Commentary

Protocol-driven care in the intensive care unit: a tool for quality

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Abstract

Advances in organization and patient management in the intensive care unit (ICU) have led to reductions in the morbidity and mortality suffered by critically ill patients. Two such advances include multidisciplinary teams (MDTs) and the development of clinical protocols. The use of protocols and MDTs does not necessarily guarantee instant improvement in the quality of care, but it does offer useful tools for the pursuit of such objectives. As ICU physicians increasingly assume leadership roles in the pursuit of higher quality ICU care, their knowledge and skills in the discipline of quality improvement will become essential.

Keywords clinical protocols, critical care, mechanical ventilation, multidisciplinary team, quality of health care

Advances in patient management in the ICU have led to reductions in the morbidity and mortality suffered by critically ill patients [1]. As with medicine in general, continued improvements in ICU patient outcomes require the development of a health care system that is effective, efficient, safe, patient-centered, timely, and equitable [2]. Achieving such a system in the ICU will require constant vigilance in order to minimize potentially harmful variations in care. One approach has been the development of protocols. However, there has been criticism that protocols might replace clinical judgment. Papers such as that by Chan *et al*., published in this issue of *Critical Care* (page 349), show that protocols are a useful tool in the provider's armamentarium if they are implemented with an understanding of the basic theories necessary for improving the quality of ICU care [3].

Evidence supports intensive care unit protocols

Many randomized controlled trials have demonstrated improved outcomes when protocols are implemented into critical care decision-making. Noteworthy areas include anemia management [4,5], sedation and analgesia [6,7], ventilator weaning [8,9], and the use of low tidal volume ventilation in acute lung injury/acute respiratory distress syndrome [10].

Many physicians have been and remain wary of 'cookbook medicine', however. Critics of clinical protocols worry that these decisional aids may reduce the quality of care by supplanting clinical judgment, breeding complacency, or stifling learning. These concerns cannot be ignored. In a highly technological era, when physician bedside skills have arguably reached a nadir, critics argue that we may be further jeopardizing the decision-making skills of our profession.

Master physicians already make clinical decisions using personalized algorithms, which were learned early in their careers and then refined through clinical experience and lifelong learning. Hence, many seasoned physicians view protocols as unnecessary. Despite these beliefs studies continue to demonstrate that ventilator weaning and extubation protocols can decrease potentially harmful variations in care, enhance efficiency, and improve outcomes [1,11].

Extubation protocols: a multidisciplinary approach

Considerable interest and time has been devoted to the study of extubation protocols [12,13]. In the present issue of

ICU = intensive care unit; MDT = multidisciplinary team.

Critical Care, Chan *et al*. [3] describe their experiences with developing and implementing an extubation protocol, illustrating the successes of using a MDT for this task. Their analysis consisted of 47 consecutive patients extubated according to their new protocol, and outcomes were compared with those of historical control individuals. The primary outcome (staff satisfaction and acceptance during the protocol development and implementation phases) was reported as favorable and positive. Unfortunately, that study neither describes how these satisfaction data were measured nor how the validity of such results was established. Secondary outcomes (mechanical ventilator days [mean 6.7 days], duration of ICU stay [mean 9.3 days], and reintubation rate [10.6%]) were similar to those in the historical control cohort. The study's small sample size limited its ability to show a difference in outcomes. In addition, the initiation of spontaneous breathing trials required a physician order, a step that promotes inefficiency and prolongs ventilator times [8].

That study raised several interesting issues. First, the results suggested that protocol ownership can be fostered through involvement of a MDT early in the development phase. In particular, Chan *et al*. commented on the staff's perception of increased autonomy and desire to assist with protocol compliance. This suggests an area for future study, namely whether protocols developed by a MDT have higher rates of staff adherence than those developed by a small group of researchers [14,15]. Second, the MDT rapidly developed and implemented their protocol. This was an important achievement, because efforts at clinical improvement need to be efficient and effective. The high attendance at team meetings suggests that MDT members were highly motivated, a feature that may affect reproducibility at other sites.

Quality improvement in the intensive care unit

Perhaps one of the most provocative comments made by Chan *et al*. [3] is found in the abstract of their report: "… research evidence does not necessarily provide guidance on how to implement changes in individual intensive care units." Indeed, physicians want to improve their delivery of care, but often lack an understanding of the basic theories that are necessary for their quality improvement efforts. This knowledge deficit has been termed 'change-process illiteracy' [16]. Although most ICU physicians have a sophisticated understanding of pathophysiology and pharmacokinetics, few clinicians or researchers possess formalized training in systems thinking, the process of quality improvement, concepts regarding changing physician behavior and practice, or outcomes measurement [16–20].

A well designed ICU protocol does not constrain decision-making, but rather focuses a provider's attention on the common aspects of patients with a well described illness. Protocol-driven care does not eliminate the need for clinical judgment. In fact, it demands constant attention to the subtleties inherent to each patient and may require deviations from the protocols. Protocol-driven care does not obviate the need for lifelong learning. On the contrary, it requires continual appraisal of evidence from the published literature so that protocols may be modified when new strategies of care have been demonstrated as effective and efficient. The continual improvement in ICU care requires valid and reliable metrics to document and monitor expected and unexpected outcomes of protocol implementation.

Conclusion

The modern ICU is an important focus for quality improvement efforts. The combination of enormous costs and inherently high morbidity will ensure constant attention from hospital administrators, third party payers, and patient representatives. The use of protocols and MDTs does not guarantee instant improvement in the quality of care. However, it does offer tools for the pursuit of this objective if it is implemented and applied with clinical acumen, with attention to individual subtleties, and with an understanding of the basic theories of quality improvement. As ICU physicians increasingly assume leadership roles in the pursuit of higher quality ICU care, their 'change-process literacy' will become essential.

Competing interests

None declared.

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