

Event

The field of personalized medicine (PM) has evolved over the last decades. Reflecting its evolution has been a shifting vocabulary within and across jurisdictions. Most recently, US President Obama has replaced PM with the moniker ‘precision medicine’ through his Precision Medicine Initiative (PMI) and related activities¹.

Significance

The language used to describe a field can shape perceptions and expectations, direct the scope of discourse and stimulate questions about how it should advance. PM is a rapidly evolving approach to healthcare and research that aims to tailor health interventions based on biological indicators. PM has significant health, economic, political and social implications. The terminology used to describe the concept of PM may influence both current activities and future developments.

Analysis

The term “personalized medicine” was first used in the 1940s. However, it was re-coined, taking on its broad contemporary meaning, in the late 1990s as the health and economic potential of the Human Genome Project came into focus². One recent systematic review of the biomedical literature derived the following definition: ‘PM seeks to improve stratification and timing of healthcare by utilizing biological information and biomarkers on the level of molecular disease pathways, genetics, proteomics as well as metabolomics’³. The term precision medicine has gained traction more recently^{1,4,5}. Like PM, precision medicine emphasizes more precise and timely patient care taking individual variability into account. However, descriptions of precision medicine further elaborate the need for networked clinical and molecular data, and the research activities required to optimize the development and adoption of a personalized healthcare approach^{1,4,5}. Precision medicine may therefore be a more comprehensive term⁷. Further, it may sidestep the misinterpretation inherent in ‘personalized’ medicine, that unique treatments can be designed for each individual patient^{4,6}. Rather, precision medicine better conveys the understanding that patients are classified into subpopulations that differ in their susceptibility to a particular disease, in the biology or prognosis of a disease they may develop, or in their response to treatment^{4,6}. Despite potential differences in the scope of their definitions, the terms PM and precision medicine are both in wide use and often employed interchangeably^{7,8}. Indeed, a systematic examination of academic and policy literature carried out by PACEOMICS compiled 99 terms and synonyms for PM, including precision, individualized and stratified medicine (<http://paceomics.org/index.php/outputs/tools-and-resources/>).

Conclusion

The terminology used to describe a field and its activities can have far-reaching consequences, and so bears careful consideration. Notably, a change in name can offer the opportunity to re-define and re-boot, taking advantage of lessons learned thus far. Canadian policy-makers, funders, researchers, clinicians and other stakeholders may wish to explicitly discuss, rationalize and harmonize their use of terms for the concept of PM.

1. Collins FS, Varmus H. (2015). A new initiative on precision medicine. *NEJM*. 372, 793-795.
2. Cherny NI, de Vries EG, Emanuel L et al. (2014) Words Matter: Distinguishing “Personalized Medicine” and “Biologically Personalized Therapeutics”. *J Natl Cancer*.106(12).
3. Schleidgen S, Klingler C, Bertram T, Rogowski WH, Marckmann G. (2013). What is personalized medicine: sharpening a vague term based on a systematic literature review. *BMC Med Ethics*.14.
4. National Research Council (US) (2011). *Toward Precision Medicine: building a knowledge network for biomedical research and a new taxonomy of disease*. National Academies Press, Washington D.C.
5. Desmond-Hellman S. (2012). *Toward Precision Medicine: A New Social Contract?* *Sci Trans Med*. 4(127), 1-2.
6. Genetics Home Reference, National Libraries of Medicine (2016). What is the difference between precision medicine and personalized medicine. Available: <http://ghr.nlm.nih.gov/handbook/precisionmedicine/precisionvspersonalized>
7. Joyner MJ, Paneth N. (2015). Seven questions for personalized medicine. *JAMA* .314(10), 999-1000.
8. Baker, P. (2015) “Personalized medicine” renamed “precision medicine”. *Genomics blog*, Genome Alberta. Available: <http://genomealberta.ca/blogs/personalized-medicine-renamed-precision-medicine.aspx>
9. Ali-Khan S, Kowal S, Luth W, Gold ER, Bubela T. (2016). Terminology for Personalized Medicine; a systematic collection. <http://paceomics.org/index.php/outputs/tools-and-resources/>