CCBIO Opinion
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"Good Enough" Biomarkers in a Centre of Excellence?

Hope, enthusiasm, and the search for perfection

Much hope and enthusiasm is placed in precision oncology, which many imagine as the ideal future of medical science. Precision oncology is expected to "help anticipate and cure illnesses" by delivering "tailored and optimized health prevention, diagnosis, and treatment" (EC, 2019), resulting in more sustainable health care systems through a fairer and more effective allocation of resources. Precision oncology relies on having biomarkers that are accurate, precise, sensitive, specific, safe and relatively easy to use in clinical practice. In other words, "perfect biomarkers". This is a lot to ask for, especially considering the high levels of biological complexity and uncertainty we are faced with. We therefore argue that it is important to also think in terms of "good enough" biomarkers (Blanchard & Wik, 2017). Yes, even in a Centre of Excellence!

What is a "good enough" biomarker?

Thinking in terms of "good enough" biomarkers means critically thinking about what precision medicine can and cannot bring. It is about balancing opportunities and limitations: a biomarker, no matter how sophisticated, can't bring all the answers or solutions. Biomarkers have a particular purpose, which will exclude other purposes or qualities. For instance, a biomarker cannot be highly precise and complex while also being accessible to all, nationally or globally. The more sophisticated a biomarker becomes, the more stringent challenges of quality and validation it will face, and the more difficult it will be to implement it in clinical practice.

Thinking about "good enough" biomarkers also means accepting the fact that even the best biomarker will never match the biological and social complexity of cancer. No matter how sophisticated a biomarker is, we will still be left with ethical dilemmas and questions of the "common good". Wherever we place the cut-off for patient stratification, some patients will suffer.

The need to reintroduce meaning in precision oncology research

Thinking about "good enough" biomarkers is stepping back from the workbench and considering what precision oncology actually means for clinicians and patients now. Perhaps the most important biomarkers are those that offer some support to clinical decision-making, even if they are not scientifically ground-breaking. Over the last two decades, there has been a tremendous increase in the generation of "omics" data (genomics, transcriptomics, proteomics, epigenomics, etc.), with the expectations that key answers and game-changing biomarkers are hidden in these big data. But do we know how to use these data in the most meaningful ways? Trying to decipher parts of the tumor biology is interesting, but we have to ask ourselves why this is important, how exactly this might benefit society, while accounting for unforeseen challenges. What is the context within which biomarkers are used, and what should their criteria of success be? Often, the focus is on adding years to a patient's life. Adding life and meaning to those years is nevertheless equally, if not more, important.

It is also important to publicly talk about biomarkers as "good enough" tools, not as final "solutions" to prognostication and treatment selection. If we look at current discourses in the media, in politics or by patients' advocacy groups, it sounds like precision medicine for all is just around the corner. Individuals now expect long and healthy lives and claim the right to have access to extraordinary treatments. Managing expectations in the public sphere starts by managing expectations in the lab and research environments. Arguably, part of what makes CCBIO excellent, is that it is nurturing these kinds of discussions about being good enough and meaningful. ••

Blanchard, A., & Wik, E. (2017). What is a good (enough) cancer biomarker? In A. Blanchard & R. Strand (Eds.), Cancer Biomarkers: Ethics, Economics and Society (pp. 7-24). Kokstad, Norway: Megaloceros Press.

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