Do healthcare professionals work around safety standards, and should we be worried? A scoping review.

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Do healthcare professionals work around safety standards, and should we be worried? A scoping review

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ABSTRACT

Background Healthcare staff adapt to challenges faced when delivering healthcare by using workarounds. Sometimes, safety standards, the very things used to routinely mitigate risk in healthcare, are the obstacles that staff work around. While workarounds have negative connotations, there is an argument that, in some circumstances, they contribute to the delivery of safe care.
Objectives In this scoping review, we explore the circumstances and perceived implications of safety standard workarounds (SSWAs) conducted in the delivery of frontline care.
Method We searched MEDLINE, CINAHL, PsycINFO and Web of Science for articles reporting on the circumstances and perceived implications of SSWAs in healthcare. Data charting was undertaken by two researchers. A narrative synthesis was developed to produce a summary of findings.
Results We included 27 papers in the review, which reported on workarounds of 21 safety standards. Over half of the papers (59%) described working around standards related to medicine safety. As medication standards featured frequently in papers, SSWAs were reported to be performed by registered nurses in 67% of papers, doctors in 41% of papers and pharmacists in 19% of papers. Organisational causes were the most prominent reason for workarounds.
Papers reported on the perceived impact of SSWAs for care quality. At times SSWAs were being used to support the delivery of person-centred, timely, efficient and effective care. Implications of SSWAs for safety were diverse. Some papers reported SSWAs had both positive and negative implications for safety simultaneously. SSWAs were reported to be beneficial for patients more often than they were detrimental.
Conclusion SSWAs are used frequently during the delivery of everyday care, particularly during medication-related processes. These workarounds are often used to balance different risks and, in some circumstances, to achieve safe care.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Healthcare professionals use workarounds to achieve different goals, but little is known about the circumstances and implications of safety standard workarounds (SSWAs) explicitly, which limits our understanding of how safe care is really achieved.

WHAT THIS STUDY ADDS

⇒ This review found SSWAs are performed frequently and are caused by a multitude of factors, including situations when professional responsibilities conflict with standards. SSWAs are perceived to both improve and diminish care quality at times and are viewed differently by stakeholders at different levels of the healthcare system.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Despite workarounds being prolific in healthcare there is little evidence to guide professionals or policy makers to know if, or when it might be desirable, to work around standards. This review emphasises the need for further research to explore when and how flexibility can be safely incorporated into current risk management strategies to improve care.

INTRODUCTION

For two decades, standardisation has been regarded as the cornerstone of improving healthcare safety by increasing reliability and reducing variation.[1 2] This approach has led to significant reductions across a variety of patient harms.[3] However, variation in the delivery of healthcare remains high,[4] and there is uncertainty about the extent to which the unquestioning application of standards supports patient-centred care, particularly when healthcare systems are under pressure.[5 6]

Recent developments in the field of safety theory have begun to question if standardisation is a universal foundation

for healthcare improvement. This includes interest in 'Safety II', a theory that views healthcare as a complex system and safety as the ability to succeed under varying conditions.[7] At the heart of this theory is the assumption that variation is not inherently risky, and that resilient systems actually rely on the ability of individuals, teams and organisations to adapt their actions in response to changing work environments.[6]

While not adhering to standards was once regarded as a 'violation',[8] deviations have been described more neutrally as 'workarounds'.[9] Perspectives regarding what workarounds achieve are divided. From one viewpoint there is some evidence that workarounds have a negative effect on safety through reducing the reliability of the intended work processes,[9–13] but from another position there is emergent evidence that workarounds can be beneficial for safety in some circumstances, such as in clinical emergencies[9] or when technology fails.[13 14]

Previous reviews have recognised the importance of investigating healthcare workarounds.[9 10 15–18] While some reviews have focused on workarounds performed by diverse professional groups,[10 18] others have concentrated on workarounds performed by individual groups.[9 16 17] Similarly, some reviews have looked broadly at healthcare workarounds, while others have concentrated on specific obstacles, most commonly, health information technology systems, being worked around.[16 18] These important reviews have contributed to current conceptualisations of workarounds in healthcare, progressing understanding of the causes, mechanisms of proliferation and potential consequences of workarounds in healthcare.[9 10 16–18]

Given the proliferation of standardisation to address safety concerns in healthcare and a failure to make significant progress in this area,[6] there is an imperative to review the literature on safety standard workarounds (SSWAs) performed by healthcare professionals to improve our understanding of the circumstances of SSWAs and explore what these very specific workarounds are perceived to achieve. This could be beneficial to improving safety and move us beyond conversations which focus on compliance with rules with little appreciation of complex nature of healthcare work.

In this review, our research question was developed using the Population, Context, Concept framework and through consultation with key stakeholders including patients, carers and healthcare staff. Our research asked: what are the circumstances and perceived implications of working around safety standards in healthcare as reported within primary studies in published peer-reviewed literature?

METHODS

As the objective of this review was to construct a thorough picture of working around safety standards in patient-facing healthcare, rather than categorically answer a specific question to make recommendations for practice, the scoping review method was adopted. Scoping reviews are useful for examining emerging evidence, clarifying definitions, identifying knowledge gaps and identifying key characteristics of a concept.[19 20] The review followed the Joanna Briggs Institute (JBI) methodology for scoping reviews.[21] Full details of the search strategy can be found in online supplemental file 1. In brief, we conducted a systematic search across multiple databases (MEDLINE, CINAHL, PsycINFO and Web of Science) using keywords for workarounds (eg, workaround*, work* around, improvisat*, violat*, deviat*) combined with keywords for healthcare delivery (eg, health care delivery, healthcare delivery, clinical practice). We identified empirical peer-reviewed papers that used qualitative or mixed methods. We included papers from 1990 to 26 January 2024 and limited the search to papers written in English to allow the review team to effectively engage with the papers. No patients or members of the public were included in this study; ethics approval was not required.

Defining terms

A definition by Debono et al[9] was initially used to identify workarounds. Safety standards were more challenging to define at the outset, therefore, the research team interpreted this concept as a written rule designed to promote safety. Through the review process and as the research team became sensitised to both the workaround and safety standard concepts, the team drew on a wider body of literature[9 22–24] to define an SSWA as 'an adaptation, improvisation or change, to an existing work rule designed to promote safety, in order to overcome, or lessen the impact of obstacles that are perceived as preventing that work system or its actors from achieving a desired goal'.

Results were imported into Covidence for screening and selection. Our eligibility criteria (online supplemental file 1) required papers to take a 'safety II' perspective and make explicit reference to the workaround of at least one rule designed to promote safety. Occasionally, workarounds were not the primary focus of the paper. Data charting was undertaken by two researchers (DC/RB). A data charting form based on the JBI template[21] was developed and tested. This form extracted information about the circumstances and implications of SSWAs. A narrative synthesis[25] of qualitative and mixed methods studies was conducted, with the aim of summarising the current state of knowledge on the use of SSWAs in healthcare. Inductive categories[26] were developed to organise the data within the papers under review objectives. This process included drawing on the types of SSWAs described in the literature,[8 27] then categorising the causes of the workarounds which involved expanding the causes previously described in the literature.[9 11 15] Multiple

reviewers (DC/JO'H/RL) categorised the perceived implications of SSWAs deductively using the Institute of Medicine's (IOM)[28] six domains of quality (safe, effective, patient centred, timely, efficient, equitable) and by stakeholder position in the healthcare system (patient, staff, organisation). These frameworks were used to understand the implications of workarounds holistically and move beyond binary perspectives of workarounds as good or bad. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist was used to report on the review.

RESULTS

Searches of electronic databases conducted on 22 April 2022 returned 14 293 records, 4109 duplicates were removed. Initial screening of titles and abstracts on the remaining 10 184 was undertaken, resulting in 325 papers being identified for full text review. Following in-depth review against the inclusion criteria 298 articles were rejected, leaving 27 papers in the review. The electronic searches were run again on 26 January 2024. No further papers were found that met the review inclusion criteria. The PRISMA diagram summarises the search process (figure 1).

The findings of this scoping review are organised into three sections: (1) key characteristics of the papers (also summarised in table 1[29–54]); (2) the circumstances of SSWAs; and (3) the perceived implications of SSWAs. Reported proportions have been calculated as the percentage of papers providing commentary on extracted features. The specific papers reporting on each feature are provided. Importantly, some papers report on more than one characteristic in each category.

Study characteristics

The earliest paper included in this review was published in 2008. 67% of papers were published from 2017 onwards. A third of papers reported on studies that were conducted in the UK, 15% in the USA and 15% in the Netherlands, suggesting that this topic is of particular relevance in a UK context.

Over three-quarters of the papers reported on studies that were conducted in acute hospital settings, with the majority of studies taking place in university teaching hospitals. Studies conducted within an acute setting were based within medical and surgical units [48%;[13 31 37 40 41 43 44 46–48 50 52 54]], intensive care units [22%;[34 37 40 47 50 52]] and emergency departments [19%;[30 32 36 37 50]]. Seven studies were conducted in a community healthcare setting [26%;[29 35 38 45 49 51 54]], including four pharmacies [15%;[29 38 49 51]], one general practitioner (GP) practice,[35] one nursing home[45] and one unspecified community setting.[54] Half of the papers reported on studies conducted in more than one healthcare organisation.

Circumstances of SSWAs

21 different kinds of safety standards were reportedly worked around across the 27 papers (table 1). Some papers reported on more than one type of SSWA, therefore the categories are not mutually exclusive. Over half of the papers described working around standards related to medicine safety [59%;[29 37 38 40–46 48–52 54]]. Consequently, SSWAs were reported to be performed by registered nurses in 67% of papers,[13 30 31 34 35 37 39–46 48 52–54] doctors in 41% of papers[13 30–33 40 41 43 50 54] and pharmacists in 19% of papers.[29 38 43 49 51]

The review identified a range of potential causes of SSWAs as illustrated in table 2. Causes of individual SSWA were inductively attributed to categories by multiple reviewers (DC/RL/JO'H), where sufficient information was provided in the paper to enable categorisation. Where there were disagreements, reviewers discussed their decisions and recategorised if required. During categorisation, reviewers differentiated between professional and relational causes of workarounds because distinction was possible and appeared important. Most SSWAs were found to have multiple causes and consequently are listed here under more than one category.

Organisational causes of SSWAs were reported in over 90% of papers [93%;[13 29–34 36–38 40–54]] and included workarounds caused by workload and time pressures,[29–31 33 36–46 48 49 52–54] lack of training,[30 31 37 41 42 48 54] local availability of adequate resources[29 40 41 43 50] and conflicting rules leading staff with no choice but to break a rule to deliver care.[32 33 53]

SSWAs caused by task-related factors were reported in over half of the papers [59%;[13 29 31 33 36 38 40–42 45 46 49–52 54]]. Task-related factors described situations that led to staff choosing to work around the situation if they could conceive an alternative way to proceed that was perceived to be more efficient. The context in which work needed to be achieved influenced the use of the workarounds. Several papers reported that tasks undertaken in emergency or exceptional circumstances caused SSWAs.[33 43 46 52 54] For example, one paper[46] reported nursing staff deviated from bar code medication administration policies by not scanning medication in an emergency. One paper[33] reported that routine and straightforward cases may lead to SSWAs.

SSWAs were reportedly caused by individual clinician factors in over half of the papers [56%;[13 30–33 35–37 40–42 44 45 48 53]]. Individual clinician factors were related to a range of features, including age that was perceived to influence willingness to adopt new technology and created additional work for colleagues,[31] fatigue and cognitive load.[33 36 54] Individual preferences were often reported as a cause of workarounds,[35 36 40 42 44 54] for example, one paper[35] described how a GP preferred to review the results of all tests they had ordered, this was inconsistent with the organisation's policy. An individual's familiarity with a
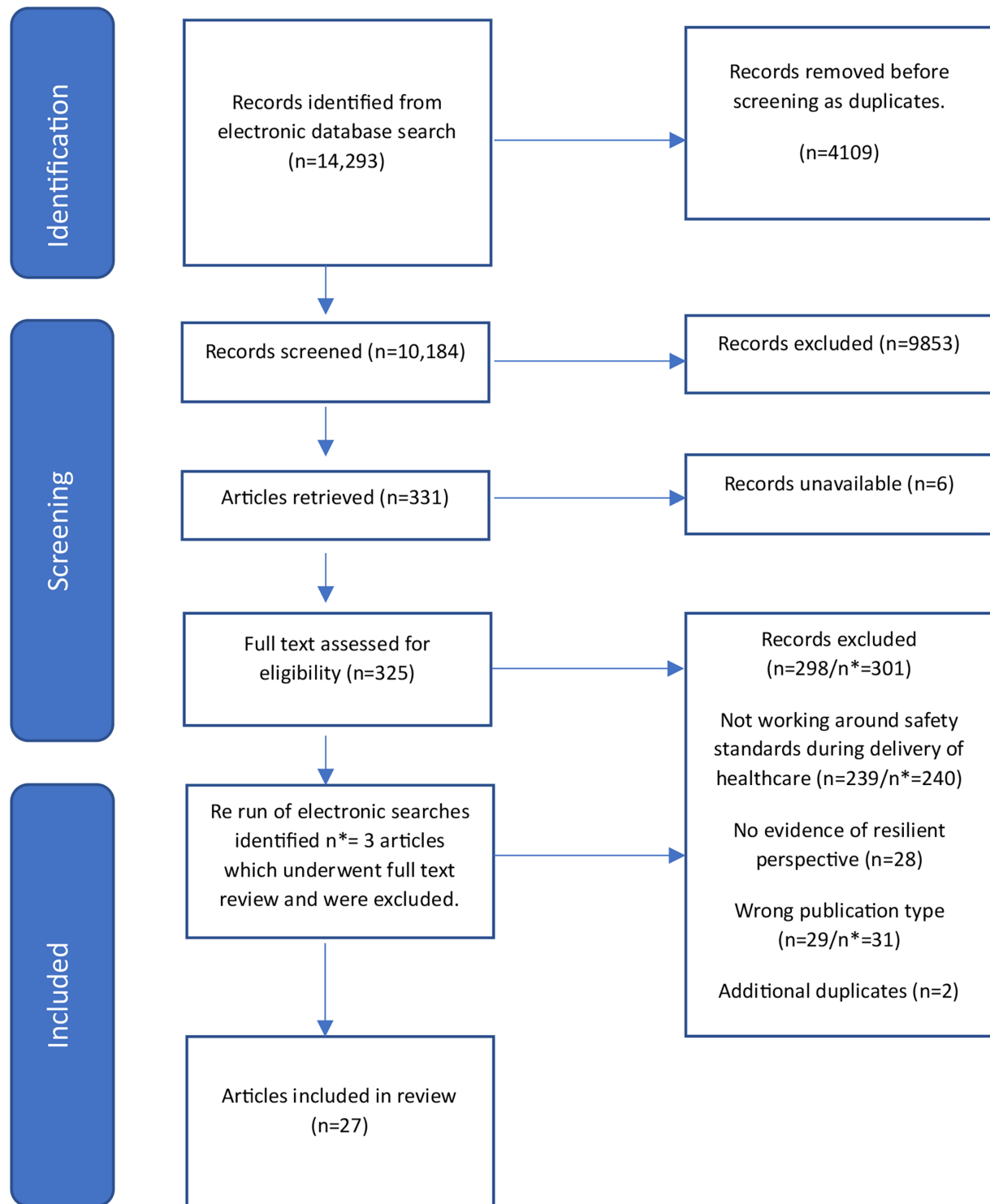
Figure 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram summarising search process.

person or task was perceived to cause workarounds, with some papers describing how having considerable clinical experience increased the likelihood of adopting an SSWA.[31 32 42] Other papers[13 31 40 42 44 53] discussed insufficient awareness of standards or lack of proficiency with technology resulted in SSWAs.

Professional factors led to SSWAs in over half the papers [52%;[13 29–32 34 38 40 47–52]]. In 30% of papers, healthcare staff chose to exercise professional judgement to manage risk when they perceived this was necessary, often knowingly working around policies [30%;[29 30 32 38 40 49–51]]. For example, one paper reported 73% of physicians transferred concentrated potassium solutions from prefilled syringes into empty syringes to enable the administration of a restricted medication when they perceived this was required to provide effective care.[50] In these situations, ensuring professional accountability and responsibility for

Table 1 Key characteristics of papers

First author	Year	Study design	Country	Context	Participants	Standard
Ashour[29]	2021	Hierarchical task analysis	UK	Community pharmacy	P, PT	Dispensing of medication policy
Back[30]	2017	Ethnographic study	UK	Emergency departments	N, Dr	Escalation policy
Barrett[31]	2020	Interview study	USA	Medical and surgical units	N, Dr, M	Electronic health record policy
Blijleven[13]	2017	Observation and interview study	Netherlands	Medical and surgical units, paediatrics	N, Dr, Ad	Electronic health record policy
Bressers[32]	2021	Ethnographic study	Netherlands	Anaesthetics, emergency departments	Dr	Safe surgery checklist, infection control protocol, supervision standards
de Saint Maurice[33]	2010	Document analysis and interview study	France	Anaesthetics	N, Dr	New preoperative rule for documenting certain items in patients notes
Dupret[34]	2017	Observations, interviews, survey	Denmark	Intensive care, geriatrics, psychiatric ward, radiotherapy, telemedicine, oncology, cardiology	N, StN, M	Standardised pain assessment using visual analogue score (VAS)
Grant[35]	2017	Ethnographic study	UK	General practice	N, Dr, Ad, M	Results handling process
Hakimzada[36]	2008	Ethnographic study	USA	Emergency departments	N, Dr, Ad	Identification procedures
Jones[37]	2016	Naturalistic inquiry	Australia	Intensive care, medical and surgical units, emergency departments, neuroscience, rehabilitation, transitional care	N	Infection control protocol, central venous catheter protocol, medication administration protocol
Jones[38]	2018	Interview study	UK	Community pharmacy	P, PT	Dispensing of medication policy
Lee[39]	2021	Mixed methods	Korea	Medical centres	N	Electronic health record policy
Lyons[40]*	2018	Mixed methods study	UK	Intensive care, medical and surgical units, paediatrics, oncology	N, Dr	Intravenous medication administration policy
Mula[41]	2019	Case study	Malawi	Medical and surgical units	N, Dr, P	Antibiotic stewardship standards
Mulac[42]	2021	Mixed methods	Norway	Geriatrics, cardiology	N	BCMA policy
Niazkhani[43]	2011	Qualitative study	Netherlands	Medical and surgical units	N, Dr, P, PT	Standards supporting medication use cycle
Popescu[44]	2011	Naturalistic inquiry	Australia	Medical and surgical units, cardiology	N	Medication administration protocol
Qian[45]	2018	Mixed methods study	Australia	Care home	N, NA	Medication administration protocol
Rack[46]	2012	Mixed methods study	USA	Medical and surgical units	N	BCMA policy
Sanford[47]	2022	Ethnographic study	UK	Medical and surgical units, intensive care, geriatrics	N, Dr	Gender breach policy
Schutijser[48]	2019	Qualitative study	Holland	Medical and surgical units	N	Double-checking of injectable medication
Vassilakopoulou[49]†	2012	Case study	Greece	Community pharmacy	P, PT	Electronic prescription policy

Table 1 Continued

First author	Year	Study design	Country	Context	Participants	Standard
Uema[50]	2020	Mixed methods study	Japan	Intensive care, medical and surgical units, emergency departments, neuroscience, rehabilitation, transitional care	Dr	High concentration of KCl infusion policy
Vassilakopoulou[51]†	2012	Case study	Greece	Community pharmacy	P, PT	Electronic prescription policy
Vos[52]*	2020	Qualitative study	UK	Intensive care, medical and surgical units, paediatrics, oncology	N	Intravenous medication administration policy
Watt[53]	2019	Interview study	UK	Acute hospital trust	N, Dr, NA, Ad	Blood transfusion policy
Westphal[54]	2014	Qualitative study	USA	Medical and surgical units, rehabilitation, community healthcare	StN	Infection control protocol, medication administration protocol

*These studies were based on the same dataset.
†These studies were based on the same dataset.
‡Policies related to patients being admitted to single sex bays.
Ad, administrative staff; BCMA, barcode medication administration; Dr, doctor; M, midwife; N, nurse; NA, nursing associate; P, pharmacist; PT, pharmacy technician; StN, student nurse.

delivering safe, effective care was regarded as of greater importance than organisational policies, despite them being in place to promote safety. Some papers described situations where healthcare professions went beyond the requirements of safety standards to create safety.[13 29 30 50 52] For example, one paper described how nurses would label intravenous lines when this was not required in policies.[52]

Assumptions about professional boundaries led to SSWAs in some papers.[29–31 40 52] For example, one paper reported pharmacists were observed to omit subtasks that they believed were not their responsibility, such as checking medicines complied with local clinical guidelines, which they believed to be the responsibility of the prescriber .[29]

SSWAs were in part caused by relational factors in over 40% of papers [41%;[29–32 35 37 41 43 49 51 52]]. SSWAs were used to either preserve relationships with team members or because strained relationships within the team inhibited communication. In some circumstances, SSWAs were used to explicitly help other healthcare team members to work effectively.[30 31 37 41 49 52] One paper[41] described situations where doctors would prescribe antibiotics based on what nurses could realistically administer with the number of patients they were caring for, rather than the medication recommended in the policy.

Environmental, technical and patient factors were partly responsible for some SSWAs. In one paper, nurses were reported to have worked around standards for safe medication administration by omitting to scan the bar code on patients' wristbands due to patients self-removing their wristbands (patient factor), the location of mediation and patients (environmental factor) and equipment failure (technical factor).[46] There were examples of staff prioritising patient needs over the use of a standard in one-third of papers [33%;[29 40 43 45–47 50 52 54]]. For example, a female patient was temporarily admitted to a male bed to receive prompt and effective care that breached gender standards.[47]

Implications of SSWAs

The majority of papers reported that SSWAs had perceived implications for care quality.[13 29–45 47–54] This was assessed by deductively categorising the implications of SSWAs using the IOM domains of quality (safe, effective, efficient, timely, patient centred, equitable), where this information was reported in each paper. Table 3 provides illustrative examples of reported SSWA implications for quality. Within the review papers, perceptions that SSWAs were being used to improve care were evident in all quality domains, although positive perceptions of SSWAs were most often reported as supporting person-centred, timely, efficient and effective care.

Papers also reported that SSWAs both support and diminish care quality within specific quality domains. For example, focusing on effectiveness, three papers[42 50 51] reported workarounds performed in one part of the system to improve effectiveness, might lead to less effectiveness elsewhere. Similarly, papers articulated healthcare professionals perceive at times there is a need to balance or trade off competing quality goals. For example, in one paper, nursing staff reported they actively tried to balance risk and efficiency rather than follow procedures mechanistically by stopping infusions when patients leave the ward for investigations, so the nurse does not have to accompany the patient when staffing resources were stretched.[40]

Table 2 Categories of potential causes of safety standard workarounds, frequency and papers

Cause	Characteristics	Frequency	Paper(s)
Organisational	Staffing levels, training, productivity pressures, workload, organisational climate, leadership, expectation of ability to multitask, information issues, ambiguity of policies, fit and relevance of policies, too many policies and complexity of workplace that impose obstacles to workflow.	25 papers	13 29–34 36–38 40–54
Example	'Failure to check medications at the bedside and the patient's identity because this represented the only way to 'get things done' and achieve the goal of timely medication administration.'		37
Task factors	Actual or perceived factors that impact on task performance, including factors that slow down performance and impose obstacles to workflow.	16 papers	13 29 31 33 36 38 40–42 45 46 49–52 54
Example	'Clinicians created workarounds to improve their actual efficiency of accomplishing tasks with the EHR (electronic health record). For example, clinicians knowingly did not re-enter do not resuscitate (DNR) orders in the EHR. Although DNR orders are valid for up to 1 year, the EHR requires clinicians—as a result of the hospital policy—to re-enter DNR orders every time a patient is readmitted to the hospital. In several cases, patients were readmitted every week on a routine basis. However, clinicians considered re-entering DNR orders for such patients on a weekly basis a 'waste of time' and therefore only entered a DNR order once.'		13
Patient factors	Acting in the best interest of patients based on their individual clinical presentation or specific circumstances that impose obstacles to workflow.	16 papers	29 34–36 38 40 41 43 45–48 50 52–54
Example	'It is a 'requirement' that if a patient is to be given pain relievers a clinical judgement should be based on a VAS pain score (visual analogue score). If the nurse is confronted with a patient who does not want to be measured in this way (he is angry or uncooperative for some reason), or if he cannot respond (due to dementia), then the nurse has to justify her reasons for not using the standardised score to determine what pain relief to administer.' 'In the observed scenario, 'despite the patient denying the nurse the opportunity to use this technology, she still needs to relate to the patient's reaction to it and to his pain and engage with his situation. She works around the technology by observing him and communicating with him in a different way (without using the VAS scale) and, when documenting her work in the nurse's office, she spends extra time documenting her non-standard work."		34
Individual clinician factors	Factors related to the individual clinician, such as fatigue, cognitive load, age, preference, position, proficiency, experience, familiarity with person or task, that impose obstacles to workflow.	16 papers	13 30–33 35–37 40–42 44 45 48 53 54
Example	'Individual practices had unwritten well understood processes for contacting patients which were generally used and justified in different ways.'		35
Professional factors	Factors related to professional judgement, professional boundaries and professional standards that impose obstacles to workflow.	14 papers	13 29–32 34 38 40 47–52
Example	'Dispensing controlled drugs that have passed their expiry date for a patient in urgent need of end of life care.'		38
Environmental factors	Factors related to the physical structure of the environment (space, light, heat) and the location of people and equipment that impose obstacles to workflow.	12 papers	29 30 38 41–43 45 47 49 51 52 54
Example	'The small size patient drawer led to deviations such as not dispensing the medications because only small forms of oral medications and ampoules were dispensed in the patient drawer, whereas voluminous medications were retrieved during administration.'		42
Relational/team factors	Factors related to teamwork, including managing hierarchy, communication issues, avoiding confrontation, delegation of responsibilities, that impose obstacles to workflow.	11 papers	29–32 35 37 41 43 49 51 52
Example	'A fellow resident advised her to 'just avoid her as much as possible'... However, they seek to make things work as well as possible by taking a lifeworld approach, deviating from the rules, while still using part of the system by way of creating workarounds such as informing a supervisor only after something has taken place.'		32
Technical factors	Actual and perceived hardware and software issues that impose obstacles to workflow.	7 papers	13 31 42 46 49 51 54
Example	'I needed to administer medications without scanning the patient wristband...because of scanner failure.'		46
Most papers described multiple causes of workarounds rather than just one cause.			

Table 3 Illustrative examples of quality implications

Quality domain	Example	Paper
Effective	This study explored intravenous infusion practices. 'We identified several examples where nurses consciously worked around policies that were perceived to be inefficient or un-workable with the aim of supporting effective and timely patient care. For example, although verbal orders were not permitted, staff often acknowledged that practice deviated from policy in this respect. 'Our medicines policy is perhaps a bit naïve in saying we should not do verbal orders. Which is fundamentally what it says at the moment. And then perhaps we do need to go back to revisit where verbal orders are taken, which would be additional, you know.'' (Site D)	[52]
Efficient	This study explored medication dispensing practices. 'Pharmacists themselves were observed missing some sub-tasks to improve efficiency. While checks to prevent fraud, non-financially efficient prescribing, or cheaper alternatives, were all included in the WAI (work as imagined) forms of the task, these were not observed to be completed in practice. Pharmacists commented that they would rarely come across prescriptions that would fail any of these checks, and so they would regularly skip them to improve processing time.' (Examples removed)	[29]
Timely	The study captured examples where nurses omitted steps in established processes for checking and documenting medications because, 'this represented the only way to 'get things done' and achieve the goal of timely medication administration.'	[37]
Patient centred	The study described how doctors and nurses worked around electronic health records (EHR). 'The nurse perceived EHR use impeded her ability to be nonverbally present with her patients; thus, she chose to violate EHR protocol to put her patients first.'	[31]
Equitable	The study described adaptions from the policy for reviewing test results in a GP practice. 'Participants expressed a trade-off between better management of results by a clinician who knew the patient or who had ordered the test and the speed with which results were managed including an equitable distribution of work between clinicians.'	[35]
Safe	The study described e-prescription system workarounds. 'Pharmacists were observed, though, to resort to partial processing of an order, after identifying potential adverse drug interactions, or detecting that prescribed drugs are out of the physician's specialty…pharmacists performing this workaround think that they have to control not only the quantity of the prescribed drugs, but also the suitability of the order.'	[49]

GP, general practitioner.

Perceived implications of what SSWAs achieve for safety were found to be diverse across the included papers. Several papers described SSWAs as unsafe.[13 31 36 41–43 45 51 54] For example, one paper reported that using workarounds during patient registration processes led to lapses in patient care.[36] Other papers did not describe SSWAs as beneficial for safety but discussed how the SSWA did not result in error or harm.[30 34 35 39 44 49] Some papers reported SSWAs had both positive and negative implications for safety simultaneously.[29 37 38 40 48 50 52 53] These papers, published from 2016 onwards, recognised healthcare staff are frequently balancing more than one risk and are juggling processes that compete to create safety. For example, double-checking intravenous medication may make the medication process safer but, if performing the double check leads to delays, the double check may make the process less safe.[48] Overall, these findings illustrate the importance of considering the implications of SSWAs across all aspects of quality.

Papers were analysed to understand the perceived implications of SSWAs for patients, staff and the organisation. SSWAs were perceived to be positive, negative and simultaneously both positive and negative for each group as illustrated in figure 2.

SSWAs were perceived to be beneficial for patients more often than they were perceived to be detrimental in over 20% of papers [22%;[31 34 39 40 49 50]].

For example, one study[31] found that nurses worked around electronic health record protocols to provide what they felt was better care. In another study, efficient care, achieved through an SSWA, was perceived to be beneficial, although it was acknowledged the workaround may have negatively impacted on the patients' experience of care.[47] Negative implications of SSWAs for patients were described in 15% of papers [15%;[13 36 41 44]], while 15% of other papers reported SSWAs neutrally [15%;[37 48 52 54]].

Perceived implications of SSWAs for healthcare staff were reported in 89% of papers [89%;[30–41 43–54]]. Perceptions were positive in one-third of papers, describing how SSWAs enabled the management of heavy workloads. However, in three papers,[34 47 53] SSWAs were perceived to increase staff workload. Over a quarter of papers perceived SSWAs enabled staff to deliver high-quality care in challenging circumstances [26%;[39–41 44 48 51 52]]. There were indications that SSWAs were encouraged or at least tolerated by managers for this reason.[38 45] Staff perceived SSWAs were used to balance risks when delivering care.[35 40 52] There was acknowledgement that operating outside of standards to provide care may make staff professionally vulnerable.[32 34 50]

Perceived implications of SSWAs for healthcare organisations were reported in 85% of papers [85%;[29–38 40–43 45–53]]. From an organisational
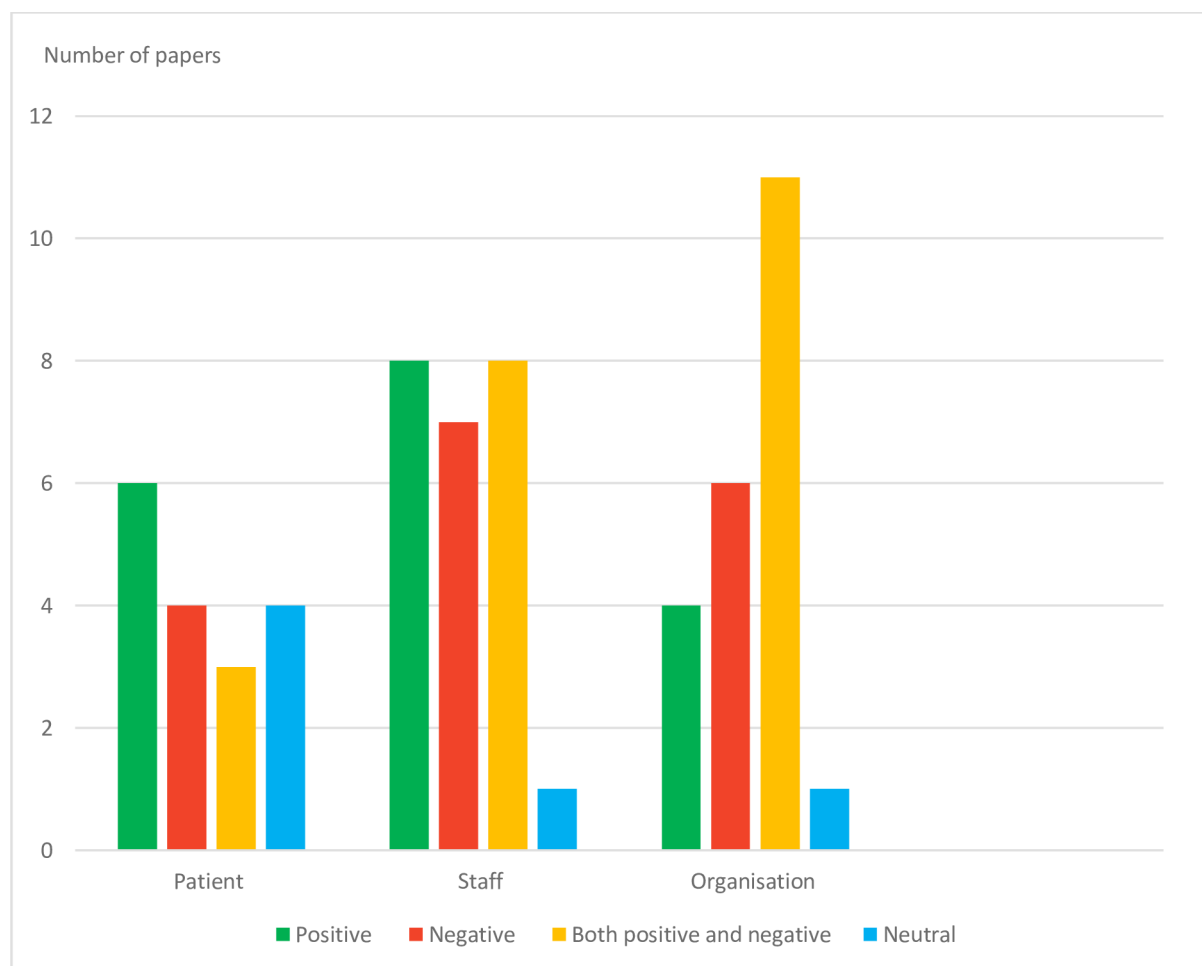
Figure 2 Perceived implications of safety standard workarounds for patients, staff and organisation.

perspective, workarounds were reported to be concerning in some papers,[41 48 53] as they can hide problems within the service and potentially shift safety margins by routinely pushing performance to the edge of acceptability in normal circumstances.[29 33 37 53] However, if known about, workarounds were regarded as an important source of organisational learning in 44% of papers,[13 29 30 33 35 38 40–43 48 53] highlighting when the system is vulnerable and illuminating strategies to overcome challenges in a complex system.[37 40 42 53] However, insufficient mechanisms to learn from work as it is done in organisations was reported as a limit to learning in some papers.[30 37 42]

Papers reported workarounds are one form of adaptation healthcare staff use to respond to challenging conditions[37 40 47 52 53] or in response to unworkable or overly prescriptive standards.[29 30 38 40 50] These papers described how standards are not achievable or adherence even desirable 100% of the time. This perspective recognised policies alone do not create safety and the adaptations made by staff can be resilient actions. For example, one study reported nurses contributed to system resilience by adapting rules rather than following them mechanistically.[52] Within some papers, it was suggested that developing flexible standards

or adopting safety goals based on core values may be beneficial.[29 30 48 52]

DISCUSSION

This review builds on previous literature reviews concerned with workarounds in healthcare[9 10 15–18] to explicitly explore the circumstances and perceived implications of working around safety standards. We found 27 papers that addressed our aim.

Theoretical implications

First, our findings have added to the theoretical understanding of workarounds. Our review has expanded the causes of healthcare workarounds previously described in the literature[9 11 18] by discriminating between professional factors and relational factors. In our review, professional causes of SSWAs underlined how organisational standards are sometimes in conflict with professional obligations. This makes it challenging for healthcare professionals to know how to proceed at times and can result in difficult decisions to follow standards or work around them being made by individuals. McCord *et al*[17] found conditions that provoke stress in healthcare settings are correlated with the use of workarounds by nurses and contribute

to burnout. Further, the use of workarounds by individuals reconciling professional responsibilities with organisational standards increases variation in care processes. This may not be undesirable[55–59] but may have implications for the wider system.[59 60]

As discussed by Hollnagel,[55] 'any living system that has a modicum of awareness of its own existence will show trade-offs in one way or the other.' While our review found frequent SSWAs, it was difficult to establish what workarounds were perceived to accomplish. Indeed, it is clear that SSWAs are viewed differently by different groups of stakeholders. For patients, SSWAs were sometimes perceived to support better care. Healthcare staff seemed to perceive SSWAs as supporting them to manage their workload, balance risks and deliver high-quality care in challenging circumstances. Our review found indications that SSWAs were tolerated by managers for these reasons as previously described in the literature.[61–63] Our findings also found there is some concern that this form of frontline dynamic adjustment, made in the moment, allows managers to protect themselves from inconvenient truths and shift accountability for failures to frontline workers which has been a concern of others.[64]

Our review found that from an organisational perspective there were theoretical fears that SSWAs may contribute to system migration.[65 66] This occurs as frontline workers adapt in response to pressures, create borderline-tolerated conditions,[67] which over time become normalised,[68] and cause the entire system to drift closer towards the very boundaries of safe performance. But our review also found SSWAs were regarded as a potential source of organisational resilience that enabled healthcare staff to adapt to challenges to maintain high-quality care,[69] as proposed in other research,[9 70–72] and could be used to improve system performance.[63 73]

Policy and practice implications

From our review, we were not able to fully understand what SSWAs achieve across the healthcare system. Scoping reviews are useful for mapping emerging evidence but there are limitations to using this approach. Empirical studies that specifically explore the highly nuanced implications of workarounds across the healthcare system are required to address this gap in the evidence. We found SSWAs were perceived as useful for achieving efficient, effective, person-centred care in some circumstances. But, consistent with previous literature, the perceived implications for safety were equivocal.[11 13 72 74] Nevertheless, our review found that papers frequently described unintended consequences for safety of both adhering to standards and deviating from standards, highlighting an inherent paradox in the use of standards to achieve safe care. This predicament centres on the fact that while standards can be used to promote safety,[75] unwavering adherence to standards can be a cause of harm[76] and stifle resilience.[59 77] One reason for this is the nature of healthcare work, where it is difficult to fully specify how tasks should be carried out at all times, such as when two standards are in conflict or when following a standard would result in a worse outcome for a patient. This also includes situations where healthcare staff find it necessary to go beyond rules to achieve goals.[72 75 78] In these circumstances, adjustments and compromises are valuable; effective performance relies on this variability.[55] This perspective acknowledges healthcare staff mediate the formal functioning of standards.[24 59] However, there are challenges accepting safety is achieved through both adherence to and adaptation from rules. Yet, we argue that the current status quo is intolerable for frontline staff who, to maintain safety, need to adhere to rules predictably and reliably, but not so rigidly or inflexibly as to fail,[6 7 79] without acknowledgement that this is the world they inhabit or any guidance.

To tackle this problem, there is an urgent need for research that explores the safety implications of SSWAs used by healthcare professionals. To be meaningful and to support the healthcare system to improve, this work will need to acknowledge safety is never the only ambition of a healthcare system,[55 80] and explore how the dynamic trade-offs between safety and other competing quality goals can be managed flexibly. This will be challenging, and further research will be needed to explore if different levels of the healthcare system can come to a collective understanding of what SSWAs achieve for diverse stakeholders in varying circumstances. This shared understanding will be important to determining how healthcare organisations and regulators can operationalise more flexible approaches to safety,[59 79 81 82] which may include developing flexible standards or adopting safety goals based on core values which account for the variability of conditions in the real world.

Strengths and limitations

To our knowledge, this is the first review to explore the circumstances and perceived implications of working around safety standards in the delivery of healthcare. The review was designed in collaboration with key stakeholders and offers new insights into the causes of SSWAs.

The review process aimed to ensure all papers concerned with working around safety standards were included; however, the review was limited to English language only, which may have excluded some relevant papers.

CONCLUSIONS

Our review has found the causes of SSWAs are aligned with causes of general workarounds previously described in the literature,[9 11 18] and that organisational causes are the most prominent reason for SSWAs. We found it was necessary to differentiate professional

factors from other causes of SSWAs to reflect how healthcare professionals use SSWAs to achieve what they perceive to be effective care when organisational standards conflict with professional obligations.

In our review, workarounds were perceived positively for achieving efficient, effective, person-centred care. But, consistent with previous literature,[10 11 13 72] the perceived implications for safety were equivocal, with papers reporting diverse perspectives regarding what SSWAs achieve for safety. The review drew attention to a contradiction in the use of standards to achieve safe care, identifying unintended consequences for safety with both adhering to and deviating from standards, and found working around standards, at times, was a potential source of organisational resilience that helped healthcare staff to succeed. We propose further research is needed to explore the safety implications of healthcare professionals using SSWAs which will have implications for improving the healthcare system.

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