Study: Brazil QI Intervention Did Not Reduce Mortality

A randomised trial of a multi-dimensional quality improvement intervention in 118 Brazilian ICUs (CHECKLIST-ICU) found no overall effect on in-hospital mortality. Potential improvements were observed in some care processes, but were not statistically significant.

The study, by Alexandre B. Cavalcanti, MD, PhD, of the HCor-Hospital do Coracao, Sao Paulo, Brazil and colleagues, is published in JAMA. It is one of the first of this scale to be conducted in an intensive care setting in a middle-income country.

The first phase collected baseline data on work climate, care processes, and clinical outcomes in 118 Brazilian ICUs. In phase 2, the same ICUs were randomised to a quality improvement intervention, which comprised daily checklists, goal setting during rounds,and follow-up clinician prompting for 11 care processes, or to standard care. The first 60 admissions of longer than 48 hours per ICU were enrolled in each phase. The researchers set out to see if the intervention improved communication, adherence to care processes and clinical outcomes.

The checklist targeted 11 care processes aimed at prevention of venous thromboembolism (VTE), ventilator-associated pneumonia (head-of-bed ≥30°), central line–associated bloodstream, and urinary tract infection (removal of unnecessary urinary or venous catheters); improvement in nutrition and analgesia; reduction of sedation; assessment of readiness for extubation; detection of severe sepsis and acute respiratory distress syndrome; optimisation of antibiotics (indication to start, adjust, or stop); and reduction of tidal volume. Four items targeted by the checklist were not assessed in the study's analysis due to feasibility constraints (timely screening of sepsis, adequacy of antibiotics, adequacy of analgesia, and daily spontaneous breathing trials).

To promote a flat hierarchy and promote participation by all staff taking part in rounds, the checklist was read aloud by a nurse and answered by participants. Daily goals were registered on a standardised form and read aloud to the team. A nurse reviewed the daily goals every afternoon and prompted the on-call physician when there were any pending. Actions to promote adherence to the intervention included audit and feedback and dissemination of videos with testimonials of opinion leaders on the importance of the intervention and emphasising the principle that "the whole team works better than individual voices."

6,877 patients were enrolled in the baseline phase and 6,761 in the randomised phase, with 3,327 patients enrolled in ICUs (n = 59) assigned to the intervention group and 3,434 patients in ICUs (n = 59) assigned to routine care. The researchers found that there was no significant difference in in-hospital mortality between the intervention group and the usual care group, with 1,096 deaths (33 percent) and 1,196 deaths (35 percent), respectively.

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Potential improvements were observed in 4 of 7 care processes and 2 safety climate domains, although except for 1 outcome, urinary catheter use, these findings were not significant after adjustment for multiple comparison.

In an email to *ICU Management & Practice*, Dr. Cavalcanti detailed the potential explanations for the small difference in mortality between the two trial arms:
1) The effect of the intervention (daily round checklist and care goals, plus clinician prompting) was only modest/moderate on care processes, which in turn was not enough to result in measurable effects on mortality;
2) Most care processes targeted by our checklist have uncertain effects on mortality – indeed, there is paucity of high quality evidence for most ICU interventions
3) It is possible that a longer period of intervention would have resulted in a higher effect on processes of care and maybe on clinical outcomes.

Dr. Cavalcanti added that they have received informal feedback from most participant ICU leaders declaring they have continued using the daily round checklists with goal setting, and clinician prompting. The control group of ICUs received the intervention after the 6 months of the study, as stiuplated by the funder and local clinical leaders. ICU leaders' perceptions regarding the effects of checklists on the quality of care are very positive, said Cavalcanti.

Next Steps

The Writing Group has planned several analyses using data gathered in the study. Dr. Calvanti said that they plan to further explore the relationships between ICU organisational characteristics, adherence to care processes and safety climate with clinical outcomes. They also are

planning a a cluster randomised trial to assess quality improvement interventions for patients with sepsis.

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Sources: [JAMA](#); author email.
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Published on : Tue, 12 Apr 2016