

Is it time for greater patient involvement to enhance transitional medication safety?

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In this issue of *BMJ Quality & Safety*, Schnipper *et al* report the effects of a refined evidence-based toolkit and mentored implementation of a complex medication reconciliation intervention, ‘MARQUIS2’, at 18 North American hospitals.¹ This pragmatic quality improvement study used interrupted time series analysis to quantify the effects of implementation on medication discrepancy rates relative to baseline trends. The MARQUIS2 toolkit was developed by refining the earlier MARQUIS1 toolkit, shown to be associated with a reduction in medication discrepancies but with inconsistent improvement among the five study sites.² In brief, subsequent changes made to MARQUIS1 included (1) addition of simulated cases as training materials and to assess competency in taking a best possible medication history (BPMH), (2) greater use of pharmacy technicians to take BPMHs, (3) provision of advocacy aids, for example, return-on-investment calculators, to promote resourcing of medication reconciliation, (4) changes to electronic health records’ medication reconciliation functionality and (5) revision of patient/caregiver discharge education materials. The MARQUIS2 toolkit employed both system-level interventions, such as training staff to take a BPMH, and patient-level interventions, such as performing a BPMH. The study reported an increase in the number of system-level interventions adopted per site, an increase in the proportion of patients receiving patient-level interventions over time and a decrease in discrepancies per month over baseline trends. The authors identified that delivery of system-level interventions alone was not associated with decreased discrepancy rates, while receipt of patient-level interventions alone was. The MARQUIS2

study findings therefore provide much-needed insights into the implementation of a medication reconciliation focused intervention across multiple sites. These findings also raise three important questions: are patients currently involved in managing their own medication safety at care transitions, should they be and how or when might this be done?

There is evidence that the patient often has a passive and inexplicit role in transitional patient safety in general^{3 4} and transitional medication safety in particular,^{5 6} despite frequently wanting greater involvement. Patients have been shown to be effective and willing actors in supporting their own transitional medication safety.⁷ For example, Fylan *et al* demonstrated that patients are an important source of system resilience following hospital discharge; they anticipate and identify medication errors, take preventative and corrective action to manage error and contribute to information management at various points.⁷ Additionally, the extent of the patient’s involvement in their own transitional safety is modifiable and influenced by their beliefs and perception of consequences³; patients participate actively in handovers of care when they feel a need for involvement to ensure care continuity but are less active when they believe that their contribution is unnecessary or not appreciated.³ Such patient-led activities constitute medication work, a type of patient work that is an increasingly valued aspect of transitional medication safety.^{8 9} This is relevant to medication reconciliation because hospitalisation is associated with an increasing burden of potentially inappropriate prescribing, increasing medication regimen complexity and deprescribing of long-term medication.^{10 11} Holden and Abebe argue that



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medication changes, whether the addition of new medications or the deprescribing of established medications, are vulnerable periods for patients and add to their medication work burden.¹² Therefore, the patient's medication work burden at periods around care transitions merits attention. Although evidence suggests that patients currently have limited involvement in their own transitional medication safety, it also suggests that they ought to be supported to be more involved.

Patient activation refers to a patient's knowledge, skills and confidence in self-managing their own health.¹³ Patients who are more activated have better health outcomes and experience better care than those who are less activated, while those who are less activated are more likely to have unmet medical needs and to experience delays in care.¹³ Patient education and counselling, and patient follow-up postdischarge, have been identified as important patient-level interventions at care transitions contributing to reduced medication discrepancies^{14 15} and reduced healthcare utilisation.^{16 17} However, these activities represent behaviours delivered by professionals to patient/caregiver recipients and the extent to which they support patient activation or contribute to the patient's medication work burden is unknown. Patient ergonomics, a field exploring the science and engineering of patient work, might therefore provide insights into opportunities to modify and nurture patient activation and opportunities for patient involvement in medication reconciliation.¹⁸

The MARQUIS2 patient-level interventions, such as health coaching and patient counselling,¹ were all delivered during the patient's acute hospital stay. The timing of intervention delivery warrants consideration, because a qualitative study of the hospital discharge process suggests that patients are suboptimally involved in discharge preparation and healthcare providers attempt to engage them at times when they are not receptive to this involvement, for example, on the day of discharge when patients may be pre-occupied with making preparations for returning home.⁶ Information provision and patient education should ideally be aligned with the patient's or caregiver's capacity to receive and engage with the information.⁹ It is possible that attempts to prepare people to be involved in managing their own medication safety at care transitions might be more effective if undertaken while the person is living well with chronic conditions in their own home rather than when they are acutely unwell and hospitalised. A systematic review of measurement tools in transitional patient safety identified several tools examining the patient's perceived preparedness for hospital discharge, but none to assess this for hospital admission.¹⁹ Emergency hospital admission of community-dwelling adults is to some extent predictable, with polypharmacy as a key predictor.²⁰ Therefore, future research could explore ways to involve

patients in preparing for their own future care transitions before an emergency occurs.

By its nature, medication safety at care transitions spans boundaries; it requires management of information about multiple patient interactions distributed across multiple systems, spaces and timepoints, as described above and depicted in [figure 1](#). A work system is a construct of the interacting sociotechnical structural elements, such as people, tasks, tools and technologies, organisations and environments, of a body of work.⁸ The MARQUIS2 study explored medication reconciliation within the acute hospital work system.¹ Calls have been made for a transitional medication safety focus that extends beyond any individual work system, such as the hospital work system or the primary care work system, because the patient's medication management journey is distributed across time and space and therefore focusing on any one system is insufficient.^{8 9 18 19} To fully understand the patient journey and what leads to positive and negative consequences for transitional medication safety, future research could take a systems-based perspective across all relevant and interacting work systems.⁹ The Systems Engineering Initiative for Patient Safety (SEIPS) model provides a framework for integrating human factors/ergonomics in healthcare quality and patient safety improvement.²¹ A previous study of distributed healthcare tasks exemplifies application of the SEIPS model to medication management across the hospital-to-home transition.²² It demonstrates that a systems-based exploration can uncover a wide range of system boundary types including those between organisations, over time and professional-to-non-professional boundaries that would not have been observed with a narrower focus on a single work system. It also usefully uncovered details about the patient's medication work system and its interaction with other work systems. The third iteration of the SEIPS model, SEIPS 3.0, calls for a focus on the patient's and caregiver's journey over space and time as they interact with multiple elements and navigate the borders between them.²¹ SEIPS 3.0 therefore provides a helpful way to conduct a systems-based exploration of transitional medication safety that requires patient and public involvement (PPI), with an emphasis on patient ergonomics and the interactions between the patient's medication work system and other relevant work systems.

The MARQUIS2 study sought to engage patient and family representatives in intervention development and evaluation by inviting them to contribute to developing discharge education and counselling materials and to be involved in all aspects of the research study.¹ Additionally, community engagement and social marketing to patients as well as clinicians were among the system-level MARQUIS2 stakeholder involvement interventions. These are welcome examples of PPI in medication reconciliation, because there is mounting evidence that PPI enhances the quality, validity and

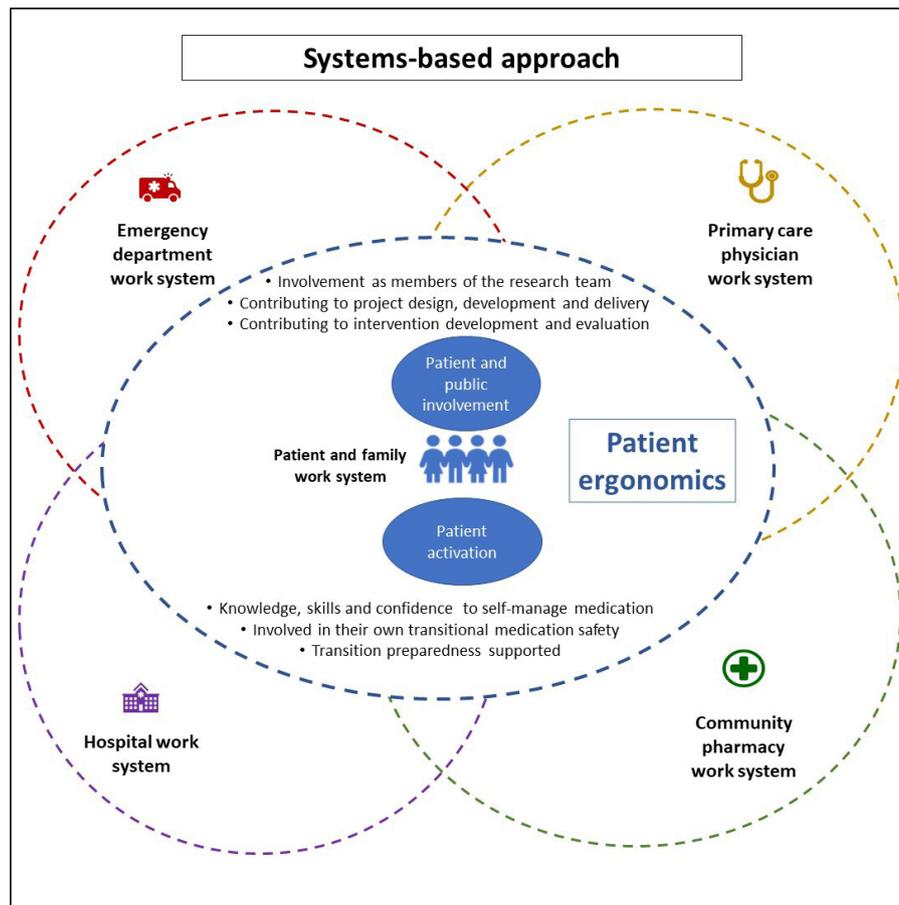


Figure 1 Patient medication work system situated within a system of interacting elements and work systems.

impact of research and service development²³ and yet PPI in medication reconciliation research is relatively rare and has not been described in systematic reviews examining the topic.^{14–17} Ocloo and Matthews argue for a move to meaningful and democratic inclusion of the relevant healthcare improvement patient population beyond what they described as the more prevalent tokenistic engagement of a narrow selection of PPI contributors.²⁴ Although community engagement and social marketing were recommended MARQUIS2 system-level interventions, only 2 and 3 sites, respectively, of the 18 included study sites actually implemented these components with little detail on the nature of the PPI contributors or contributions to the overall research programme.¹ Information about the facilitators and barriers to the adoption of community engagement and stakeholder involvement at individual study sites would therefore be instructive for those seeking to involve patients and the public in similar healthcare improvements. Articles describing PPI in medication safety research may offer helpful insights into how to conduct and report PPI, such as the types of engagement activities, the stages of the project when engagement might occur, the challenges encountered, the benefits realised and some general tips on supporting collaboration and partnership with patients and the public.^{25 26}

The report by Schnipper *et al* on the implementation and evaluation of the MARQUIS2 toolkit provides much-needed evidence to guide others seeking to implement medication reconciliation interventions at scale.¹ It suggests either that patient-level interventions may be more important than system-level interventions, or that system-level interventions are necessary but not sufficient alone. Future transitional medication safety research could be further enhanced by exploring ways to promote patient involvement and activation in their own care, partnering with patient and caregiver stakeholders as members of the quality improvement and research teams and applying a systems-based exploration across the entire patient journey, inclusive of the patient's medication work system and patient ergonomics.

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