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Severity of Illness Confusion

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Keywords

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To the Editor:

I'd like thank Drs. Tasker and Randolph for a thoughtful and occasionally provocative commentary on the manuscript PRISM Update 2015.[1, 2] Unfortunately, I believe that they have introduced several areas of conceptual confusion. First, they confuse the terms mortality risk and severity of illness. The APR-DRG system, which dominates in this arena, defines severity of illness and mortality differently. *By convention*, severity of illness is defined as the extent of physiological decompensation or organ system loss of function; in contrast, risk of mortality refers to the likelihood of dying.[3] Since the hallmark of ICU care is the monitoring and maintenance of physiological stability, ICU severity methods such as APACHE, SAPS and PRISM are numeric representations of physiological decompensation. By convention, the mortality risk computations from PRISM or PIM are not severity of illness.

Why is it important to distinguish severity of illness (physiological status) from mortality risk? Recently, we demonstrated that severity of illness is similarly associated with the risks of both morbidity and mortality.[4] Since it is appropriate to use mortality as an ICU outcome for quality and other studies, it is also appropriate to use morbidity since morbidity is based on the same conceptual foundation as mortality. Since significant functional status morbidity occurs approximately twice as frequently as mortality, using morbidity as an outcome increases the power and improves the relevance of these assessments.

Second, in their advocacy for “personalized mortality predictions” and better use of big data, laudable goals, Drs. Tasker and Randolph minimized the importance of quality assessments based on PRISM or PIM for individuals. Individual patients benefit from these quality assessments. The reduction in mortality rates in PICUs is due, in part, to quantitative methods such as PRISM. Major issues regarding pediatric ICUs and pediatric intensivists (e.g. the importance of training, in-house attendings, etc.) have evolved because of studies using these methods. It is also clear from my involvement in hundreds of individual unit assessments that the quality of care in many ICUs improved after the discovery of

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"opportunities for improvement." Importantly, institutional bias must be avoided for units to conduct assessments and accept the results. The *fixed* observation time period, the carefully considered *exclusion of therapeutic data* such as mechanical ventilation, the use of only the first ICU admission with hospital outcome, and the new criteria for the sampling time for cardiovascular patients are designed into PRISM to prevent or minimize institutional bias. In particular, PIM's inclusion of a non-fixed observation period ("first contact to 1 hour"), and the therapies of mechanical ventilation and high FiO_2 create the potential for introducing significant institutional bias.

I certainly agree with their message that big data and personalized risk profiling are important aspects of our future. However, in the context of ICU quality assessment, updated risk profiling which includes therapies in addition to physiological data should be used very cautiously to assess quality of care since the timely and appropriate use of therapies is a large component of quality.[5]

Respectfully,

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References

1. Tasker RC, Randolph AG. Severity-of-Illness Scoring in Pediatric Critical Care: Quo Vadis? Pediatr Crit Care Med. 2016; 17(1):83–85. [PubMed: 26731320]
2. Pollack MM, Holubkov R, Funai T, Dean JM, Berger JT, Wessel DL, Meert K, Berg RA, Newth CJ, Harrison RE, et al. The Pediatric Risk of Mortality Score: Update 2015. Pediatr Crit Care Med. 201617(1):2–9.
3. Averill, RFGN.; Hughes, JS.; Bonazelli, J.; McCullough, EC.; Steinbeck, BA.; Mullin, R.; Tang, AM.; Muldoon, J.; Turner, L. All Pateint Refined Diagnostic Related Groups (APR-DRG), Version 20.0, Methodology Overview. 20.0 edn.. 3M Health Information Systems; Wallingford, CT: 2003. p. p3
4. Pollack MM, Holubkov R, Funai T, Berger JT, Clark AE, Meert K, Berg RA, Carcillo J, Wessel DL, Moler F, et al. Simultaneous Prediction of New Morbidity, Mortality, and Survival Without New Morbidity From Pediatric Intensive Care: A New Paradigm for Outcomes Assessment. Crit Care Med. 2015; 43(8):1699–1709. [PubMed: 25985385]
5. Lee J, Maslove DM. Dubin JA: Personalized mortality prediction driven by electronic medical data and a patient similarity metric. PloS one. 2015; (10)(5):e0127428. [PubMed: 25978419]