

Checklist & prompting in intensive care unit: quality of care is improved but long way to go for better outcome

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Comment on: Writing Group for the CHECKLIST-ICU Investigators and the Brazilian Research in Intensive Care Network (BRICNet), Cavalcanti AB, Bozza FA, *et al.* Effect of a Quality Improvement Intervention With Daily Round Checklists, Goal Setting, and Clinician Prompting on Mortality of Critically Ill Patients: A Randomized Clinical Trial. JAMA 2016;315:1480-90.

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Crude mortality rate in intensive care unit varies according to the primary diagnosis of the patients, demographic characteristics of the patients and geographical location of the intensive care units (ICUs) (1-3). Though a decline in the mortality in ICU is evident over the last few decades (4,5), there is still significant gap between the knowledge and practice of the intensive care physicians even in the developed world (6). ICU checklists are expected to increase adherence to the guidelines, reduces medical errors and consequently improves patients' outcome. A number of studies have evaluated utility of checklist in a particular area such as weaning from mechanical ventilation, catheter related blood stream infection etc. and most of the such studies are of before-after design. Results of the studies on checklist and prompting by the physicians are contradictory. Use of a surgical safety checklist was associated with a reduction in morbidity and mortality in patients with older than 16 years' age and undergoing non-cardiac surgery (7). Implementation of checklist during ICU round has been associated with improved patients care and implementation of best evidence based practice (8,9). Weiss *et al.* (10) in 2011 reported a significant reduction in ICU mortality and in-hospital mortality even after baseline risk adjustment from checklist based prompting by a resident physician. In that study, during ICU round, following six areas were considered for prompting if it is missed: weaning from mechanical ventilation, empirical antibiotic therapy, central venous catheters, Foley urinary catheters, and deep vein thrombosis

and stress ulcer prophylaxis and prompting continued from first round after ICU admission to ICU discharge.

Recently, a large randomized controlled trial from Brazil reported that implementation of a multifaceted quality improvement intervention with daily checklists, goal setting, and clinician prompting did not reduce in-hospital mortality (11). The study is uniquely designed as in the initial observational phase of the trial, the authors have assessed baseline data on work climate, care processes, and clinical outcomes in the participating ICU and in the later phase, the same ICUs were randomized to a quality improvement intervention, including a daily checklist and goal setting during multidisciplinary rounds with follow-up clinician prompting for 11 care processes, or to routine care. The 11 care processes included in the checklist were developed according to the Practice Guidelines Development Cycle (12). The authors reported no difference in the in-hospital mortality among both the groups in the second phase of the study. However, there was an improvement in terms of use of low tidal volume ventilation, use of light sedation and calm & alert mechanically ventilated patient, less use of central venous catheter and urinary catheter. Interestingly, all four parameters where an improvement was found had a low baseline compliance and no benefit was obtained on the parameters with better baseline compliance. There was also an improvement in team work climate and safety climate in the ICU from the intervention.

The strength of this study is that it is a large, well

designed trial and baseline characteristics of the patients were comparable after randomization. However, though the authors included practice parameters in the checklist according to guidelines, effects of these practices on mortality is controversial. Such as a recent Cochrane review also failed to find in mortality benefit from head elevated position in mechanically ventilated patients (13). Similarly, benefit of a protocol driven ICU sedation is also not evident in another Cochrane review (14). Another important issue is that, this study aimed to delineate effects of checklist in short term period, a larger effect size may be found when these practices are implemented for longer term.

Encouraging input from this trial is that checklist and prompting improves adherence to practice standards particularly where baseline adherence is low but disappointing part is that at this time point there is no evidence that it improves clinical outcome.

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Footnote

Conflicts of Interest: The author has no conflicts of interest to declare.

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