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VIEWS AND REVIEWS

NO HOLDS BARRED

Margaret McCartney: Are we too captivated by precision medicine?

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Barack Obama's state of the union address in 2015 kicked precision medicine into the mainstream. He wanted the US to lead "a new era of medicine—one that delivers the right treatment at the right time," with a precision medicine initiative to "bring us closer to curing diseases like cancer and diabetes—and to give all of us access to the personalised information we need to keep ourselves and our families healthier."[1] So far $215m (£175m; €200m) has been invested into the initiative, and one million American people will provide genetic data and biological samples with the aim of "better predicting disease risk, understanding how diseases occur, and finding improved diagnosis and treatment strategies."[2]

In the UK we use the term "personalised medicine" interchangeably with precision medicine.[3] NHS England wants to "move away from a 'one size fits all' approach to the treatment and care of patients with a particular condition, to one that uses emergent approaches in areas such as diagnostic tests, functional genomic technologies, molecular pathways, data analytics, and real time monitoring of conditions to better manage patients' health and to target therapies."[4] So we have the Precision Medicine Catapult, a project funded by the government via its innovation agency, Innovate UK.

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Catapult is clear that it wants to bridge research and commercialisation.[5] The pace is fast and the attitude insistent; for example, trials are underway to test a sponge device that collects cellular material to generate biomarkers to diagnose Barrett's oesophagus without an endoscopy. Yet the Catapult website infers that the trials are just a formality, saying that "assistance" will be provided so that the "Cytosponge is ready to be adopted into clinical practice following completion of the BEST3 trial."[6] Shouldn't we wait for the results of this large trial first? Big data, genomes, large populations, and technology are a captivating mix—one that is being preached from TEDx-type platforms with panache and style but often little critical analysis.

Precision medicine is also, paradoxically, a recipe for unhelpful early diagnosis, false alarms, poor sensitivity, and conflicts of interest. Collaboration on shared goals is one thing; government funded drives to use products of uncertain value are another. Genetic analyses are no doubt capable of guiding and improving treatment for many conditions—cancers most obviously—but the promise of tangible interventions must be based on fact, not hope.

We could use a bit more personalised medicine and precision right now; it doesn't need a genome, and it doesn't need much technology. The tool is talking—having conversations to decide what interventions are wanted and warranted. Clinicians continue to overestimate the benefits of treatments and to underestimate the harms: we estimate benefits and harms accurately only 11% and 13% of the time, respectively.[7] We know that palliative care can provide more quality and quantity of life than usual care, but we also know there are large gaps in provision.[8 9] Personalised medicine is definitely the goal, but technology may not always be needed to obtain it.

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