Pros and cons in medical decision making

The *Journal of Emergency and Critical Care Medicine* launched a new column under the name pros and cons. The aim of the column is to provide a platform for controversial issues in the management of critically ill patients. Some novel ideas and insights can be discovered through the process of discussing and debating.

In the era of evidence based medicine, strenuous efforts have been made to standardize the management of patients. For example, the clinical pathway for patients with myocardial infarction has remarkably standardized the treatment for such group of patients. Patients can receive the best standardized treatment across the globe if the pathway and checklist are strictly conformed to. In critical care medicine, enteral feeding protocol has also been shown to improve clinical outcomes if standardized feeding protocol is applied (1-3). Such a standard protocol incorporates the most updated evidence from clinical trials (4). Although there is a trend that more and more medical decision-makings are standardized, numerous controversies exist that cannot be fully addressed with current body of evidence (5). Thus, the idea of individualized or precise medicine come into being (6).

Randomized controlled trials are thought to be the gold standard to provide high-quality evidence. However, such trials usually selected a heterogeneous group of patients, causing the problem of case-mix. Although many efforts have been made to make the study population more homogeneous, case-mix cannot be fully excluded. For example, clinical trials conducted by the acute respiratory distress syndrome (ARDS) network enrolled patients with ARDS (7,8). However, ARDS is a clinical syndrome involving a heterogeneous patient population depending on etiology, comorbidity, age, gender and many other unmeasured factors (e.g., socioeconomic status, genomics and living habits) (9,10). Both measured and unmeasured feature variables contribute to the case-mix. Different subgroups defined by these variables many respond differently to a given intervention (11,12). In other words, the original trial simply reports a mean treatment effect, which may be a weighted average of beneficial and harmful effects. Thus, in clinical practice, clinicians need to identify subgroups of patients who will benefit the most from a treatment. Even though evidence from RCTs and/or systematic reviews recommend not to apply a treatment, there still can be a subset of patients who may benefit from the treatment under certain disease stages. Thus, clinical practice guidelines developed from clinical trial data cannot teach us the whole in the management of a specific patient, leaving room for the discussion of pros and cons.

In the recent issue of the journal, Pan and Yu discussed the pros and cons of decolonization for critically ill patients (13,14). The debate has been presented in the Peking-Hongkong Infectious Diseases and Microbiology Conference (PIDMIC) 2017 (http://pidmic.medmeeting.org/cn). While applying decolonization routinely for critically ill patients can reduce the risk of nosocomial infection, it also increases the risk of resistance. The weighing of risks and benefits imposes great challenges for clinicians and researchers. Emergency and critical care medicine encompasses a case-mix population involving all specialties of clinical medicine. Thus, a given treatment can have varying effects in different patients, which cannot be fully addressed with well-designed RCTs. The pros and cons column welcomes submissions from all topics related to the emergency and critical care medicine.

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