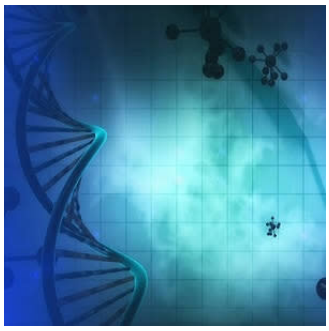
ICU
MANAGEMENT & PRACTICE

Critical care: personalised vs. precision medicine



The current healthcare system tends to be reactive, providing treatment post-onset of the disease, with limited attempts at prevention and prediction. Recently there has been a backlash to such a medical system, as providers and patients have started to demand more personalised care. This has led to the emergence of “P-Medicine” in the form of personalised and precision medicine. A review paper in the Journal of Critical Care discusses the key differences between personalised versus precision Medicine and how this is relevant to the current and future practice of critical care medicine (CCM).

According to the paper, personalised medicine is an "N-of-1" model where each patient is considered to be the only patient being treated. While this model is directed to the patient in front of the intensivist this model does not allow for research or improvements of medicine as a whole.

Pioneers of personalised medicine stressed the importance of the individual. The belief was that “actionable understanding of disease and wellness as a continuum of [molecular] network states unique in time and space to each individual human being” is possible, the paper explains. This implication suggested that the accumulation of molecular network analyses should provide the clinician with enough information that a specific and unique care-delivery treatment could then be designed for each individual patient.

"Personalised medicine is still in a fledgling and evolutionary phase and there has been much debate over its current status and future prospects," the paper notes. "A confounding factor has been the sudden development of precision medicine, which has currently captured the imagination of policymakers responsible for modern healthcare systems."

The precision medicine model of "1-in-N" allows for the more traditional western medicine approach of doing research on groups and subgroups and treating the patient's specific subgroup, the paper says. The Institute of Precision Medicine provided an early definition that stated:

“Precision medicine is targeted, individualised care that is tailored to each patient based on his or her specific genetic profile and medical history. Unlike traditional medicine where one-size-fits-all, practitioners of precision medicine use genomic sequencing tools to interrogate a patient's entire genome to locate the specific genetic alterations that have given rise to and are driving his or her tumour.”

Currently, as the paper emphasises, political and clinical momentum is with precision medicine. Perhaps this is not surprising, since the “1-in-N” model is more closely aligned with conventional modern medicine, which is predicated on the comparative population model. Indeed, a number of disease area specialities have started to query or implement elements of precision medicine into everyday practice and treatment of patients and they include such diverse areas as diabetes and Alzheimer's disease. In particular the oncology community has been quick to embrace and reduce precision medicine to practice in the diagnosis and treatment of a wide variety of cancers. However, in the case of CCM where the attending physician has to often make rapid decisions based on limited information it could be argued that the N-of-1 model of personalised medicine is possibly more applicable.

"Practitioners of CCM have been participating in personalised medicine unknowingly as it takes the protocols of sepsis, mechanical ventilation, and daily awakening trials and applies it to each individual patient," write the paper authors Shihab Sugeir, MD, Department of Anaesthesiology, Keck School of Medicine, University of Southern California, Los Angeles, CA and Stephen Naylor, PhD, ReNeuroGen LLC, Milwaukee, WI. "The next challenge is working with researchers and the databases available to identify the correct subgroup each of our patients belongs to. The intensivists must take a leading role in the communication between the bedside and the bench."

Source: Journal of Critical Care
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