A Service Improvement Plan for Enhancing Hand Hygiene Compliance: A Critical Appraisal and Evidence-Based Approach

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Abstract

This service improvement plan will critically appraise the principles of infection prevention and control (IPC) by developing a structured response to the findings of a clinical audit. The overarching aim is to enhance patient safety and care quality within a National Health Service (NHS) setting, aligning with the core objectives of the NHS Constitution and the regulatory framework of the Care Quality Commission (CQC). The main focus of this plan is hand hygiene, a fundamental component of standard precautions and the primary defence against healthcare-associated infections (HCAIs). HCAIs such as Methicillin-resistant Staphylococcus aureus (MRSA) and Clostridium difficile, are considered major risks to patient safety and large costs for the NHS, also contributing to antimicrobial resistance (AMR) (National Institute for Health and Care Excellence [NICE]. Although it is very critical for the known importance of hand hygiene, health care systems worldwide still have the same problem, as the compliance of hand hygiene keeps on being not up to the required level. This situation points to a complicated interaction between personal behaviour, organizational culture, and the context surrounding it.

Keywords: Service Improvement Plan, Infection Prevention and Control, hand hygiene, healthcare-associated infections

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INTRODUCTION

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The first part of this plan will present and evaluate a hand hygiene compliance audit conducted in a hypothetical adult medical ward. Then, it will critique the results in the light of the findings from the established evidence-based guidelines like the ones issued by NICE and WHO. The plan will delve into the reasons for noncompliance while concurrently discussing the roles taken on by leadership and quality improvement models. Lastly, the plan will make recommendations that are backed by evidence, which will be presented through the Plan-Do-Study-Act (PDSA) cycle, aiming to create a continuous and quantifiable change in practice that will, thus, showcase a full IPC principles application.

CHOSEN AUDIT

Clinical audit, according to NICE (2002), is a foundational pillar of clinical governance, providing a systematic framework for improving patient care and outcomes through the critical review of practice against explicit, evidence-based criteria. It embodies a continuous cycle of assessing existing practice, juxtaposing it with the best-practice criteria, implanting changes, and auditing again to verify progress, hence, the loop between regulations and operations is closed. In the specific area of IPC, audits are crucial in gauging the risks of infection, formulating guidelines in terms of actions, and ushering in the habit of routine quality improvement (Hill, et al.,2024). Theoretical concept of IPC becomes the institutionalised and measurable element of clinical safety.

This audit focuses on hand hygiene compliance, a critical issue that costs the NHS about £2.1 billion each year due to HCAIs, many of which could be prevented through proper basic infection-control practices (Stewart et al., 2021). This particular audit will monitor the adherence to WHO's 'My 5 Moments for Hand Hygiene' model, which is the evidence-based global standard for hand hygiene in clinical care (WHO, 2009). This model not only defines compliance very precisely and behaviourally but also makes it measurable through the performance of the specific actions required at five pivotal moments: before patient contact, before any aseptic task, after risk of exposure through body fluids, after patient contact, and after contact with the patient's environment. Auditing against this rigorous standard gives an even more valid and reliable measure of true IPC practice than indirect proxies like alcohol-based hand rub (ABHR) consumption which might be swayed by factors other than compliance (Tartari, et al., 2024).

The methodology was a prospective, direct observational audit that took place as a one-off event over one week on a 30-bed adult medical ward. To improve the consistency of the findings, two trained infection prevention and control (IPC) link nurses carried out the observations, and in addition to observing they standardised the session with WHO training materials that ensured inter-rater reliability. At the time of the observation, a data collection form (structured) was used to document the healthcare worker’s (HCW) professional group and the specific WHO moment that was encountered. A total of 300 opportunities were observed, differentiated by professional groups and shift patterns to make sure that a representative sample was obtained.

Table 1: Hand Hygiene Compliance Audit Results

Professional Group	Opportunities Observed	Compliant Actions	Compliance Rate (%)
Nurses	180	126	70%
Doctors	80	40	50%
Allied Professionals	40	28	70%
Total	300	194	64.7%

Analysis of the results indicates a low compliance rate of 64.7% which is significantly less than the organisational target of 90% (Lotfinejad, et al., 2021) and the high-reliability standard set for basic IPC practices. Amongst the findings, the most remarkable and statistically significant is the difference in compliance levels between the different professional groups, where doctors showed a particularly low rate of 50% compared to the 70% of nurses and allied health professionals. This trend which is in line with the literature (Lotfinejad et al., 2021) suggests that the application of a universal improvement strategy is very likely to be ineffective. It very much confirms that the drivers of behaviour, such as attitudes, perceived norms, and environmental barriers are very different in the professional subcultures within the multidisciplinary ward team and thus a tailored diagnosis and intervention is necessary.

APPRAISAL OF EVIDENCE

The audit results established a 64.7% adherence rate. This value is very low, and one that implies serious safety concerns especially for patients. In this section, the author attempts to critically appraise these results through various lens, including the broader IPC framework, the practical challenges of healthcare provision, and theoretical behaviour models. In this section, the author argues that 64.7% being a very low figure, is indicative of not just failings at an individual level, but also complex systematic behavioural challenges. These challenges require sophisticated and multi-faceted approaches to achieve sustainable resolutions.

NICE (2014) requires healthcare organisations to conduct hand hygiene audits and use the results to devise improvement strategies. This means that NICE's target is 100% compliance. Similarly, WHO (2009) emphasizes hand hygiene as the cornerstone of IPC. 'My 5 Moments' model offers the most comprehensive operational framework. The 64.7% compliance recorded is a considerable deviation from these evidence-based standards.

The effects of this deviation are far-reaching and complex. First, it poses a direct risk to patients. Boyce (2024) and Stone et al. (2021) argue that there is very strong evidence showing a causal relationship between poor hand hygiene and the increased rate of Healthcare-Associated Infections (HCAIs) like Methicillin-resistant Staphylococcus aureus (MRSA), Clostridium difficile, and other multi-drug-resistant organisms (MDROs) It can be said that every 1% reduction in compliance increases the risk of infection, which results in patient suffering, longer hospital stays, and sometimes even death. Moreover, this kind of neglect in basic care causes loss of patient trust and goes against the fundamental principle of care which is enshrined in the NHS Constitution (Department of Health and Social Care, 2015) and is assessed by the Care Quality Commission (CQC) through its Key Line of Enquiry (KLOE S3) relating to safety in care.

Looking at it from a systems viewpoint, the financial loss is enormous. Stewart et al. (2021) calculated that the annual cost of HCAIs to the NHS is £2.1 billion, directly assocatedwith preventable infections. Therefore, the audit outcome is not only a problem that is specific to the ward but is also related to patient safety issues, national economy, and the global fight against infections.

On the other hand, the audit results highlight the necessity to look critically at the data's reliability and limitations as well. The method used, which is direct, structured observation by trained IPC link nurses, is rightly considered the gold standard for measuring hand hygiene behaviour (WHO, 2009). It allows for very specific actions to be assigned to the particular WHO moments, thus offering the rich, qualitative insights that automated systems cannot capture (Tomczyk et al., 2021).

However, this approach brings along disadvantages. The main disadvantage is the Hawthorne Effect which describes a situation in which the people being observed change their

behaviour as a result of the knowledge that they are being observed (Haessler, 2014). This probably means that the compliance of 64.7% that was recorded is lower than the actual compliance in non-observation scenarios, hence making the practice gap even more concerning.

Furthermore, the sample size of 300 observations might not be wholly representative of all shift patterns, clinical situations, or individual practitioners, although it does provide a snapshot. Besides, the data is rather quantitative; it informs us of what happened but not why. For instance, it shows the shocking 20% difference between doctors (50%) and nurses (70%), but the reasons for this difference (be it cultural, logistical, or attitudinal) are still hidden within the qualitative realm of human experience and organizational culture. This suggests the need for a combination of both qualitative and quantitative methods in collecting data.

The findings of this audit could also be appraised through the lens of behavioural science. The Theory of Planned Behaviour (TPB) (Sin and Rochelle, 2022) provides the first framework and looks at all the possible factors contributing to the intention and behaviour; it suggests that these are the three main contributors: attitudes (for example, "Is hand hygiene effective?"), subjective norms (such as, "What do my peers and seniors do?"), and perceived behavioural control (such as, "Do I have the time and means to do it?"). The lower compliance among doctors could be construed through this model: their attitudes might be more swayed by a presumed low risk of transmission during "clean" tasks; subjective norms might be influenced by a hierarchical culture where it is a taboo to challenge a senior; and perceived control might be affected by the high cognitive load during complex diagnostic reasoning (Shubayr, et al., 2020; McLaws, 2015).

The COM-B model (Michie, Van Stralen and West, 2011) is a more advanced and comprehensive framework, which claims that behaviour (B) is the result of the interaction of Capability, Opportunity, and Motivation. This model is a powerful diagnostic tool to dissect the audit results as shown in table 2 below:

Table 2: COM-B Model Explained

COM-B COMPONENT	TYPE	KEY POINTS
CAPABILITY	Psychological and Physical	Staff may struggle to apply the “My 5 Moments” model in fast-paced settings. Fatigue, stress, and high workload reduce psychological capability, leading to habitual lapses (Handiyani, 2020). Some professional groups receive less IPC training, lowering competence.
OPPORTUNITY	Physical	Poor placement or limited accessibility of ABHR dispensers is a major barrier to compliance, as shown in previous audits (Vander Weg et al., 2019). The current audit did not assess this, creating a diagnostic gap.
OPPORTUNITY	Social	Strong social norms and supportive leadership improve compliance. Leaders modelling hand hygiene and promoting open discussion of errors help staff remind one another without fear of judgment (Hanskamp-Sebregts et al., 2016).
MOTIVATION	Reflective and Automatic	Lack of regular feedback reduces reflective motivation. Non-punitive presentation of audit results, led by a clinical champion such as a registered nurse (RN), can strengthen conscious decision-making and behaviour change (Gould et al., 2018).

Using ABHR and feeling clean can act as a small positive motivator, while frequent handwashing can cause skin irritation, which strongly discourages compliance (Lambe et al., 2019). In emergencies, staff may switch to automatic, task-focused actions and skip the conscious decision to clean their hands.

Comparative analysis has yielded a consensus regarding the pressing necessity for multi-modal strategies, as each single intervention proves to be insufficient by itself. The multi-faceted improvement strategy of the WHO (2009), which includes system change, training, evaluation and feedback, reminders, and a safety climate, has the strongest evidence

backing it. NICE (2014) and some recent studies endorse this point by showing that bundled interventions are way more effective than the same ones done in isolation (Lotfinejad et al., 2021).

That being said, full support is given to NICE guidelines which advocate the use of bundle techniques. Nevertheless, different researchers point to different aspects. Some studies give traction to the leadership and cultural aspect (Srigley et al., 2015), while others highlight the effectiveness of certain technological aids, such as electronic monitoring with feedback, which can reduce the Hawthorne Effect and yield more data (Handiyani, 2020). This disparity implies that the "best" approach depends on the context. The audit results, especially the interdisciplinary differences, necessitate a customized approach that targets specific COM-B components for various groups.

The audit did not depict good practice; it revealed a vital systems breakdown. The registered ward manager (RWRM) and other clinical leaders such as registered nurses have the responsibility to evaluate the situation, identify the root causes using, for example, the COM-B framework, and create a supportive environment. RNs are fundamental in the maintenance of high IPC standards. As Chen et al. (2024) explain, these RNs do this through the assessment of risk, the application of evidence-based precautions and ensuring clean and safe environments. Agustin, et al. (2025) reiterate that RNs also play an important role of educating different stakeholders (colleagues, patients, families) on transmission routes and hand hygiene. As such, they play a critical role of driving service improvement.

This process of critical appraisal naturally leads to the conclusion that a structured, iterative service improvement approach is necessary. The Plan-Do-Study-Act (PDSA) cycle is, therefore, the most appropriate one, allowing for small-scale testing of targeted changes based on the specific behavioural problem and the subsequent gradual implementation, while at the same time nurturing a culture of continuous learning and adaptability (Taylor et al., 2014). Thus, the following recommendations are dynamically framed within this model so that they remain evidence-based and sustainable.

RECOMMENDATIONS FOR FUTURE PRACTICE

Presenting results from the critical evaluation, a set of evidence-based recommendations is put forward to fill in the compliance gap existing between the levels of hand hygiene performed in the medical ward that is meant to be 85% and is only 64.7%. These recommendations are put in the form of successive PDSA cycles which allow for the continuous process of testing and refining to take place.

Recommendation 1

Implement a Multi-Faceted Feedback and Education Strategy (PDSA Cycle 1)

Plan- Design 5-minute educational "huddles" (live from 5-minute) at shift handovers focusing on the top 5 moments of hand hygiene according to WHO. It is just as important to establish a separate and non-judgmental feedback session for the medical team, which will be led by a well-respected consultant 'champion', and, where, audit findings will be presented and specialty-specific barriers will be discussed (Gould et al., 2018).

Do-Hold these sessions for two weeks. Every nurse responsible for Infection Prevention Control will provide staff who are observed to be non-compliant with their personalized and real-time feedback.

Study- Conduct a mini-re-audit comprising 100 observations to determine whether there is an immediate change in compliance according to professional group. Measure the usefulness of the sessions through an anonymous, short staff survey.

Act- If the huddle is successful, particularly among physicians, formalize the huddle and specialty-specific feedback as a quarterly governance activity. However, if it is not effective, refine the messaging or the mode of delivery based on the feedback.

Recommendation 2

Optimise the Physical and Social Environment (PDSA Cycle 2)

Plan- Perform an "environmental walk-through" with a checklist to check that ABHR dispensers are not only accessible but also visible and operational at every bed space and at entrances/exits of the rooms (Vander Weg et al., 2019).

At the same time, start a "Positive Poster Campaign" that displays photos of esteemed staff members representing all professions, including senior doctors, and promoting hand hygiene to create a positive social norm (Hanskamp-Sebregts et al., 2016).

Do- Add new dispensers in the places that need them. Mount posters in the medical areas and teacher lounges.

Study- Measure the amount of ABHR used weekly and note if there is any development in compliance in the area near the newly installed dispensers. The staff survey will be used to determine the knowledge and the opinion of the campaign among the staff.

Act-Make persistent changes in the environment based on the data collected and the feedback received. Change the poster themes every three months to keep them active and avoid 'message fatigue'.

Recommendation 3

Integrate a Structured, Longitudinal Measurement for Improvement Approach

Plan- Change from periodic audits to a continuous measurement-for-improvement model. Train IPC link nurses to carry out short weekly "spot audits" (20 observations) to produce a run chart for the ward's quality board (Taylor et al., 2014).

Do- Position the run chart in a conspicuous place in the staff room to create transparency and promote a sense of shared responsibility and accountability.

Study- The run chart will allow you to monitor compliance by displaying your progress over time, so that you can be aware of when compliance starts decreasing and DAP PDSA cycles can be initiated.

Act- Incorporate this model into the ward's standard operation procedures to make sure that hand hygiene remains a live and visible quality indicator, that is central to the ward's identity as a safe care centre.

CONCLUSION

This service improvement plan has critically evaluated the results of a hand hygiene compliance audit, revealing a significant deviation from the evidence-based standards established by NICE and WHO. The analysis reported the low compliance rate of 64.7% and moved on to a thorough investigation of the underlying behavioural, environmental and cultural determinants, employing the COM-B model to structure the issue. The major findings were not only an overall compliance gap but also the affirmation of the need for customized interventions due to the critical difference between professional groups. The plan has reasonably deduced that a multifaceted, theory-informed approach is required for a sustainable improvement. The leadership role, especially that of RWRM and RNs, in the development of social norms and provision of a psychologically safe environment, among others, was acknowledged as a success factor. The recommendations which were directed towards the provision of multi-modal feedback, optimization of the environment and elevation of the standard of longitudinal measurement in future practice were specifically tailored to overcome the barriers and were embedded in the iterative PDSA framework to ensure they remain dynamic and flexible. Hand hygiene is a process of quality improvement, not a one-time project.

This paper critically examined evidence as a basis of suggesting the best practices for hand hygiene and ultimately preventing infections. This is fundamental for aligning practice with policy. The result would be a safer atmosphere for the patients, lesser incidences of HCAIs and, last but not the least, the observance of the 'first, do no harm' principle as the core of the healthcare profession.

Originality statement

I declare that this assessment is my own work and that I have correctly acknowledged the work of others using the Harvard referencing. This assessment is in accordance with university guidance on good academic conduct.

Confidentiality statement

I declare that confidentiality of people discussed in this work is maintained; there is no identifiable information of these individuals.

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