



Critical care archetypes

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Variability in decision-making among critical care physicians is a well-observed phenomenon. In this Reflections piece, we discuss an empiric framework for understanding some of the individual factors that underlie this variability. We propose a two-axis model of intervention-minimalism and individualist-collectivist practice. A better understanding of the root causes of physician-attributable differences in patient management can foster a better collaborative and educational environment to help critical care systems adapt to emerging ideas.

Variability in decision-making has often been attributed to a physiologic *vs* evidence-based approach, the former promoting understanding and manipulation of physiology and the latter privileging the results of randomized controlled trials (RCTs). Physiology ruled the practice of critical care for years with the pulmonary artery catheter being perhaps the exemplar of this approach. As RCT results accumulated, the pitfalls of a purely physiologic approach to critical care were laid bare and the death of the pulmonary artery catheter came at the hands of such trials.¹ Nevertheless, the vast majority of RCTs in critical care have since yielded negative or contradictory results (early

goal-directed therapy,² insulin intensity).³ A review of major RCTs in emergency and critical care, with total enrolment of 100,000 patients, found mortality to be 40% in intervention arms compared with 39% in control arms.⁴ The apparent inadequacy of the RCT approach lacking sufficient attention to scientifically valid physiologic premises has once again brought the role of physiology to the fore.^{5,6}

We submit that physicians differ in their approach to patients beyond the physiology *vs* RCT dyad in fundamental and possibly more important ways. We propose a two-axis framework of intervention-minimalism and individualist-collectivist practice. The first refers to the extent to which physicians see their role as primarily interventionist or minimalist. The second refers to the degree to which individuals perceive their own contribution to patient outcomes compared with the team processes.

Framework

Interventionist vs minimalist

Physicians differ in how they conceive of their role in critical care, some believing their role to primarily consist of actively intervening to improve the state of an acutely ill patient with others adopting a more minimalist approach aimed at preventing iatrogenesis. Physicians hewing more to the interventionist role believe that disturbances require treatment and that careful manipulation of therapies, in aggregate, leads to improved global status. Conversely, minimalists consider most interventions fundamentally harmful, instead viewing the role of critical care as providing adequate stability for patients to recover. They view additional therapies beyond supportive care (minimal mechanical ventilation, minimal sedation, basic nutrition, etc.) as likely contributing to harm. This latter approach dovetails with the concept of “masterly inactivity”, initially described in parenting theory, reflecting a

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strategy of conscientious observation whereby time is the sole intervention prescribed).^{7,8} Within this framing, outcomes become self-affirming and hence interventionists view patient improvement as reflective of their treatment, while minimalists likewise attribute improvement to their non-interventionism.

The COVID-19 pandemic response among intensivists emphasizes the application of this taxonomy to knowledge generation. Physiology-minded interventionists seek ever better measures of physiology, favouring immunologic therapies such as the anti-interleukin-6 medication tocilizumab, based on biologic plausibility. Those interventionists are ever optimistic, believing that negative results simply inform future studies and that definitive therapies extracted from well-designed research ventures will arrive soon. When faced with the dismantling of yet another promising approach in an RCT, they scavenge the results searching for post-hoc sub-group signals. Conversely, minimalists, humbled by negative trials are skeptical at best and nihilistic at worst. When confronted with widespread adoption of hydroxychloroquine based on Twitter level data, they proceed with caution and scrutiny, awaiting validated, reproducible results.

Individualist vs collectivist

Individualists believe their insight, cognitive synthetic ability, and technical skills drive optimal patient care and had they been absent at the crucial moment, negative outcomes may have come to pass. Conversely, collectivists view their individual contribution as less impactful; any physician with similar skills and knowledge would achieve comparable outcomes. Their trust in the healthcare team is high; relevant information will be gathered so that prudent, timely care can occur.

Volume management in septic acute tubular necrosis illustrates this dichotomy. Individualist physicians believe their personal thoughtful assessment is required to prescribe fluid therapy based on all knowable physiologic variables. A fine needle is threaded, providing the precise therapy at the necessary moment in time to maintain renal perfusion. The collectivist physician believes all intensivists respond to physiologic aberrations appropriately, administering small boluses as needed, reducing their unique, intellectual contribution. The confluence of clinical findings would be recognized by another expert surrounded by experienced healthcare team members.

These proposed axes combine in many clinical scenarios, for example a patient with abdominal compartment syndrome. The interventionist would suggest immediate bedside decompressive laparotomy.

The minimalist would consider this condition so morbid that all interventions will invariably generate the same outcome. The individualist would believe if they were absent, compartment pressure measurement may have been neglected. The collectivist would believe any adequately trained clinician alongside experienced nursing colleagues would have appreciated the abnormality.

Discussion

Current analyses of variability in patient outcomes are understandably focused on severity of illness, institution type, and timing of therapy among other factors while differences in physician attitudes and behaviours seem under-explored. Studies have shown that tolerance of uncertainty influences specialty selection by final year medical students,⁹ that attitudes towards end-of-life preferences influence prognostication by intensivists,¹⁰ and that resource utilization by intensivists varies dramatically without impacting outcomes.¹¹

Our proposed taxonomy may have some overlap with several initiatives and approaches popular in today's literature such as de-adoption or resource stewardship as operationalized by the Choosing Wisely Campaign. Nevertheless, those initiatives focus on healthcare cost reduction rather than promoting mindfulness around factors influencing physician variability and the resultant implications for learner development and unit efficiency.^{12,13} With respect to Critical Care Medicine specifically, the subjectivity inherent in recommendations such as "over-use" or "except...answer a specific clinical question" fails to address the assumptions underlying an individual clinician's appraisal of necessity whereas a deeper understanding of one's location along our proposed dyad may.

Individual practitioner differences are often tacit and unacknowledged in daily practice, creating a considerable barrier to learning by novice physicians. The variability can also be a cause of tensions in a multidisciplinary team. This is especially true in the context of critical care where drastic changes in plan and approach take place on the day intensivist coverage changes over. While we have described the two axes in terms of their extreme representations, most providers likely practice on a continuum and occupy different positions within this dyad depending on circumstance. We hope that describing these tendencies can help initiate a meaningful discussion within our community, promoting opportunities for mindfulness of one's approach in different clinical scenarios. Conversely, placement of physicians within this dyad by survey, simulation, or external appraisal of decision-making rationale may have unintended

consequences. Should factors responsible for variability without associated improvement to patient outcomes be identified, institutional pressure to curb physician habits may deleteriously impact their ability to channel experience and utilize gestalt, tools with demonstrated value in diseases such as pulmonary embolism.¹⁴

Conclusion

Variability in physician behaviour exists, influences healthcare costs, and may impact intensive care unit care as well as trainee development. A more explicit framework of the motivations and worldviews intensivists bring to their practice may provide an important source of understanding variability in the provision of critical care, informing educational programming as well as guiding the practice of multidisciplinary teams.

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