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What's new for patient safety in the ICU?

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Increasing awareness of patient safety issues in the intensive care unit (ICU) is driving brisk research into the causes of medical errors, with the goal of identifying means to avoid errors or mitigate their consequences. Recently, two multicenter studies from European countries (Spain and Austria) produced further confirmation that patient safety is often at risk in ICUs [1, 2]. In the Spanish study, 58 % of all ICU patients experienced one or more of the predefined incidents. Clearly, there is a pressing need for strategies to improve patient safety in ICUs.

Promoting patient safety consists not only in avoiding errors, but also in building an intelligent environment that facilitates the safe delivery of acute care. Although attention to patient safety has intensified considerably in recent years, resulting in increased pressure on hospitals and individuals, progress has been frustratingly slow. The four challenges raised by patient safety are visibility, ambiguity, complexity, and autonomy [3]. At the patient level, harm due to adverse events has limited visibility, and its impact may be difficult to recognize by individual healthcare workers. Ambiguity may surround the cause-and-effect relationship between the error and the adverse event. Complexity is considerable, as a host of factors related to care, organization, and the environment can jeopardize patient safety, resulting in discouragement among healthcare workers. Finally, professional autonomy may compromise cooperation among physicians caring for the same patient.

Multifaceted programs, bundles, or checklists combine several safety interventions and produce a mental model that is shared among all healthcare workers, thereby improving the safety climate over time [4]. Reported benefits of multifaceted programs include better adherence to practices designed to prevent ventilator-associated pneumonia [5–7], decreased rates of catheter-related infections and decubitus ulcer [6], and diminished insulin errors and accidental endotracheal tube removal [8]. Although multifaceted programs improved quality in general, the best results were obtained in hospitals with low baseline adherence to specific practices [6].

Promoting best practices takes time at the individual, hospital, and national level [9]. Key factors for success include participation from the very start of the intervention, facilitation of discussion with peers and experts, strong leadership, education at all levels, user-friendly tools, feedback and information sharing, and freedom to leave the project if the healthcare workers feel it is misguided [3]. Simulation programs derived from the aviation industry have been found useful in the operating room and hold promise for the ICU [10]. Efforts to promote best practices should also be directed to the patient or family. Disclosing harms is crucial to ensure comprehension, trust, and professionalism and to promote healing of the patient or family [11].

Intensive care medicine has evolved over time in close connection with the development of medical technologies such as monitoring systems and artificial ventilation. New technologies hold promise for contributing to decreased error rates, provided they are used optimally. The key to their success is good communication among team members and involvement of the team at the appropriate level. Information technology is starting to find applications at the ICU bedside, and expectations that this will improve patient safety are high. For instance, computerized physician order entry [12], barcode systems [13], and smart infusion pumps [14] may decrease the rate of medication errors. Although studies of these expensive technologies have produced mixed results, the underlying principle of detecting human error before it impacts the patient remains valid. Furthermore, valuable effects of information technology may include improved transfer of important information (e.g., during structured handoffs) and access to experts in various medical fields (e.g., via telemedicine).

System design has been recognized as the main source of medical errors [15]. Consequently, the culture behind current ICU system design requires close scrutiny. A major change is necessary to replace the culture of blame and shame by a new culture of learning. Efforts to identify a culprit must give way to the prevention and mitigation of future errors. The transformation of traditional behavior patterns, including the assignment of blame, into a new culture focused on systemic improvements in patient safety requires an atmosphere of trust and respect that allows open communication. Consequently, leaders must foster teamwork, trust, and individual commitment to patient care. The impact of such cultural changes is difficult to measure but should not be underestimated. Growing attention is being directed to team training programs that include sessions on situational awareness, recognition of adverse events and human errors, nonpunitive responses, communication strategies, two-way feedback about performance, stress management, leadership, building and maintaining team structure, and developing a climate of strong cooperation. The importance of a positive attitude toward safety issues was recently demonstrated in a study involving 57 European ICUs [2]. Whereas a higher workload was associated with higher rates of medication and dislodgement errors, a stronger safety climate seemed to contribute to decreasing the rate of medical errors. Figure 1 displays the evolutional steps of a safety culture.

Fig. 1 Conceptualization of the evolution of safety in the ICU environment

Medical errors (chiefly involving medications) and adverse events are very common in ICUs. Safety must be approached at both the hospital and individual level. This complexity, together with the slow pace of improvement, may result in patient safety being perceived as an unattainable goal. However, improvements have occurred. Most hospitals are now involved in safety programs coordinated by multidisciplinary teams that use well-designed follow-up methods. A culture of safety can be developed in many ICUs and is the key to obtaining improvements. Changing human behaviors associated with improved working conditions is the greatest challenge.

Conflicts of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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