Medical Error and Harm

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Coping With the Psychological Impact of Medical Errors: Some Practical Strategies

Significant efforts have been made to make hospitals and ICUs as safe as possible. As healthcare workers (HCWs) try to get through this pandemic, the focus of this article is to explore practical steps to help these workers better cope with the psychological effects of being involved in an error event.

Introduction: Error Events, Causes and Psychological Effects

With all the efforts being made to make hospitals and ICUs as safe as possible, many layers of protection for patients now exist, yet adverse events and error events continue to happen. Some of these occur within hospital wards and can range from 'near miss' situations in which an event occurs yet harms do not reach the patient, to significant harms resulting in a need for rescue by admission to the ICU. Some occur within ICUs themselves. Some result in significant morbidity and some in mortality.

The frequency of medical errors varies depending on what is included within their classification. The worst result in significant morbidity and patient death. Within the ICU, medication errors are the most common (Foster et al. 2018; Escrivá et al. 2021; Escrivá et al. 2019; Piriou et al. 2017; Roumeliotis et al. 2020; Welters et al. 2011) and are related to dosage, timing, mode of delivery and medication interactions (Foster et al. 2018; Piriou et al. 2017; Roumeliotis et al. 2020). Other adverse events relate to the use of equipment, the development of nosocomial infections related to hand hygiene, insertion, care and duration of central lines, catheters, the inappropriate use of antibiotics, pressure sores, self-extubations, re-admissions within 48 hours, and the use of restraints

to name but a few (Duarte et al. 2015; Welters et al. 2011). The current intense focus on patient safety within hospitals and healthcare settings with a concept of "zero preventable harms" has been widely espoused in particular since the Institute of Medicine's recommendations in their To Err is Human Report in 1999. With all the efforts being made to make hospitals and ICUs as safe as possible, many layers of protection for patients now exist before an error has the potential to both reach them and cause harm. In addition, research has identified many common sources of errors on a system wide level thus allowing individual hospitals and ICUs to learn from each other to improve their policies, processes and clinical practices. Yet even with all the safeguards that have been put in place, errors still occur, and though perhaps different in nature and scope than in the past, reaching zero preventable harms is still an elusive target.

In the ICU, the sheer acuity of illness, complex needs, knowledge of medications, knowledge of and skill with the use of new technologies, a lack of sufficient time between admissions and a failure to adequately transfer accountability for patient care within the ICU and upon discharge from specialised ICU care may contribute to errors and even worse outcomes for some patients (Parsons et al. 2021). While the reasons for the elusiveness in achieving zero preventable harms are many, perhaps the most obvious one is that healthcare workers

(HCWs) are humans – people experiencing personal and professional life stressors, mental and physical health issues of their own, working in high stress environments and dealing with sleep deprivation especially if involved in shift work (Arimura et al. 2010). Unfortunately, the donning of scrubs and personal protective equipment (PPE) that transform ICU teams from humans into HCWs does not provide them with superpowers or cloaks of invincibility with respect to the commission of errors. Error events cause significant psychological distress in approximately 43% of HCWs (Seys et al. 2013).

The involvement in any error event is a very traumatising experience for HCWs (Kaur et al. 2019; Pratt and Jachna 2015; Seys et al. 2013) especially when they occur under emotionally demanding circumstances. How HCWs experience error events and their consequences may engage both physical and psychological reactions (Kaur et al. 2019; Seys et al. 2013). One qualitative study from France interviewed 20 ICU physicians and 20 nurses one month after an event and found 53.8% experienced feelings of guilt, 42.5% shame, 37.5% anxiety with rumination, 20% questioning their own professionalism and 32.5% loss of confidence (Laurent et al. 2014). The psychological impact may result in hypervigilance, a perceived need for self-verification or oversight (Laurent et al. 2014). While hypervigilance and self-verification is an understandable reaction,

if extreme it may be paralysing resulting in an inability to act or make decisions. Emotional distress may result in further mistakes, burnout, a reduction in work hours or departure from their profession (Mazurek et al. 2021). While talking with colleagues may help, some are not able to verbalise their experience and others feel that such support is not enough (Kaur et al. 2019; Laurent et al. 2014; Pratt and Jachna 2015). Some have found their coping with such events was improved by the disclosure and apology to patients, forgiveness and understanding of their own imperfection (Kaur et al. 2019; Plews-Ogan et al. 2016). Some used the error as an opportunity to develop skills and knowledge, participating in changes to prevent recurrences, teaching and helping others (Laurent et al. 2014; Plews-Ogan et al. 2016) while others have coped by minimising the error, avoidance and denying responsibility (Laurent et al. 2014). While the emotions and ways of coping may vary, what appears certain is that for many the psychological impact of involvement in medical error is significant (Kaur et al. 2019; Pratt and Jachna 2015; Seys et al. 2013) and may be long lasting (Laurent et al. 2014; Pratt and Jachna 2015), even career ending.

Effects of the Ongoing Pandemic

As ICUs around the world struggle during this ongoing COVID-19 pandemic with the sheer volume of patients and the severity of their illnesses, research has shown us the impact on their mental health is significant with symptoms of depression 30-57%, anxiety 46-67%, post-traumatic stress disorder 32-54% and burnout in over half of ICU team members (Azoulay et al. 2020a; Azoulay et al. 2020b; Styra et al. 2021). Many have not had time to tend to their own physical health (Styra et al. 2021). ICU teams are exhausted. As this pandemic continues, many ICUs are seeing HCW departures resulting in a greater workload for those who remain. Many ICU teams are being helped by physicians and nurses re-deployed from other fields and parts of the hospital. Such help is greatly appreciated yet requires varying levels and areas of oversight from ICU teams

depending on pre-existing knowledge and skill sets—oversight needs that may change on a daily basis depending on who has been assigned to help. The oversight and help required from the ICU team to allow those who have come to help care for patients with life-threatening illnesses may not be achievable due to the volume of those in need. As the pandemic continues, the mental health of ICU team members and those re-deployed to help will likely deteriorate further. While not a lot of attention has been paid to this topic to date, though more research is underway, based on our current understanding of

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their causes, it is not hard to imagine that the frequency of error events will also increase as a consequence of the ravages of the pandemic.

As the stressors of the COVID-19 pandemic to date only continue to increase with each variant and 'wave' of critically ill patients along with HCW attrition from illness, exhaustion and burnout, the likelihood of errors can be anticipated to increase (Mazurek et al. 2021). When combined with current stressors, the impact of error events, is likely to create an ever increasing rate of departures of HCWs from the ICU. As we all try to get through this pandemic, the focus of this article is therefore to explore practical steps to help HCWs better cope with the psychological effects of being involved in an error event.

Coping with Error Events: Practical Steps for HCWs and Organisations

Once the physical, visceral reaction to having made a mistake has passed, it is important to remember that with all the layers of safety measures in place today within an ICU, it is rare that an adverse

event occurs and reaches a patient without breakdowns occurring at multiple levels. While an individual HCW may have been the 'last peg' in the safety measures breached, there are typically a series of mistakes and any one HCW is not likely to be solely responsible. Having a leadership role in a Rapid Response Team and having been involved in many critical incident debriefs as well as root cause analysis of critical error events, in our experiences the last peg in the safety breach is often initially unaware of all the previous failures in the safety net that aligned before the final mistake occurred and reached the patient. Assuming sole responsibility when this is not reflective of the actual situation because one is the most responsible physician (MRP), the bedside RN or patient's RT is a self-sacrificing approach and a psychologically unhealthy way of addressing the event. Such an approach may result in more psychological distress than is warranted and may make recovery from the event more difficult. The sense of ultimate responsibility has been reinforced for years by hospital policies and practices that require the MRP to disclose the error to the patient and/or their family, bearing the brunt of the reaction when they receive little if any training in doing so and when events are usually multifactorial. In recognition of the true nature of error events, a better way forward would be to have more formalised training in timely disclosure of error events, a collaborative team approach to disclosure, what is known of its causes initially, what is being done to mitigate its effects on the patient, and how it will be explored to improve the quality of care in the future.

To really understand the psychological impact of an error event, we need to understand the concept of self-identity. For many HCWs, who have spent many years training, working increasingly long hours, who have volunteered for extra shifts, and stepped up to be re-deployed in this pandemic, their professional self-identity is deeply entwined with and even defines who they are as a person. For this reason, an error event that caused harm, for many, is an existential crisis. The emphasis on "zero

preventable errors" goal and posted dates without/since last preventable error strategies to achieve these goals can exacerbate feelings of failure and cause HCWs to feel that they let their colleagues and organisations down. Questioning of self-identity and self-perceptions of being a failure can be further exacerbated when disclosure is met by anger and threats of inter-personal violence and/or legal repercussions. While some have found support in being able to discuss the event with colleagues, many may not feel comfortable doing so (Laurent et al. 2014; Plews-Ogan et al. 2016) due to concerns of repercussions, perceptions of their mental health/coping skills in fields where pride is taken in being resilient or concerns about being judged if their working environment is new, not supportive in nature or if they have had other challenges in the past. Understanding the psychological impacts of an error event on both personal and professional identity is crucial to being able to recover from such events. Unfortunately HCWs are often perceived uni-dimensionally as professionals and the existence of a person inside the professional is either not acknowledged or not accorded the value needed to cope with these challenging events. No one goes to work in healthcare to cause harm to someone who is already struggling with illness. No one is infallible and if a HCW hasn't been involved in an error event in the past, they likely will be in the future. Keeping these two truths in mind is crucial to developing and maintaining a supportive work environment.

Another way of framing the psychological impact of error events is to return to Maslow's hierarchical needs which we used in a previous article (Hawryluck and Styra 2021). We discussed how the mental health, coping and resilience of HCWs in both personal and professional dimensions could be better supported during this current pandemic (Maslow 1954). Maslow described humans as having five hierarchical categories of values-based needs: physiological, safety, love and belonging, esteem and self-actualisation needs (Maslow 1954). In his theory, if the most basic physiological, safety, belonging and

esteem needs are not met, psychological harms can ensue. Research has revealed the negative effects of error events on the HCWs own perceptions of self-worth. If not handled well by colleagues and team members, an error event can become a direct challenge to the need to belong and to be respected both as a professional and, again in view of how intertwined the concept of identity is for HCWs, as a person. A supportive environment for coping with an error event is therefore one in which it is consistently made clear that the HCWs involved have not lost value in

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the eyes of their colleagues and friends. A supportive environment is one that seeks not to further diminish the professional or the person by assigning blame, rather one that uses a spirit of inquiry to seek understanding of what occurred and seeks to then create preventative solutions.

Critical incident debriefs reveal that one of the common causes of an error event in critical care is the loss of situational awareness (Schulz et al. 2016). Some of the most effective ways of helping a HCW understand an error event can be achieved through critical incident reviews and root cause analysis of the event (Mitchell and Schuster 2016; van der Starre et al. 2014). Both processes are commonly approached with some trepidation on the part of HCWs who are usually rarely exposed to them in training. Both methods can explore the sequence of events, how the error event breached the safety measures in place, help each HCW understand their role in the breaches, why the safety measures failed and what harms can be attributed to the event (van der Starre et al. 2014). Root cause analysis processes interview HCWs

involved in error events by walking through the sequence of events with each HCW involved and discussion with a content expert with a goal of understanding how individual and the collective team critical thinking and situational awareness may have intertwined and contributed to the event. Root cause analysis permit a much deeper and more thorough exploration of error events and in view of their labour intensive nature tend to be reserved for events wherein the harms are deemed more severe in nature. For HCWs, root cause analysis are one of the few continuing education opportunities precisely tailored to them and provided to explore their own critical thinking, and understand the role of uncertainty in decision-making. It models and teaches inductive reasoning biases and identifies the role of "who, how and why" in uncovering thought processes that can impact the scope of differential diagnosis, investigations and treatments of patient care in real time. The integration of root cause analysis into critical care education would meet many of the previously identified strategies identified by Hayes et al. (2017) to improve the critical thinking of critical care trainees and staff alike. If these debriefs are approached in a 'safe space with a safe manner', understanding one's actual contribution to how things went wrong can be an opportunity for personal and professional growth, and participation in advocating for changes, being part of problem solving and developing solutions which can potentially restore HCWs' sense of belonging, of being respected by peers and even more importantly may be a way of regaining self-respect and self-confidence. Even if professional educational needs are identified, the way forward is clear and within the hands of the HCW.

Critical incident and root cause analysis debriefs can result in very practical changes in policies, practices and procedures that can help prevent future events (van der Starre et al. 2014) yet they have not fully realised their potential to do so (Mitchell and Schuster 2016). Widely incorporating what they uncover into future HCWs continuing education is arguably less effectively and systematically performed

within any given healthcare organisation (Mitchell and Schuster 2016). This could change moving forward. In critical care, critical thinking in crisis situation requires situational awareness and teamwork to prevent errors. Research has shown that simulation based education can improve both teamwork and situational awareness, reducing error in resuscitation scenarios (Chang et al. 2017; Cheng et al. 2012; Davis et al. 2021; Parush et al. 2017). In the future it would be interesting to use error event simulations as an educational modality and integrate root cause analysis processes in its debriefing time to promote personalised learning of the trainees' and teams in diagnostic biases, the interplay of critical thinking, communication and situational awareness skills (Hayes et al. 2017). If properly designed we hypothesise that this could be a powerful tool in teaching error prevention and improving patient safety.

Still for many, if not most, involvement in an error event can be psychologically devastating. An error event is a good time to perform a self-check on one's state of physical and mental health and to examine current workload and work-life balance (Mazurek et al. 2021). It is important for all of us to understand the need to take and to give each other opportunities to rest, to address our own needs and recharge. As research has shown error events occur more frequently when HCWs are dealing with their own mental and physical health issues (Mazurek et al. 2021). Feelings of guilt, shame, symptoms of anxiety, depression and post-traumatic stress disorder that ensue after an error event can be very

challenging to manage –and will amplify the psychological effects being experienced especially during these current stressful times in healthcare. Even if talking with colleagues can reveal these are normal responses, coping is not easy. It is okay to need and to seek professional help. Healthcare teams and hospitals should have readily available and accessible resources to provide timely interventions to help HCWs recover and prevent long term psychological damage. It would be helpful that preventative support be offered so that HCWs can explore their psychological stress and determine with

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a professional whether further support is or is not required.

While a significant amount of effort has been placed in improving patient safety and in understanding and decreasing error event, research in understanding the psychological effects of error events on HCWs needs to receive more attention.

Now as the pandemic continues to rage, HCWs are seeing increasing workloads as colleagues leave the field, as others are unable to work due to illness or need to self-isolate as cases soar in their own healthcare system and worldwide. Moreover, in many centres, additional stress is arising as HCWs are subjected to increasing threats and intimidation from a frustrated public waiting for testing, vaccination or care. Others are receiving threats for trying to advocate for public health measures on social media platforms. In view of the ever increasing shortages of human resources, many hospitals are considering policies to ask, encourage or mandate that HCWs who are COVID positive and either asymptomatic or mildly symptomatic return to work. Research has shown the correlation between physical and mental health and error events. Even in the face of the human resource challenges of this phase of the pandemic, ways of maintaining the basic needs of HCWs — in Maslow's framework the physiological and safety needs--must be tended to urgently or more error events will become certainties. A greater understanding of the psychological ramifications of such events, and the provision of support and help in recovering from them are crucial for the healthcare system not only to maintain the quality of care it provides but, more importantly at present, to substantially show it values its HCWs in order to retain its highly skilled staff.

Conflict of Interest

None. ∎

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