

Acknowledgement of AI Tool Use

I acknowledge the use of Claude AI (<https://www.claude.ai/>) on 27 August 2026 to clarify concepts and support my research using the prompt(s):

1. Can you explain Norman and Shallice's (1986) model of attentional control in simple terms?
2. Clarify more about Supervisory Attentional System (SAS).

I confirm that I have not presented any AI generated text as my own work. I confirm I have copies of my drafts, notes, and other resources I used before, and after the use of AI tools which I may be asked to provide as evidence.

I acknowledge the use of Grammarly (<https://www.grammarly.com/>) on 27 August 2026 to structuring my paragraph using the prompt(s):

1. Please check the following text for readability, grammar and syntax.

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CASE REPORT

BACKGROUND TO THE REPORT

The district nursing staff of the Glynafonshire Health Board are required to adhere to a strict handwashing policy. In order to become qualified, nurses go through formal training and must pass both written and practical examinations to show that they are competent. According to the policy, nurses must wash their hands both before and after entering a patient's home in order to lower the risk of infection. Yet, even though all the nurses had previously passed these tests perfectly and had a good deal of experience, some did not carry out the procedure consistently.

This happened during a time when there was a shortage of staff, nurses being asked to work longer hours, to take one shift after another repeatedly, and looking after about twice as many patients as is normal. Hence, the problem was not simply a lack of knowledge or skill, but might have been due to the amount of attention that was being demanded of them (Dawson & McCulloch, 2005). The heavy workload and the other demands may have interfered with the attentional control necessary to keep an eye on and carry out this routine action consistently (Bruya & Tang, 2018). The results were severe, with eight patients contracting infections as a result of the failure to wash their hands and one patient dying sadly.

The fact that the nurses were aware of the right procedure and had the necessary skills to carry it out under ordinary circumstances shows that they had difficulty in carrying out this well-drilled and important action when they were tired, working under time pressure and having to deal with a heavy workload. This indicates that the problem was not one of not having learned the procedure, but rather a possible difficulty in maintaining and controlling their attention in demanding situations (Dawson & McCulloch, 2005). As a result, the case is well explained by cognitive psychology, especially by the theories which deal with how routine behaviours are controlled and how that control can break down.

Attentional control means the ability to direct and manage one's attention to the correct action, in particular in the presence of distractions or competing demands. The next sections introduce and apply Norman and Shallice's (1986) model of the attentional control of action to this case in order to explain how even well-trained and experienced nurses might still fail to perform a routine but safety-critical action when conditions are demanding.

THE ATTENTIONAL CONTROL THEORY

Norman and Shallice (1986) proposed a model that explains how people control their everyday actions. It explains how we can carry out familiar, well-practised behaviours without consciously thinking about each step, while still being able to change or correct our actions when a situation requires more attention. Recent discussions of the model also say that routine actions are guided by automatic action schemas (Cooper, 2021). Supervisory control becomes important when these routines need to be checked or changed (Cooper, 2021).

The model has two main levels of control. First is contention scheduling, which is a fast and mostly automatic system that helps us choose and perform familiar actions we have practised before. For example, a nurse might follow a routine like putting on gloves, washing their hands, and entering a patient's room. Since this routine is well learned, it requires little conscious thought. When different routines compete, people usually choose the one that best fits the situation (Norman & Shallice, 1986).

The second is the Supervisory Attentional System (SAS). This system is important when a situation requires conscious attention, such as when actions compete, something unexpected happens, or a person needs to stop or change a routine behaviour (Cooper, 2021). The SAS guides attention and controls which action to carry out instead of simply following the strongest automatic response. It is also linked to executive functions (Shallice & Burgess, 1991). Because attentional resources are limited, factors like high workload, time pressure, fatigue, stress, or divided attention make it harder to control these actions effectively. As a result, a person may fall back on a familiar or strongly triggered action even when it is not what they intended.

Substantial research supports this two-level model. Shallice and Burgess (1991) provided evidence for the Supervisory Attentional System (SAS) by studying patients with frontal-lobe damage. Although these patients had normal intelligence, memory, and basic knowledge, they struggled with tasks that required them to manage several goals at once, such as the Six Elements Test and the Multiple Errands Test. This suggests that knowing

what to do and being able to control and organise the action are not always the same thing. This supports the idea that routine skills and attentional control can work somewhat separately.

Sellen and Norman (1992) found that even skilled people can make attentional errors while doing familiar tasks. Sometimes, being very familiar with a task makes it easier for automatic routines to take over if attention shifts. Reason and Mycielska (1982) also observed that everyday mistakes often happen during routine activities, especially when people are distracted or switching between tasks. These findings support Norman and Shallice's idea that even well-practised actions can go wrong if attention is elsewhere and there is not enough oversight. Norman and Shallice's model has shaped research on human error, especially in safety-critical environments. Reason (1990) separated slips and lapses, which are mistakes in performing a familiar action, from mistakes that come from planning or knowledge errors. This is relevant here because the nurses seemed to know the right handwashing steps but sometimes did not follow them correctly or consistently. So, the nurses' actions are better seen as slips or lapses, not a lack of knowledge.

This framework has also helped explain hand hygiene problems in healthcare. Pittet et al. (1999) found that hand hygiene compliance dropped in a teaching hospital when staff faced high activity and staff shortages. Compliance was also lower for tasks done more often. These results fit Norman and Shallice's model because frequent, familiar actions are more likely to be automatic and get less attention. Erasmus et al. (2010) also found that high workload, time pressure, and staff shortages were common reasons for poor hand hygiene, even among workers who knew the correct steps. This shows that knowing what to do does not always mean it will be done right under pressure.

HOW DOES THE THEORY RELATE TO THE CASE STUDY

The Glynafonshire case can be explained with Norman and Shallice's (1986) model as a possible failure of supervisory attentional control, rather than a lack of knowledge or skill. All the nurses had already passed both written and practical tests and had experience with proper hand hygiene. This shows that handwashing was a familiar routine for them. Norman and Shallice's (1986) model suggests that familiar actions are often done with little conscious attention. So, the issue may not have been a lack of knowledge, but rather trouble consistently monitoring and controlling the routine when under pressure.

Second, the specific problems reported in the case, including rushing, using the wrong techniques, and at times not washing their hands before and after visiting a patient's property, can be linked to reduced attentional control. If a familiar routine is carried out without careful conscious oversight, there is a greater chance of missing or changing parts of the procedure (Norman & Shallice, 1986). For instance, a nurse who is concentrating on finishing the patient care and then going on to the next patient might not pay sufficient attention to the handwashing step. In such cases, the Supervisory Attentional System (SAS) becomes important since it helps monitor and control actions whenever there are competing demands or when it is necessary to deliberately maintain or adjust the routine (Norman & Shallice, 1986).

Third, the working conditions described by the Health Board provide a possible explanation for why attentional control may have been more difficult during this period. Nurses were experiencing staff shortages, longer working hours, repeated back-to-back shifts, and were caring for around twice their usual number of patients. These conditions could increase the demands placed on attention, making it harder for nurses to maintain close supervision of routine behaviours. Research on hand hygiene has also linked factors such as high workload, time pressure and understaffing with lower compliance (Sadule-Rios & Aguilera, 2017; Scheithauer et al., 2017). This supports the idea that the nurses' working environment may have contributed to the lapses described in the case.

Norman and Shallice's (1986) model explains why experienced, well-trained nurses were unable to consistently carry out a routine safety procedure. Although the nurses had the required knowledge and skills, their attentional control might have been affected by the demanding circumstances (Sellen & Norman, 1992). However, it cannot be said for certain that reduced attentional control caused the incident, since the case does not directly assess the nurses' attention or cognitive capacity. Instead, the model offers a cognitive account of how high workload and competing demands could have led to inconsistent handwashing behavior (Norman & Shallice, 1986).

EVIDENCE LINKING ATTENTIONAL CONTROL TO WORKLOAD AND HAND HYGIENE

Previous research indicates that demanding clinical environments are associated with reduced hand hygiene compliance. Pittet et al. (1999) found that compliance decreased as patient-care activity increased and suggested that understaffing may further reduce compliance. This is relevant to the Glynafonshire case, where staff shortages required nurses to manage about twice their usual patient workload.

Similarly, Erasmus et al. (2010) reviewed 96 studies and found that hand hygiene compliance was frequently lower during periods of high activity. These findings are applicable to the Glynafonshire case, where staff shortages resulted in longer working hours, consecutive shifts, and nurses caring for approximately twice their usual number of patients. According to Norman and Shallice's (1986) model, these demanding conditions likely increased competing demands for attention, thereby making it more difficult for nurses to consistently follow handwashing routines.

SUGGESTIONS FOR NEW PROCEDURES BASED ON THE THEORY

If the issue is primarily due to a failure of attentional control caused by a heavy workload, rather than a lack of knowledge, then simply providing more training or retesting them may not prevent the problem from happening again. The nurses had already demonstrated that they knew the right procedure and possessed the necessary skills to carry it out; the theory proposes two main solutions: improve the cues that remind the nurses to carry out hand hygiene and reduce the workload and fatigue, which can make it more difficult to maintain attentional control (Norman & Shallice, 1986).

Since contention scheduling depends on well-known cues to trigger regular actions (Norman & Shallice, 1986), the Health Board could make the handwashing cues clearer in the nurses' working environment. For example, hand sanitiser could be put right at the entrance and exit of patients' homes so that entering or leaving naturally reminds nurses to wash their hands (WHO, 2009). A checklist or an electronic alert could also be used to encourage the nurses to check that hand hygiene has been completed before finishing a visit (Boyce, 2017). The objective is therefore not just to ask nurses to "pay more attention", but to design the work environment so that the right behaviour becomes easier to carry out automatically.

The theory also states that in order to prevent future incidents, it is necessary to examine the working environment rather than assigning all the blame to individual nurses (Reason, 2000). The Health Board might set up a confidential and non-punitive system which would allow nurses to report hand hygiene or near-misses. This could help identify problems such as overburdened workloads or unsafe staffing levels to be identified before they cause serious harm. It would then be possible for the Health Board to detect and deal with risks earlier rather than only looking into them after an incident has taken place.

There are also some ethical issues to consider. For example, electronic systems that record whether or not hand sanitiser has been used might make nurses feel as though they are being watched or blamed, especially after a serious incident involving a patient death. This could reduce trust and increase stress, which in turn could make it more difficult to exercise attentional control. As a result, any monitoring system should be introduced openly and presented as a way to support safe practice rather than punish staff (Kelly et al., 2021). Where possible, nurses should also take part in designing these systems.

Lowering the number of patients on a doctor's case and cutting down on excessively long working hours might also contribute to reducing mental strain and fatigue (Aiken et al., 2002). Yet this could result in fewer patients being seen in the short term, which would raise questions about fairness in the allocation of limited healthcare resources. Lastly, while it is important to promote non-punitive reporting, the Health Board should not therefore fail to maintain accountability. Even if one understands the cognitive reasons for an error, this does not excuse the organisation or the individuals concerned. Attention must be given to both supporting staff and to holding accountable patients and their families.

EVALUATION AND CRITIQUE OF THEORY

Norman and Shallice's model helps explain the Glynafonshire incident by showing that nurses can still make mistakes under pressure, even if they know the correct procedure and have the right skills. This matters because the nurses had already completed their training and passed practical tests. Research on attention, skilled performance, and hand hygiene in healthcare supports this idea (Shallice & Burgess, 1991; Sellen & Norman, 1992; Reason & Mycielska, 1982; Pittet et al., 1999; Erasmus et al., 2010). These studies show that knowing what to do does not always mean it will be done correctly when someone faces competing demands.

However, the model has some limits. The SAS is hard to measure directly, so it cannot fully explain why a certain nurse made a mistake at a specific moment. Some nurses may have rushed or skipped parts of the procedure on purpose because they felt pressed for time, instead of all mistakes being accidental. The case study does not give enough details to know exactly why each nurse acted as they did.

Another limitation is that the model mostly looks at individual mental processes. It does not fully cover bigger organisational issues like staff shortages, workplace culture, management pressure, or the push to see more patients. These factors may have added to the nurses' workload and affected how they behaved. So, it is important to consider these organisational factors as well as the cognitive explanation, instead of focusing only on the nurses' attention.

Finally, some of the explanations for this case are still just theories and have not been directly proven. For example, the case does not show exactly when nurses were most likely to make mistakes during a patient visit or if their attention was actually elsewhere. More research, like watching nurses at work or talking to them about their experiences, would help confirm this. Even with these limits, Norman and Shallice's model is still helpful for understanding how heavy workloads, competing demands, and less attention can lead to missed or poorly done hand hygiene, even for experienced and well-trained nurses.

CONCLUSION AND RECOMMENDATIONS

The Glynafonshire incident seems to be less about nurses lacking knowledge or skills, since they had already been trained and tested. Instead, it is more about the challenge of staying focused under high pressure. Norman and Shallice's (1986) model helps explain why even experienced nurses might rush, use the wrong technique, or skip handwashing when they face staff shortages, long shifts, and double their usual workload. These stressful conditions can make it harder to keep the attention needed to follow important safety procedures (Scheithauer et al., 2017).

Given this explanation, the Health Board should not depend only on more training or testing. Instead, it could use clear reminders in the workplace, lower excessive workloads and fatigue (Scheithauer et al., 2017), and support nurses in reporting mistakes or near-misses without fear of punishment. Any monitoring system should also respect staff privacy and trust. Reducing workloads may be difficult because healthcare resources are limited. Finally, explaining the incident as a mental process does not take away the responsibility of either the nurses or the Health Board.

Overall, Norman and Shallice's (1986) model helps explain why handwashing may become less consistent when nurses have heavy workloads and many demands. However, it does not explain every individual mistake or fully cover organisational issues like staffing and workplace culture. So, this theory should be viewed as just one part of a broader explanation for the incident, not the only cause.

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