Original Research

Patient safety professionals as the third victims of adverse events

Journal of Patient Safety and Risk Management
0(0) 1–10

DOI: 10.1177/2516043519850914
journals.sagepub.com/home/cri
SAGE

Julie Holden[1] and Alan J Card[2]

Abstract

Harm from adverse events does not always stop with patients and their families. In recent years, attention has been drawn to the plight of second victims, the healthcare workers involved in an incident, who can also experience significant harm. But even that does not tell the whole story. This article describes how those with indirect exposure to an adverse event can become the third victims of an adverse event, and focuses on the example of patient safety professionals responsible for incident investigation and improvement activities.

We outline potential sources of harm, including critical incident stress, emotional labor, abusive supervision, and competing loyalties/duties. These stressors may cause symptoms of acute stress disorder or post-traumatic stress disorder, loss of confidence, and economic harm, and may even lead patient safety professionals to leave the profession.

We also propose a number of actions to prevent or reduce harm to third victims, which include extending second victim support services to patient safety professionals, redesigning the patient safety role, providing board-level and senior management leadership, creating a culture of psychological safety, and tracking metrics related to third victims.

Having drawn attention to this problem, we hope the research community will move forward with an agenda to more robustly characterize the sources and types of harm third victims experience, and to test interventions aimed at preventing and mitigating that harm.

Keywords

Risk management, safe practice, organisational learning

Introduction

Avoidable patient harm is a major public health problem[1] and patients, themselves, are not always the only victims. Each adverse event creates ripples of potential harm that may also reach others,[2] including family members,[3] and the healthcare workers involved in the event (the "second victims"[4]). This paper will describe how adverse events can also harm those who are indirectly involved in an adverse event. Harm to these "third victims" has been largely ignored in both the literature and practice of patient safety.

The first victim

The first and most direct victims of adverse events are patients and their loved ones.[5] There is no strong epidemiological evidence to indicate how many die each year due to avoidable patient harm, and this has led to vigorous debate within the patient safety community.[6–8] Based on the best available evidence, researchers have made arguments for numbers as low as 25,000 deaths per year and as high as 200,000–400,000 deaths per year in US hospitals alone.[6–8] The disagreement for the most part revolves around two questions: (1) How much patient harm is actually preventable? And (2) Are patients dying *of* these healthcare-acquired conditions, or simply dying *with* them?[6]

The second question, however, is only relevant to the number of *deaths* that can be attributed to patient harm, not the overall rate of harm. And while mortality is obviously an extremely important category of harm, it is far from the only one. The rate of serious physical harm, such as disability or extended hospitalization, has been estimated as 10 to 20 times higher than the

[1]South Bay Community Services, Brockton, MA, USA
[2]Department of Pediatrics, UC San Diego School of Medicine, La Jolla, CA, USA

Corresponding author:
Julie Holden, South Bay Community Services, Brockton, MA, USA.
Email: hldnsj@gmail.com

mortality rate.[8] And none of these numbers account for harm that occurs outside the hospital (which may be at least as common[1]), for psychological harm (avoidable patient suffering, or grief over the loss of a loved one),[9,10] or for economic harm due to disability or the death of a family member.[10]

Regardless of the exact number of people who die as a result of patient harm, there is no debate about the broader question of acceptability: Patient harm represents a major public health concern and should be treated as such.[1,11]

The second victim

The second victims of adverse events are the healthcare workers or other staff members who were involved in the event.[4] These individuals may suffer significant emotional harm regardless of whether their actions actually contributed to the incident – or whether it was preventable at all. In addition to harm from the incident itself, second victims may also experience harm related to stress from adversarial legal proceedings, root cause analysis (RCA) investigations, or action by licensing boards.[12,13]

The impact on second victims can be severe,[14] and may take the form of signs and symptoms associated with acute stress syndrome[15] or post-traumatic stress disorder.[16] Some second victims are driven to leave the profession (which can cause significant economic losses for them, their families, and for the health system as a whole) or even to suicide.[15]

To address these problems, some organizations provide second victim support programs[12,17–19] and resilience training.[20,21] There is a pressing need for broader cultural change that acknowledges clinicians are humans who will inevitably make mistakes, no matter how competent or caring they are,[4,13,19,22] and that promotes a non-punitive response.[4] But, when it comes to preventable incidents, the most important way organizations can reduce harm to second victims is through primary prevention: Reducing the systems failures and patient harm that cause trauma in the first place.[22]

Recent advances in the field have included empirical studies characterizing the harm experienced by second victims[14,16,23–27] and sources of support for second victims[12,14,17,19,25–31]; the development of validated measurement instruments[24,27]; the use of critical incident stress debriefing[32] or psychological first aid[33]; and new models for understanding the second victim experience.[17,34]

The third victim

We now introduce the third victim of patient harm. In contrast with second victims, they are not involved in the adverse event, itself. Instead, third victims are those who experience psychosocial harm as a result of indirect exposure to an incident, such as their role in leading incident investigation or improvement activities after an adverse event. This may include patient safety personnel, as well as others with similar titles and roles (e.g., risk managers, and quality/process improvement personnel). But it might also include previously uninvolved clinicians who learn their current workflow is dangerous, middle managers tasked with implementing safety-critical improvements, communications officers who are tasked with being the "face" of the organization in the wake of a catastrophic patient safety failure, or others.

Some authors,[5,35–37] following the lead of Denham,[38] have defined healthcare *organizations* as the third victims of patient harm. Organizations certainly can suffer reputational, economic, and even cultural harm after adverse events, and effective crisis management is important.[2] But we argue that "corporate victimhood" is qualitatively different from psychosocial harm experienced by individual human beings (the hallmark of second victims). Hospitals do not experience acute stress syndrome, though their employees might. Healthcare systems do not burn out and leave the profession, although their employees might. Thus, in extending the logic of second victims beyond those directly involved in an adverse event, we focus on the human impact – fully recognizing that healthcare organizations are comprised of those humans.

Waring has described a different definition of third victims: Whistleblowers and others who speak up, or speak out, about patient safety concerns.[39] And Shama has proposed healthcare risk managers as third victims.[40] Both of these formulations fit readily within the broader definition we propose.

In the remainder of this article, we consider a specific subset of third victims: Those responsible for investigating patient safety incidents and devising interventions to improve safety. Although we use "patient safety professionals" as a shorthand, these individuals may hold diverse titles including patient safety officer, risk manager, quality manager, etc. In some systems (e.g., NHS England) they may be a clinical manager from another area. In other cases, a middle manager from one of the units involved in an incident might be called upon to undertake these duties. Regardless of their usual role, patient safety professionals become third victims when they experience psychosocial harm (with or without subsequent physical manifestations)

that results from their involvement in investigation and improvement activities.

Evidence base

While formal research on patient safety professionals as third victims is in its infancy, preliminary evidence suggests the problem is both widespread and important. Two relevant studies have directly addressed the issue. First, a recent international study of healthcare risk and safety professionals found that workplace bullying is common and – importantly – that it is correlated with pressure to change risk and safety-based decisions. Bullying of healthcare risk and safety professionals was also found to be associated with maladaptive coping behaviors in a sizable minority of cases.[41]

Second, Shama uses a small qualitative study to describe some of the causes and consequences of psychological harm among risk managers.[40] Emotional labor and empathy were a significant source of harm. As one risk manager described:

> *"My stress in this job was more related to dealing with families and staff following adverse outcomes that resulted in serious harm or death. Depending on the event, patients and/or their families would often be angry so I would try and deal with their emotions and provide for support for them as well. At times, I would tear up with involved staff who ended up crying about the event, and then during family meetings, would tear up again with the families as they shared their feelings."*

Another noted that "the hardest cases are those involving children," an issue that healthcare accident investigators have in common with those from other industries.[42,43] The chronic and negative nature of these exposures was also highlighted by a respondent who noted "there is a sad complicated story with every file on my desk."

Shama described an almost complete lack of emotional support for risk managers, and a sense that the harm they experience goes unacknowledged. But this harm is clearly real. Respondents experienced anxiety, lost sleep, emotional exhaustion, and a sense of being blamed by everyone for events they weren't involved in. This led some to consider leaving the profession (e.g., "Life for risk managers is very stressful…I love risk management but I am not sure all the stress is worth it.").

Other literature also supports the existence, and adverse impact, of psychological stressors that affect patient safety professionals –particularly risk managers. They are often misunderstood by their coworkers,[44–46] and face hostility, defensiveness, and isolation that impair their ability to be successful.[45] Simms et al., found risk managers struggle to deliver safety improvements, given a lack of engagement from clinical staff, and face demoralizing external pressure from reporting and compliance requirements that are often ill-conceived, unsuited to local practice, and a distraction from actually improving safety.[44]

Capp describes widespread negative perceptions of risk managers on the part of physicians, finding that many avoid risk managers whenever possible and see the risk management function as punitive.[46] And Levett et al.[47] describes risk managers being caught in the middle between stakeholders committed to learning from adverse events and those who would prefer to "whitewash" them, along with a tension between risk managers' competing missions (i.e., "…the fact-finding investigative mission, the legal defense considerations, and the physician support teams").

The patent safety infrastructure has also been weaponized by some frontline workers who threaten each other with the phrase, "I'll Datix you" (report you in the incident reporting system).[48]

Psychological harm is common among accident investigators,[42,43,49] and patient safety professionals are likely no exception. In fact, some important sources of distress may be more common in healthcare. Anecdotally, healthcare incident investigators often identify critical solutions in response to an adverse event, but then find themselves unable to secure senior management support for those solutions. They are then forced to move forward with interventions they judge insufficient to protect patients. And, as employees of the organizations they are investigating, they are expected to do so without making their disagreement public.

In contrast, air safety investigations (e.g., by the U.S. National Transportation Safety Board (NTSB)) sometimes ground whole fleets of airplanes until needed repairs are made; all recommendations are made public; progress toward meeting those recommendations is made public; and on those relatively rare occasions when airlines or regulatory agencies fail to act on important recommendations, they are called out in the agency's annual Most Wanted List (https://www.ntsb.gov/safety/mwl/). A similar approach has recently been introduced in the UK,[50] but is not yet at the scale of the NTSB.

The stronger solutions used by the airline industry also mean that crashes are extremely rare. Some healthcare incident investigators, on the other hand, see an ongoing stream of incidents, illustrating all the different ways things can go wrong. Not only is this stressful in its own right, but it can also add to the stress of receiving care when patient safety professionals become patients.

There is a pressing need for more targeted, high-quality research to characterize the third victim phenomenon. In large part, this paper is a call to action for just that. But drawing on the evidence above, we can begin to sketch out likely avenues for exploring the sources of harm and forms of harm experienced by third victims.

Potential sources of harm to third victims

Although the process of patient safety improvement is often described in analytical terms, it is actually a very human enterprise that is fundamentally social and political in nature.[51–61] As Table 1 illustrates, patient safety professionals face a number of different stressors across the lifecycle of an incident investigation. While there are some areas of overlap (e.g., disclosure), many of these hazards are different from those experienced by second victims, and require different strategies for harm prevention and mitigation.

Some of these sources of harm, such as abusive supervision and bullying, are entirely avoidable. Others, such as critical incident stress, are an inherent part of the role. The goal for healthcare organizations should be to prevent avoidable occupational suffering, and to mitigate the harm caused by unavoidable occupational suffering.[22]

Potential forms of harm to third victims

Ultimately, third victims likely suffer the same forms of psychological harm and burnout as second victims and accident investigators in other industries, including acute stress disorder[15,43] or post-traumatic stress disorder.[15,16,43,49] Like second victims, they may come to doubt their own professional competence, and even leave the profession. This is costly both to them and to the healthcare system as a whole, because there is a limited pool of highly experienced patient safety professionals to draw from. Loss of confidence may be especially acute when third victims are exposed to maladaptive social and organizational responses such as blame, ostracization, or abusive supervision.

Leaving a position can impose a significant – sometimes impossible – economic burden on patient safety professionals and their families. When financial concerns prevent a third victim from exiting a toxic or unsupportive workplace, the feeling of being "trapped" adds yet another layer of emotional stress.

Solutions

Healthcare systems pursuing the "triple aim" of improving patient experience, population health, and the cost of care have found that their efforts often backfire if they don't also prioritize the well-being and job satisfaction of healthcare employees. As a result, the goal of promoting joy and meaning in work has been widely adopted as the fourth component of the "quadruple aim."[84,85] And, while the literature on the quadruple aim has focused first on frontline clinicians, this goal applies equally to all who are involved in the complex task of delivering on the triple aim[84] – including patient safety professionals.

This insight speaks directly to the problem of third victims. As Sikkaet al.[84] wrote

> The precondition for restoring joy and meaning is to ensure that the workforce has physical and psychological freedom from harm, neglect and disrespect. For a health system aspiring to the Triple Aim, fulfilling this precondition must be a non-negotiable, enduring property of the system. It alone does not guarantee the achievement of joy and meaning, however the absence of a safe environment guarantees robbing people of joy and meaning in their work.(p.609)

To address the problem of third victims, healthcare organizations should start by building on strategies that reduce psychological harm for second victims, redesigning the role of patient safety professionals, and providing an environment that is more supportive of patient safety improvement.

Expanding second victim support services and resilience training to third victims

Recently, some healthcare organizations have designed and implemented second victim support services. While these services differ in their details, the overall aim is to confidentially provide emotional (and sometimes practical) help to the second victims of a patient safety incident.[12,17–19] These programs could easily be extended to third victims, as well. However, they are sometimes short-term and initiated in response to specific incidents. Because patient safety professionals are at particular risk of cumulative critical incident stress,[49] longer-term support may be required, and it is important that no time limits apply to their use of such services.

Similarly, resilience training is a cornerstone of recent efforts to reduce physician burnout.[20,22,81,86–88] And, while it is not the panacea that some have hoped, resilience training can help mitigate the harm caused by unavoidable occupational suffering.[22] Because patient safety work involves a number of unpreventable hazards that are in inherent part of the job (e.g., exposure to critical incident stress), proactive resilience training probably has a role to play.

Table 1. Some sources of harm to third victims.

Source of harm	Details
Critical incident stress	Like accident investigators in other industries, patient safety professionals can experience trauma and stress as a result of conducting an incident investigation, especially if they empathize with the victims, or if the victims are children.[42,43,49]
Cumulative critical incident stress	Because patient safety professionals experience repeated and ongoing exposure to adverse events (perhaps more so than incident investigators in many other areas), the long-term effects of cumulative critical incident stress[49] may be a significant source of harm.
Emotional labor: Disclosure and victim support	Patient safety professionals may play an important role in disclosing errors to patients and families,[62–65] and serving as a liaison for ongoing communication with them about the results of the incident investigation. Managing these conversations can be emotionally difficult and a potent source of stress.
Emotional labor: Investigating incidents	The impacts of incident investigation and systems improvement efforts have potentially significant ramifications for all involved. Therefore, even when patient safety professionals focus on fixing the system rather than affixing blame, interactions with clinicians, administrators, and other staff can easily become difficult.[51,66]
	Those involved in an adverse event often experience significant emotional distress. When patient safety professionals are charged with incident investigation, they are aware that their work risks causing further harm by causing first and second victims to relive the events. Blame and infighting among the care team involved in an incident can also occur.[66] The emotional labor involved in conducting a thorough, systems-focused investigation while minimizing "collateral damage" to other staff can be challenging.
Emotional labor: Implementing action plans	Defensiveness is common in the wake of an incident – both on the part of the clinicians involved[4] and on the part of managers.[67] Action plans may therefore be perceived as a suggestion of blame. This can lead to emotionally maladaptive responses, which the patient safety professional must manage. And, in the context of ongoing change fatigue[68] on the part of clinicians, even less fraught action plans can face significant resistance. Nor is this resistance always unreasonable; the tools of current practice provide patient safety professionals with little support for mitigating the negative side-effects of patient safety interventions.[69–73]
	Patient safety professionals can easily become embroiled in a professional tug-of-war between the partisans of different groups, either as a result of political hijacking,[55] or insufficient support from administrators for ensuring that appropriate changes are made.[61,74,75] And they often have limited leverage to resolve such disputes. Patient safety professionals rarely have a level of formal authority that is commensurate with their scope of responsibility.[76] And they also lack the informal status that comes with a revenue-producing clinical role.
Abusive supervision and bullying	Maladaptive organizational politics may also extend to *abusive supervision*, which is "subordinates' perceptions of the extent to which supervisors engage in the sustained display of hostile verbal and nonverbal behaviors, excluding physical contact."(Tepper,[77] p.178) This can lead to significant psychological distress for the victim[77,78] and may impair the effectiveness of the patient safety professional's work, both directly and by reducing organization support.[78,79]
	Abusive supervision can take many forms ranging from private meetings where intimidation is used, devaluing input in a public forum, or arranging for others in the organization to undertake disciplinary action or ostracize the victim. A recent international study found that healthcare risk and safety professionals experience high levels of bullying in the workplace.[41]
Competing loyalties and duties	Patient safety professionals may face competing loyalties and ethical duties. The scope of work for many patient safety professionals includes not only a duty to protect patients, but also a duty to protect the organization from liability. If the organization is at fault and could have reasonably prevented the adverse event, these two obligations can come into conflict. While the literature,[10,58,80,81] and best practice guidance,[63,82,83] suggest proactive disclosure and apology in such cases, many organizations have yet to adopt this approach, which can leave patient safety professionals in a difficult ethical position.
	More broadly, patient safety efforts compete with the bottom line. Unlike fee-for-service clinical care, patient safety is a cost center. With rare exceptions, doing more or better at patient safety often drains, rather than adds to, the organizational coffers. Therefore, patient safety professionals often find themselves unsuccessful in advocating for what they see as the best and strongest solutions to patient safety problems. This can lead to a sense of futility and ethical failure.

Redesign of the patient safety role

A more complex, but potentially more far-reaching intervention would be to redesign the role of patient safety professionals. Key goals for such an effort should be to promote professionalization, better match the scope of the patient safety professional's authority to their scope of responsibility, and to ensure direct access to senior management.[51,76]

Role redesign should also focus on ensuring the day-to-day activities of patient safety professionals make the best possible use of their expertise. Of particular interest is whether the patient safety role should involve less focus on investigating incidents after someone has already been harmed, and more focus on proactive risk assessment and the design of effective risk control interventions.

Incident investigation/RCA is one of the most common duties of patient safety professionals, but there is no evidence that this is the most effective approach to improving patient safety.[89,90] In fact, healthcare's approach to incident reporting is very poorly aligned with evidence from other safety-critical industries,[91] and some commonly-used RCA tools are so ineffective they may do more harm than good.[92]

One important problem associated with RCA is that those involved in the incident (and their partisans) may feel that the investigation and any solutions proposed represent an overt or tacit communication of blame. This can lead to defensiveness and hostility, even when the patient safety professional is focused strictly on systems improvement. Other problems that have been identified include the common – and incorrect – pursuit of a single root cause, as well as "the questionable quality of many RCAs, their susceptibility to political hijack, their tendency to produce poor risk controls, poorly functioning feedback loops, failure to aggregate learning across incidents and confusion about blame and responsibility."[55]

Relying on incidents of harm as the primary prompt for improvement makes perfect sense in systems that are simple, stable, and safe. But none of these are true of healthcare. This calls for a proactive approach, in which patient safety professionals focus on identifying and addressing risks *before* they cause harm.[93–100] In addition to providing a more complete picture of patient safety risks,[98] there is a key advantage to this approach from a third victim perspective: The complete lack of an emotionally-charged adverse event. In the absence of victims and even the *potential* for blame, participants may have a much easier time objectively assessing and improving the systems they work in, and there is far less scope for harm to the patient safety professional.

A related problem is that too much time spent on incident investigation means too little time is left for designing effective solutions that make work easier instead of harder. Current practice in risk control action planning is not supported by the same kinds of tools, techniques, and time investment that are dedicated to RCA,[89,101] and the result is often weak or poorly-targeted risk controls. Failed "solutions" leave first, second, and third victims vulnerable to repeated incidents, and may erode support for patient safety efforts. Emerging evidence suggests that structured, participatory approaches to risk control action planning may result in stronger and more acceptable solutions.[69–71,73,102,103]

Board-level and senior management leadership

Those at the top of the org chart set the tone for the entire organization. If board members and senior managers prioritize patient safety, and ensure that patient safety professionals have the practical and political support they need to be successful, this is likely to reduce many sources of preventable suffering and burnout. It is important, however, that senior leaders prioritize patient safety not only in word, but also in *deed*.[104] A key way to operationalize this support is for senior managers to be directly engaged in key patient safety interventions.[75,105]

Raising the profile of patient safety within the organization also raises the profile of patient safety professionals. This may prevent them from being seen as a "soft target" for abusive supervision. It may also give line managers greater incentive to support the efforts of patient safety professionals, because they know they will be answerable for the outcomes of those initiatives. And, if a stronger organizational commitment to safety leads to fewer patient safety incidents, it will also reduce exposure to critical incident stress.

Creating a culture of psychological safety

Psychological safety is ". . . a shared belief that the team is safe for interpersonal risk taking," and ". . . a sense of confidence that the team will not embarrass, reject, or punish someone for speaking up. This confidence stems from mutual respect and trust among team members (Edmondson,[106] p 354)". Psychological safety provides a host of benefits across domains that are key to patient safety improvement, such as communication and knowledge sharing; learning behavior; performance and innovation; staff attitudes; and workarounds[107]; and a psychologically safe environment has been widely described as important for effective patient safety efforts.[79,104,108,109]

As with the other solutions we propose, creating a culture of psychological safety works at multiple levels

to reduce harm to patient safety professionals. It allows patient safety professionals to investigate incidents, evaluate findings, and propose solutions without fear of retribution. But, more broadly, it reduces the barriers to productive participation in patient safety improvement for *other* managers and staff, and addresses the root cause of maladaptive behaviors like abusive supervision. It may also reduce some of the burden of psychosocial management and conflicting loyalties faced by patient safety professionals by allowing all the staff involved in an incident and its aftermath to focus on learning and improvement, rather than avoiding blame.

Implementing approaches based on the idea of a non-punitive[4] or "just culture"[110–114] may help to build psychological safety. However, *just culture* is easier said than done, and "...the culture of blame remains a tenacious foe to improving patient safety."[115] Healthcare organizations should plan for a systematic and ongoing process to fully implement just culture and sustain it over time.

Developing and tracking metrics for third victims

Finally, healthcare organizations should develop and track metrics related to third victims and risk reduction strategies. As additional research on third victims uncovers specific metrics, those should be adopted, but some existing measures can be leveraged to help address this problem. Measures of culture (e.g., psychological safety[106] or safety culture[116]) may provide important data about underlying causes of harm. Other, more targeted but lagging metrics, such as turnover among patient safety professionals, time to fill vacant positions, and exit interview data, may assist organizations in identifying specific sources of harm.

Conclusion

Adverse events in healthcare have the potential to cause harm not only to patients and families (the first victims) and the healthcare workers involved in the event (second victims), but also to those – like patient safety professionals – who are indirectly exposed to the incident (third victims).

Focusing on patient safety professionals, we have described a number of potential sources and types of harm experienced by third victims, as well as strategies to reduce risk. We know enough that there can be no excuse for inaction on the part of healthcare organizations. But truly evidence-based practice to reduce harm and promote joy and meaning in work for patient safety professionals will require research that specifically addresses the needs of this population.

Having drawn attention to this problem, we hope the research community will move forward with an agenda to more robustly characterize the sources and types of harm third victims experience, and to test interventions aimed at preventing and mitigating that harm.

Authors' contributions

Julie Holden developed the concept of third victims, and contributed to the literature review and writing. Alan J Card contributed to framing the concept and led the literature review and writing.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Julie Holden https://orcid.org/0000-0002-9603-3493

References

1. Card AJ. Patient safety: this is public health. *J Healthc Risk Manag* 2014; 34: 6–12.
2. Conway J, Federico F, Stewart K, et al. Respectful management of serious clinical adverse events. *IHI Innov Ser White Pap* 2010.
3. Vincent C. Understanding and responding to adverse events. *N Engl J Med* 2003; 348: 1051–1056.
4. Wu AW. Medical error: the second victim. *BMJ* 2000; 320: 726–727.
5. Wu AW, Shapiro J, Harrison R, et al. The impact of adverse events on clinicians: what's in a name? *J Patient Saf*, http://insights.ovid.com/crossref?an=01209203-900000000-99430 (2017, accessed 27 May 2019).
6. Shojania KG and Dixon-Woods M. Estimating deaths due to medical error: the ongoing controversy and why it matters. *BMJ Qual Saf* 2017; 26: 423–428.
7. Makary MA and Daniel M. Medical error – the third leading cause of death in the US. *BMJ* 2016; 353: i2139.
8. James JT. A new, evidence-based estimate of patient harms associated with hospital care. *J Patient Saf* 2013; 9: 122–128.
9. Card AJ and Klein VR. A new frontier in healthcare risk management: working to reduce avoidable patient suffering. *J Healthc Risk Manag* 2016; 35: 31–37.
10. Vincent CA and Coulter A. Patient safety: what about the patient? *Qual Saf Healthc* 2002; 11: 76–80.
11. National Patient Safety Foundation. Preventable health care harm is a public health crisis and patient safety requires a coordinated public health response. *Natl Patient Saf Found* 2017; 501: 1–4.

12. Trent M, Waldo K, Wehbe-Janek H, et al. Impact of health care adversity on providers: lessons learned from a staff support program. *J Healthc Risk Manag* 2016; 36: 27–34.
13. Scott SD, Hirschinger LE, Cox KR, et al. The natural history of recovery for the healthcare provider "second victim" after adverse patient events. *Qual Saf Heal Care* 2009; 18: 325–330.
14. Gerven E, Van Bruyneel L, Panella M, et al. Psychological impact and recovery after involvement in a patient safety incident: a repeated measures analysis. *BMJ Open* 2016; 6: e011403–e011410.
15. Wu AW and Steckelberg RC. Medical error, incident investigation and the second victim: doing better but feeling worse? *BMJ Qual Saf* 2012; 21: 267–270.
16. Harrison R, Lawton R and Stewart K. Doctors' experiences of adverse events in secondary care: the professional and personal impact. *Clin Med (Lond)* 2014; 14: 585–590.
17. Scott S and McCoig M. Care at the point of impact: insights into the second-victim experience. *J Healthc Risk Manag* 2016; 35: 6–13.
18. Edrees H, Brock D, Wu A, et al. The experiences of risk managers in providing emotional support for health care workers after adverse events. *J Healthc Risk Manag* 2016; 35: 14–21.
19. White AA, Brock DM, McCotter PI, et al. Risk managers' descriptions of programs to support second victims after adverse events. *J Healthc Risk Manag* 2015; 34: 30–40.
20. Oliver D. David Oliver: when "resilience" becomes a dirty word. *BMJ* 2017; 358: j173604.
21. Baker K and Sen S. Healing medicine's future: prioritizing physician trainee mental health. *AMA J Ethics* 2016; 18: 604–613.
22. Card A. Physician burnout: resilience training is only part of the solution. *Ann Fam Med* 2018; 16: 267–270.
23. Rodriquez J and Scott SD. When clinicians drop out and start over after adverse events. *Jt Comm J Qual Patient Saf* 2018; 44: 137–145.
24. Swartwout E and Rodan M. The development and testing of the psychometric properties of the emotional response and disclosure of errors in clinical practice instrument. *J Nurs Meas* 2017; 25: 184–200.
25. Brunelli MV. Cross-cultural adaptation and psychometric evaluation of a Second Victim Experience and Support Tool (SVEST). *J Patient Saf*. Epub ahead of print 3 May 2018. DOI: 10.1097/PTS.0000000000000497
26. Winning AM, Merandi JM, Lewe D, et al. The emotional impact of errors or adverse events on healthcare providers in the NICU: the protective role of coworker support. *J Adv Nurs* 2018; 74: 172–180.
27. Burlison JD, Scott SD, Browne EK, et al. The second victim experience and support tool. *J Patient Saf* 2017; 13: 93–102.
28. Edrees HH, Morlock L and Wu AW. Do hospitals support second victims? Collective insights from patient safety leaders in Maryland. *Jt Comm J Qual Patient Saf* 2017; 43: 471–483.
29. Leferink EHM, Bos A, Heringa MP, et al. The need and availability of support systems for physicians involved in a serious adverse event. *JHA* 2018; 7: 23.
30. Merandi J, Liao N, Lewe D, et al. Deployment of a second victim peer support program: a replication study. *Pediatr Qual Saf* 2017; 2: e031.
31. Edrees HH and Wu AW. Does one size fit all? Assessing the need for organizational second victim support programs. *J Patient Saf*. Epub ahead of print 30 June 2017. DOI: 10.1097/PTS.0000000000000321
32. Harrison R. Critical incident stress debriefing after adverse patient safety events. *Am J Manag Care* 2017; 23: 310–312.
33. Gispen F and Wu AW. Psychological first aid: CPR for mental health crises in healthcare. *J Patient Saf Risk Manag* 2018; 23: 51–53.
34. Schiess C, Schwappach D, Schwendimann R, et al. A transactional "Second-Victim" model-experiences of affected healthcare professionals in acute-somatic inpatient settings: a qualitative metasynthesis. *J Patient Saf*. Epub ahead of print 30 Jan 2018. DOI: 10.1097/PTS.0000000000000461
35. Mira JJ, Carrillo I, Guilabert M, et al. The second victim phenomenon after a clinical error: the design and evaluation of a website to reduce caregivers' emotional responses after a clinical error. *J Med Internet Res* 2017; 19: 1–14.
36. Seys D, Wu AW, Gerven E, Van, et al. Health care professionals as second victims after adverse events : a systematic review. *Eval Health Prof* 2012; 36: 135–162.
37. MacLeod L. "Second victim" casualties and how physician leaders can help. *Physician Exec* 2014; 40: 8–12.
38. Denham CR. TRUST: the 5 rights of the second victim. *J Patient Saf* 2007; 3: 107–119.
39. Waring J. When whistle-blowers become the story: the problem of the "Third Victim" comment on 'Cultures of Silence and Cultures of Voice: the role of whistleblowing in healthcare organisations. *Int J Health Policy Manag* 2015; 5: 133–135.
40. Shama S. The third victim: caring for the risk manager. *ASHRM Forum* 2012; Q4: 6–7.
41. Brewer G, Holt B and Malik S. Workplace bullying in risk and safety professionals. *J Safety Res* 2018; 64: 129–133.
42. Cotter M. *The air accident investigator – often the hidden victim?* Dublin: Dublin Business School, 2004.
43. Dyer BR and Brickhouse AT. Mental health aspects of aircraft accident investigation: protecting the investigator. In: *Proceedings of the 41st Annual international seminar in air safety investigation*. Sapporo, Japan: ISASI, 2010, pp.76–81.
44. Simms RA, Yelland A, Ping H, et al. Using data and quality monitoring to enhance maternity outcomes: a qualitative study of risk managers' perspectives. *BMJ Qual Saf* 2014; 23: 457–464.
45. Firth-Cozens J. Anxiety as a barrier to risk management. *Qual Saf Health Care* 2002; 11(suppl II): 115.
46. Capp MB. As others see us: physicians' perceptions of risk managers. *J Healthc Risk Manag* 1996; 16: 4–12.

47. Levett JM, Mellott S, Smith AL, et al. Perioperative risk and management of surgical patients. In: *Surgical patient care: improving safety, quality and value* (Sanchez JA, Barach P, Johnson J, Jacobs JP, eds). 2017, pp.571–588.
48. Titcombe J. Transform the culture of fear into a culture of learning. *Heal Serv J* 2015; Jul 1:1–4, www.hsj.co.uk/comment/transform-the-culture-of-fear-into-a-culture-of-learning/5086847.article
49. Kowalski KM and Podlesny A. A study of burnout in accident investigators in the US mining industry. 2003; 1: 155–169.
50. Macrae C and Vincent C. A new national safety investigator for healthcare: the road ahead. *J R Soc Med* 2017; 110: 90–92.
51. Nicolini D, Waring J and Mengis J. The challenges of undertaking root cause analysis in health care: a qualitative study. *J Health Serv Res Policy* 2011; 16 Suppl 1: 34–41.
52. Dixon-Woods M. Why is patient safety so hard? A selective review of ethnographic studies. *J Health Serv Res Policy* 2010; 15 Suppl 1: 11–16.
53. Iedema RA, Jorm C, Braithwaite J, et al. A root cause analysis of clinical error: confronting the disjunction between formal rules and situated clinical activity. *Soc Sci Med* 2006; 63: 1201–1212.
54. Martin GP, McKee L and Dixon-Woods M. Beyond metrics? Utilizing 'soft intelligence' for healthcare quality and safety. *Soc Sci Med* 2015; 142: 19–26.
55. Peerally MF, Carr S and Waring J. The problem with root cause analysis. *BMJ Qual Saf* 2017; 26: 417–422.
56. Dixon-Woods M, Bosk CL, Aveling EL, et al. Explaining Michigan: developing an ex-post theory of a quality improvement program. *Milbank Q* 2011; 89: 167–205.
57. Nicolini D, Waring J and Mengis J. Policy and practice in the use of root cause analysis to investigate clinical adverse events: mind the gap. *Soc Sci Med* 2011; 73: 217–225.
58. Macrae C. Remembering to learn: the overlooked role of remembrance in safety improvement. *BMJ Qual Saf* 2017; 26: 678–682.
59. Braithwaite J, Westbrook MT, Mallock NA, et al. Experiences of health professionals who conducted root cause analyses after undergoing a safety improvement programme. *Qual Saf Heal Care* 2006; 15: 393–399.
60. Iedema RA, Jorm C, Long D, et al. Turning the medical gaze in upon itself: root cause analysis and the investigation of clinical error. *Soc Sci Med* 2006; 62: 1605–1615.
61. Iedema R, Jorm C and Braithwaite J. Managing the scope and impact of root cause analysis recommendations. *J Health Organ Manag* 2008; 22: 569–585.
62. LeCraw FR, Montanera D, Jackson JP, et al. Changes in liability claims, costs, and resolution times following the introduction of a communication-and-resolution program in Tennessee. *J Patient Saf Risk Manag* 2018; 23: 13–18.
63. American Society for Healthcare Risk Management. Disclosure of unanticipated events: the next step in better communication with patients. Chicago, www.ashrm.org/pubs/files/white_papers/Disclosure-of-Unanticipated-Events-in-2013_Prologue.pdf (2003, accessed 27 May 2019).
64. Hoffman C, Beard P, Greenall J, et al. *Canadian root cause analysis framework: a tool for identifying and addressing the root causes of critical incidents in healthcare framework*. Edmonton, AB: Canadian Patient Safety Institute, 2006.
65. Iedema R, Sorensen R, Manias E, et al. Patients' and family members' experiences of open disclosure following adverse events. *Int J Qual Heal Care* 2008; 20: 421–432.
66. Peerally MF and Dixon-Woods M. Root cause analysis gone wrong. *AHRQ Web M&M* 2018; Case 444. https://psnet.ahrq.gov/webmm/case/444/root-cause-analysis-gone-wrong (27 May 2019).
67. Singer SJ, Hayes J, Cooper JB, et al. A case for safety leadership team training of hospital managers. *Health Care Manage Rev* 2011; 36: 188–200.
68. Garside P. Are we suffering from change fatigue? *Qual Saf Health Care* 2004; 13: 89–90.
69. Card AJ, Ward JR and Clarkson PJ. Rebalancing risk management – part 1: the process for active risk control (PARC). *J Healthc Risk Manag* 2014; 34: 21–30.
70. Card AJ, Ward JR and Clarkson PJ. Rebalancing risk management – part 2: the active risk control (ARC) toolkit. *J Healthc Risk Manag* 2015; 34: 4–17.
71. Card AJ. The active risk control (ARC) toolkit: a new approach to designing risk control interventions. *J Healthc Risk Manag* 2014; 33: 5–14.
72. Card AJ. A new tool for hazard analysis and force field analysis: the Lovebug Diagram. *Clin Risk* 2013; 19: 87–92.
73. Pham JC, Kim GR, Natterman JP, et al. ReCASTing the RCA: an improved model for performing root cause analyses. *Am J Med Qual* 2010; 25: 186–191.
74. Chuang E, Jason K and Morgan JC. Implementing complex innovations: factors influencing middle manager support. *Health Care Manage Rev* 2011; 36: 369–379.
75. Bagian JP, King BJ, Mills PD, et al. Improving RCA performance: the Cornerstone Award and the power of positive reinforcement. *BMJ Qual Saf* 2011; 20: 974–982.
76. Sine DM and Paull D. Where should patient safety be installed? *J Healthc Risk Manag* 2017; 37: 14–17.
77. Tepper BJ. Consequences of abusive supervision. *AMJ* 2000; 43: 178–190.
78. Tepper BJ. Abusive supervision in work organizations: review, synthesis, and research agenda. *J Manage* 2007; 33: 261–289.
79. Rydon-Grange M. What's Psychology got to do with it?' Applying psychological theory to understanding failures in modern healthcare settings. *J Med Ethics* 2015; 41: 880–884.
80. Wojcieszak D, Banja J and Houk C. The sorry works! Coalition: making the case for full disclosure. *Jt Comm J Qual Patient Saf* 2006; 32: 344–350.
81. Goldhagen BE, Kingsolver K, Stinnett SS, et al. Stress and burnout in residents: impact of mindfulness-based resilience training. *Adv Med Educ Pract* 2015; 6: 525–532.

82. WHO. *The WHO patient safety curriculum guide: multi-professional edition*. Vol. 20. Geneva: World Health Organization, 2011.
83. VHA. *VHA national patient safety improvement handbook*. Washington DC: VHA. 2008. p.22.
84. Sikka R, Morath JM and Leape L. The quadruple aim: care, health, cost and meaning in work. *BMJ Qual Saf* 2015; 24: 608–610.
85. Bodenheimer T and Sinsky C. From triple to quadruple aim: care of the patient requires care of the provider. *Ann Fam Med* 2014; 12: 573–576.
86. Halliday L, Walker A, Vig S, et al. Grit and burnout in UK doctors: a cross-sectional study across specialties and stages of training. *Postgrad Med J* 2017; 93: 8389–8394.
87. Panagioti M, Panagopoulou E, Bower P, et al. Controlled interventions to reduce burnout in physicians: a systematic review and meta-analysis. *JAMA Intern Med* 2017; 177: 195–205.
88. West CP, Dyrbye LN, Rabatin JT, et al. Intervention to promote physician well-being, job satisfaction, and professionalism. *JAMA Intern Med* 2014; 174: 527–533.
89. Card AJ, Ward J and Clarkson PJ. Successful risk assessment may not always lead to successful risk control: a systematic literature review of risk control after root cause analysis. *J Healthc Risk Manag* 2012; 31: 6–12.
90. Card AJ, Ward JR and Clarkson PJ. Getting to zero: evidence-based healthcare risk management is key. *J Healthc Risk Manag* 2012; 32: 20–27.
91. Macrae C. The problem with incident reporting. *BMJ Qual Saf* 2015; 25: 71–75.
92. Card AJ. The Problem with "5 whys". *BMJ Qual Saf* 2017; 26: 671–677.
93. Potts HW, Anderson JE, Colligan L, et al. Assessing the validity of prospective hazard analysis methods: a comparison of two techniques. *BMC Health Serv Res* 2014; 14: 41.
94. Croteau R. Risk assessing risk assessment. *Jt Comm J Qual Patient Saf* 2010; 36: 35–37.
95. Card AJ, Ward JR and Clarkson PJ. Beyond FMEA: the structured what-if technique (SWIFT). *J Healthc Risk Manag* 2012; 31: 23–29.
96. Card AJ, Harrison H, Ward J, et al. Using prospective hazard analysis to assess an active shooter emergency operations plan. *J Healthcare Risk Mgmt* 2012; 31: 34–40.
97. Ward J, Clarkson J, Buckle P, et al. Prospective hazard analysis: tailoring prospective methods to a healthcare context, www.webcitation.org/6KZ0Y4R8E (2010, accessed 27 May 2019).
98. Kessels-Habraken M, Van der Schaaf T, De Jonge J, et al. Integration of prospective and retrospective methods for risk analysis in hospitals. *Int J Qual Health Care* 2009; 21: 427–432.
99. The Joint Commission Journal on Quality and Patient Safety. Special issue: learning from proactive risk assessment. *Jt Comm J Qual Patient Saf Duluth, MN: The Joint Commission* 2010; 172:337–384.
100. Hyman WA and Johnson E. Fault tree analysis of clinical alarms. *J Clin Eng* 2008; 33: 85–94.
101. Card AJ, Ward JR and Clarkson PJ. Trust-level risk evaluation and risk control guidance in the NHS East of England. *Risk Anal* 2014; 34: 1471–1481.
102. Card AJ, Ward JR and Clarkson PJ. Generating options for active risk control (GO-ARC): introducing a novel technique. *J Healthc Qual* 2014; 36: 32–41.
103. Card AJ, Simsekler MCE, Clark M, et al. Use of the generating options for active risk control (GO-ARC) technique can lead to more robust risk control options. *Int J Risk Saf Med* 2014; 26: 199–211.
104. Tarrant C, Leslie M, Bion J, et al. A qualitative study of speaking out about patient safety concerns in intensive care units. *Soc Sci Med* 2017; 193: 8–15.
105. The Healthcare Commission. *Safe in the knowledge: how do NHS trust boards ensure safe care for their patients?* London: Commission for Healthcare Audit and Inspection, http://archive.cqc.org.uk/_db/_documents/Safe_in_the_knowledge_200903273451.pdf (2009, accessed 27 May 2019).
106. Edmondson A. Psychological safety and learning behavior in work teams. *Adm Sci Q* 1999; 44: 350.
107. Newman A, Donohue R and Eva N. Psychological safety: a systematic review of the literature. *Hum Resour Manag Rev* 2017; 27: 521–535.
108. Leroy H, Dierynck B, Anseel F, et al. Behavioral integrity for safety, priority of safety, psychological safety, and patient safety: a team-level study. *J Appl Psychol* 2012; 97: 1273–1281.
109. Etchegaray J, Ottosen M, Dancsak T, et al. Barriers to speaking up about patient safety concerns. *J Patient Saf*. Epub ahead of print 4 November 2017. DOI: 10.1097/PTS.0000000000000334
110. Marx D and Bray A. *Whack-a-mole: the price we pay for expecting perfection*. Plano, TX: By Your Side Studios, 2009.
111. Frankel AS, Leonard MW and Denham CR. Fair and just culture, team behavior, and leadership engagement: the tools to achieve high reliability. *Health Serv Res* 2006; 41: 1690–1709.
112. Chassin MR and Loeb JM. High-reliability health care: getting there from here. *Milbank Q* 2013; 91: 459–490.
113. Reason J. Achieving a safe culture: theory and practice. *Work Stress* 1998; 12: 293–306.
114. Wachter RM and Pronovost PJ. Balancing "No Blame" with accountability in patient safety. *N Engl J Med* 2009; 361: 1401–1406.
115. Wu AW. The end of the beginning: *Clinical Risk* and the *Journal of Patient Safety and Risk Management*. *J Patient Saf Risk Manag* 2018; 23: 3–6.
116. Sorra J and Dyer N. Multilevel psychometric properties of the AHRQ hospital survey on patient safety culture. *BMC Health Serv Res* 2010; 10: 199.