What is needed for taking emergency obstetric and neonatal programmes to scale?

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Abstract

Scaling up an emergency obstetric and neonatal care (EmONC) programme entails reaching a larger number of people in a potentially broader geographical area. Multiple strategies requiring simultaneous attention should be deployed. This paper provides a framework for understanding the implementation, scale up and sustainability of such programmes. We reviewed existing literature and drew on our experience in scaling up the Essential Steps in the Management of Obstetric Emergencies (ESMOE) programme in South Africa. We explore the non-linear change process and conditions to be met for taking an existing EmONC programme to scale. Important concepts cutting across all components of a programme are equity, quality and leadership. Conditions to be met include appropriate awareness across the board and a policy environment that leads to: commitment, health-systems-strengthening actions, allocation of resources (human, financial, capital/material), dissemination and training, supportive supervision, and monitoring and evaluation.

Key words: Emergency obstetric and neonatal care, scale up, implementation

INTRODUCTION

Questions of how to scale up programmes known to be effective are currently high on the global health agenda [1-9]. The focus is on translating evidence into policy and practice on a much larger scale in order to reach a larger number of people or a broader geographical area and to improve care [1]. Emergency obstetric and neonatal care (EmONC) should be considered a basic quality-of-care intervention for which universal access and coverage is needed [10].

Yamey contends that "large-scale implementation is more likely if the intervention being scaled up is simple and technically sound and there is wide consensus about its value" (p 3) [3]. Although EmONC programmes vary in complexity, in our experience there are three basic building blocks that have to be attended to simultaneously: developing knowledgeable and skilled clinicians (training); allocating appropriate resources (including staff) to improve emergency services; and building up a reliable referral transport system. For scaling up an EmONC programme multiple strategies are needed. There should be an increase in the number of women and babies accessing more appropriate and better quality emergency care as a result of an increase in health worker skills, the reallocation of human, financial, capital and material resources [1], improved health facility functionality in terms of signal functions, and improved service delivery mechanisms (e.g. emergency transport).

Interventions or innovations that are converted into a programme mostly start with a research phase where the intervention is tested in a research setting before being implemented in practice on a large scale [1,11,12]. After the pilot it is expected that the key features of the intervention or innovation would be replicated in the further expansion, as it is important not to lose the essential characteristics of the tested new practices [13]. Implementation could entail the phased expansion of the intervention. The lessons learned on the way provide input for the refinement of further expansion [3]. In the case of EmONC a number of interventions

known to be effective for different emergency conditions are combined in a programme to be rolled out as part of health systems strengthening [7].

This paper reflects on current evidence and experience and puts forward proposals with regard to what would be needed to (a) implement an EmONC programme, (b) to scale up such a programme, and (c) to sustain the programme. The focus is on providing clinician practitioners and service managers with a better understanding of the conditions and challenges relating to the scale up of EmONC, of how they should act within different country- and health-facility contexts, and of how they should position themselves with regard to the implementation of an EmONC programme within the broader health system's policy of scaling up the programme.

OVERVIEW OF THE DEVELOPMENT AND SCALE UP OF EmONC PROGRAMMES

EmONC is intricately linked to mortality and the health outcomes of women and babies [14, 15]. This has led to the development of structured programmes to institute and scale up care. A number of well-known EmONC and related obstetric and neonatal programmes exist that demonstrate some elements of the scale-up processes. Most of these programmes use healthcare-worker training as the point of departure. They are often embedded in safe-motherhood-type programmes [16] or sector-wide approach (SWAp) initiatives [17]. Some of the more well-known programmes are Advance in Labour and Risk Management (ALARM) [18], Making It Happen [19], Practical Obstetric Multi-Professional Training (PROMPT) [20] and ALSO (Advanced Life Support in Obstetrics) [21]. There are also country-specific programmes such as Nepal's Safe Delivery Incentive Programme (SDIP) [22], Tanzania's comprehensive emergency obstetric and newborn care (CmONC) scale-up programme [23],

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and South Africa's Essential Steps in the Management of Obstetric Emergencies (ESMOE) [24].

The ALARM programme has been delivered in more than 16 low- and middle-income (LMIC) countries and internal assessment suggests that the programme not only improves clinical care but also acts as an enabler for countries involved to engage with other key stakeholders in their region [18]. ALARM has been tested in conjunction with audit and review and proven as a mechanism for improving maternal mortality in the QUARITE (quality of care, risk management and technology in obstetrics) trial in Senegal and Mali [25] The Making It Happen programme from the Liverpool School of Tropical Medicine is based on the Royal College of Obstetricians and Gynaecologists' Life Saving Skills Programme [26] and is currently rolled out in 11 LMIC countries in Africa and Asia [19]. ESMOE is based on this programme and trains participants in 12 modules: maternal resuscitation; care of the newborn; shock and the unconscious patient; pre-eclampsia and eclampsia; obstetric haemorrhage; sepsis; assisted delivery; obstructed labour; obstetric complications; surgical skills; complications of abortion; and HIV in pregnancy [24]. ESMOE will be used as an example to demonstrate the process of scale up.

Programmes based in high-income countries are also being implemented. Examples of these include the ALSO course, developed in the United States, which aims to improve emergency obstetric care through a standardised approach in responding to emergencies [21]. This is similar to PROMPT, developed in the United Kingdom, where on-site training standardises responses to obstetric emergencies, with demonstrable improvement in clinical outcomes [27]. The In Time course based at King Edward Memorial Hospital in Perth, Western Australia is a locally developed programme based on the PROMPT course and is a small-scale example of scale up in emergency obstetric training [28]. Finally, there is the

MOET course [29-31], which is aimed at training specialist obstetricians in high-, middle- and low-income countries.

From a research point of view there is therefore sufficient evidence for the effectiveness of EmONC programmes introduced on a small-scale in terms of healthcare-provider behaviour, service delivery and policy. The question is, however, what conditions need to be met in order to take these programmes to large scale.

SETTING THE IMPLEMENTATION AND SCALE-UP AGENDA

The various facets of an EmONC programme cannot all be addressed at the same time and it takes time to institutionalise a programme, especially at grassroots level. We use a stages-of-change framework [32,33] to organise practical pointers on issues to consider at various levels of a health system when implementing EmONC as part of a scale-up drive (Figure 1; Table 1). The framework consists of three phases. In the pre-implementation phase two stages are distinguished: creating awareness (after getting acquainted with a programme/intervention/innovation) and committing to implement (adopting the concept). The two stages in the implementation phase are preparation for implementation (taking ownership and mobilising resources) and initial implementation. The stages in the institutionalisation phase consist of integrating the programme/intervention/innovation into routine practice and sustaining the new practice.
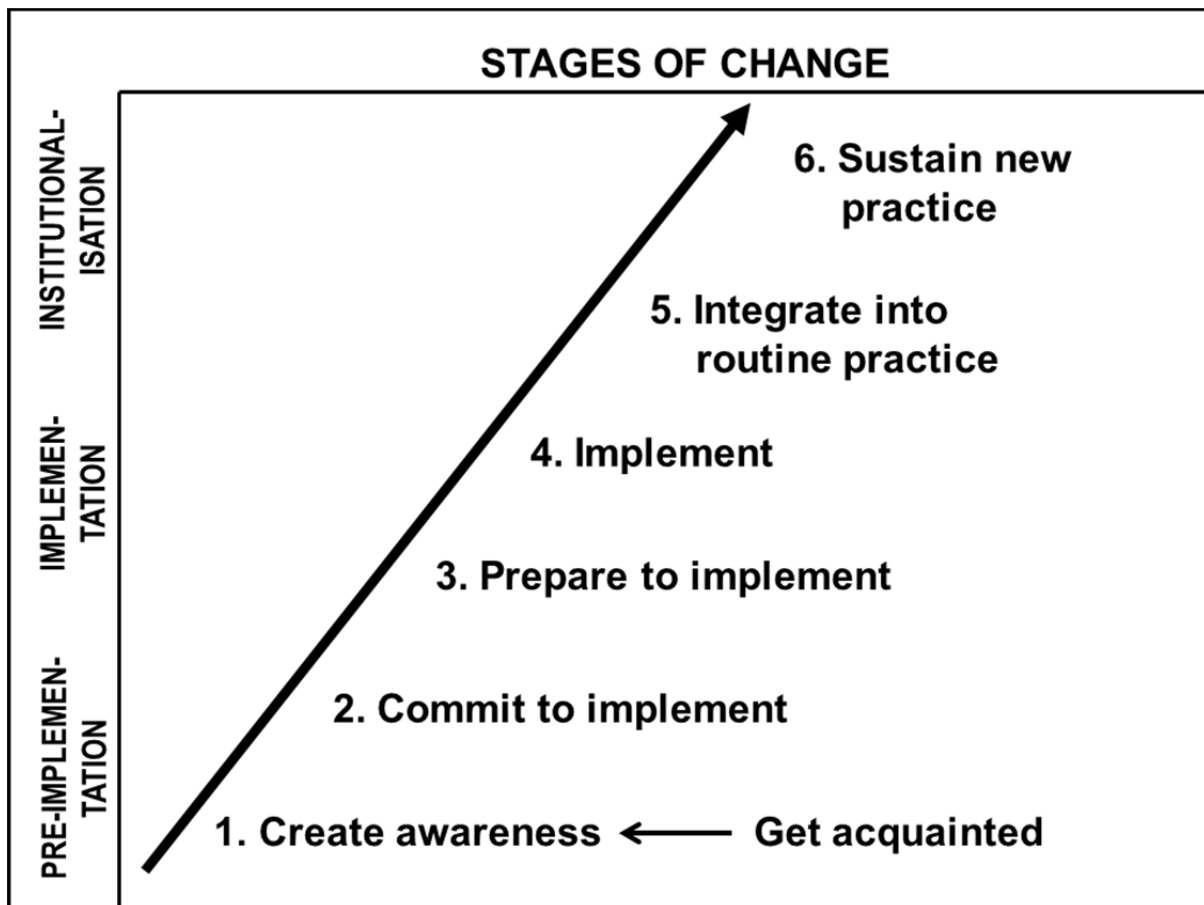
Figure 1. A stages-of-change framework

STAGES OF CHANGE

INSTITUTIONALISATION

IMPLEMENTATION

PRE-IMPLEMENTATION

6. Sustain new practice

5. Integrate into routine practice

4. Implement

3. Prepare to implement

2. Commit to implement

1. Create awareness ← Get acquainted

Table 1. Conditions in a scale-up agenda using a stages-of-change framework

STAGE	CONDITIONS FOR CHANGE
Stage 1: **Create awareness** • of problem (e.g. high MMR) • that something must be done • of EmONC programmes that could be used	• Baseline assessment or health management information system (HMIS) leads to awareness of the problem (e.g. national, provincial / regional, district, facility) [17] • Identify advocacy needs (e.g. addressing inequity of EmONC access [67]) and activist leaders [40,42] • Readiness and willingness of stakeholders and health workers to change (including political will [42]) • Existing EmONC programmes to inform awareness and provide guidance on the way forward [51]
Stage 2: **Commit to implement and scale up an EmONC programme** • National level • Provincial / regional level • District level • Facility level • Non-state sector • Community and society	• Agreement among decision makers, opinion leaders, funders and health professions to scale up EmONC [5,17] • Policy support and strategic planning for scaling up EmONC from state and non-state sectors [5,43,48,51] • Types of commitment and support required (e.g. human resources, [58,67,68] financial, [3,55-57,69,70] capital/material) • Capacity to support sustainable EmONC services at all levels [52,71-73] • Dialogue and flow of information between healthcare users, providers, and policy makers [49,50]

Stage 3: **Prepare to implement an EmONC programme** • Practical aspects to get the services up and running	• Decision on an EmONC scale-up model (including training) [3,12,44] • Business plans for the scale-up process and for the maintenance of quality EmONC services at all levels (including resource allocations) [53,67] • Roles and responsibilities of different partners and role-players [1,7,68,71-73] • Committed leadership across levels [3,5,42,63,64] • Assessment of preparedness of individual healthcare facilities and health networks to implement EmONC and sustain practice [17,64] • Accountability measures for scale up and maintenance [11, 12,64,65] • Preparation and motivation of health workers at facility level for compulsory activities, including job descriptions and performance agreements [65,66,74]
Stage 4: **Implement the EmONC programme** • Onsite training • Provision of additional services • Further improvement of the service	• Support for appointed leaders • Training (initial and continuous refresher training) [11,19-21,23-25] • Strengthening and expanding clinical services [5,10,48,52] • Resources for continuous training • Documenting the process of EmONC implementation and scale up at all levels [65] • Recording of improvements as a result of EmONC implementation (e.g. commodities, service, referral, transport, morbidity and mortality improvements) [45]
Stage 5: **Integrate EmONC into routine practice** • Analysis of the results • Dissemination of results • Use of findings to improve practice ↓ Routine practice	• Regular feedback and response to the changes, outcomes and impact resulting from EmONC across all levels [45] • Regular assessment of and accountability for the quality of EmONC-related data at all levels [65] • Continued commitment and ownership by all role-players and support for EmONC leaders • Continued refresher training and regular emergency drills • Support for essential resources integrated into the health system functioning
Stage 6: **Sustain EmONC** • Data collection • Analysis of the results • Dissemination of results • Use of findings ↓ Sustained over a longer period of time	• Long-term and sustained monitoring, evaluation and feedback on scale up and provision of EmONC services at all levels [45,65] • Institutional culture promoting facility- and health-worker ownership of EmONC [5,32] • Continued support for induction of new staff members into EmONC • Sustained reduction of adverse events and improvement of maternal and perinatal morbidity and mortality, signal functions and service provision at all levels

The stages-of-change framework can be used for planning and monitoring of EmONC implementation and scale up at different levels. Table 1 provides a summary of important implementation issues for each of the stages. Despite the visual in Figure 1 that depicts progress with implementation, it is important to realise that the stages of change are in fact non-linear and each stage at each healthcare level influences many or all of the other stages such that the times lines for stages at different levels follow different trajectories and may overlap.

CONDITIONS FOR SCALING UP EmONC PROGRAMMES

The conditions for scale up are addressed below, based on a review of the existing literature. Our own experience of the non-linear progress and interaction between the conditions and the six stages of change in the ESMOE programme is demonstrated in the timeline in Figure 2.

Conditions for scale up described in the literature include establishing clear policy and implementation networks between state and non-state sectors [3,34], consideration of task shifting in order to meet the human-resource demands of providing the desired service [35,36], appropriate contextual application of existing and emerging evidence [3,37], and advocacy for the outcome amongst healthcare professionals [38]. Once there is robust evidence to support the use of a particular tool or package in an implementation programme, the feasibility of scale up should be ascertained [3].

Cutting across all components of a scale-up programme are the concepts of equity, quality and leadership. Of key concern is addressing inequities in terms of women's access to emergency maternal and newborn services. There is an inherent assumption that women

Figure 2. Applying the stages of change to the ESMOE experience

Stage	Pre-2008	2008	2009	2010	2011	2012	2013	2014	2015-2018
1 Create awareness	Quality of care mortality audit	Developing and testing ESMOE	Dissemination results	Further awareness	Expanding awareness of ESMOE				Re-creation of awareness as scale up expands
	←DATA TO SUPPORT THE CHANGE→								
2 Commit to implement			Seeking stakeholder commitment across the board		National political will (formalised in CARMMA document)		Continued commitment by national DoH, provincial departments and districts		**2018:** ESMOE incorporated into district, provincial & national budgets
			Establishment ESMOE Board						
			Seed funding for scale up	Negotiate funding 12 worst districts	Funding & partnership secured for roll out in 12 districts				
					Negotiate funding for rest	Funding & partnership secured for roll out in remaining 37 districts			
3 Prepare to implement						Baseline assessment of facility functionality in targeted districts			
				Training of ESMOE master trainers					
					Initial off-site training of 2 people per facility (staggered)				
4 Implement						ESMOE-trained personnel implement ESMOE-EOST in their facilities			
					DCSTs established	Supportive supervision for facilities by DCSTs			
					Changes in infrastructure, resource allocation & transport to improve care				
					Onsite and offsite saturation training of remaining heath workers in all facilities				
5 Integrate into routine							Regular refresher training		
					Regular emergency drills in facilities with trained staff				
6 Sustain practice — PROCESS						Continued oversight of scale up by ESMOE Board			
						Continued monitoring of the performance of DCSTs			
							DCSTs monitor compulsory drills		
				Mandatory death review meetings	Strengthening facilities' and districts' ability to run regular death review meetings				
			Integration of ESMOE into all pre-service curricula of medical schools and nursing colleges						
IMPACT						Repetition baseline assessment at intervals to monitor facility functionality			
	Continuous morbidity and mortality audits								
	Continuous data collection through the District Health Information System (DHIS)								

CARMMA: Campaign on accelerated reduction of maternal and child mortality in Africa; DCST: District Clinical Specialist Team; DoH: Department of Health
ESMOE-EOST: Essential Steps in the Management of Obstetric Emergencies and Emergency Obstetric Simulation Training

receiving the service have a similar baseline, similar access and a similar experience [39], whereas the burden of disease requiring EmONC is likely to be greatest in the regions that, for many complex reasons, are likely to wait the longest for access to new services [40]. The baseline burden of need may vary greatly within a population targeted for EmONC [41] and programmes are required to overcome complex social norms, economic discrepancies and geographic differences [40].

The conditions for scale up in terms of the six stages of change are divided into two categories: laying a solid foundation for scale up (stages 1-3) and what is needed when there is visible evidence of EmONC implementation (stages 4-6).

Stages 1-3: Laying the foundation

Awareness across the board

Political and administrative figures, health professionals and communities must all be aware of the problem of perinatal and maternal mortality and the options for EmONC [17,43,44]. Awareness and engagement from the first two groups could be enhanced by the use of perinatal and maternal mortality audit results [45] and the development and testing of an EmONC programme. Engagement with the community and "understanding … the needs of the target beneficiaries" (p 266) [5] is critical for understanding the potential barriers within the community that must be overcome to make the service accessible [6]. Women need to first deliver in facilities [40], and encouraging this practice may require consideration to lateral incentives [22] before facility-based scale up has a penetrating effect. Once willing to deliver in a facility, women and communities must be educated about where to deliver related to a risk assessment so that no undue burden is placed on a select group of care providers [16]. Women must then have transport to access the EmONC service, as delay in getting to a care facility impacts on the outcomes of an EmONC programme [46]. The lack of access to

health-facility deliveries may not be applicable in all settings. For example, South Africa is a middle-income country with 89 per cent of deliveries occurring in health facilities in 2003 [47].

A policy environment leading to commitment

Maternal and newborn care is high on many policy agendas and a conscious change is needed for a shift in political will [3] and public policy to create the right environment for scale up [48]. Leadership amongst local policy makers provides the impetus for involving government partners [3]. Leaders initiate planning for the needs of the local health system and facilitate the dialogue between healthcare and public policy providers [49,50].

An encouraging policy environment for EmONC [51] creates the opportunity of early involvement of key stakeholders and funders. This process has been identified as critical to the successful establishment of any programme [5] and requires strategic choices in terms of types of scale up, dissemination, organisational choices, cost and resource mobilisation, and monitoring and evaluation [12]. Strong governance following from this could then filter down to a functioning civil service, with an appropriately paid, retained, trained and assessed group of health system workers [1,7].

Health-systems strengthening

Scale up of EmONC should be considered against the backdrop of a health system's ability to undertake the scale up, inter alia by means of health-system strengthening. Maternal and newborn outcomes driving the need for the programme may exist because of a poorly functioning system, a factor that can increase the costs of scale. There may also be more bottlenecks to overcome [48]. For example, the underutilisation of existing health services by the target population is a potential indicator of poorer quality of care [52]. A new EmONC

training programme and service may struggle to take flight in an already non-optimally utilised service because of other system failures. Methods of strengthening may include expanding the capacity of the organisation and staff to implement a programme – a critical factor in success of scale up [5]. Running a specific programme within a broader group of health services [53] may in some instances result in a more efficient use of existing resources.

Resources

Financial resources cover the following: funding to run a programme (a critical factor [5]); balancing the cost of different training methods [54]; the potential decrease in costs with more people trained [55]; and the geographical, supervisory and resource costs unique to different facilities within the same programme [56]. The principles of equity and equality require putting EmONC services in the right place for the right people, with a fair balance between available resources, the distribution of coverage of services and improved health workforce competencies. Finally, a focus on fiscal support measures to enable the most needy people to access EmONC services should also be a priority, as a lack of money is reported as a major reason why women do not access EmONC [57].

A baseline assessment of all *capital and material resources* for EmONC can shape the approach to implementing training and services. Orinda et al [17] describe a sector-wide approach (SWAp) bringing together stakeholders from government through to civil society and facilities to use an assessment of United Nations (UN) process indicators to "establish a baseline for availability, utilization, and quality of EmONC" (p 285). Meeting many of the outcomes within an EmONC programme requires material resources (e.g. $MgSO_4$ for hypertensive disease, antenatal corticosteroids for foetuses at risk of preterm birth) and the supply of these resources must dovetail with any improvement of staff skill to manage EmONC.

Human resources for health (HRH) centre on workforce planning. The places with the highest maternal mortality necessitating EmONC are frequently challenged by staff shortages [58]. EmONC services need enough staff equipped with the right skills to implement such services in an environment that supports the potential task shifting required for this and supplemented by consistent availability of materials [58]. Once the HRH are in place, staff commitment to the programme needs to be maintained [5]. This is more likely to be successful if constraints of staff shortages and excessive burdens of care on existing staff have been alleviated. The feasibility of what kind of EmONC services could be scaled up within an existing health system and at what pace are important considerations, as scale up should not come at the cost of depleting existing human resources, especially in LMICs. Cairney and Kapilashrami [59] describe how rapid scale up to increase human resources to address the HIV/AIDS crisis in Namibia "bypassed existing institutions and procedures" (p 205), which ultimately resulted in non-sustainable practices. The subsequent 'scale down' provided a new contextual challenge: trying to sustain a programme with less funding in the face of on-going need.

Stages 4-6: From implementation to sustainable practice

Dissemination and training

EmONC dissemination includes the communication and human support activities that are important for programme implementation and scale up. These activities provide programme information to the general community and informing the health sector community about policies, decisions, and plans to implement EmONC. These steps lead in to the dissemination of knowledge and skills in the form of training to health workers that will enable them to treat maternal and newborn emergencies appropriately, according to the objectives of the EmONC programme. To achieve this, the training curriculum should also be aligned with the existing

competencies prescribed for specific professions, especially in the case of midwives where certain procedures may not be in their scope of practice everywhere [60].

Supportive supervision

Implementing and scaling up an EmONC programme does, however, not end with training, but requires continuous "technical, supervisory and training support" (p 14) [12]. Healthcare providers need on-the-job support in terms of the system and facility they work in (policies and procedures conducive to quality service delivery and care, and teamwork; access to information; access to adequate equipment and supplies). They also need personal support through team support and continued learning opportunities [61]. Supervision has traditionally been seen as a form of inspection [13] and administrative compliance [62] and a reorientation of supervisors may be needed to achieve programme objectives directed at quality of care and client-responsiveness [13]. The implementation and scale-up of the programme itself needs managerial supervision in which the roles and responsibilities of supervisors are integrated into the existing system. In lower-income countries, there are many challenges to sustain initial supervisory efforts at all levels of the health system [63].

Monitoring and evaluation

Scalability includes planning for an appropriate evaluation approach [11] able to show that the programme continues to have worth [5] and is sustainable. Firstly, the problem that leads to the need for EmONC is one of morbidity and mortality. The evaluation of the programme therefore needs to involve audit, which has been shown to potentially reduce mortality by up to 30% in LMICs [45]. Signal functions assessed in baseline planning should be monitored throughout implementation. In addition, monitoring and evaluation (M&E) should be viewed in terms of accountability and how an EmONC programme is tracked "along the continuum

of inputs to the health system, processes and outputs, as well as outcomes and impact" (p 45) [64].

Monitoring of scale up requires collection of data around set end points. Internally owned data may enhance sustainability; however, it is possible that this process ends up placing a burden on individuals at the centre of a programme, from national to institutional level. Mechanisms to enable the system and facilities, not just the passionate individuals and drivers, to support data collection are essential and the assessment and monitoring of a scale-up programme [65].

The final step in the agenda for implementation is embedding research into the process. According to Yamey [3], a key factor in successful scale up is a context where research is incorporated into the implementation process. On-going research would allow constant re-evaluation of the stages of change throughout a programme, which would tend to lend itself to sustainability of scale up. As there are so many facets to scaling up EmONC and many programmes have used different versions of monitoring and evaluation tools, the research question could centre around the usefulness of existing tools that monitor and evaluate the planning process, the programme, the implementation and the outcome and whether there is a need to give thought to new tools in global scale up of EmONC. The approach goes beyond the usual M&E ideals of administrative compliance and instead embraces a principle of learning through doing [3].

SUMMARY

The scale up EmONC practices is a critical step in addressing the large global burden of maternal and perinatal mortality and morbidity. A strong evidence base exists for the effectiveness of EmONC; however, the conditions for scale up are complex. EmONC lends itself to integration into current health systems [3] and the context determines the way in

which an EmONC programme is ultimately rolled out. EmONC leaders need to consider these conditions across social networks and community, the policy environment and the health-system environment. The management of programmes requires resources (HRH, financial, capital and material), strategies for dissemination, training and supervision, and well-specified mechanisms of service delivery and monitoring and evaluation. Implementation, scale up and sustainability are not linear processes but in fact require constant attention to all facets of each stage of change as actions continue to affect one another throughout the provision of EmONC. Ultimately, we are trying to achieve a knowledge base transformed into multi-sector policy that leads to a programme that is not only successfully implemented but also sustained [66].

Conflict of interest

The authors of this chapter have no conflicts of interest to report.

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