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Five key recommendations for the implementation of Hospital Electronic Prescribing and Medicines Administration systems in Scotland

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Abstract

NHS Scotland is about to embark on the implementation of Hospital Electronic Prescribing and Medicines Administration (HEPMA) systems. There are a number of risks associated with such ventures, thus drawing on existing experiences from other settings is crucial in informing deployment.

Drawing on our previous and ongoing work in English settings as well as the international literature, we reflect on key lessons that NHS Scotland may wish to consider in going forward. These deliberations include recommendations surrounding key aspects of deployment strategy surrounding: 1) the way central coordination should be conceptualised, 2) how flexibility in can be ensured, 3) paying attention to optimising systems from the outset, 4) how expertise should be developed and centrally shared, and 5) ways in which learning from experience can be maximised.

Our five recommendations will, we hope, provide a starting point for the strategic deliberations of policy makers. Throughout this journey, it is important to view the deployment of HEPMA as part of a wider strategic goal of creating integrated digital infrastructures across Scotland.

Introduction

eHealth functionalities associated with prescribing and medicines administration have been shown to improve the safety and quality of care, and also to contribute to increasing healthcare efficiency.(1) These systems therefore play an essential part in international efforts to modernise health systems.(2,3)

The widespread deployment of Hospital Electronic Prescribing and Medicines Administration (HEPMA) systems in Scotland is imminent and it is therefore now timely to reflect on experiences from other health systems to inform the strategy that Scotland should adopt.(4) Drawing on previous and ongoing work, we distil five key lessons that policymakers should consider going forward.(5,6)

Overall, the implementation of HEPMA is best viewed as part of a journey towards digitising health systems. Implementation-related activities in this process are best viewed as being part of the system lifecycle including conceptualisation, planning, implementation and adoption, and optimisation activities (Figure 1).(7)

Examining activities through the lifecycle perspective indicates that, once systems are chosen, the system lifecycle is already relatively advanced (i.e. at the contracting stage). As NHS Scotland is at this relatively advanced stage in the lifecycle, we focus on the pre-implementation, implementation and adoption, and optimisation stages.

1. Central coordination

Some central coordination is essential to streamline efforts to move towards optimisation (preferably reducing the time to deliver the benefits that optimisation will generate) and set standards that will eventually allow sharing of data across Scottish care settings.(8) Given the central approach, there is, however, a risk that systems will be viewed as imposed by local hospitals and users,(9-10) which may hamper their intended use and slow down implementation timeliness.(11) Setting up a range of structures that allow continuous strategic input from implementing sites and academic evaluators may help to address this (see Figure 2 for a proposed model). NHS Scotland has the advantage that relevant stakeholders can come together in person to exchange experiences. Existing structures now need to be utilised to strengthen national engagement activities and to involve end-users from all of the impacted professions ensuring that systems bring the intended benefits to individual users earlier on in the process than might otherwise be achieved.(12) This may be realised through establishing a single central source of information to underpin the face-to-face or other engagement activities and information needs of different stakeholders.(7) Here, it is important to convey from the start that system implementation and use must not be primarily pharmacy-led (as is often the case), but should draw on the range of professions – in particular, doctors and nurses – that are affected by the wider transformation of healthcare delivery associated with new systems.(6)

There are also significant opportunities surrounding economies of scale afforded by the national procurement model being pursued in Scotland and these should be harnessed. Central coordination of implementation efforts, including training strategies, should help to draw on existing experiences, to feedback lessons learned across implementations, and to share expertise and pool resources.(13) An important aspect here is the set-up of nationally shared risk/hazard registers, where known technical limitations and potential mitigation strategies are shared between hospitals. This should, if possible, be agreed with HEPMA vendors in advance.

2. Flexibility in strategy based on periodic review

The deployment strategy needs to be flexible and responsive to local needs wherever possible to help mitigate potentially adverse consequences resulting from the national procurement model.(14) In

order to achieve this, ongoing evaluation of implementation progress and potential risks is vital.(15) This should also include formative feedback to implementing sites thereby helping to build local evaluation expertise and to guide next steps.

In terms of deployment strategy (see Figure 3 for a proposed model, further discussed below), there should be a formal review after each cohort of hospitals goes live, feeding back lessons learned into future deployment strategy and making adjustments where necessary. We suggest that a multidisciplinary National Advisory Board be established which will be responsible for strategic oversight of implementation efforts and progress, and also liaise with local implementation teams and suppliers. This will also help to oversee individual sites' readiness to go live and thus oversee the scheduling of go-lives.

3. Focus on systems optimisation from the start

In line with the system lifecycle perspective, system optimisation needs to be seen as the end-goal, as deriving value from HEPMA is very dependent on achieving this.(16) It is however, more often than not, an afterthought in many implementation efforts. The implementation of HEPMA systems in Scotland represents a real opportunity to share optimisation experience, as some hospitals in the UK/Scotland have refined systems over a number of years to realise significant benefits.(6) If 'fast followers' effectively utilise the experiences from 'early adopters', this can help to reduce the timeline to realise benefits.

It is also important to view HEPMA as part of the growing health information infrastructure in Scotland, where an increasing number of users draw on a range of sources of information and collect data from these that are then (in due course) centrally collated and analysed. Interfacing and data analytics activity should be central to these optimisation efforts, as the HEPMA system that is likely to be deployed in Scotland is an interfacing (rather than an enterprise) solution with limited inbuilt data analytics capability.(17) A national data strategy on how this may be achieved should guide ongoing analytics efforts and HEPMA implementation should be viewed as part of the journey towards realising this aim.

4. Developing, sharing and retaining expertise

NHS Scotland has limited implementation and optimisation expertise, which may hamper efforts to successfully deploy and derive benefits from HEPMA.(18) A central problem is that all too often external project managers are seconded to oversee implementations and then leave with the accumulated knowledge. Internal capacity development using local staff and increasing their skill set ensuring that staff is retained at local level should therefore be a priority for the Scottish Government. Developing and retaining expertise is important for implementing hospitals in order to help maintain and continually refine systems beyond the initial implementation period, whilst sharing expertise nationally can help to maximise existing resources. Creating new career pathways, structures, and incentives are essential activities that thus need to be carried out in parallel to system implementation. These efforts should ideally be inter-disciplinary reflecting the broad range of skills and expertise needed to exploit HEPMA for patient, professional and system benefits. Periodic sharing of experiences should also be promoted across hospitals, and to this end the establishment of an implementation peer support and networking group should be considered.

5. Learning from experience

There is already significant expertise available within the UK, including hospital sites that have implemented the same system that is likely to be procured in Scotland and optimised this over a number of years. There is also a range of academic evaluators that have insights into local, national,

and international experiences. Drawing on this expertise will be vital in facilitating the implementation and ongoing optimisation of systems. The proposed structures in Figure 2 may help to conceptualise how this expertise can be effectively harnessed.

In terms of deployment strategy, we propose that hospitals pair up with those that already have implementation experience in relation to planning, direct implementation and ongoing optimisation. Figure 3 outlines how this may be conceptualised, incorporating periodic review and reflection on experiences after each new cohort of hospitals goes live. A phased deployment strategy should be considered at the outset, thereby allowing an opportunity for learning from early efforts, followed by accelerated implementation across the remaining hospitals.

Conclusions

We have made a number of recommendations that will, we hope, help Scottish policymakers and NHS Scotland ensure successful deployment of HEPMA systems. More generally, it is important to pursue the strategic goal of creating integrated digital infrastructures across Scotland.⁽¹⁹⁾ The implementation of HEPMA presents an important stepping stone and a real opportunity in this respect.

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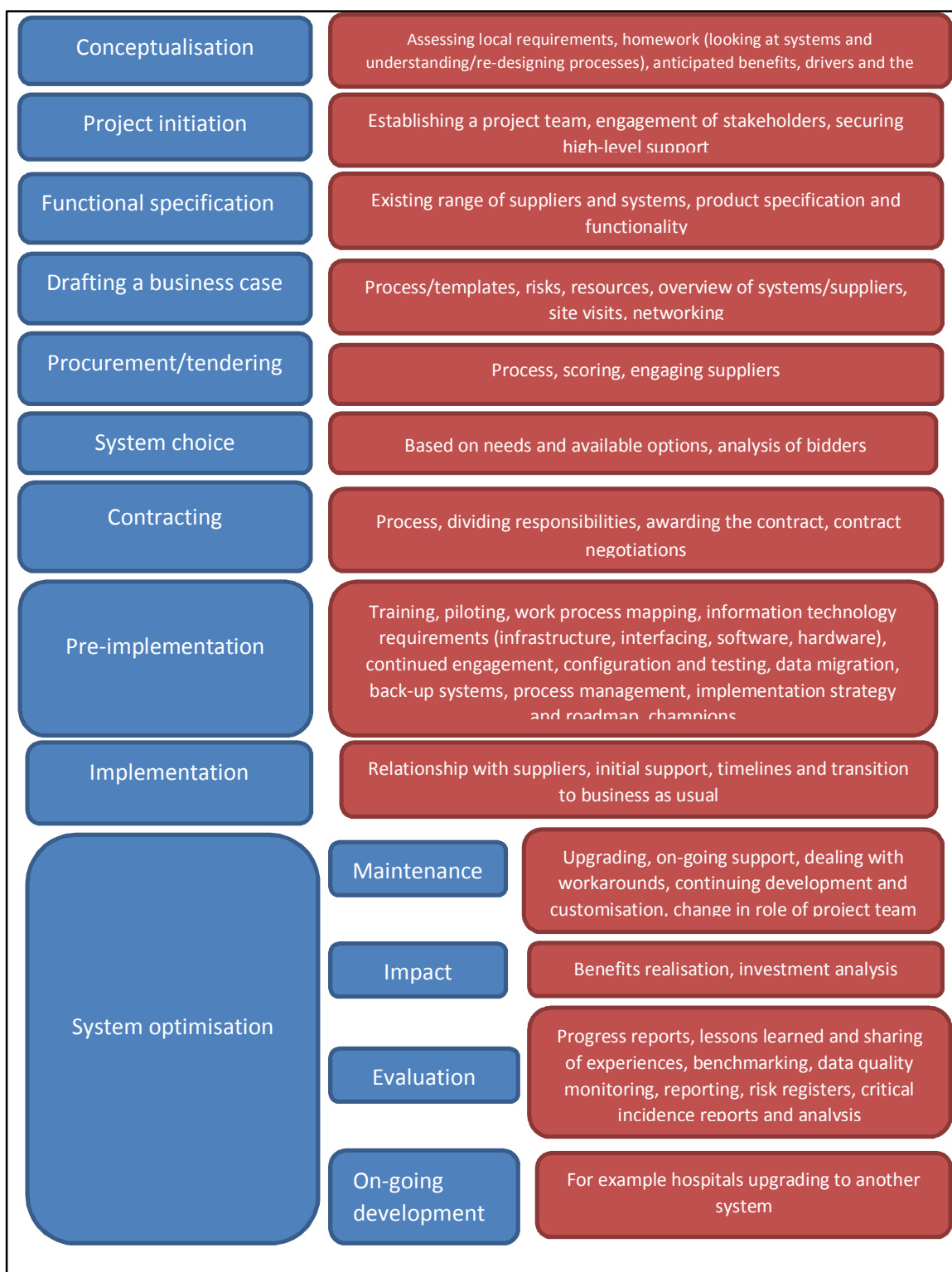
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Figures

Figure 1: Lifecycle perspective of implementing HEPMA systems¹



¹ Adopted from: Cresswell K, Coleman J, Slee A, Morrison Z, Sheikh A. A toolkit to support the implementation of electronic prescribing systems into UK hospitals: preliminary recommendations. *Journal of the Royal Society of Medicine*. 2014;107(1):8-13.

Figure 2: Proposed structures for monitoring/reviewing progress/strategy

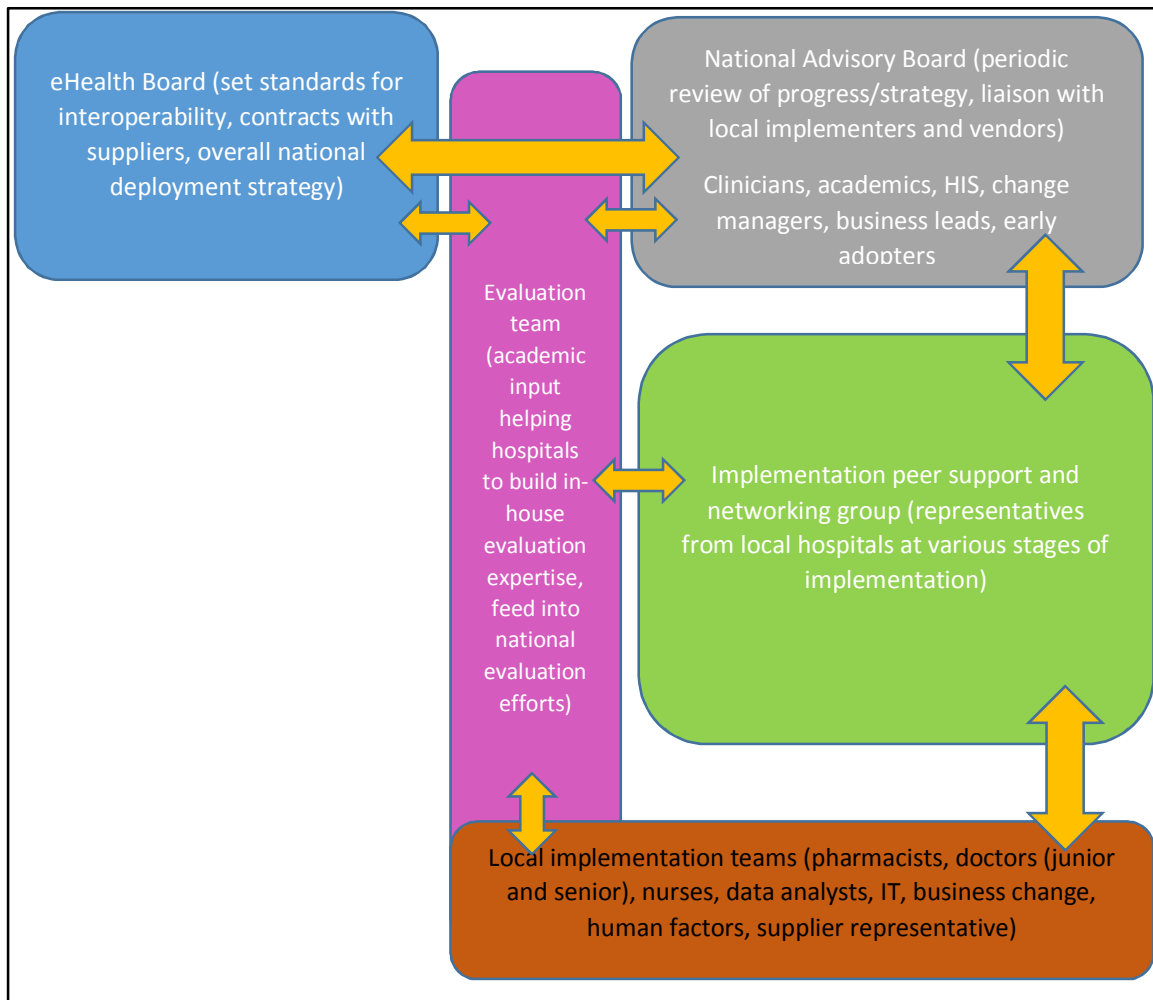


Figure 3: Proposed deployment strategy (please note: numbers are illustrative)

