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CASE REPORT



BACKGROUND TO THE REPORT

The case of Glynafonshire Health Board is purely hypothetical and is based upon a single incident which was made up to illustrate the issues. Nurses were to wash their hands before and after entering their patients' homes, and use an approved technique. They were trained and they had to pass written and practical competency tests. However, in some instances, nurses rushed the process, performed the wrong technique or failed to wash their hands before or after visiting the patients. Later, 8 patients became severely infected and 1 patient succumbed. The case was noteworthy because the nurses had shown some knowledge and experience, all had been successful in the required assessments. Pre-event periods, however, resulted in staff shortages and higher demand, with longer working hours, back-to-back staffing and around twice the patient volumes compared to normal periods of time (Glynafonshire Health Board, 2025). The problem thus seems more the failure to recall and perform a well-learned intention when attention is divided than a lack of knowledge. Prospective memory (PM) is an appropriate cognitive framework for the study of prospective memory because it deals with remembering to perform an intended action at the right future time when engaged in another action (Rummel & Kvavilashvili, 2022). The failures are described in the next sections using the Multiprocess Theory of PM, and a consideration of procedures informed by theory is provided.

THE MULTIPROCESS THEORY OF PROSPECTIVE MEMORY

Prospective memory is a memory for intended action, the intention to act at a time and place removed from the point of learning. The typical components of a PM task include a running activity (Representational Cue) and a Future Action that needs to be taken when the appropriate cue is heard (Activational Cue). (Rummel & Kvavilashvili, 2022) This can be useful for nurses, who might want to recall a safety measure while they are communicating with a patient, evaluating a patient, travelling between appointments, or filling out paperwork.

According to the Multiprocess Theory (MPT), which was initially suggested by Einstein and McDaniel (2005), either strategic monitoring or relatively spontaneous retrieval (RSR) can enhance prospective remembering. Strategic monitoring refers to purposeful allocation of attention to search for a target cue. When a cue is strong enough, and an encoded intention is weak, a retrieval can take place spontaneously, without continuous active monitoring. The dominance of one process or the other may have to do with the type of cue and task requirements. Today, PM is still understood as a process that requires interaction between intention representations, cue detection, attentional allocation and retrieval processes and not a single memory mechanism (Rummel & Kvavilashvili, 2022).

This focus is especially relevant with regard to cue focality. The additional monitoring that is more likely is when the cue is a nonfocal cue, that is when it is part of what the person is already attending to, retrieval can be relatively automatic. Handwashing cues can be in the environment but may be competing with other information in a busy clinical environment. As a theory, it predicts sufficient vulnerability when people have to split their limited cognitive capacity between a number of activities. A similar study on multitasking revealed that prospective memory was also correlated with other cognitive tasks related to working memory, shifting, and divided attention (Himi et al., 2022). One major advantage of the theory is that instead of addressing PM as a single capacity, it is treated as a complex phenomena that has multiple dimensions. A nurse can have the

intention but miss the cue, not get it in time, or distract the attention during the execution of the task. This is helpful because the case shows various types of failure such as omitting, rushing and incorrect technique.

The theory has also had an influence because it accounts for the variability in performance on prospective memory tasks when they are performed under different task conditions. When cues have a strong association to the intention and they are distinctive, attentional resources may be reduced by spontaneous retrieval, and when cues are not distinctive then strategic monitoring is required (Rummel & Kvavilashvili, 2022). The implication of the distinction is important in nursing for two reasons. First, continually asking the question during a hectic visit would detract from the assessment of the patient and other nursing activity. Second, universal precautions are followed for every patient at every moment and there is no need to ask the question. There is then a safer design which is to make the relevant environmental event predictable and easily recognised. The theory is not to rely on memory, but to alter the relationship between the work context and the intention to make less deliberate monitoring of the need. The findings of everyday PM research also suggest that practical interventions need to be evaluated in realistic environments, as there is not a 1:1 relationship between the improvement in the lab and improvement in everyday performance (Jones et al., 2021). As a result, the theory has led to a greater awareness of the failure as well as a justification for the redesign of the environment at the boundary of human cognition.

HOW DOES THE THEORY RELATE TO THE CASE STUDY

If the case is seen as a failure at point of cue detection and intention retrieval, then verbal interference is taken as the initial failure. If interpreted as failure at cue detection/retrieval of intention, the verbal interference is an initial failure. The intention had been sufficiently encoded as the nurses were aware of the policy and had demonstrated competence. The action of entering or leaving a patient's home should be a constant reminder when going in or out to wash hands under normal circumstances. The case reports however, resulted in increased workload, repeated back-to-back shifts and a double workload of patients (Glynnafonshire Health Board, 2025). Under these circumstances, there is more competition from the continuing tasks, and less capacity for attentional monitoring for strategy. So, according to the Multiprocess Theory, the more processing a cue receives the less likely a nonfocal or weakly processed cue is to successfully elicit a response.

The theory also gives some idea as to why some nurses did not run, but rather forgot. If the intention is retrieved, the action may be started with less attention to the entire sequence, if the nurse is placing great importance on getting the action started. Therefore, the imprecise execution of technique and incomplete handwashing can be a sign of partial failure to remember, not complete failure to remember. Healthcare evidence corroborates this conclusion. As tasks increase,

hand-hygiene compliance drops, which demonstrates that in trained environments the likelihood of performing a prescribed behaviour can be influenced by the number of competing task opportunities and demands (Rosenberg, 2023). This reflects the situation in the case as the workload has also changed significantly while training and competency has not changed.

More recent evidence also shows that hand hygiene is not a knowledge issue. The systematic review and meta-analysis identified that there is significant variation between what nurses do in practice with regards to compliance and correct practice cannot be assumed by virtue of being a nurse or from nursing training alone (Bredin et al., 2022). A systematic review of interventions also identified that behavioural interventions are effective at increasing hand-hygiene adherence, although the extent of the intervention and the context in which it was implemented influences the results (Sands et al, 2020). These results lend credibility to a systems approach that take cognitions and environmental cues into account in addition to education.

Research on PM provides additional evidence for the need to employ external prompts and encoding strategies. While the quality of the studies was good and identified a variety of effective interventions, Jones et al. (2021) concluded that the effects of prospective-memory interventions were seen as better for everyday functioning, and in particular from external memory aids. The research on implementation intentions further indicates that when such cues are coupled with the action, it enhances prospective responding in real-life situations (Szarras-Kudzia, & Niedźwieńska, 2022). The evidence under discussion that is relevant to handwashing is one that can be expressed as a clear cue-action association, like “when I enter or leave a patient's property, I will complete the full handwashing procedure.”

SUGGESTIONS FOR NEW PROCEDURES BASED ON THE THEORY

The Health Board must first reimagine the handwashing process by making the behavior much more salient and frequent. Clear prompts should be placed at the point of action such as outside the patients' room entrance and exit, to be seen “right when needed”. This decreases the need to rely on internal monitoring, and increases the salience of the intended response. The external supports align with evidence supporting use of memory aids in the real world (Jones et al., 2021).

Second, policy information should not be the sole component of the refresher training. Instead, implementation-intention practice should be used to individualize the training. Secondly, the policy information should not be repeated in the refresher training, but implementation-intention practice should be done to individualize the refresher training. Nurses could practice the rule in terms of an “if – then” statement. For example, “If I go into a patient's home, then I wash my hands first. If Ibruh can u do the exam ready script leave, then I wash my hands again.” The CED approach links the environmental event to the needed action, and can enhance cue-driven retrieval (Szarras-Kudzia & Niedźwieńska, 2022). Importantly, short-term training is required, and should be repeated when first introduced and refought.

Third, staffing and workload should be considered a component of the safety intervention. With regard to contributing conditions the case specifically names staff shortage, long hours and doubled patients' workloads (Glynafonshire Health Board, 2025). There are currently some evidences that adherence to hand-hygiene decreases as task loads increase, which therefore suggests workload-sensitive staffing/scheduling model, not just that staff should try harder. The Board should therefore ensure workload, manage for too many consecutive shifts when possible and consider escalation strategies if workloads are beyond safe capacity.

Fourthly, support in adherence should be based on positive feedback, not punishment-like surveillance. Direct observation is still the primary approach used to assess hand hygiene, but it is susceptible to observer effects and inconsistencies in the method (Bredin et al., 2022). Audits should, therefore, detect the areas where and when omissions are taking place, give feedback, and develop an improvement plan based on trends. To allow the Board to compare baseline adherence to adherence following cue placement and implementation-intention training and workload adjustments, a pilot phase would be warranted. Measures should not only measure handwashing, but also if the correct technique was followed.

Ethically, the intervention has to separate out the accountability of individuals from the responsibility of systems. Whilst the case relates to patient harm, the Board is responsible for minimising recurrence but if it was the individual nurse's fault, and he or she is under extreme workload pressures, this may miss the point of the organisational failure. Monitoring should be clear, fair and directed towards patient safety. Any data gathered for improvement should be kept confidential and only used for the purposes that have been established, which is mostly to assess unsafe conditions. Role players should also be provided with opportunities to report obstacles to workload without penalty for voicing concerns. Increasing surveillance without addressing staffing issues could lead to further pressures, but not resolution.

EVALUATION AND CRITIQUE OF THEORY

The Multiprocess Theory is useful because it makes one understandable explanation why knowledge and performance might not align cognitively. It emphasizes how the intentions influence the cues, which in turn influence the attention and competing tasks and so on, as opposed to the idea that it was a lack of motivation or training among the nurses. This also yields practical predictions, that are, stronger cues and lower monitoring demands should facilitate retrieval, whereas high cognitive load should make retrieval more vulnerable. This provides a rationale for prompts, implementation-intention rehearsal and workload reduction.

The theory however cannot explain the case entirely. Other factors affecting handwashing include time constraints, social norms, physical accessibility to facilities and perceptions of any risk of infection at handwashing facilities, within the organisation's culture. Even if a nurse intended to perform some action, he or she might forget, or the equipment may be unavailable, interruptions or perceived urgency may prevent the action. The theory sheds light on one pathway of cognition rather than being able to account for all such pathways. It also has no way of determining the extent of the PM deficit of the nurses. There is no direct assessment of the prospective memory function in the case, and so it is an educated guess, i.e. a theory, that this function has failed.

One other feature that may limit interventions is generalisability. The benefits of PM interventions are not universal and many vary in ecological validity and intervention effects as revealed by a systematic review (Jones et al., 2021). Similarly, hand hygiene is a multi-faceted behaviour influenced by a range of individual, environmental and organisational factors and a cognitive intervention alone will not be enough to achieve hand hygiene (Sands et al., 2020). The most protective strategy would then be to add layers to it, to create a better cueing and retrieval process with the theory, then to mitigate against workload and operational issues.

CONCLUSION AND RECOMMENDATIONS

The Glynafonshire case highlights the fact that despite training and experience a safety related behaviour can fail where staff are asked, in the context of high workload and competing demands, to carry out a behaviour which requires high levels of safety. The Multiprocess Theory of PM gives a reasonable explanation, that is, when the cognitive load increases, nurses might not be able to monitor for a cue for handwashing or they might be unable to retrieve this intention at the time or only partially. The strongest response is therefore not another repetition of the same training but a layered safety system. The Health Board should increase entry and exit cues, rehearse explicit cue-action intentions, oversee workload/staffing levels, and have supportive audit and feedback. Results from real world adherence data and conclusions should guide these recommendations. In summary, theory should be used as a part of a wider strategy for patient safety and implemented in conjunction with organizational responsibilities and cognitive design.

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