), but all the different theories can at least provide ideas to improve practice (Grol R & Wensing M, 2004).

Theories of change have been used both to understand the behaviour of health professionals and to guide the development, dissemination and implementation of interventions such as clinical practice guidelines, which are intended to change and improve behaviour regarding clinical decision making in practice. Many theories of behaviour change have developed from a variety of perspectives such as psychology, sociology, economics, marketing, education and business management and can be used to inform knowledge translation. Such theories relate to changing the behaviour of professionals and organisations and can be used to develop a conceptual framework for improving the implementation of clinical guidelines in practice and further the understanding of the relationship of the different factors which influence practitioners' use of guidelines.

The most referred to theory of change is Rogers' Diffusion of Innovation Theory (Rogers E, 1983). In this model an innovation is defined as an idea or practice, which is perceived as new (Rogers E, 1983). This is a passive model that describes the naturalistic process of change. The innovation-decision process derived from Rogers' theory consists of five stages that potential adopters pass through as they decide whether or not to adopt an innovation and which can assist in predicting the probable response of practitioners to a suggested change in practice. Rogers developed the model of adopter types in which he classified people as innovators (the fastest adopter group), early adopters, the early majority, the late majority and the laggards (the slowest to change). Rogers argues that the adoption of new ideas and practices are influenced by interaction between the innovation, the adopters, and the environment. In his view there are five characteristics that influence successful adoption: "the perception of the relative advantage of innovation, the compatibility with existing structures, the degree of difficulty involved in making the change, the extent to which the innovation can be tested by potential adopters without significant resource expenditure; and the visibility of the outcomes" (Rogers E, 1983).



Innovators and early adopters refer to those practitioners who would respond early to the guidelines and lead the process of implementation. The late majority may be more skeptical and the laggards may require much more support and encouragement before the innovation is adopted (Conroy M & Shannon W, 1995). Thus if change based on new evidence is considered, it would be important to have an awareness of these adopter types in order to understand those who will support or resist change. This model emphasises the role of the change agent, but provides little information about how to actually accelerate and promote change and therefore is limited in its application to guideline implementation. However further evaluation of this model in a range of different settings has been suggested (Greenhalgh T et al., 2004).

Other types of models are often called planned change models (AHRQ, 2004). They aim to explain how planned change occurs and how to alter ways of doing things in the social systems. Most of these are based on social cognitive theories. Three examples of planned change theories are Green's precede-proceed model, the social marketing model, and the Ottawa model of research use.

The precede-proceed model outlines steps that should precede an intervention and gives guidance on how to proceed with implementation and subsequent evaluation (Green L et al., 1980). The precede stage involves identifying the problem and the factors that contribute to it. The factors are categorised as predisposing, enabling or reinforcing. The key proceed stages are implementation and evaluation of the effect the intervention had on behaviour change, and on predisposing, enabling and reinforcing factors.

Social marketing theory (which involves the diffusion of socially beneficial ideas rather than commercial products) has largely focused on bringing about health behaviour change at a community level, but has also been used as the basis for other quality improvement strategies. Governments have used social marketing successfully in areas of family planning to encourage its use (Rogers EM, 1983). This theory further emphasises the role of practitioners' beliefs, assumptions and behaviour in decision making and how their personal values may enhance or act

as barriers to such decision making (Mittman BS et al., 1992). Even their practice environment can influence the uptake of guidelines in practice (Stokols D, 1996).

The Ottawa Model of Health Care Research requires quality improvement facilitators to conduct an assessment of the barriers to implementing evidence-based recommendations. They can identify the potential adopters and look at the practice environment to determine factors that might hinder or support the uptake of recommendations (AHRQ, 2004). The information is then used to tailor interventions to overcome identified barriers or enhance the supporters.

Most of the theories described focus on the individual, but organisational factors play an important role in change processes as well. One type of organisational theory is the rational systems model, which focuses on the internal structure and process of an organisation. This model describes four stages in the process of organisational change and different perspectives that need to be addressed in each stage. These four stages relate to awareness of a problem, identification of actions, implementation and institutionalisation of change. Furthermore, Barrett R (Barrett R, 2006; Barrett R, 2010) and Mash B et al (2012) emphasise the need for the organisational culture to be in congruence with the personal values of its staff and with patient centred care (Mash B et al., 2012). Well-functioning and resilient organisations that adapt and innovate show high levels of alignment between the four quadrants of the integral model: personal values of the staff, personal behaviour and practice of the staff, organisational values or culture and organisational practice in the form of guidelines, procedures, incentives and processes (Barrett R, 2010).

The transtheoretical model of behaviour change is also referred to as the "stage-of-readiness-to-change model". In this regard Prochaska and DiClemente (1983) and later Prochaska and Velicer (1997) point to behavioural change as a process involving different stages of precontemplation, contemplation, preparation, action and maintenance (Prochaska JO & DiClemente CC, 1983; Prochaska JO & Velicer WF, 1997). Thus awareness of the different stages in which practitioners find themselves may improve the overall understanding of the implementation process and encourage understanding of the key barriers and enabling factors.

The awareness to adherence model developed by Pathman et al (1996) is similar to the transtheoretical model of behaviour change. They describe behavioural steps to guideline uptake that practitioners take as they change their behaviour over time (Pathman DE et al., 1996). They describe how practitioners become aware of a guideline (awareness); then agree with the recommendations in the guideline (agreement); then decide to use the recommendations in their practices (adoption) and then follow and comply with it appropriately (adherence). This model also points out ways to improve practitioners' adherence to a range of guidelines and assist in identifying which practitioners are at greatest risk of non-adherence.

Complexity theory has emerged as a recent theoretical development in health. It focuses on the value of observing, understanding and improving systems as interactive living wholes and engages with health care environments as "complex adaptive systems" and not as "machines" (Grol R & Wensing M, 2004). The whole can never be completely understood and learning through research (particularly action research) is an attempt to make sense of change and the complexity which exists in the primary care context.

It is clear though that many different theories exist (Graham ID & Tetroe J, 2007), each providing potentially plausible explanations of how human behaviour can be changed in attempting to implement new forms of practice or innovations. Attempts have been made to provide an overarching theoretical framework, which incorporates most of the current existing theories of change. The theoretical domains framework (TDF) describes 12 theoretical constructs which represents 33 theoretical approaches and "can be used for problem analysis, theorising pathways of change, designing interventions, identifying appropriate process measure and testing pathways to change" (Michie S , 2005).

There is however no convincing evidence that any one of the described approaches for transferring evidence to practice is more effective in one given situation than another. The emphasis therefore should be on integrating the different approaches within a practically applicable implementation model or framework (Grol R & Grimshaw J, 2003).

## **2.12 CONCLUSION**

Using a conceptual framework this chapter dealt with the major factors which have a direct bearing on the gap between evidence and practice. It discusses the evidence-practice gap, clinical practice guidelines, asthma guideline implementation, the unique complexity and evidence needs of Primary Care, EBP and patient-centred care, guideline dissemination and implementation, teaching EBM and educational outreach, QICs and criticisms, barriers and facilitators of change. It concludes by discussing how theories of change can further our understanding and influence the development of strategies to bridge the evidence-practice gap.

The next chapter discusses the methodology used in conducting this research, gives an overall justification for situating this research in the emancipatory-critical paradigm and further shows how additional methodological approaches within the empirical-analytical and interpretive-hermeneutic paradigms were used to enhance the understanding of the entire research process undertaken.

## CHAPTER THREE

### METHODOLOGY

*"Stronger emphasis should be placed on translating knowledge into action to improve public health by bridging the gap between what is known and what is actually being done"*

*(World Report on Knowledge for Better Health; Strengthening Health Systems;  
(WHO, Geneva, 2004)*

#### 3.1 INTRODUCTION

This chapter describes the development of the research proposal and is followed by a description of the overarching methodologies and the specific methods and techniques used to address the research question, aim and objectives.

The research setting is described in detail and this is followed by an in-depth discussion of the suitability of each methodology and related methods to deal with the research question, aim and objectives posed. Furthermore, a brief summary of the conceptual framework of the research methodology, which shows the interrelatedness of the different phases is presented in Figure 3.1. The central research question, aim and objectives of the research were already described in Chapter One and are briefly revisited in the detailed description of the different phases below.

Central to addressing the broader research question was the implementation of the national evidence-based asthma guideline prepared and disseminated by the South African Thoracic Society and published in the SA Family Practice Journal in March 2007 (Lalloo U et al., 2007). This research looked at ways of improving the uptake of this guideline in primary care practice in the public sector in the Cape Town metropolitan area.

The first phase of the research dealt with the initiation of a series of quality improvement (QI) cycles that evaluated the standard of asthma care in CHCs in the Cape Town metropolitan area as well as a cross-sectional descriptive survey

of the awareness, knowledge and perceptions of practitioners in both the public and private sectors, regarding EBP and the published national asthma guidelines.

The second phase of the research used qualitative research to explore the concept of evidence; gain insight into the main barriers to EBP and understand the experience and current practice with regards to guideline implementation from the points of view of academic FPs, attached to departments of Family Medicine and Primary Care at all health sciences faculties in South Africa, and FPs practicing in the public and private sectors of the Cape Town metropolitan area.

The third phase of the research engaged with a PAR process that included four planning, action, observation and reflection (PAOR) cycles. This phase established a Cooperative Inquiry Group (CIG), which is a well-recognised PAR method. As PAR typically begins with the researcher working with already existing groups, I decided that the CIG should consist of teams of asthma caregivers from different CHCs in the Cape Town metropolitan area. These teams were identified at CHCs in the public sector, where a "club" (dedicated clinic) system for management of chronic diseases, such as asthma, was in place.

This chapter concludes with the ethical considerations, which pertain to the different methodologies used in this research and a justification for using the emancipatory-critical paradigm to address positivist EBP.

### **3.2 RESEARCH PROPOSAL BACKGROUND**

The process of EBM is now formally taught to undergraduate students at all health sciences faculties in South Africa. The researcher is currently involved in the teaching of EBM to both undergraduate and postgraduate medical students in the Faculty of Medicine and Health Sciences at Stellenbosch University and was previously involved in teaching clinicians at CHCs in the Cape MDHS.

The profile of the Stellenbosch University doctor claims that after graduation students will be proficient at critical appraisal, interpretation and application of research evidence, and have knowledge of the basic principles of research methodology. Teaching the concept of EBM is now viewed by some as one of the

key graduate attributes of the undergraduate curriculum (CanMEDS, 2000). This teaching seeks to assist the medical student in the critical appraisal and application of clinical research evidence in health care practice, as well as the utilisation of evidence-based guidelines in order to enhance the quality of clinical decision making in practice (CanMEDS, 2000). Even more recently, the use of clinical research evidence to inform practice has been re-emphasised and more clearly described as an important scholarly role of the medical expert (Rourke J & Frank JR, 2005).

This research proposal was formally developed over a period of one year and approved under the supervision and auspices of the South African and Netherlands Partnership for Research and Development (SANPAD) and supported by Ceres Netherlands in 2008. During this time I was invited by my supervisor, Prof RJ Mash, to join the Asthma Guideline Implementation Project (AGIP) and to align the research proposal to focus on asthma care and assist with improving the uptake and implementation of the asthma guideline that was newly published at the time in the South African Family Practice Journal of March 2007 (Lalloo U et al., 2007). This AGIP group developed well recognised and innovative tools such as teaching aids, desktop manuals to support clinical decision making, posters, flipcharts for patient education, videos, patient information leaflets as well as a quality improvement (audit) tool, which was based on the asthma guideline recommendations with the intention to be utilised in the basic assessment of asthma care in health care facilities in the Western Cape. At the same time the Knowledge Translation Unit at the University of Cape Town was contracted by the Department of Health to produce a manual on the diagnosis and management of common conditions in primary care by clinical nurse practitioners. This manual (known as PALSA Plus) contained a section on asthma and COPD. AGIP ensured that there was congruence between the messages in these tools.

The AGIP used outcome mapping (Mash B et al., 2009) to define its vision and mission and to identify boundary partners that they intended to influence. The project was launched to address the dissemination and implementation of the asthma guideline in the Western Cape. The researcher chose to continue the

work of AGIP and decided to use PAR to address a specific focused central question of:

*“How can the implementation of clinical research evidence, in the form of the national evidence-based asthma guidelines, be improved in the PHC sector in the MDHS of the Cape Town metropole?”*

### **3.2.1 The conceptual framework (Figure 3.1)**

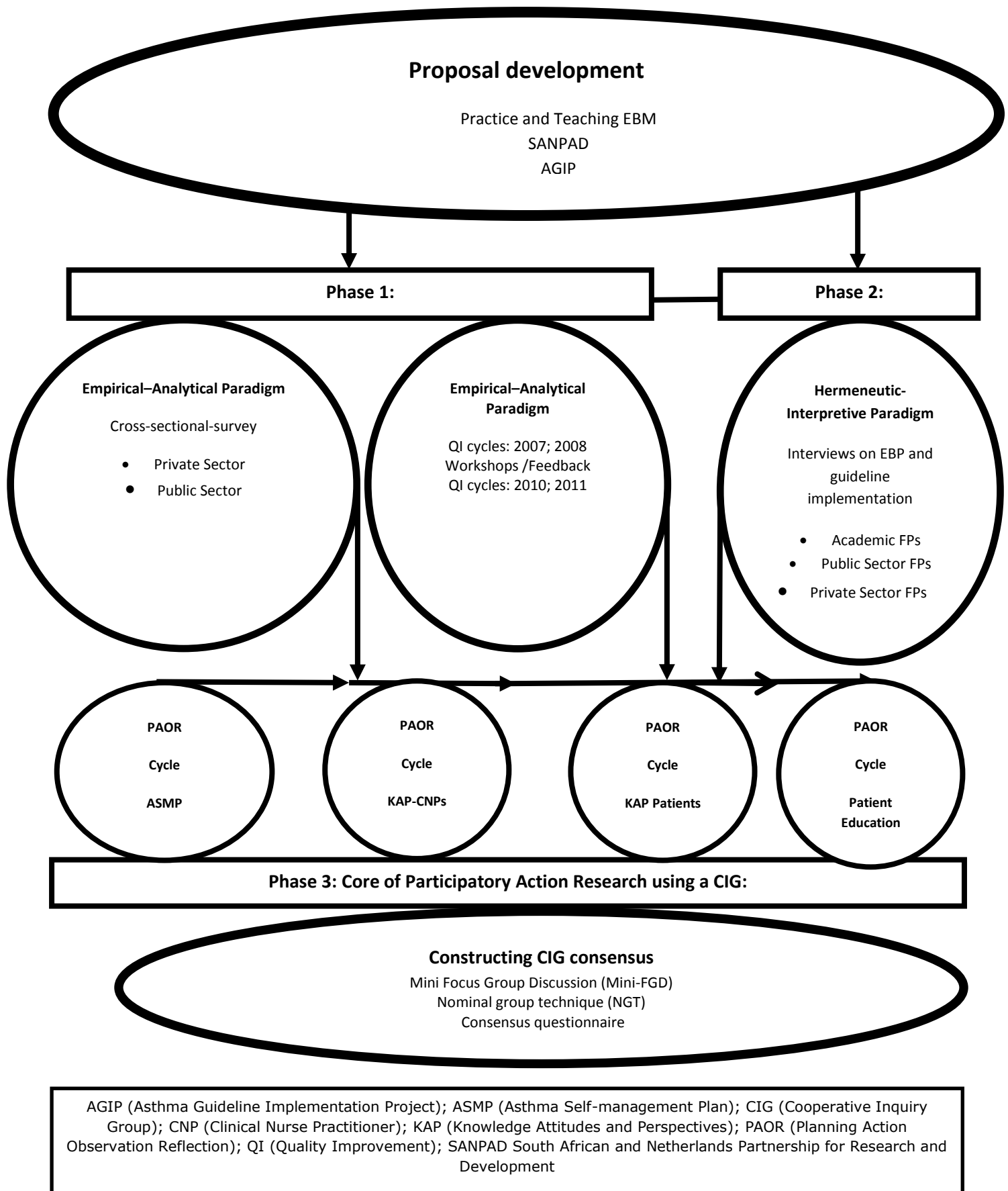
Figure 3.1 shows a conceptual framework of the research process, which also emphasises the different research paradigms that the researcher engaged with. After completion of the proposal, phase one (cross-sectional survey and QI cycles) and phase two (qualitative interviews) ran concurrently and were followed by phase three (PAR). Findings of phase one and two were used within phase three (PAR) and the Nominal Group technique (NGT) was the main consensus building technique used to reach consensus on the new understanding and new learning constructed by the CIG. The different methodologies used are further discussed in detail below.

### **3.3 PHASE 1**

The survey in the public and private sectors (Annexures A & B) and QI cycles in the public sector, utilised in phase one, were situated in the empirical-analytical research paradigm. The researcher decided to conduct a descriptive cross-sectional survey in order to describe the knowledge, awareness and perceptions of medical practitioners in the public sector and private sector of the Cape Town metropole regarding EBP and the SA evidence-based asthma guideline. At the same time QI cycles were commenced at selected CHCs in the MDHS, which evaluated the current quality of asthma care in relation to recommendations contained in the asthma guideline. These QI cycles monitored changes in the quality of care for asthma before and during the CIG intervention in Phase 3.



**Figure 3.1:** Conceptual framework



### **3.3.1 Main research setting**

This research was conducted with nursing staff and medical officers in the public sector of the Cape Town metropolitan area as well as general practitioners in the private sector. The private sector provides care to more affluent communities or families with either medical insurance or the ability to pay for out-of-pocket expenses, while the CHCs provide care to the poorer and disadvantaged communities or families without medical insurance.

District health services in the Western Cape Province serve a population of 5 million people of whom 80% are uninsured and depend on the public sector for most of their health care. First-line primary care is largely provided by CNPs with the support of medical officers and pharmacists. Chronic and acute asthma is managed by nurses and doctors in primary care and patients with more complicated or severe acute asthma by specialists at district, regional or tertiary hospitals.

#### **3.3.1.1 Survey (private and public sector)**

The survey was conducted among doctors practicing in private practices in the Cape Town metropole and among doctors employed in CHCs in the MDHS. At the time of the study a total of 203 doctors were employed at 45 CHCs in the MDHS. This number of doctors did not remain stable as they continuously entered and left the public service.

#### **3.3.1.2 QI cycles in public sector**

The QI cycles were conducted in CHCs of the MDHS within the public sector only. During the same period of conducting QI cycles, an integrated audit tool was developed by the Department of Health (DoH) for all the CHCs to look at all chronic diseases simultaneously (including asthma). The DoH QI tool covered fewer criteria, was internally conducted by members of the asthma team and audited a smaller sample of 10 records annually. This is mentioned in view of the potential confounding of these activities on the outcomes of the continuous cycles of QI conducted over a period of 5 years.

### **3.3.2 SURVEY RESEARCH**

The research question, aim and objectives addressed by the survey are listed below. This survey targeted doctors in primary care who were practicing at the coalface of PHC.

#### **3.3.2.1 Research question**

What is the knowledge, awareness and perceptions of doctors in the public and private sectors of the Cape Town metropole, regarding EBP and asthma guideline implementation?

#### **3.3.2.2 Aim**

To describe the knowledge, awareness and perceptions of doctors (public and private sectors) regarding EBP and the evidence-based asthma guideline implementation in the Cape Town metropole.

#### **3.3.2.3 Objectives:**

- To evaluate how doctors (public and private sector) gain access to evidence and clinical practice guidelines.
- To evaluate the perceived role and relevance of evidence in contemporary health care.
- To evaluate the level of current engagement of doctors with EBP.
- To evaluate the level of current engagement of doctors with the national asthma guideline recommendations.

#### **3.3.2.4 Methods**

##### **3.3.2.4.1 Study design:**

This was a descriptive cross-sectional survey.

### **3.3.2.4.2 Sample size**

The researcher met with a statistician at the Centre for Statistical Consultation at Stellenbosch University in order to determine the sample size as well as clearly identify variables for analysis. The statistician assisted with the calculation of the sample size for doctors in the private sector only. The calculation of the appropriate sample size was based on the primary objective of the survey, which was to determine the knowledge, awareness and perceptions of a representative sample of practitioners in the Cape Town metropole regarding EBP and guideline implementation. As this is largely unknown in the PHC sector and estimating the proportion to be 50%, and the width of the 95% confidence interval to be 5%, the sample size calculation proceeded as follows:  $N = (1.96^2 \times 0.5 \times 0.5) / 0.05^2 = 384$ . No sample size calculation was performed for the public sector as all the doctors working in the public sector CHCs were included in the survey.

### **3.3.2.4.3 Sample selection**

#### **3.3.2.4.4 Private sector**

The vast majority of private general practitioners in the Cape Town metropole are considered to be members of the Dispensing Practitioners Association (DPA) or Qualicare. All are members of the Health Professions Council of South Africa (HPCSA). From these combined lists, which constituted the total population of private general practitioners in the Cape Town metropolitan area, a random sample was selected to obtain a sample of 384 practitioners in the private sector.

##### **3.3.2.4.4.1 Public sector**

During the research the PHC sector of the MDHS in the Cape Town metropolitan area was responsible for a total of 45 CHCs. All CHCs were selected from the municipality districts to represent all the doctors at CHCs in the MDHS. All public sector doctors who were employed at CHCs in the MDHS at the time were invited to participate in the survey. The questionnaire was delivered to all CHCs in the MDHS in the Cape Town metropole where doctors were employed. A total of 203 questionnaires were delivered to the public sector doctors.

#### **3.3.2.4.5 Data collection instrument**

The questionnaire (Annexure A) was developed from issues identified in the relevant literature (McColl A et al., 1998; Cabana MD et al., 1999; O'Donnell CA, 2004) and focused on EBP, guideline implementation and barriers to both EBP and guideline implementation. Two sections in the questionnaire also evaluated awareness of and implementation of the new asthma guideline. A mixture of closed questions (with multiple or dichotomous responses) and questions requiring responses on a Likert scale (ranging from strongly disagree, disagree, agree to strongly agree) were used.

Rigorous attention was given to the design of the covering letter, which assumed informed consent was implied by completion of the questionnaire. The questionnaire was divided into 6 sections: Section 1 dealt with the demographic information of each respondent, Section 2 dealt with the current engagement of the respondent with internet searching and EBP, Section 3 explored the respondents' views of EBP, Section 4 looked at issues concerning use of clinical practice guidelines, Section 5 dealt with asthma guideline awareness and implementation and Section 6 dealt with engagement with specific recommendations from the national asthma guideline.

##### **3.3.2.4.5.1 Validating the questionnaire**

At the time of the survey, no local examples of questionnaires evaluating EBP were available and local expertise in the field of EBP was limited. The questionnaire was initially developed and piloted with a small sample of 10 primary care practitioners from both the private and public sectors. Member checking in addition to the traditional piloting techniques were used to identify flawed questions. The questionnaire used elements covered in the abovementioned articles (McColl A et al., 1998; Cabana MD, 1999; O'Donnell CA, 2004). These articles did not cover the exact same areas as in this questionnaire but all relevant components were used and piloted. Questions were then added and modified, Feedback was received from the piloted participants, but was limited to content (face) validity, grammar, wording and categorisation of questions into sections 1-6. Furthermore, feedback was received on ambiguity of questions, the overall user-friendliness and clarity of the questionnaire and to refine logistics and further improvements of the

questionnaire. All respondents approached, completed the questionnaire and besides minor grammatical and typographical errors, no other substantive feedback was given on the contents. The piloted questionnaires were not included in the final data analysis.

#### **3.3.2.4.6 Data collection**

The questionnaire, which included a covering letter and freepost return envelope, was then sent in a self-addressed envelope to the selected doctors.

##### **3.3.2.4.6.1 Private sector**

In order to achieve the maximum response rate, non-responders were sent two further postings one month apart. Thus over a period of three months non-responders would have received the questionnaire three times. In addition a number of telephonic reminders were used to encourage non-responders. Thus a mixed strategy of mail and telephonic reminders were used to deal with persistent non-responders in an attempt to improve the response rate.

##### **3.3.2.4.6.2 Public sector**

Questionnaires were delivered in a self-addressed envelope to all medical officers working at CHCs in the MDHS. The facility manager in charge of the CHC ensured that all the medical officers employed at the CHC completed the questionnaire. Repeated telephonic reminders were used in order to obtain outstanding questionnaires from medical officers at CHCs. Some questionnaires were posted back and some questionnaires of non-responders were collected from the CHCs over a period of three months.

#### **3.3.2.4.7 Data Analysis**

Data was captured from the returned questionnaires and were analysed by a statistician who looked at the descriptive statistics and cross tabulations using SPSS. For all inferential analysis a significance level of 5% ( $p < 0.05$ ) was used.

### **3.3.3 QUALITY IMPROVEMENT (QI) CYCLES**

In this component of the research ongoing QI cycles were conducted to measure performance of asthma care on an annual basis, starting in 2007. Feedback was

provided to the asthma care teams from every audited CHC. This data was also later utilised at the start of the PAOR cycles in the third phase of the research.

### **3.3.3.1 Aim**

To improve the quality of current practice in the Cape Town metropole with regard to asthma care and describe performance in relation to recommendations contained in the most recently published asthma guideline.

### **3.3.3.2 Objectives**

- To measure current baseline performance of asthma care at CHCs in the MDHS.
- To reach consensus on what needed to be changed in current asthma care.
- To implement changes in asthma care at CHCs in the MDHS.
- To re-measure the performance of asthma care in CHCs of the MDHS following implementation of changes.

### **3.3.3.3 Methods**

#### **3.3.3.3.1 Design**

Continuous QI cycles over a five year period (2007 to 2011).

#### **3.3.3.3.2 Setting**

See research setting described earlier.

#### **3.3.3.3.3 Selection**

At the commencement of the research there were a total of 45 CHCs in the Cape Town metropole. A purposeful sample of 22 CHCs were selected using the following criteria: 2-6 from each municipal district, inclusion of both small, medium and large-sized CHCs, one 24 hour emergency unit per municipal district and one CHC with a family physician responsible for clinical governance in each municipal district.

#### **3.3.3.3.4 Sites selected**

A total of 22 CHCs were selected from the following 6 municipal districts of the Cape Town metropolitan area (Table 3.1).

### **3.3.3.3.5 Record (Folder) selection**

With the assistance of a statistician the sample size of patient records was calculated for the different sizes of CHCs. The asthma clubs at selected sites were visited weekly over a period of four weeks in order to select a systematic sample of every fifth record to obtain an overall sample of between 20 and 30 records (20 records for small to medium sized CHCs and 30 records for large CHCs). These were the records of adult chronic asthmatics and although based on the record only, great care was taken to exclude patients with COPD. Factors considered were documentation in the patient's records of a longstanding history of smoking, a history of pulmonary TB, bronchiectasis, chronic bronchitis history; emphysema, chest x-ray reports of COPD, the medication prescribed and non-reversible airway obstruction following nebulisation.

#### **3.3.3.3.5.1 Inclusion criteria:**

- Adult asthmatic patients 15 years of age and older
- A consistent diagnosis of asthma according to the record
- Had to be in attendance at the CHC for at least one year between 1<sup>st</sup> January and 31<sup>st</sup> December 2007.

#### **3.3.3.3.5.2 Exclusion criteria:**

- Patients attending for treatment of COPD



**Table 3.1:** Selected research sites in the Cape Town metropole

<b>Municipal district</b>	<b>Small CHC Y/N</b>	<b>Med CHC Y/N</b>	<b>Large CHC Y/N</b>	<b>24 hour EU Y/N</b>	<b>FP Y/N</b>
<b>Southern</b>					
Grassy Park CHC	Y	N	N	N	N
Lady Michaelis CHC	N	Y	N	N	N
Retreat CHC	N	N	Y	Y	Y
Lotus River CHC	N	Y	N	N	N
<b>Northern</b>					
Durbanville CHC	Y	N	N	N	N
Goodwood CHC	N	Y	N	N	N
Kraaifontein CHC	N	N	Y	Y	Y
<b>Central</b>					
Delft CHC	N	N	Y	Y	N
Dr Abdurachman CHC	Y	N	N	N	N
Gugulethu CHC	N	N	Y	Y	Y
Heideveld CHC	N	Y	N	N	N
Vanguard CHC	N	N	Y	Y	Y
Hanoverpark CHC	N	N	Y	Y	Y
<b>Khayelitsha</b>					
Khayelitsha CHC	N	N	Y	Y	N
Michael Mapongwana CHC	N	N	Y	N	N
Nolungile CHC	Y	Y	N	N	N
Macassar CHC	N	N	N	N	Y
<b>Mitchells Plain</b>					
Crossroads CHC	N	Y	N	N	N
Mitchells Plain CHC	N	N	Y	Y	Y
<b>Tygerberg</b>					
Bishop Lavis CHC	N	Y	N	N	N
Elsies River CHC	N	N	Y	Y	Y
Ravensmead CHC	Y	N	N	N	N

This sample of records was handled as a panel survey over a longitudinal period of 5 years during which the same records were audited in years 2007, 2008, 2010 and 2011, excluding 2009. In situations where the record was lost, misplaced or the diagnosis had been altered to that of COPD a new record was randomly selected from the club system, which then replaced the lost or altered record. Feedback to the selected sites was given annually from 2008 and during 2009 workshops were conducted to assist with the education of members of staff dedicated to the management of asthma at their respective CHCs. The rationale was to assess whether there would be any improvement in asthma care over subsequent years following the training given in 2009 and to agree on standards for performance levels of structure, process and outcome criteria. The format and structure of the training was decided on by the researcher with the asthma teams based on the results of their initial audit findings and was presented uniformly across all CHCs.

A panel sample represents the strongest form of survey design. Asthma team members could have modified their behaviour had they been aware of the specific records audited. In an attempt to reduce the potential of Hawthorne bias and to enhance the reliability and validity of the QI process, the record numbers selected were not disclosed to the sites where auditing was performed. Therefore CHCs were unaware of the exact records being audited during QI cycles.

#### **3.3.3.3.6 Instrument (QI tool)**

The AGIP had developed an audit tool for primary care, which was based on the national asthma guideline and this was used with minor modifications in this research project (Annexure C).

#### **3.3.3.3.7 Criteria audited**

Structural criteria focused on the availability of asthma equipment, patient education material and asthma medication (Table 3.2). Process and outcome criteria focused on key activities or information recorded in the medical record (Table 3.2). Table 3.2 lists the main criteria audited in these QI cycles.

**Table 3.2:** Criteria used in the QI cycles

<p><b>Structural criteria</b></p> <p>Consulting rooms where asthma patients were consulted.</p> <ul style="list-style-type: none"> <li>% of consulting rooms with a functional PEFR meter</li> <li>% of consulting rooms with a published asthma guideline</li> <li>% of consulting rooms with a spacer for demonstration and education</li> <li>% of consulting rooms with placebo inhalers for demonstration and education</li> <li>% of consulting rooms with printed patient educational material</li> </ul> <p>Pharmacy stock on day of audit.</p> <ul style="list-style-type: none"> <li>% of medication in stock on day of audit</li> <li>% of medication in stock over previous month</li> </ul> <p><b>Process criteria</b></p> <p>Whether the patient’s level of control had been assessed during the last visit.</p> <p>Whether the patient received an ASMP during the last visit.</p> <p>Whether the PEFR was measured during the last visit.</p> <p>Whether the patient’s inhaler/ spacer technique had been assessed during the last visit.</p> <p>Whether the smoking status was recorded in the past year.</p> <p>Whether the ratio of controller to reliever MDIs prescribed improved.</p> <p><b>Outcome criteria</b></p> <p>The number of emergency visits for asthma (defined as an unscheduled visit for an exacerbation of asthma) per annum.</p> <p>Whether the patient had been hospitalised for asthma in the past year.</p>
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**3.3.3.3.8 Choosing the team:**

Dedicated asthma teams from CHCs were identified and consisted of a family physician and two or three CNPs who were dedicated to asthma care at their respective CHCs.

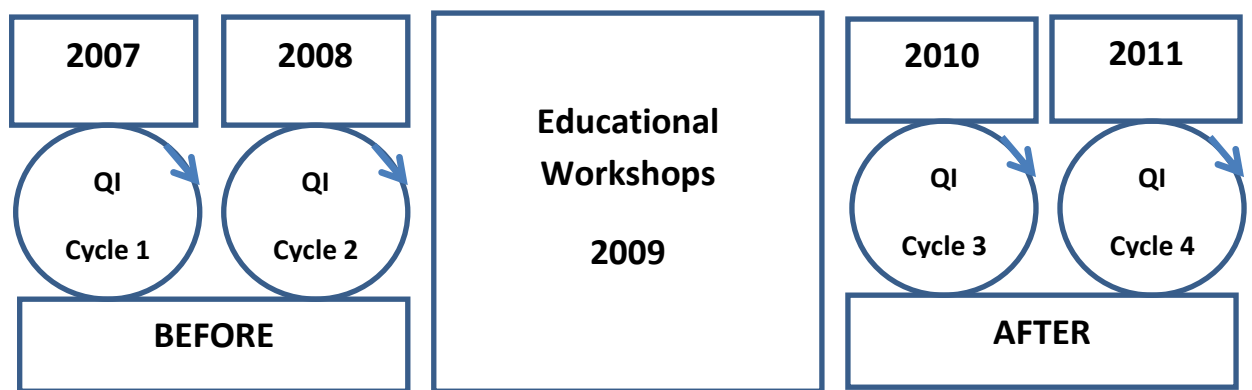
**3.3.3.3.9 Setting target standards:**

Overall performance levels were set each year for the structure, process and outcome criteria with the asthma teams at the beginning of the process in 2007 in order to create target standards. Although these targets could differ for each CHC, the performance level expected was 100% for structural criteria, 80% for outcome criteria and varied for process criteria from 80% for routine visits with an assessment of asthma control to 90% for patients with an assessment of their inhaler/spacer technique.

### 3.3.3.3.10 Data collection and analysis:

Data was collected in 2007, 2008, 2010 and 2011 for each of the four QI cycles by the principal researcher and research assistant. Data was captured on a computer software programme developed for AGIP by the Health Information System Project (HISP) which calculated the structure, process and outcome criteria (Annexure C).

**Figure 3.2:** QI cycles from 2007 to 2011.



### 3.3.3.3.11 Feedback planning and implementing change

Continuous QI cycles occurred over a period of 5 years. Feedback on the actual performance relative to the targets was given annually to the asthma teams in each municipal district after each audit. All the asthma teams reflected on the performance of their respective CHCs and planned changes to their local clinical practice activities. This meant that each asthma team from CHCs had the opportunity to reflect on their performance and plan the way forward

Issues considered were related to clinical practice, such as acquiring functional peak flow metres, guidelines, spacers, placebo inhalers, and information brochures per consulting room. In addition they looked at the record system and flow of patients through the CHC. Furthermore, the pharmacies looked at ordering the necessary asthma medication required. They made changes related to the findings of their respective audit results. The tweaking of clinical practice occurred in the QI cycles annually. These initial QI cycles in 2007 and 2008 also assisted in planning and developing educational workshops, which were presented in 2009 to each asthma team per municipal district.

#### **3.3.3.3.12 Educational intervention to improve quality of asthma care**

Workshops were presented monthly during 2009 for dedicated asthma team members of CHCs in the different municipal districts of the Cape Town metropolitan area. The workshops were attended by the dedicated asthma teams and provided the opportunity to give formal feedback of asthma audit results, set future performance levels for structure, process and outcome criteria, workshop areas where audit results were sub optimal, and further emphasise the content of the South African national asthma guideline. Furthermore, prepared educational aids (flip charts, videos, manuals, placebo inhalers and spacers) were introduced to improve the teaching proficiency of asthma teams at their respective sites.

These sessions specifically looked at training asthma teams on the principles of quality improvement, how to conduct QI cycles, focused on the teaching of the correct inhaler technique and stressed the use of inhaled steroids in asthma care. Teaching the difference between reliever and preventer MDIs and emphasising the assessment of the level of control of asthma patients were among the key national asthma guideline recommendations covered in the educational workshop sessions. Various teaching aids prepared by AGIP, such as educational flipcharts, manuals, posters, booklets, information leaflets and DVDs on the correct inhaler technique with different MDIs, were used in these sessions and made available to workshop participants for utilisation at their respective CHCs. The educational workshops also facilitated asthma teams to engage in reflection-planning and action.

#### **3.3.3.3.13 The broader view: Data Analysis (Before and After)**

Data collected from each year was further analysed by a statistician who compared the performance of CHCs between periods 2007 and 2008 (referred to as "Before") with period 2010 and 2011 (referred to as "After"). Although QI cycles occurred annually, the researcher preferred to report on the larger meta process occurring between the broader "before" and "after" period. One reason for this grouping was to determine whether the educational workshops, conducted during 2009, resulted in any trend of improvement in the structural, process and outcome criteria audited. Change and improvement cannot be exclusively attributed to the educational workshops, but could also be due to the

changes in clinical practice implemented by the dedicated asthma teams in each QI cycle. Furthermore, change could be demonstrated more easily and may be more significant over a longer period compared to the shorter periods within the QI cycles. A further comparison was made between CHCs where action research occurred and CHCs where no action research occurred. Frequencies, descriptive statistics and cross tabulations were used.

## **3.4 PHASE 2**

### **3.4.1 QUALITATIVE RESEARCH**

Whereas the survey component of the research dealt more with doctors in primary care who were practicing at the coalface of PHC, this component of the research dealt more with FPs who were expert generalists involved with education and research and who were overall responsible for clinical governance in PHC. The use of qualitative research methods was considered appropriate to provide insights into how FPs, as expert generalists, engaged with EBP (Green J & Britten N, 1998) and guideline implementation. The main rationale for qualitative research was to explore the range of possible views of EBP and asthma guideline implementation and to describe the potential barriers to asthma guideline implementation, rather than to determine the prevalence of such barriers with a quantitative descriptive cross-sectional study.

The researcher used qualitative methods to obtain an in-depth understanding of how practitioners conceptualised evidence and to further explore the experiences and understanding of academic FPs in teaching settings and FPs in the public and private sectors with regard to the implementation of evidence in practice and its relevance to the primary care context in the South African health care system.

Thus mixed qualitative (in phase two) and quantitative methods (in phase one) have been used to explore the views and perceptions of EBP held by academics FPs and FPs in the public and private sectors to further elucidate the concept of evidence and to obtain a deeper understanding of the experiences, attitudes, perceptions and understanding of practitioners (private and public sector) with regard to the implementation of evidence in practice.

#### **3.4.1.1 Aim**

To obtain an in-depth understanding of the concept of evidence and to further explore the experiences and understanding of academic FPs and FPs practicing in the public and private health sectors with regard to EBP and the implementation of asthma evidence-based guidelines in practice.

#### **3.4.1.2 Objectives**

- To understand current practice with regards to the implementation of evidence in practice.
- To gain insight into the main barriers to EBP and guideline implementation.

#### **3.4.1.3 Methods**

##### **3.4.1.3.1 Design**

This was an inductive qualitative clinical research study (Denzin NK & Lincoln Y, 2000) using semi-structured interviews as the main method of data collection.

##### **3.4.1.3.2 Setting**

Academic FPs were interviewed at academic institutions (universities), FPs in the public sector were interviewed at their private practices and FPs in the public sector were interviewed at their respective CHCs.

##### **3.4.1.3.3 Selection and recruitment of FPs**

For this research a list of potential interviewees was compiled at the planning phase, based upon an understanding of which groups of FPs were likely to contribute to an improved understanding of EBP and guideline implementation in particular. The rationale was to interview FPs who had some exposure to EBP and guideline implementation. Purposeful sampling was used to select FPs for the study based on the understanding that FPs had different views on EBP and guideline implementation as they were practicing in an academic environment; the private or public health care sector. They had to be accessible, prepared to be interviewed following informed consent and be able to make a useful contribution to the study. FPs from academic institutions, the private and public health care sectors were recruited for participation by invitation and a follow up telephone call. They were informed about the study and asked if they would be willing to participate. Those who expressed an interest were given an

information leaflet and contacted by the researcher. At the interview the researcher explained the study again and FPs who agreed to participate signed the consent form. Recruitment procedures also drew upon elements of snowball sampling as interviewees suggested names of potential FPs to be approached for participation in the study.

The research was designed to include a conventional sample size of 8-12 interviewees in each of the three identified groups of FPs: (1) academic FPs affiliated to University Health Science Faculties in South Africa; (2) FPs in the public sector CHCs of the MDHS and (3) FPs in the private health care sector and whose practices were located in the Cape Town metropole. (The latter two groups were interviewed and separated along public and private sector lines in keeping with a similar demarcation in the cross-sectional survey). The aim of including the three groups was mainly to explore the different experiences of the three groups of FPs and to generate a composite account of their views.

The participants from the academic sector were Heads of Departments (HODs) of Family Medicine and Primary Care at all Health Sciences Faculties in South Africa. FPs in the public sector were appointed in specialist posts and part of their job description was the responsibility to improve clinical governance and clinical effectiveness as well as the implementation of guidelines at their respective CHCs.

The researcher anticipated a difference in ideology between the academic FPs and the FPs at PHC level (private and public sector) regarding their understanding of EBP and guideline implementation. However early familiarization with the transcripts did not demonstrate such ideological differences between the three groups and all interviews were then considered for analysis in one group. In the final analysis a total of 27 FPs were interviewed from the three groups as follows:

- 10 Academic Family Physicians
- 10 Public sector Family Physicians
- 7 Private sector Family Physicians



#### **3.4.1.3.4 Data collection**

All interviews were conducted face-to-face and digitally recorded by the researcher in the natural (practice) setting of the interviewee. One interview was conducted in Afrikaans and all other interviews in English. An interview guide consisting of broad open questions and subsequent topics for exploration (Annexure E) was used to generate discussion rather than to elicit answers to specific questions. Interviews were conducted and digitally recorded by the researcher. FPs selected, received an explanation and overview of the research, as well as a list of potential questions, which they could then begin to reflect on in preparation of the interview.

Features of the particular context (the private practice or CHC) were explored. This included the attitudes of colleagues in the public and private sector towards EBP and guideline implementation, the style of leadership in the organisation as well as features of the strategies used for dissemination and implementation of the asthma guideline. Other areas explored were: the concept of evidence; FPs' views of the barriers to guideline implementation; their views on how best to implement guidelines; anecdotal experience in practice and the role of the patient in clinical decision making.

Some of the questions were also modified during the fieldwork, in response to the insights gained from participants. Confidentiality of interviewees was maintained at all times (see ethics later).

#### **3.4.1.4 Data Analysis**

All interviews were transcribed verbatim and a full text of the transcribed interview was returned to all interviewees for member checking, which included confirmation that the documented interview was a true reflection of the interview. This served as an additional means to confirm the accuracy of the transcription process before final analysis.

An analytical framework was developed, using the framework method (Ritchie J & Lewis J, 2003; Ritchie J & Spencer L, 1994) which involved the following steps:

#### **3.4.1.4.1 Familiarisation:**

The researcher immersed himself in the transcripts by reading, re-reading and listening to the original recorded interviews and referring to field notes taken during the interviews in order to become familiar with the data and organise and prepare data for analysis. Transcripts of all 27 interviews were used for analysis. Multiple readings of the transcriptions allowed the researcher to become fully immersed and familiar with the data.

#### **3.4.1.4.2 Identification of a thematic framework.**

The researcher identified all the themes and specific issues related to them, which resulted in a detailed index of the themes. Data analysis began with "open coding" in which phenomena found in the text of an interview were identified, categorised, and described. Segments of the transcripts ranging from part of a sentence to a whole paragraph, were assigned codes based on the identified points or themes. Coding was both deductive and inductive, allowing for themes to emerge from the data as a first level of abstraction. Codes that emerged as thematically similar were grouped together into a family. Codes and themes were derived from issues raised by FPs, experiences that recurred in the data, and the research aims. The final list consisted of a numbered list of codes and related phrases or sentences. Based on these codes, a series of themes arranged in a treelike structure connecting transcript segments organised into separate groups or themes were generated.

#### **3.4.1.4.3 Indexing.**

The interview transcripts were entered into ATLAS.ti and systematically coded using the thematic index and with the assistance of a qualitative data analysis software programme, ATLAS.ti version 6.1 (Muhr T, 2008).

#### **3.4.1.4.4 Charting:**

A document for each category (family as designated by Atlas-ti) was then saved and/or printed. All the coded data related to this category was then presented together for interpretation.

#### **3.4.1.4.5 Mapping and interpretation.**

The charts were used to interpret the data and identify emerging themes. Connections between different themes, the range and strengths of different opinions within themes as well as contradictions were reflected on. The researcher searched for alternative explanations and potential negative cases.

As stated earlier a reflexive report was referred to and kept closely in an attempt to remain neutral and receptive to the data during this phase of the analysis. The reflexive notes dealt with my assumptions, predispositions, biases and perspectives with regard to EBP and asthma guideline implementation. This meant having an explicit awareness of my own assumptions in order to minimise the impact on the analysis and interpretation.

#### **3.4.1.5 Ensuring quality in the qualitative research**

The researcher attempted to limit the likelihood of serious errors in conducting this research and the following well established strategies were used to enhance the credibility of this qualitative research process.

##### **3.4.1.5.1 Triangulation**

As stated earlier methodological triangulation was used to enhance the credibility and reliability of the research by comparing the findings obtained from other sources as well as different methods of data collection. The themes that emerged from the qualitative interviews were triangulated with the results of the quantitative survey to determine if a coherent picture was created. In addition the results that pertained to the asthma guidelines specifically were triangulated with the audit results on the quality of asthma care. This convergent validity enabled an overall comprehensive interpretation of all the findings obtained from different methods.

#### **3.4.1.5.2 Member checking**

All interviews were transcribed verbatim and validated by the interviewees using member checking immediately after transcripts became available. A full text of the transcribed interview was returned to all interviewees for member checking, which included confirmation that the transcribed interview was a true reflection of their views, feelings and experiences and further allowed for correction of mistakes (Lincoln Y & Guba E, 1985). Member checking therefore served as an additional means to confirm the accuracy of the transcription process and provided the opportunity to volunteer any additional relevant information where applicable. Member checking occurred before formal analysis was conducted. However except for minor typographical changes addressed by the interviewees, no significant changes were made to the transcripts, which were generally accepted as is. Lincoln and Guba (1985) view this form of validation as one of the most important strategies to check the credibility of the research process (Lincoln Y & Guba E, 1985). This view however, also refers to the validation of the interpretation and not just the accuracy of the transcription.

#### **3.4.1.5.3 Deviant case analysis**

Care was taken to identify and consider data in the analysis that appeared to be different or in contradiction to the overall themes developed.

#### **3.4.1.5.4 Fair dealing**

The interviews of all participants were analysed with great care not to emphasise the opinions of more prominent experts in the sample of participant interviewees. Care was thus taken to prevent any particular view dominating the interpretation and to be as neutral and non-partisan as possible.

### **3.5 PHASE 3**

#### **3.5.1 PARTICIPATORY ACTION RESEARCH (PAR)**

Researchers situated in the emancipatory-critical paradigm work with a range of qualitative and quantitative techniques as appropriate and relevant to address the specific questions posed.

### **3.5.1.1 Central question**

How can we improve the implementation of the South African national asthma guideline in CHCs in the Cape Town metropolitan area?

### **3.5.1.2 Aim:**

To improve the uptake and use of the national asthma guideline in selected CHCs in the Cape Town metropole and to reach a consensus on how to do this.

### **3.5.1.3 Objectives**

- To explore ways of improving the uptake among primary care health workers of specific recommendations contained in the asthma guideline
- To use QI cycle data of suboptimal performance for within the PAR process.
- To compare the overall performance of CHCs where action research occurred (ARS) in phase three, with CHCs where no action research occurred (non-ARS).
- To reach consensus on the most practical ways of improving guideline implementation

### **3.5.1.4 Research Setting**

This research was conducted in five CHCs and each CHC was from a different municipal district of the Cape Town metropole (see research setting above). This meant that the research occurred in the natural practice setting of all CIG members.

### **3.5.1.5 Action Research (AR) definition**

For purposes of this research the following definition was adopted: "Action research is a period of inquiry, which describes, interprets and explains social situations while executing a change intervention aimed at improvement and involvement. It is problem-focused, context specific and future-orientated. Action research is a group activity with an explicit critical value basis and is founded on a partnership process. The participatory process is educative and empowering, involving a dynamic approach in which problem identification; planning, action and evaluation are interlinked. Knowledge may be advanced

through reflection and research, and qualitative and quantitative research methods may be employed to collect the data. Different types of knowledge may be produced by action research, including practical and propositional. Theory may be generated and refined, and its general application explored through the cycles of the action research process." (Waterman H et al., 2001).

### **3.5.2 PROCESS OF PLANNING/PREPARATION**

#### **3.5.2.1 Who constituted the CIG and how was it established?**

This phase of the research process involved PAR using a CIG, which is a well-recognised action research method. As PAR typically begins with a researcher working with already existing groups, I decided that the CIG should consist of teams of asthma care-givers from different CHCs in the Cape Town metropolitan area. These teams were working at CHCs in the public sector, where a club system for chronic disease management was in place. Such CHCs had a dedicated asthma team who were running a club system and were directly involved in the care of asthma patients (Table 3.3).

During asthma workshops provided in 2009 in response to the audit results obtained in 2007 and 2008, asthma teams from five different CHCs indicated their interest in further improving the quality of asthma care in their practice settings and were then formally invited to form the CIG. As in other forms of research, participation in the CIG was entirely voluntary and no one was forced, instructed or coerced. They perceived the need for improving the quality of asthma care in their practices and wanted to be part of the change process.

The teams consisted of at least three members: the Family Physician (FP); Clinical Nurse Practitioner (CNP) and professional nursing sister. Thus only CHCs with FPs were selected. They were all directly involved in asthma care at their respective CHCs.

The FPs work in CHCs in the Cape Town metropole and have a Master's degree in family medicine and primary care, or MCGP, which includes some formal training in EBP. They were the clinical leaders at their CHCs in the MDHS of the Cape Town metropole. Their job descriptions incorporated a responsibility for

clinical governance, which included the implementation of evidence-based clinical practice guidelines at their respective CHCs. The CNPs and nursing sisters were dedicated asthma care-givers at their CHCs and some had completed a six month South African Certificate course in Asthma Care through the National Asthma Education Programme (NAEP). The teams were dedicated to asthma care via a club system for chronic disease management that was already in place.

**Table 3.3:** The CIG

<b>CHC TEAM</b>	<b>Member of CIG</b>
<b>ERCHC</b>	
Dr 1	FP
Sr 1	CNP
Sr 2	Prof Nursing Sister
<b>HPCHC</b>	
Dr 2	FP
Sr 3	CNP
Sr 4	CNP
<b>MCHC</b>	
Dr 3	FP
Sr 5	CNP
Sr 6	CNP
Sr 7	Prof Nursing Sister
<b>MPCHC</b>	
Dr 4	FP
Sr 8	CNP
Sr 9	CNP
<b>RCHC</b>	
Dr 5	FP
Sr 10	CNP
Sr 11	Prof Nursing Sister
<b>SU</b>	
Dr 6	Principal Investigator
Sr 12	Research Assistant

Informed consent was signed (see ethical considerations) by all members of the CIG before the start of the first meeting and all members agreed to participate and collaborate with others as co-participants, co-workers and co-researchers. This meant that the research was to be conducted in a manner consistent with the view of Heron and Reason (1988) who defined PAR as "... a form of participative person centred inquiry which does research with people, not on them or about them" (Heron J & Reason P, 1988). The willing interaction, engagement and commitment of these practitioners were essential and necessary to secure and effect change over an extended period of time. All the members of this CIG were committed to the basic cycles of planning, action, observation and reflection (PAOR) in the implementation of the asthma guideline, which involved going through different cycles of action research before final conclusions could be drawn.

At the start there were different degrees of commitment and participation in the CIG. As their understanding of the action research process and their relationships with each other improved, the enthusiasm for and levels of interest in the CIG improved over the 10 month period of the inquiry. The researcher encouraged the CIG members to maintain high levels of motivation over the entire action research period, particularly as the process of change was slow.

### **3.5.2.2 Relationship to asthma audit results**

Initial audits were conducted in the MDHS for the years 2007 and 2008. These audit results served as a baseline of the standard of asthma care at primary care level and results of the practice audits were formally presented to the respective CHCs and used as a basis for formal workshops conducted to address areas in which performance had been suboptimal (see earlier educational intervention to improve quality of asthma care).

Formal auditing with feedback at the selected CHCs then continued after the workshops in 2009 during 2010 (January to May 2011) and 2011 (January to May 2012). The PAR process, with four cycles of planning-action-observation-reflection (PAOR cycles), occurred over a period of 11 months, from October 2011 to August 2012.



### **3.5.2.3 Training of co-operative inquiry group**

Before the start of the first PAOR cycle, the CIG received formal training in action research in the form of two 2 hour sessions, which covered basic knowledge about PAR and basic critical reflection. In addition the group worked through the recommendations contained in the current national asthma guideline and their current practice on asthma care was reviewed. All members had a resource file containing information on PAR, critical reflection, the guideline, AGIP resources and a copy of their signed informed consent. The ethical framework for the study and its participants was agreed on.

### **3.5.2.4 Mutual identification of questions for the inquiry**

Central to the research was the implementation of an evidence-based asthma guideline by the CIG. CIG members worked collaboratively (Kemmis S & Mc Taggart R, 1988) and formed a supportive alliance in their endeavour to implement change and improve the quality of asthma care at their respective CHCs. Facilitation emphasised equality in terms of people's views and experiences within the CIG, rather than the traditional hierarchies of power and seniority amongst doctors and nurses. They were closely involved with asthma and had unique tacit knowledge, understanding, experiences and insights, which they utilised at the coal face where they contributed to asthma care. They were the experiential experts in their direct interactions with groups of asthma patients at primary care level.

Although it is possible to start anywhere in the PAOR cycle, this CIG found it relatively easier to commence at the planning phase. The researcher did not predetermine the specific questions to be addressed by the CIG and planning started figuratively with a "blank sheet of paper".

At the first CIG meeting the overall asthma results of the practice audits (2007 to 2008) and results of the cross-sectional survey were used to help identify and refine the concerns of the CIG. Following the presentation and critical appraisal of the results and reflection on their own experience of current practice, the CIG collaboratively selected key areas of mutual concern where asthma care was sub-optimal. This critical examination of practice and exploration of concerns (Meyer J, 2000) was then used to formulate questions to be addressed by the inquiry (Kemmis S & McTaggart R, 1988). These were practical questions posed by the asthma teams which dealt with the improvement and development of

asthma care in their different practice settings. This meant that the CIG questions were at the centre of the agenda and guided the ongoing participatory research process.

### **3.5.2.5 CIG meeting procedures**

CIG members met monthly on a Tuesday evening, at a neutral venue (seminar room, Division of Family Medicine and Primary Care, Faculty of Medicine and Health Sciences, Stellenbosch University) for 2 hours from 18H30 to 20H30. Ten CIG meetings occurred over the four cycles. The facilitator dealt with issues of power and hierarchy by encouraging members to address each other on their first names, maintaining a spirit of mutual respect from the first contact session. A research assistant, Ms HR, addressed the logistic aspects of the CIG meetings, which included setting dates for monthly meetings, contacting CIG members, sending messages to remind members of meetings, arranging refreshments, finalising the honoraria of CIG members, overseeing the recording of interactions and creation of transcripts for documenting the CIG process. Meeting summaries were prepared by the principal investigator and presented as an introduction to the next meeting.

### **3.5.2.6 Role and preparation of facilitator and research assistant**

The role of the principal researcher was predominantly that of facilitator, mainly as an “outsider” and had been clearly described to the members of the CIG. Waterman has shown in a systematic review that “outsiders” were “twice as likely to be associated with more successful action research projects” (Waterman H, 2001). Therefore the facilitator acted as a guide and listened to the CIG members, sought to learn from them, understand their suggestions for change, help them put ideas into action and ensured that high standards of research conduct was maintained. This meant that the researcher had to remain sensitive to the ways in which he and the research process shaped the data. Critical self-reflection and reflexivity were used to remain aware of how his predispositions and experience in the field of EBP might have influenced the research process. The researcher kept a personal research diary alongside the data collection and analysis in which to record his reactions to events occurring during the period of research. A summary presentation and hard copy of each meeting was

presented to all CIG members at the beginning of the next meeting and this was followed by a reminder and alignment with the purpose of the PAR process.

### **3.5.3 PROCESS FOR EACH OF FOUR “PAOR” CYCLES**

#### **3.5.3.1 Planning phase**

During the **planning** phase the CIG revisited their concerns and then collaboratively formulated questions, based on these concerns. An action plan to address these questions in their practices was then agreed on, with particular emphasis on practical ways to answer questions in their daily struggles with asthma care and to observe, document and critically reflect on their practices. This first cycle was also an important opportunity for them to align themselves with the overall purpose of the research, which was emphasised at the beginning of each meeting.

#### **3.5.3.2 Action phase**

During the **action** phase the CIG implemented the action plan decided on by the CIG

#### **3.5.3.3 Observation phase**

The **observation** phase ran simultaneously and required the CIG members to record their individual observations and critical reflections in a personal journal while they were implementing the mutually agreed on action plan at their respective CHCs.

#### **3.5.3.4 Reflection phase**

During the **reflection** phase the CIG members met as a team at their CHCs and then as a larger group with all CIG members monthly. In the group meetings each person would share and reflect on their individual experiences over the previous month, especially with regard to the action plan and the implementation of it. After initial individual reflection, the group as a whole would then reflect with comments and feedback. The aim was to develop new learning based on the whole group’s experience. The group then conceptualised in a more abstract way what they had learnt or what they still needed to learn. This new learning and questions would then be incorporated into the planning of

the next PAOR cycle where the action plan would be redefined based on the understanding and learning gained in the preceding PAOR cycle.

The detailed activities and learning of the CIG are reported on fully in Chapter Seven (PAR results).

### **3.5.4 PROCESS OF CONSENSUS BUILDING.**

#### **3.5.4.1 Consensus meetings**

As depicted in the conceptual framework (Figure 3.1), the four PAOR cycles were then followed by the use of methods intended to build consensus within the CIG on what had been learnt. Apart from the group discussions and reflections of the CIG, I used two qualitative methods (Mini-focus group discussions (mini-FGDs) and the nominal group technique (NGT)) and one quantitative method (a questionnaire) to reach final consensus on the understanding and learning of the CIG.

##### **3.5.4.1.1 Mini-FGDs**

The site (CHC) specific asthma teams were interviewed separately in small mini-FGDs in an attempt to reach site specific consensus first. This was then followed by the combined main CIG discussion on consensus, which took the form of the NGT process. This was followed with the quantitative questionnaire (consensus questionnaire).

##### **3.5.4.1.2 NGT**

The same question that was used in the FGDs was used in the group consensus meeting of the CIG. I used the NGT as a more structured and systematic approach to building consensus at the end of the PAR process. The NGT focuses on a single idea such as consensus of the learning achieved by the members of the CIG and can be conducted in one single meeting. The NGT is well described (Anderson G & Ford L, 1994; Zuber-Skerritt O, 1998) and is particularly suitable to collect feedback for the evaluation of action research. It can be used in the beginning of PAR when group concerns are identified, during PAR for continuing improvement and at the end of PAR to evaluate the overall quality, value and effectiveness of PAR (Zuber-Skerritt O, 1998)

In this PAR, the NGT involved two rounds in which CIG members had an opportunity of deliberation on their views about the question.

Round one constituted the ranking of ideas where each member then contributed one idea to the facilitator who grouped similar ideas together on a flip chart. As the facilitator of the group, I then clarified the individual statements and collated those which were similar or overlapped. The collated statements were then listed and numbered and each member of the CIG was then asked to select from the list the five statements he/she considered to be the most important to answer the question. These statements were then individually ranked from A to E ("A" being the most important and "E" the least important). After all members contributed, a group discussion followed for clarification purposes and further evaluation of the ideas. Each member then had the opportunity to privately rank ideas or items. At the end of round one the ranking of ideas was tabulated and presented to the group by the facilitator.

Round two constituted the discussion of the overall ranking and followed by a final re-ranking which was then fed back to the members. The individual results were then collated to give a final score and ranking of the statements that represented the consensus of the members of the CIG. The group results and collective priority lists were therefore immediately available and could be acted upon with immediate effect. Unlike the Delphi technique, the NGT provides immediate feedback of the results to the group and is in general superior consensus technique than the Delphi method even though the degree of superiority is small (Sackman H, 1975; Rowe M et al., 2013).

The NGT process ensured that overall CIG member participation in the process was equal and balanced and no individual member was allowed to or could dominate the proceedings as all suggestions and contributions carried equal weight. This style of achieving consensus allowed the researcher to take a back seat and observe the process without a dominant influence on the proceedings (Zuber-Skerritt O & Wilcox J, 2003).

The above process of consensus building, which included the mini-FGD, the NGT and the consensus questionnaire, is further reported on in Chapter Seven as part of the PAR results.

#### **3.5.4.1.3 Consensus questionnaire**

The statements evaluated in the consensus questionnaire (Figure 3.3), were derived from the activities to which the CIG attached the highest score in the NGT process. The consensus questionnaire dealt with what the CIG learnt and it thus served as a quantitative confirmation of that learning. This questionnaire thus took ranking and prioritising of the learning which occurred in the NGT process and reflected it back to the CIG for confirmation.

Statements which dealt with the areas of greatest learning achieved during the PAR were presented for assessment by the CIG, using a Likert scale which ranged from 1-9. The Likert scale for the derived statements was further subdivided into: "Not useful" (score 1-3); "Use doubtful" (score 4-6) and "Useful" (score 7-9).

### **3.6 KNOWLEDGE TRANSLATION RESEARCH**

Conceptually, 'knowledge translation' is the process that connects the researcher to the knowledge user, converts knowledge into actions and links research to clinical practice (Likscai C et al., 2012). Knowledge translation influences decision making at the micro-level of the individual (clinicians and public health practitioners) and at the meso-level of groups (teamwork) and sectors (health sector) respectively (Shortell SM et al., 2007). It is now used globally to bridge the evidence-practice (know-do) gap in health care practice (Ahmed AA et al., 2014), and also refers to the effective use of two types of knowledge (explicit and tacit) within and across a range of levels within the health system. Explicit knowledge refers to codified knowledge, such as that found in research papers, systematic reviews and best-practice guidelines whereas tacit knowledge refers to informal, non-codified and experience-based knowledge (Friedman LH & Bernell SL, 2006; Kothari et al., 2012).

**Figure 3.3:** Participatory action research consensus meeting

Community Health Centre								
ERCHC	HPCHC		MCHC		MPCHC		RCHC	
<b>REGARDING THE ASTHMA SELF-MANAGEMENT PLAN (ASMP)</b>								
The ASMP is easy to use in the care of asthma patients in practice at my CHC								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
The ASMP covers all the important recommendations in the current asthma guideline								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
I find the ASMP useful in the management of asthma patients								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
Other members of our PHC team find the ASMP useful								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
My asthma patients find the ASMP useful in their management								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
<b>REGARDING THE EDUCATIONAL AID (FLIP CHART)</b>								
The flip chart is useful in the education of asthma patients								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
The flip chart is useful in the teaching of the MDI technique to asthma patients								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
The flip chart is useful in the teaching of the difference between controller and reliever MDIs								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
The flip chart is useful in smoking cessation counselling								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
The flip chart is useful in assessment of the level of asthma control								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
The flip chart is useful in teaching patients about the difference between Asthma and COPD								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
The flip chart is useful in teaching patients about triggers of asthma								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
<b>REGARDING THE ACTION RESEARCH PROCESS</b>								
The action research process empowered me to implement recommendations contained in the asthma guideline								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
I learned about the Planning, Action, Observation and Reflection cycles of Action Research								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
The action research process improved my ability to collaborate with other group members on asthma care								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
The action research process improved my ability to critically reflect on asthma care individually and as part of the CIG								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9
The action research process improved my understanding of the asthma guideline and its implementation								
Not Useful			Use Doubtful			Useful		
1	2	3	4	5	6	7	8	9

Knowledge translation refers to active engagement by researchers with policy and practice issues (as experienced by policy makers and practitioners) and with research information, and application of that information to real challenges by

people with deep understanding of the challenges and the context within which the information needs to be applied. The analysis of studies examining the effectiveness of implementation interventions is a key component to an overall knowledge translation research agenda (Graham ID, 2006). Many different knowledge translation theories currently exist, and according to Lapaige (2010) they present a theoretical challenge as they are poorly conceptualised and operationalised (Lapaige V, 2010).

The concept of knowledge translation research on the other hand is the scientific study of the determinants, processes and outcomes of knowledge translation (Grimshaw, 2008) and has been dominated by efficacy trials, which often do not translate to the complexity of the PHC setting. The term “integrated Knowledge Transfer”, also described as T2 research, describes a way of doing research in which researchers and research users collaborate on set research questions, decide on the methodology, collect data, interpret the findings, and contribute in the dissemination of the research findings (CIHR, 2009). T2 research requires a partnership between the T2 researchers and the practitioners, policymakers or caregivers. The development of this partnership is the hallmark of integrated knowledge translation or T2 research. Such co-production of knowledge should produce findings which are more likely to be relevant to, and for, end users in decision making at the coalface of practice (AHRQ, 2009).

### **3.7 USING PAR TO IMPROVE THE UPTAKE OF AN EVIDENCE-BASED GUIDELINE**

During my medical education I have been schooled in a very positivist background. It was difficult accepting other forms of evidence as scientific and valid. Over the years I have however acquired a more open epistemological stance which has enabled me to be more open to other points of view and to utilise evidence from other paradigms.

Engaging with action research to address the central research question was at first accompanied by unsettling feelings. I had to move away from the linear-reductionist-cause-and-effect way of looking at phenomena to a more post-modern, relativist and dialectic point of view. Post-modernism recognises uncertainty and complexity, and supports the belief that no one view has



dominance over another. The dialectic way of thinking can also accept apparent contradicting points of view as being part of the same phenomenon without the need to exclude one point of view or the other. This emphasises that understanding is partial, open ended and not yet fully understood.

As a family physician faced with uncertainty, complexity and undifferentiated problems in primary care this was not a very difficult adjustment to make as my new way of thinking is also reflected by the discipline of family medicine. Family medicine has adopted a model based on systems theory and uses a three-stage assessment based on the bio-psycho-social framework, which utilises a holistic approach and recognises the contribution of multiple factors towards illness.

In my involvement with family medicine and as a proponent of the EBP process, I have explored adult education and found it to resonate with my own way of learning and also with the approach to learning within action research (Mash B & de Villiers M, 1999). I often teach the formulation of focused answerable questions to undergraduate and postgraduate students as the most fundamental step in the process of EBP.

Students then proceed to ask questions which are "answerable" using different forms of research study designs, which are ideally highly placed in the "hierarchy of evidence" to answer the questions posed (Hayward RS, 2005). However students often struggle to answer questions effectively using the EBP "5 A's" approach of Asking, Accessing, Appraising, Applying and finally Auditing their practice (Sackett D et al., 1996) particularly in areas of uncertainty and complexity such as primary care where patient problems are often less well differentiated. It is in situations of such uncertainty and complexity where critical reflection and embracing other paradigms of research can become extremely useful in furthering our understanding and enhancing the quality of our interpretation of research evidence.

My initial intention with this research was to conduct a pragmatic clustered RCT to demonstrate the differences in structure, process and health care outcomes between CHCs utilising the evidence-based asthma guidelines and those CHCs who did not. However randomised controlled trials have restricted external

validity, often complicated by strict inclusion and exclusion criteria and its gold standard status in situations of complexity and uncertainty, which is often encountered in PHC, can be questioned. I also anticipated problems in selecting and using appropriate health care indicators and also demonstrating statistically significant differences in health care outcomes between comparison groups.

The limitations of EBP can be addressed using action research, which allows more practical and complex questions to be framed and iterative cycles of action and reflection can improve our understanding of complex questions. In addition “good quality PAR can combine research rigour, effective action and high quality participation.” (Hughes I, 1981) and is appropriate for research in complex situations. Furthermore, PAR has been used as an intervention in a positivist study design by Hampshire et al (2006) who conducted a RCT to improve child health services at preschools. They divided practices into two groups with the one group having action research to improve services and the other group receiving feedback only. The action research practices performed better and were considered to be more successful although statistical significance was not achieved (Hampshire J et al., 2006).

Critical theory emanating from the emancipatory-critical paradigm, in which action research is situated, is critical of positivist research, which features prominently in EBP. In the words of Hart & Bond (1996), “it (critical theory) represents a counter to positivism and can develop reflexive practice and general theory from practice” (Hart E & Bond M, 1996). Furthermore, interpretive research on the other hand, is complementary to critical theory and can generate knowledge which serves practical interests.

The main focus of this research was to bridge the gap between theory and practice (between knowing and doing) and according to Maguire (2006), PAR “links the theory and practice, the knowing and the doing and in profoundly new and different ways the doers and those historically done to” (Maguire P, 2006). Action research may be viewed as context bound and therefore also has restricted external validity. However it offers practical solutions to health care problems in particular contextual settings, especially where local problems need solutions. It is therefore viewed as “real world” research by Waterman H et al

(2001). Engaging with practitioners to conduct research on their own practice settings can thus improve their practice and reduce the gap between evidence and practice (Rolfe G, 1996). McNiff, Lomax and Whitehead (2003) view action research as “a form of practitioner research which can help improve professional practices in many different types of workplaces” and Carr and Kemmis (1986) see action research as “helping professionals to make decisions in the best interest of their clients” (McNiff J, Lomax P and Whitehead J, 2003; Carr W & Kemmis S, 1986).

This PAR is situated in the emancipatory-critical paradigm and this way of enquiry is traced back to Kurt Lewin (Holter IM and Schwartz-Barcott D, 1993) and the Tavistock Institute in London. There are several definitions of action research, each reflecting the different disciplines in which it has been used. These range from healthcare improvements, to introduction of information systems and production of organisational change (Waterman H, 2001). As a result of extensive investigation and reflection on the literature, a definition of action research was proposed as part of a systematic review and is the definition that will be used in this research:

*“Action research is a period of enquiry, which describes, interprets and explains social situations while executing a change intervention aimed at improvement and involvement. It is problem-focused, context specific and future-orientated. Action research is a group activity with an explicit critical value bases and is founded on a partnership process. The participatory process is educative and empowering, involving a dynamic approach in which problem identification; planning, action and evaluation are interlinked. Knowledge may be advanced through reflection and research, and qualitative and quantitative research methods may be employed to collect the data. Different types of knowledge may be produced by action research, including practical (doing) and propositional (knowing). Theory may be generated and refined, and its general application explored through the cycles of the action research process.” (Waterman H, 2001)*

The above definition was specifically chosen as it was derived from the systematic review process, which is central to EBP and as it provides a succinct

summary of the methodology alluded to and described earlier. As this research sought to improve the utilisation of clinical research evidence presented in the form of the asthma evidence-based guidelines in clinical practice, I decided to use PAR as the main method of investigation (Zuber-Skerritt O, 1992, Zuber-Skerritt O, 1996, Whyte W, 1991, Malterud K, 1995,). This research has therefore drawn mainly from the emancipatory-critical paradigm (Habermas J, 1972) as well as the interpretive-hermeneutic (Denzin NK & Lincoln Y, 2000) and positivist paradigms in an attempt to understand ways of reducing the gap between clinical research evidence and clinical practice in CHCs in the MDHS, Cape Town, South Africa.

The epistemological base of action research is rooted in critical theory and the epistemological assumptions underpinning action research include that knowledge is uncertain, that it is ambiguous and that there is no single answer – no single truth (McNiff, J & Whitehead J, 2006). According to McNiff and Whitehead (2006); “knowledge is created in a collaborative process rather than discovered and that the object of enquiry is not other people but the ‘I’ in relation to other ‘I’s.” (McNiff J & Whitehead J, 2006). She states further that “...the ontological commitments underpinning action research include that it is value laden, morally committed and that the action researchers perceive themselves as in relation with one another in their social context. The research is done by people who are trying to live in the direction of the values and commitments that inspire their lives. Your values come to act as your guiding principles” (McNiff J & Whitehead J, 2006).

Critical action research also draws heavily from a body of theory called post-modernism, which challenges the notions of truth and objectivity on which the traditional scientific method relies. The term critical action research derives its name from the body of critical theory on which it is based (Kemmis S & McTaggart R, 1988), and “not because this type of action research is critical, as in ‘fault-finding’ or ‘important’ although it may certainly be both” (McNiff J & Whitehead J, 2006). The objective of critical theory is to critique the socially constructed experiences of people, understand the nature of power relations and empower people to change their lives (Kincheloe JL, 2003). Therefore this

research sought to empower practitioners in the context of their practice and to change with the main intention to improve the standard of asthma care.

One extremely important justification for using a PAR approach is that its principles are closely aligned to the PHC concepts of collaboration and empowerment. PHC emphasises the participation of people in the planning and development of their own health (WHO, 1978). In addition the principles of PAR such as mutual collaboration, reciprocal respect, co-learning and acting on results from inquiry are all essential in the doctor-patient relationship (Marincowitz GJ, 2003). Action research is therefore suited to identify problems in clinical practice and to help develop potential solutions in order to improve practice (Hart E, 1995). In addition it is particularly well suited for the development of knowledge to inform theory, practice and further research particularly in the field of guideline implementation. It can thus be seen that PAR is designed to bridge the gap between research and practice (Somekh B, 1995), thereby striving to overcome the perceived persistent failure of research to impact on, or improve, practice (McCormick R, 1988).

At a time when there is increasing concern about the "theory-practice" gap in clinical practice and that research evidence is not sufficiently influencing practice development, (Walshe K et al., 1995), PAR is gaining credibility in health care settings (East L & Robinson J, 1994). Practitioners have to rely on their intuition and experience since traditional scientific knowledge, for example the results of RCTs, often do not seem to fit the uniqueness of the situation. PAR is seen as one way of dealing with this because, by drawing on critical reflection and practitioners' intuition and experience, it can generate findings that are meaningful and useful to them (Meyer J, 2000).

PAR has slowly started to emerge as a useful method for improving and understanding professional practice in health care (Sandars J & Waterman H, 2005) and has contributed positively in the past to primary care (Macaulay AC, 1999; Koch T & Kelly S, 1999; Kovacs PJ, 2000; Mash B & Meulenberg-Buskens I, 2001).

The importance of including the subjects, who are being studied, as participants, or “co-researchers”, is regarded as being essential to the development of practical knowledge (doing) and the implementation of change in practice (Sandars J & Waterman H, 2005). This approach ensures that the aims are relevant to the needs of the participants and that the outcomes will be utilised.

This research has been viewed as something done “with and for” the researched and not “on” them (Heron J & Reason P, 1988). It is not research done on other people, but by particular people on their own work, to help them improve what they do, including how they work “with” and “for” others (Kemmis S, 2000). In this regard action research conducted in one’s own practice is more likely to be persuasive and relevant and findings expressed in ways that are meaningful for practitioners themselves.

Fundamental questions can be asked about ownership of knowledge and the rights of social research “on people” rather than “with and for people” (Reason P & Rowan J, 1981). PAR allows communities to research their own problems, analyse them and come up with solutions. In so doing the community becomes empowered to plan and act in order to create social change. PAR is therefore highly relevant for work with oppressed and disempowered communities with self-help groups and for health education (Wallerstein N & Bernstein E, 1994; Brydon–Miller M, 1997). The role of the researcher therefore is that of a guide, a facilitator or catalyst (Walker M, 1993) who works collaboratively to involve stakeholders in every aspect of the research process (Mash B & Meulenberg-Buskens I, 2001).

PAR for example, is seen as a “social process of collaborative learning realised by groups of people who join together in changing the practices through which they interact in a social world and living with the consequences of their actions” (Kemmis S, 2000). Their principal concern is in changing practices in “the here and now”. PAR has also been described as a systematic form of inquiry which is, participatory, emancipatory, practical, collaborative, critical and reflexive, and which seeks to transform both theory and practice. It is with this main focus that the researcher has elected to utilise this methodology to address this research question.

According to Zuber-Skerritt (1996), the underlying assumption is that people can learn and create knowledge in the following ways:

- “On the basis of their concrete experience
- Through observing and reflecting on that experience
- By forming abstract concepts and generalisations; and
- By testing the implications of these concepts in new situations, which will lead to new concrete experience and hence the beginning of a new cycle.”  
(Zuber-Skerritt O, 1996)

The CRASP model of action research defines it as “critical collaborative enquiry by reflective practitioners, accountable and making the results of their enquiry public, self-evaluating their practice and engaged in participative problem-solving and continuing professional development” (Zuber-Skerritt O, 1996). Furthermore, it is viewed by some as a form of disciplined inquiry, in which a personal attempt is made to understand, improve and reform practice (Hopkins D, 1995). Some suggest that “the aims of any action research project or program are to bring about practical improvement, innovation, change or development of social practice and practitioners’ better understanding of their practices” (Zuber-Skerritt O, 1996).

According to Zuber-Skerritt (1996), “the task of action research is not merely to understand the world but to change it” (Zuber-Skerritt O, 1996). It is a particularly powerful tool to change and improvement at the local level such as improving the uptake of evidence at CHCs. It may be used in almost any setting where a problem involving people, tasks and procedures cries out for solution, or where some change of feature results in a more desirable outcome. The approach is only action research “when it is collaborative, though it is important to realise that the action research of the group is achieved through the critical examined action of individual group members” (Kemmis S, 2000).

How does one ensure that good quality PAR is conducted? According to Mash and Meulenberg–Buskens (2001), there are eight themes which define quality in the CIG process (Mash B & Meulenberg-Buskens I, 2001):

**“Alignment with purpose** - The purpose of the inquiry must be clear and all members of the CIG should continuously re-align themselves with the purpose of the inquiry.

**Ownership of the inquiry**- The inquiry should be fully owned by and engaged with by each member of the CIG. This often implies a transfer of ownership from the researcher, who often initiates the process, to the CIG members as they mature in the process. The researcher needs to transfer power so as not to dominate the process.

**Development of reflectivity**- The group members are both researchers and the researched. The quality of the inquiry relies on their capacity to witness themselves. This refers to a reflective stance, which is characterised by heightened awareness and commitment to dialogue. The ability to reflect in a structured, systematic and explicit way needs to be taught with both modelling and practice.

**Democratic and collaborative group dynamics**- Members should tell the truth without judgment. Power hierarchies and imbalances may erode the group process if these cannot be overcome. The facilitator must pay particular attention to building respect and equity within the group.

**A balance between action and reflection**- The group must engage with both the action side of the cycle as well as the reflective side. Some groups need help to act, while others need help to reflect. Both aspects are of fundamental importance.

**Documentation**- Three aspects must be documented in each cycle; the individual experience or action; the developing reflections (new ideas and further questions) and the practical plans to engage with new ideas and questions in ongoing practical action.

**Transferability**- For the readers to be able to generalise findings from their contexts the descriptions need to be thick and detailed. The acid test lies in the practical usefulness of this new knowledge in the readers own context.” (Mash B & Meulenberg-Buskens I, 2001)

The generation of new propositional knowledge as a function of action research is what characterises it as research, differentiating it from other approaches to implementing change, such as quality improvement processes (Greenwood J, 1994). PAR involves an eclectic approach to research (Meyer J, 2000) which



draws on a variety of data collection methods such as participant diaries, field notes, reflective diaries, minutes of meetings, recorded meetings, free attitude interviews, focus group interviews and survey questionnaires (McNiff J, 2003).

### **3.8 ETHICAL CONSIDERATIONS**

#### **3.8.1 General:**

Formal permission to conduct the research was obtained from the authorities at the MDHS of the Western Cape, from directors of health districts and facility managers in charge of CHCs. Ethics clearance and permission to conduct the research was obtained from the Health Research Ethics Research Committee (HREC), Faculty of Medicine and Health Sciences, Stellenbosch University (Project number: N07/03/066) and updated based on progress shown annually. This research has been conducted according to the ethical guidelines and principles of the International Declaration of Helsinki, South African Guidelines for Good Clinical Practice (GCP) and the Medical Research Council (MRC) Ethical Guidelines for Research.

The researcher received a research grant from The National Research Fund (NRF) who had no direct influence or involvement in the research process and the findings of this research will not be utilised for personal financial gain. Participants have received an honorarium for basic expenses undertaken (such as work research data collection performed, transport and meal costs) where relevant, but did not receive any additional remuneration.

#### **3.8.2 Ethics Phase 1 (Cross-sectional survey and QI cycles)**

Questionnaires completed by participating doctors were anonymous and confidentiality was maintained throughout. In the conduct of the cross-sectional survey, informed consent was implicit in the willingness of participants to complete the questionnaires. Data extracted from the records for auditing was anonymous and confidentiality maintained at all times. Only the record number was required to ensure that the same folder was audited in each year. A waiver of informed consent for the patients was obtained from the ethics committee to enable the extraction of this routine clinical information from the records.

### **3.8.3 Ethics Phase 2 (Qualitative Research )**

The purpose of the research was made clear prior to the interview and all interviewees clearly understood that participation was voluntary and that they were free to withdraw at any stage without any negative repercussions should they refuse to continue. Informed consent forms were signed by all interviewees prior to the onset of the interviews (Annexure D), all agreed for interviews to be tape recorded and transcribed and confidentiality was maintained throughout this research process. Good faith and integrity have been maintained at all times and participants have been reimbursed where required for basic transport expenses undertaken.

### **3.8.4 Ethics Phase 3 (Participatory Action Research)**

Participants of the CIG engaged with the main purpose of the research and accepted both the relationship with the researcher and the aim of the action research project. It has been suggested that action research may put participants at a greater risk of exploitation than research that uses defined variables (Meyer JE, 1993). This is because participants are closely involved with the change process and work collaboratively in order to implement change.

Informed consent forms were signed by all members of the CIG (Annexures F & G) and they were assured of confidentiality and protection of their anonymity. All CIG members agreed on their roles and responsibilities, control of the use of the data and the channels through which findings will be disseminated. The issue of ownership and intellectual property and where applicable, co-authorship of research publications were discussed and resolved. It was agreed that the contribution of participants will be acknowledged in formal publications and during academic presentations. Where appropriate the CIG members will be consulted prior to publication of results.

## **3.9 CONCLUSION**

This chapter provided an overview of the methodological framework used in this research and presented the specific methods and study designs that addressed the aims and objectives of this research.

This chapter further discussed the use of PAR as a vehicle to address the implementation of the national evidence-based asthma guideline in practice as well as the pertinent ethical considerations for each phase of the thesis.

Following the background literature review in Chapter 2 and the methodological overview in this Chapter, I now proceed to present the main research findings in Chapters 4 to 7.

## CHAPTER FOUR

### CROSS-SECTIONAL SURVEY RESULTS

*"The job of the human being [in the digital age] is to become skilled at locating relevant valid data for their needs. In the sphere of medicine, the required skill is to be able to relate the knowledge generated by the study of groups of patients or populations to that lonely and anxious individual who has come to seek help."*

**Muir Gray J, 2001.**

#### 4.1 INTRODUCTION

In this chapter the findings of the cross-sectional survey are presented. The results, which shed light on the reported behaviours and attitudes of practitioners in both the public and private sectors regarding EBP and evidence-based asthma guideline implementation in the Cape Town metropole, are presented. Basic descriptive statistical analysis was performed and the results are summarised as proportions and statistical significance for inferential analysis conventionally indicated as  $p < 0.05$ . Cross tabulations with the Chi-square test were used to test for significant differences in percentages and ANOVA to test for significant differences in means between the two groups. The methods were fully described in Chapter Three.

#### 4.2 RESULTS

##### 4.2.1 Demographic profile

A total of 354 practitioners participated, (193 public sector (PubS), 161 private sector (PrvS)). The response rate was 95% (PubS) and 42% (PrvS) respectively. A total of 142 (40%) were female and 212 (60%) were male. The mean age of practitioners was 42 years (SD12.6). A total of 41 (12%) were FPs with a formal postgraduate degree in family medicine.

#### 4.2.2 Profile of internet activity and journal reading

Table 4.1 shows the frequency with which practitioners surfed the internet or read clinical research journals to obtain clinical information. A total of 254 (72%) surfed the internet for clinical information: 11 (3%) practitioners searched the internet daily, 90 (25%) weekly, 111 (31%) monthly, 62 (18%) quarterly, 24 (7%) annually and 56 (16%) never searched the internet for clinical information. The two most frequently used internet sites were Google scholar 105 (29.6%) and Pub Med 92 (25.9%). Interestingly the majority of 244 (69%) did not have access to the internet at work (Table 4.1).

**Table 4.1:** Comparison of public sector and private sector practitioners with regard to frequency of internet access and reading journals.

<b>Practitioners who surf internet for clinical information</b>						
	<b>Never</b>	<b>Annually</b>	<b>Quarterly</b>	<b>Monthly</b>	<b>Weekly</b>	<b>Daily</b>
<b>All Practitioners</b>	56 (16%)	24 (7%)	62 (18%)	111 (31%)	90 (25%)	11 (3%)
Public Sector	33 (17%)	15 (8%)	26 (13%)	63 (32%)	50 (26%)	6 (3%)
Private Sector	23 (14%)	9 (5%)	36 (22%)	48 (30%)	40 (25%)	5 (3%)
<b>Practitioners who read clinical research journals</b>						
	<b>Never</b>	<b>Annually</b>	<b>Quarterly</b>	<b>Monthly</b>	<b>Weekly</b>	<b>Daily</b>
<b>All Practitioners</b>	16 (4.5%)	21 (6%)	71 (20%)	154 (44%)	82 (23%)	12 (3%)
Public Sector	10 (5%)	15 (8%)	44 (23%)	85 (44%)	39 (20%)	2 (1%)
Private Sector	6 (4%)	6 (4%)	27 (17%)	69 (43%)	43 (27%)	10 (6%)

Although 95.5% of practitioners read clinical research journals only 26% did so on at least a weekly basis (Table 4.1) Furthermore 69% of practitioners read the South African Medical Journal, followed by 68% who read the Continued Medical Education, 40% who read the Update Journal, 34% who read the SA Family Practice Journal, 8% who read Modern Medicine, 6% who read the British Medical Journal, 2% who read the Lancet and a further 53 (15%) who claimed to read other journals as well.

### **4.2.3 EBP**

In terms of EBP activity (Table 4.2) there was a statistically significant difference between the private and public sectors in some areas. Overall the doctors in the public sector were more engaged with EBP in terms of using evidence in quality improvement, attending journal clubs to discuss new evidence and using evidence in clinical decision making. Despite this difference in practice the two groups were the same in terms of the percentage that had attended a formal EBM course and wanted to know more about EBP. The majority used the internet for obtaining new research evidence, although this was a smaller percentage than those who used it for obtaining clinical information (see Table 4.1)

**Table 4.2:** A comparison of EBP activity; journal reading and internet activity of practitioners in the public and private sectors in the Cape Town metropole.

	Practitioners N= 354					
	All Practitioners N=354	Public Sector n= 193 (100%)		Private Sector n= 161 (100%)		p value
		N (%)	n	%	n	
Practitioners who completed a course in EBM.	139 (39%)	80	41	59	37	p=0.36
Practitioners who wanted to know more about EBM.	295 (83%)	168	87	127	79	p=0.053
Practitioners who used formal clinical research evidence in decision making.	251 (71%)	142	74	109	68	p=0.024
Practitioners who participated in journal club activity.	47 (13%)	38	20	9	6	p<0.0001
Practitioners who engage in QI cycles of other conditions in primary care practice.	106 (30%)	82	42	24	15	p<0.0001
Practitioners who used the internet for clinical research evidence.	254 (72% )	136	70	118	73	P=0.56

Table 4.3 present the perceptions of practitioners regarding EBP and show that the majority of practitioners agreed that clinical research evidence is useful in the management of patients, EBP can improve the quality of patient care; that there is a place for EBM in practice and that EBP has an important role in clinical practice in South Africa. Comparing the public and private sectors, it appears that while perceptions are largely the same regarding the value of EBP (Table

4.3), the public sector had a greater actual engagement with this in practice (Table 4.2). More public sector practitioners had used evidence in clinical decision making (Table 4.2), whereas private sector practitioners had a stronger belief that they could benefit from EBP (Table 4.3).

**Table 4.3:** A comparison of the perceptions of practitioners in the public and private sectors in the Cape Town metropole regarding EBP.

Practitioners' perceptions regarding EBP	All Practitioners N=354 (%)	Public Sector n= 193		Private Sector n= 161		p value
		Mean	(SD)	Mean	(SD)	
Agreed that clinical research evidence is useful in the management of patients.	339 (95)	3.36	0.60	3.29	0.61	P=0.23
Agreed that EBP can improve quality of patient care.	351 (99)	3.31	0.03	3.48	0.04	P<0.01
Agreed that there is a place for EBM in practice.	340 (96)	1.55	0.59	1.52	0.57	P=0.60
Agreed that implementation of evidence will make a difference to the quality of care of patients	323 (91)	1.74	0.70	1.78	0.63	P=0.56
Agreed that EBP has an important role in clinical practice in South Africa.	347 (98)	3.30	0.51	3.20	0.46	P=0.07



#### 4.2.4 Asthma guideline implementation

It is interesting to note that in terms of overall awareness of the study guidelines the private sector performed statistically significantly better than the public sector in all areas of awareness of the asthma guideline (Table 4.4).

Furthermore the private sector has adopted the guideline more than the public sector. However, the performance of the public sector with regard to QI cycles is statistically significantly better than the private sector, even though performance is still low in both sectors.

**Table 4.4:** A comparison of the awareness and adoption of the published asthma guideline of practitioners in the public and private sectors in the Cape Town metropole.

	Practitioners N= 354					
	All Practitioners N=354	Public Sector n= 193		Private Sector n= 161		
<b>Awareness of guideline</b>	<b>N (%)</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>p value</b>
Practitioners who received a copy of asthma guideline	198 (56%)	89	46	109	64	p<0.001
Practitioners who knew where to find the guideline	220 (62%)	103	53	117	73	p<0.001
Practitioners who claim to have read the guideline	324 (92%)	168	87	156	97	p<0.001
<b>Adopted guideline</b>	<b>N (%)</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>p value</b>
Practitioners who used asthma guideline	297 (84%)	149	77	143	89	p<0.01
Adopted specific asthma guideline recommendations	234 (66%)	110	57	124	77	p<0.01
<b>Acted on guideline</b>	<b>N (%)</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>p value</b>
Practitioners who implemented asthma audits	89 (25%)	65	34	24	15	p<0.001
Practitioners who initiated asthma registers	23 (6%)	0	0	23	14	p<0.001

Commitment to the practice of QI cycles has also been supported by the drive of the MDHS which incorporated QI cycles as part of their ongoing annual

performance plans for practitioners at CHCs in the MDHS. However some practitioners in the private sector have started to engage with asthma registers, although this is still non-existent in the public sector (Table 4.4).

Overall, with regard to adherence to the main key asthma guideline recommendations, which were assessed on a likert scale (ranging from strongly disagree; disagree; agree; strongly agree), the majority of primary care practitioners reported that they personally educated patients on the differences between reliever and controller MDIs; demonstrated the inhaler technique; assessed the level of control and documented the smoking status of their patients (Table 4.4). Moreover the majority of practitioners felt that peak flow rate readings before and after nebulisation are useful in the management of acute asthma and agreed that inhaled corticosteroids are the mainstay of treatment of chronic asthma. However it is disturbing to note that the majority did not issue ASMPs to patients and that in this regard there was no statistically significant difference between the public and private sectors. The recommendation of ASMPs forms one of several key recommendations in the guideline which are clearly linked to level A definitive RCT evidence. Overall the adherence to key recommendations of practitioners in the private sector is statistically significantly better in five of the seven key asthma guideline recommendations compared to the adherence of practitioners in the public sector to the same key recommendations (Table 4.5).

**Table 4.5:** A comparison of adherence to key recommendations in the published asthma guidelines of practitioners in the public and private sectors in the Cape Town metropole.

Adherence to key asthma guideline recommendations	All practitioners n=354			Public sector n= 193		Private sector n= 161		p value
	N(%)	Mean	(SD)	Mean	(SD)	Mean	(SD)	
Practitioners who educated patients on the difference between reliever and controller MDIs	330 (93)	3.39	0.64	3.26	0.67	3.55	0.57	p<0.01
Practitioners who recorded the smoking status of patients	274 (77)	3.08	0.76	2.96	0.73	3.24	0.76	p<0.01
Practitioners who found peak flow readings useful in the care of patients	331 (94)	3.21	0.57	3.21	0.59	3.20	0.55	P=0.97
Practitioners who issued Asthma Self-management plans	67(19)	2.09	0.66	2.08	0.59	2.09	0.74	P=0.93
Practitioners who demonstrated the inhaler technique to patients	257(73)	3.02	0.58	2.83	0.74	3.11	0.72	p<0.01
Practitioners who assessed the level of control	280 (79)	3.10	0.60	2.85	0.65	3.02	0.62	P=0.013
Practitioners who agreed that inhaled corticosteroids is the mainstay of treatment for chronic asthma	339 (95)	3.33	0.55	3.19	0.56	3.50	0.50	P<0.01

### 4.3 CONCLUSION

This chapter presented the results of the cross-sectional survey of private and public sector practitioners and describes their reported behaviour and perceptions towards EBP and evidence-based asthma guideline implementation in the Cape Town metropole, South Africa.

It remains clear that there is a need for the formal teaching of EBM to practitioners in both the public and private sectors. In this regard journal club

activities such as critical appraisal and the interpretation of clinical research evidence can be useful. Overall the vast majority of practitioners agreed that EBP can improve the quality of patient care, and has an important role in contemporary health care in South Africa. Furthermore it is clear that clinical research evidence is perceived as useful in the management of patients and such evidence is currently used in decision making in practice.

Regarding asthma guidelines in practice, most practitioners were aware of the asthma guideline and the majority had read it. In keeping with published research (Pathman DE et al., 1996), however, fewer practitioners had adopted specific recommendations from the guideline, acted on them or continued to adhere to such recommendations in practice. It is interesting to note that the private sector practitioners performed statistically significantly better with regard to their views on EBP and their reported adherence to key guideline recommendations while the public sector engaged more with EBP activities.

There is thus a high level of general awareness of the asthma guideline and recommendations are being adopted in practice although the lack of formal registers, auditing of asthma care and the utilisation of written ASMPs is disturbing. Further interpretation and discussion of the results is presented in Chapter Eight.

The next chapter will show the results of the QI cycles, which monitored the changes in asthma care over a 5 year period from January 2007 to December 2011.

## CHAPTER FIVE

### QUALITY IMPROVEMENT CYCLES RESULTS

*"Research is finding out what is the right thing to do; audit is seeing that the right thing is being done."*

**Richard Smith (1990)**

#### 5.1 INTRODUCTION

The results of the quality improvement (QI) cycles of asthma care covering the period 01 January 2007 to 31 December 2011 are presented in this chapter. The QI cycles results helped to monitor any changes in the quality of asthma care.

#### 5.2 CRITERIA AUDITED

Data was captured on a computer software programme developed by the Health Information Systems Project (HISP) and looked at basic structure, process and outcome criteria (ANNEXURE C). Table 5.1 shows the main criteria, which were audited annually from 2007 to 2011 excluding the year 2009. As stated earlier, during 2009 workshops on the asthma guideline and the QI cycles were conducted in all 6 municipal districts of the MDHS. Thus in all the figures and tables presented below, the QI cycles of the period 2007 to 2008 is herein referred to as "before" and the period 2010 to 2011 as "after".

**Table 5.1:** Main criteria audited

<p><b>Structural criteria</b></p> <p>Consulting rooms where asthma patients were consulted.</p> <ul style="list-style-type: none"> <li>% of consulting rooms with a functional Peak Expiratory Flow Rate (PEFR) meter</li> <li>% of consulting rooms with a published asthma guideline</li> <li>% of consulting rooms with a spacer for demonstration and education</li> <li>% of consulting rooms with placebo inhalers for demonstration and education</li> <li>% of consulting rooms with printed patient educational material</li> </ul> <p>Pharmacy stock on day of audit.</p> <ul style="list-style-type: none"> <li>% of medication in stock on day of audit</li> <li>% of medication in stock over previous month</li> </ul> <p><b>Process criteria</b></p> <p>Whether the patient's level of control had been assessed during the visit.</p> <p>Whether the patient received an Asthma Self-Management Plan (ASMP).</p>
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Whether the patient's PEFR was measured during the visit.

Whether the patient's inhaler/ spacer technique had been assessed during the visit.

Whether the smoking status was recorded in the past year.

Whether the ratio of controller to reliever MDIs prescribed improved.

**Outcome criteria**

The number of emergency visits for asthma (defined as an unscheduled visit for an exacerbation of asthma) per annum.

Whether the patient had been hospitalised for asthma in the past year.

## **5.3 RESULTS**

### **5.3.1 General**

A cohort of 494 records were audited per year over a period of 5 years 2007-2011 (excluding 2009) and covered a total of 1976 asthma visits at 22 CHCs. Action research was conducted at 5 of these 22 CHCs and focused on how to improve the implementation of the asthma guideline in practice (See Chapter 7). The main audit findings of the structure, process and outcome criteria are presented below. Finally the five CHCs where action research occurred (AR CHCs) are compared to the 17 CHCs where no action research occurred (non-AR CHCs).

### **5.3.2 Structure criteria**

Except for the pharmacy stock, which was always 100% present, a statistically significant improvement was demonstrated in all the other structural criteria (Table 5.2).

### 5.3.3 Process criteria

The main process and outcome audit criteria assessed over the period from January 2007 to 2011 (excluding 2009) are presented in Table 5.3.

**Table 5.2:** A comparison of the structural criteria 2007-2011

<b>Structure criteria</b>	<b>2007</b>	<b>2008</b>	<b>2010</b>	<b>2011</b>	<b>p value</b>
<b>Rooms where asthma patients were consulted</b>					
% of consulting rooms with a published asthma guideline.	45%	57%	94%	89%	P<0.001
% of consulting rooms with a functional PEFR meter.	52%	59%	66%	73%	P<0.001
% of consulting rooms with a spacer for demonstration and education.	38%	53%	74%	77%	P<0.001
% of consulting rooms with placebo inhalers for demonstration and education.	32%	48%	70%	76%	P<0.001
% of consulting rooms with printed patient education material.	46%	53%	91%	92%	p<0.001
<b>Pharmacy stock on day of audit</b>					
% of medication in stock on day of audit	100%	100%	100%	100%	NS
% of medication in stock over previous month.	100%	100%	100%	100%	NS

Table 5.3 shows the percentage of patients where the level of control was assessed at every asthma visit. This means that during the period 2007 to 2008

(before) the proportion of visits to all CHCs where the level of control was assessed every time was as low as 1%. Following the asthma workshops in 2009, a statistically significant increase to 9% ( $p < 0.01$ ) occurred during the period 2010 to 2011 (after) (Table 5.3). Although this improvement remains very small, it still shows that a statistically significant increase in the assessment of the level of control has occurred since 2007.

Assessing control at every visit is quite a high standard and Table 5.3 shows that the percentage of all visits where the level of control was recorded increased from 4% (before) to 22% (after) of all records examined ( $p < 0.001$ ) over the same period.

**Table 5.3:** A comparison of the process criteria from before (2007-2008) to after (2010-2011)

<b>Process criteria</b>	<b>Before</b>	<b>After</b>	<b>p value</b>
Whether the patient's level of control was assessed at every last visit	1%	9%	P=0.001
Whether the patient's level of control had been assessed during the visit.	4%	22%	P<0.001
Whether the patient received an ASMP.	0%	0%	NS
Whether the patient's PEFR was measured at every visit	9%	22%	P<0.001
Whether the patient's PEFR was measured during the last visit.	31%	45%	P<0.001
Whether the patient's inhaler/ spacer technique had been assessed during the last visit.	12%	36%	P<0.001
Whether the smoking status was recorded in the past year.	33%	74%	P<0.001
Number of Controller MDI refills received per annum.	7.7	11.5	P<0.001
Number of Reliever MDI refills received per annum.	8.6	11.7	P<0.001

Table 5.3 shows a general overall improvement in PEFR recording from 31% of all visits (before) to 45% (after) ( $p < 0.001$ ). In addition, Figure 5.2 shows that only 9% of patients showed a recording of peak flow rate at every visit during 2007 to 2008 (before) compared to 22% during 2010 to 2011 (after). Once again this improvement is statistically significant ( $p < 0.001$ ). It is interesting to



note that during the same period, the assessment of the inhaler technique (Table 5.3), which is crucial to successful management of asthmatics, improved from 12% (before) to 36% (after) of all visits examined ( $p < 0.001$ ). Smoking status documentation also improved from 33% (before) to 74% (after) ( $p < 0.001$ ) as shown in Table 5.3. The use of asthma self-management plans (ASMPs) was non-existent and this criteria was not affected by the QI process. As will be seen it was addressed further by the CIG.

It is interesting to note that both the prescription of controller and reliever MDIs increased significantly (Table 5.3). This would imply that either patients did not receive sufficient medication before or that dispensing became more regular. Usually in a situation in which controllers are prescribed more, the need for reliever medication would decrease. However in this system the medication may well be dispensed regardless of need, if it has been prescribed. The overall increase in controller medication should however, if it is used correctly, lead to improvement in control.

#### 5.3.4 Outcome criteria

The number of emergency visits and hospitalisations for acute asthma were the main outcome criteria and the results are shown in Table 5.4.

**Table 5.4:** A comparison of the outcome criteria from before (2007-2008) to after (2010-2011)

Outcome criteria	Before	After	p value
The number of emergency visits for asthma.	14%	23%	P= 0.047
Whether the patient had been hospitalised for asthma in the past year.	2%	2%	P=0.369

##### 5.3.4.1 Emergency visits

It is interesting to note that the number of emergency visits (Figure 5.3) significantly increased, which could imply worsening control despite the improved quality of care shown in the structural and process criteria. This paradoxical situation is difficult to interpret, but might also imply greater awareness of risk among patients and practitioners and improved access to care although there is no evidence to support or reject such a hypothesis. Greater

attention being given to the patients with asthma might have shifted their expectations and understanding of acceptable control and reduced the threshold for them to seek additional care during exacerbations.

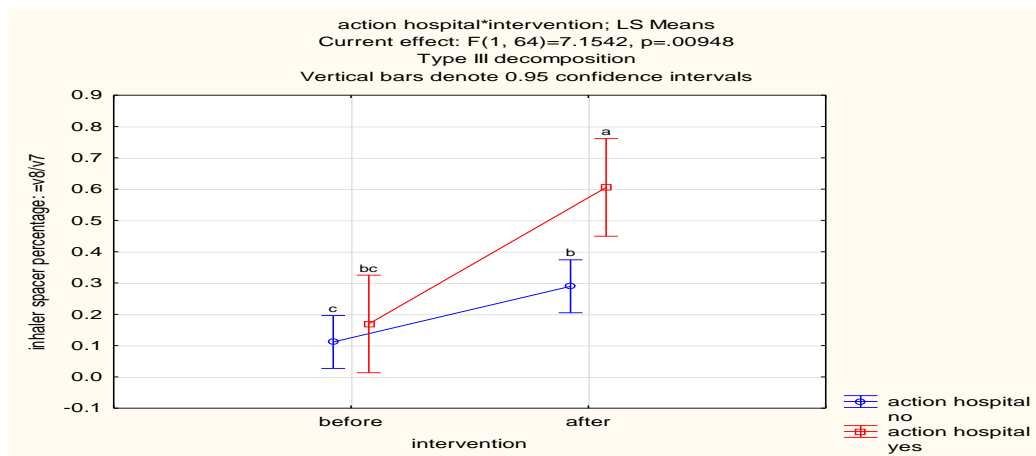
#### **5.3.4.2 Hospitalisations**

There was no statistically significant difference between the number of hospitalisations for asthmatic patients (Figure 5.4), which remained the same from 2% (before) to 2% (after) ( $p=0.369$ ) over the audit period.

#### **5.3.5 Action research sites vs. non-action research sites**

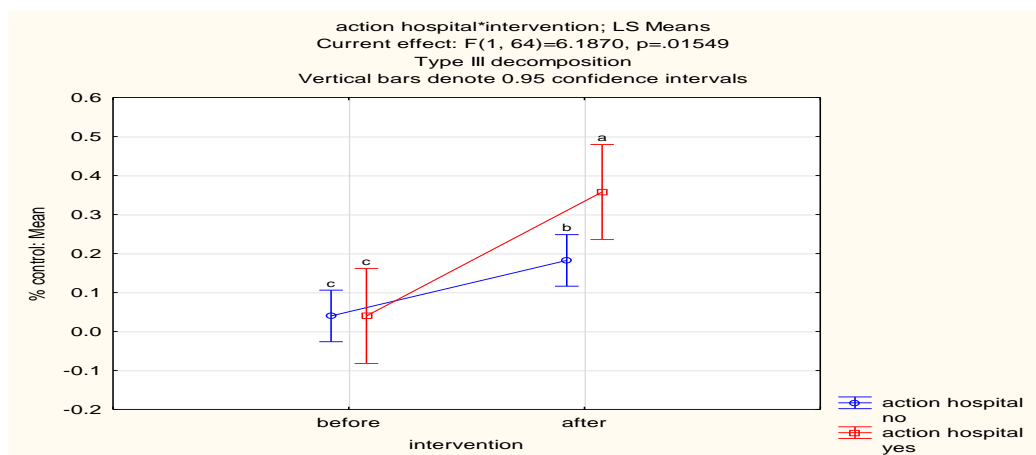
Tables 5.5 and 5.6 compare the process and outcome criteria between the action research sites and the non-action research sites. The only statistically significant difference between the two groups was the assessment of the inhaler technique and the assessment of control. It is thus interesting to note that overall the assessment of the inhaler technique (Figure 5.5) improved statistically significantly more at the action research sites compared to the non-action research sites from before (16% vs. 11%) to after (60% vs. 28%) ( $p=0.009$ ).

**Figure 5.5:** A comparison of the action research sites with the non-action research sites with regard to overall assessment of the inhaler technique of asthma patients before and after training workshops.



In addition the overall percentage of visits where control was assessed (Figure 5.6) improved statistically significantly more at the action research sites compared to the non-action research sites from before (4% vs. 4%) to after (36% vs. 18%) ( $p= 0.016$ ), even though the absolute percentage remained low. The QI cycle process however did not overlap with the whole PAR process and therefore cannot provide results for after the full PAR process when larger differences could have been demonstrated.

**Figure 5.6:** A comparison of the action research sites with the non-action research sites with regard to overall assessment of the level of control of asthma patients before and after training workshops.



All of the other process and outcome criteria did not show statistically significant differences between the action research and non-action research sites (Table 5.5

and Table 5.6) even though the percentage difference in all process criteria were higher at the action research sites compared to the non-action research sites.

**Table 5.5:** A comparison of the action research sites with the non-action research sites with regard to process criteria before and after training workshops.

Process criteria	Action Research Sites			Non Action Research Sites			P value
	Before (2007- 2008)	After (2010- 2011)	change	Before (2007- 2008)	After (2010- 2011)	change	
Whether the patient's level of control had been assessed during the visit.	4%	36%	32%	4%	18%	14%	P=0.016
Whether the patient's PEFR was measured during the visit.	27%	43%	16%	32%	45%	13%	P=0.753
Whether the patient's inhaler/ spacer technique had been assessed during the visit.	16%	60%	44%	11%	28%	17%	P=0.009
Whether the smoking status was recorded in the past year.	39%	82%	43%	32%	72%	40%	P=0.867
Number of Controller MDI refills received per annum.	7.5	10.9	3.4	7.8	11.7	3.9	P=0.534
Number of Reliever MDI refills received per annum.	8.2	11.1	2.9	8.7	11.9	3.2	P=0.456

**Table 5.6:** A comparison of the action research sites with the non-action research sites with regard to outcome criteria before and after training workshops.

Outcome criteria	Action Research Sites			Non Action Research Sites			P value
	Before (2007-2008)	After (2010-2011)	% change	Before (2007-2008)	After (2010-2011)	% change	
Emergency visits for asthma.	43%	47%	4%	6%	16%	10%	P=0.51 3
Hospitalisations for asthma in the past year.	2%	1%	1%	3%	4%	1%	P=0.52 7

Overall performance levels were set each year for the structure, process and outcome criteria in order to create target standards. Even though statistically significant improvements occurred in structural criteria over the 5 year period only the percentage of consulting rooms with a published asthma guideline (2010 to-2011); percentage of consulting rooms with printed patient education material (2010 to 2011); percentage of medication in stock on day of audit (2007 to 2011) and the percentage of medication in stock over previous month (2007 to 2011) reached the target standards set. With regard to process criteria statistically significant improvements occurred in the majority of criteria assessed but none reached the target performance levels set annually.

#### 5.4 CONCLUSION

This chapter showed the results of the QI cycles which were conducted over a period of 5 years from 2007 to 2011, excluding 2009. A cohort of 494 records were audited per year over a period of 5 years 2007-2011 and covered a total of 1976 asthma visits at 22 CHCs .

The baseline quality of asthma control with specific reference to the assessment of the patient's level of control, measuring the patient's PEFr, assessing the patient's inhaler/ spacer technique, recording the smoking status, issuing an ASMP and the adequate prescription of controller and reliever MDI refills during

visits was poor. It is disturbing to note that at baseline the proportion of visits where the level of control was assessed every time was as low as 1%.

During the quality improvement process a statistically significant improvement in five out of the seven structural criteria was seen (the remaining two were already at 100% at baseline). In addition a significant improvement was seen in seven out of eight process criteria. Assessment of control, use of the PEFR, education on inhaler technique, recording of smoking status and dispensing of medication all improved.

Despite the improvement in structural and process criteria there was no corresponding improvement in the outcome criteria and in fact the utilization of facilities for emergency visits significantly increased.

In comparing the criteria between the action research sites and the non-action research sites only the assessment of the inhaler technique and the level of control were statistically significantly different. The auditing period however did not overlap with the whole action research process.

Although clear cause-and-effect reasoning cannot be inferred, overall statistically and clinically significant improvements in the quality of care occurred in conjunction with asthma guideline implementation.

The next chapter will show the results of the qualitative research, which deals with the views of family physicians in academic, public and private practice regarding EBP and asthma guideline implementation.

## CHAPTER SIX

### QUALITATIVE RESEARCH RESULTS

*"I think **the first thing is awareness**. I am sometimes startled at how few practitioners are aware of, or understand what evidence-based medicine is, and guidelines are meant to achieve. So I think there is a level of awareness that has to be created." (FP2)*

*"... so I think if it is **home-grown or home-tempered**, it will be better." (FP3)*

*"So for me it's about having that comfort, **a lack of dissonance**, the freedom of anxiety in prescribing a treatment plan, prescribing a medication or a system of treatment for that patient, knowing that it comes with tangible proof that it's effective and that it's working." (FP1)*

*"I think that's an innate challenge in being human. You want to rely on what's familiar, and **it's always challenging to change** one's own lifestyle and behaviours, even if it's part of your professional work. People like to stick to what they know and what they're comfortable with" (FP4)*

#### 6.1 INTRODUCTION

This chapter presents the results of the qualitative component of the research. These results can be triangulated with the findings of the cross-sectional survey and audit, described in Chapters Four and Five respectively, in order to enhance their validity and reliability. The methods are described fully in Chapter Three, but in summary a total of 27 Family Physicians were interviewed as follows:

- 10 Academic Family Physicians (attached to University departments of Family Medicine and Primary Care throughout South Africa).
- 10 Public sector Family Physicians (employed at CHCs in the MDHS of the Cape Town metropole).
- 7 Private sector Family Physicians (in private practice in the Cape Town metropole).

The main areas explored during the interviews were: the relevance and quality of evidence in relation to primary care with its inherent complexity and uncertainty; their views of the barriers and enabling factors to guideline implementation; their views on how best to implement guidelines; the value of anecdotal experience in primary care practice and the role of the patient in clinical decision making.

## **6.2 RESULTS**

A number of themes (Appendices 6.1 and 6.2 present the thematic indices) were charted and interpreted and the qualitative findings presented in this chapter also contributed to a conceptual framework that is presented and further discussed in Chapter Eight.

### **6.2.1 Evidence-quality and relevance**

FPs felt that clinical research evidence forms an important component of decision making in clinical practice. However evidence is often limited in its usefulness and therefore in its ability to inform practice. For evidence to be useful in primary care, it has to be relevant to the primary care context. Even rigorously prepared quality evidence, derived from contexts other than primary care where the morbidity profile and spectrum of patient illnesses differ, may not be directly applicable to primary care and can be limited in its ability to influence practice. On the other hand badly conducted research from relevant and appropriate settings may be of such poor quality that the validity and trustworthiness could also be compromised.

To be patient centred, and deal with patient problems holistically, requires an awareness of all dimensions of the illness experience. For example, addressing patient values, expectations, beliefs and concerns in addition to considerations of evidence and cost effectiveness, forms an integral part of evidence-based decision making. It is clear that FPs recognise the limitations of EBM in addressing the problems with which patients present and they recognise the need for different forms of research evidence to inform their practice:

*"Evidence-based medicine, because we're using a scientific method there, it's mainly looking at the biomedical side of issues. It doesn't delve*



*much into the psychosocial, cultural, political, administrative issues involved in patient care. So in other words it's limited." (FP3)*

*"I think that from that point of view, evidence-based health care does not actually do justice to the realities of family practice within the primary care context." (FP5)*

#### **6.2.1.1 The biomedical emphasis of EBM is overemphasised**

Some FPs felt strongly that the biomedical perspectives and the use of the RCT as a means of addressing questions in public health and primary care were limited and at times even overemphasised:

*"If you look at it in the context of family medicine, the underlying principle of family medicine is being patient-centred using a bio-psychosocial model, whereas if you look at evidence-based medicine, and I could be wrong here, and this is just my perception of it, is that it tends to follow more a biomedical perspective and is more sort of doctor-centred, whereas we know family medicine, or family practice, which is influenced more by personal experiences, more subjective, anecdotal issues that come through." (FP6)*

*"If you look at evidence-based medicine, the scientific method, it's got its limitations because it is unable; the scientific method is unable to explain the psychosocial and spiritual aspects of patients. It can't explain all of it. It can explain a lot of the biomedical stuff, but it can't explain why, when a patient believes in a certain thing, this patient actually got better." (FP7)*

#### **6.2.1.2 Evidence needs to be relevant to the context of primary care.**

Uncertainty is common in the context of primary care where patients present with a wide range of symptoms and signs, which are still undifferentiated. Evidence to assist primary care practitioners in dealing with uncertainty and more complex presentations is of course not readily available. FPs felt that evidence contained in guideline recommendations, needs to be relevant to the context of care. They further recognised a need for such evidence to deal with

the uncertainties and undifferentiated nature of encounters at the primary health care level and called for context relevant research. The relevance of evidence in the primary care context they felt, depends on its usefulness when conditions of an undifferentiated nature are encountered and whenever patients with multi-morbidity are seen:

*"In primary health care, which is my home, we are riddled with a lot of uncertainties, and that is the nature of our discipline. So, it is particularly important to be able to access evidence for the kind of problems that we encounter. It is critical for us that we have some evidence for what we do, especially because most of what we see doesn't really have state of the art evidence, but we always do our best to access whatever evidence there is around us. In fact, most research is not performed in primary care for most of the conditions that we manage, and it would actually be much, much better if primary care practitioners would conduct more research for answering questions that are relevant to primary care practice." (FP1)*

*"I think best available evidence should be the evidence that is available and proved in the context where you work, not anywhere else. Sometimes best evidence is not scientifically proven through all the methods, but in your specific situation, you used probably not very scientific methods to prove that it is best for you, but there are some means that you can prove that it is best." (FP8)*

*"In best practice, Well, I think for me, the best evidence would be evidence that comes from research done in the context where I work, and not necessarily done in a setting that's not relevant to where I work. The best practice would be then from research from practitioners that work in that situation and do research in that setting. I think what I do find problematic is when guidelines are drawn up in settings in a context that's not relevant for me. So if drugs are prescribed that I can't use, or procedures or investigations that I don't have available to me, like MRI scans. So I think that's the one thing that guideline evidence must be relevant to my context." (FP9)*

## **6.2.2 Guideline development**

FPs felt that relevant research evidence that is of good quality can be useful in the process of guideline development for local use. This process is of fundamental importance and needs to be conducted by an inclusive group of developers, which includes representatives of PHC and patients and not only by so-called experts. All members of such an inclusive group have expertise; even the views of patients who are the experiential experts of their illnesses and disease should be incorporated.

### **6.2.2.1 The patient's experience and knowledge must be recognised as an integral part of guideline development.**

Respondents clearly supported the important role patients play in guideline development. The role of patients in guideline development is of course well recognised. FPs felt that the experiential expertise and tacit knowledge that patients have should be utilised and that patients should be considered as active partners in improving the holistic understanding of patient care:

*"The obvious and the most logical approach would be to take the patient with you as a co-passenger on the journey rather than to stand in front of the patient and to pretend to be leading from the front, and where the patient merely follows you and where the outcome can be any one of several outcomes." (FP10)*

*"You have used the word - the word there is 'active partner'. I mean we've got to move from the authoritarian position that we take as doctors where we are the custodians of all knowledge and skills, to the stage where we are saying we are partners." (FP11)*

### **6.2.2.2 Guideline development needs to be all inclusive.**

Guideline development is undertaken predominantly by experts in the relevant field of care. Respondents felt that primary care practitioners, who are more familiar with their context of care, should become more involved in providing the relevant research required to address the gaps in their knowledge and assist in the formal development of the guideline. However, for primary care practitioners

to become directly involved in research activity would be extremely challenging given the current workload they have to deal with. The lack of evidence from the primary care context results in important perspectives in the holistic understanding of patients being missed and not considered:

*"Although in my experience in our country, I have found that most guidelines are developed by subspecialists without involvement of primary care providers. That for me creates an impression that the specialists, or subspecialists, are relied upon to give direction to primary care providers. Not that I have a problem with that, but I feel that primary care providers must also be involved in the drawing up of these guidelines. But then that also means that primary health care providers must also be involved in research activities, because to be able to say to people this is what we experience in primary health care, one should be doing research in one's environment. The subspecialists don't really know the environment in primary health care, and I'm sure they will be very happy if primary health care were to co-opt and involve them in studies that they are conducting." (FP2)*

FPs felt that qualitative research in particular is underutilised as this form of research can provide unique insight into important areas such as how to improve adherence of patients to medication, or how to get primary care practitioners to change their clinical practice:

*"I think we would actually become much more empowered, and much, much richer if those of us in primary health care were also to conduct research in primary health care, and then when it comes to the development of guidelines on asthma, we come on board and we sit together with those guys and say these are some of the works that we have done in our context of care. We are very good at doing qualitative work. We bring it on board and say these are the reasons why our patients are struggling with adherence. These are the reasons why our patients are not able to keep up with lifestyle modifications. In that way, that guideline will come out much, much richer and much, much more relevant to our context." (FP3)*

Respondents felt that there is a place for a wide range of stakeholders to become involved in the process of guideline development, and even the health care organisation, which is responsible for policy development and funding, should be closely involved:

*"In an ideal world I think it would be nicer for the organisation or department, or the system, to actually develop it with the clinicians as stakeholders. It is always difficult to impose a guideline onto a group of people." (FP12)*

*"I think that my biggest worry with guidelines in our country is if you look at who is involved, you do not find much by way of primary care representation. I'm not even talking about patients, I'm not even talking about interest groups, I'm not even talking about government representation, because all those stakeholders must be part of a guideline development process, because it's not just about the drugs. I mean there are other issues involved, issues of policy, issues of costing, and the like." (FP13)*

### **6.2.2.3 Universities must provide academic input in the preparation of evidence and play a role in the provision of on-going education to care providers.**

FPs felt that there is a tension between the actual evidence, which needs to be collated and summarised at a national level, and the process of adaptation for local use in primary care. Unfortunately the local level is often not able to, nor should it have to source the evidence globally. This has to happen at a higher level. The academic centres and universities are perhaps more suitably placed to provide this function. Thus the main task of reviewing research, research synthesis and the critical appraisal of the evidence, which inform guidelines, should perhaps not be left with the busy and already overburdened primary care practitioner. FPs recognised that the social accountability and responsibility of universities and academic departments regarding the provision of quality evidence in the form of evidence-based guidelines in health care be extended to include this function. They felt that universities could deliver on-going

educational input based on the guidelines to primary care providers and support evidence-based implementation strategies for knowledge translation:

*"So, my personal feeling is even national protocol or national guideline, once it is made, it should be nice for especially the academic departments to take it up but look at the evidence on which this was made..."(FP12)*

#### **6.2.2.4 Medical Aid schemes must provide evidence of cost effectiveness.**

Respondents in private practice highlighted the need for private medical aid schemes to become involved and work with universities in an attempt to deal with barriers such as cost constraints and reduce the wide variations and many different, and often confusing forms of guidelines. This could assist with ensuring more uniformity and standardisation of practice:

*"I think if we can get guidelines that are set by academics in consultation with medical aids, I think that would be a start because then they could marry the evidence as well as the financial constraints that medical aids seem to find themselves in. So that would work well in private practice, and I think perhaps a different model, or a different set of guidelines should be set for patients who can't afford medical aid, or who are not on medical aid. In other words, sort of state-based patients, which we would call private patients in our practice." (FP13)*

#### **6.2.2.5 Specific guideline related factors must be addressed.**

Once the guideline content has been finalised the preparation and final layout is important to facilitate the usability of the guidelines by the target audience.

##### **6.2.2.5.1 User-friendliness.**

Respondents supported the need for guidelines to be concise and easy to use:

*"You can't write guidelines that makes provision for every individual variety. Then the guidelines will be thick books, and you want the guideline to be short and simple and generic, that it can be applied in a*

*lot of different circumstances to make it easy, because if a guideline is also too longwinded, people won't read it." (FP14)*

#### **6.2.2.5.2 Easy access.**

Respondents further supported the need for primary care practitioners to have easy access to the guideline or at least know where to find it quickly:

*"So, there must be easy access to the guidelines, and also appropriate marketing of the guidelines. If there is easy access, there may be better utilisation. Now, for that purpose, your practitioners who are going to be using guidelines need to then develop the skill to access material easily and quickly." (FP5)*

#### **6.2.2.5.3 Uniformity and structure is important.**

Too many and different guidelines on the same topic may result in confusing messages, misunderstanding and further delay their implementation.

Respondents felt that there should be a standard structured way of presenting the guideline recommendations and emphasised the role FPs should play in ensuring appropriate and relevant guidelines are selected from a wide variety of sources:

*"In our setting is that we don't have a structured way of the guidelines being presented. There are guidelines coming from the Department of Health and from other sources, like the PALS PLUS. There are the national guidelines which come out for the SAMJ, for asthmatics. So, we have various sources of guidelines, and then our referral hospital, which is Paarl Hospital, also have their own set of local guidelines, from which they want us to prescribe. So, there's not really uniformity or a structured way that we can decide this is the one we should stick to. In our setting, the Department of Health's guidelines probably carry more weight, but then again, our biggest barrier is the training of that implementation, of implementing those guidelines. I think the role of the family physician is very important here." (FP15)*

### **6.2.3 Guideline dissemination**

The processes of dissemination and implementation are inter-related and should be handled as such. Respondents felt that great care must be taken when guidelines are disseminated in order to ensure that guidelines actually reach the target audience and are at least read. At a local level, FPs should lead by example in showing how the evidence from the guideline can be implemented in clinical decision making and audited.

#### **6.2.3.1 Dissemination is not just sending it.**

The guideline should not just merely be posted to the recipient. More should be done for dissemination to be considered successful. Respondents felt that the dissemination process should stress the importance of the guideline, improve the confidence of recipients to use it and assist with the understanding of it. Such essential motivational steps improve readiness to use the guideline in practice and are crucial in the overall success of the dissemination process:

*"What I've learnt from experience is to set the example, because just sending them out will make the guidelines end up pasted on a wall, or you will find the guidelines nicely displayed on a shelf, or you will open a drawer, and low and behold, there it's lying." (FP16)*

*"Well, how to do it, is not just to circulate it, but it needs to be discussed at facility level. So there needs to be someone who knows what goes on in the guideline and to either have been trained somewhere or to have read it properly, and then at facility level, it needs to be discussed by the clinicians. And then it helps if one has visual reminders in the room, or the manual in the room or whatever, that one can refer to when you're not sure what to do with a patient." (FP10)*

Some FPs questioned who had the final responsibility for efficient and successful dissemination and implementation of guidelines:

*"..., but no effort is actually being made from, I don't know if it's the responsibility of the management or those who actually develop the guidelines to come through and make sure that there's on-going training,*



*and ensuring that the people that you want to implement the guidelines understand and have the necessary knowledge to implement them properly.” (FP17)*

### **6.2.3.2 Practitioner awareness is paramount.**

Dissemination should aim to at least achieve awareness of the guideline. Practitioners’ awareness and the awareness of the relevant staff within the broader organisation are of fundamental importance before it can be implemented:

*“I think the first thing is awareness. I am sometimes startled at how few practitioners are aware of, or understand what evidence-based medicine is, and guidelines are meant to achieve. So I think there is a level of awareness that has to be created.” (FP2)*

*“I think that awareness within ourselves has to be there, and then the comfort from ourselves that we are ultimately not solely responsible for the health care of the patient, that the patients are also taking heed for their health care themselves.” (FP11)*

### **6.2.4 Implementation is a complex process.**

#### **6.2.4.1 Adapt to local context (contextualise), overcome local barriers and lead by example.**

Refining the guideline and adapting it for local use is fundamental in the implementation process and an important first step in developing ownership. Respondents felt that different levels of contextualisation should occur, starting with the different types of practitioners (CNPs and doctors) and moving to include the CHC, the sub-district and the district (MDHS). Such adaptation needs to start at a functional unit (be it a CHC or even a single practitioner) that is sufficiently small to enable effective ownership and contextualisation. The change process should start with the individual person and proceed to involve teams within the practice. Readiness to adopt the guideline will differ from practitioner to practitioner:

*"The main thing about guidelines of course is that they must also be contextualised. There has to be that room for contextualisation of guidelines. That means that in a particular practice environment, the practitioners in that practice should be allowed to look at the guideline and so to speak, adapt it to their environment. But when they do that, they must do it as a team and they must explain why they are adapting the guideline, and then it must be accepted practice for that facility, and everybody must adhere to that modified guideline. It shouldn't be an individual's prerogative to modify guidelines as they go." (FP19)*

*"I think the best way to implement guidelines would be I think firstly one needs to do a situational analysis to find out what's happening on the ground, so a kind of audit of finding out how people on the ground, whether they are doctors or nurses, how they're currently making decisions on patient care. And then also just finding out what their needs are, and then actually implementing something that's based on their needs and based on the context, and then having a process to re-evaluate whether those guidelines are taken up, and whether they are actually meeting the needs of the clinicians." (FP20)*

*"So the way to do it is to get the guideline, give some in-service training, show by example how it's used, implement it yourself so that people can see that you are doing it and you believe in it, and then also implement an audit system to check whether it improves the outcomes, certain specific outcomes." (FP16)*

It is important to keep checking that you are on the right track, that particular health outcomes are being met and that there is resonance between the needs of the primary care practitioners and that of their patients. Some FPs encouraged an iterative process of checking whether the guideline has been of value to both practitioners and the patients they serve and even aligned with their values (morally driven practice):

*"So it's not just what happens in terms of the evidence, but also processes of care. So what I understand by the statement is that in order*

*to actually implement evidence-based practice, it needs to be contextualised to the actual setting and the actual means, and it needs to speak to the resources that are available, both in terms of human resources and in terms of available resources in terms of investigations and in terms of medications that may be available. It's very important to not just have something in writing, but something that can actually practically speak to the needs of communities and patients. So for me it's an iterative process of implementing and actually checking to see whether it's been of practical use and value. Basically what I'm saying is you can have hard core evidence that is based on a very rigorous scientific approach, but it needs to be real-world, and it needs to speak to available resources, and definitely also values, values of the practitioner and preferences and values of the patients as well." (FP21)*

Time constraints, the lack of financial resources and how the system is organised, were identified as major barriers to guideline implementation in the already overburdened primary care setting. This may certainly impact on the way the patients experience the care provided:

*"Yes, it is so. I think there are various reasons for that. From the simplest being, that sometimes what is being proposed in the guideline takes more time, and often in government facilities you are pressed for time. So if you would make it relevant to asthma, the guideline says that you must check inhaler techniques, you must check the person's understanding of the use of medication, and the junior medical officer, instead of following those steps, would just write up the medication to have a quick consultation." (FP17)*

#### **6.2.4.2 There must be local ownership of the guideline.**

Respondents were clear in considering local contextualisation and ownership as important for successful implementation and that research evidence on the local contextual issues which directly pertain to the primary care context, could improve such ownership:

*"The onus of this guideline is everybody who is going to be involved must own it. The patients, the clinicians, all the staff and the coordinators must own it." (FP7)*

*"So I think it's ownership, it's in the development of them. One thing we had is we had the JNC6 guidelines and seven's and all that lot, which are all very nice but they're very distant from us. There was a South African guideline, it was more home-baked, and therefore we felt more applicable. It took into account the epidemiological differences and the racial differences and so on. So I think if it is home-grown or home-tempered, it will be better." (FP3)*

Some FPs felt that all local practitioners should be part of its adaptation and preparation, be clear of the purpose of the guideline and feel part of the process:

*"Again, it comes back to ownership, because if practitioners in a primary health care environment feel that they are part of the guideline, the product, when they see these guidelines they appreciate them as we also contributed, our colleagues contribute to the development of these guidelines, then one is able to then even come up with mechanisms within practice to assess one's self and one's practice with respect to adherence to those guidelines." (FP19)*

Respondents felt that the contrary, however, also holds true - that lack of ownership and collaboration can potentially negatively influence implementation. This would occur when those promoting a guideline are not perceived as part of the team or as having their own individual and ulterior motives:

*"The other problem is this lack of ownership, because what happens is that we work in silos in our country. You find that the managers are from another background. They are not medically trained, or they are not trained in nursing. Maybe the manager might just be trained in accounting or economics, so all they are concerned about is cost saving, or making sure that resources are allocated in a particular way." (FP22)*

*"So people must not see them as an impediment, and if people find that they have got good reason to not want to apply a guideline in a particular situation, they must critique it and go to the source, and say to the guys who develop the guideline: 'this is our input', so that when they come up with a new addition, they include our input. So they must go to the research, back to the research bank and find evidence and give us an answer, and if there is no answer, they must give us a consensus opinion. Let us all agree on what we will do." (FP23)*

#### **6.2.4.3 There must be consensus of agreement on its usefulness.**

Respondents felt that practitioners must feel confident about the usefulness of their guideline. This means having a sense of cognitive resonance, the feeling of a positive emotional response and confidence that what is being recommended for patients is useful and effective.

*"So for me it's about having that comfort, a lack of dissonance, the freedom of anxiety in prescribing a treatment plan, prescribing a medication or a system of treatment for that patient, knowing that it comes with tangible proof that it's effective and that it's working." (FP1)*

*"I would think that there needs to be consensus first, in any system, amongst the different stakeholders. If one works with general practitioners who are independent practitioners and who see the patients in an independent practice, all these generalists need to come together, the guideline needs to be revisited and reviewed and be adapted to meet their needs, and to be standardised in such a way that there is buy-in from the bottom upwards." (FP10)*

*"It does not have to be 100%, but it could be a sufficient majority to indicate some degree of consensus. Patients then need to be processed in a reasonable, appropriate manner that would come as close as possible to standardisation." (FP24)*

Some FPs stressed the importance of all practitioner groups within the organisation being consistent in following the same guidelines. Such consistency

may be difficult to achieve especially as the development paths of CNPs and doctors are separate. In addition tension exists between standardisation of care on the one hand and patient's individual requirements on the other:

*"So there is consensus in that the guideline having been adapted and is contextualised to their practices, the guideline is now standardised, and having been standardised, it needs to be applied at a standardised level. The second thing would be if one works in an institution, then the different stakeholders need to come together because the process of applying guidelines in an institution where patients are cared for, not only by the first contact doctor, there are a number of stakeholders that interact with patients at different levels in the processing of that patient, and one would think all of them need to come together, and there needs to be a certain degree of consensus." (FP12)*

#### **6.2.4.4 Motivation and training must be central, prominent and on-going in guideline implementation.**

On-going educational sessions and workshops on specific areas and recommendations in the guideline were emphasised by respondents as a vital component to their successful implementation:

*"I think it's the education part of it. I think it's the training of people to use the guidelines properly. As I said earlier on, guidelines are often just sent via an email, or the hardcopy gets sent to facilities to say these are now your asthma guidelines." (FP17)*

Respondents felt that formal training enhances confidence or self-efficacy and improves the chances of the guideline being used in practice and more importantly that practitioners will continue to adhere to it. On-going maintenance of such adherence is important to prevent relapse:

*"Now, one thing about guidelines, I find if I have had some training, some form of a workshop in the line of a guideline, my chances of using that guideline is much, much better, than just by a guideline being*

*passed down from the Department of Health and it ends up in my pigeonhole.” (FP15)*

*“I find if I have some on-going form of formal training in it, there is a bigger chance of the guideline being used, especially if the rationale of the steps are explained, why certain things, why inhalant steroids are of value, etc.” (FP4)*

Respondents felt that training should be provided in the form of workshops for all NCDs and should not be once off, but on-going and more importantly, interactive and involving all staff members who are directly involved with patients.

*“They need to hopefully be motivated in a positive way where they see it in the true spirit of quality improvement and it’s a team process and it’s for the greater good of their community that they serve. I think one cannot make it just a clinical process. There is a bit of human emotion and human motivation behind it, and there should also be a form of feedback. So I think once they buy-in, they should also have say in the process of implementation, and also be involved with the feedback of each step of implementation so that they know how their own behaviour has hopefully benefitted the implementation process.” (FP4)*

*“I think that’s a good question. It links with the previous one, that people, to change their behaviour, be it prescription behaviour or be it clinical behaviour, clinicians and all health care workers need to buy into the process. They need to be motivated. There must be an internal, and probably an external motivation process as well, where they will see the benefit of change. There must be a positive form of motivation, not a negative punitive process where, that if the guideline is not implemented, that they may have disciplinary reaction against them, or even financial salaries being deducted or something like that.” (FP27)*

If there is a collaborative nature to the training as well as recognition of practitioner’s choice and control over their management of patients, this is more

likely to lead to meaningful change. Training is seen across the educational spectrum as necessary to inform people about new knowledge or information, but also as a collaborative process of interacting with new information and deciding what is applicable (i.e. information transfer vs. information exchange). FPs seemed to stress the importance of on-going education to encourage adherence to the guideline and prevent relapse. Motivational interviewers would suggest that information exchange is more likely to lead to behaviour change as the information is owned and personalised:

*"I think the best would be to have workshops when a new guideline is developed in the form of CPD sessions. In terms of training people to utilise the guidelines, and also in terms of training people to access the guidelines, and also to train people in looking at the benefit of the guideline in terms of the patient's health, individual patient's health, in terms of the cost efficacy for the system, and in terms of the long term benefits for the patient and the practice." (FP5)*

*"So, I think the same should happen for asthma and chronic diseases in general, and I think there should be more integration in terms of management of conditions, and for the staff to receive the necessary training and on-going training. Training should not just be a one-off, it should be more interactive. We should move away from didactic teaching where you come and you just teach and you just say this is the new guideline." (FP16)*

Respondents further felt that the style of education was important and emphasised "guiding and engaging" practitioners rather than just "direct teaching":

*"Regular workshops, have feedback from those to say listen, we find that in our experience we've got this new guideline now, this is what we find, is this the right way that we're doing things? So, on-going training at the community level, or at a clinic level, and I think you've got enough expertise around to ensure that." (FP17)*



*"It should be more interactive, and definitely have people leaving that workshop with the understanding of what is expected of them, and they know very well what they need to do, and show them that it was done in this area or this place, this is the outcome, and show them that you can have the same outcome in your facility. That's the only way you're going to have people become more interested in their work. I think that's what's also lacking - people are losing interest in their work. They see big numbers, but there's no gratification." (FP25)*

Respondents felt that such training should start as early as possible and engage practitioners even during undergraduate studies:

*"We need to ensure that our staff has the necessary training, whether it's a nurse practitioner or whether it's a junior doctor. They need to start doing this, maybe even at undergraduate level. You know, have this paradigm shift, or paradigm change in terms of understanding of education, and teaching should be done at this level." (FP21)*

#### **6.2.4.5 All PHC workers must feel and be part of the process of implementation.**

##### **6.2.4.5.1 Junior doctors and clinical nurse practitioners are more adherent.**

Junior doctors and clinical nurse practitioners appear to utilise guidelines more closely. There may be an attitudinal difference between practitioners who are trained to be more autonomous practitioners, who ultimately decide what their practice will consist of and CNPs, who are trained to follow a series of tasks or decisions contained in an algorithmic approach. Doctors therefore may view the guideline as a guide whereas the CNP may view it as a set of rules to be obeyed and strictly adhered to. In addition, guidelines could be useful for older doctors, particularly those who have not kept up to date with new developments and whose practice can be considered outdated and even dangerous to the patient:

*"I think a great value of the guidelines is to update people's knowledge. I have the experience of working with colleagues, who have just done their internship, and their practice is very close to the guideline, and then I*

*work in clinics with general practitioners who have practiced for 30 years and their practice and prescription is quite different, and sometimes even dangerous, if you compare it to the guidelines. One example of that would be the prescription of Theophyllin. Where we get taught that you should actually avoid Theophyllin, oral Theophyllin as far as possible, you find in some of the clinics that many of the asthmatics are on Theophyllin and not even on an inhaler at all.” (FP15)*

*“That applies especially to people who have very little experience, who are new in the field of medicine, who are just starting out. In other words, the very young, junior, inexperienced doctor definitely needs guidelines to guide him. The more that I as an experienced practitioner use guidelines, the more I get a sense of its applicability to what I’m doing.” (FP18)*

Respondents felt that CNPs currently form the backbone of chronic asthma care in primary care centres in the Cape Town metropole. They have an increasingly important role to play in guideline implementation and ongoing training should be provided to improve their proficiency in caring for asthma patients. CNPs may need to have stricter guidelines and more rigid rules and structure to follow:

*“Definitely in a South African context, we have a burgeoning population of clinical nursing practitioners who are not taught in the same way as medical practitioners. They need a lot of structure, even though that rigid structure does cause problems in terms of diagnosis and in terms of the correct treatment in situations, especially with the large differential that accompanies many conditions. I do believe though that in the belief that clinical nursing practitioners are the only way we can roll out care to as many people as possible, we definitely need very strict guidelines, and obviously the more evidence-based they are, the better they are.” (FP18)*

*“The other reason I think it’s important is more and more in the practice of medicine, especially given resource constraints, human resource constraints and the fact that there are more and more patients, especially with chronic diseases and fewer and fewer doctors. So we now*

*rely more and more on clinical nurse practitioners who may not have had the depth and the duration of the undergraduate training of medical practitioners. Very often they need to be up skilled quite rapidly to actually cater for the demand by the increasing number of patients. I think guidelines need to be appropriate to a wide range of clinicians, from doctors with various backgrounds of qualification, and also clinical nurse practitioners.” (FP20)*

Respondents felt that one of the central roles and responsibilities of family physicians is clinical governance, which entails that evidence-based guidelines are implemented, acted on and adhered to. There could be a tension between the desire to engage with people around adapting the guidelines to local and personal use and the command/control approach of monitoring adherence to the rules:

*“...is to be part of providing that on-going training for those that work either under you, whether it’s a young community service doctor, whether it’s a CNP, in terms of your role of clinical governance, because that’s one of your roles, to be responsible for clinical governance, is to ensure that that kind of information is disseminated, to make sure that those working under you have the necessary skills to use that, or the knowledge to use that evidence appropriately. So, to have regular audits, quality improvement cycles, I think those are important.” (FP14)*

#### **6.2.4.5.2 Quality improvement cycles and the provision of comprehensive and good quality feedback with on-going motivation are important.**

Respondents felt that QICs work if standards have been agreed to and owned through the initial adaptation process and the process feels reflective and appreciative rather than judgemental and critical:

*“One can come up with quality improvement projects, for example, or audit. You can tell all your people in your practice that we will audit your work based on the guidelines that we have in place, because the whole*

*idea of the guidelines is that we practice almost in a similar fashion and we use resources in a cost-effective manner.” (FP19)*

Good quality feedback should include feedback from patients who are on the receiving end of care. A team process is encouraged and the feedback should serve to provide on-going motivation (not punitive action) so that ultimately practitioners are more likely to change their clinical practice and allow the voice of patients to be heard. It is very interesting to note that some FPs seem to suggest that patients be involved in the discussion of feedback:

*“So you need to have a feedback system which is going to go in both directions, from whoever is coordinating its implementation with the staff who are going to have to implement it, with the patients as well, who are going to be the receivers of care.” (FP7)*

## **6.2.5 The Health Care Organisation (HCO)**

### **6.2.5.1 The HCO and important stakeholders must be actively involved in implementation.**

For both the micro (CHC and clinics) and macro system (District Health System) of the HCO, tremendously frustrating delays occur in the process of policy change. The process of engaging practitioners with the evidence and changing their expectations of clinical practice are not synchronised with the time taken for the District Health System (DHS) to change policy or implement new policy. Respondents felt that unnecessary delays in the implementation can result in gaps between evidence and practice and thus delays in knowledge translation. Therefore implementation in the form of education and training of staff must be coordinated with policy change around the availability of resources:

*“One of our challenges we experience is that the new guideline would come out, and say a new treatment or an intervention would be promoted, but there would be a lagging time for that medication to become available. Then the Department has to adjust budgets to make it available and do this, and often there is a gap before you can actually practice what the guideline says. The inhalant corticosteroids are an*

*example of that. It took quite a while before it became freely available, especially in the setting of our district hospital.” (FP15)*

Respondents were of the opinion that even if the best evidence is available, if its implementation is not supported by the HCO in the form of formal policy, the impact of the whole process from development, dissemination to implementation will be disrupted. Unnecessary time-delays should be prevented. The HCO needs to provide good support, on-going education and particularly good communication between management and staff. Advocacy is important and there needs to be dialogue between best practice, implementation of guidelines and the policy of the HCO. Priority should be given to resource availability and resource allocation:

*“Yes, I think you can have best evidence, best practice used in a particular facility, but if the system that they use to practice health care in that facility, or in that community, is of such a nature that it is obstructive; then you’re not going to get far. So your system is actually important. Like I mentioned earlier on, where are these resources going to come from? Who is responsible for allocating? Who is responsible for actually making sure that best practice happens there, that the community’s needs are being catered for, that the basic primary needs are being catered for before you go and look at other more high level tertiary needs? There must be a system in place.” (FP7)*

*“Yes, but part of that system should be to ensure that that individual’s working within a system is supported. There should be on-going communication between, whether it’s the management, whatever body or committee, to ensure good practice, that there is on-going communication with the individuals actually working at that level.” (FP17)*

*“Good education for a start. People have to understand, they have to be clinically adept, and they have to have a good education and a good understanding of the condition in which they’re going to be handling the*

*guideline. There has to be support for the people that are doing it, the conditions under which they work have to be optimal.” (FP26)*

Some FPs seemed aware of the concept of social accountability and the public responsibility they have to ensure safe and effective practice. Often delays and impediments for effective practice fell outside of the consultation room. This would require a commitment to being proactive in ensuring a broader awareness, which goes beyond the four walls of their consultation rooms and involves an obligation to advocate for policy to become more aligned with the evidence. Where then does the responsibility of the practitioner end? Is there a need to transcend boundaries if best practice is to be achieved?

*“Are the practitioners of best evidence going to stand their ground and say we are the practitioners, we’ve looked at the system, this is not good for us, and we’re going to push all the way? I don’t think that is going to happen in real life. You are now stepping outside the realm of clinical practice into administration, into politics, into all these other areas which are outside your clinical area, and people feel uncomfortable there, so they tend to stop at the boundary of clinical practice and politics when it comes to best practice and evidence. And yet it’s those issues on the other side of the barrier line that, at the end of the day, are going to impact majorly on how you practice health care in a community.” (FP9)*

#### **6.2.5.2 Readiness to change**

Respondents felt that readiness to change is a huge problem in a busy and already overburdened primary care setting and different levels of readiness were reported among members of staff:

*“I think that’s an innate challenge in being human. You want to rely on what’s familiar, and it’s always challenging to change one’s own lifestyle and behaviours, even if it’s part of your professional work. Some people like to stick to what they know and what they’re comfortable with.” (FP4)*

Practitioners often find it extremely difficult to change their ways of practice, especially when they feel that control is being taken away from them or the perception remains that their current way of practicing had been successful:

*"If you have been practicing things for years, you've been taught to do things in a certain way and suddenly somebody comes and puts evidence in front of you and tells you that what you have been doing for the last ten years has actually been harmful to your patients, or it's not good for them, it can be very difficult for that practitioner to accept that." (FP7)*

*"Then, sometimes I think they are threatened by guidelines because it pushes them to change, and most people have some level of anxiety over change. Some people not very much, but when you realise that you have to change, you have some bit of insecurity about how you are going to manage the change. Some people manage that insecurity much better than others, and some people in the end start liking it because it makes life an adventure to face change and to make it better, where others feel threatened because they feel life gets out of control if they have to change too often. They get a sense of losing control." (FP27)*

For many practitioners what is required may constitute a profound change in their thinking and approach to patient care and accepting the need for such a radical change may increase their reluctance to embrace the change:

*"Well, I think the paradigm shift that we sometimes have to make, because for many years we were told that this or that treatment or intervention is the best and now we have to change. I think for people who have got established practices, they often would find it very difficult to change. If they have used something that for them has worked, people are reluctant to change. So I think that is a big barrier. However, if the evidence is compelling that it doesn't work, and then I think it is good." (FP2)*

## 6.2.6 Patient health outcomes

### 6.2.6.1 Ambivalence exists as to whether an evidence-based guideline may lead to improved patient health outcomes.

Would proper evidence-based guideline implementation result in improved health outcomes? Respondents agreed this to be a complex question as no simple cause and effect association exists. They recognised that not all forms of health outcomes can be assessed using research strategies and methods from the dominant positivist paradigm. Furthermore they felt that simple cause and effect conclusions in a context as complex as primary care would be incomplete, inappropriate and ill advised. FPs had their doubts and were thus careful not to give a simplified answer. Linear causal reasoning was therefore cautioned, but the need for formal research across paradigms to try and answer this question, has been suggested. Their responses were varied and the answers generally reflected ambivalence and uncertainty:

*"It is difficult to say that it will definitely lead to improved health outcomes. That is difficult to say. I would expect it would lead to improved health outcomes, but I won't say definitely and promise someone, even a patient, that it will definitely, because as I said earlier, there are other aspects of care which are not necessarily addressed by evidence, by best biomedical evidence and therefore needs further research, further evidence."* (FP7)

Some FPs felt that health outcomes may improve at the population level. This brings up the tension between guidelines that are written for everyone and which, on the one hand, incorporate evidence from a public health perspective with an emphasis on the average population effect, and on the other hand the need for the practitioner to manage individual patients with their personalised complexities:

*"It depends on whether you think of an individual person's health outcome or whether you think of the population that you serve's outcome. Implementing guidelines for a specific patient will not necessarily improve the outcome for that specific patient, but it should improve the outcome for the population that you see. So if you are talking about asthma guidelines, as you referred to, implementing the guideline in the young patient in front of you may not necessarily improve that patient's situation, but if you implement the guidelines in all*



*your asthma patients that you see, a bigger percentage of them will do better. So they have a better chance of doing better, but it's not 100% that that specific person will do better." (FP27)*

*"I think yes, looking at it from a more bigger vantage, a higher vantage population, certainly it would definitely improve health outcomes, especially if one can just think that the guideline will hopefully standardise care and hopefully if one patient, yah, that the patient's context doesn't influence his or her outcome, that the practitioner, wherever they may practice, that their communities benefit from the same evidence." (FP4)*

### **6.3 CONCLUSION**

This chapter presented the results of qualitative research, which reflected the views of FPs (academic and in practice) regarding EBP and asthma guideline implementation in PHC.

The findings are incorporated into a conceptual framework in Chapter Eight, which further discusses the findings. Key findings include: that evidence creation should not only be of high quality, but also relevant to the particular context of care; that guideline development should be all inclusive and involve a wider spectrum of stakeholders including patients; that guideline dissemination and implementation should be carefully planned with special consideration given to local adaptation, contextualisation and ownership; that members of the PHC staff could be at different levels in their perceived readiness to change; that universities and academics have a role to play in scrutinising the evidence, giving input on guideline development and providing on-going education on aspects of the guideline to practitioners as part of their social responsibility; that the health care organisation should prevent unnecessary delays in guideline implementation and that barriers and enabling factors are encountered throughout the entire process of implementation.

The next chapter will show the results of the action research conducted with the CIG and which addressed the question: "How can the implementation of the current asthma guideline be improved?"

## CHAPTER SEVEN

### PARTICIPATORY ACTION RESEARCH RESULTS

*"If we want more evidence-based practice, we need more practice-based evidence"*

**(Green, 2004/2006)**

*"Knowing is not enough, we must apply;  
Willing is not enough, we must act"*

**(Johann Wolfgang von Goethe)**

#### 7.1 INTRODUCTION

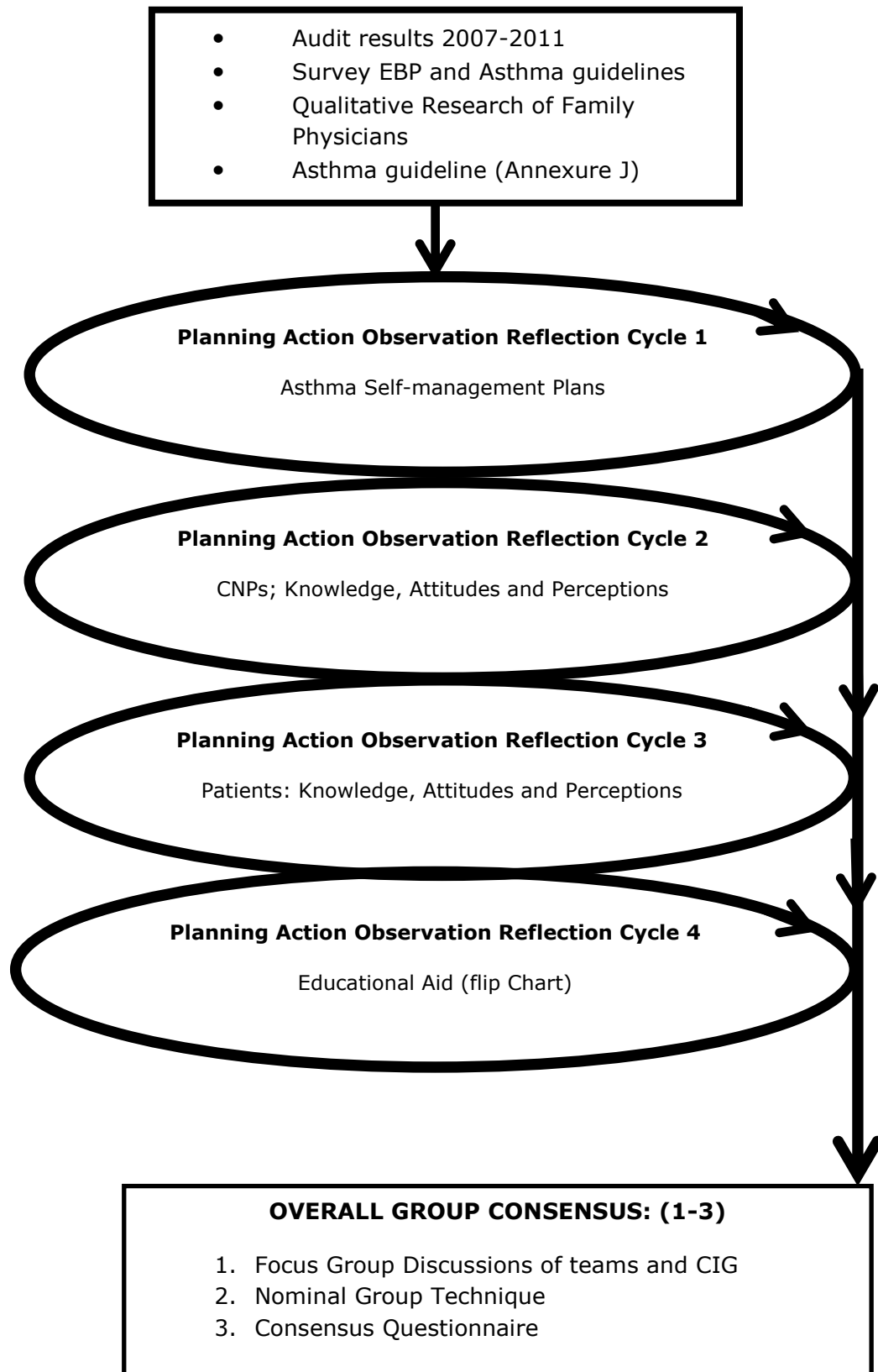
In this chapter the findings of the participatory action research (PAR) are presented. The results, which shed light on how asthma guideline implementation can be improved, are presented as themes that emerged from the group consensus of the cooperative inquiry group (CIG).

I will describe the practical steps (Meyer J, 1993), taken by the CIG while going through the PAR process. A conceptual framework (Figure 7.1) is used to discuss and provide further illustration of the steps and results of the whole PAR process.

#### 7.2 MUTUAL IDENTIFICATION OF CONCERNS

At the first CIG meeting the overall asthma results of the practice audits (2007 to 2008) and results of the cross-sectional survey (Chapter Four) were used to help identify and refine the concerns of the CIG. Following the presentation and critical appraisal of the results and reflection on their own experience of current practice, the CIG collaboratively selected key areas of mutual concern where asthma care was sub-optimal. The critical examination of practice and exploration of concerns (Meyer J, 2000) was then used to formulate questions to be addressed by the inquiry (Kemmis S & McTaggart R, 1988). These were practical questions posed by the asthma teams which dealt with the improvement and development of asthma care in their different practice settings.

**Figure 7.1:** Participatory Action Research: conceptual framework



This meant that the CIG questions were at the centre of the agenda and guided the ongoing PAR process. This led to ongoing cycles of planning; action;

observation and reflection (PAOR cycles), over a period of 10 months, from November 2011 to August 2012. The questions that were formulated collaboratively based on the identified concerns of the CIG are presented in Table 7.1.

**Table 7.1:** Questions based on concerns identified collaboratively by the CIG.

1. How do we introduce an asthma self-management plan (ASMP) for asthma patients at our CHCs?
2. How do CNPs feel about themselves regarding the care of asthma at their CHC?
3. How can we improve the proficiency of CNPs dealing with asthma patients at their clinics?
4. How do we improve the understanding, the knowledge and the perspectives of patients regarding their asthma care at their CHC?
5. How do we improve the education of asthma patients at CHCs in the Cape Town metropole?
6. How do we address smoking cessation in patients with asthma at our CHC?
7. How do we improve the proper use of the MDIs?
8. How do we improve adherence to medication?
9. How do we integrate the care of the patient with co-morbidity (multiple diagnoses)?
10. How do we improve the understanding of patients with little education?
11. How do we improve the understanding of patients with language barriers?
12. How can we make more effective use of videos related to the care of asthma?
13. How long do our asthmatic patients wait to receive treatment (Will they have time to watch the videos?)
14. How do we provide continuity of care to asthmatic patients?
15. How do we use well controlled patients with asthma more to assist with the education of others with asthma?

### **7.3 PAOR CYCLE ONE**

Each member of the CIG who participated from start to finish of the PAR process was committed to all four phases of planning; observation; action and reflection (PAOR) which meant:

- Engaging with the collaboratively planned actions of the CIG and immersing themselves in the experience.
- Documenting their experiences and observations in their own reflection diaries.
- Reflecting on their observations within the CIG meetings in ways which extracted key lessons, new knowledge, abstract concepts and generating further questions for exploration.
- Collaboratively planning new actions and experiences on the basis of the new knowledge gained.

#### **7.3.1 Planning**

During the planning phase the CIG revisited their concerns based on the presented data from the QI cycles, cross-sectional survey and qualitative research (Figure 7.1) and then collaboratively formulated questions, based on their collective concerns (Table 7.1) and their keenness to change their practice. An action plan to address these questions in their practices was then agreed on, with particular emphasis on practical ways (McKay, Twine & Martinek in Ismat, 1995) to answer questions in their daily struggles with asthma care and to observe, document and critically reflect on their practices (Table 7.2). This first cycle also provided an important opportunity for the CIG to align themselves with the overall purpose of the research, which was emphasised at the beginning of each meeting. Furthermore the planning process encouraged the CIG's to take ownership of the inquiry as co-researchers in PAR.

The group agreed and felt strongly that an ASMP was their main concern as this was clearly non-existent in the audit, and the cross-sectional survey conducted amongst practitioners in the public and private health sectors of the Cape Town metropole (report Chapter Four), confirmed that it was not or very seldom used. The ASMP was also a key recommendation in the national guideline and was supported with level A evidence (i.e. evidence obtained from a definitive RCT). The first action cycle therefore undertook to address the question:

*"How do we introduce an asthma self-management plan (ASMP) for asthma patients at our CHCs?"*

**Table 7.2:** Summary of the action-research cycles

<p><b>PAOR cycle one:</b></p> <ul style="list-style-type: none"> <li>• All CIG members were invited to meet together.</li> <li>• All concerns were articulated and the key action research questions defined</li> <li>• The ethical framework for the study and its participants was agreed on.</li> <li>• Training in CIG methods and critical reflection was provided.</li> <li>• The CIG's current asthma care practice at their respective CHCs was reviewed.</li> <li>• The latest national asthma guideline was introduced to participants.</li> <li>• The group reflected on ways to implement it.</li> <li>• The implementation of the asthma self-management plan (ASMP) was selected as the first goal.</li> <li>• Initial fact finding and piloting of ASMP. Then ASMP further refined and printed. Critical reflection by each member of the CIG on its implementation.</li> <li>• ASMP introduced into practice.</li> <li>• Critical reflection on what happened following the ASMP implementation.</li> </ul> <p><b>PAOR cycle two:</b></p> <ul style="list-style-type: none"> <li>• Redefined the action plan based on the understanding gained in cycle one.</li> <li>• The redefined plan sought to assess the proficiency and knowledge of the CNPs with the view to assist in their improvement.</li> <li>• Action was taken by devising and conducting a survey to assist with evaluating the understanding of the knowledge, proficiency and practice of CNPs</li> <li>• Data collection for survey</li> <li>• Critical reflection on results of the CNP survey.</li> </ul> <p><b>PAOR cycle three:</b></p> <ul style="list-style-type: none"> <li>• Redefined the action plan based on the understanding gained in cycle two.</li> <li>• The redefined plan sought to improve the knowledge and level of satisfaction of asthma patients regarding the care received at their respective CHCs</li> <li>• Action was taken by developing and conducting a survey on patient knowledge and satisfaction</li> <li>• Data collection for survey</li> <li>• Critical reflection on results of the patient survey.</li> </ul> <p><b>PAOR cycle four:</b></p> <ul style="list-style-type: none"> <li>• Redefined the action plan based on the understanding gained in cycle three.</li> </ul>
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- The redefined plan sought to improve the quality of asthma patient education using an educational aid such as a flipchart.
- Implementation of the educational programme using the flipchart
- Critical reflection on the experiences and learning which occurred during the educational sessions with asthma patients.

**CIG Consensus:**

CIG consensus was achieved using:

- Exploring learning of asthma teams by use of Mini-Focus Group Discussions (mini-FGDs).
- Exploring learning of CIG by use of FGDs.
- Building consensus by use of the nominal group technique (NGT)
- Confirming the consensus by means of a final questionnaire

**Development of ASMP**

All members contributed to the design of the tool for the asthma self-management plan, which was finalised after repeated reflection and review. The revised and refined tool was collaboratively accepted (Figure 7.2. ASMP Pages 1-3) and ready for adoption. The ASMP clearly contained information from key recommendations in the national asthma guideline. The process of piloting and reflecting on the ASMP helped to enhance the member's overall ability to reflect in a more conscious and structured way. All CIG members were comfortable with the final ASMP produced, which incorporated theory (recommendations from the guideline) as well as their practical knowledge and experience. The ASMP was printed and each asthma team received 200 copies of the ASMP to distribute and utilise with asthma patients at their respective CHCs (Figure 7.2. ASMP Pages 1-3).

**7.3.2 Action**

During the action phase the CIG developed and then implemented the ASMP at their CHCs. Each member of the CIG used the ASMP during interaction with asthma patients and ensured that its use was explained and understood by the patient. The ASMP was placed into a plastic cover for protection and ease of use. Patients were asked to produce it to the practitioner at follow up visits to ensure that the main guideline recommendations were covered during every ensuing visit.

### **7.3.3 Observation**

The observation phase ran simultaneously and required the CIG members to record their individual observations (thoughts, feelings; concerns and reactions) and critical reflections in their personal journals while they were implementing the ASMP at their CHC. The observations and reflections were based on their concrete experiences with the ASMP in practice and at the CIG meeting the practical knowledge (e.g. new skills and competencies) was agreed on for further use during patient interactions at their CHCs (Kolb DA, 1984).



**Figure 7.2:** ASMP Page 1

<b>ASTHMA SELF-MANAGEMENT PLAN</b>			
<b>Full Name(s):</b>			
<b>Community Health Centre:</b>	<b>Gender:</b>		
<b>Folder number:</b>	<b>DOB:</b>		
<b>Smoker:</b>	Yes   No	<b>Medic Alert Disc:</b>	Yes   No
<b>Allergies:</b>	Yes   No	<b>Allergic basis of Asthma explained:</b> Yes   No	

**My current treatment:**

<b>1</b>		
<b>2</b>		
<b>3</b>		
<b>4</b>		
<b>5</b>		

**My other illnesses:**

<b>1</b>				
<b>2</b>				
<b>3</b>				
<b>4</b>				
	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Best Peak flow reading</b>				
<b>Influenza Vaccine given</b>	Yes   No	Yes   No	Yes   No	Yes   No

**Figure 7.2: ASMP Page 2**

<b>DATE</b>	<b>LEVEL OF CONTROL</b> Assessed?  Yes/No	<b>MDI TECHNIQUE</b> Assessed?  Yes/No	<b>SMOKING STATUS</b> Assessed?  Yes/No	<b>Actual PEAK FLOW</b> Reading today?	<b>RELIEVER</b> Adherence/ Side effects Assessed? <b>Yes/No</b>	<b>CONTROLLER</b> Adherence/ Side effects Assessed? <b>Yes/No</b>	<b>ACUTE</b> exacerbation since last visit <b>Yes/No</b>	<b>HOSPITALISED</b> for Asthma since last visit? <b>Yes/No</b>	<b>Need to Adjust medication/ Need Referral?</b> (? Which one) <b>Yes/No</b>	<b>Possible COPD? / PTB?</b> <b>Yes/No</b>	<b>Patient signature</b>
<b>A S T H M A   S E L F   M A N A G E M E N T   P L A N</b>											

**Figure 7.2:.** ASMP Page 3

<b>ASTHMA SELF-MANAGEMENT PLAN</b>	
<b>My goals are: (Tick applicable)</b>	
• To stop smoking by: _____ (Date:   _____   _____   _____ )	
• To have no/less limitations of my daily work   duties	
• To have a tight chest less often/not at all this year	
• To blow my expected (personal best) Peak Flow	
• Not to be absent from work/school because of my asthma	
• To require my reliever pump less often	
• Other personal goal:	
<b>I know my asthma has worsened when/if:</b>	
• My chest becomes tight more frequently	
• I wake up at night or sleep poorly because of a tight chest	
• I cough/feel short of breath or tight or wheeze more at night	
• I need my reliever pump more often than usual	
• My peak flow reading is lower than usual	
<b>When my asthma gets worse I must:</b>	
• Contact my facility at 021- _____ OR _____ Emergency at: <b>107</b>	
• Go to my nearest CHC with 24-hour service or hospital as soon as possible	
• Use my reliever and controller asthma pumps	
<b>For every visit to my hospital for asthma, I must:</b>	
• have my inhaler technique checked	
• have adherence to my medication checked	
• Bring my empty inhaler pumps with me	
• discuss potential problems I have with my medication	
• confirm my follow up visit appointment	
• bring and personally sign my Asthma Self-Management Plan (ASMP)	
<b>P:</b> _____	<b>DR:</b> _____
<b>CHECK INHALER TECHNIQUE! ; EMPHASISE ADHERENCE! ; MOTIVATE TO STOP SMOKING!</b>	

**Potential triggers of my asthma:**

Medication e.g.: Aspirin / Penicillin / Brufen/ Voltaren/ and Beta blockers (e.g. Atenolol /also in Eye some drops) / Pollen/Furry animals/Fumes/Dust/ Preservatives/Passive smoking/Insect bites/Chest infection/Emotional factors.

### 7.3.4 Reflection

During the reflection phase the CIG members would meet as a small asthma team at their respective CHCs and then as the larger CIG. The process followed in the large group meetings (CIG meetings) allowed each person to share and reflect on their individual experiences (experiential knowledge gained in the process of change) over the previous month, especially with regard to the action plan and the implementation of the ASMP. After the individual reflection the CIG as a whole would then reflect with comments and feedback. The aim was to develop new learning about the use of the ASMP based on the whole group's experience and active experimentation with it in practice. The CIG could then conceptualise in a more abstract way what they had learnt or what they still needed to learn. This new learning and questions were then incorporated into the planning of the next PAOR cycle. In this process it became apparent that the reflections generated in the CIG process were more fruitful than those generated at an individual level within the asthma team at the respective CHCs. This observation on the overall usefulness of the CIG process compared to that of the individual reflections is consistent with that described by Stringer, (2007).

Some CIG members gave positive feedback and reported on immediate success even though the overall process of introducing the ASMP to patients was experienced as too time consuming. The practical experience and learning meant that they had to improvise and provide teaching to groups simultaneously:

*"I found it easier to implement the ASMP in groups. This saves time and I can therefore reach more patients that way." (SrHac)*

*"The one client I had today was very enthusiastic and I did not have a problem explaining the ASMP to her and she could identify very quickly with the questions. She seemed well informed afterwards and the whole process only took me 15 minutes. But I agree and I think we must introduce the ASMP in groups to them. In doing so we will cover more patients and spread the message quicker as I still think it is too time consuming at the moment." (SrNd)*

The fact that patients had to sign their ASMPs at the end of the consultations meant that all guideline recommendations had to be checked by the patients themselves. This was new to patients but also positively experienced by them:

*"We started a therapeutic asthma group today. We handed out and discussed the ASMP with patients. We had positive feedback from patients especially where they had to sign that their asthma had been dealt with as the guideline recommends." (SrG)*

*"I discussed the self-management plan with Drs and CNPs in a meeting at my facility today. The reception was warm with much discussion. The plan was to get the club sisters to announce and distribute it further to patients. I also gave my first patient the plan. It took some time to explain. The patient seemed keen especially with the section where she had to confirm that she had been attended to as required and where she had to sign her ASMP at the end of her visit." (DrM)*

*"The ASMP will make a difference; their asthma knowledge will improve and they know what to do in case of an emergency. They feel empowered as everything they need to know is covered in there." (SrvR)*

Other CIG members were less happy with their progress especially in situations where less continuity of care was provided in practice:

*"The locum doctors do not seem interested in the guideline. They are just here for the day and then leave. So they are not aware or interested in the guideline protocol." (SrG)*

CIG members still felt unhappy and frustrated even though they were happy with the ASMP. A common concern raised was the inadequacy of the staff complement at their CHCs:

*"The ASMP is a very good and useful tool but there must be enough staff to assist with its implementation. We at MPCHC are just two, plus a sister in the club." (SrHar)*

Some CIG members experienced direct resistance from colleagues and senior members of staff who claimed that the ASMP introduced more work to other colleagues. Similar forms of resistance were experienced in qualitative research interviews of staff members (Chapter Six):

*"Staff not involved with the asthma patient care and research [PAR] does not share the same enthusiasm as us when it comes to the ASMP. We see the need and the purpose. They don't."(SrG)*

*"My family physician was not enthusiastic when I discussed the implementation of the ASMP with her. She did not even listen. She felt that the clinical staff is not completing the "pink sheet" and that our card [ASMP] would just add more work. Why she suggested that the ASMP is not patient-centered, I do not understand. This is as patient-centred as a document can get. It even checks that the practitioner has dealt with all the issues which the guideline recommends and requires the patient to sign that all the issues had been covered. To her the concept of signing is new. They cannot accept it. I suppose it is part of the resistance to change. I feel that it is something that they have to live with as I don't have a problem with it."(SrAl)*

However some members were supported by those members of staff who were in favour of its use:

*"The Paeds doctor issued the ASMP cards and completed it for her asthma kids and she said it was well accepted by patients and other staff." (SrvR)*

Some CIG members used innovative ways to assist with the process by utilising the presence of medical students who were attached to the CHC for their rotations in family medicine and primary care:

*"I showed one of my medical students how to use the ASMP today as we were seeing a patient together. She was enthused especially with regard to the monitoring of the consultation section. The students in general have also taken to it well and have been passionate about the ASMP. They gave it out to every asthmatic they saw."* (DrBl)

In stark contrast to the CHCs where the staff compliment was inadequate the implementation process for some CIG team members whose CHCs were adequately staffed, proceeded quickly:

*"We have implemented all our stock of ASMPs and other information leaflets and now need more. We are continuing with the green booklet in the meantime."* (SrvR)

Some members felt strongly that the health care organisation should show support and come on board early on in the implementation of the ASMP tool:

*"The organisation should buy into this and support the use of it [ASMP]. Then it will be easier. We were today again reminded that we should see 40 patients per day. This means 12 minutes per patient for me as a CNP. This is far too little time if I need to do the asthma education as well. We get pressurised from all sides to increase quantity. What about quality?"* (SrG)

Of all the recommendations contained in the ASMP, the CIG struggled most with the aspect of counselling patients regarding smoking cessation:

*"Today I feel overwhelmed. Most of our asthmatics are still smoking and they make me feel that I am fighting a losing battle."* (SrvR)

*"I sometimes feel despondent speaking to smokers. They just don't seem to pay attention. We must never stop though. This must be on-going. At least with the ASMP they can now consider their personal goals and commit them to a date to stop smoking."* (SrNd)

Some members preferred to remain positive about their feedback and experiences:

*"It is good to see that patients are appreciative when they are well controlled. Some of them are at least acknowledging what you are doing". (SrAI)*

The patients viewed this as a positive development, but were clearly not sure how to accept added responsibility and move toward a partnership with their care-giver regarding their care:

*"One patient seemed surprised and actually asked me: "Do you mean I can confront the doctor if, or even ask him if he forgot to do these things on the card?" He seemed excited when I replied: "Yes!" (SrAr)*

### **7.3.5 Summary PAOR cycle one**

During PAOR cycle one, the planning phase involved careful collaborative design of an ASMP tool. During this cycle the CIG engaged with a process of observation and reflection and agreed on what had been learnt during their actual experience with the ASMP in practice at their respective CHCs. Based on the experience of the CIG, strengths and weaknesses were identified and it was clear that the CNPs were primarily responsible for the education of patients in general and particularly with regard to asthma care at CHCs. CNPs within the CIG felt confident with the practical knowledge they have gained in the preparation and process of ASMP implementation and remained concerned that their CNP colleagues at other centres may not be aware of the ASMP and other recommendations contained in the asthma guideline. They felt that CNP competence in caring for asthmatic patients was generally assumed. This prompted the CIG to have a closer look at how CNPs coped with asthma patients and to assess their knowledge, attitudes and perspectives regarding the care of asthma patients at their sites.

Consensus on learning shared in PAOR cycle one, based on the experience of CIG:



- Provide education on the ASMP in groups rather than to individual patients.
- More primary care practitioners should become involved with ASMP implementation even visiting students could assist where possible.
- Remain positive and build on positive feedback from patients.
- Determine the basic knowledge, awareness and perspectives of CNPs with regard to their care of asthma patients.

## **7.4 PAOR CYCLE TWO**

### **7.4.1 Planning**

The nature of PAR is such that it has a specific purpose, which defines its boundaries, but it also has the freedom to experiment and question as the CIG members demonstrated during each cycle of inquiry. Different qualitative and quantitative data may be collected depending on the evolving needs of the inquiry process.

From cycle one it was clear that the CNPs were understood and expected to be the key people in the implementation of the ASMP. They were the ones who would be at the centre of its distribution, explanation, education and follow up. They were closely involved with the asthma clubs at their respective CHCs and it was therefore considered of fundamental importance to assess their baseline proficiency with regard to asthma care. Questions were posed and further refined during the CIG's discussion and the main concern and collaboratively derived central question to be addressed in the second (PAOR) cycle was thus:

*"How can we improve the proficiency of CNPs dealing with asthma patients at their clinics?"*

After further critical reflection and with the emphasis on the implementation of the current evidence-based asthma guideline, this question was further refined to be more focused and answerable and became the sub-question:

*"How can we establish the current knowledge, awareness and perceptions of CNPs employed in the MDHS with regard to evidence-based nursing and asthma guideline implementation?"*

It was collaboratively decided that it was easier to assess their knowledge, awareness and perceptions of the asthma guideline. Furthermore there is evidence to suggest that improved nursing knowledge and proficiency can improve nursing practice and care for patients (Loth C et al., 2007). In addition

qualitative research results obtained from the family physician interviews (reported on in Chapter Six), served to generate hypotheses and suggested that CNPs, junior nurses and doctors used guidelines more often, more conscientiously and more rigidly and that they were the main asthma care-givers who formed the backbone of asthma education in the PHC sector. Therefore the CIG considered it important, appropriate and necessary to assist in improving the clinical proficiency of CNPs and to assess their knowledge, awareness and perceptions of evidence-based nursing and asthma guideline implementation as an important baseline assessment towards achieving this goal. A suitable method to address this question was to conduct a descriptive cross-sectional survey to shed more light on this question. The information and data obtained would serve to further advance the knowledge of CNPs in caring for asthma patients attending their CHCs.

#### **7.4.2 Action**

The survey questionnaire was discussed and developed (Annexure H) with all members of the CIG along the lines of the survey questionnaire used for doctors in phase one. It was piloted with a small sample of 10 CNPs and members of the CIG. Feedback was received from the piloted participants on the style, content covered, clarity and the different categories of questions. No other substantive feedback was given on the content. The questionnaire, which included a covering letter explaining the research, was then finalised and printed. The CIG worked as a group to distribute it to all CNPs employed in the whole MDHS and not just to CNPs at their own CHCs. The CIG therefore attempted to reach all 156 CNPs in the employ of the MDHS at the time, but only received a response from 98 CNPs (63%).

Questionnaires were delivered to all CHCs where CNPs worked and gathered over a period of one month. The survey data was analysed by a statistician and reported back to the CIG for comment and reflection.

#### **7.4.3 Observation**

##### **7.4.3.1 Results of CNP survey**

###### **7.4.3.1.1 Evidence-based practice**

A total of 15 (15%) had access to the internet at work and 58 (59%) at home. About half, 48 (49%), never surfed the internet for clinical information, while

half used the internet to varying extents: 10 (10%) surfed annually, 18(18%) quarterly, 10(10%) monthly, 8(8%) weekly and 4 (4%) surfed the internet daily. Only 15 (15%) attended CPD activities such as journal club and academic activities. A total of 61 (62%) were involved with QI cycles in their primary care CHCs. The concept of evidence-based nursing was fairly unknown to CNPs with only 11 (11%) aware of evidence-based nursing and the vast majority 97 (99%) indicated an interest to learn more about it.

The majority 91 (93%) agreed that evidence is useful in the daily management of patients, 77 (78%) agreed that their decision making is based on evidence, 100% agreed that evidence-based nursing can improve the quality of patient care, 82 (84%) agreed that there is a place for evidence-based nursing in their practices at their respective CHCs, 88 (90%) agreed that EBP will make a difference in the quality of care of their patients and 97 (99%) agreed that evidence-based nursing practice has an important role to play in nursing practice in South Africa. However 76 (77%) valued the interaction with their supervising doctors more than published evidence, 40 (41%) viewed the opinions of colleagues more useful than research evidence and 43 (44%) agreed that their own clinical nursing experience is more meaningful to them than published research evidence.

#### **7.4.3.1.2 Asthma guideline awareness and implementation**

A total of 41 (42%) were aware of the latest South African asthma clinical practice guideline, but only 16 (16%) had actually read the guideline. A total of 19 (19%) had received a copy, 39 (40%) had problems accessing the guideline at their CHCs, 38 (39%) agreed that the guideline was not easily available at their facilities and 35 (36%) encountered problems finding the guideline when they actually needed it.

A total of 34 (35%) agreed that guidelines are not user-friendly, 43 (44%) agreed that summaries of recommendations are more useful than the actual guideline and 76 (77%) felt that guideline recommendations should be presented in synopsis format. A total of 74 (75%) agreed that they struggle to management asthma patients with co-morbidity. A total of 54 (55%) were involved with the auditing of asthma care in their primary care CHCs.

With regard to adherence to recommendations in the guideline, 93 (95%) reported personally educating patients on the difference between reliever and

controller MDIs, 76 (77%) recorded the smoking status of patients in the records, 90 (92%) personally demonstrated the inhaler technique to all their asthma patients, 68 (69%) assessed the level of control, 95 (97%) agreed that inhaled corticosteroids are the mainstay of treatment in patients with chronic persistent asthma and 71(72%) agreed that the distinction between asthma and COPD is reasonably clear to them. However only 24 (24%) started issuing patients with ASMPs.

#### **7.4.4 Reflection**

The above results of the cross-sectional survey were communicated to all members of the CIG and to all participating CHCs where CNPs responsible for asthma care were employed. The CIG further reflected on the results and based on their reflections it was clear that the supervision and support provided by doctors were appreciated and valued more than actual published research evidence. Further CIG reflection on the survey results supported the view that guidelines were not very user-friendly to CNPs as the guidelines appeared to have been developed and prepared mainly for use by doctors at primary care level.

CNPs also felt that the issue of co-morbidity was a source of concern, which led to them struggling and having difficulty with caring for asthma patients. In addition fewer CNPs were involved in the actual QI of asthma care.

The CNPs within the CIG further reflected on how they felt about caring for people with asthma at their sites. Despite their improved confidence with the guideline recommendations contained in the ASMP, the CNPs within the CIG reflected on their feelings of sometimes being lost and frustrated during their daily encounters with asthma patients. This CIG member posed many questions, all reflecting a lack of perceived support from her supervisor:

*"As a CNP I often felt frustrated with the workload and it was difficult to cope with the workload on a daily basis. Also despondent. I often asked myself the questions; "Am I doing my job?" Am I doing my job correctly?" How can I do this better? "How can I obtain better cooperation from my patient? How can I contribute individually as part of a group of asthma care-givers on the task of quality improvement in asthma care at our site?" (SrJ)*

Even the supervisors (FPs within the CIG) recognised the need to assist CNPs in their task and especially in improving their motivational interviewing skills:

*"The big issue I know CNPs have at MPCHC is their perception (or real) of lack of support from the doctors; when they have difficult patients. Some do complain about their frustration of dealing with patients who continue to smoke and take little responsibility for their own health. This may make them less motivated to do everything for the patient. I think the CNPs could benefit from knowing about motivational interviewing techniques."*  
(DrI)

One member felt that they often do not have the proficiency and clinical acumen and support to deal with asthma patients who have more complex problems:

*"Today I felt frustrated and wondered whether the patient was telling me the truth. I mean there he was uncontrolled as ever. He was recently admitted to hospital twice. Now his second acute attack within a week and oral prednisone for the past 2 months. I checked everything: adherence to his medication, triggers, his technique and his smoking status but still remained confused."* (SrAI)

The need for well-run CPD for nurses was clear as well as the need to develop the role of mentor amongst the doctors. It was clear that ongoing support should be provided to CNPs and involving them in asthma club activities including the ongoing quality improvement of asthma care may be beneficial to them:

*"CMEs and similar activities help, but I think what they want is "real time" assistance with the challenges they face. We have tried to roster a "CNP-assist" Dr on a daily basis so that they [CNPs] would know on a daily basis where they can go to for help. Some Drs do a better job than others and overall it has not been a success. Involving them in the audits is also beneficial. They should all work in the asthma club on a regular basis to gain experience."* (DrI)

*"They must be involved with auditing and quality control measures with effective quality improvement plans."* (DrBe)

The CIG reflection touched on the role of patients especially with regard to becoming more involved in their care and taking more responsibility for their health:

*"One patient today apologised for lying about her smoking, which was probably the reason why she remained so poorly controlled. One realises*

*that they should really start taking responsibility for their own health.*  
"(SrG).

The general feeling based on the practice experience of the CIG was that the knowledge of patients regarding their asthma could be improved, especially with regard to inhaler technique, adherence to medication, the disadvantageous effects of smoking, knowledge of the different types of MDIs and potential asthma triggers, which could exacerbate their asthma.

#### **7.4.5 Summary PAOR cycle two**

During PAOR cycle two, the planning phase involved careful collaborative design of the CNP questionnaire and planning to conduct the survey. Action during this cycle involved the CIG engaging with a process of distribution and collection of the questionnaire to all CNPs employed in CHCs in the MDHS. Collected data was analysed by a statistician and findings presented to the CIG for reflection.

CIG reflection on the survey results supported and confirmed that:

- the concept of evidence-based nursing was fairly unknown and they identified a need for nurses to learn more about it.
- members valued the interaction with their supervising doctors more than actual evidence contained in guidelines and felt that doctors should contribute more to the mentoring and capability building of CNPs.
- CIG members felt the need to build and improve on their understanding of patients, especially with regard to their basic knowledge, awareness and perspectives regarding their asthma care.

### **7.5 PAOR CYCLE THREE**

#### **7.5.1 Planning**

There was general agreement within the CIG that asthma patients should be more engaged in decision making regarding their care and empowered to take more responsibility for their own self-care. Some members felt that patients were already involved in decision making regarding their asthma care:

*"Patients feel happy to be part of the decision making process regarding their asthma care at our CHC." (DrBI)*

However more members expressed concern regarding the perceived lack of engagement and sense of empowerment that some patients have for their well-being especially in situations where asthma control has been identified to be poor and behaviour did not appear to change. This was often expressed as a belief that patients do not take responsibility for their own health:

*"It is so frustrating to see patients present with acute exacerbations. These are the people who do not take responsibility for their own health. They are the very ones who do not come to the asthma clubs. In fact quite a number of them actually attend this facility as acute admissions only. They do not have a single visit to the asthma club and it remains difficult to reach and therefore educate them. "(DrI)*

*"Before our discussion group the patients felt that the clinician is responsible for the control of their asthma. But later as the discussion went on, they realised that they are in control of their situation with positive thinking and lifestyle change. "(DrBe)*

However health is a fundamental resource for living and most patients are concerned about their health. This judgement may be more of a way of making sense of frustration with patients whose control and behaviour does not appear to have changed despite the best efforts of health workers. Patients also face difficulties in coping with a chronic illness and would probably complain that they are not empowered to understand, take control or make choices about their illness.

Members were keen to conduct a formal assessment using a questionnaire based survey into the knowledge, awareness and perceptions of patients regarding their asthma care at their CHCs. Such evidence could help to improve the patient's experience of care at CHCs in the metropole:

*"The patient should reflect on their experience of asthma care to the clinician. How they experience their care, but I think the research questionnaire can at least partially address this question."(DrBe)*

The collaborative understanding within the CIG was that patients should be empowered to take control of their own health and contribute to improving the quality of asthma care they receive at their respective CHCs. This collaborative approach is supported in the asthma guideline and aims to: "enable patients with asthma to gain the knowledge, confidence and skills to assume a major role in the management of their asthma." (Lalloo U et al., 2007). Furthermore the



goals, identified by the Department of Health for 2020, rate patient satisfaction highly, as it is perceived as an important component of quality care. Empowering patients through education would improve their satisfaction and hence assist to meet this goal. The central question derived from the CIG's concern and addressed in the third PAOR cycle was:

*"How do we improve the understanding, knowledge attitudes and perceptions of asthma patients regarding their care at their CHCs?"*

An important sub question based on this broad question was:

*"What is the perceived knowledge, attitudes perceptions, and satisfaction of asthma patients regarding the quality of care received at their CHCs? "*

The ideal strategy to follow and the initial intention of the CIG, was to interview some patients or conduct FGDs of patients particular those whose folders had been audited during 2007 to 2011 (results reported in Chapter Five). This was partially achieved at the CIG sites, but was not at all feasible at the non-action research sites. Initial piloting of this strategy to look at particular patients whose records had been audited, proved too cumbersome and time consuming given the already limited time the CIG had. The consensus decision was taken to include all CHCs where the quality improvement cycles had been performed, in a cross-sectional survey. Thus patients from both action research sites (ARS) and non action research sites (n-ARS) were therefore included for sampling. The CIG therefore decided to conduct a survey using a representative sample of all asthma patients attending CHCs in the MDHS for asthma care, as opposed to just involving the five CHCs where action research was conducted.

### **7.5.2 Action**

The questionnaire was discussed and developed by all members of the CIG (Annexure I) to cover the areas of patient knowledge, awareness and perspectives of asthma care received at their various CHC. The main emphasis was to deal with recommendations covered in the asthma guideline. The questionnaire was then piloted among 10 patients to check whether questions were clear and unambiguous. After the questionnaire had been further refined it was printed and distributed to all selected CHCs. A sample of 20 adult asthma patients was selected from the bigger CHCs with a 24 hour casualty and 10 adult asthma patients were selected from the remaining smaller CHCs. The selection of patients occurred over a period of two to four visits and patients were asked



to complete a questionnaire by an independent group of fieldworkers after they were seen by the CNPs or medical practitioner for their asthma. Care was taken to ensure that only adult asthma patients were included and that such patients attended for actual asthma care on the day of their visit to the CHC.

The CIG worked together to conduct the survey in all the CHCs in the MDHS and questionnaires were distributed and collected over a period of one month. The results of the patient knowledge, awareness, perception and satisfaction survey is presented below.

### **7.5.3 Observation**

#### **7.5.3.1 Results of survey**

All CHCs where asthma care was provided in club format were selected for inclusion in the survey. This made it easier to find patients for completion of the questionnaire as opposed to CHCs where patients were treated as they presented in the general pool of patients. Altogether 28 CHCs, which included the 5 CHCs where PAR was taking place, were selected to participate in the survey. A total of 411 adult asthma patients, 293 (71%) female and 108 (29%) male, took part in this survey. The mean age of asthma patients was 41 years.

#### ***Smoking***

It is a source of concern that 223 (54%) of this sample smoked tobacco. On the day of the asthma visit to the CHC, health workers knew of the smoking status of 221 (53%), but only 104 (25%) of patients had ever received smoking counselling at their CHC. On the day of their visit only 124 (30%) of all attending asthma patients were asked whether they smoked or not. Of the 223 asthmatic patients who smoked, 62 (28%) were asked about their smoking status on the day of their visit, 69 (30%) ever received smoking counselling at their CHCs and only 33 (15%) received counselling on the day of their visit. However 204 (91%) of smoking asthmatic patients were aware of the dangers of smoking and 202 (91%) would have preferred smoking cessation counselling on the day of their visit and not just to receive follow-up medication.

### ***Peak flow readings and MDIs***

While 291 (71%) of asthma patients had a peak flow reading taken on the day of their visit to the CHC and 349 (85%) knew the difference between a reliever and a controller MDI, only 129 (31%) of asthma patients had their MDI technique checked on the day of their visit.

### ***Asthma knowledge and information***

A total of 174 (42%) of asthma patients ever received written information regarding asthma, although 364 (89%) indicated that they would like to have received such information from the attending practitioner or CNP during their visit to the CHC and 392 (96%) agreed that they would like to know more about their asthma.

### ***Asthma self-management plan, co-morbidity and hospitalisation***

It is disturbing to note that only 44 (11%) had received and only 38 (9%) of patients had heard about an asthma self-management plan (ASMP), which implies that 2% who received ASMPs, were not sure what they had received. According to the patients their level of control was assessed in 216 (53%) of visits, 202 (49%) had co-morbidity and 40 (10%) of asthma patients were hospitalised during the preceding year.

### ***Asthma decision making***

It is interesting to note that 330 (71%) of patients agreed that they were involved in decision making regarding their asthma, and 389 (94%) agreed that they were satisfied with the quality of asthma care received. High levels of patient satisfaction, however, may be as much due to low expectations of the standard of care as opposed to the actual standard of care when measured by other means. It is possible that empowerment of patients might actually raise expectations and lower satisfaction.

### 7.5.3.2 Action research sites vs. Non-action research sites

It is interesting to note that at the action research sites more patients were asked about their smoking status (60% vs. 18%,  $p < 0.001$ ) compared to the non-action research sites. In addition more asthma patients received smoking cessation counselling on the day of their visit for asthma care (25% vs. 4%,  $p < 0.001$ ) and more practitioners and CNPs knew the smoking status of their asthma patients (70% vs. 47%,  $p < 0.001$ ).

Even though not statistically significant a greater proportion of asthma patients ever received smoking cessation counselling (29% vs. 24%,  $p = 0.31$ ) at action research sites compared to non-action research sites. Furthermore patients' knowledge of asthma (3.36 vs. 2.65,  $p < 0.01$ ) and satisfaction of the quality of care received (3.28 vs. 2.83,  $p < 0.01$ ), was significantly better at action research sites than at non-action research sites.

### 7.5.4 Reflection

The survey results were communicated to all members of the CIG and to all participating CHCs where patients attended for asthma care. The CIG further reflected on the results and supported and assisted with its dissemination to all CHCs.

Critical reflection on the survey results led to CIG members feeling that the asthma club educational activities could be enhanced with proper scheduling of teaching and educational topics covered during patient visits to CHCs:

*"The club system seems to be the logical vehicle for this. There should be a schedule of topics to be covered (i.e. like on the flipchart) and patients should all be exposed to all the talks. Get medical students to do projects relating to patients' perspectives." (DrI)*

A member felt that the group should consult the literature and conduct research into what patients' expectations were:

*"We probably would have to check the literature to see what works, but also to ask our patients which method of education they would prefer (this was done by students for diabetes). We need to regularly check their understanding and keep on repeating the same messages." (DrI)*

### 7.5.5 Summary PAOR cycle three

During PAOR cycle three, the planning phase involved careful collaborative planning design and validation of the patient questionnaire as well as the survey methods. Action during this cycle involved the CIG engaging with a process of distribution and collection of the questionnaire to asthma patients attending asthma clubs at selected CHCs in the MDHS. Collected data was analysed by a statistician and findings presented to the CIG for reflection.

CIG reflection on the survey results supported and confirmed that:

- Patients need to be more educated and empowered regarding asthma and self-care, and to take part in decision-making regarding their asthma.
- The prevalence of smoking among asthmatic patients was high and more could be done to assist patients with smoking cessation counselling.
- Patients' perceptions with regard to education on the inhaler technique and their assessment of the level of control remained poor.
- CIG members felt the need to improve on the education of asthma patients in relation to recommendations contained in the guideline and collaboratively decided on using the flipchart as an educational aid to educate patients.

## **7.6 PAOR CYCLE FOUR**

### **7.6.1 Planning**

With further critical reflection of individuals within the CIG, the issue of patient knowledge, attitudes and perceptions from cycle three was further refined to involve patient education regarding their asthma care. The need for educational aids was identified and an educational flipchart, described below, was agreed on collaboratively to assist with the education of asthma patients at the CHCs.

### **7.6.1.1 Background of the educational aid**

The educational flipchart was developed by the Asthma Guideline Implementation Group (AGIP) to be user-friendly and pictures were carefully selected to cover all the key recommendations contained in the national asthma guideline. The AGIP educational aid (flipchart) was also used in the workshops, during 2009 and was piloted for use at PHC clinics and was generally favourably received by the CIG. Although developed by AGIP this was the first time it was actually used in practice and it covered the following aspects:

- Education about the basic underlying pathology of asthma, which emphasises the presence of airway inflammation.
- Education about the difference between a controller and reliever MDI.
- Education about the inhaler technique.
- Education about the use of spacers.
- Education about the assessment of the level of control.
- Education about adherence to medication and emphasis on the use of inhaled corticosteroids.
- Education on the assessment of the smoking status as well as smoking cessation counselling.
- Education about potential triggers of asthma.

The research assistant (Ms. HR), a lecturer in the Division of Family Medicine and Primary care with a keen interest in asthma education, provided the teaching on the flipchart during the workshops in 2009 and again with the current CIG.

The main question addressed in this fourth PAOR cycle therefore was:

*"How can the utilisation of educational aids (flipcharts) be used to improve asthma patients' knowledge and understanding of their asthma?"*

### **7.6.2 Action**

Each CNP received an educational flipchart for use at their CHC. CNPs were trained and practiced the use of the educational flipchart in the presence of the CIG prior to implementing it in practice.

### 7.6.3 Observation

Feedback was given to the CIG by all the CNPs, who undertook to use the educational aid in practice, using a reflective diary to record their specific experiences with patients.

The observations would include all educational interaction with asthma patients at the CHC.

### 7.6.4 Reflection

The practicalities of the club system provided the opportunity for the educational aid (flipchart) to be used in larger groups of patients rather than individually as was the situation initially. The CIG reflected that shortage of staff and other resources were common and added to the frustrations of personnel. They often felt that they could not implement educational activities as a result of the increasing workload due to staff shortages. CIG members became increasingly frustrated when management seemed reluctant to respond to staff shortages:

*"A common problem at my CHC is the shortage of staff which is not addressed by management. This makes it difficult to deal with all the requirements of asthma care alone. I mean we are out of stock of functioning peak flow meters now for almost 2 months. No mouthpieces."*  
(SrAI)

Although the activities in the action plans were designed with an awareness of the limitations of staff to engage with any additional workload such as patient education; being overworked and exhausted was often identified as the main impediment for implementation:

*"I am completely drained. I mean physically and mentally exhausted. I mean it is very difficult for one person to run the club of more than 60-80 patients all alone. Management is doing nothing about this. I am struggling and cannot use my ASMP and flipchart during those times. I mean what must I do? The patients get frustrated and start passing remarks as if it is my fault although you explain the situation to them. Management is never there to face those angry patients."* (SrvR)

*"Today we had a busy clinic and I struggled to get the message across. I am always left to struggle alone. I feel guilty if I can't do more as I know it could work if they use it. The person seemed to think it a lot of work."*

*After finally getting her to acknowledge that she would benefit by using it [flipchart] she realised how it could help her.” (SrJac)*

The process of attending the CHC for asthma care can be long, tedious and frustrating and patients do not seem to appreciate education if this resulted in prolonging their progress through the system any further:

*“It is difficult to maintain a balance if the clinic is full like today. When we are short staff patients are even more impatient and intolerant of education. The ASMP and flipchart chart can be time consuming.” (SrHac)*

*“I felt happy that at least a renewed strategy was offered, is offered to assist with the frustrations experienced at our site.” (SrAd)*

Sometimes evaluations conducted at the CHC do not capture the hard work of the staff, which further adds to their frustration. It is demotivating to have external assessment and criticism that fails to appreciate or recognise their attempts:

*“I feel terrible. I mean the medical students came and did a student research project on our asthma patients and our asthma club. They found that our patients lack knowledge and are struggling with the inhaler technique. Would you believe we check this every time they come to us? I feel this is very unfair. They did not present what we do in our asthma club. Really all that work for nothing.” (SrAl)*

*“I felt excited to be part of such a group of action researchers who will assist in addressing the on-going frustrations in the workplace and with whom one can collaborate and share problems experienced at the coalface of care.” (SrG)*

CIG members reported their own increased understanding and new knowledge of asthma care, which was obtained through trying to improve the implementation of the asthma guideline in their respective primary care practices.

The flipchart encouraged interaction during educational sessions and even made explanation on the ASMP easier:

*“I find that patients do interact well with role-play and the flipchart.” (SrHar)*

*“After doing the flipchart I find that the ASMP needs less explanation and is much quicker to do.”(SrJac)*

*"My patients were very interested while I used the flipchart and even participated. It is a good tool to use and I feel better equipped to use it during my patient education sessions at the club." (SrvR)*

The CIG hoped that experience gained in action research on asthma could be utilised in improving the quality of care of other chronic non-communicable diseases, such as hypertension, diabetes and epilepsy, at their respective CHCs at a later stage, following this period of action research. The practical use of the flipchart which could be adapted for use elsewhere was emphasised:

*"I can even use the flipchart with other non-asthmatic patients in counselling smokers. It is just so useful."(SrRub)*

*"I ask patients to volunteer in demonstrating the inhaler technique while the others have to check and comment on mistakes and if the one who demonstrates does everything right. Using the flipchart this is just so easy and practical. They even enjoyed the session. They could relate to the pictures especially the home ones with the triggers. They remain confused with asthma and COPD though. Maybe an insert on COPD would be nice even just to differentiate between the two." (SrG)*

*"I also make use of the client to demonstrate while others watch to check if they are doing it correctly. The dragon (on the flipchart) caused quite a stir and the discussion was very heated about the right technique and how to use the pump." (SrAl)*

Members were positive about the overall value of the flipchart and have already noted improvement in asthma knowledge and inhaler technique amongst their patients:

*"I saw a 20 year old asthmatic patient today who did not know how to use her inhaler. It felt good to use the flipchart demonstrating the difference between the reliever and preventer and then demonstrating the inhaler technique to her." (SrAr)*

*"I used the flipchart for the first time this morning. I am used to using flipcharts, but I found this one particularly practical and useful. It is very practical .One could use certain parts of the chart in an information session and in an education session. I find it very useful and helpful. I use it now all the time in our asthma clubs or to explain to someone about tight chests."(SrHac)*



*"I have noticed an improvement in our asthmatics, especially about the knowledge about the difference between the reliever and controller pumps and the technique. The MDI technique of younger children is also better. They find the spacer too bulky to carry in their bookcases to school."*(SrvR)

#### **7.6.5 Summary PAOR cycle four**

During PAOR cycle four, the planning phase involved careful collaborative reflection and planning on the need for educational aids to assist in the education of asthma patients at their CHCs. Action during this cycle involved the CIG engaging with the educational aid and receiving training on the use of the aid in practice. The CIG further practiced the use of the educational flipchart in the presence of the CIG prior to using it at the CHCs. The observations would include all educational interaction with asthma patients at the CHC. Feedback was given to the CIG by all the CNPs, who undertook to use the educational aid in practice, using a reflective diary to record their specific experiences with patients. CIG reflection supported and confirmed that the educational aid (flipchart) was a practical and useful tool, and should be used in larger groups of patients rather than individually. CIG also felt that experience gained in educating patients on asthma could be utilised in improving the quality of care of other NCDs, such as hypertension, diabetes and epilepsy.

### **7.7 CONSENSUS MEETINGS**

As depicted in the conceptual framework (Figure 7.1), the PAOR cycles were then followed by a process of consensus building on what had been learnt. The research methods employed in the building of consensus were predominantly qualitative, although quantitative evaluation of consensus has also been used. Agreement refers to the extent to which each member agreed with the issues under consideration and was rated on a numerical scale.

The site (CHC) specific asthma teams were first approached separately in small mini focus group discussions (mini-FGDs) in an attempt to reach site specific consensus. This was then followed by the bigger CIG discussion on consensus, which took the form of a nominal group technique (NGT) process. This was followed immediately by a quantitative questionnaire evaluation of the action research process. The methods are described more fully in Chapter 3.

### **7.7.1 Mini-Focus group discussions**

The mini-FGD was conducted at the CHC of each team, recorded and transcribed and the transcriptions were returned immediately to all the members of the CHC team for member checking. The main focused question was carefully selected to be exploratory and to allow members of the CIG to answer in a variety of ways. However the question also needed to be as specific as possible in order to lead to the evaluation of the action research process. Finally the decision was taken to explore the question:

*"For you personally, what were the main positive aspects of this action research project and what are your suggestions for improvement at your CHC?"*

This was then followed by a qualitative analysis of the mini-FGD. The results were presented to all members of the CIG for reflection. The mini-FGD was then followed by the main CIG consensus meeting, which was conducted as a larger FGD using the same question, before using the NGT to evaluate the degree of consensus.

### **7.7.2 CIG Reflection on actual learning achieved**

A thematic analysis of the larger group's FGD was conducted after the transcripts were sent to the CIG for member checking. It was clear that the greatest learning experienced by the CIG were related to their activities with the ASMP and the educational flipchart. Their learning led to changes actually being implemented at the coalface.

#### **7.7.2.1 The ASMP**

##### **7.7.2.1.1 The ASMP was a useful tool in the management of asthma at CHCs.**

The ASMP provided a comprehensive presentation of the most important key recommendations contained in the asthma guideline. This tool was put into practice by the CIG; used in its initial form, and then refined and further developed into its final format (Figure 7.2 page 1-3):

*"...so I first had to take it home and sit with the thing and sit with the thing and look at the thing. I realised it's actually a smartcard. It is so full*

*of information. The patient empowered and knows what to do when he gets sick; the patient knows how to control his asthma. The patient has got both his pumps on there that he must understand. He blows, the smoking status, everything is on there. Even if he has other sicknesses like diabetes and stuff, it's all on there. So I actually try to tell the patient this is your smartcard. If anything happens to you, then somebody picks you up and they will see this one has asthma, this one is allergic to penicillin, this one can't have this, and this one also has diabetes. So, that is actually a very nice card. " (SrJac)*

The practical usefulness of the ASMP in the CHC setting was not only reported on by CIG members, but by other staff as well. It was considered very useful even by groups such as medical students outside of the CIG:

*"You know Dr P, I can now convincingly state that this topic and the implementation of the ASMP has profound meaning to me because it is clearly documented in the guidelines that every patient; an asthma patient, must have a written asthma plan to help them understand their asthma better and also to improve their asthma care. Up to now there has never been a written asthma plan available to patients at RCHC that I am aware of." (SrAl)*

*"Also doctor, with the ASMP, we also gave it to the students that came that were also busy with their research, and they also used it on their clients that they had. They really felt that this tool assists them very well. So, like we say, it's a very good tool to use. It really encourages the health workers and the patients, and then also to stick to those requirements on the tool. "(SrHac)*

The ASMP empowered members of the CIG to remain focused when providing care to asthma patients:

*"For me personally it really empowered me to work with the patients, and also what assisted me most is the self-management plan and then the educational flipchart, because with that I discovered that a person stays focused when you're busy with a patient, and it also assists the patient and encourages the patient to work with you as the health worker, and vice versa. That really stood out for me with this whole research that we did. "(SrHar)*

It also empowered the patients to take part in decision making and become active partners in their care:

*"I agree with Sister G and the way I agree is that I mean it is a partnership between the clinician as well as the patient. It is not my illness and this is where self-empowerment comes in; that it is your illness; so you have to take charge of your own illness. With regard to the other issue and from what I have learnt, discovered, is that because the patients have that self-empowerment, control, they now give accurate feedback as to how their asthma is at home; whether it improves or not..." (DrBe)*

Some CIG members felt that the ASMP facilitated goal setting with the patients and allowed them to plan their care in advance and provided a tool for further motivational change:

*"...because at the back of the SMP is the thing about setting of goals. It actually brought them to that point where they can definitely say this is what I want to achieve. So I would agree with her, it's a very good teaching tool. It doesn't just help you, but it helps the client and the SMP is something that I think should be used everywhere for asthmatic clients." (SHac)*

*What is also so beautiful is that there is a goal in the asthma plan, which could nicely, you know, motivate the patient. So for example at the end of this year 2012, I will no longer smoke. That is so beautiful to me; you can motivate them to change." (Sr Al)*

Members of the CIG had concerns about patients not taking responsibility for their own self-care and health. Some noted that the ASMP helped patients to take responsibility for their own health:

*"I would also agree with the SMP, especially from our previous meetings, we have always felt that the patient should take more responsibility. We're always talking about how difficult it is if patients do this and that, despite all our education. So I think this tool, plus everything else that's said, plus that also may be a good tool that sort of helps the patient just to take that responsibility because they now have to document it and check it. So that's one way of improving or increasing their responsibility."(DrI)*

Patients had a sense of ownership and felt involved in decision making regarding their asthma care. The ASMP was clear for patients to understand and enhanced a sense of collaboration in their care:

*"And even at other CHCs, and with every audit, asthma audit where it is being said that there must be a written self-management plan. And for me it is so well designed that the patient could understand it and have ownership and can feel that they are part of their treatment and that it is not being forced onto them and decisions just taken without them. Everything which needs to be done for an asthmatic patient is well laid out; where it's the patient's control of asthma; whether the patient had acute attacks; whether the patient had been admitted to hospital and whether the patient smokes. All important detail is captured in it."* (SrAl)

As the tool was simple and straightforward to understand, patients could clearly see what had been omitted and not done during their visit and thus the expectations of care were modified:

*"They feel part of their treatment. They have a better understanding of what their treatment is about. There is a beautifully clear stepwise plan. Everything in black and white. They can see precisely what needs to be done and what has not been done. In future they can come back and say: "Sister, My peak flow was not recorded' or my inhaler technique was not checked and such little things."* (SrvR)

An important shift in the health care workers was that they started to see asthmatics as individual people that they were caring for, rather than patients on whom a series of tasks should be performed:

*"Yes I agree with it. Instead of just the asthma pumps and such things, we are dealing with human beings and human beings are important. You need to understand the patient holistically. As sister said there are different aspects. If you come down to the level of the patient and manage the patient, then asthma management should be easy."* (DrBe)

#### **7.7.2.1.2 The ASMP allowed patients to experience ownership of their care.**

The act of signing the ASMP card was a new experience to patients and enabled them to be more explicitly active partners and to take more responsibility for and ownership of their asthma care. Patients could thus check whether guideline

recommendations were actually dealt with during the consultation with their primary care practitioner:

*"For me, what I personally feel what helped the self-management plan, it actually helped you assess the patient, you get the level of control, you do the inhaler technique, and the smoking cessation as well, and you give the patient responsibility to sign and take ownership of the card, of his card to sign, so that if he comes to another clinician, that he can remind the clinician as well to sign it if you didn't do the peak flow or you didn't ask him about the difference of the inhalers as well. Because we do audits quite regularly, if we have a meeting in our group, the same response comes from there." (SrA)*

*"I also like the way it is done, because it's a two-way talk, the patient and myself, because at the end of the whole process, he has to sign so that the following visit, he can also ask if maybe he is seen by the other member, you didn't ask me about the peak flow. He can even remind that person who is seeing that patient that you didn't ask me about smoking, you didn't ask me about peak flow, and all that stuff." (DrM)*

*"What I have also picked up over the period that I have been involved with research, is; how can I put it? They realise that they themselves hold the key to controlling their asthma. So they realise that they need to take ownership and with the knowledge we convey to them, they can control their asthma better. They alone, because you can take a horse to the water, but you can't make him drink. This is what they have come to realise, because we nowadays tell them the naked truth. It is your asthma; you must take control and you have the key to success. I don't know if you agree with me or not?" (DrBe)*

The experience of asthma patients at primary care facilities can be improved. Patient involvement and participation in their care is further encouraged and endorsed by the MDHS vision for 2020:

*"I think it will probably continue the way it is because even for the metro district health services, the vision, the patient experience is sort of one of the things that is being pushed. So this is going to fit in with that vision of enquiring about the patient's experience. So maybe for the first time we're getting their point of view from finding out whatever we're telling them, Is it what they want to know? Is it useful? or do they actually want to know*

*other things? So that whole patient experience is going to be a big thing going forward as part of the Metro District's vision for 2020, the patient experience, because you might think of it in one way, but they experience it in another way. But specifically for asthma, the signing of the SMPs by patients may be the start of it, besides the audits that we've been doing about asking patients how they felt about sessions or whatever else."*  
(DrI)

#### **7.7.2.1.3 Learning gained from the ASMP implementation can be applied in the management of other chronic diseases.**

Members felt that asthma care had previously been neglected in favour of other chronic diseases and that this project had focused attention on the needs of asthma patients:

*"I agree, because what I also experienced before is that the patients with much co-morbidity such as patients with asthma, diabetes and hypertension, the asthma side of their management have usually been neglected. So I think the positive aspect is that more attention is now given to asthma as well."* (DrBe)

Members even felt that important principles they have learnt in using the ASMP could be applied and transferred to other chronic diseases:

*"The other thing, the positive side of things, is that which I have learnt of asthma, I now apply to other conditions such as diabetes and hypertension. So you can expand it to other chronic conditions."* (DrBe)

#### **7.7.2.1.4 The overall control and learning of asthma patients has improved.**

Members felt that acute exacerbations as a result of poorly controlled asthma and asthma related hospitalisation for asthmatics specifically, had become less frequent eventhough this observation had not been supported by the audit results:

*"The same was shown in the survey. Those that we've interviewed with the questionnaire and the people that we ask here, most of them have never been hospitalised for asthma as such."* (SrHar)

*"So we have now also achieved better control of asthma and with my improved knowledge, I am also now equipped as a nurse practitioner to*



*assist the patient better. Through the groups I have learnt about their errors and our common errors and where we could improve. We had an outcome because there was also better communication between staff and us here at our hospital.” (SrA)*

*“I think overall there is also better control of the management of asthma patients. Patients who used to come regularly for the management of acute exacerbations are now coming much less frequently for nebulisation.” (SrG)*

Members of the CIG attributed this improvement in outcome to educational activities, which were linked to their asthma clubs. Some felt strongly that patients who attended the asthma clubs were better controlled than those who did not receive education at asthma clubs:

*“Yes, that’s correct; they do seem to be better controlled. But the other challenge we have, is that the patient that comes to the club and who is part of the whole education and things, they’re okay, but there is a percentage, we can’t quite quantify, of patients who just come to casualty, so they’re never part of the club system. So the challenge is for the casualty doctors to refer them to the club, they sort of just come in with a tight chest. Their management is otherwise very poor, nobody checks their inhaler technique etc. They only frequent the hospital as acute admissions and are not seen in the asthma club and therefore miss out on the education other asthmatics receive.” If you attend the club your chances are that you are very well controlled.” (DrI)*

Some members observed patient learning in the process of guideline implementation:

*“To date we can say we are all proud that most of the asthma patients that attend Elsies River day hospital club know how to use the metered dose inhaler effectively. I walk in the trauma and we are beginning to see the advantage of this in the trauma, in the sense that less and less of the asthmatic patients come with acute exacerbation to the trauma unit. That is to say that whatever we are teaching them at the club site is beginning to have a spin-off in the sense that less number of them attends trauma for acute relieving of their condition.” (DrBl)*



### **7.7.2.2 The flipchart**

#### **7.7.2.2.1 The flipchart was a very useful educational tool.**

The flipchart contained all the key recommendations of the asthma guideline and was considered a very useful tool in the education of asthma patients:

*"The other thing is that the flipchart helps a lot for patients to understand and for me personally, I have become more confident to address patients, because you have all the guidelines. The picture is there, which the patient can immediately identify with and therefore participate in discussion and give opinions, because the picture is there and they contribute to discussion. It is no longer just you who does the talking. They talk with, demonstrate understanding more and they are more enthusiastic, and the DVD also. It contains everything." (SrvR)*

*"I would agree with that. The other sort of big benefit of the flipchart is that the nursing staff have got lots of topics to discuss, lots of talks to give, and obviously like everybody else they've got their favourites and their not so favourite, so they are stronger on one topic but not on the other. But with this sort of standardised message, even if they aren't that interested in asthma but they are giving a talk, they can at least use something that everybody else is using, so the same message gets across. One might give a good talk on diabetes, the other one doesn't do a good job, and there are different messages. So at least for asthma we know there's a consistent clear message that everybody is giving week in, and week out."(DrI)*

CIG members realised and agreed that patients understood and performed the inhaler technique poorly. The flipchart highlighted the fact that one of the main reasons why patients remained poorly controlled was as a result of poor inhaler technique:

*"Yes I agree. What I understand better now is that one of the main reasons why patients were so poorly controlled is because of poor inhaler technique. They have forgotten how to use it. It is surprising how many wrong techniques patients have. You now realise the importance of the inhaler technique which you have to correct in order to help them."(Sr Hac)*

*"On my side, as sister Ar said, it teaches me, it encourages me and motivates me for the communication between me and my patient, and*

*also giving the education to them, as you say, teaching them about smoking, smoking habits and also the inhaler technique, how to use it, because at the beginning, you find that the patient didn't know how to use the inhaler technique. So, by demonstrating this inhaler technique to them, so they have gained a lot.”(SrN)*

The usefulness of the flipchart to assist them in the teaching of proper inhaler technique was clearly expressed and members felt that the education of the inhaler technique and spacers had improved since using the flipchart in patient education:

*“You find out that really, they have improved a lot, because really, at the beginning, they didn't know how to use the inhaler. They will just spray say two puffs, the same time, and then just remove the pump immediately. So now I found out that they really improved a lot. We also emphasise the rinsing issue after each dose, because they have to rinse.”(SrN)*

*“Yes, what I have discovered with the research and with the management of problems you experience with patients, especially elderly patients. Many of them have arthritis in their hands, and cannot handle the pump well. They also do not manage the coordination between breathing and the squeezing of the pump well. In such situations I use the spacers much more and I find it very effective. That is one of the reasons why I think the patients are much better controlled.” (SrG)*

As a secondary spin off some members felt that the education of the inhaler technique in children had also improved:

*“And you know we manage them like the adults in the club and we do not make them feel like they are children and not heard and noticed. Because you can see the confidence these children have. They feel so good if we could use them to demonstrate and they feel so good to learn. You know when you educate; I like the two way method. I do not like to do all the talking, I always involve the patients. So in the case of a child I ask; ‘What do you do at school?’ ‘Do you take you pump to school?’ You know it is important to take your pump.’ So they are cute.” (SrRub)*

The teaching of inhaler technique is not only the responsibility of CNPs and pharmacists. Doctors have also improved their teaching of the inhaler technique by using the flipchart:

*"What I've learnt is if you are in your group and what you have learnt and when you come together, the feedback that you got when you take it to your own facility, there is an improvement by sharing with your other colleagues, because what I noticed, it's like in the beginning all the clinicians weren't doing this inhaler technique with the patients, but as I go even to trauma, because we have to go for signatures most of the time, and the doctors are actually now teaching the patients to do inhaler technique. Doctors were the ones that never used to, only the nurses."*

*(SrA)*

Understanding the difference between the reliever and controller MDIs became clearer among patients. Teaching the difference between the reliever and controller MDIs has improved since using the flipchart:

*"Yes, I agree, and again, it's also to point out to them the difference. Like sister Nd is saying, because if you have the one to one consultation in the room and you ask the patient, do you know what the difference is, most of them don't know, but by even using the flipchart to show them, they do get insight into their illness."* (SrAr)

*"And for example the difference between the two pumps they receive. They now know precisely which is the preventer and which one is the reliever."* (SrAl)

*"UB I think. UB was just on Asthavent, the reliever for couple of years and she used so much Venteze three, four times daily and she had never been on Budeflam. I sent her to Sr A to attend the asthma club. When she came back, she came back with flying colours. She could see the difference. She did not need to use her reliever often anymore. She could not even recall when she last used her Asthavent pump."* (SrvR)

Patients were beginning to grasp the fundamental differences between asthma and COPD. Explanation of the differences between asthma and COPD was facilitated by the use of the flipchart.

*"Yes, there again, what I have learnt, it's to see the difference, the direct diagnosis between asthma and COPD. A patient would say no, because they've been smoking for a long time and there's no improvement, and you ask from what age they started to smoke, since when they are smoking, and then if you do the correlation between smoking and COPD so that the patient gets the correct treatment."* (SrA)

Education regarding smoking cessation had improved since using the flipchart:

*"Yes, it is. But what I found out, one to one is actually by far the best if you do the smoking cessation, because everybody doesn't really want to say out in the open that they are smoking and how many they are smoking. "Oh, I'm not smoking that much", but they don't give the amount, sort of." (SrAr)*

*"I think we also had reasonable success in assisting patients with smoking cessation. Patients who have people who smoke in the house are now more aware that they have to avoid passive smoking and they would leave the room themselves." (SrG)*

Education on the triggers of asthma had improved since using the flipchart:

*"There is a nice picture in the flipchart of that home scene of the cigarette in the ashtray and the cats and the dust and the stuff. That is a very nice picture for the patients to identify with because they know that picture, people sit and smoke at home and there are cats on the floor, and then there's an asthmatic in the house. So that is also a nice tool to use, because the flipchart already has that in." (SrJac)*

*"Yes I agree. I think the guidance of the patients with the green booklet which states that you can control your asthma was one of the most positive experiences for me personally. Many of them return and say Sr; "I removed the carpets and my asthma is much better; or I bought a vacuum cleaner in cases where they could not discard the carpets especially where they could not afford to. You assess every patient and adjust accordingly - according to their circumstances, because the important thing is that they should realise what the trigger factors are." (SrG)*

*"Yes, it really generates discussion, especially with the triggers. When you get to that part in the flipchart, then the one will say no, but that doesn't trigger mine, but this will trigger mine. I think the flipchart actually helps generate discussion regarding their asthma amongst the clients when they're sitting there. Even after my talk, I start the observations and they're still talking, they're still discussing it, and they will still say, and whatever we pick up from there, what is wrong, we will correct." (SrHac)*

Education on the assessment of the level of control had improved since using the flipchart:

*"We now have the 20 second questionnaire which we complete for every patient. Well if the patient has not been assessed at his first visit then he will be later. The patients should be assessed at every visit though. The control, because there are usually three points we emphasise a lot: what the limitation is, the number of times the reliever is used per week; whether he could sleep through the night or woken the night because of a tight chest or if the patient stays absent from work or school. You could then have an idea that the patient is well controlled or not." (SrAl)*

Fellow staff members not involved with PAR were using the idea of flipchart education to educate patients with other chronic diseases:

*"In general and for example with the chronic diseases, the hypertension and the diabetic club which I also mentioned to Dr D. So I mentioned that Dr P and co have implemented the asthma flipchart so they are now busy getting a flipchart together for diabetics, which will make it so much easier also." (SrvR)*

CNPs always struggled with the diagnosis of asthma and COPD. The flipchart also assisted them in differentiating between the two conditions:

*"Another positive aspect for me was that we concentrated much more on the correct diagnosis of your asthma patients especially with regard to the difference between Asthma and COPD and as a result of that, the guidelines are better implemented. I think it had an impact on the cost as well. The fact that the patients are better controlled, the correct diagnosis of the patient, because they now receive the correct medication." (SrG)*

For the CIG members it seemed easier and quicker to educate groups rather than individual patients and using the flipchart assisted a great deal. It also encouraged interaction within groups:

*"But what was striking to me with this group because they happened to be at the same level. They boasted about how much they knew and they were almost in competition to know more than the other. 'I know this and I do this and how this works.' But the interaction was good and valuable. They are comfortable with each other and they are happy because they notice the attention they are receiving. They are not just being told do this or that. As Sr G said earlier it is a partnership and they develop ownership." (SrAd)*

*"Yes, I also use the flipchart, because sometimes SrR can't be here, and I found that it's a really fun and informal way to pump the patients full of information without them really knowing that they're getting this information, because the pictures are funny, it's colourful and the information is really valuable to them without them knowing."(SrN)*  
*"They interact quite nicely, because that also makes me feel more confident to do it another time. The patients stand up and they volunteer to show the MDI technique to the others and the rest must show what they did wrong and what they did right. That is really a fun way of getting them to get more information." (SrJac)*

Furthermore specific education on peak flow readings had improved since using the flipchart:

*"..Usually we have decided, with every asthmatic even those who present at trauma, we decided to take the peak flow reading of every asthmatic patient who comes here."(SrAd)*

*"But what I have noticed is that some people do not know how to use the peak flow metre. We do not have lung functions that we can do, but we have a simple system like the peak flow reading which we do. So we use it in the trauma unit and in the prep room and there has been a huge difference between what happened in the past and what happens now." (DrBez)*

Even the note keeping had improved since the flipchart was used:

*"But I see there has definitely been an improvement in the clinical notes since we took action. Note taking was very poor. As I said, we had 30% in the beginning of the year, but as I have evaluated the notes on a regular basis I have noticed improvement in what is being documented. The note taking is improving." (DrBe)*

*"We discussed it much more often at our clinical governance meetings. I think we have also standardised the recordkeeping of our patients." (SrG)*

Members felt that they now emphasised quality of asthma care rather than just quantity:

*"Yes we now concentrate on quality rather than quantity. We realise that we are working with people because at the end of the day the day, people come with expectations and they want to be listened to. So we do not*

*rush through them. As I said there is a full partnership and we consider the feelings of patients as well.” (SrJ)*

#### **7.7.2.2.2 Learning and teamwork from the action research process improved.**

The PAR process engaged members in a transformative process with emphasis on self-awareness, reflection and within which personal change and growth was inevitable. Members agreed that learning occurred in many different areas of the action research process and that teamwork had improved as a result:

*“...the other thing that stood out for me in this whole process was the importance of teamwork in the management of any chronic condition, but especially asthma. So the doctors are more aware that they don’t have to do everything on the patient because they know they can’t do it and they often don’t, but now they know they can send them to the club, there are people there that can do the education, maybe things that they [the Drs] don’t have the opportunity to do. So, that is one of the things that actually stood out to me, reliance on a dependable team to manage, not just that I can see the patient fully on my own in the rooms.” (DrI)*

*“I actually found the process quite interesting. Starting with the planning and then the action and reflection. I found it quite interesting, and I will be using that sort of planning as part of our therapeutic groups, because the group will plan what they’re going to need to do and then they must do it, so the action will be there. I need to do the observation afterwards and evaluate and review. So I found that quite useful and interesting, just to give me – actually, how can I put it – that I can also evaluate myself, to see if I’m doing any good.” (SrHar).*

*“What really stood out for me is if you work in a team, then at least you see you are going somewhere, but if you’re alone, then it is a struggle. Even with the rest of the staff, because now you come and you give feedback of what you’ve learnt or what you want to do, then it’s not important for them so they’re not going to worry about it. But if we at least, say for instance like myself and DrI and SrHar, now at least there are three of us, so we can as a team, and Dr gives over to the rest of the staff, like the CNPs, now they also see that picture, and now we’re all*



*working towards that. It really pays off, but if you're alone in this, then I must say it's really hard." (SrHac)*

Learning occurred from individual reflection as well as from reflection related to interaction in the CIG:

*"I would agree with that. Another thing that we have had in the last ten months or so is the actual insight, the insights that we get from other people, because we never got their perspective of how they see asthma, what their challenges are. So that's also been very useful to me, to listen to the CNPs and other staff categories to actually see what their challenges are." (DrI)*

*"I can agree with that as I have personally also benefitted from it. What I also found is that the action research and the group has broadened my knowledge and empowered me in the sense that I know and understand much more with regard to asthma care. Right in the beginning when I was approached I knew very little. I come from a different background and in the past I just referred the patient to somebody else whom I thought knew better than me and could do more for the patient." (SrJon)*

*"Yes I agree with SrVr. At different CHCs where they have dedicated staff attached to their clubs and the roles the nurses and clinical nurse practitioners have to play are well defined. They all work together as a multidisciplinary team whereas we are sometimes alone. It remains very difficult and exhaustive if you do not have adequate staff to assist. But it feels good that there are other groups and people who have the same level of interest and enthusiasm in asthma care."(SrAl)*

Some members observed an improvement in the relationship between asthma team members at the CHC:

*"I think what has also been positive was the fact that the relationship between members of staff has improved. There is a better understanding among each other, which had been a direct positive result of the research process." (DrBe)*

Members viewed reflection as important and useful and felt that it must be used more frequently in groups at their various CHCs:

*"I think it doesn't take long to reflect. It's just a matter of setting aside the time as a team, or individually, you can also do it anytime you want to. But I think as a team, it should also be done as a team." (DrI)*



Learning meant being able to adapt to the demands posed by different individuals with asthma and being able to improvise:

*"I think I have also learnt a lot in the sense that you have to adapt to the level of the patient. That in some instances the patient may have a low IQ. I had a deaf and dumb patient and to give asthma education to her was challenging. You learn to overcome these problems and to apply different methods. To 'improvise' is the word I am looking for. With every patient, you have to consider their cognitive abilities, the insight they may have and to adapt your education accordingly."*(SrG)

The group recognised that health workers experience a lot of frustration in the way they currently approach patient education and behaviour change counselling. They recognised that a more guiding style based on motivational interviewing might be more helpful:

*"That even came out, that I think we must bring in motivational interviewing techniques with some of the nurses if they haven't been exposed to that, but there were other things that cause them frustration, was that they didn't maybe deal with their patient's lack of listening and action or commitment, and that frustrated them no end [chuckles] [SrH agrees]. So there might be some sort of group teaching that maybe we can do to assist them with dealing with those types of frustrations."* (DrI)

*"Definitely, because it can become frustrating when you're dealing with people that you feel aren't listening, or not grasping what you are trying to tell them. So, if you get different techniques, learn different techniques from others, it would help."* (SrHar)

*"I suspect that some of the nurses get frustrated and they say: 'what's the point, nobody listens', but even if there is one out of them that didn't listen, that they maybe focus on the one that gave them a hard time. Then they just say well, it's a waste of time, so why carry on. So we almost need to keep them, or everybody, keep them motivated to continue."* (DrBel)

The competency of the CNPs within the CIG to manage asthma had improved:

*"Well for me personally, I think it's been useful time spent in the action research project in the sense that as a family physician, I can say authoritatively now that my sisters, the CNPs at the club, they are having a good grip of the way they manage asthma patients in the sense that*

*they don't come to me as frequently as they used to do in the past, asking questions on what to do and what medication to write up for this asthma patient. The impression I have from them, on interaction with them, is the fact that they are able to sort out this patient now confidently.”(DrBl)*

*“I agree with Dr B as well, because since I am part of this action research project, I've been using the asthma guideline in the club, and I've really been empowered by using this because my knowledge is now better, so I can educate my patients better. If Sister Cloete, who isn't on this project, if she doesn't know what to do, or if she has an asthma patient then she can come to me and say what do you do with the research on this patient. I have learnt a lot, I have gained a lot of information from it, and it is better now for me to share that information with other CNPs, and even to educate the patients.” (SrJac)*

*“I gave out almost 80 of those asthma management plans to the patients personally in the club, and I already received a few back. It's nice to get good information back, because one patient that came from [OBD] that was new to the club said since I took that Atenolol tablet away his chest is much better, So that is the Atenolol. The other one said since you gave me that brown pump, I'm feeling much better. That is the Budeflam.” (SrJac)*

Some members felt that asthma patients requested to be members of the asthma club as the news was spreading amongst the asthma patients:

*“With us the asthma club is in demand, because the patients speak about it and tell each other about it. They come back from the dispensary to ask if they cannot attend the asthma club. They come of their own accord because the word is spreading.” (SrvR)*

Some members felt that death was preventable if patients received the correct information and guidance:

*“When I listen to the patient speaking about relatives who died of asthma. ‘My brother and my mother had asthma and they died’ I feel very bad and cannot believe it, because this is a condition which you can control. People have previously not been well informed regarding the treatment in comparison to now. They did not have as much information regarding the treatment of asthma available as we now have. So to me it remains very tragic indeed when I hear of the demise of somebody as a result of poorly*

*controlled asthma. I really feel sad about it. It is then when I wish I could have made a difference earlier on.” (SrAl)*

Members felt that not only themselves, but most other CNPs, had learnt a lot in the process of using the flipchart:

*“I feel much more confident, and especially with the teaching aid, because the patients interact very well. They are sharing problems in the groups, and they also reflect from other people in the same group about their situations. From this teaching aid, I speak in their language so that they can understand, and most predominantly here they speak Afrikaans. The pictures on the teaching aid were also very valuable and it made them more understand what I was trying to say to them. Using Afrikaans, it’s simple and they know what the teaching aid is all about, and they could ask questions with regard to the teaching aid.” (SrRub)*

*“I suppose I was hoping when SrHac educates the patients with the flipcharts, and what I see there actually makes me happy because there is enthusiasm, particularly on the part of the patients in the way she interacts with them. Often she calls on one or two of them to act as patients using the flipcharts with placebo MDI demonstrating to the asthma patients in the club how to use the metered dose inhaler, taking them one by one, step by step, on how to make use of this metered dose inhaler, pointing out the difference between the reliever and controller to them, and using volunteers among them to demonstrate to others were hallmarks of this teaching because others also feel confident that when they go home, they do understand how to use this very important medication in managing their condition.” (DrI)*

*“The issue with the CNPs, we have sent CNPs on guideline training and we have done workshops for CNPs in terms of how they put the guideline into use. So among us we have not only the Sister in the club, even generally among the CNPs, knowledge of the guidelines and what they need to do for the asthma have actually improved. Leave the MDI aspect now, even the asthma self-management plan is becoming a buzzword at Elsie’s River now, not only among the patients, but among the clinicians, often when these patients come for follow up, before seeing everybody looks at what have we not done on the self-management plan.”(DrBl)*

*So it becomes a quick reference guide for clinicians as well as the patients to say what have we not covered in terms of your illness today for your follow up, or where did we stop at the last visit. So, people are beginning to use peak expiratory flow metre pre and post acute exacerbations. For follow up we use it just to see where these patients are every time they are at the clinic. This the Sisters are taking very, very seriously, and the patients are also beginning to be aware of this.” (DrM)*

Doctors’ learning had improved and their behaviour had changed:

*“In terms of the way forward for us, I think at Elsie’s River we are beginning now to say that we have a presentation every Friday morning. One of the Sisters working in the club, the CNP, she is going to do a PowerPoint presentation to the entire staff on these action research objectives, and the main thing of that presentation would be to increase the uptake of the asthma guideline within the context of our patients at Elsie’s River. Most of the things we have learnt and implemented on the action research project are going to feature prominently in this presentation, how we are assisting them in this regard as the family physician. Not only that, we are also going to roll out this thing across the sub district to other smaller CNPs to empower the CNPs in those areas as well.” (DrBe)*

Knowledge of specific asthma guideline recommendations had improved among doctors:

*“In fact, if I reflect back ten years ago when I first started here at Elsie’s River, most of the clinician’s prescription is just on Asthavent only. Even among the clinicians, the knowledge of the guideline has improved tremendously, that a quick further review has shown that they don’t always just write Asthavent. Most of the prescriptions for asthma also contain Budeflam. This is to say that the knowledge of guidelines among the clinicians at Elsie’s River has improved tremendously compared to what we used to have in the past.” (DrBe)*

*“Some of the patients often accost me in the corridor and say you see, Dr, I don’t even come to trauma anymore, because now I can see that my pumps are working for me. They say when last did you see me in trauma, then I say please, keep up the good work. So, even in terms of satisfaction on the patient’s side, we’re beginning to see the effectiveness*

*of this guideline objective, how it has been improving their lives and the way they manage their condition.” (DrM)*

General improvement of asthma care was observed:

*“Well, the patient, as regards the questionnaire, many of them don't present, as I said earlier on, they don't present at the trauma for acute exacerbation of their condition. To us, we believe it's because of the impact of this guideline that we are preaching to them, or we are using in their management, that is bringing about decreasing the attendance at trauma.” (DrBe)*

*“Then, our interaction on a one to one basis with them also reveals that some of them that we used to see frequently, now we haven't see them in the last three months. Whenever we come across them, either in the hospital or outside the hospital, what they said is now Dr, I think I am much better now. I no longer have this attack all the time. Even when it happens, I know exactly what to do, and that is why you don't see me at the day hospital as frequently as you used to before.” (DrBe)*

*“The self-management plan is one of the things that actually they are so enthusiastic about it, that they no longer say no, I don't want to see this Sister, or I don't want to see that doctor, because even if the doctor forgets something, they will quickly remind the doctor, that pump that I used to blow into, you haven't given it to me today. So those are things that are giving us the impression that they are now beginning to appreciate what this management is all about.” (DrI)*

*“In terms of recognising contributing factors, many of them have now come to the clinic to say listen doctor, I think the reason why I come here often is because my mother smokes, or my husband is a big problem, or I got rid of my dog or the cat in the house and since I have done that, then I no longer have bronchospasm. I think the bottom line is generally the patients are feeling very good about this. Not only that, the CNPs, the MOs, everybody that is involved in terms of managing this asthma are beginning to feel on top of this particular problem. I think it's just a question of time before we see that these patients are no longer visible within our hospital area because many of them are now capable of managing themselves if they have an attack at home.” (DrM)*

Some CIG members felt empowered by the PAR process especially as it was collaborative and allowed people to express their points of view democratically without being overpowered:

*"I quite liked the way this process was facilitated especially in allowing all members to express their views in this protective environment without domination from anyone present. I mean all of us were allowed just to say what we wanted to say." (Dr M)*

Some members felt strongly that the action research process should not stop and that their learning must continue:

*"That we must be on-going with the asthma care as such that we started, to continue, because we can't let it go now. We have come a long way, so we must continue, and it's for the patient's health and benefits as such." (SrA)*

With all but one member of the CIG present at the consensus meeting, there was sufficient variety of suggestions and ideas and members were keen to continue discussion towards the end, but had to close due to time constraints. Smaller groups from the different CHCs within the CIG indicated that they wished to continue meeting with each other and that they felt confident to sustain the process at their sites without the formal facilitation of the researcher.

### **7.7.3 Nominal group technique (NGT)**

I used the NGT as a more structured and systematic approach to building consensus at the end of the PAR process. The NGT was developed by Delbecq and Van den Venn in 1971 (Delbecq AL, 1975) and this structured consensus method ensured that all relevant issues were considered, provided a democratic approach, avoided conformity and domination by individuals or by those with vested interests.

The NGT process allowed the CIG members to democratically express what they learned and to then prioritise their learning as a group. I used a structured meeting process where information was gathered from CIG members. The NGT process included the following steps (Anderson G & Ford L, 1994; Zuber-Skerritt O, 1998,) also described in Chapter Three:

**Step 1:**

- The NGT process was explained to the CIG.

**Step 2:**

- A focal question was presented to the CIG. In this PAR it involved the question:

*"For you personally, what were the main positive aspects of this action research project and what are your suggestions for improvement at your CHC?"*

**Step 3:**

- The CIG members had the opportunity to individually generate ideas and brainstorm their thoughts in response to the focal question posed.

**Step 4:**

- Each CIG member compiled a list of their responses to the question posed.

**Step 5:**

- As the facilitator I collected the ideas from each member of the CIG and noted them on a flip chart. Discussion, criticism and judgment of the items listed were not allowed during this step.

**Step 6:**

- After collection of all the ideas the members were allowed to clarify, discuss and express their opinions about the list. Some items were combined and the remaining items were then numbered sequentially.

**Step 7:**

- Following the discussion the individual CIG members selected five items from the list which they thought were the best answers to the focal question posed and ranked them from A-E as they considered most important.

**Step 8:**

- The facilitator allocated points for each item ranked from A to E (where A=5 points; B=4 points; C=3 points; D= 2 points; E = 1 point) and thus works out a score for each item.

**Step 9:**

- The final reordered list of the group results was then displayed on a flip chart to the whole CIG to show the groups collective priority list of statements from the highest score at the top to the lowest (Table 7.4).



Quantitative results of the consensus meeting are depicted in Table 7.4, which shows the group's consensus of the most important aspects of the action research process ranked in order of importance the most positive learning experience for each member of the CIG.

**Table 7.4:** Ranking of the most positive learning experiences in the CIG.

<b>Rank</b>	<b>Activity</b>	<b>Score</b>
<b>1</b>	Improved use of the asthma self-management plan	<b>58</b>
<b>2</b>	Improved use of the educational flip chart	<b>40</b>
<b>3</b>	Improved knowledge of the asthma guideline.	<b>25</b>
<b>4</b>	Improved clinical diagnosis of asthma.	<b>15</b>
<b>5</b>	Improved group teamwork.	<b>12</b>
<b>6</b>	Improved understanding of the PAOR process.	<b>11</b>
<b>7</b>	Improved quality of asthma care.	<b>10</b>
<b>8</b>	Improved assessment of level of control.	<b>8</b>
<b>9</b>	Improved understanding of patient KAP of asthma care.	<b>7</b>
<b>10</b>	Commitment to ongoing action.	<b>6</b>
<b>10</b>	Improved metered dose inhaler technique.	<b>6</b>
<b>12</b>	Improved understanding of asthma guidelines and based evidence based practice by CNPs.	<b>4</b>
<b>13</b>	Improved understanding through collaborative learning	<b>3</b>
<b>13</b>	Improved patient knowledge of difference between reliever and controller MDI.	<b>3</b>
<b>15</b>	Improved commitment to smoking cessation education.	<b>2</b>

Although the whole NGT process was recorded and could be transcribed, transcription of this process, is viewed by some as too time consuming (Zuber-Skerritt O, 1998) and therefore an immediate summary of the entire process was used. The main purpose was to get the main findings in response to the focal question back to the CIG as soon as was feasible. For this reason the NGT process was summarised and presented to the group a few days later for member checking and confirmation.



#### **7.7.4 Consensus questionnaire**

The statements evaluated in the consensus questionnaire were derived from the activities which scored highest in the NGT process. The lowest scoring statements were excluded. The consensus questionnaire dealt with what the CIG learned and thus served as a quantitative confirmation of that learning. This questionnaire thus took the results of the NGT process and gave it back to the CIG to confirm.

Statements which dealt with the areas of greatest learning (ASMP, flipchart and the action research process) were posed for assessment by the CIG, using a Likert scale which ranged from 1-9. The Likert scale for the derived statements was further subdivided into: "Not useful" (likert score 1-3); "Use doubtful" (likert score 4-6) and "Useful" (likert score 7-9).

The results in Table 7.5 clearly show that the agreement among CIG members on their learning, using the statements derived from the main consensus meeting was very high. All scores fell within the "Useful" range (score 7-9), which signifies high agreement.

**Table 7.5:** CIG consensus on derived from areas of main improvement.

<b>Activity</b>	<b>Mean Score</b>
ASMP was easy to use	<b>8.3</b>
ASMP covers guideline recommendations	<b>8.7</b>
ASMP was useful in asthma care	<b>8.6</b>
ASMP was used by PHC team	<b>8.2</b>
ASMP was useful to patients	<b>8.3</b>
FLC was useful in asthma education	<b>8.8</b>
FLC was useful in teaching MDI technique	<b>8.7</b>
FLC was useful Diff Teach	<b>8.9</b>
FLC was useful in promoting smoking cessation	<b>8.6</b>
FLC was useful in assessing asthma control	<b>8.6</b>
FLC was useful in differentiating COPD / Asthma	<b>8.5</b>
FLC was useful for educating about triggers	<b>8.7</b>
PAR improved implementation of recommendation	<b>8.8</b>
PAR improved learning of PAOR	<b>8.7</b>
PAR improved collaboration	<b>8.7</b>
PAR improved critical reflection	<b>8.6</b>
PAR improved guideline implementation	<b>8.6</b>

## **7.8 CONCLUSION**

This Chapter presented the results of the PAR performed by the CIG. The PAR involved four full cycles of PAOR involving the contributions and the collaborative learning and reflections of the CIG. The PAOR cycles focused on the development and introduction of ASMPs, CNP knowledge, awareness and perspectives of EBP and asthma guideline implementation, patient knowledge awareness and perspectives of asthma care received and the use of an educational aid in the education of asthma patients in CHCs in the Cape Town metropole. To summarise the overall group learning the consensus meeting was utilised which included mini FGDs, NGT and consensus questionnaire. I now proceed with the discussion of the main findings of this research in Chapter Eight.

## CHAPTER EIGHT

### DISCUSSION

*"Evidence of effectiveness does not equal successful implementation"*

***Verhagen E et al 2013***

#### **8.1 INTRODUCTION**

This Chapter discusses the main findings and new knowledge obtained from the different phases of the research, which have contributed to answering the central research question: "How can the implementation of clinical research evidence, using the example of the national evidence-based guideline on asthma, be improved in the PHC sector in the MDHS of the Cape Town metropole?"

The results are discussed in relation to a conceptual framework (Figure 8.1), which was developed and derived from the analysis of the core findings of the different phases involved in this research thesis. Even though the conceptual framework is presented in a linear format each of the steps involved in the guideline implementation process have challenges and complex interdependencies that are discussed in more detail below. The model also includes feedback loops between the steps as in a more complex adaptive system. The steps thus serve as a guide to action, rather than a simple recipe for implementation. Models help us to understand and make sense of complex systems, but can never fully represent the full complexity.

In the discussion below the researcher draws on a complexity science perspective (Leykum LK et al, 2009) to further discuss how these steps can assist with managing implementation in primary care practice settings. The researcher observed that the characteristics of complex adaptive systems, such as self-organisation, co-evolution and co-development were present in the PAR process. Complexity perspectives thus offer a way to understand how systems change and provide insight into research implementation in these settings (McDaniel RR et al, 2009).

PHC centres are complex adaptive systems because they are comprised of a collection of individual agents (staff, patients and families) with the freedom to act in ways that are not always totally predictable, and whose actions are interconnected; for example, one agent's actions change the context for other agents in the system (Plsek PE & Wilson T, 2001).

Complexity concepts applicable to the experiential learning that took place within the CIG include the recognition that individual members were independent and creative in their decision making in situations of uncertainty inherent in their practices. Effective solutions to problems encountered emerged from their experiences in real practice situations. Learning is known to occur in the zone of complexity (Plsek PE & Greenhalgh T, 2001) where relationships between items of knowledge are uncertain and not predictable or linear. The CIG learning was further enhanced by their critical reflection and feedback on their performance received from fellow members of the CIG. This is transformational learning as the CIG enhanced their competence and capability within the real-world complexity of their practices. As reflective adult learners they were receptive to feedback and able to adapt appropriately to challenges in practice. The story telling that related to practice incidents as well as the group activities of the CIG, which resulted in action plans, are well known examples of non-linear learning methods (Bligh J, 1995). This form of learning resonates well with complexity theory's acknowledgement of uncertainty, the need to be alert to feedback and the information emerging from different members of the CIG.

Furthermore, awareness of the complexity related to guideline implementation was increased because of the need to accommodate the unique features of 22 CHCs as well as the five CHCs where PAR was conducted. All these sites were their own complex adaptive systems nested within the larger district health system (McDaniel RR, 2009), where heterogeneity was the norm both within and between individual CHCs. In addition, the research process allowed for interaction with a wide spectrum of PHC staff members as well as patients, thus adding to the potential for complex, non-linear, unpredictable and emergent outcomes. The research process required modification and adjustments of the guideline in the form of action plans, which were needed to support successful implementation while maintaining the integrity of the research process.

Guideline implementation is therefore a complex process and many recommendations in clinical guidelines aim at “ideal patients” - usually adult patients without any comorbidity and are not well tailored to real patients in pragmatic settings where decision making is more complex (Hegarty K et al., 2009). A balanced view of risks and benefits of clinical guidelines is therefore needed, in which the demands of practice and policy and preferences of patients are matched with the achievements of science (Grol R & van Weel C, 2009).

There is also an increased focus on integrated care between disciplines and most guidelines do not yet focus on this complexity (Grol R & van Weel C, 2009) and are written by specialists from tertiary centres who write with a different patient in mind. Changes are needed in the guideline development process to make them more relevant to primary care practice. The limitations of guidelines to deal with every possible clinical situation with which practitioners may be confronted should be acknowledged. They should address co-morbidity as a starting point rather than an afterthought, be willing to modestly accept that they are one influence on the quality of care for complex people, in complex consultations within complex adaptive systems, be updated more frequently, presented in more concise formats, be combined with quality indicators and support tools for practice and better collaboration with all stakeholders to identify jointly the most important questions (Schunemann HJ, 2009).

If one considers how these issues relate to the principles of family medicine, it is clear that even though the principles might not use the discourse or language of complexity, they recognise complexity through the description of principles needed for generalist primary care in contrast to the more narrow biomedical focus of hospital-based disciplines. McWhinney summarises the principles as “... an open-ended commitment to patients; an understanding of the context of illness; the use of all visits for preventive purposes; the view of the practice as a population at risk; the use of a community-wide network of supports; the sharing with patients of the same habitat; the care of patients in office, home and hospital; a recognition of the subjective aspects of medicine; and an awareness of the need to manage resources” (McWhinney IR, 1981).

## **8.2 EVIDENCE CREATION AND THE RESEARCH COMMUNITY**

As shown in the conceptual framework (Figure 8.1) the creation and synthesis of sound, appropriate, current, good quality evidence, relevant to the primary care context, with its complexity and uniqueness, is an important initial step in the process of guideline implementation.

FPs interviewed in this research clearly recognised the limitations of EBM and that of quantitative, positivist research to address the problems with which patients present in primary care practice and identified the need for different forms of research to inform such practice. Although well conducted definitive RCTs are often considered the gold standard of studies on treatment efficacy and effectiveness, are highly placed in the hierarchy of evidence (Sackett DL, 2000), and used in the preparation of systematic reviews and guidelines (Crumley ET et al., 2005; Akobeng AK, 2005), evidence from RCTs is only a portion of the real knowledge that is needed in primary care (Siriwardena AN, 1995; Glasziou P et al., 2007; Boylan JF et al., 2011) and not all primary care issues can be addressed by them (Iggo N, 1995; Timmermans S & Mauck A, 2005; Mant J, 2006;).

However Zwarenstein & Treweek (2009) have argued strongly for a more pragmatic approach in order for trials to “directly inform the decisions of real-world patients, clinicians and third-party funders.”

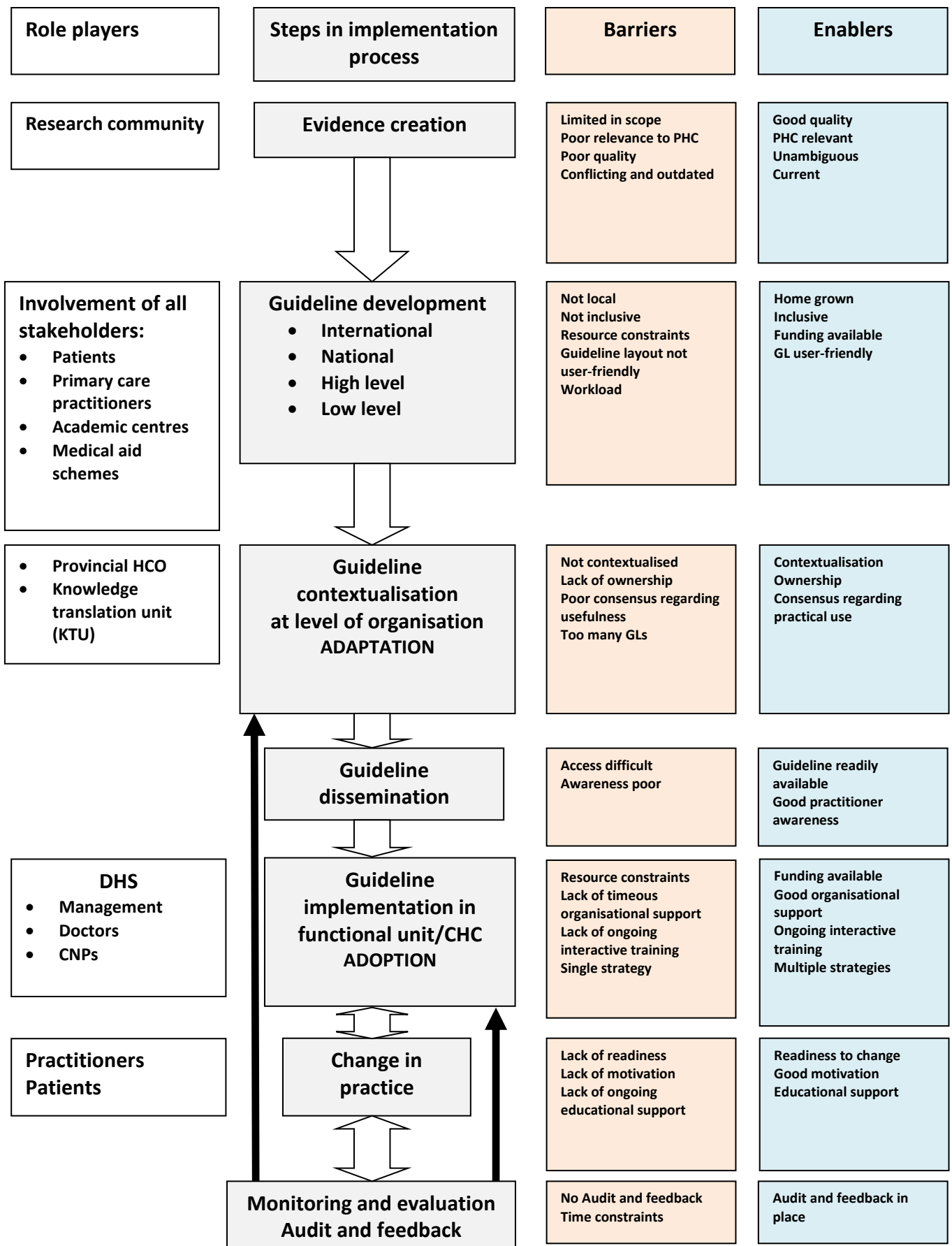
The patients studied in clinical trials, which form the basis of clinical practice guidelines, do not adequately reflect the true population in terms of burden of comorbidity, due in part to emphasis on efficacy trials by funders and perceived barriers to the participation of older adults in clinical trials (Van Spall et al., 2007; Mody et al., 2008; Kitzman & Rich, 2010). In addition, they have restricted external validity as many older patients and patients with major comorbidities are still excluded from many clinical trials (Van Spall, 2007; Wedzica, 2008). Pragmatic trials have better external validity as they are conducted in real patient settings, can account for multi-morbidity and for heterogeneity of treatment effects (Kent, 2009). In order to develop clinical practice guidelines more relevant to people with any index condition and comorbidities, it is important to determine what the prevalence of common and clinically relevant conditions in a particular practice setting are.

Pragmatic trials compare the effects of different complex decisions in the real environment of usual clinical practice. Thompson (2004) argues that the primary means of generating knowledge for the evidence-based deployment of complex interventions should be the pragmatic randomised controlled trial (Thompson C, 2004). However an exploratory, pragmatic, cluster randomised trial of practice nurse training in the use of asthma action plans as a methodology has been disappointing (Cleland JA et al., 2007). The authors cited outcome measure limitations, data collection problems, and underestimating the complexity of supporting practice nurses in behaviour change as reasons for their inability to demonstrate improvement in asthma management.

Complexity of clinical management for patients is the rule, not the exception. While most elderly patients have more than one chronic condition, EBP and health care quality initiatives currently focus largely on single-diseases (Garber, 2005; Boyd, 2005; Marengoni, 2009; Lee, 2009). Clinical practice guidelines on single diseases thus have limited application to those with multi-morbidity (Boyd, 2005). In addition, functional limitations can have a significant impact on the treatment of chronic conditions, as patients may have difficulty adhering to treatment regimens (Gray, 2001).

The synthesis of systematic reviews is currently an important function of the Cochrane Collaboration (assisted by the Centre of EBHC at the University of Stellenbosch) and such reviews serve as a useful starting point and source of evidence for guideline development. FPs however felt strongly that other forms of research, such as qualitative research in primary care, is underutilised and that the biomedical perspectives, and particularly the gold standard status of the RCT as a means of addressing questions in public health and primary care, were limited and even overemphasised.

**Figure 8.1:** Conceptual framework.





Qualitative methods can help bridge the gap between evidence and practice and can help us understand the limitations of the available evidence in terms of assisting practitioners with decisions about treatment in practice (Green J and Britten N, 1998; Greenhalgh T & Howick J, 2014). However the limited use of qualitative research in primary care as well as the limited ability to demonstrate “quality” in qualitative research (Reynolds J et al., 2011) is of concern. Moreover Novotna et al (2012) and Reynolds et al (2011) suggest that in order to improve our understanding of complex practice settings such as primary care, a combination of qualitative and quantitative research is necessary (Novotna G et al., 2012; Reynolds J et al., 2011).

The views of FPs in this research study further support the view of the need for different paradigms of research to be utilised. In addition Green and Glasgow (2006) suggest that research should be more practice-based, using participatory approaches and emphasising the applicability to local settings (Green LW and Glasgow RE, 2006) and local relevance (Glasgow RE, 2006). Such involvement is further supported by van der Vlegel-Brouwer (2013) who suggests that research should be “context bound in order to provide solutions that address locally defined demands and circumstances” (van der Vlegel-Brouwer W, 2013).

This research suggests that primary care practitioners should become more involved in improving the relevance of evidence. This might mean formulating research questions that can be addressed by researchers or becoming more directly involved in research which deals with problems encountered in primary care. This supports the view of Smith, Singleton and Hilton (1998) who advocate that practitioners should use their reservoir of specific experiences as a source of learning (Smith F, Singleton A, Hilton S, 1998) and that of Evensen et al (2010) who comment on the low rates of practitioners who participate in studies identifying evidence-practice gaps (Evensen AE et al., 2010). Furthermore, Domenighetti et al (1993) suggests that more frequent practitioner involvement in studies may increase the uptake of their findings and they may be positively influenced by the results (Domenighetti G et al., 1993).

FPs in this research felt that evidence contained in guideline recommendations needs to be relevant to the context of care. They further recognised a need for such evidence to deal with the uncertainties and undifferentiated nature of illness encountered at PHC level and a clear need for such context relevant research was crucial. These views are in agreement with that of Woolf (2008) who showed that for evidence to be useful in primary care, it has to be relevant to the primary care context (Woolf SH, 2008). Practice-relevant research (Woolf SH, 2008) must be available to support research-informed decisions and practice. Uncertainty is common in the context of primary care where patients present with a wide range of symptoms and signs, which are still undifferentiated. However evidence to assist primary care practitioners in dealing with uncertainty and more complex presentations is of course not readily available.

Having research conducted in relevant primary care settings however does not guarantee quality. In this research FPs cautioned that research conducted in relevant and appropriate settings may be of poor quality and its validity and trustworthiness may be compromised. Thus for evidence to be implemented it needs to be relevant (Mickan S & Askew D, 2006; Woolf SH, 2008), applicable, of good quality and generalisable to the primary care context (Jacobson LD, 1997). Furthermore, FPs in this research pointed out that aspects of practice such as the personal clinical experience of practitioners in PHC are often difficult to quantify and assess using formal research methods. This view is supported by Hay et al (2008) who emphasised the systematic use of clinical experience to guide effective practice, which they refer to as "evidence farming". They claim that clinical experience is relatively neglected by EBM proponents and they further suggest that practitioners often rely on clinical experience during decision making especially in complex settings such as primary care where uncertainty and complexity are common (Hay MC et al., 2008).

However, FPs interviewed in this research were quick to point out that for primary care practitioners to become directly involved in research activity would be extremely challenging given the current workload they have to deal with. Furthermore, they observed that guidelines are often limited in their scope to address problems at PHC, out-dated, not updated regularly, differed between the

public and private PHC sectors and can be conflicting. Out-dated and conflicting guidelines may affect ownership and continued involvement with the guideline and may act as barriers to implementation. This clearly identifies the need for guidelines to come with a clear plan to be updated and revised (Shekelle P et al., 2001; Grol R, 2001).

### **8.3 GUIDELINE DEVELOPMENT AND STAKEHOLDER INVOLVEMENT**

#### **8.3.1 The need for inclusive stakeholder involvement**

In South Africa guidelines are often developed by professional bodies and societies each with their own approach, their own emphases and purpose. Respondents in this research emphasised the need for primary care providers to be involved in the drawing up of guidelines by specialists and other experts when these guidelines are intended for them. They also mentioned other stakeholders that should be involved in the development phase, including patient advocates and managers of the health system who are responsible for cost-effective policy and resource allocation. In other words there are many different types of expertise and stakeholders that should be included in the process.

As shown in the conceptual framework (Figure 8.1) the process of guideline development is of fundamental importance and needs to be conducted by an inclusive group of developers, which includes representatives of patients, primary care practitioners, academic centres, professional bodies and medical aid schemes and not just by so-called experts. All the relevant stakeholders should become involved at an early stage of its development as all members of such an inclusive group have expertise and successful development of evidence-based guidelines is an important step for EBP and knowledge translation in particular.

#### **8.3.2 Patient involvement**

The role of patients in guideline development is important and well recognised (Boivin A & Legare F, 2007; Diaz Del Campo P et al., 2011; Legare F et al., 2011; Tong A, 2012). This research suggests that the experiential expertise and tacit knowledge (information that patients unconsciously possess) that patients have as consumers should be utilised and they should be considered as active partners in establishing a holistic understanding of quality care. FPs in this

research were particularly keen to point out that patients should be involved and be active partners in the process of guideline development. This is important, especially in view of the fact that the views and preferences of patients have long been considered as a critical component in the assessment of quality (Donabedian A, 1990).

### **8.3.3 Primary care practitioners**

This research has further shown that guideline development is perceived to be undertaken predominantly by experts in the relevant field of care. Moreover PHC providers, who are more familiar with the context of care, should become involved in assisting with the formal development of the guideline. This view is confirmed by O'Byrne (2005) who emphasised that primary care practitioners should have their practice context emphasised and taken into consideration (O'Byrne PM, 2005). Primary care practitioners have useful tacit knowledge and experience in patient care and important perspectives in the holistic understanding of patients that are therefore unfortunately missed and not usually considered in guideline development. Kothari et al points out that this tacit knowledge can be useful in knowledge translation and the interpretation of evidence in practice (Kothari AR et al., 2011).

### **8.3.4 Academic centre involvement**

This research suggests that universities and professional bodies should provide academic input in the identification and appraisal of evidence. It is clear that the local level is often not able to, nor should it have to, source the evidence globally. This has to happen at a higher level. The universities, and other academic centres, are perhaps more suitably placed to provide this function. Thus the main task of reviewing research, research synthesis and the critical appraisal of evidence, which inform guidelines, should perhaps not be left with the busy and already overburdened primary care practitioner. The social accountability and responsibility of universities, and other academic centres, regarding the provision of quality and relevant evidence in the form of evidence-based guidelines in health care can be extended to include this function.

### **8.3.5 Medical aid schemes involvement**

FPs in private practice further highlighted the need for private medical aid and managed care schemes to become involved and work with universities in an attempt to deal with barriers, such as cost constraints, and reduce the wide variations between many different and often confusing forms of guidelines. This could assist with ensuring more uniformity and standardisation of practice within the health system as a whole.

### **8.3.6 Guideline layout**

FPs and CNPs clearly appreciated guidelines that are clear. Once the guideline content has been finalised the preparation and final layout is important to facilitate the usability of the guidelines by the target audience.

#### **8.3.6.1 Uniformity and structure.**

FPs felt that too many and different guidelines on the same topic may result in confusing messages, misunderstanding and further delay in their implementation. They felt that there should be a standard structured way of presenting the guideline recommendations and the role of the FP in implementation should be emphasised.

#### **8.3.6.2 User-friendliness.**

The respondents in this research further reiterated the need for guidelines to be concise and easy to use, which supports the findings of Nabyonga Orem et al (2012) and that of Michie and Johnston (2004), that guidelines which are "simple, concrete and specific" make implementation easier (Nabyonga Orem J et al., 2012; Michie S & Johnston M, 2004).

## **8.4 GUIDELINE CONTEXTUALISATION**

Given that each province has a great deal of autonomy with how it organises PHC, contextualisation should occur at the provincial level prior to dissemination of the guideline. In this model contextualisation refers to the process of adaptation to ensure congruence between the guideline recommendations and organisational policy and context. It may also include the development of more user-friendly tools that can be disseminated in place of the published guideline.

It may also include, in some organisations, an integrative process that combines individual guidelines into one guideline that is disseminated further. These processes of contextualisation, although they occur at the level of the whole organisation, are essential for the success of adoption and ownership of the guideline at the local level.

Even if the best evidence is available, if its contextualisation is not supported by the HCO in the form of formal policy, the impact of the whole process from development, dissemination to adoption may be minimal. Guideline implementers should therefore not rush into dissemination, but spend time on adaptation to the organisational context and engagement with other decision-makers in order to ensure congruence between the guideline recommendations and organisational environment and policy. Although this may take time the ultimate success of implementation may depend upon it.

Aligning the guideline with policy at the level of the organisation is therefore an important part of the contextualisation process. Recommendations in the guideline may impact on policy with regard to the availability of medication, who can prescribe medication, standard equipment and different types of human resources. In this research, FPs pointed out that frustrating delays occur in the process of policy change. For example the essential drug list may not be congruent with the guideline recommendations and therefore the decision-makers responsible for the use of drugs must be willing to change their policy in order to support those implementing the guideline. Thus policy must be responsive to new evidence from guidelines. Alternatively those implementing the guideline may need to adapt the recommendations to be congruent with the policy environment even if this means diluting the evidence. Incongruence between guideline recommendations, policy and the organisational context can be very frustrating for practitioners and weaken their commitment to adoption and use of the guideline.

Advocacy around guideline recommendations to decision-makers is important and there needs to be ongoing communication and interaction between best practice recommendations in guidelines and the policy of the organisation. Some senior FPs in this research seemed aware of their social accountability, and the

public responsibility they have, to ensure safe and effective practice. However delays and impediments to effective practice often fell outside of their immediate clinical sphere of control. In this situation FPs might have to use their influence to advocate for policy and organisational change, but many felt uncomfortable about exposing themselves in this way. Some FPs felt strongly that a more formal analysis of the situation at the coalface should be conducted as part of contextualisation. This echoes the suggestion of Grol (2001) who emphasised a “diagnostic analysis” of the target group and setting, before formal dissemination is considered (Grol R, 2001).

FPs also stressed the importance of consistency in approach and use of guidelines between all practitioner groups (e.g. CNPs and doctors). Guidelines should be contextualised to include all the practitioners that might be managing the condition in primary care and not targeted at just one role player.

Once there is congruence between the policy and organisational environment and recommendations of the guideline the format in which the guideline will be disseminated should be considered. Only disseminating the guideline in the form of a scholarly publication or academic document may not be the most effective method. It may be useful to incorporate the key recommendations into a more user-friendly manual or tools that can prompt clinical decision making and be easily accessed and understood.

A number of additional specific computer-based approaches to implementation have been presented internationally (Langton KB et al 1992; Hunt DL et al., 1998), including a locally researched computer-based decision support system which has been shown to improve the training of clinical nurse practitioners in the Integrated Management of Childhood Illness (IMCI) guideline, although further work is required to determine if this improves patient outcomes (Rhode H, MPhil Thesis, 2012). Such automated guidelines, which can be used on tablets or smart phones, may be an important future direction for the dissemination of guidelines.

CNPs agreed that the guideline was not user-friendly, that summaries of recommendations were more useful than the actual guideline and that they

struggled to manage asthma patients with comorbidity. Comorbidity among asthma patient in this survey was found in 49% of patients which is strikingly similar to the co-morbidity currently found in 48% of patients with NCDs in South Africa and in 45% of patients with asthma (Lalkhen H, 2014). Co-morbidity is therefore a common issue in clinical practice (Fairall L, CDIA presentation annual meeting 2013), although not as common as seen in Europe (De Maeseneer J, 2012). Asthma is most commonly associated with hypertension, osteoarthritis and diabetes as the three most common comorbid conditions (Lalkhen H, 2014). In a recently published essay Greenhalgh and Howick (2014) stress the limited usefulness of evidence-based guidelines in the presence of co-morbidity as single disease is encountered less frequently in PHC (Greenhalgh T & Howick J, 2014). In Europe with an ageing population, multimorbidity is becoming a challenge to care and to the integration of guidelines for multiple diseases in one patient. Guidelines are now seeking to address multi-morbidity (Guthrie B et al., 2012) and a goal-orientated approach to care has been recommended based more on what is of value to the individual patient in terms of improving their quality of life (De Maeseneer J, 2011; De Maeseneer J & Boeckxstaens P, 2011) and supporting their “creative capacity” in dealing with their health (Reeve J, 2010). This further supports the argument for more integrated guidelines.

In the Western Cape Province an important aspect of contextualisation has been the integration of guidelines into the Practical Approach to Adult Care Kit (PACK), which is currently the responsibility of the Knowledge Translation Unit (KTU) at the University of Cape Town. The PACK guideline is an integrated tool which synthesises other guidelines, deals with conditions most frequently encountered in adult ambulatory care, and provides a more user-friendly tool for use by primary care practitioners at PHC level. This acts as an example of how the contextualisation process can also include integration of multiple guidelines into one practical tool for use at the coal-face.

## **8.5 GUIDELINE DISSEMINATION**

FPs argued that clinicians should have easy access to the guidelines or at least know where to find them quickly. Easy access was further confirmed by the survey results conducted in the private and public sectors amongst primary care



practitioners showing that the majority were aware of the asthma guideline; read it; knew where to find it and received a copy of the asthma guideline. In this regard research has shown that guidelines which are easily accessible positively influence local adoption (Fretheim A, 2006).

This research revealed that the vast majority of practitioners claimed to use the asthma guideline they had received. In stark contrast to this finding, Grol (2001) showed that many guidelines are not used even after they have been disseminated (Grol R, 2001).

As noted in Figure 8.1 guideline dissemination is an important step which should aim to at least achieve awareness of the guideline. Practitioners' awareness and the awareness of the relevant staff within the broader organisation are of fundamental importance before it can be adopted. However few CNPs were aware of the latest South African asthma clinical practice guideline and very few had actually read the guideline. They felt that the guideline was not easily available at their facilities and they encountered problems finding the guideline when they actually needed it. In this regard studies have shown that guidelines should be readily available if adoption is to be successful (Fretheim A et al., 2006; Schunemann HJ, 2006).

Great care must be taken when guidelines are disseminated in order to ensure that guidelines actually reach the target audience and are read. At a local level, FPs who are the clinical leaders and responsible for clinical governance at many CHCs in the metropole, should lead by example in showing how the evidence from the guideline can be adopted in clinical decision making and audited. The guideline should not just merely be posted to the recipient, as posting does not ensure utilisation of the guideline in practice.

Respondents in this research pointed out that more should be done for dissemination to be considered successful, that the dissemination process should stress the importance of the guideline, improve the confidence of recipients to use it and assist with the understanding of it. Such essential motivational steps may improve readiness to use the guideline in practice and are crucial in the overall success of the dissemination process.

It is interesting to note that the survey results are in general consistent with the awareness-to-adherence model of Pathman et al (1996), who describe behavioural steps to guideline uptake that practitioners make as they change their behaviour over time. They discuss how practitioners become aware of a guideline (awareness); then agree with the recommendations contained in the guideline (agreement); then decide to use the recommendations in their practices (adoption) and then follow (act-on) and comply with it appropriately (adherence) (Pathman DE et al., 1996).

FPs in this research felt that awareness of primary care practitioners and relevant staff within the broader organisation is of paramount importance before successful adoption can take place. They further stated that poor awareness of the guideline can be a barrier to adoption. This finding has been supported by Cabana et al (1999) and Francke et al (2006) who have shown poor awareness to be associated with poor guideline utilisation (Cabana MD, 1999; Francke AL et al., 2008). Furthermore, with regard to the dissemination of the South African asthma guideline, the survey results showed that both public and private sector practitioners in the Cape Town metropole were well aware of the asthma guideline in that the majority read it; knew where to find it and received a copy of the guideline. This is in contrast to the study by Arroll et al (1995) which showed that only 40% of practitioners read guidelines (Arroll B et al., 1995). The high level of awareness of practitioners with regard to the asthma guideline may have been influenced by the Asthma Guideline Implementation Project which had already started prior to the survey in the Western Cape (Mash B et al., 2009). Furthermore, a good proportion of respondents claim to have used the guideline, and have adopted specific recommendations from it. A minority however acted-on it by specifically implementing asthma audits in practice and very few practitioners in both sectors initiated asthma registers. With regard to adherence to specific asthma guideline recommendations, the majority of doctors in this research reported that they educated patients on the differences between reliever and controller MDIs; demonstrated the inhaler technique; assessed the level of control and knew the smoking status of their patients. However it is disturbing to note that the majority of practitioners did not issue asthma self-management plans to patients.

Some FPs even questioned who had the final responsibility for efficient and successful dissemination and ultimately implementation of guidelines. They expressed concern as to whether priority is given to resource availability and resource allocation with regard to the whole process of guideline development, dissemination and adoption. Evidence shows that this whole process seldom comes with a formal cost analysis or budget. Availability of funding for formal implementation is often just assumed and taken for granted (Grol R, 2000). In resource constrained areas this remains a source of concern. Many models for implementation and quality improvement have been described, but evidence of the cost-effectiveness of such models is limited (Grol R, 2000). While the majority of studies report on the cost of treatment interventions, only a small number of studies report on the cost of the guideline development-dissemination-adoption process (Grimshaw JM & Eccles MP, 2004).

## **8.6 ADOPTION OF GUIDELINE IN THE FUNCTIONAL UNIT/PRIMARY CARE FACILITY**

As shown in Figure 8.1, local adoption of the guideline recommendations through planning as a PHC team of what and how to implement is a key part and of fundamental importance. At this stage in the process the focus is not on modifying or adapting the guideline recommendations, but on deciding which of these recommendations to adopt locally. Certain recommendations may be prioritised in line with local circumstances, existing quality of care and practitioner's motivation. Evoking ownership of the recommended changes to practice and engagement of the local practitioner's will be essential if change in clinical practice is to be seen. Al-Ansary (2013) suggests that more should be done to achieve this objective. On-going education and training on specific recommendations in the guideline and ongoing organisational support have been emphasised in this research as vital components to successful implementation. Moffat et al (2007) have shown that poor training and doctor-patient communication could adversely affect guideline implementation (Al-Ansary LA, 2013; Moffat M et al., 2007). However contrary to this in some countries adoption may be driven by financial incentives for practitioners and practices resulting in more rapid implementation of programmes (Berthiaume, JT et al., 2004).

### **8.6.1 Ongoing education**

Education brings confidence, increasing self-efficacy, and improves the chances of the guideline being adopted in practice and more importantly that practitioners will continue to adhere to it. FPs stressed the importance of ongoing training to encourage adherence and prevent relapse. The training, therefore, should not be once off, but on-going and more importantly, interactive involving all staff members directly involved with patients. An interactive approach implies that staff should be engaged in more of a workshop style format than lectures, which inhibit real engagement with the material (Greenhalgh T et al., 2005).

If there is a collaborative process with recognition of one's choice and control over adoption of the recommendations in individual practice, this may be more likely to lead to meaningful change. Such an approach is certainly congruent with current thinking on behaviour change. Training is seen across the educational spectrum as necessary to inform people about new knowledge or information, but also as a collaborative process of interacting with new information and deciding what is applicable. Training should not just be transferring new information (Rollnick S, 1999), but also engaging people in an exchange of information whereby people also give feedback on what is most relevant and applicable to their practice. Such an approach recognises that adoption of guidelines is ultimately a matter of individual practitioners changing their own clinical practice behaviour, within a supportive organisational context, and in relationship to the standards inherent in the guideline's evidence-based recommendations. Also important in terms of motivational change is the style of education, which should be characterised by guiding and evoking commitment, more than directing and instructing (Rollnick S et al., 2005). Academic centres could fulfil an important role in the provision of ongoing education based on the guidelines to primary care providers and support evidence-based implementation strategies.

According to Chou et al (2011) implementation strategies can be rather slow and unpredictable (Chou AF et al., 2011) and may result in only small to moderate improvement in care outcomes (Grimshaw JM & Eccles MP, 2004). Furthermore,

Foster et al (2007), using a definitive RCT, could not show significant improvement in outcomes at a 6-month assessment point, although some improvement in outcomes were shown after a follow up period of one year (Foster JM et al., 2007); emphasising the point that demonstrating change and improvement in primary care can take time. This very much depends on the quality of care at baseline (Kande CN & Mash B, 2014) as it may be easier to improve the quality from a low starting point. This research has shown statistically significant changes in the quality of asthma care through the cycles of audit and feedback.

### **8.6.2 Ongoing HCO support**

In addition observational studies have also shown that HCOs must support activities of change and furthermore, create a culture where such activities are possible (Counte MA & Meurer S, 2001). Although related to the larger organisation, culture is also created at the level of the CHC. Moreover despite a commitment to improve the quality of care the local DHS shows an absence of focus on innovation and change (Mash B et al., 2012). Other studies confirm that organisations often do not adopt evidence-based recommendations as promptly as is expected (Crites GE et al., 2009), due to a lack of teamwork (Wiener-Ogilvie S et al., 2008) and a lack of a formal guideline implementation strategy (Wahabi HA & Alziedan RA, 2012). Unnecessary delays in the implementation can result in gaps between evidence and practice.

Guideline implementation should be particularly successful in organisations where the responsibility for implementation belongs to the collective expertise and management of the organisation. Unfortunately in a recent local study the current organisational values did not support innovation and evolution (Mash B et al., 2009), which points to a less than conducive environment for successful guideline implementation. Although there was a large emphasis in the culture on improving processes and quality most of this was experienced negatively with values such as not sharing information, confusion, power, and hierarchy. They further suggest that to improve the quality of care the organisation would have to transform the leadership style and “emphasise learning, teamwork and customer focus” (Ferlie EB & Shortell SM, 2001).

Davis and Taylor-Vaisey (1997) emphasised and categorised the different implementation strategies as weak (e.g. didactic, traditional continuing medical education and mailings), moderately effective (e.g. audit and feedback) and relatively strong (reminder systems and multiple interventions) (Davis DA & Taylor-Vaisey A, 1997). Furthermore, Stone et al (2005) later emphasised that ineffective implementation strategies could even prevent the uptake of guidelines in practice (Stone TT et al., 2005). Seeking to improve the understanding of the science of guideline implementation, experts have produced a strategy to further expand the understanding of evidence based guideline implementation (Gross PA, 2001). Of significance is the suggestion by Doherty (2006) that "an evidence-based implementation strategy will lead to greater changes in clinician behaviour than other strategies used in quality improvement projects" (Doherty S, 2006). More recently attempts have been made to further define a taxonomy for guideline implementation in order to improve the understanding and efficacy of different implementation strategies (Mazza D et al., 2013).

Baker et al have shown that implementation strategies were more effective when tailored towards locally identified barriers (Baker R et al., 2001). Thus linking the implementation with our locally identified barriers and audit data could improve our chances of success in our local contextual setting. Many studies (including this research) have measured the effectiveness of implementation in terms of demonstrating improvement in process of care criteria, which do not necessarily translate to improvement in health outcomes.

Besides the lack of a well-developed evidence-based guide for implementation strategies, this framework (Figure 8.1) clearly shows the omnipresent barriers to implementation, which need to be addressed in order to improve the likelihood of successful guideline implementation. A number of barriers have been identified by respondents who showed that time constraints, lack of financial resources and a focus on cost-reduction, and a poorly organised health system, to be major barriers to guideline implementation in the already overburdened primary care setting. The lack of timeous organisational support has also been described as an important barrier in this context and has been described fully

earlier. Furthermore, Ishii (2013) showed that well organised health systems that implemented guidelines effectively had improved clinical outcomes, patient satisfaction and decreased costs of patient care (Ishii LE, 2013).

This research has further confirmed one of the central roles and responsibilities of FPs in terms of clinical governance (Pasio KS & Mash B, 2014), which entails an awareness of the latest guidelines and evidence in PHC and ensuring that evidence-based guidelines are disseminated, adopted and adhered to. FPs therefore are key role-players in guideline implementation. This role of the FP in guideline implementation is supported in the national development plan as well as the Vision 2030 document. There could, however, be a tension between the desire to engage with people around adopting the guidelines to local and personal use and the command/control approach of monitoring adherence to the rules.

### **8.7 ENGAGEMENT OF CHANGE IN THE INDIVIDUAL PRACTITIONER**

Practice consistency may be difficult to achieve especially as the development paths of CNPs and doctors are different and separate. In addition tension exists between standardisation on the one hand and uniqueness on the other as practitioners may feel restricted in what they have to offer patients in their attempts to standardise practice and reduce costly variations in practice. However FPs encouraged an iterative process of checking whether the guideline has been of value to both practitioners and the patients they serve. They considered that it is important to keep checking that one remains on the right track, that particular health outcomes are met and that there is resonance between the needs of the health services and that of patients.

A clear need for evidence-based practice has been identified in this research and the identified need for change in the individual practitioner to address the gaps between evidence and practice will assist in the implementation of guidelines and knowledge translation in PHC.

### **8.7.1 A need for EBP - doctors**

Doctors participating in this study agreed that EBP can improve the quality of patient care, is useful and has an important role in contemporary healthcare in South Africa. It is encouraging to note that the majority of doctors claimed to actually use formal clinical research evidence in practice. This is similar to the benchmark findings of McColl et al (McColl A et al., 1998).

While the clinical performance of doctors has been shown to deteriorate over time (Choudhry NK et al., 2005) and there is a need to develop the skills of practicing EBM at the bedside (Straus SE, 2004), this research showed that a considerable proportion of doctors in the Cape Town metropole have not had any formal training in the skills and processes of EBM. Furthermore, Lu and Li (2013) suggest the need for further education to “encourage and strengthen physicians’ EBP within the medical community” (Lu YC & Li YC, 2013).

Although a minority of doctors in the private and public sectors have completed a formal course in EBP, the majority agreed that EBP can improve the quality of patient care, agreed that clinical research evidence is useful in the management of patients, agreed that EBP has an important role in contemporary healthcare in South Africa and claim to have used evidence in decision making in practice.

### **8.7.2 A need for EBP - CNPs**

With regard to EBP this research showed that the knowledge of CNPs regarding EBP remains poor. The majority of CNPs have no access to the internet at work and never surf the internet for clinical information or use research evidence in decision making in practice. However the majority are also involved with general QI cycles in their primary care CHCs as well as in QI cycles of asthma care specifically.

The concept of evidence-based nursing is fairly new to CNPs with little awareness and the vast majority indicating that they would like to learn more about it. In addition it is encouraging to note that the majority of CNPs agreed that clinical research evidence is useful in the daily management of patients, that their decision making should be based on evidence, that evidence-based nursing can improve the quality of patient care, that there is a place for



evidence-based nursing in their practices at their respective CHCs, that EBP will make a difference in the quality of care of their patients and that evidence-based nursing practice has an important role to play in South Africa.

What is very encouraging though, is that with reference to the asthma guideline recommendations, the vast majority of CNPs reported that they personally educate patients on the difference between reliever and controller MDIs, record the smoking status of patients in the records, demonstrate the inhaler technique to all their asthma patients, assess the level of control, agreed that inhaled corticosteroids are the mainstay of treatment in patients with chronic persistent asthma and that the clinical distinction between asthma and COPD is reasonably clear. However only a small minority (mainly at the CHCs where action research occurred) started issuing patients with asthma self-management plans. These results show improvement to earlier findings by Mash et al (2009) who claimed that; "health workers do not adequately distinguish asthma from chronic obstructive pulmonary disease, do not assess control by questions or PEF, do not adequately demonstrate or assess the inhaler technique and have no systematic approach to or resources for patient education" (Mash B et al., 2009). However the findings of this CNP survey support those of Feder et al (1995) who showed improvement in the recording of inhaler technique, smoking habit and review of asthma symptoms (Feder G et al., 1995). They further demonstrated improvement in the recording of inhaler technique and quality of asthma prescribing in those practices who received a guideline (Feder G et al., 1995).

### **8.7.3 Practitioners' readiness and motivation to change**

Changing behaviour is complex and two personal attributes - self-efficacy and readiness to change - have been associated with health behaviour change in patients and to a lesser extent to use of guidelines by clinicians (Shirazi M, 2008; Salinas GD, 2011). While self-efficacy refers to the degree of confidence in one's capacity for success in implementing a goal-directed behaviour (Bandura, 1996), readiness to change (Proschaska JO, 1988) recognises that each individual is at a different stage of behaviour change and that interventions must be tailored to each individual's stage of readiness. Clinicians with higher

degrees of readiness to change and levels of self-efficacy are thought to be more likely to adopt and adhere to guidelines (Salinas GD, 2011). However Cloutier et al (2012) note that improving clinician self-efficacy did not increase asthma guideline use by primary care clinicians (Cloutier MM et al, 2012).

FPs felt strongly that practitioners have to feel confident about the usefulness of their guideline. Some felt that it is important to have a sense of cognitive resonance, and confidence that what is being recommended for patients is useful and effective. This finding supports that of Crim (2000) who suggests that clinical trial evidence of the usefulness of the guideline should be available in support of implementation and further suggests that educational programmes be aimed at practitioners and patients (Crim C, 2000). Grol R (2001) goes further to suggest that piloting of guideline use should be performed before formal use (Grol R, 2001). Resistance to any additional tasks in an environment with high levels of burnout and stress (Rossouw L, 2011) is also a key barrier.

#### **8.7.3.1 Junior doctors**

This research showed that staff engaged differently with guidelines and that junior doctors and CNPs may be more adherent to the recommendations. Readiness to adopt the guideline differed from practitioner to practitioner as the target users of the guideline are often poorly defined (Nabyonga Orem J et al., 2012). There may be an attitudinal difference between practitioners who are trained to be more autonomous practitioners, who ultimately decide what their practice will consist of and CNPs, who are trained to follow a series of tasks or decisions contained in a more algorithmic approach. Senior practitioners therefore may view the guideline as a guide whereas the CNP and junior doctors may view it as a set of rules to be obeyed and strictly adhered to. Interestingly Stone et al (1999) showed that reminders from a nurse were amongst the most effective measures of encouraging physicians to use guideline recommendations in practice (Stone TT et al., 1999). In addition, the guideline could be used even with older doctors, particularly those who have not kept up to date with new developments and whose practice can be considered outdated and even dangerous to the patient.

### **8.7.3.2 CNPs**

This research has suggested that CNPs have an increasingly important role to play in guideline implementation and ongoing training should be provided to improve their proficiency in caring for patients. CNPs may want to have stricter guidelines and more rigid rules and structure to follow. They currently form the backbone of chronic asthma care in primary care facilities in the Cape Town metropole and research has shown that 90% of acute asthma is managed in PHC (Lalloo UG et al, 2013).

The critical reflection and mutual interaction of CNPs in this study has highlighted their tacit knowledge. This tacit knowledge is useful and important in the overall interpretation of formal evidence, which is presented to them in the form of guideline recommendations. For CNPs the translation of evidence into practice remains a particularly complex process. This research clearly showed that CNPs prefer guidelines in synopsis format and rely on the support of senior practitioners more than the actual evidence. This finding is confirmed by Estabrooks et al (2005) who showed that nurses relied on experience, social interaction and predetermined knowledge in practice and prefer experiential knowledge to that from traditional sources like journals and books (Estabrooks CA et al., 2005). Furthermore, Kothari AR et al (2011) emphasised the important role tacit knowledge plays in the interpretation and implementation of evidence-based research recommendations in practice (Kothari AR et al., 2011). In this research the majority of CNPs valued the interaction with their supervising doctors more than published evidence, which suggest that the important mentoring and role modelling of doctors should be maintained and cannot be substituted by guidelines. However with ongoing workload and administrative challenges of supervising doctors, the mentoring role remains difficult to maintain. However FPs in this research confirmed that there is increased reliance of CNPs on the guidelines especially with increasing numbers of patients and fewer medical practitioners available.

Readiness to change is a huge problem in a busy and already overburdened primary care setting and different levels of readiness were encountered among members of staff. Local research conducted by Rossouw (2011) showed a high prevalence of burnout and depression among doctors in primary care (Rossouw

L, 2011) and Cornoc and Mash (2012) found resistance to change in practitioners practicing in PHC in the Cape Town metropole (Cornoc N & Mash B, 2012) and who were only willing to deal with changes that were considered survivable. In addition Steyn K et al (2013), cited excessive workload of practitioners in PHC as the main reason for not widely using structured diabetes and hypertension clinical records (Steyn K et al., 2013). Further abroad excessive workload has also been suggested as main reasons for not acting on guideline recommendations (van der Weijden T et al., 1998). Furthermore, Ornstein & Jenkins (1999) revealed that most practice guidelines for chronic disease in primary care are not adhered to and that most primary care patients do not obtain the expected outcomes (Ornstein SM & Jenkins RG, 1999). For many practitioners what is required may constitute a profound change in their thinking and approach to patient care even though they may be reluctant to embrace such change.

This research has also shown that primary care practitioners could be reluctant to change practice. Primary care practitioners often find it extremely difficult to change their ways of practice especially when they feel that they have lost control or that the guidelines make excessive demands on their time or where the perception remains that their current way of practicing has been successful. This finding supports that of Michie & Johnston (2004) and Rashidian & Russell (2011) who have observed reluctance in doctors to change their practice behaviour (Michie S & Johnston M, 2004; Rashidian A & Russell I, 2011). Well published early examples in the literature, where the uptake of research findings have been delayed include the use of anticoagulants in orthopaedic surgery (Laverick MD et al., 1991) and especially inadequate treatment of asthma (Jones K, 1991; Jones K et al., 1991). In addition there is often a wide variation in practices where recommendations are clearly evidence-based and supported by high quality evidence (Soll RF, 2010).

## **8.8 MONITORING AND EVALUATION**

Important ways of reinforcing and monitoring the success of implementation, shown in the conceptual framework (Figure 8.1), is through audit with good quality feedback, as part of a quality improvement cycle. Straus et al (2010) emphasise the need to consider both qualitative and quantitative approaches to

monitoring and evaluation (Straus SE et al., 2010). Furthermore, evidence-practice gaps exist internationally and although asthma guideline implementation in an emergency setting showed improvement in practitioner adherence to the guideline and some outcome benefits (Gildenhuys J et al., 2009), few studies exist which evaluate the implementation of evidence-based asthma care in primary care practice (To T et al., 2008; Cloutier MM et al., 2008).

Monitoring and evaluation is important for continued evidence-based decision making, resource allocation, programme planning and implementation, and in order to produce evidence of impact on health outcomes (UNAIDS, 2010). This process is iterative, where information gained can be used to give feedback to earlier steps in the process, particularly how the guideline is contextualised and which aspects are adopted at the level of the facility. These feedback loops are illustrated in the model (Figure 8.1).

Although it is recommended that doctors should partake in journal club activities and in auditing of their practices (Straus SE et al., 2005) only a minority of respondents in this research took part in journal club activities such as critical appraisal and interpretation of clinical research evidence, or engaged in quality improvement of their clinical practice. The difference shown, in the use of quality improvement practices in this research, between the private and public health sectors can be explained by the current drive in quality improvement, which has become part of the individual doctor's annual performance assessments in the public sector.

FPs in this research felt that good quality feedback should also include feedback from patients who are on the receiving end of care. In addition it is very interesting to note that some FPs seemed to suggest that patients also be involved in the discussion of this feedback. A team process to QI is encouraged and the feedback should serve to provide on-going motivation to improve the quality of care so that ultimately practitioners are more likely to change their clinical practice. Furthermore, Mogyorosy G and Mogyorosy Z (2004) showed that; "the success of clinical audit depends on the commitment and support of the management of the organisation" (Mogyorosy G & Mogyorosy Z, 2004).

These findings echo earlier findings of Dulko (2007) who found audit and feedback to be an effective approach to assist with the translation of evidence into practice (Dulko D, 2007).

## **8.9 ASTHMA CARE IN THE MDHS**

### **8.9.1 QI Cycles**

In this study most asthma guideline recommendations assessed in the MDHS improved during the QI cycles. Even though statistically significant improvement was demonstrated, some of the recommendations, such as assessing the level of control, were still performed infrequently. However this study showed a statistically significant overall improvement in peak flow measurement, assessment of control, assessment of patients' inhaler technique, documentation of the patient's smoking status and dispensing of both the reliever and controller MDIs per annum. These findings support those of Neville et al (2004) who showed improvement in asthma outcomes in those patients where formal QI had been implemented (Neville RG et al., 2004) and that of the integrated audit tool (Govender I et al., 2012) used in the public sector which showed that the improvements in performance in process indicators seen in this research was congruent with their findings.

Although the ratio of reliever to controller did not improve, as both MDIs increased, the increased provision of inhaled corticosteroids should be beneficial. This focus on improving the supply of controller medication is consistent with that of Chong et al (2008) who showed a significant increase in the prescription ratio of preventer to reliever in the Singapore National Asthma Programme (SNAP)(Chong PN et al., 2008), of Pisarik (2010) who demonstrated an improved prescription of inhaled corticosteroids (Pisarik P, 2010), of Shapiro et al (2011) who showed a statistically significant improvement in the prescription of controller medication to paediatric patients with uncontrolled asthma (Shapiro A et al., 2011).

It is interesting to note that while the QI cycle showed significant improvement in process, this did not translate into improvement in outcomes. This may partly be explained by the fact that this research did not directly assess control and

used more indirect indicators, which were easier to collect from the medical record. Despite improvement in the process of care, the number of emergency visits, where unscheduled visits for an exacerbation of asthma occurred, actually increased. This could be because of a short period of observation or an increased expectation of the level of control by asthma patients. Exacerbations of asthma could have been reported more frequently as patients' utilisation of services improved due to improved understanding and higher expectations of the level of control that should be possible. The number of hospitalisations for acute exacerbations in asthmatic patients remained the same from before and after 2009. The number of such hospitalisations was relatively uncommon (at 2%) and therefore it may have been difficult to show a significant reduction in this sample. In contrast to this research, Gildenhuis et al (2009) have shown a decrease in hospital admission rates following the implementation of a paediatric asthma guideline in practice (Gildenhuis J et al., 2009).

### **8.9.2 PAR**

In comparing the variables between the action research sites and the non- action research sites it is interesting to note that overall the assessment of the inhaler technique and the overall level of asthma control assessment improved statistically significantly more at the action research sites compared to the non-action research sites. The results echo the findings of Wiener- Ogilvie et al (2008) who found varied adherence to guideline recommendations and the provision of ASMPs as the most complex of the guideline recommendations (Wiener-Ogilvie S et al., 2008).

#### **8.9.2.1 ASMPs**

A particularly new finding for our local context was the successful development and use of an ASMP by the CIG in the PHC setting. The ASMP was also a key recommendation in the national asthma guideline and was supported with level A evidence (i.e. evidence obtained from a definitive randomised controlled trial). The ASMP was a major concern of the CIG as this was completely non-existent in the QI cycle reports. Although ASMPs have been shown to be effective (Ducharme FM, 2008), and associated with highly significant improvements in asthma health outcomes (Gibson PG & Powell H, 2004) when delivered in written

form, the cross-sectional survey conducted amongst doctors in the public and private health sectors of the Cape Town metropole, confirmed that it was very seldom or not at all used in PHC. This finding is supported by Turner et al (1998), Backer et al (2007) Peters SP et al (2007) and Wisnivesky et al (2008) who showed low use of written ASMPs in practice (Turner MO et al., 1998; Backer V et al., 2007; Peters SP et al., 2007; Wisnivesky JP et al., 2008).

An evidence-based analysis by Lefevre et al (2002) showed insufficient evidence of the usefulness of written self-management plans citing inadequate sample size and systematic bias of included studies (Lefevre F et al., 2002). However a more rigorous systematic review conducted by Gibson & Powell (2004) has demonstrated that the use of individualised asthma self-management plans have consistently improved asthma outcomes such as reduced hospitalisations, emergency department visits and absenteeism from work (Gibson PG & Powell H, 2004). Even though the cost-effectiveness of peak flow-based ASMPs have been clearly demonstrated by de Asis and Greene (2004) (de Asis ML & Greene R, 2004), its use remains low in PHC settings and can be improved (Sulaiman N, 2011). Furthermore, symptom-based ASMPs have been shown to be effective in preventing deterioration of asthma (Ducharme FM, 2008), can help patients to benefit from available treatment and the aggressive implementation of ASMPs is encouraged (Partridge MR, 2007).

Even though the implementation of ASMPs has been described as complex (MRC, 2004), this research developed an ASMP within the CIG which complied with all the recommendation in the asthma guideline and implemented its use at the action research sites.

#### **8.9.2.2 PATIENTS**

This research showed that the majority of asthma patients participated in decisions regarding their asthma and felt satisfied with the quality of care they received. Actively engaging patients in decision making regarding their health is an important objective of the WHO globally (WHO, 2011) and the department of health nationally (DoH, 2012). However the prevalence of smoking among asthmatic patients was high and opportunities for smoking cessation counselling were missed. Clear evidence shows that smoking is associated with poor asthma



control and increased hospitalisation (Ulrik CS & Lange P, 2001; Boulet LP et al., 2006; Boulet LP et al., 2008). Furthermore, although peak flow recordings were high and patients knew the difference between the reliever and controller MDIs, patients' perceptions with regard to education on the inhaler technique, the assessment of the level of control, the issue of written information regarding asthma and the use of ASMPs remained poor. However Ring (2007) showed that ownership of ASMPs should be encouraged (Ring N, 2007) and Douglass (2002) has shown that patients viewed ASMPs positively and found it useful in the management of their asthma (Douglass J, 2002).

### **8.10 KNOWLEDGE TRANSLATION RESEARCH**

Despite the identified knowledge-to-practice gap internationally, there are relatively few studies evaluating the implementation of evidence-based asthma care in adults in a primary care setting (Legoretta AP et al, 2000; To T et al., 2008)

I have presented a detailed and multifaceted knowledge translation initiative targeting gaps in primary care asthma management. I engaged with a PAR approach that enabled local staff members to mould the asthma guideline to their specific context and needs. This may have facilitated buy-in which has been shown to be intrinsically more rewarding for participants (Parker LE et al., 2007).

The conceptual model presented compares well with similar processes internationally and is similar to the knowledge-to-action cycle proposed by the Canadian Institutes of Health Research (CIHR). The CIHR defines knowledge translation as 'a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically sound application of knowledge to improve health, provide more effective health services and products and strengthen the health system' (CIHR, 2009; Rischard JF, 2002). The CIHR framework model is based on process elements that are common to 31 planned-action models. In the CIHR framework model, a series of 'action phases' follow knowledge creation to convert medical knowledge to clinical actions (Graham ID et al., 2006; Graham ID & Tetroe J, 2010).

Most planned-action models encourage working eclectically across paradigms and engage with different methods from the positivist, interpretive and the critical emancipator paradigms. There is no straightforward approach as all the methodologies, the field and context of research are complex. As mentioned earlier in Chapter Three different methods of research were initially considered including a RCT and even a pragmatic cluster randomised controlled trial to answer the central research question. However the serious limitations of these study designs in areas of such complexity were clear since the inception of this research. It became obvious very early on that a novel approach had to be used. In the three phases of this research I have engaged with a wide spectrum of complex methods in order to obtain a deeper understanding of knowledge translation research in the area of the asthma guideline implementation and to specifically reduce the knowledge–practice gap regarding asthma care. The research can also be viewed as integrated knowledge transfer or T2 research where a partnership was developed with Family Physicians and nursing practitioners within the CIG. As mentioned in Chapter Three such co-production of knowledge was considered more likely to produce findings more relevant to, and for, end users in decision making at the coalface of practice (AHRQ, 2009).

## **8.11 LIMITATIONS OF RESEARCH**

Some limitations and possible weaknesses of this research have been identified in the different phases and are discussed below.

### **8.11.1 Survey**

The assessment of EBP and guideline awareness was based on survey questionnaires and such self-reporting may lead to a more positive picture of practitioners' behaviour. Thus self-reporting may have led to obsequiousness and social desirability bias in the findings.

The questionnaire was rather lengthy and the subject of EBP relatively new to most responders at the time of data collection. The length and subject of a questionnaire is known to affect the response rate to it. The poor response rate in the private sector was to be expected, as practitioners had limited time to complete the survey questionnaire and was less accessible to the researcher,

although several attempts were made to overcome this. Although the poor response rate is comparable with that of other surveys, it compromises the overall representativeness of the sample in the private sector and may therefore limit the external validity of the research findings. The excellent response rate in the public sector, however, could be due to the fact that practitioners were more easily accessible than in the private sector and follow up was easier. Although the responses to the questionnaire remained anonymous and confidential, in some instances the public sector practitioners might have been aware of asthma QI cycles in progress at their CHCs and this could have positively influenced their responses. Therefore Hawthorne bias should at least be considered. Even though this is the largest sample of doctors and CNPs studied in South Africa to date, the low response rate of doctors could detract on the representativeness of doctors in the rest of South Africa.

#### **8.11.2 QI cycles**

This QI cycle process worked with the assumption that if something was not recorded in the folders, it was not done. Therefore activity might have been underestimated as actions may have been undertaken in practice but not recorded. Not being able to measure control was a limitation of the outcomes. The PAR period commenced towards the end of the 5 year period of QI cycles and not extending the QI process to cover the whole PAR period could be seen as a limitation as greater change could have been shown had this been possible.

#### **8.11.3 Qualitative research**

Careful thought must be given to the potential transferability of the findings. In comparison with cross-sectional research the participating interviewees were similar to the questionnaire respondents except that because of purposeful sampling they were all senior family medicine specialists with an additional diploma or master's degree in family medicine.

#### **8.11.4 Participatory action research**

The CIG was established with certain pre-determined conditions in terms of the overall research question and the need to focus on implementation of the

asthma guideline. These pre-determined conditions were however made explicit and CIG members engaged with the process knowing that this was the case. Within this they had complete freedom to determine sub-questions and to explore how to address the issue. These pre-determined conditions were therefore not seen as significant impediments to the work of the CIG.

The researcher facilitated the research process by providing clarification where needed and encouraging discussion, dialogue and reflection, and throughout this phase tried to avoid the desire to be in control of the CIG process. Despite his efforts to allow all participants to have voice he could not at all times guarantee this. CIG members were not all familiar with the reflection and reflexivity practiced in a professional sense and therefore this could have affected the quality of their reflection.

Furthermore, there still remains a dominance of an empirical-analytical paradigmatic stance within the Faculty which somewhat impedes and limits the performance of research situated in other paradigms such as the emancipatory-critical paradigm. One just has to glance at the application checklist provided by the Health Research Ethics Committee (HREC) to confirm this observation. HREC should perhaps develop an action research application procedure to accommodate unconventional action research methods.

#### **8.11.5 External validity and relevance beyond this setting**

The researcher initially struggled with his positivist empirical-analytic mind set in his attempts to engage with the values and assumptions of the emancipatory-critical paradigm. Positivists claim that action research is "preoccupied with solving practical problems and implementing interventions, rather than generating new knowledge and theory in a rigorous way" (Carr W & Kemmis S, 1986). In addition there is the view that the typical cyclical structure of planning, action, observation and reflection (PAOR) is unplanned, not rigorous enough methodologically, that planned cycles take too long to complete (Kemmis S & McTaggart R, 1988) and that results are site specific and therefore not easily transferable. Furthermore, objections to qualitative research methods have always been along the lines of restricted generalisability and some researchers (Locock L et al., 2005) have suggested an "upscaling" of qualitative work by

presenting an overview of a combined set of broadly similar research studies which addressed the same central question.

The researcher used methods from different research paradigms to engage with the central question posed with the realisation that values and assumptions across paradigms are different. Rather than producing a generalisable “best buy narrative”, Pawson (2002) proposes that: “those seeking to imitate the programme should try as far as possible to recreate those favourable circumstances or as many of them as possible” (Pawson R, 2002). Furthermore, Noblit and Hare observed how positivist research ignores “meaning in context” as it; “...gets in the way of producing generalisable findings. It is treated as a confounding variable that must be controlled, or stripped out of the equation, rather than understood as an important explanatory variable” (Noblit GW & Hare RD, 1988). In this regard a particular advantage of action research is that it facilitates research that is deeply embedded in its context and provides means to construct interventions and action plans which can respond to local needs.

The researcher further argues that the approach and methods used to address the central question were appropriate, samples were representative, data sufficient, analysis was rigorously conducted and conclusions flow from the data. Moreover the researcher used reflexivity, triangulation (data and method), member checking and thick description (Mays N & Pope C, 2000) to enhance the credibility and trustworthiness of the research findings. Given the contextual setting and the CIG background, clearly described in the methodology Chapter Three, the researcher believes the findings to be transferable to primary care contexts elsewhere. It is therefore hoped that this research will assist in understanding the implementation process at primary care level in other provinces nationally and in other LMIC countries in Africa.

## **8.12 CONCLUSION**

This Chapter integrates the findings from the different aspects of the research, which are reported separately in Chapters Four to Seven, into one overarching conceptual framework (Figure 8.1). The components of this conceptual framework are then discussed one by one, relating them to the findings and to the broader literature and policy environment. This is followed by a discussion of

the findings that relate specifically to asthma. The Chapter then ends with a discussion of the limitations of the methods used.

Chapter Nine deals with the conclusions, recommendations, implications and impact of this research.

## CHAPTER NINE

### CONCLUSIONS AND RECOMMENDATIONS

*"Evidence is more powerful where it chimes with experiential knowledge"*

***Fitzgerald L et al, 2001***

#### 9.1 INTRODUCTION

This study looked at how the process of implementation of clinical research evidence can be improved in the PHC sector of the MDHS in the Cape Town metropole. The study used the specific experience of implementing asthma guidelines, as part of an action research project, to understand the issues involved. Action research itself closes the gap between evidence and practice and this methodology is therefore ideally suited to improving the uptake of evidence in practice and to conduct research "with" people rather than "on" them.

This chapter presents the conclusions and recommendations, which flow from this research. The conclusions are presented in three parts. The first part deals with the conclusions specifically related to implementing the new guideline and improving the quality of asthma care. The second part presents the conclusions with regard to evidence-based practice and the third part on the overall process of guideline implementation. A model is presented to assist with closing the gap between evidence and practice for future use in primary care practice. This chapter then concludes with the recommendations, implications and potential impact of this research.

#### 9.2 QUALITY IMPROVEMENT OF ASTHMA CARE AND THE PROCESS OF ASTHMA GUIDELINE IMPLEMENTATION IN PRIMARY CARE

The **first objective** of the study was to gain insight into the current quality of asthma care in the MDHS of the Cape Town metropole. This was largely addressed through the baseline audits conducted in 2007 and 2008. This showed that the baseline quality of asthma care, with specific reference to the assessment of the patient's level of control, measuring the patient's PEFr, assessing the patient's inhaler/ spacer technique, recording the smoking status, the adequate prescription of controller and reliever MDI refills during visits and particularly the issuing of an ASMP during visits, was poor.

The **second objective** was to determine whether the process of implementation of the new asthma guideline contributed to an improvement in the quality of care in the MDHS. This was largely addressed through the annual audits conducted in 2007, 2008, 2010 and 2011 during the period of implementation. This showed that although clear cause and effect reasoning cannot be inferred, overall statistically and clinically significant improvements in the quality of care occurred in conjunction with the process of asthma guideline implementation. Despite the improvement in structural and process criteria there was no corresponding improvement in the outcome criteria and in fact the utilisation of facilities for emergency visits significantly increased, while the hospitalisation of patients remained constant.

The **third objective** was to explore ways of improving the process of implementation of the national asthma guideline in PHC in the MDHS. This was largely addressed through the action-research process at selected CHCs. This showed that implementation could be improved by ongoing educational support and formal interactive training workshops with the staff members who were directly involved with patients. The development and use of educational aids and ASMPs based on the guideline recommendations were useful and encouraged patient participation in decision making regarding their care.

The **fourth objective**, specific to asthma care, was to gain insight into the perceptions, attitudes and knowledge of asthmatic patients regarding their asthma management. This was addressed by means of a survey and showed that even though the majority of asthma patients participated in decisions regarding their asthma and felt satisfied with the quality of care they received, the prevalence of smoking among asthmatic patients was high and opportunities for smoking cessation counselling were missed. Even though documentation of peak flow recordings and patients' knowledge of the difference between the reliever and controller MDIs were good, patients' perceptions with regard to education on the inhaler technique, the assessment of the level of control, the issue of written information regarding asthma and the use of ASMPs remained poor and could be improved.



### 9.3 EVIDENCE-BASED PRACTICE AND ASTHMA GUIDELINE IMPLEMENTATION IN PRIMARY CARE

The **fifth objective** of the study was to explore how EBP is understood and perceived by doctors in PHC. This was addressed by means of a survey which showed that the doctors in PHC used evidence in clinical decision making and agreed on the usefulness and importance of EBP in improving the quality of patient care in South Africa. There was a difference in the engagement with activities related to EBP between the public and private sector PHC doctors and there is a need for formal training in the skills and processes of EBP.

The **sixth objective** was to understand how PHC doctors in the public and private health sectors gained access to and used guidelines. This was addressed by means of a survey which showed that a good proportion of both public and private sector doctors in the Cape Town metropole were well aware of the asthma guideline, had used the guideline and had adopted, acted on and adhered to specific guideline recommendations. There was a high level of general awareness of the asthma guideline and recommendations were being adopted in practice, although the lack of formal disease registers, monitoring and evaluation of asthma care and the utilisation of an ASMP could be improved on.

The **seventh objective** was to explore the experiences, perspectives and understanding of FPs (academic, private and public sector) with regard to EBP and the implementation of guidelines in PHC practice. This was addressed by qualitative research which showed how the views and perspectives of FPs regarding EBP and the process of guideline implementation contributed to the development of a conceptual framework for the process of guideline implementation.

The **eighth objective** was to gain insight into the understanding of FPs regarding the perceived problems and main barriers to EBP and their views of the process of guideline implementation in PHC. This was addressed by qualitative research, which identified barriers present in each step of the implementation process. Time constraints, practitioner workload, lack of financial resources, lack of ownership, the lack of timeous organisational support and practitioner resistance to change were important barriers to guideline implementation in an already overburdened PHC setting. A conceptual model

was developed which showed that the process of guideline implementation should be tailored to the barriers identified.

The **ninth objective** was to gain insight into the knowledge, perceptions and attitudes of clinical nurse practitioners in the public sector with regard to EBP and the process of guideline implementation. This was addressed by means of a survey which showed that the concept of EBP was fairly new to CNPs in PHC and identified a need to learn more about it. CNPs agreed that clinical research evidence is useful in the daily management of patients, that their decision making is based on evidence, that evidence-based nursing can improve the quality of patient care, that there is a place for evidence-based nursing in their practices at their respective CHCs, that EBP will make a difference in the quality of care of their patients and that evidence-based nursing practice and has an important role to play in South Africa. Although the awareness of CNPs with regard to the asthma guideline was poor, the vast majority reported that they personally educated patients on the difference between reliever and controller MDIs, recorded the smoking status of patients in the records, demonstrated the inhaler technique to all their asthma patients, assessed the level of control and agreed that inhaled corticosteroids are the mainstay of treatment in patients with chronic persistent asthma. However only a small minority (mainly at the CHCs where action research occurred) started issuing patients with ASMPs.

#### **9.4 HOW TO IMPROVE THE PROCESS OF GUIDELINE IMPLEMENTATION**

In answering the question: "How can the process of implementation of clinical research evidence, using the example of the national evidence-based guideline on asthma, be improved in the PHC sector in the MDHS of the Cape Town metropole?", this thesis concludes that the process of guideline implementation can be improved in the PHC sector by an in depth understanding and systematic approach to the whole process. The conceptual framework (Figure 8.1) is provided as a model which attempts to guide and make sense of this process of guideline implementation. A stepwise approach is presented and provides a summary of the main research findings. The model shows that the initial process of evidence creation should not only deal with research evidence of high quality, but should incorporate research evidence that is relevant to the particular context of care. In addition the model shows that guideline development should

be inclusive and involve a wider spectrum of stakeholders as well as patients; that guideline contextualisation, dissemination and implementation should be carefully planned. Special consideration should be given to local decision making about adoption or prioritisation of specific recommendations as part of ongoing quality improvement cycles and the conversion of published guidelines into practical tools for practitioners to use in the consultation prior to dissemination. Implementation should anticipate that members of the PHC staff will differ in their readiness to change and that strategies should consciously embrace principles of behaviour change and build up a sense of ownership, choice and control over local adoption of the guidelines. Academic centres, such as universities and professional bodies, have a role to play in identifying, appraising and synthesising the evidence, and giving input into guideline development. They can also assist by innovating and evaluating practical tools as part of the contextualisation stage and by providing continuing education during implementation as part of their social responsibility. The HCO should prevent unnecessary delays in guideline implementation by ensuring that policy, resources and recommendations are aligned during the contextualisation stage; that barriers encountered should be dealt with throughout the entire process, and that ongoing monitoring and evaluation of the quality of care occurs.

## **9.5 RESEARCH RECOMMENDATIONS, IMPLICATIONS AND IMPACT**

### **9.5.1 Research Recommendations**

#### **9.5.1.1 Recommendations regarding EBP and guideline implementation**

Two main recommendations flow from the findings of this study:

- That the formal teaching of the process of EBP to CNPs and doctors in PHC be encouraged. Such teaching would include an overview of the formulation of questions in PHC, the searching for relevant research to answer it, the critical appraisal of evidence, application of evidence in decision making with patients and the monitoring and evaluation of practice including QI cycles.
- That a formal model (as discussed under implications below) for the process of guideline implementation be used in PHC. This process could provide more structure and make it easier for primary care practitioners to follow and utilise the recommendations contained in guidelines and move towards closing the evidence-practice gap. It is essential for

contemporary South African health systems, including the development of quality primary care as part of future NHI, to prioritise the effective implementation of evidence-based guidelines in practice.

#### **9.5.1.2 Recommendations specifically for asthma care**

In order to improve the current quality of asthma care and the utilisation of evidence contained in the guideline, the following recommendations are made:

- That ASMPs be actively encouraged and used with all asthma patients during consultation.
- That structured education in groups be encouraged; with educational aids, such as flipcharts, used in the education of asthma patients.
- That CNPs receive ongoing education and support in the care of asthma patients from primary care doctors and FPs especially in dealing with patients with comorbidity.
- That the current continuous QI cycles on asthma be integrated with the process of guideline implementation as part of reflection and planning at the local level.
- That formal asthma registers be established in PHC.

#### **9.5.1.3 Recommendations for future research**

The following recommendations for future research based on the model (Figure 8.1) are made:

- Contextualisation:
  - Policy research into how the contextualisation stage can be streamlined to align policy development and the latest guideline recommendations in an efficient and co-ordinated process that includes all the role players.
  - Applied research into what should be disseminated:
    - What kind of educational tools should be developed?
    - Is the current PACK approach that integrates guidelines into one tool for adults the most effective way forward?
    - Should guidelines be more automated and electronically available?

- Dissemination:
  - What are the best ways of disseminating and sharing information about guidelines in order to ensure maximal awareness and access?
- Adoption:
  - How can the practitioners be engaged in an ongoing process that builds ownership and adoption of the guidelines at a local level – similar to the CIG process, but part of the organisational culture?
  - What is the best approach to providing training on new guidelines and associated skills for primary care practitioners?
- Monitoring and Evaluation
  - What are the best strategies for engaging people at the local level with the QIC process?
  - How can the integrated audit tool be extrapolated to assist in the monitoring and evaluation of all the conditions in the PACK guideline?

A final recommendation, which applies to the whole process of implementation as well as the individual components, is to establish the cost-effectiveness of the model.

#### **9.5.1.4 Implications of the study for the local health system. (Figure 9.1)**

This research was based on one single guideline, but in the Western Cape Province an important tool, the integrated Practical Approach to Adult Care Kit (PACK), which integrates different guidelines for use in PHC, is being implemented and is part of policy. There is therefore a need to clearly align the findings of this research with the existing policy and processes, which are already established within the public sector of this province and which could potentially be duplicated in the private sector as well.

The universities and professional bodies located within this province should continue to contribute at a national level to the process of guideline development. It should not be necessary for many, if any, guidelines to be developed de novo at the level of individual provinces or districts. The contribution of academic institutions would include creating, identifying, appraising and synthesising evidence that can then be considered by the

stakeholders involved in guideline development. At a local level the academic institutions could also be involved in applied research that assists the province. The reality in the Western Cape Province is that the PACK integrated guideline has been developed and is being rolled out throughout the province to all primary care providers. This is a practical tool which guides practitioners through the assessment and management of all the common presentations by adults (e.g. cough, chest pain and diarrhea) and the management of all the common chronic conditions (e.g. HIV, TB, diabetes, depression). Therefore, rather than disseminating isolated individual guidelines, all new guidelines should feed into this already established integrated tool. There might still be individual guidelines which need the full process of implementation as they are not part of PACK, but the majority of adult conditions in ambulatory primary care are now covered by PACK. A similar integrated guideline is also being planned and developed for children.

Following the steps in the conceptual framework, the guideline is developed, then contextualised, then disseminated, and then adopted at the level of the facility followed by audit and feedback. In the Western Cape reality, with the existence of the PACK, the step of contextualisation involves a process of incorporating the recommendations of new individual guidelines related to the PACK content into the one integrated PACK guideline and ensuring that the recommendations are aligned with policy (e.g. essential medication and resources). Dissemination of the PACK guideline with ongoing adoption, audit and feedback at the facility level then continues (Figure 9.1).

The implementation process should continually disseminate revisions of the PACK guideline, as well as update and capacitate individual practitioners. This implies that funding should also be available for printing, disseminating and for continued educational outreach.

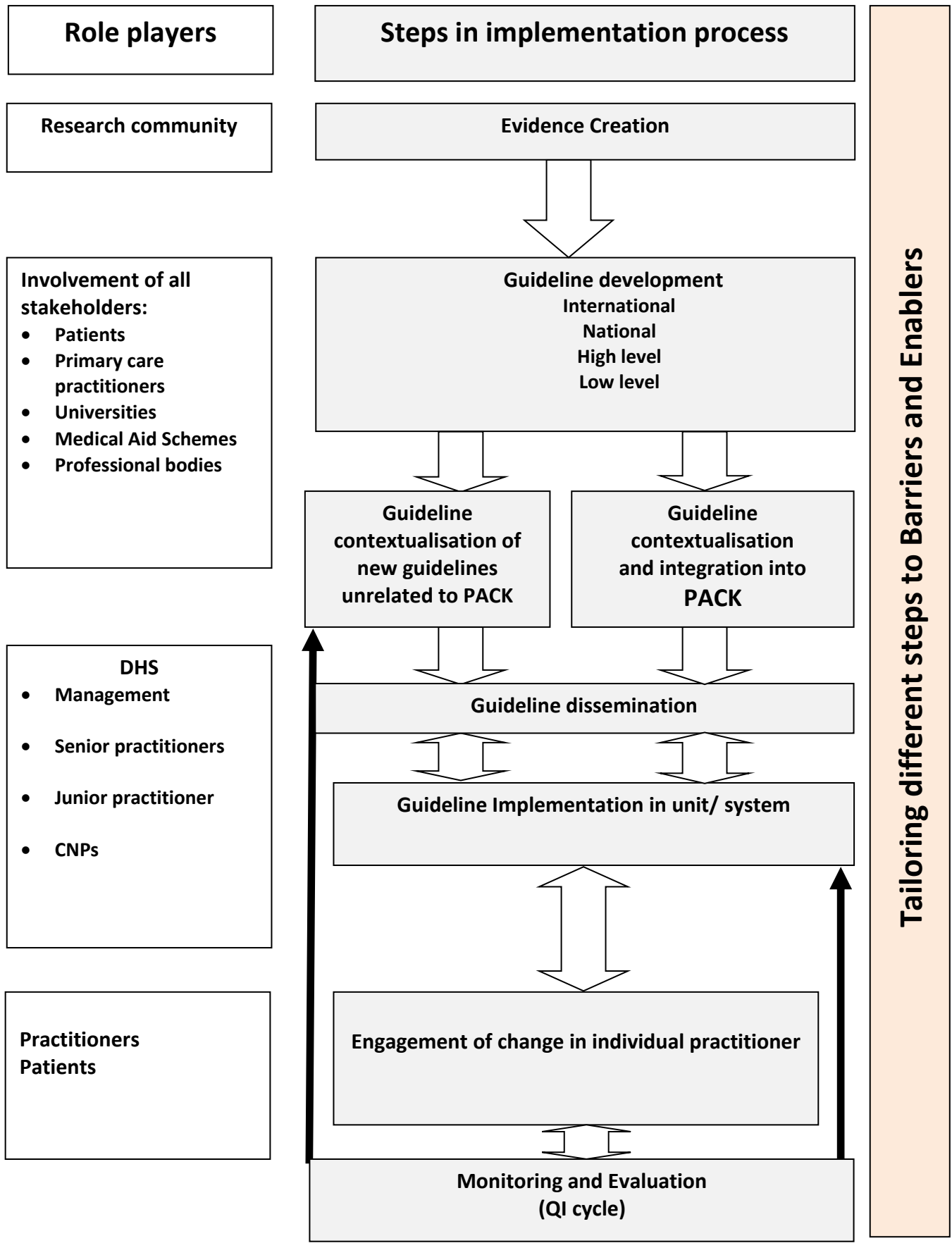
Furthermore, the implementation process should be tailored to the identified barriers and enablers mentioned in this conceptual framework.

In terms of monitoring and evaluation the current system of audit picks on certain priority issues in silos (e.g. HAST audit, integrated NCD audit, and mental health audit tools), which are then reported to different people or departments within the Department of Health. Thus an integrated approach to audit needs to be developed, which would audit and report on key issues and

conditions covered by PACK in a systematic way. The PACK guideline sets clear criteria, which could lead to clear target standards for auditing purposes. Embedding this model in the organisation would mean engagement with the support structures, such as the Health Impact Directorate, as well as the managers of the health services, such as the Directors for Urban and Rural Districts. Implementation of the model would require commitment to embedding the steps into the structure, identifying who would be responsible for each step and supporting a change in organisational culture. In the Western Cape Province in particular, key questions to address would be:

- Who will take responsibility for the development of new clinical guidelines if a need is identified, but no such guidelines exist? Ideally such guidelines should be developed at a national level and the process could be led by an academic institution, professional body or even the department of health. In some countries a specific body has been established to develop and update guidelines for the whole public health system. (Killoran A et al., 2013),
- Who will identify and evaluate the quality of new clinical guidelines or research evidence once they are published? The KTU has been engaging with this as part of the development of PACK. A Provincial Guidelines Advisory Committee was also previously established for this purpose, with key competencies in the burden of disease and appraisal of guidelines, and may need to be revived.

**Figure 9.1:** Implications of conceptual framework to that of KTU.





- Who will take responsibility for the local contextualisation of guidelines and development of practical tools? The KTU is already covering conditions contained in PACK and the FPs, as clinical leaders who are responsible for clinical governance in the DHS, should also play a prominent role in this process. Ultimately this should be the responsibility of the Department of Health's support services.
- How should the contextualised integrated tool be disseminated to primary care practitioners? In addition to the postal mailing of the printed integrated tool to primary care practitioners, it may be more cost-effective to have both interactive educational tools and the integrated guideline (PACK) available electronically.
- How will the contextualised guideline/ tools be introduced to primary care facilities? This may require the leadership at the health facility to ensure that the guideline and its recommendations are incorporated into local planning and QI cycles. It may also be necessary to identify trainers that can assist primary care practitioners to adopt new recommendations into clinical practice.
- How will improvement in quality be monitored? An integrated audit tool based on PACK should be developed and used. The department must ensure feedback of the results to those involved in changing practice at the local level as described above as well as those involved in contextualisation and dissemination of the guideline. Regular monitoring and evaluation with QI cycles should be encouraged and supported.

### **9.5.2 Research Impact and Dissemination**

A basic research impact framework described by Kuruvilla et al (2007) has been used to guide this section on the potential impact of this study (Kuruvilla S et al., 2007).

### 9.5.2.1 Transferability

The extent to which the research findings are transferable to other settings beyond the context of this research setting (as discussed in Chapter Eight) is important to consider. Asthma patients in this research are similar to those attending other PHC facilities locally, provincially and nationally. Furthermore, the CNPs, doctors and members of the CIG were current practitioners in their local settings and very similar to the wider body of practitioners in and from similar CHCs in the metropole, the Western Cape Province and nationally. Even though the PHC infrastructure in the Western Cape may be better than some other provinces in South Africa it is relatively easy to transfer the findings to other PHC settings. Where the context is similar it may also be possible for clinical leaders and managers to make use of the findings in other Low Middle Income Countries (LMIC) in Africa. For example Botswana, where the development of family medicine has been twinned with the Division at Stellenbosch, would be in a good position to make use of the findings.

The question arises whether the methodological approach to implementation of evidence used in this study at the level of guideline implementation, change in practice, monitoring and evaluation is a feasible approach to take to scale in the public service? Guideline implementation in this study was closely aligned with the participatory action research and QI cycles, informed by ongoing audits as part of monitoring and evaluation. At its heart this requires the primary care team to engage in an ongoing process of action, observation, reflection and planning. Does this process require expertise that is not widely available? Facilitation of this process is skilful and requires leadership that is willing to collaborate and guide rather than control and direct. Recent studies of organisational culture suggest that these attributes are present amongst staff (Mash Barretts survey) and are becoming part of training programmes (Pasio KS & Mash B; 2014 ), but are not always enabled by a culture that is characterised by a lack of open communication and accountability with poor relationships (Mash Barretts; Barrett R, 2006). Nevertheless initiatives are underway to transform the culture to support innovation and experimentation (DoH, 2012) and there have been large scale examples of inquiry processes linked to quality improvement (Mash B, 1999).

Another aspect to consider in scalability is how to replicate this process, which in this thesis was for one disease and guideline, across the whole of primary care. The integration of guidelines at the level of contextualisation, for example the PACK guideline that addresses the whole of adult care, can translate into integrated approaches to dissemination, implementation, monitoring and evaluation based on this one tool. The approach to the integrated audit of chronic diseases, which has been implemented throughout the Western Cape, is a good example of going to scale at the level of monitoring and evaluation. Such tools however still tend to emphasise the treatment of specific diseases rather than the core dimensions of effective primary care services such as accessibility, continuity, comprehensiveness and co-ordination (Kringos DS et al., 2010), which are also seldom addressed adequately in disease-orientated guidelines. It may be necessary to use integrated tools such as the adapted Primary Care Assessment Tool to adequately monitor and evaluate these issues (Bresick, National Family Practitioners Congress). Approaches must also ensure a balance between the views of health workers and patients when monitoring and evaluating the quality of care.

#### **9.5.2.2 Knowledge advancement**

Dissemination to stakeholders will be in the form of publications, feedback sessions to participants and decision makers, and presentations at congresses. Feedback will be given to clinical practitioners in primary care who participated in the research including:

- Clinical nurse practitioners at Community Health Centres (CHCs) in the MDHS.
- Primary care practitioners at CHCs in the MDHS (public sector)
- The Department of Health, Health Impact Assessment directorate who gave permission for the study
- FPs (academic; private and public sectors).

This research has been presented at local, national and international conferences:

**Local:**

- The 56<sup>th</sup> Annual Academic Day, Faculty of Medicine and Health Sciences, Stellenbosch University (15 – 16<sup>th</sup> August 2012): Oral presentation: Knowledge, perceptions and awareness of medical practitioners regarding evidence-based practice and asthma guideline implementation in the public and private sectors of the Cape Town metropole, South Africa.
- The 57<sup>th</sup> Annual Academic Day, Faculty of Medicine and Health Sciences, Stellenbosch University (13-14<sup>th</sup> August 2013). Oral presentation: Audit results of asthma care at selected Community Health Centres (CHCs) in the Cape Town metropole before and after asthma guideline implementation.

**National:**

- The 15<sup>th</sup> National Family Practitioners Conference (10<sup>th</sup> May 2012). Oral presentation: Knowledge, perceptions and awareness of medical practitioners regarding evidence-based practice and asthma guideline implementation in the public and private sectors of the Cape Town metropole, South Africa.
- The 16<sup>th</sup> National Family Practitioners Conference (11<sup>th</sup> May 2013). Oral presentation: Audit results of asthma care at selected Community Health Centres (CHCs) in the Cape Town metropole before and after asthma guideline implementation.
- The 17<sup>th</sup> National Family Practitioners Conference (20-22<sup>nd</sup> June 2014). Poster presentation: "Reducing the gap between Evidence and Practice. Improving the Implementation of Evidence-based asthma guidelines in the PHC sector of the Cape Town metropole."

**International:**

- International meeting of National Heart, Lung, and Blood Institute (NHLBI) in Washington, US, (15th April 2014). Poster presentation: Audit results of asthma care at selected community health centres (CHCs) in the Cape Town metropole before and after asthma guideline implementation.
- Papers will be submitted for formal presentation at the Regional Africa WONCA Family Medicine Conference and the International Evidence-based Health Care (IEBHC) Conference in 2014.

The conceptual framework presented in Chapter 8 has been accepted as one of two poster presentations from the Faculty of Medicine and Health Sciences for the Provincial Department of Health's Annual Research Day with the theme of "Translation of research into policy and practice" at Lentegeur hospital on 24 October 2014.

An abstract has been submitted to present this research at the International Evidence-based Health Care Conference (IEBHCC) to be held in Sydney, Australia in 2015: "A conceptual framework of guideline implementation; Reducing the evidence-practice gap".

As a minimum the following five articles will be submitted to national or international journals for publication:

- 1 A survey of the knowledge, attitudes and perceptions of EBP and guideline implementation of primary care practitioners in the Cape Town metropole.
- 2 The experience, perspectives and understanding of FPs with regard to EBP and the implementation of evidence in clinical practice - qualitative research.
- 3 A survey of the knowledge, attitudes and perceptions of patients regarding asthma care in the Cape Town metropole.
- 4 How to improve the quality of asthma primary care in the Cape Town metropole: Audit, feedback and action research
- 5 How to improve the implementation of guidelines in primary care: A conceptual model

The advancement of knowledge could be assessed in terms of the number of publications and future citations, although its impact on policy and patients would be more valuable. Evidence of its impact on provincial and national policy can be monitored through its use in policy documents and decision making. Indicators, such as morbidity, mortality and quality of life, would also be relevant, and yet more difficult to evaluate and attribute to the impact of this study.

### **9.5.2.3 Undergraduate curriculum**

Judging from the identified need of CNPs and doctors to know more about EBP, it is clear that EBP as a graduate attribute in the current undergraduate curriculum of nursing and medical students could be further enhanced. Many universities in

this country have incorporated the CanMEDS model, which emphasises different attributes and roles that an effective medical practitioner should have (Rourke J & Frank JR, 2005). Furthermore, the role of “scholar”, in particular, encourages the identification, preparation, appraisal, and use of evidence to inform practice (Rourke J & Frank JR, 2005). This research could further guide the curriculum for the training of undergraduate students in the principles and application of EBP in decision making at the bedside and could be incorporated in the current planning of the newly formed Centre for Evidence-based Health Care at Stellenbosch University.

#### **9.5.2.4 Postgraduate curriculum**

The researcher has already assisted with the teaching of the process of guideline implementation in the MSc Epidemiology programme as well as postgraduate training in other disciplines in the Faculties of Health Sciences locally and nationally. Family Medicine and Primary Care, nursing and clinical associates in particular, stand to benefit from such teaching. Furthermore, the knowledge and learning obtained from the process of asthma guideline implementation can be used to assist with guideline implementation for other chronic conditions such as for example, COPD, hypertension, diabetes and epilepsy.

#### **9.5.2.5 Research capacity**

The researcher is a teacher in the MMed (Family Medicine) programme of applied research and this study has improved his knowledge and experience of action research and he is looking forward to assist in improving the capacity of master’s students and future PhD students in the conduct of research in this critical-emancipatory paradigm.

Action research deals with closing the gap between evidence and practice and this methodology is ideally suited to improve the uptake of evidence in practice. The action research process can be further utilised to address areas where improvement in the evidence-practice gap is required. Action research is a methodology that Family Medicine and Primary Care should particularly embrace as they are often involved in translational and implementation research for use at the coalface of care. This has further implications for research training programmes in Family Medicine and Primary Care and research journals. In addition the usefulness of action research to address the evidence-practice gap

has also been identified and emphasised in local research (Chopra M et al., 2009; Mash R et al., 2014).

The development of a network of researchers in South Africa with a particular focus and interest in PAR will be useful. Collaboration within establishing partnerships for grant applications to conduct action research projects in the community is envisaged.

#### **9.5.2.6 Capacity building in CHCs**

In the course of conducting this research, the researcher provided basic teaching on the QI cycle process to dedicated asthma teams at CHCs as well as in critical reflection and the process of action research to members of the CIG. This process has capacitated staff members dedicated to asthma care to conduct quality improvement and critically reflect on the process of care. Action research and the QI cycle process should be embraced as way of capacity building for primary care staff and growing a learning organisational culture. Furthermore, the understanding of the CIG of the key components of quality asthma care was improved. The CIG process also enhanced group interaction, teamwork and a culture of experimentation, innovation and learning.

#### **9.5.2.7 Public health policy nationally**

The detail discussed in section 9.4.2 acts as a practical example of how this could be done in the Western Cape Province. Departments of health nationally and even more widely in LMIC countries in Africa should look at how the principles and steps of this model can be incorporated into their organisations.

### **9.6 CONCLUSION**

This research undertook to answer the central research question: "How can the implementation of clinical research evidence, using the example of the national evidence-based guideline on asthma, be improved in the PHC sector in the MDHS of the Cape Town metropole?"

A framework for guideline development and implementation, which could be transferable locally, nationally and possibly to other LMIC in Africa, has been developed. Policy- and decision-makers can utilise the framework as a model for implementation of evidence-based guidelines in primary care practice within their own health care organisations. The implementation of the model by key

stakeholders provides the opportunity for further research on the individual steps and cost-effectiveness.



## CHAPTER TEN

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## **Annexures**

# **PHASE 1**

# **ANNEXURES**

**ANNEXURE A: Survey Questionnaire Private Sector**



**Dr Dr Michael Pather**  
 Asthma Guidelines Implementation Project (AGIP)  
 Family Medicine and Primary Care  
 F Faculty of Medicine and Health Sciences

Date ..... /..... /.....

**EVIDENCE BASED PRACTICE  
 AND ASTHMA GUIDELINE IMPLEMENTATION QUESTIONNAIRE  
 (Private Sector)**

Dear Colleague

Kindly assist with the completion of this questionnaire, which forms part of the asthma guideline implementation project and a doctoral research thesis. It seeks an improved understanding of how practitioners engage with the concept of evidence based practice (EBP), asthma care in practice and their awareness and familiarity with the latest evidence based national asthma guideline published and disseminated in July 2007.

Your response to this questionnaire will remain confidential and your anonymity and that of your practice will remain protected at all times. Data collected will be analysed as part of the guideline implementation and research project and will be made available to you as part of a research publication. Completion of this questionnaire therefore assumes informed consent on your willingness to participate and provide the data requested. Please tick off your preferred responses to the questions provided and mail back using the enclosed self-addressed envelope or return via the consultants from QualiCare. The questionnaire is also available electronically on the QualiCare website and can be completed and returned in electronic format.

Thank you for your much valued time and assistance in this regard.

Kind regards and best wishes.

Yours sincerely

-----  
**Dr Michael Pather**

<b>SECTION 1.</b>			
<b>1.1. Gender</b>	Male	Female	
<b>1.2. Age</b>	<input style="width: 50px;" type="text"/>		
<b>1.3. Practice</b>	Public Sector	Private sector	
<b>1.4. Years of experience since qualifying</b>	<input style="width: 100px;" type="text"/>		
<b>1.5. Formal postgraduate studies in progress?</b>	Yes	No	<b>1.6 Postgraduate qualification obtained?</b>
	<input type="checkbox"/>	<input type="checkbox"/>	Yes
			<input type="checkbox"/>
<b>1.7. Postgraduate qualification obtained</b>	Diploma	Postgraduate degree	Other
<b>SECTION 2</b>			
<b>2.1. Do you surf the internet for clinical information?</b>	Yes	No	
<b>2.2 Which internet site do you visit most</b>	<input style="width: 100%; height: 20px;" type="text"/>		

<b>often?</b>							
<b>2.3. Do you have access to PubMed (Medline)?</b>				Yes	No		
<b>2.3.1. At your practice?</b>	Yes	No	<b>2.3.2. At home?</b>	Yes	No		
<b>2.4 How often have you accessed the internet for clinical information during the past year?</b>							
Daily	Weekly	Monthly	Quarterly	Annually	Never		
<b>2.5 How often do you find the time to read medical journals?</b>							
Daily	Weekly	Monthly	Quarterly	Annually	Never		
<b>2.6 Which of the following medical journals do you read?</b>							
NONE	SAMJ	SAFP	CME	BMJ	LANCET	UPDATE	OTHER
<b>2.7. Please specify if "other"</b>							
<b>2.8 Are you an active member of a medical Journal Club?</b>				Yes	No		
<b>2.9. Do you use clinical research evidence in your decision making in practice?</b>				Yes	No	Unsure	
<b>2.10. Do you currently use any asthma clinical practice guideline?</b>				Yes	No		
<b>2.11. Do you conduct any quality improvement cycles (clinical audits) in your practice?</b>				Yes	No		
<b>2.12. Have you attended any course on Evidence-Based Practice (EBP)?</b>				Yes	No		
<b>2.13. Would you like to learn more about Evidence-Based Practice (EBP)?</b>				Yes	No		
<b>SECTION 3.</b>							
<b>3.1. Clinical research evidence is useful in the day to day management of my patients.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.2. The vast majority of my decisions are based on clinical research evidence.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.3. I think it is important to keep up to date with new evidence in practice.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.4. Practising evidence-based medicine can improve the quality of patient care.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.5. There is no place for evidence-based medicine in my practice.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.6. The implementation of evidence will not make a difference in the quality of care of my patients.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.7. EBP has an important role to play in contemporary health care in South Africa.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.8. I value interaction with my local consultants more than published evidence.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.9. I view the opinions of colleagues as much as research evidence.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.10. My clinical experience has more meaning to me than published research evidence.</b>							



Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>3.11. The only "credible" evidence comes from research Randomised Controlled Trials (RCTs).</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>SECTION 4.</b>				
<b>4.1. Have you read the current SA National Thoracic Society Asthma guideline?</b>			Yes	No
<b>4.2. I am keen to improve the implementation of the latest asthma guideline in my practice.</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>4.3. I have problems accessing clinical practice guidelines due to time constraints.</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>4.4. Clinical practice guidelines are not easily available</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>4.5. I have problems finding clinical practice guidelines when I actually need them.</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>4.6. Clinical practice guidelines are not user-friendly enough for use in my practice.</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>4.7. Summaries of recommendations are more acceptable options to the actual guideline.</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>4.8. Recommendations from guidelines should be presented to me in synopsis format</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>4.9. I find clinical practice guidelines problematic in that they limit my freedom to practice.</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>SECTION 5.</b>				
<b>5.1. Do you manage patients with asthma?</b>		Yes	No	
<b>5.2. How many patients with asthma do you have in your practice?</b>				
<50	50-100	101-150	151-200	>200
<b>5.3. Do you have a formal practice register for asthma patients?</b>			Yes	No
<b>5.4. Are you aware of the latest (2007) South African Thoracic Society Asthma guideline?</b>			Yes	No
<b>5.5. Have you received a copy of the latest (2007) South African Thoracic Society Asthma guideline?</b>			Yes	No
<b>5.6. Do you know where to find the latest (2007) South African Thoracic Society Asthma guideline?</b>			Yes	No
<b>5.7. Have you adopted any of the recommendations from the</b>			Yes	No

<b>latest South African Thoracic Society Asthma guideline?</b>			
<b>5.8. Do you audit the care of asthma patients in your practice?</b>		Yes	No
<b>SECTION 6</b>			
<b>6.1. I personally educate most patients regarding the difference between "reliever" and "controller" inhalers.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.2. All my asthmatic patients have their smoking status recorded in their folders.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.3. Peak flow readings before and after nebulization are useful in the care of asthmatic patients.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.4. I issue all my asthmatic patients with a written detailed self-management plan.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.5. I demonstrate the inhaler technique to all asthma patients in my practice.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.6. I assess the level of control of all asthma patients in my practice.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.7. The distinction between Asthma and COPD is reasonably clear to me clinically.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.8. Inhaled corticosteroids are the mainstay of treatment for chronic persistent asthma</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree

**THANK YOU VERY MUCH FOR COMPLETING THIS QUESTIONNAIRE.**

**Signature-----**

**ANNEXURE: B: Survey Questionnaire Public Sector**



**Dr Dr Michael Pather**  
 Asthma Guidelines Implementation Project (AGIP)  
 Family Medicine and Primary Care  
 F Faculty of Medicine and Health Sciences  
 University of Stellenbosch Box 19063 Tygerberg  
 7505

Date ..... /..... /.....

**EVIDENCE BASED PRACTICE  
 AND ASTHMA GUIDELINE IMPLEMENTATION QUESTIONNAIRE  
 (Public Sector)**

Dear Colleague

Kindly assist with the completion of this questionnaire, which forms part of the asthma guideline implementation project and a doctoral research thesis. It seeks an improved understanding of how practitioners engage with the concept of evidence based practice, asthma care in practice and their awareness and familiarity with the latest evidence based national asthma guideline published and disseminated in July 2007.

Your response to this questionnaire will remain confidential and your anonymity and that of your practice will remain protected at all times. Data collected will be analysed as part of the guideline implementation and research project and will be made available to you as part of a research publication. Completion of this questionnaire therefore assumes informed consent on your willingness to participate and provide the data requested. Please tick off your preferred responses to the questions provided and mail back using the enclosed self-addressed envelope.

Thank you for your much valued time and assistance in this regard.

Kind regards and best wishes.

Yours sincerely

-----  
**Dr Michael Pather**

SECTION 1.			
<b>1.1. Gender</b>	Male	Female	
<b>1.2. Age</b>	<input style="width: 80%;" type="text"/>		
<b>1.3. Practice</b>	Public Sector	Private sector	
<b>1.4. Years of experience since qualifying</b>	<input style="width: 100%;" type="text"/>		
<b>1.5. Formal postgraduate studies in progress?</b>	Yes	No	<b>1.6 Postgraduate qualification obtained?</b>
	<input type="checkbox"/>	<input type="checkbox"/>	Y <input type="checkbox"/> N <input type="checkbox"/>
<b>1.7. Postgraduate qualification obtained</b>	Diploma	Postgraduate degree	Other
SECTION 2			
<b>2.1. Do you surf the internet for clinical information?</b>	Yes	No	
<b>2.2 Which internet site do you visit most</b>	<input style="width: 100%;" type="text"/>		

<b>often?</b>							
<b>2.3. Do you have access to PubMed (Medline)?</b>			Yes	No			
<b>2.3.1. At your practice?</b>	Yes	No	<b>2.3.2. At home?</b>	Yes	No		
<b>2.4 How often have you accessed the internet for clinical information during the past year?</b>							
Daily	Weekly	Monthly	Quarterly	Annually	Never		
<b>2.5 How often do you find the time to read medical journals?</b>							
Daily	Weekly	Monthly	Quarterly	Annually	Never		
<b>2.6 Which of the following medical journals do you read?</b>							
NONE	SAMJ	SAFP	CME	BMJ	LANCET	UPDATE	OTHER
<b>2.7. Please specify if "other"</b>							
<b>2.8 Are you an active member of a medical Journal Club?</b>			Yes	No			
<b>2.9. Do you use clinical research evidence in your decision making in practice?</b>			Yes	No	Unsure		
<b>2.10. Do you currently use any asthma clinical practice guideline?</b>			Yes	No			
<b>2.11. Do you conduct any quality improvement cycles (clinical audits) in your practice?</b>			Yes	No			
<b>2.12. Have you attended any course on Evidence-Based Practice (EBP)?</b>			Yes	No			
<b>2.13. Would you like to learn more about Evidence-Based Practice (EBP)?</b>			Yes	No			
<b>SECTION 3.</b>							
<b>3.1. Clinical research evidence is useful in the day to day management of my patients.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.2. The vast majority of my decisions are based on clinical research evidence.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.3. I think it is important to keep up to date with new evidence in practice.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.4. Practising evidence-based medicine can improve the quality of patient care.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.5. There is no place for evidence-based medicine in my practice.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.6. The implementation of evidence will not make a difference in the quality of care of my patients.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.7. EBP has an important role to play in contemporary health care in South Africa.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.8. I value interaction with my local consultants more than published evidence.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.9. I view the opinions of colleagues as much as research evidence.</b>							
Strongly Disagree	Disagree	Agree	Strongly Agree				
<b>3.10. My clinical experience has more meaning to me than published research</b>							

<b>evidence.</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>3.11. The only "credible" evidence comes from research Randomised Controlled Trials (RCTs).</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>SECTION 4</b>				
<b>4.1. Have you read the current SA National Thoracic Society Asthma guideline?</b>			Yes	No
<b>4.2. I am keen to improve the implementation of the latest asthma guideline in my practice.</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>4.3. I have problems accessing clinical practice guidelines due to time constraints.</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>4.4. Clinical practice guidelines are not easily available</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>4.5. I have problems finding clinical practice guidelines when I actually need them.</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>4.6. Clinical practice guidelines are not user-friendly enough for use in my practice.</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>4.7. Summaries of recommendations are more acceptable options to the actual guideline.</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>4.8. Recommendations from guidelines should be presented to me in synopsis format</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>4.9. I find clinical practice guidelines problematic in that they limit my freedom to practice.</b>				
Strongly Disagree	Disagree	Agree	Strongly Agree	
<b>SECTION 5.</b>				
<b>5.1. Do you manage patients with asthma?</b>			Yes	No
<b>5.2. How many patients with asthma do you have in your practice?</b>				
<50	50-100	101-150	151-200	>200
<b>5.3. Do you have a formal practice register for asthma patients?</b>			Yes	No
<b>5.4. Are you aware of the latest (2007) South African Thoracic Society Asthma guideline?</b>			Yes	No
<b>5.5. Have you received a copy of the latest (2007) South African Thoracic Society Asthma guideline?</b>			Yes	No
<b>5.6. Do you know where to find the latest (2007) South</b>			Yes	No

<b>African Thoracic Society Asthma guideline?</b>			
<b>5.7. Have you adopted any of the recommendations from the latest South African Thoracic Society Asthma guideline?</b>		Yes	No
<b>5.8. Do you audit the care of asthma patients in your practice?</b>		Yes	No
<b>SECTION 6</b>			
<b>6.1. I personally educate most patients regarding the difference between "reliever" and "controller" inhalers.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.2. All my asthmatic patients have their smoking status recorded in their folders.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.3. Peak flow readings before and after nebulization are useful in the care of asthmatic patients.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.4. I issue all my asthmatic patients with a written detailed self-management plan.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.5. I demonstrate the inhaler technique to all asthma patients in my practice.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.6. I assess the level of control of all asthma patients in my practice.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.7. The distinction between Asthma and COPD is reasonably clear to me clinically.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.8. Inhaled corticosteroids are the mainstay of treatment for chronic persistent asthma</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree

**THANK YOU VERY MUCH FOR COMPLETING THIS QUESTIONNAIRE.**

**Signature-----**  
**Dr Michael Pather**

**Annexure: C****Asthma Audit tool:****Section 1**

**1. Please visit each room where adult asthma patients are managed. Ask the following questions and/or look for the materials/equipment. Rooms include consulting and club rooms.**

Questions	No.	%
1.1 How many rooms in total are used to clinically manage adult asthma patients? (use this as the denominator to calculate the % in questions 1.2 to 1.7)		
<b>Peak Expiratory Flow Meters (PEFM)</b>		
1.2 How many rooms have <i>functional</i> PEF meters?		
1.3 How many rooms have PEF reference charts?		
<b>Guidelines</b>		
1.4 How many rooms have a published guideline on the management of chronic adult asthma? i.e. South African Thoracic Society 2000, PALS Plus 2006 , 2007 Department of Health or EDL		
<b>Educational materials</b>		
1.5 How many rooms have a spacer for demonstration and education?		
1.6 How many rooms have placebo inhalers for demonstration and education?		
1.7 How many rooms have printed patient education material on asthma?		

**2. Please answer the following questions regarding the facility.**

Questions	Yes	No
2.1 Does the facility have a clear protocol on which asthma patients to refer for specialist care?		
2.2 Do you have a member of staff with ongoing specific responsibility for asthma care?		
2.3 Does this facility provide group health education on asthma?		
2.4 Does this facility have patient education materials for asthma in ALL the local languages?		
2.5 Does this facility have a functional height measure?		
2.6 Is there a spacer in the emergency room?		
2.7 Is there a nebuliser in the emergency room?		
2.8 Is there oxygen available in the emergency room?		
2.9 Is there a peak expiratory flow meter in the Emergency room?		

**3. Visit the pharmacy or drug store room. The table lists medications that are on general code as well as ones that may be dispensed in primary care**

**with a specialist's prescription. Ask the pharmacist or nurse-in-charge of drugs the following questions:**

<b>Drug</b>	<b>Currently in stock? Yes/No</b>	<b>In stock in the last month? Yes/No</b>	<b>State the reasons for drug running out</b>
1. Budesonide 100 MDI			
2. Budesonide 200 MDI			
3. Salbutamol MDI			
4. Ipratropium Bromide MDI			
5. Theophyllin LA 200mg tabs			
6. Theophyllin LA 300mg tabs			
7. Prednisolone 5mg tabs			
8. Salmeterol 50 MDI			
9. Adult Spacers			
<i>Emergency treatment</i>			
10. Salbutamol nebuliser solution 5mg/ml			
11. Ipratropium Bromide nebuliser solution 0,25mg/ml			
12. Hydrocortisone 100mg IV			
13. Normal saline 10mls. amp			
<b>Total</b>			
<b>% of all medication (Total number items in stock ÷ 13 x100)</b>			

## **Section 2**

**Review the folders of the same 20-30 patients as per original selection. Look back at the record of asthma visits over the last year and answer the questions in the Table below. Record the information for each patient in one row of the Table.**



**Section 2: Summary of information to be obtained from the medical record of patient with asthma**

	<b>3.1 Folder number</b>	<b>3.2 Number of routine visits for asthma in the past year?</b>	<b>3.3 Did the patient. have a consistent diagnosis of asthma over the past year?</b>	<b>3.4 How many routine visits recorded an assessment of the level of asthma control?</b>	<b>3.5 Has the patient been issued with a written self - management plan in the past year?</b>	<b>3.6 How many routine visits recorded the PEFR?</b>	<b>3.7 Has the inhaler / spacer technique been recorded during the past year?</b>	<b>3.8 Has the tobacco smoking status been recorded during the past year?</b>	<b>3.9 How many controllers has the patient. received in the past year?</b>
			<i>Yes/No</i>		<i>Yes/No</i>		<i>Yes/No</i>	<i>Yes/No</i>	
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									
16.									
17.									
18.									
19.									
20.									
<b>Total</b>									

## How to calculate the results

<b>Structural criteria</b>	<b>Calculation</b>
% of rooms with a functional PEF meter	See section 1, question 1
% of rooms with a reference chart for the PEFR	
% of rooms with a published asthma guideline	
% of rooms with a spacer for demonstration and education	
% of rooms with placebo inhalers for demonstration and education	
% of rooms with printed patient educational material	
Clear protocol on who to refer to specialist care	See section 1, question 2
Member of staff with ongoing specific responsibility for asthma	
Provision of group health education on asthma	
Availability of patient education materials in all languages	
Height measure	
Spacer in the emergency room	
Nebuliser in the emergency room	
Oxygen in the emergency room	
Peak expiratory flow meters in the emergency room	
% of medication in stock on day of audit	
% of medication in stock over previous month	
<b>Process criteria</b>	
% of patients with a consistent diagnosis of asthma	Total Q3.3 ÷ 20 x 100
% of routine visits with an assessment of asthma control	Total Q3.4 ÷ Total Q3.2 x 100
% of patients with written self-management plan	Total Q3.5 ÷ 20 x 100
% of routine visits where the PEFR was recorded	Total Q3.6 ÷ Total Q3.2 x 100
% of patients with an assessment of inhaler/spacer technique	Total Q3.7 ÷ 20 x 100
% of patients with record of smoking status (tobacco)	Total Q3.8 ÷ 20 x 100
Controller / Reliever ratio	Total Q3.9 ÷ Q3.10
<b>Outcome criteria</b>	
% of all visits for asthma emergencies / exacerbations	Total Q3.12 ÷ (Total Q3.2) x 100
% of patients who have been hospitalised	Total Q3.11 ÷ 20 x 100

## Summary of results (to present to CHC facility asthma teams and staff)

<b>Structural criteria</b>	<b>Performance level expected</b>	<b>Actual performance level measured</b>
% of rooms with a functional PEF meter	100%	
% of rooms with a reference chart for the PEFR	100%	
% of rooms with a published asthma guideline	100%	
% of rooms with a spacer for demonstration and education	100%	
% of rooms with placebo inhalers for demonstration and education	100%	
% of rooms with printed patient educational material	100%	

Clear protocol on who to refer to specialist care	Yes	
Member of staff with ongoing specific responsibility for asthma	Yes	
Provision of group health education on asthma	Yes	
Availability of patient education materials in all languages	Yes	
Height measure	Yes	
Spacer in the emergency room	Yes	
Nebuliser in the emergency room	Yes	
Oxygen in the emergency room	Yes	
Peak expiratory flow meter in the emergency room	Yes	
% of medication in stock on day of audit	100%	
% of medication in stock over previous month	100%	
<b>Process criteria</b>		
% of patients with a consistent diagnosis of asthma	95%	
% of routine visits with an assessment of asthma control	80%	
% of patients with written self-management plan	80%	
% of routine visits where the PEFr was recorded	80%	
% of patients with an assessment of inhaler/spacer technique	95%	
% of patients with record of smoking status	95%	
Controller / Reliever ratio	>0.5	
<b>Outcome criteria</b>		
% of patients who are totally/well controlled	80%	
% of patients who can explain the difference between reliever and controller medication	80%	
% of all visits for asthma emergencies / exacerbations	<10%	
% of patients who have been hospitalised	<5%	

# **PHASE 2 ANNEXURES**

## Annexure D

### **PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM FOR FAMILY PHYSICIAN (PHASE 2: SEMISTRUCTURED INTERVIEW)**

#### **TITLE OF THE RESEARCH PROJECT:**

Bridging the gap between clinical research evidence and practice. Implementing the South African National Evidence-Based Asthma Guidelines in private and public practice in the Cape Town Metropole.

**REFERENCE NUMBER:** PROJECT NUMBER N07/03/066

**PRINCIPAL INVESTIGATOR:** DR MICHAEL PATHER

**ADDRESS:** 18 KAMEELDORING ROAD; ROUXVILLE; KUILS RIVER; 7580

**CONTACT NUMBER:** 0842799927; 021-9039943 (H); 021-9389171 (W)

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the study staff or doctor any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied, that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. You are also free to withdraw from the study at any point, even if you do agree to take part.

**This study has been approved by the** Committee for Human Research at Stellenbosch University **and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.**

#### **What is this research study all about?**

- *Dear .....The purpose of this research is to improve the implementation of the national evidence-based asthma guideline in clinical practice and to explore how to overcome the barriers to implementation. This study will be conducted in primary care practices in the Cape Metropole and seeks:*
- *To understand the role and relevance of evidence in contemporary health care in the Western Cape.*
- *To gain insight into the experiences, attitudes, perceptions and understanding of clinical practitioners (private and public sector) with regard to the implementation of evidence in clinical practice.*
- *To gain insight into the perceived problems and main barriers to guideline implementation in primary health care practice.*
- *To improve the utilization of evidence-based asthma guideline in primary care practice*
- *To explore ways of improving the effective implementation of the national asthma guideline in primary care practice in the Metro District Health System and private practice in the Cape Town Metropole.*

**Why have you been invited to participate?**

- *You are viewed as a n expert in the field of family medicine and evidence practice and you are invited to participate by availing yourself for a semi-structured interview.*

**What will your responsibilities be?**

- *Your responsibilities will be to respond to questions posed in an open way and as you view the responses to be.*

**Will you benefit from taking part in this research?**

- *Following implementation of this guideline the results will be used to assist other practices to improve the implementation of asthma guidelines as well as guidelines on other conditions. In so doing you will therefore assist in improving health care in the Western Cape and the greater South Africa. Medical colleagues will benefit through feedback and publication of the information obtained.*

**Are there any risks involved in your taking part in this research?**

- *There are no risks involved to yourself in taking part in this research study.*

**If you do not agree to take part, what alternatives do you have?**

- *Participation is voluntary and your participation or withdrawal will be accepted and respected.*

**Who will have access to your medical records?**

- *The information obtained will be used in a doctoral thesis and may be published in future clinical research publications. However confidentiality and anonymity will be protected at all times.*

**Will you be paid to take part in this study and are there any costs involved?**

- *No you will not be paid to take part in the study. There will be no costs involved for you, if you do take part.*

**Is there anything else that you should know or do?**

- *You can contact the Committee for Human Research at 021-938 9207 if you have any concerns or complaints that have not been adequately addressed by your study doctor.*
- *You will receive a copy of this information and consent form for your own records.*

**DECLARATION BY PARTICIPANT**

By signing below, I ..... hereby agree to take part in the semi-structured interview which forms part of the doctoral research entitled:

**"Bridging the gap between clinical research evidence and clinical practice. Implementing the South African National Evidence-Based Asthma Guidelines in private and public practice in the Cape Metropole".**

**I declare that:**

- I have read or had read to me this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurized to take part.
- I may choose to leave the study at any time and will not be penalized or prejudiced in any way.

Signed at (*place*) .....(*date*) ...../...../20....

.....  
Signature of participant

.....  
Signature of witness

**DECLARATION BY INVESTIGATOR**

I (*name*) ...**DR MICHAEL PATHER**..... declare that:

- I explained the information in this document to .....
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use a translator. (*If a translator is used then the translator must sign the declaration below.*)

Signed at (*place*) .....on (*date*) ...../...../20...

.....  
Signature of investigator

.....  
Signature of witness

**Annexure E: Semi structured interview framework**

<b>SEMI STRUCTURED INTERVIEW FRAMEWORK</b>	
<b>EVIDENCE</b>	
1	How would you define evidence in the context of primary care?
2	What constitutes evidence in primary care?
3	What do you understand by the term "best available evidence"?
4	What do you consider as relevant and high quality evidence?
<b>GUIDELINES</b>	
1	Is there a need to use evidence based guidelines in practice and why?
2	<i>"Doctors often describe a tension between their own practice experiences and recommendations contained in guidelines".</i> Why do you think this is so?
3	<i>"Doctors see real patients as more complicated than how they are portrayed in guidelines".</i> Is this so? /Why do you think this is so?
4	<i>"Guidelines are not flexible enough to take into account individual circumstances, multiple diagnoses, and patient preference".</i> Do you agree?
<b>BARRIERS TO GUIDELINE IMPLEMENTATION</b>	
1	What do you see as the main barriers/enablers to guideline implementation?
2	<i>"EBP should not just be concerned with clinical content but also with the processes of changing and with systems of care."</i> Do you agree/disagree
3	What do you consider to be the best way of implementing guidelines?
4	Do you think that evidence-based guideline implementation would necessarily improve health care outcomes?
<b>EVIDENCE AND PRIMARY CARE PRACTICE</b>	
1	<i>"There are those who do not embrace the concept of EBP emphasising the ART with on-going reflective processes enabling them to evaluate their practices and learn from anecdotal experience"</i> What do you understand about practice –generated knowledge and experience?
2	<i>"Anecdotal experience contributes to professional judgment"</i> Should anecdotal experience of practitioners be classified as evidence?
3	How can these "unsystematic anecdotal experiences" of doctors be more formally developed?
4	<i>"In reality some GP are daunted by the high tech aspect of EBP and view it as a threat to family practice's doctor- patient relationship traditions".</i> Do you agree or not?



5	"GPs often find that evidence prepared in a different context to be irrelevant to decision making where they practice". What should they do in such situations?
6	Do you think practitioners may become deskilled in over relying on evidence based resources?
<b>FAMILY MEDICINE AND EBP</b>	
1	Is there a need for family physicians/practitioners to change their behaviour regarding the utilisation of evidence in decision making?
2	What role does the new founded specialty of family medicine have in bridging the gap between evidence and practice?
3	"The problem of clinicians maintaining currency or "up-to-datedness" is immense" How do you see doctors overcoming barriers to improve uptake of evidence in practice?"
<b>PATIENT'S ROLE IN DECISION MAKING</b>	
1	<i>The traditional medical model has been where doctors make paternalistic decisions for their patients. In recent years there has been a move towards patient involvement in decision making in other words patients have been given the opportunity to contribute to decisions involving their preferences in health".</i> What are your views on the role of patients in decision making regarding their care?
2	What do you understand /mean by patient preference?
3	EBP also creates the expectation that the best possible clinical outcomes will ensue following the use of evidence. What are your views on this?
4	Lots of information patients access themselves provide low quality and spurious information How can we assist or encourage them in identifying high quality research?
5	How can the <b>patients' role</b> in decision making be improved and refined?
<b>THANK YOU</b>	

# **PHASE 3 ANNEXURES**

**Annexure F:** Informed consent CNPs

**PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM FOR  
NURSING STAFF (COOPERATIVE INQUIRY GROUPS (CIG):  
ACTION RESEARCH)**

**TITLE OF THE RESEARCH PROJECT:**

Bridging the gap between clinical research evidence and practice. Implementing the South African National Evidence-Based Asthma Guidelines in private and public practice in the Cape Town Metropole.

**REFERENCE NUMBER:** PROJECT NUMBER N07/03/066

**PRINCIPAL INVESTIGATOR:** DR MICHAEL PATHER

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**CONTACT NUMBER:** 0842799927; 021-9039943 (H); 021-9389171 (W)

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the study staff or doctor any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied, that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. You are also free to withdraw from the study at any point, even if you do agree to take part.

**This study has been approved by the** Committee for Human Research at Stellenbosch University **and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.**

**What is this research study all about?**

- *Dear \_\_\_\_\_ .the purpose of this research is to improve the implementation of the national evidence-based asthma guideline in clinical practice and to explore how to overcome the barriers to implementation. This study will be conducted in primary care practices in the Cape Metropole and seeks:*
- *To understand the role and relevance of evidence in contemporary health care in the Western Cape.*
- *To gain insight into the experiences, attitudes, perceptions and understanding of clinical practitioners (private and public sector) with regard to the implementation of evidence in clinical practice.*
- *To gain insight into the perceived problems and main barriers to guideline implementation in primary health care practice.*
- *To improve the utilization of evidence-based asthma guideline in primary care practice*
- *To explore ways of improving the effective implementation of the national asthma guideline in primary care practice in the Metro District Health System and private practice in the Cape Town Metropole.*

**Why have you been invited to participate?**

- *You are viewed as an expert in the field of family medicine and evidence practice and you are invited to participate by availing yourself for a semi-structured interview.*

**What will your responsibilities be?**

- *Your responsibilities will be to respond to questions posed in an open way and as you view the responses to be.*

**Will you benefit from taking part in this research?**

- *Following implementation of this guideline the results will be used to assist other practices to improve the implementation of asthma guidelines as well as guidelines on other conditions. In so doing you will therefore assist in improving healthcare in the Western Cape and the greater South Africa. Medical colleagues will benefit through feedback and publication of the information obtained.*

**Are there any risks involved in your taking part in this research?**

- *There are no risks involved to yourself in taking part in this research study.*

**If you do not agree to take part, what alternatives do you have?**

- *Participation is voluntary and your participation or withdrawal will be accepted and respected.*

**Who will have access to your medical records?**

- *The information obtained will be used in a doctoral thesis and may be published in future clinical research publications. However confidentiality and anonymity will be protected at all times.*

**Will you be paid to take part in this study and are there any costs involved?**

- *No you will not be paid to take part in the study. There will be no costs involved for you, if you do take part.*

**Is there anything else that you should know or do?**

- *You can contact the Committee for Human Research at 021-938 9207 if you have any concerns or complaints that have not been adequately addressed by your study doctor.*
- *You will receive a copy of this information and consent form for your own records.*

### DECLARATION BY PARTICIPANT

By signing below, I .....hereby agree to take part in the semi-structured interview which forms part of the doctoral research entitled: **"Bridging the gap between clinical research evidence and clinical practice. Implementing the South African National Evidence-Based Asthma Guidelines in private and public practice in the Cape Metropole"**.

#### I declare that:

- I have read or had read to me this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurized to take part.
- I may choose to leave the study at any time and will not be penalized or prejudiced in any way.

Signed at (*place*) .....on (*date*) ...../...../20....

.....  
Signature of participant

.....  
Signature of witness

### DECLARATION BY INVESTIGATOR

I (*name*) ...**DR MICHAEL PATHER**..... declare that:

- I explained the information in this document to .....
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use a translator. (*If a translator is used then the translator must sign the declaration below.*)

Signed at (*place*) .....on (*date*) ...../...../20....

.....  
Signature of investigator

.....  
Signature of witness

**Annexure G:** Informed Consent Family Physicians

**PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM FOR FAMILY PHYSICIANS (COOPERATIVE INQUIRY GROUPS (CIG): ACTION RESEARCH)**

**TITLE OF THE RESEARCH PROJECT:**

Bridging the gap between clinical research evidence and practice. Implementing the South African National Evidence-Based Asthma Guidelines in private and public practice in the Cape Town Metropole.

**REFERENCE NUMBER:** PROJECT NUMBER N07/03/066

**PRINCIPAL INVESTIGATOR:** DR MICHAEL PATHER

**ADDRESS:** 18 KAMEELDORING ROAD; ROUXVILLE; KUILS RIVER; 7580

**CONTACT NUMBER:** 0842799927; 021-9039943 (H); 021-9389171 (W)

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the study staff or doctor any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied, that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. You are also free to withdraw from the study at any point, even if you do agree to take part.

**This study has been approved by the** Committee for Human Research at Stellenbosch University **and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.**

**What is this research study all about?**

- *Dear \_\_\_\_\_ .the purpose of this research is to improve the implementation of the national evidence-based asthma guideline in clinical practice and to explore how to overcome the barriers to implementation. This study will be conducted in primary care practices in the Cape Metropole and seeks:*
- *To understand the role and relevance of evidence in contemporary health care in the Western Cape.*
- *To gain insight into the experiences, attitudes, perceptions and understanding of clinical practitioners (private and public sector) with regard to the implementation of evidence in clinical practice.*
- *To gain insight into the perceived problems and main barriers to guideline implementation in primary health care practice.*
- *To improve the utilization of evidence-based asthma guideline in primary care practice*
- *To explore ways of improving the effective implementation of the national asthma guideline in primary care practice in the Metro District Health System and private practice in the Cape Town Metropole.*

**Why have you been invited to participate?**

- *You are viewed as an expert in the field of family medicine and evidence practice and you are invited to participate by availing yourself for a semi-structured interview.*

**What will your responsibilities be?**

- *Your responsibilities will be to respond to questions posed in an open way and as you view the responses to be.*

**Will you benefit from taking part in this research?**

- *Following implementation of this guideline the results will be used to assist other practices to improve the implementation of asthma guidelines as well as guidelines on other conditions. In so doing you will therefore assist in improving healthcare in the Western Cape and the greater South Africa. Medical colleagues will benefit through feedback and publication of the information obtained.*

**Are there any risks involved in your taking part in this research?**

- *There are no risks involved to yourself in taking part in this research study.*

**If you do not agree to take part, what alternatives do you have?**

- *Participation is voluntary and your participation or withdrawal will be accepted and respected.*

**Who will have access to your medical records?**

- *The information obtained will be used in a doctoral thesis and may be published in future clinical research publications. However confidentiality and anonymity will be protected at all times.*

**Will you be paid to take part in this study and are there any costs involved?**

- *No you will not be paid to take part in the study. There will be no costs involved for you, if you do take part.*

**Is there anything else that you should know or do?**

- *You can contact the Committee for Human Research at 021-938 9207 if you have any concerns or complaints that have not been adequately addressed by your study doctor.*
- *You will receive a copy of this information and consent form for your own records.*

**DECLARATION BY PARTICIPANT**

By signing below, I .....hereby agree to take part in the semi-structured interview which forms part of the doctoral research entitled: **"Bridging the gap between clinical research evidence and clinical practice. Implementing the South African National Evidence-Based Asthma Guidelines in private and public practice in the Cape Metropole"**.

**I declare that:**

- I have read or had read to me this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurized to take part.
- I may choose to leave the study at any time and will not be penalized or prejudiced in any way.

Signed at (*place*) .....on (*date*) ...../...../20....

.....  
Signature of participant

.....  
Signature of witness

**DECLARATION BY INVESTIGATOR**

I (*name*) ...**DR MICHAEL PATHER**..... declare that:

- I explained the information in this document to .....
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use a translator. (*If a translator is used then the translator must sign the declaration below.*)

Signed at (*place*) .....on (*date*) ...../...../20....

.....  
Signature of investigator

.....  
Signature of witness



**ANNEXURE H: CNP Questionnaire**



**Dr Dr Michael Pather**  
 Asthma Guidelines Implementation Project (AGIP)  
 Family Medicine and Primary Care  
 F Faculty of Medicine and Health Sciences  
 University of Stellenbosch Box 19063 Tygerberg  
 7505

**EVIDENCE BASED PRACTICE  
 AND ASTHMA GUIDELINE IMPLEMENTATION  
 SURVEY QUESTIONNAIRE**

Date ..... / ..... / .....

**Dear Clinical Nurse Practitioner**

Kindly assist with the completion of this questionnaire, which forms part of the asthma guideline implementation project and a doctoral research thesis. It seeks an improved understanding of how Clinical Nurse Practitioners (CNPs) engage with the concept of evidence based practice, asthma care in practice and their awareness and familiarity with the current evidence-based South African Thoracic Society national asthma guideline.

Your response to this questionnaire will remain confidential and your anonymity and that of your practice will remain protected at all times. Data collected will be analyzed as part of the guideline implementation and research project and will be made available to you as part of a research publication. Completion of this questionnaire therefore assumes informed consent on your willingness to participate and provide the data requested.

Please tick off your preferred responses to the questions provided and mail back using the enclosed self-addressed envelope.

Thank you for your much valued time and assistance in this regard.

Yours sincerely

-----  
**Dr Michael Pather**  
 MBChB (UCT); MFamMed (STELL) ; BSc HONS Med Sci (STELL); FCFP (SA)

<b>SECTION 1.</b>					
<b>1.1. Gender</b>	Male		Female		
<b>1.2. Age</b>					
<b>1.3. Practice</b>	Public Sector		Private sector		
<b>1.4. Years of experience since qualifying as CNP</b>	[ ]				
<b>1.5. Formal diploma studies in progress?</b>	Yes	No	<b>1.6 Formal university graduate studies in progress?</b>	Yes	No
<b>1.7. Qualification obtained</b>	Diploma	University Degree	SA Certificate in Asthma care		
<b>SECTION 2</b>					
<b>2.1. Do you surf the internet for clinical information?</b>	Yes		No		
<b>2.2 Which internet site do you visit most</b>					

often?					
<b>2.3. Do you have access to the internet?</b>				Yes	No
<b>2.3.1. At your Community Health Centre (CHC)?</b>		Yes	No	<b>2.3.2. At home?</b>	
				Yes	No
<b>2.4 How often have you accessed the internet for clinical information during the past year?</b>					
Daily	Weekly	Monthly	Quarterly	Annually	Never
<b>2.5 How often do you find the time to read nursing journals?</b>					
Daily	Weekly	Monthly	Quarterly	Annually	Never
<b>2.6 Which of the following journals do you read?</b>					
NONE	Nursing Update	CME		OTHER	
<b>2.7. Please specify if you selected "other"</b>					
<b>2.8 Are you an active member of a Journal Club?</b>				Yes	No
<b>2.9. Do you use clinical research evidence in your decision making regarding patient care in your practice at the CHC?</b>				Yes	No Unsure
<b>2.10. Do you currently use any asthma clinical practice guideline?</b>				Yes	No
<b>2.11. Are you involved in conducting any quality improvement cycles (clinical audits) in your Community Health Centre?</b>				Yes	No
<b>2.12. Have you attended any course on Evidence Based Practice?</b>				Yes	No
<b>2.13. Would you like to learn more about Evidence Based Practice?</b>				Yes	No
<b>SECTION 3.</b>					
<b>3.1. Clinical research evidence is useful in the day to day management of my patients.</b>					
Strongly Disagree	Disagree	Agree	Strongly Agree		
<b>3.2. The vast majority of my decisions are based on clinical research evidence.</b>					
Strongly Disagree	Disagree	Agree	Strongly Agree		
<b>3.3. I think it is important to keep up to date with new evidence in practice.</b>					
Strongly Disagree	Disagree	Agree	Strongly Agree		
<b>3.4. Practicing evidence-based medicine can improve the quality of patient care.</b>					
Strongly Disagree	Disagree	Agree	Strongly Agree		
<b>3.5. There is no place for evidence-based medicine in my practice.</b>					
Strongly Disagree	Disagree	Agree	Strongly Agree		
<b>3.6. The implementation of evidence will not make a difference in the quality of care of my patients.</b>					
Strongly Disagree	Disagree	Agree	Strongly Agree		
<b>3.7. Evidence-based practice has an important role to play in contemporary Nursing Practice in South Africa.</b>					
Strongly Disagree	Disagree	Agree	Strongly Agree		
<b>3.8. I value interaction with my supervising doctor (consultant) more than published evidence.</b>					
Strongly Disagree	Disagree	Agree	Strongly Agree		

<b>3.9. I view the opinions of colleagues as more useful than research evidence.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>3.10. My clinical nursing experience has more meaning to me than published research evidence.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>SECTION 4.</b>			
<b>4.1. Have you read the current SA National Thoracic Society Asthma guideline?</b>		Yes	No
<b>4.2. I am keen to improve the implementation of the latest Asthma guideline at our CHC.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>4.3. I have problems accessing the asthma guideline at our CHC.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>4.4. Asthma practice guidelines are not easily available at our CHC.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>4.5. I have problems finding asthma practice guidelines when I actually need them.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>4.6. The asthma guideline is not user-friendly enough for use at our CHC.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>4.7. Summaries of recommendations are more useful options to me than the actual guideline.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>4.8. Recommendations from the asthma guideline should be presented to me in synopsis format.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>4.9. I struggle with co morbidity in the management of asthma patients</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>4.9.1 Co morbidity of patients is not adequately addressed in the asthma guideline</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>SECTION 5</b>			
<b>5.1. Do you see patients with asthma at your CHC?</b>		Yes	No
<b>5.2. How many patients with asthma do you have at your CHC?</b>			
<50	50-100	101-150	151-200
			>200
<b>5.3. Do you have a formal practice register for asthma patients?</b>			Yes No
<b>5.4. Are you aware of the latest (2007) South African Thoracic Society Asthma guideline?</b>			Yes No

<b>5.5. Have you received a copy of the latest (2007) South African Thoracic Society Asthma guideline?</b>		Yes	No
<b>5.6. Do you know where to find the latest (2007) South African Thoracic Society Asthma guideline?</b>		Yes	No
<b>5.7. Have you adopted any of the recommendations from the latest South African Thoracic Society Asthma guideline?</b>		Yes	No
<b>5.8. Do you audit the care of asthma patients in your practice?</b>		Yes	No
<b>SECTION 6</b>			
<b>6.1. I personally educate most patients regarding the difference between "reliever" and "controller" inhalers.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.2. All my asthmatic patients have their smoking status recorded in their folders.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.3. Peak flow readings before and after nebulization are useful in the care of asthmatic patients.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.4. I issue all my asthmatic patients with a written detailed self-management plan.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.5. I demonstrate the inhaler technique to all asthmatics at our CHC.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.6. I assess the level of control of all asthmatic patients at our CHC.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.7. The distinction between Asthma and COPD is reasonably clear to me clinically.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>6.8. Inhaled corticosteroids are the mainstay of treatment for chronic persistent asthma</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree

**THANK YOU VERY MUCH FOR COMPLETING THIS QUESTIONNAIRE.**

-----  
**Dr Michael Pather**

## ANNEXURE I: Patient Satisfaction Questionnaire



**Dr Dr Michael Pather**

Asthma Guidelines Implementation Project (AGIP)

Family Medicine and Primary Care

F Faculty of Medicine and Health Sciences

University of Stellenbosch Box 19063 Tygerberg  
7505

Date ..... / ..... / .....

### **ASTHMA PATIENT SATISFACTION QUESTIONNAIRE**

**Dear Sir/Madam**

Kindly assist with the completion of this questionnaire, which forms part of the asthma guideline implementation project and a doctoral research thesis. It seeks an improved understanding of the knowledge, attitudes; perceptions of patients with asthma regarding their asthma as well as their level of satisfaction regarding the quality of care received at their Community Health Centres (CHC).

Your response to this questionnaire will remain confidential and your anonymity and that of your community Health Centre will remain protected at all times. Data collected will be analyzed as part of the guideline implementation and research project and will be made available to you as part of a research publication.

Completion of this questionnaire therefore assumes informed consent on your willingness to participate and provide the data requested.

Please tick off your preferred responses to the questions provided and hand back to the sister in charge of your CHC.

Thank you for your much valued time and assistance in this regard.

Kind regards and best wishes.

Yours sincerely

-----

**Dr Michael Pather**

MBChB (UCT); MFamMed (STELL) ; BSc HONS Med Sci (STELL); FCFP (SA)

<b>SECTION 1.</b>				
<b>1.1. Gender</b>	Male		Female	
<b>1.2. Age</b>				
<b>1.3. Married</b>	Yes		No	
<b>1.4. Do you have Asthma?</b>	Yes		No	
<b>1.5 Did you attend the hospital for your Asthma today</b>	Yes		No	
<b>1.6. Level of Education?</b>	Nil	Primary Sch	Secondary Sch	University
<b>1.7 Which Community Health Centre do you attend for asthma care?</b>				

<b>SECTION 2.</b>			
<b>2.1</b>	Do you smoke cigarettes?	<b>Yes</b>	<b>No</b>
<b>2.2</b>	Do you think that the doctor or sister who saw you today knows whether you smoke or not?	<b>Yes</b>	<b>No</b>
<b>2.3</b>	Have you been asked whether you smoke during your visit to this hospital <b>today</b> ?	<b>Yes</b>	<b>No</b>
<b>2.4</b>	Have you ever received counselling to stop smoking at this hospital before?	<b>Yes</b>	<b>No</b>
<b>2.5</b>	Have you received counselling to stop smoking at this hospital <b>today</b> ?	<b>Yes</b>	<b>No</b>
<b>2.6</b>	Would you like to have received counselling to stop smoking at this hospital?	<b>Yes</b>	<b>No</b>
<b>2.7</b>	Whose responsibility is it to assist you to stop smoking?	<b>Doctor</b>	<b>Sister</b>
<b>2.8</b>	Are you aware of the dangers of smoking to your health?	<b>Yes</b>	<b>No</b>
<b>2.9</b>	Has anybody at this hospital taught you how to use your asthma pumps before?	<b>Yes</b>	<b>No</b>
<b>2.10</b>	Has anybody at this hospital <b>today</b> checked whether you use your asthma pumps correctly?	<b>Yes</b>	<b>No</b>
<b>2.11</b>	Do you know how to use your asthma pumps? (Field worker checks technique)	<b>Yes</b>	<b>No</b>
<b>2.12</b>	Do you know what a spacer is?	<b>Yes</b>	<b>No</b>
<b>2.13</b>	Have you ever used a spacer?	<b>Yes</b>	<b>No</b>
<b>2.14</b>	Would you prefer to have used a spacer before?	<b>Yes</b>	<b>No</b>
<b>2.15</b>	Have you been taught the difference between a reliever and controller pump? (interviewer to check/confirm knowledge)	<b>Yes</b>	<b>No</b>

<b>2.16</b>	Do you know the difference between a reliever and controlled pump?	<b>Yes</b>	<b>No</b>
<b>2.17</b>	Have you had a peak flow test (a test to show how strongly you breath out) done today?	<b>Yes</b>	<b>No</b>
<b>2.18</b>	Have you ever had a test of your lung function before?	<b>Yes</b>	<b>No</b>
<b>SECTION 3.</b>			
<b>3.1</b>	Do you have any allergies?	<b>Yes</b>	<b>No</b>
<b>3.2</b>	Have you been taught how to avoid that which you are allergic to?	<b>Yes</b>	<b>No</b>
<b>3.3.</b>	Have you ever received information leaflets on asthma from this CHC?	<b>Yes</b>	<b>No</b>
<b>3.4</b>	Do you feel that you have a good understanding of your asthma?	<b>Yes</b>	<b>No</b>
<b>3.5.</b>	Would you like to receive information to improve your asthma?	<b>Yes</b>	<b>No</b>
<b>3.6.</b>	Who should give you such information regarding your asthma?	<b>Doctor</b>	<b>Sister</b>
<b>3.7.</b>	Have you ever heard about a Self-Management Plan (SMP) regarding your Asthma?	<b>Yes</b>	<b>No</b>
<b>3.8.</b>	Have you today received a Self-Management Plan regarding the treatment of your Asthma?	<b>Yes</b>	<b>No</b>
<b>3.9.</b>	Have you been asked <b>today</b> how well your asthma is controlled?	<b>Yes</b>	<b>No</b>
<b>3.10</b>	Do you have any other chronic disease besides your asthma?	<b>Yes</b>	<b>No</b>
<b>SECTION 4</b>			
<b>4.1</b>	Have you had a tight chest that required nebulization with oxygen at your day hospital during the past week?	<b>Yes</b>	<b>No</b>
<b>4.2</b>	How often have you required nebulization with oxygen this year?		
<b>4.3</b>	Have you been admitted to hospital because of your asthma this year?	<b>Yes</b>	<b>No</b>
<b>4.4</b>	How often have you been admitted to hospital because of your asthma this year		
<b>4.5</b>	Did you wake up at night because of your asthma during the past week?	<b>Yes</b>	<b>No</b>
<b>4.6</b>	Did you need to use your asthma treatment (reliever) more than twice during the past week?	<b>Yes</b>	<b>No</b>
<b>4.7</b>	Did your asthma affect your ability to do your normal activities during the past week?	<b>Yes</b>	<b>No</b>
<b>4.8</b>	Have you been absent from work (school) because of your	<b>Yes</b>	<b>No</b>

	asthma during the past year?		
<b>4.9</b>	How often have you been absent from work/school during the past year?		
<b>4.10</b>	Has your asthma treatment ever been changed since your last acute attack of asthma?	<b>Yes</b>	<b>No</b>
<b>4.11</b>	Is it easy for you to tell when your asthma gets worse?	<b>Yes</b>	<b>No</b>
<b>4.12</b>	Have you been informed how to tell whether your asthma gets worse?	<b>Yes</b>	<b>No</b>
<b>4.13</b>	Do you know the side-effects of your asthma medication?	<b>Yes</b>	<b>No</b>

<b>SECTION 5.</b>			
<b>3.1. It is important to me that my carer listens to my views regarding my asthma care.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>3.2. My carer listens to me when I consult with him/her regarding my asthma.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>3.3. I feel involved in the decision making regarding my asthma care.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>3.4. I would like to know more about my asthma than I presently know.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree
<b>3.5. I am happy that my asthma control is presently the best it could be.</b>			
Strongly Disagree	Disagree	Agree	Strongly Agree

**THANK YOU VERY MUCH FOR COMPLETING THIS QUESTIONNAIRE.**

-----  
**Dr Michael Pather**



**ANNEXURE J:** Guideline for the management of chronic asthma in adolescents and adults

CPD: National Guidelines

# Guidelines for the management of chronic asthma in adolescents and adults

*Lalloo U, Ainslie G, Wong M, Abdool-Gaffar S, Ijusen E, Mash R, Feldman C, O'Brien J and Jack C*  
Working Group of the South African Thoracic Society

Correspondence to: Prof Umesh Lalloo, E-mail: [lalloo@ukzn.ac.za](mailto:lalloo@ukzn.ac.za)

## Introduction

Asthma prevalence is increasing worldwide and surveys indicate that the majority of patients in developed and developing countries do not receive optimal care and are therefore not well controlled. The aim of these guidelines is to promote a better standard of treatment based on advances in the understanding of the pathophysiology and pharmacotherapy of asthma and to encourage uniformity in the management of asthma.

The South African Thoracic Society first published guidelines for the management of chronic persistent asthma in 1992 and the second revision in 2000. The current revision is prompted by:

- The revised classification and new evidence on the safety and optimal use of asthma medication
- An ongoing need to emphasize the use of anti-inflammatory medication as the foundation of asthma treatment
- The positioning of leukotriene modifiers in the maintenance treatment of chronic asthma
- An emphasis on defining and achieving control of asthma

### ESSENTIAL STEPS IN THE MANAGEMENT OF ASTHMA TO ACHIEVE CONTROL:

- A. Establish the diagnosis of asthma.....20
- B. Assess severity.....21
- C. Implement asthma treatment .....21
  1. Set goals for control of asthma
  2. Preventive/avoidance measures
  3. Pharmacotherapy
- D. Achieve and monitor control .....25

*SA Fam Pract 2007;49(5): 19-31*

### EVIDENCE

The strategies recommended in these guidelines are classified according to the Evidence Category in Table 1 and denoted as “Evidence A, B, C and D. For details about these see Table 10 in the Additional Notes section.

**Table 1:** Categories of evidence for management strategies in asthma (Reproduced with permission from Global Initiatives for Asthma 2006)

Evidence Category	Sources of Evidence
A	Randomised controlled trials. Rich body of data.
B	Randomised controlled trials. Limited body of data.
C	Nonrandomised trials. Observational studies.
D	Panel consensus judgment.

### METHOD

This 2007 asthma guideline update was developed following a meeting with a working group constituted by the SA Thoracic Society. The working group is chaired by Prof UG Lalloo. The contribution by the working group is gratefully acknowledged. Meetings were held with the working group on the 2-3 July 2005, subsequently the editorial board was convened and met on the 30 March 2007 to develop and finalize this guideline document. The meetings were sponsored by the National Asthma Education Program (NAEP) of the SA Thoracic Society. This was possible through unrestricted educational grants to NAEP from the SA Thoracic Society, GSK, Astra-Zeneca, MSD, Altana, Madaeus and Boehringer Ingelheim. The document is viewed as a living document that will be updated periodically.

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**B. ASSESSMENT OF ASTHMA SEVERITY**

When asthma is first diagnosed, it is convenient for implementation of treatment to classify it as **mild intermittent** or **chronic persistent** asthma that is **mild, moderate or severe** (Table 2). However, the severity is variable, does not predict response to treatment and is of little value in patients already on treatment. Periodic assessment of asthma control and review of management are more relevant.

**Table 2:** Assessment of asthma severity using symptoms and PEF in patients presenting for the first time on no treatment

INTERMITTENT	CHRONIC PERSISTENT		
	Mild	Moderate	Severe
I	II	III	IV
DAYTIME SYMPTOMS* ≥2/week	DAYTIME SYMPTOMS 3-4/week	DAYTIME SYMPTOMS >4/week	DAYTIME SYMPTOMS Continuous
NIGHT SYMPTOMS** ≥1/month	NIGHT SYMPTOMS 2-4/month	NIGHT SYMPTOMS >4/month	NIGHT SYMPTOMS Frequent
PEF ≥80%	PEF ≥80%	PEF 50-80%	PEF <60%

\*any of cough, tight chest and wheeze;

\*\* any of cough, tight chest, wheeze and night wakening

**C. IMPLEMENT ASTHMA TREATMENT**

**1. SET GOALS OF ASTHMA TREATMENT TO ACHIEVE CONTROL**

The emphasis of modern asthma treatment is to achieve control. A patient's asthma is well controlled when the goals of asthma management are achieved and maintained. The Global Initiative for Asthma (GINA) goals for asthma treatment is widely acknowledged and are:

- a. Achieve and maintain control of symptoms
- b. Maintain normal activity levels, including exercise
- c. Maintain pulmonary function as close to normal as possible
- d. Prevent asthma exacerbations
- e. Avoid adverse effects from asthma medications
- f. Prevent asthma mortality.

**Table 3:** Classification of drugs used in the maintenance treatment of asthma

CONTROLLERS		RELIEVERS
Anti-inflammatory action to prevent asthma attacks	Sustained bronchodilator action but weak or unproven anti-inflammatory effect	For quick relief of symptoms and use in acute attacks as PRN dosage only
<b>Inhaled corticosteroids</b> 1. Beclomethasone 2. Budesonide 3. Fluticasone 4. Ciclesonide	<b>Long-acting β<sub>2</sub> agonists</b> 1. Salmeterol 2. Formoterol	<b>Short-acting β<sub>2</sub> agonists</b> 1. Salbutamol 2. Fenoterol 3. Terbutaline
<b>Leukotriene modifiers</b> 1. Montelukast 2. Zafirlukast <b>Oral corticosteroids</b> 1. Prednisone 2. Prednisolone 3. Methylprednisone 4. Methylprednisolone	<b>Sustained-release theophylline preparations</b>	<b>Anti-cholinergics</b> (ipratropium bromide)

Achievement of the goals will also reduce asthma-related morbidity and mortality.

**2. PREVENTATIVE/AVOIDANCE MEASURES**

Avoidance of triggers wherever possible helps to minimise asthma severity and reduces asthma exacerbations. Practical measures include:

- a. Avoid exposure to personal and second-hand tobacco smoke
- b. Avoid contact with furry animals
- c. Reduce pollen exposure
- d. Reduce exposure to house dust mite
- e. Avoid sensitisers and irritants (dust and fumes) which aggravate or cause asthma especially in the workplace
- f. Avoid food and beverages containing preservatives
- g. Avoid drugs that aggravate asthma such as beta blockers (including in eye drops), and aspirin and non-steroidal anti-inflammatory drugs

**3. PHARMACOTHERAPY**

Maintenance treatment of asthma is determined by severity on presentation, current asthma medication, patient profile and level of control.

A classification of asthma drugs based on current knowledge of their mode of action is presented in Table 3. They may be:

- **Relievers:** short acting bronchodilators with rapid onset of action that provide acute relief of symptoms
- **Controllers:** drugs with anti-inflammatory and/or a sustained bronchodilator action

Prescribers should be acquainted with the trade names, formulations, dosage and mode of administration of each preparation. The inhaled route is recommended as drugs are delivered directly into the airways with higher lung concentrations and less systemic side effects. Inhaled medications for asthma are available as pressurised metered-dose inhalers (pMDIs), breath-actuated MDIs, dry powder inhalers (DPIs), soft mist inhalers and nebulisers. It requires training and skill to coordinate activation of the pMDI with inhalation. All patients using a pMDI should use a large volume (500 ml) spacer or holding chamber to im-

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## A. ESTABLISH THE DIAGNOSIS OF ASTHMA

## 1. Definition of asthma

Asthma is a chronic inflammatory condition of the airways which is usually allergic in origin and is characterised by hyperresponsive airways that constrict easily in response to a wide range of stimuli.

## 2. Symptoms and signs of asthma

The characteristic symptoms of asthma are cough, wheeze, dyspnoea or shortness of breath, and tightness of the chest.

Patterns of symptoms that suggest asthma are:

- Variability: day and night, day to day, seasonal
- Precipitation by a range of factors including environmental allergens (house dust mite, grass pollens, animal dander, occupational exposures), non-specific irritants (smoke, dusts and fumes), cold weather and exercise
- Response to bronchodilators and corticosteroids

Wheeze is a cardinal sign of asthma but may be absent at the time of consultation because airway constriction does not always result in detectable signs.

## 3. Lung function in asthma

Spirometric lung function tests, including measurement of peak expiratory flow, are useful in the diagnosis, assessment of severity and management (monitoring) of asthma. It may be abnormal even when symptoms and signs are absent. It may also be normal when asthma is quiescent. The commonest abnormality is a reduction in forced expiratory volume in 1 sec (FEV<sub>1</sub>) and peak expiratory flow (PEF). The ratio of FEV<sub>1</sub> to forced vital capacity (FVC) to below 70% is characteristic of obstructive airways disease. The degree of reduction is generally related to severity of the asthma. Asthma improvement is usually mirrored by an improvement in FEV<sub>1</sub> and PEF.

Significant reversibility of the airway obstruction is the major physiological characteristic of asthma. The standardised criteria are an increase in FEV<sub>1</sub> of >12% and 200 ml, 15-30 min following the inhalation of 200-400 µg of salbutamol, or a 20% improvement in PEF from baseline. It should be noted, however, that many asthma patients will not exhibit reversibility at each assessment, particularly those on treatment, and thus the test lacks sensitivity and repeated testing at different visits is advised.

Conversely, asthma can also be confirmed by demonstrating increased hyperresponsiveness to bronchoconstrictor stimuli, particularly in subjects with normal spirometry. This is the principle of the methacholine/histamine challenge test. Exercise-induced bronchoconstriction may also be used to diagnose inducible airway obstruction. The FEV<sub>1</sub> or PEF is measured at baseline and the patient asked to exercise (e.g. run for about 6 min) and the measurements repeated 5-10 minutes following cessation of exercise. A fall of 20% in PEF (15% in FEV<sub>1</sub>) in this setting is supportive of a diagnosis of asthma. Exercise induced bronchoconstriction may be the only manifestation of asthma in some.

Another option is to demonstrate diurnal variation in PEF of more than 20%. This can also be used to identify environmental (including occupational) causes of asthma symptoms by monitoring PEF 2-4 times each day for at

least 2 weeks. To measure diurnal variation, the PEF is measured first thing in the morning before treatment is taken, when values are often lowest, and last thing at night, when values are usually higher. There are several methods of calculating the diurnal PEF variability. A common way is the difference between the maximum and the minimum value for the day, expressed as a percentage of the mean daily PEF value, and averaged over 2 weeks.

If spirometry shows obstruction, a 2 week trial of oral prednisone (40 mg daily) may help to distinguish asthma from chronic obstructive pulmonary disease (COPD). In asthma there would be a significant improvement in FEV<sub>1</sub> from baseline (>12% and 200 ml).

## Diagnostic lung function values

## Reversibility:

- An increase in FEV<sub>1</sub> of >12% and 200 ml, 15-30 min after the inhalation of 200-400µg of salbutamol, or a 20% improvement in PEF from baseline.

## Hyperresponsiveness:

- Methacholine/histamine challenge
- Exercise: A fall of 20% in PEF (or 15% in FEV<sub>1</sub>) measured 5-10 minutes apart after cessation of exercise (e.g. running for 6 minutes)

## Diurnal variation:

- Diurnal variation in PEF of more than 20%

Distinguishing between COPD and asthma when FEV<sub>1</sub> shows obstruction:

- Improvement of FEV<sub>1</sub> from baseline (>12% and 200ml) after a 2 week trial of oral prednisone (40 mg daily).

## 4. Making/confirming the diagnosis of asthma

The diagnosis of asthma is made by following these steps:

## Step 1

Suspect asthma on basis of symptoms and signs particularly if there is variability

## Step 2

Search for associated factors such as:

- Related atopic disorders – allergic rhinitis, allergic conjunctivitis, eczema
- Family history of asthma or other allergic disorders
- Onset of, or presence of symptoms during childhood
- Identifiable triggers for symptoms, and relieving factors such as improvement with a bronchodilator, or deterioration with exercise
- Exposure to known asthma sensitizers in the workplace (Table 8 in Additional Notes).
- Conduct spirometric lung function test or measure PEF. Repeat 15-30min after administration of 200-400µg of salbutamol, preferably via a spacer to ensure drug delivery to the airways.
- Optional tests include:
  - Full blood count to check eosinophil count
  - Total serum IgE
  - Skin prick tests or RAST in blood to look for evidence of atopy
  - Methacholine or histamine or exercise challenge tests

The optional tests are generally more costly but may be required as supportive evidence for asthma when the clinical and lung function data is not confirmatory. Measurement of exhaled nitric oxide (NO) and allergen challenge tests should only be done in research centres.



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prove drug delivery to the lungs and reduce local and systemic side effects. A pMDI plus spacer is as effective as a DPI (**Evidence A**). An inhaler device should be chosen and prescribed after patients have received training in its use and have shown satisfactory technique (**Evidence B**). See section C for Additional Notes on inhaler devices. Treatment combinations are necessary in patients with more severe asthma or mild asthma not responsive to low dose inhaled corticosteroids.

**CONTROLLERS**

There are 2 groups of controllers: those with anti-inflammatory action (corticosteroids and leukotriene blockers) and those with a sustained bronchodilator action (long-acting  $\beta_2$  agonists and slow-release theophyllines).

**Anti-inflammatory agents**

Anti-inflammatory treatment is recommended for all patients with chronic persistent asthma. Inhaled corticosteroids are the most widely studied and recommended drugs in this class. Leukotriene modifiers are effective but less so than inhaled corticosteroids.

**Corticosteroids**

**Inhaled corticosteroids** are the mainstay of treatment for patients with chronic persistent asthma (**Evidence A**). The inhaled route is preferred because delivery direct to the lungs permits the use of lower doses. The equivalent effective doses of currently available inhaled corticosteroid preparations for prescription in asthma are compared to 200  $\mu\text{g}$  beclomethasone dipropionate in Table 4. Through its anti-inflammatory effects, inhaled corticosteroids reduce airway inflammation, decrease bronchial hyperresponsiveness and improve asthma control. In addition, they may modify airway remodelling and prevent an accelerated decline in lung function. Their long-term use in adequate doses has been shown to decrease exacerbations and mortality.

Systemic absorption of inhaled corticosteroids arises from oropharyngeal absorption and to a lesser extent from drug deposited in the lungs. This may be reduced by the use of a spacer device combined with mouth washing after inhalation (**Evidence A**). The former increases the fraction delivered to the lung (**Evidence A**). Both measures reduce the incidence of local side effects such as dysphonia and oropharyngeal candidiasis.

Inhaled corticosteroids are generally administered twice daily and may be used once daily as well. A low starting dose is 200-500  $\mu\text{g}/\text{day}$  of BDP equivalent and a dose above 1000  $\mu\text{g}/\text{day}$  is considered a high dose. At higher

doses, the dose-response curve is relatively flat but the risk of systemic side effects such as skin bruising, cataracts and osteoporosis may be increased. Patients requiring long term use of high dose inhaled corticosteroids should be referred to a specialist for review. Strategies to minimise osteoporosis such as regular exercise, calcium supplementation and hormonal replacement in post-menopausal women should be considered.

A preferred strategy to minimise the dose of corticosteroids and improve control is the combination of long-acting  $\beta_2$  agonists (salmeterol or formoterol) with lower doses of inhaled corticosteroids (**Evidence A**). An alternative is the combination of lower dose inhaled corticosteroids with leukotriene modifiers (**Evidence A**). If these are unavailable, combination with slow-release theophyllines are a weaker alternative (**Evidence B**). Long-acting  $\beta_2$  agonists, leukotriene modifiers and slow-release theophylline must always be used in combination with at least low dose corticosteroids for maintenance treatment of asthma.

**Nebulised corticosteroids** are expensive, require high pressure nebulisers for optimal delivery and are not recommended for routine use in acute and chronic asthma.

**Oral corticosteroids** may be considered in patients with poorly controlled asthma on high doses of inhaled corticosteroids and other controller medications. Long term oral corticosteroids (>7.5mg prednisone/day), whilst relatively inexpensive, are associated with serious systemic side-effects. Such patients should be referred to a specialist for review. Alternate day dosing may reduce side effects (**Evidence D**).

**Leukotriene modifiers**

Leukotriene modifiers have been shown to improve asthma control and exert their effect within days of commencing treatment. They may be used in patients with at least mild persistent asthma as add-on treatment to inhaled corticosteroids (**Evidence A**) and may be of value in patients with aspirin-sensitive asthma. If no benefit is evident after 4 weeks, the leukotriene modifiers should be withdrawn since not all patients respond. Their routine use as monotherapy in asthma in adults is not advised (**Evidence D**).

**Sustained action bronchodilators****Long-acting  $\beta_2$  agonists (LABAs)**

Salmeterol and formoterol are LABAs administered twice daily because of their greater than 12 hour duration of action. They are useful for control of nocturnal symptoms and exercise-induced asthma. They are recommended as an addition to low dose inhaled corticosteroids in preference to increasing the dose of inhaled corticosteroids (**Evidence A**). Salmeterol is not suitable for acute relief of asthma symptoms because it has a delayed onset of action and is limited by the ceiling dose of 50  $\mu\text{g}$  BD. Formoterol has a rapid onset

**Table 4:** Equivalent effective metered doses of inhaled corticosteroids

STERIOD PREPARATION	EQUIVALENT METERED DOSE IN ASTHMA
Beclomethasone dipropionate	250 $\mu\text{g}$
Budesonide	200 $\mu\text{g}$
Fluticasone propionate	100 $\mu\text{g}$
Ciclesonide	80 $\mu\text{g}$

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of bronchodilation (within 10-15mins of administration) and has a wide dose range. LABAs should never be used without inhaled corticosteroids in asthma because current evidence suggests an increased risk of deaths if LABAs are used as monotherapy. Some patients may not respond to LABAs. Side effects of these drugs include palpitations and tremor.

**Slow-release (SR) theophyllines**

Most formulations of SR theophyllines have a 12 hour and some a 24 hour duration of action. They are administered orally and have a complementary mode of action to other bronchodilators. Their disadvantages include a narrow therapeutic range, drug interactions and frequent side effects (nausea, vomiting, abdominal pain, gastro-oesophageal reflux, palpitations, insomnia, irritability and seizures). They should not be used as monotherapy. There is no role for oral short-acting theophyllines in chronic asthma.

**RELIEVERS**

These include short-acting inhaled  $\beta_2$  agonists (SABAs) and the anti-cholinergic ipratropium bromide. They should be used on an as needed basis as rescue medication.

**Short-acting  $\beta_2$  agonists (SABAs)**

Short-acting  $\beta_2$  agonists (e.g. salbutamol and fenoterol) provide relief from acute symptoms of asthma and are usually used as 2 puffs as needed (**Evidence A**). With optimal maintenance therapy their use should be rare (less than once a day). The frequency of their use is a measure of asthma control. They are the most important and widely used reliever treatment for asthma.

They may only be used as the sole therapy in mild intermittent asthma where the symptoms are mild and infrequent (<2x/week) and the lung function is normal (PEF > 80% predicted), see Table 2. In chronic persistent asthma they should only be used on an as needed basis as rescue medication. Some patients with severe persistent asthma may need to use short-acting  $\beta_2$  agonists up to 6 times per day. Side effects of  $\beta_2$  agonists include tachycardia, tremor, headache and irritability.

**Anti-cholinergics (ipratropium bromide)**

This drug works by inhibiting vagally-mediated bronchoconstriction and is not the preferred reliever in asthma. It may be used in patients, particularly the elderly, who cannot tolerate  $\beta_2$  agonist side effects. It may also be of value as add-on treatment in patients who do not obtain adequate symptom relief with the short-acting  $\beta_2$  agonists alone (**Evidence B**).

**ADDITIONAL TREATMENT AND OTHER DRUGS**

- Antihistamines are not effective in adult asthma.
- Immunosuppressives including methotrexate are rarely of benefit. Patients considered for this treatment must be referred to a specialist.
- There is little scientific evidence that ionisers, oxygen therapy, acupuncture, homeopathy and exclusion diets are useful in the treatment of asthma. Their prescription is not recommended in this guideline.
- Desensitisation using immunotherapy (including sublingual) is not routinely recommended for asthma. Patients with refractory asthma sensitised to only one allergen such as house dust mite or grass pollen may be referred to a specialist for immunotherapy.
- Nebuliser use in chronic persistent asthma must be actively discouraged. With good inhaler technique assisted by spacer devices, adequate drug delivery via an inhaler is achieved with similar bronchodilatation even in patients with chronic severe asthma and inability to generate large airflow rates. Nebulisers are not a substitute for adequate controller treatment.

**TREATMENT OPTIONS**

All patients should be prescribed inhaled short-acting  $\beta_2$  agonists such as salbutamol; 200  $\mu$ g (2 puffs) as needed for use as symptom relief for acute asthma symptoms (**Evidence A**). All patients should receive inhaled corticosteroids as baseline asthma treatment except those classified as mild intermittent asthma according to the criteria in Table 2 (**Evidence A**).

Table 5: Levels of Asthma Control

CHARACTERISTIC	CONTROLLED (All of the following)	PARTLY CONTROLLED (Any measure present in any week)	UNCONTROLLED
Daytime symptoms	$\leq 2$ /week	$> 2$ /week	3 or more features of partly controlled asthma in any week
Limitation of activities	None	Any	
Nocturnal symptoms/awakening	None	Any	
Need for reliever/ rescue treatment	$\leq 2$ /week	$> 2$ /week	
Lung function (PEF/FEV <sub>1</sub> )	Normal	<80% predicted or personal best (if known)	
Exacerbations	None	1 or more/year*	1 in any week**

\* Any exacerbation should prompt review of maintenance treatment to ensure that it is adequate.  
 \*\* By definition, an exacerbation in any week makes that an uncontrolled asthma week.

The dose of corticosteroids and additional treatment is determined by:

1. The severity of asthma
2. The response to treatment

The recommended treatment plan is:

1. Add a LABA if asthma is not well controlled on low dose ICS (**Evidence A**). This option is preferred to doubling the dose of ICS; however, not all patients respond to LABAs. Never use LABAs alone.
2. An alternative is to double the dose of ICS or add leukotriene modifiers (**Evidence A**) or slow-release theophyllines (**Evidence B**)
3. Oral corticosteroids should only be used as maintenance treatment with extreme caution.
4. Referral to a specialist is recommended when asthma is difficult to control (see Section E Additional Notes).

#### D. ACHIEVE AND MONITOR CONTROL

Patients should be reviewed frequently until control is achieved and thereafter less often. A self management plan is recommended for all patients (see Section F of Additional Notes). Asthma control may be assessed using a simplified scheme for recognising controlled, partly controlled, and uncontrolled asthma in a given week as provided in Table 5 (**Evidence D**). An exacerbation is defined as an increase in asthma symptoms requiring a consultation with a health care provider. At each visit the patient should be assessed for adherence and level of asthma control. It is possible to achieve complete control of asthma in most patients and this should be achieved with minimal side effects. Validated measures for assessing clinical control of asthma are the Asthma Control Test (ACT) (<http://www.asthmacontrol.com>) or the Asthma Control Questionnaire (ACQ) (<http://www.qoltech.co.uk/Asthma1.htm>). They are suitable for self-assessments by patients, and provide a reproducible objective measure that may be charted over time.

Patients with poor asthma control should be assessed for the following:

- Reasons for poor adherence and misunderstanding the difference between relievers and controllers
- Poor inhaler technique
- Exposure to trigger factors at home and work
- Presence of gastro-oesophageal acid reflux disease
- Rhinitis and sinusitis
- Use of medications that may aggravate asthma such as aspirin, non-steroidal anti-inflammatory drugs and  $\beta$  blockers
- Other medical conditions (e.g. cardiac disease)

Step up treatment when control is not achieved after attention to the above factors. Step down is recommended when total control is achieved and maintained for at least 3 months. Within a self management plan, well-motivated patients could also be advised to vary treatment according

to PEF and symptom frequency.

Treatment with short courses of oral prednisone should be considered in known or newly diagnosed asthmatics in the following circumstances in order to prevent severe deterioration and to gain rapid control of asthma:

- Symptoms and/or lung function (PEF) progressively deteriorating acutely or over several days and associated with increased use of inhaled rescue medication
- Lack of sustained relief from rescue medication
- Repeated drops in PEF over 1 or more days to below 60% of previous best value
- Frequent night time symptoms
- Requirement for emergency treatment

Recommended procedure for the prescription of a short course of oral prednisone

- Prednisone 30-40mg / day for 7-14 days
- Once daily (morning) dosing
- Stop abruptly after course (there is no need to tail off if used for the recommended duration)
- Inhaled corticosteroids for maintenance treatment should be commenced or continued
- A step-up in maintenance controller treatment is usually indicated
- Patients requiring oral corticosteroids for more than 14 days should be referred to a specialist.

#### ASTHMA EDUCATION

Optimal management of a chronic disease like asthma requires the active participation of patients. To achieve this patients require education about asthma and a detailed written management or action plan (**Evidence A**). A systematic approach is necessary to ensure that all relevant details are included and education should be staged over several visits. Details of a self management plan are presented in Section F of Additional Notes. The use of nurse educators and other specially trained healthcare professionals is cost-effective. Goals of asthma education include:

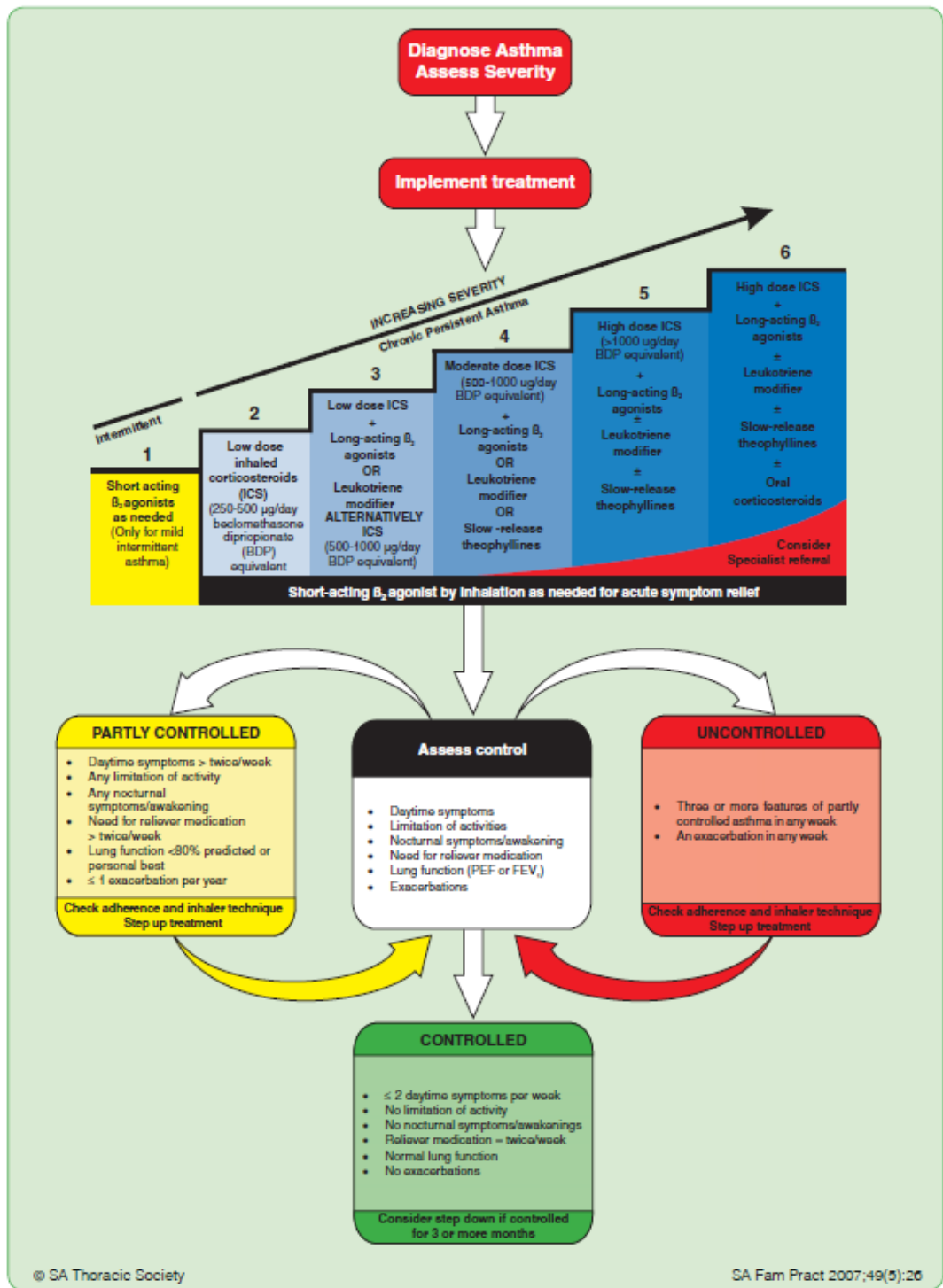
- An explanation of the nature of asthma and its allergic basis
- A description of the different classes of drugs and their purpose in treatment (i.e. as-needed "relievers" and regular "controllers")
- Advice on prevention strategies (allergen and tobacco smoke avoidance)
- The correct choice and use of inhalers and the opportunity to practice under supervision
- How to recognise worsening asthma
- In some patients, particularly those requiring stabilisation or patients who have had a recent exacerbation or deterioration, the use of a PEF meter and chart
- Introduction to the National Asthma Education Programme (NAEP) the official asthma education programme of the South African Thoracic Society. This provides educational material for the self management of asthma. Contact details are provided in Section G of Additional Notes.

Figure 1 is a summary of the treatment plan.



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**Figure 1: Algorithm for diagnosis and management of chronic asthma**



**ADDITIONAL NOTES**

**A. DIFFERENTIAL DIAGNOSIS OF ASTHMA, WHEEZE AND AIRWAY OBSTRUCTION**

There are many causes of airway obstruction that cause symptoms and signs that may mimic asthma. These are listed in Table 6. Asthma must be distinguished from COPD particularly when a patient develops airway obstruction for the first time in the 5th decade or later. The features that help to differentiate between asthma and COPD are summarised in the Table 7. The SA Thoracic Society has issued guidelines for the diagnosis and management of COPD in a separate guideline statement.

**Table 6:** Causes of airway obstruction

<p><b>WIDESPREAD AIRWAY OBSTRUCTION</b> <i>May present with wheeze.</i></p>	<ul style="list-style-type: none"> <li>• Asthma</li> <li>• COPD</li> <li>• Bronchiolitis</li> <li>• Pulmonary congestion /oedema (left ventricular failure, mitral valve stenosis)</li> </ul>
<p><b>TRACHEAL OBSTRUCTION</b> <i>May present with stridor</i></p>	<ul style="list-style-type: none"> <li>• Extrinsic compression (thyroid, lymph nodes)</li> <li>• Lesions in the lumen or wall (stenosis, stricture, tumour)</li> <li>• Cartilage (tracheomalacia, relapsing polychondritis)</li> </ul>
<p><b>BRONCHIAL OBSTRUCTION</b> <i>May present with localised wheeze</i></p>	<ul style="list-style-type: none"> <li>• Extrinsic compression (lymph nodes)</li> <li>• Lesions arising from the wall (tumour, stenosis, endobronchial TB, sarcoidosis) Luminal lesion (foreign body)</li> </ul>
<p><b>LARYNX</b> <i>May present with wheeze and/or stridor</i></p>	<ul style="list-style-type: none"> <li>• Vocal cord dysfunction</li> <li>• Tumours</li> </ul>

**B. DIFFERENTIATING ASTHMA FROM COPD**

**Table 7:** Differentiating features between asthma and COPD

Features suggesting asthma	Features suggesting COPD
Young age of onset	Long history of smoking
Presence of atopy and/or allergic rhinitis	Usually non-atopic
Diurnal and/or day to day and seasonal variation in symptoms and lung function	Insidious onset of symptoms and persistent dyspnoea Slow progression of symptoms
Often normal examination and normal/near normal spirometry while in a stable state	Hyperinflation and abnormal spirometry while in a stable state, Progressive deterioration in lung function over time
Marked improvement after bronchodilator and/or 2 week trial of systemic corticosteroids*	Poor response to bronchodilator and/or 2 week trial of systemic corticosteroids

\*>12% and 200ml improvement in FEV1 or 20% in PEF

**C. ROUTES OF ADMINISTRATION OF ASTHMA DRUGS INHALED, ORAL or PARENTERAL**

Asthma treatment for adults can be administered in different ways: inhaled, orally or parenterally (by subcutaneous, intramuscular, or intravenous injection). The major advantage of inhaled therapy is that drugs are delivered directly into the airways, producing higher local concentrations with significantly less risk of systemic side effects. Inhaled medications for asthma are available as pressurised metered-dose inhalers (pMDIs), breath-actuated MDIs, dry powder inhalers (DPIs), soft mist inhalers, and nebulisers (rarely indicated for the treatment of chronic asthma in adults).

Inhaler devices differ in their efficiency of drug delivery to the lower respiratory tract, depending on the form of the device, formulation of medication, particle size, velocity of the aerosol cloud or plume (where applicable), and ease with which the device can be used by the majority of patients. It requires training and skill to coordinate activation of the pMDI with inhalation, and a breath-actuated MDI may be helpful for patients who have difficulty with this. Most patients make mistakes with a pMDI alone. They are less likely to do so if they also use a large volume (500 ml) spacer or holding chamber to improve drug delivery, increase lung deposition, and reduce local and systemic side effects. The drug should be given by repeated single activations of the MDI into the spacer, each followed by inhalation (normal/tidal breathing is as effective as single deep breaths). There should be minimal delay between pMDI activation and inhalation. The spacer should be compatible with the pMDI being used. Spacers should be cleaned monthly (washed in detergent and allowed to air dry) and ideally should be replaced at least every year.

Dry powder inhalers are generally easier to use, but they require a minimal inspiratory flow rate which may be difficult for some patients. A pMDI + spacer is as effective as a DPI (Evidence A). Some patients may prefer a DPI or prefer not to carry a large volume spacer. Choice of delivery device should be based on correct technique and patient preference. The patient should have their inhaler technique assessed, ideally by a specifically trained health care worker. An inhaler device should be prescribed after patients have received training in its use and have demonstrated satisfactory technique (Evidence B). Their inhaler technique should be continually reassessed as part of a structured clinical review (see Section F Asthma Education). In mild and moderate exacerbations of asthma, a pMDI + spacer is at least as good as a nebuliser in adults and children from the age of two (Evidence A). DPIs are not currently recommended for acute asthma (Evidence D).

CFC inhaler devices are being phased out due to the impact of CFCs upon the atmospheric ozone layer, and are being replaced by HFA devices. For pMDIs containing bronchodilators, the switch from CFC to HFA inhalers does not result in a change in efficacy at the same nominal



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dose. However, for some glucocorticosteroids, the HFA formulations provide an aerosol of smaller particle size that results in less oral deposition (with associated reduction in oral side effects), and correspondingly greater lung deposition. A spacer is thus only necessary with HFA inhalers if coordination is poor. This may result in greater efficacy at equivalent ex-actuator doses, but also greater systemic exposure and risk of side effects. Information on various inhaler devices available can be found on the GINA Website (<http://www.ginasthma.org>).

**D. SPECIAL CLINICAL CIRCUMSTANCES**

There are several clinical circumstances where special precautions and adjustments to asthma management and treatment may be required. These are summarised as follows:

**Pregnancy**

Ideally pregnancy should be planned and optimal control achieved prior to conception. The effect of pregnancy is unpredictable: asthma control may remain the same, deteriorate or improve and may vary in different trimesters in successive pregnancies. Current evidence suggests that corticosteroids,  $\beta_2$  agonists and theophyllines are safe in pregnancy. New drugs for which safety data in pregnancy are not available should be avoided. It is essential that asthma should be optimally controlled during pregnancy through the use of appropriate doses of inhaled corticosteroids, which have been shown to decrease exacerbations. Acute exacerbations should be managed very actively to prevent foetal damage. Poor control of asthma is much more dangerous to both the mother and foetus than any asthma drug.

**Menstruation**

Pre-menstrual exacerbations of asthma are common. The mechanism is not well understood. When severe they may require an increase in the dose of inhaled corticosteroids or a low dose of oral prednisone for 2-3 days commencing 1-2 days before menstruation.

**Exercise**

Exercise-induced asthma (EIA) may occur as an isolated symptom but is usually an indication of sub-optimal asthma control. The preferred treatment is the use of short-acting inhaled  $\beta_2$  agonists 15-20 mins before exercise. Long-acting  $\beta_2$  agonists, leukotriene modifiers and SR theophyllines may protect against EIA for several hours after dosing.

**Elderly patients**

Asthma occurs in the elderly and is frequently overlooked or misdiagnosed. The elderly are more susceptible to adverse effects of drugs. SR theophyllines should be used with care because of their narrow therapeutic range and side effects. The elderly are also especially prone to the

side effects of corticosteroids such as osteoporosis, cataracts, glucose intolerance, hypertension and fluid retention.

**Nocturnal asthma**

Occasionally nocturnal symptoms are the sole manifestation of asthma and may be associated with marked falls in the PEF (50% or more). However, nocturnal symptoms are usually an important indicator of poor control and may signal the onset of impending severe deterioration. Long-acting  $\beta_2$  agonists and SR theophylline provide an additional benefit to that of anti-inflammatory therapy in controlling nocturnal symptoms. Sometimes a short course of oral corticosteroids is indicated.

**Cardiac disease and hypertension**

Fluid retention and hypokalaemia induced by corticosteroids and high doses of  $\beta_2$  agonists may occasionally be a problem in asthma with associated cardiac disease. Pulmonary congestion may manifest with wheezing and may be misdiagnosed as asthma particularly in patients with mitral stenosis and in the elderly.  $\beta$  blockers are contraindicated in asthma.

**Diabetes mellitus**

Particular caution is required when prescribing oral corticosteroids. Inhaled corticosteroids are safe and have no significant effect on glycaemic control.

**Pulmonary tuberculosis**

In patients who have had tuberculosis or evidence of healed tuberculosis on chest radiographs, chemoprophylaxis with isoniazid is not recommended whilst on inhaled or short course of oral corticosteroids as the risk of reactivation has not been shown to be increased.

**Gastro-oesophageal acid reflux**

Acid reflux may aggravate asthma and should be considered in patients with difficult asthma and in those with symptoms of acid reflux. The acid reflux may be asymptomatic.

**Rhinitis and sinusitis**

These may aggravate asthma and should be considered in patients with difficult asthma even in the absence of specific symptoms.

**E. OCCUPATIONAL ASTHMA**

This should be considered in every patient who develops asthma in adulthood. It requires systematic enquiry into all work exposures.

It is important to familiarise oneself with the common agents and jobs/industries that are known to cause occupational asthma and some of these are listed in Table 8

**CPD: National Guidelines**

**Table 8:** Causative agents and jobs/industries associated with occupational asthma

Industry/Job type	Causative Agent/s
Animal handlers (labs./vets.)	Animals, formaldehyde
Bakeries, grain mills, farms	Flour, storage mites, fungi, insects, animal matter, amylase
Detergent manufacture	Proteolytic enzymes
Food processing	Sulphites, prawns, coffee beans, soya bean
Foundries	Resins, Isocyanates
Furniture, cabinet makers, sawmills	Wood dust, formaldehyde, resins
Hospital and medical laboratories	Formaldehyde, ethylene oxide, enzymes, latex
Metal refining, plating, welding, turning, grinding, sharpening	Platinum, chrome, nickel, mineral oils, cobalt (hard metal)
Pharmaceutical manufacture, mixing	Penicillins, proteolytic enzymes
Photography	Ethylene diamine
Plastics or foam manufacture	Isocyanates, anhydrides, epoxy resins
Printing	Vegetable gums, acrylates, Isocyanates
Shoe industry	Glues (acrylates), resins
Soldering	Colophony flux
Spray painting or varnishing	Isocyanates

in the management of their asthma. The partnership is formed and strengthened as patients and their health care professionals discuss and agree on the goals of treatment, develop a personalised, written self management action plan including self-monitoring, and periodically review the patient's treatment and level of asthma control. The ability or willingness of patients to take responsibility varies and thus the information and skills training required by each patient will differ. All require certain core information and skills, but most education must be personalised. Action plans are one of the most effective interventions available in asthma for both adults and children and can be issued by any health care worker and used in all health care environments (especially in secondary care with moderate to severe disease, and those who have had recent exacerbations (**Evidence A**)). They may be based on symptoms and/or peak flows (depending on age and ability). The use of a personalised written asthma action plan does not improve lung function but does result in fewer days lost from work and school, fewer emergency department visits and hospital admissions, fewer nocturnal symptoms, less use of rescue medication and better quality of life. A systematic approach is necessary to ensure that all relevant details are included and education should be staged over several visits. The use of nurse educators and other specially trained healthcare professionals is cost-effective.

**F. WHEN TO REFER TO A SPECIALIST**

**Table 9:** When to refer patients to a specialist/pulmonologist

<p><b>A. DIFFICULTY WITH DIAGNOSIS</b></p> <ul style="list-style-type: none"> <li>• Patients receiving multiple courses of antibiotics</li> <li>• Possibility of COPD</li> <li>• Asthma for the first time after the age of 60 years</li> <li>• Suspected vocal cord dysfunction</li> </ul>
<p><b>B. SUSPECTED OCCUPATIONAL ASTHMA</b></p>
<p><b>C. MANAGEMENT PROBLEMS</b></p> <ul style="list-style-type: none"> <li>• Brittle asthma</li> <li>• Recurrent exacerbations &gt;2 per month</li> <li>• Recent discharge following admission for severe exacerbation</li> <li>• Oral corticosteroid dependence</li> <li>• Poor control despite intensive treatment</li> <li>• Pregnancy</li> <li>• Co-existing significant medical illnesses like thyroid disease, collagen vascular disease, peptic ulcer, cardiac failure</li> <li>• Frequent school or work absenteeism</li> <li>• Significant corticosteroid side effects</li> <li>• Consideration for immunosuppressive treatment or desensitisation</li> <li>• Consideration for disability grant or medical boarding for asthma</li> </ul>

**Goals of asthma education include:**

- An explanation of the nature of asthma and its allergic basis
- A description of the different classes of drugs and their purpose in treatment ( i.e. as-needed "relievers" and regular "controllers")
- Advice on preventative strategies (allergen and tobacco smoke avoidance)
- The correct choice and use of inhalers and the opportunity to practice under supervision
- Emphasis on the importance of regular follow-up and when to request earlier review
- How to recognise worsening asthma
- How to recognise potential side-effects of drugs

**G. ASTHMA EDUCATION AND SELF MANAGEMENT (ACTION) PLANS**

The effective management of asthma requires the development of a partnership between the person with asthma and his or her health care professional. The aim of this partnership is to enable patients with asthma to gain the knowledge, confidence, and skills to assume a major role

Key components of a self-management plan:
<ul style="list-style-type: none"> <li>• The use of a <i>PEF meter and chart</i>, particularly in those requiring stabilisation or patients who have had a recent exacerbation or deterioration.</li> <li>• Realistic goals of treatment in terms of symptom relief and/or PEF</li> <li>• Advice on <i>how to recognise changes in the asthma</i> (via symptoms and/or peak flow rates) and when to make adjustments to treatment according to a predetermined schedule</li> <li>• <i>Written instructions on treatment</i> which include the class, name, strength, dose and frequency of each of the asthma medications prescribed</li> <li>• Instruction on when and <i>how to initiate short courses of oral prednisone</i></li> <li>• Details on <i>when and how to obtain access to medical care in emergencies</i></li> <li>• Arrangements for a Medic-Alert for patients on high dose inhaled or oral corticosteroids, known drug hypersensitivities (like aspirin and penicillin) and brittle asthma</li> </ul>

Patients should be introduced to the National Asthma Education Programme (NAEP), the official asthma education programme of the South African Thoracic Society, which provides free educational material and action plans for the self-management of asthma. Their contact details are: National Asthma Education Programme (South Africa) - <http://www.asthma.co.za>, PO Box 72128 Parkview 2122, Fax: 011 678 3069, Tel: 011 643 2755, email: [naep@netactive.co.za](mailto:naep@netactive.co.za).

Other sites offering educational material include:

- Allergy Society of South Africa (ALLSA) <http://www.allergysa.org>
- The Global Initiative for Asthma <http://www.ginasthma.com>
- National Asthma Campaign (UK) [www.asthma.org.uk](http://www.asthma.org.uk)
- National Heart, Lung and Blood Institute (US) [www.nhlbi.nih.gov/](http://www.nhlbi.nih.gov/)
- Medic Alert: (021) 425 7328

#### H. LEVELS OF EVIDENCE FOR ASTHMA MANAGEMENT

Table 10: Description of Levels of Evidence

Evidence Category	Sources of Evidence	Definition
A	Randomised controlled trials (RCTs). Rich body of data.	Evidence is from endpoints of well designed RCTs that provide a consistent pattern of findings in the population for which the recommendation is made. Category A requires substantial numbers of studies involving substantial numbers of participants.
B	Randomised controlled trials (RCTs). Limited body of data.	Evidence is from endpoints of intervention studies that include only a limited number of patients, posthoc or subgroup analysis of RCTs, or meta-analysis of RCTs. In general, Category B pertains when few randomized trials exist, they are small in size, they were undertaken in a population that differs from the target population of the recommendation, or the results are somewhat inconsistent.
C	Non-randomised trials. Observational studies.	Evidence is from outcomes of uncontrolled or nonrandomized trials or from observational studies.
D	Panel consensus judgment.	This category is used only in cases where the provision of some guidance was deemed valuable but the clinical literature addressing the subject was insufficient to justify placement in one of the other categories. The Panel Consensus is based on clinical experience or knowledge that does not meet the above-listed criteria.

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