



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

Development of a patient-centred electronic review template to support self-management in primary care

Citation for published version:

McClatchey, K, Sheldon, A, Steed, L, Sheringham, J, Appiagyei, F, Price, D, Hammersley, V, Taylor, S & Pinnock, H 2023, 'Development of a patient-centred electronic review template to support self-management in primary care', *British Journal of General Practice Open (BJGP Open)*.
<https://doi.org/10.3399/BJGPO.2022.0165>

Digital Object Identifier (DOI):

[10.3399/BJGPO.2022.0165](https://doi.org/10.3399/BJGPO.2022.0165)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Peer reviewed version

Published In:

British Journal of General Practice Open (BJGP Open)

General rights

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.



Development of a patient-centred electronic review template to support self-management in primary care

Running title: Developing a patient-centred review template

Kirstie McClatchey¹, Aimee Sheldon¹, Liz Steed², Jessica Sheringham³, Francis Appiagyei⁴, David Price³, Vicky Hammersley¹, Stephanie JC Taylor², Hilary Pinnock¹, for the IMP²ART Programme Group.

¹*Asthma UK Centre for Applied Research, Usher Institute, The University of Edinburgh*

²*Institute for Population Health Sciences, Barts and the London School of Medicine and Dentistry, Queen Mary University of London*

³*Department of Applied Health Research, University College London*

⁴*Optimum Patient Care*

Contributions: Study design: KM; LS, JS, SJCT; HP; data collection: KM, AS; data analysis: KM, AS; manuscript writing: KM, AS, HP; commenting on manuscript and approval manuscript: all authors.

Corresponding Author: Dr Kirstie McClatchey, ORCID: 0000-0002-1270-7738

Address: The University of Edinburgh, Usher Institute, Old Medical School, Teviot Place, Edinburgh, EH8 9AG **Email:** kirstie.mcclatchey@ed.ac.uk

References: 24

Data availability: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Development of a patient-centred electronic review template to support self-management in primary care

ABSTRACT

Background: Electronic templates are frequently used in long-term condition reviews (e.g. asthma) to act as reminders and improve documentation, however, they can restrict patient-centred care and opportunities for patients to discuss concerns and self-management.

Aim: The IMPlimenting IMProved Asthma self-management as RouTine (IMP²ART) programme aimed to develop a patient-centred asthma review template that encourages supported self-management.

Design and Setting: This was a mixed-methods study, which integrated qualitative and systematic review data, primary care Professional Advisory Group feedback, and qualitative data from clinician interviews.

Methods: Aligned with the Medical Research Council complex intervention framework, a template was developed in three phases: 1) Development phase: qualitative exploration with clinicians and patients, a systematic review, and prototype template development; 2) Feasibility pilot phase: feedback from clinicians (n=7); 3) Pre-piloting phase: delivering the template within the IMP²ART implementation strategy (incorporating the template with patient and professional resources) and eliciting clinician feedback (n=6).

Results: Template development was guided by the preliminary qualitative work and the systematic review. A prototype template was developed with an opening question to establish patient agendas, and a closing prompt to confirm agendas have been addressed and an asthma action plan provided. The feasibility pilot identified refinements needed, including focusing the opening question to asthma. Pre-piloting ensured integration with the IMP²ART strategy.

Conclusion: Following the multi-stage development process, the implementation strategy including the asthma review template is now being tested in a cluster randomised controlled trial.

How this fits in

Electronic templates are frequently used in long-term condition reviews (e.g. asthma) to act as reminders and improve documentation, however, they can restrict patient-centred care and opportunities for patients to discuss concerns and self-management.

As part of a programme of work aiming to develop and evaluate a strategy to improve implementation of supported asthma self-management in primary care (IMPlimenting IMProved Asthma self-management as RouTine, IMP²ART), we aimed to develop a patient-centred asthma review template to encourage supported self-management. We aligned development to the Medical Research Council complex intervention framework, and developed the template using mixed-methods (systematic review, qualitative interviews).

Defining elements of the IMP²ART template include: an opening question to establish patient agendas, and a closing prompt to verify the agenda had been addressed and an asthma action plan had been provided. These key elements encourage patient-centred care, by prompting clinicians to work collaboratively with patients, and facilitating asthma action plan provision. For clinicians, our findings can inform the development of patient-centred electronic review templates addressing some of the recognised disadvantages of template structured care.

Development of a patient-centred electronic review template to support self-management in primary care

INTRODUCTION

Long-term conditions (LTCs) account for approximately 15 million premature deaths globally each year[1], emphasising a need to improve care. Electronic disease templates are commonly used in healthcare systems to structure LTC management and data recording[2]. The data retrieved via review templates can be used to enable pay-for-performance which, although they have not been shown to change mortality[3], can impact positively on healthcare quality[4]. In the United Kingdom (UK), trained nurses usually conduct focused LTC reviews using electronic templates, often discussing lifestyle issues and changes to disease management[2]. Review templates can be valuable resources, improving the documentation of key measures[5]. However, templates may encourage a checklist approach to LTC care[6]; prioritise the healthcare professional agenda over the patients[7]; and limit opportunities for patients to discuss self-management[6]. Patient-centred care involves healthcare professionals working collaboratively with patients to support them to develop the knowledge, skills and confidence they need to self-manage more effectively and make informed decisions about their health and health care[8]. In order to support LTC care and self-management, templates should be designed with patient-centred care in mind.

Asthma is a LTC that affects approximately 5.4 million people in the UK[9]. Supported self-management for asthma, which includes patient education, regular review, and personalised asthma action plan provision, has been recommended by guidelines for 30 years[10]. A recent meta-review found that supported asthma self-management can reduce hospitalisations, accident and emergency attendances, and unscheduled care consultations[11]. Despite the evidence, it is poorly implemented in practice. Only half of the respondents (52%) to a survey conducted by Asthma UK (whose self-management resources are widely promoted[12]) owned an asthma action plan[9]; in our review of clinical records only 6% of people with asthma had a record of being provided with an action plan[13].

In response to the poor implementation of supported asthma self-management, the IMPLementing IMProved Asthma self-management as RouTine (IMP²ART) programme was developed. IMP²ART aims to develop and evaluate a three-level implementation strategy for primary care comprising of resources for patients, professional training, and organisational support (including an asthma review template). This paper reports the design and development, within the context of the IMP²ART research, of a theoretically-informed, patient-centred electronic asthma review template, which aims to encourage self-management and asthma action plan ownership.

METHOD

Our programme of work aligns with the development and feasibility stages of the Medical Research Council (MRC) framework for developing and evaluating complex interventions[14], guidance on developing complex interventions to improve health and healthcare[15], and follows the guidance for reporting intervention development studies in health research (GUIDED)[16]. The IMP²ART research team consists of academics and healthcare professionals (nurses, general practitioners (GPs), health psychologists) based within the Asthma UK Centre for Applied Research (AUKCAR). In addition, Optimum Patient Care (OPC), a not-for-profit social enterprise improving the diagnosis, treatment and management of chronic diseases within primary care, assisted with building the asthma review template. We established a Professional Advisory Group of GPs and nurses (n=10) from the Primary Care Respiratory Society (PCRS) to advise on template content. They met twice (by video-conference) during the development and discussed template design and patient-centredness. Figure 1 displays the overarching asthma review template development phases, which align to the MRC framework for developing and assessing feasibility of complex interventions[14].

MRC Framework

Development phase

Preliminary work included a qualitative exploration of supporting asthma self-management in UK primary care with general practice staff[17], and interviews with UK patients living with asthma to explore views about routines and resources used to support care (both current and aspirational). Additionally, we conducted a systematic review investigating the impact of using LTC review templates during consultations[5]. Building on the expertise of the research team, OPC, and the Professional Advisory Group, the explorative and review work was followed by the development of a system-agnostic prototype IMP²ART asthma review template (in pdf format) (Figure 1.)

Feasibility pilot phase

We recruited clinical staff from five UK general practices, and provided them with the IMP²ART pdf-prototype asthma review template for feedback (Figure 1.). We used semi-structured qualitative interviews to explore their thoughts and recommendations for the template. The interviews were carried out by AS and KM between February-May 2019, and were audio-recorded, transcribed verbatim, and analysed in NVivo 11 using Framework Analysis[18].

Pre-piloting the IMP²ART asthma review template within the IMP²ART implementation strategy

Following refinement, an electronic prototype version of the template (for SystmOne and EMIS) was integrated with patient resources and professional training components of the IMP²ART strategy for pre-piloting in four general practices (Figure 1.). A sample of practice staff from each of the four pre-pilot practices were interviewed by KM between October-November 2019 using semi-structured interviews to explore experiences of using the IMP²ART strategy (including the template). Interviews were audio-recorded, transcribed verbatim, and analysed using Framework Analysis[18] in NVivo 11. The refined asthma review template was then incorporated into the IMP²ART implementation strategy for evaluation in a cluster randomised controlled trial (RCT) [ref: RP-PG-1016-20008].

RESULTS

Overarching results can be found in Table S1.

Development Phase

Qualitative exploration

The preliminary qualitative exploration with 33 general practice staff (23 GPs, seven nurses) found that annual asthma reviews and supporting self-management was largely a nurse-led task, and reviews were mostly structured around electronic templates[17]. In addition to describing templates as an aide memoire, clinicians considered that templates had the potential to promote and facilitate supported self-management, including provision of asthma action plans. Poor integration with IT-systems, alert fatigue, duplication of effort, and too many tick-boxes were identified as barriers.

Interviews with patients living with asthma (n=10 (7 male, 3 female) across four UK general practices) found that most were aware that their clinician used the computer, or some form of template on the computer, during their review. However, this did not restrict the review process, as most felt able to discuss any issues they had about their asthma, and they felt involved in the decisions that were made regarding their asthma.

Systematic review

The IMP²ART systematic review concluded that templates can improve documentation of key measures, and act as a reminder tool during consultations; but raised concerns that templates may act as a barrier to providing patient-centred care[5] by restricting the review process and prioritising the healthcare professional agenda over the patient's[5]. In line with the findings by Morrow et al. (2017), the review recommended that templates should incorporate free text options for documentation (as well as coded items), and should include education and self-

management items to prompts healthcare professionals to encourage and support patient self-management practices. A specific suggestion to improve patient-centredness, was that templates should begin with an opening question to establish the patient's agenda, and also a closing question to confirm concerns have been addressed.

Prototype IMP²ART asthma review template development

The PCRS Professional Advisory Group welcomed the patient-centred and shared-decision making approach to the template, and specifically highlighted that the generic opening question about the patient's agenda ('what is the patient's agenda?') should focus on asthma reviews ('thank you for coming to an asthma review, is there anything in particular you would like to talk about?'). Utilising the evidence base, following professional advice, and including the necessary Quality and Outcomes Framework (QOF)[19] components, a prototype IMP²ART asthma review template was produced by OPC.

Feasibility Pilot Phase

In total, seven clinical staff (four nurses, two GPs, and one pharmacist, all female) from five general practices participated in interviews discussing the prototype IMP²ART template. Five themes were identified and are detailed in Table S1 and below.

Helpful components

Clinicians found a range of the IMP²ART template features helpful. These included: electronic health record auto-populated information; links to information for patients; the dedicated section for assessment of uncontrolled asthma; user-friendliness; patient-centred questions; and the closing summary of management recommendations. For less experienced staff, a prompt to ensure the review was complete was found to be helpful.

Content, design, and timing

Clinicians thought the IMP²ART template covered the pertinent aspects of a review. Both GPs thought the template was long, with one commenting on several items she was unlikely to use. The nurses and pharmacist, however, thought the amount of content was as expected, with some implication that more content was better than less.

"There's a lot to work with... you've covered most bases that I would see anyway." (Nurse 2, female)

Clinicians welcomed the addition of template-embedded patient information links, though it was noted they should be used within the context of a range of different resources for different patients. All interviewees considered that the template appeared to be simple to navigate. Despite this, the volume of questions initially seemed daunting (this was because the prototype template was printed in a single screen without visualisation of discrete tabs). Once clinicians explored the content further, they concluded the template fitted with their current review sequence; it would be user-friendly as there was less complex navigation, and fields were optional. Clinicians had mixed opinions on whether the template was achievable in time-limited reviews. Several thought it was appropriate for a 20-minute consultation but others expressed some concerns about the time required for completion. Clinicians observed that timing is often patient or practice-dependent.

“So although I initially said ‘oh, it’s quite long,’ you’re not going to be asking your well-controlled asthmatics all of these questions.” (GP 2, female)

Patient-centredness

The IMP²ART template was viewed as patient-centred. Clinicians regarded the opening agenda question, *‘Thank you for coming to an asthma review, is there anything in particular you would like to talk about?’*, positively. Several expressed that it facilitated holistic care by concentrating on what the patient wants to address, helping divert focus from the clinician and engaging the patient by making them feel as if they were gaining something from the review. Clinicians thought this cue-based approach had the potential to make patients more open to education.

“What’s the thing YOU want to talk about...that’s absolutely what we’re interested in in our practice is trying to have a holistic review...focusing on the patient’s agenda first...it’s hard to engage them in this so I think that’s a useful opening line.” (GP 2, female)

Implementing into practice

All clinicians said they would be comfortable with implementing the IMP²ART template in their practice. Reasons for comfort with the template included: similarity to their current template and compliance with the Quality and Outcomes Framework which determined performance-related payments[19].

“I don’t think it’s dissimilar to what we already use so I don’t see the issue there.” (GP 1, female)

Recommendations

Three clinicians highlighted that the opening agenda question needed to be open enough to allow the patient to express their concerns, but should avoid shifting the focus of the consultation from asthma.

“You want it to be open but you’re wanting to be focused on their asthma rather than whether they got parked or not.” (GP 1, female)

Four clinicians recommended changes to template content including the addition of missing content and removal of superfluous items. Suggested additional content included: inhaled corticosteroid adherence/dose, spacer use and replacement. More detail on asthma triggers, was regarded as important to note due to their possible impact on quality-of-life.

Proposed removals were: age of asthma onset, eosinophil count, spirometry, smoking questions (shorten to fewer questions), and use of the asthma control test (ACT)[20] as opposed to the Royal College of Physicians 3 questions (RCP3)[21]/Global Initiative For Asthma (GINA) assessment of asthma control[22]. Recommendations for IT use included: software-compatible templates, the ability to print off the link to the patient-facing website (or a code that could be scanned), attachment of completed action plans to the electronic health record for re-evaluation at subsequent reviews.

Refining after the feasibility pilot interviews

Following feedback from the clinicians, the multidisciplinary team had a consensus discussion and made refinements to the template which included reducing the number of questions about smoking, and changing the template opening question to be more asthma focused (*‘What would you like to discuss about your asthma?’*).

Pre-piloting the electronic IMP²ART asthma review template as a component of the IMP²ART implementation strategy

Six clinical staff (four GPs (two male; two female), two female nurses) across four general practices participated in interviews following template refinements. The electronic prototype version was integrated with the IMP²ART implementation strategy (patient resources and professional training) in the pre-pilot. Two participants provided additional feedback via email after the interviews had been completed. Three themes were identified and are detailed below and in Table S1.

Perceptions of the template

Clinicians were positive about the IMP²ART template available on their systems, and considered that it covered what was expected.

“...it is actually quite comprehensive.” (Nurse 1, female)

Participants welcomed the patient-centred focus of the template, in particular the opening question.

“...I think it’s good...because obviously we’re trying to create that holistic care.” (GP 2, male)

Template Implementation

Participants indicated that they had, or planned to implement the IMP²ART template into their care delivery.

“We have spoken to everyone and started to use the template now because it has a lot more information there than what was given in our original template...” (GP 2, male)

Suggested changes to the template

Participants made a number of detailed suggestions about items they would like to be included, revised, or omitted (see Table S1), and one participant asked if the personalised asthma action plan could be saved to the record for future reference.

Refining after the pre-pilot interviews

Refinements, such as the addition of some suggested tick boxes, were added to the IMP²ART template following the interviews. The PCRS Professional Advisory Group had no further comments/suggestions for the template. The template was then formatted for different clinical systems (EMIS/SystemOne/Vision) for future use in the IMP²ART cluster RCT.

A dynamic and iterative process

The process of developing the finalised IMP²ART asthma review template followed key principles of intervention development, that it is dynamic, iterative, creative, and open to change[15]. The template not only evolved during development, feasibility and pre-piloting phases, but continued to evolve in accordance with changing contexts. For example, following the COVID-19 pandemic in 2020, the PCRS Professional Advisory Group were consulted to discuss remote consulting and considered if any further changes to the template were needed (they decided not). Further, the electronic prototype version of the template was developed for pre-piloting using Read codes. In England, SNOMED Clinical Teams (CT) codes were

adopted in 2020[23], thus the template was adapted to include SNOMED CT codes prior to the start of the cluster RCT in early 2021. Finally, as the IMP²ART asthma review template was designed as part of an implementation strategy, practices are able to adapt the template to add/remove fields to suit individual practice routines, which will be monitored as part of the implementation process.

DISCUSSION

Summary

The current paper describes the development of an asthma review template within a research programme. Aligned to the MRC framework[14], the process included a development phase drawing on existing literature, a feasibility phase to explore clinician views of the review template, and a real-world pre-pilot of the review template as a component of the IMP²ART implementation strategy. Following the feasibility and pre-pilot testing of the review template, feedback was considered and changes were made. Defining elements of the IMP²ART template include: an opening question to establish patient agendas, and a closing prompt to verify the agenda had been addressed, and an asthma action plan had been provided. These key elements were perceived as encouraging patient-centred care, by prompting clinicians to work collaboratively with patients, and facilitating asthma action plan provision.

Strengths and Limitations

A major strength of the research was the cross-discipline work underpinning the development of the asthma review template. Development, feasibility testing, and pre-piloting with patients and clinicians currently working in general practice further strengthened the work and its applicability to real-world practice. Additionally, the testing phases allowed for refining of the review template in an iterative and on-going process. Limitations of the research included small sample sizes for qualitative interviews, and the lack of patient interviews to explore their thoughts of the newly developed template, which may have provided additional insight to the patient-centred focus of the template.

Comparison with existing literature

Understanding and adapting to context is crucial in implementation research[24]. Our initial qualitative exploration, on-going advice from a primary care stakeholder panel as well as the iterative testing in routine practice, ensures our template fits (and if necessary can be further adapted to) the routines of UK primary care. The core principles of ensuring patient-

centredness and alignment with guidelines, however, remain generalisable and pertinent to any setting providing proactive care for people with LTCs.

The findings of the current research regarding the opening template question addressing the patient's agenda positively aligned with prior research. For example, a study evaluating a patient-centred template that began with an opening question about the patients' most important concerns, found that clinicians highly valued the enquiry about the patient's agenda, and it allowed for the identification of unmet health needs through patients revealing previously unmentioned symptoms[2].

Implications for research and practice

We conclude that a multi-stage development process, aligned with the MRC complex intervention framework, contributed to the design and delivery of the patient-centred asthma review template. The IMP²ART strategy (incorporating the review template, as well as patient resources and professional education) is now being tested in a UK-wide cluster RCT [ref: RP-PG-1016-20008], evaluating implementation (action plan ownership) and health outcomes (unscheduled care). For clinicians, our findings can inform the development of patient-centred electronic review templates addressing some of the recognised disadvantages of template structured care.

Funding

This work was supported by the National Institute for Health and Care Research (NIHR) Programme Grants for Applied Research [RP-PG-1016-20008]. The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care.

Ethics approval

The study was undertaken in 2018-2019 with ethics approval from West Midlands - Black Country Research Ethics Committee (REC ref: 18/WM/0300) and NHS governance approvals from Health Research Authority (ref: IRAS 249302). The trial sponsor was the Academic and Clinical Central Office for Research and Development (ACCORD), The University of Edinburgh and NHS Lothian Health Board.

Competing interests

The authors declare that there are no conflicts of interest.

Acknowledgements

We acknowledge all members of the IMP²ART group for their contributions including: Brian McKinstry, Aziz Sheikh (University of Edinburgh); Sandra Eldridge, Chris Griffiths, Chris Newby (Queen Mary University of London); Steven Julious (University of Sheffield); Deborah Fitzsimmons (University of Swansea); Ann-Louise Caress (University of Huddersfield). Dr Susan Morrow was Programme Manager during early stages of this work; Emily Healy and Lesley Gardner provided invaluable administrative support.

We are grateful to members of the IMP²ART Primary Care Respiratory Society Professional Advisory Group, coordinated by Dr Steve Holmes, and to the IMP²ART Patient and Public Involvement Group, co-ordinated by Dr Tracy Jackson. We thank the primary care general practices that participated in this study. We acknowledge the helpful advice of the Independent Programme Steering Committee chaired by Professor Robbie Foy.

REFERENCES

1. World Health Organization. Noncommunicable diseases, <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases> (2021, accessed 11 Aug 2022).
2. Mann C, Shaw A, Wye L, et al. A computer template to enhance patient-centredness in multimorbidity reviews: a qualitative evaluation in primary care. *Br J Gen Pract.* 2018 1;68(672):e495-504.
3. Ryan AM, Krinsky S, Kontopantelis E, Doran T. Long-term evidence for the effect of pay-for-performance in primary care on mortality in the UK: a population study. *The Lancet.* 2016 16;388(10041):268-74.
4. De Bruin SR, Baan CA, Struijs JN. Pay-for-performance in disease management: a systematic review of the literature. *BMC Health Serv Res.* 2011 11(1):1-4.
5. Morrissey M, Shepherd E, Kinley E, et al. Effectiveness and perceptions of using templates in long-term condition reviews: a systematic synthesis of quantitative and qualitative studies. *Br J Gen Pract.* 2021 1;71(710):e652-9.
6. Blakeman T, Chew-Graham C, Reeves D, et al. The Quality and Outcomes Framework and self-management dialogue in primary care consultations: a qualitative study. *Br J Gen Pract.* 2011 1;61(591):e666-73.
7. Chew-Graham CA, Hunter C, Langer S, et al. How QOF is shaping primary care review consultations: a longitudinal qualitative study. *BMC Fam Pract.* 2013 14(1):1-7.
8. The Health Foundation. Person-centred care made simple, <https://www.health.org.uk/publications/person-centred-care-made-simple> (2014, accessed 14 Dec 2022).
9. Asthma UK. Annual Asthma Survey 2020, https://www.asthma.org.uk/65fe870b/contentassets/927811d182034c45bebeb56824a023bf/aas-2020_2a-1.pdf (2021, accessed 15 Aug 2022).
10. British Thoracic Society, Research Unit of the Royal College of Physicians of London, King's Fund Centre. National Asthma Campaign. Guidelines for management of asthma in adults: I-chronic persistent asthma. *BMJ.* 1990;301:651–3
11. Pinnock H, Parke HL, Panagioti M, et al. Systematic meta-review of supported self-management for asthma: a healthcare perspective. *BMC Med.* 2017 15(1):1-32.

12. British Thoracic Society/Scottish Intercollegiate Guideline Network. British guideline on the management of asthma. 2019 update. <https://www.brit-thoracic.org.uk/document-library/guidelines/asthma/btssign-guideline-for-the-management-of-asthma-2019> (2019, accessed 15 Aug 2022).
13. Newby C, Wright N, Eldridge S, et al. Estimating exacerbation rates from routine UK primary care data: an exploratory validation from the IMP2ART programme. *Eur Respir J Suppl* 2017, 50 (suppl 61) PA1603; DOI: 10.1183/1393003.congress-2017.PA1603
14. Skivington K, Matthews L, Simpson SA, et al. A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance. *BMJ*. 2021 30;374.
15. O'Cathain A, Croot L, Duncan E, et al. Guidance on how to develop complex interventions to improve health and healthcare. *BMJ open*. 2019 1;9(8):e029954.
16. Duncan E, O'Cathain A, Rousseau N, et al. Guidance for reporting intervention development studies in health research (GUIDED): an evidence-based consensus study. *BMJ Open*. 2020 8;10(4):e033516.
17. Morrow S, Daines L, Wiener-Ogilvie S, et al. Exploring the perspectives of clinical professionals and support staff on implementing supported self-management for asthma in UK general practice: an IMP2ART qualitative study. *NPJ Prim Care Respir Med*. 2017 18;27(1):1-7.
18. Ritchie J, Spencer L. Qualitative data analysis for applied policy research. *Analysing qualitative data*. 1994:173-94.
19. NHS Confederation, British Medical Association New GMS Contract 2003: investing in general practice. London, March 2003.
20. Nathan RA, Sorkness CA, Kosinski M, et al. Development of the asthma control test: a survey for assessing asthma control. *J Allergy Clin Immunol*. 2004 1;113(1):59-65.
21. Pearson M G, Bucknall C E, editors. *Measuring clinical outcome in asthma: a patient-focused approach*. London: Royal College of Physicians of London; 1999.
22. Global Initiative For Asthma. *Global Strategy for Asthma Management and Prevention*, <https://ginasthma.org/wp-content/uploads/2022/07/GINA-Main-Report-2022-FINAL-22-07-01-WMS.pdf> (2022, accessed 15 Aug 2022).

23. GOV.UK. Personalised health and care 2020, www.gov.uk/government/publications/personalised-health-and-care-2020 (2014, accessed 15 Aug 2022).

24. Pinnock H, Barwick M, Carpenter C, et al. Standards for Reporting Implementation Studies (StaRI) statement. *BMJ* 2017;347:f6753

Figure 1. Asthma review template development phases aligned with the Medical Research Council (MRC) framework for developing and evaluating complex interventions.

