How can we achieve equitable global access to cancer imaging and care?

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The *Lancet Oncology* Commission on imaging and nuclear medicine highlights stark differences in cancer care between low-income and lower-middle-income countries on one side and high-income countries on the other.[1] Between 2018 and 2040, global cancer incidence is expected to rise by 62%,[2] and, as leaders in the field of cancer care, we believe we have a corporate responsibility in addressing these inequalities. Three main questions are posed in the underlying modelling study on scale-up of cancer imaging, treatment, and care by Ward and colleagues[3] and here is our strategy for addressing them.

First, what can we do to facilitate access to high-quality care everywhere? As investments in cancer centres begin to materialise, human resources will lag behind,[4] so technology needs to take centre stage in helping to bridge this gap. Three key directions can be considered to help address the sparsity of expertise. First, enable remote operations—eg, in virtual operation centres where experienced technologists are empowered to operate several satellite hospitals concurrently from a central location. Similarly, cloud-based technologies can provide easy access to remote reading or computer-aided detection tools for which radiologists are no longer restricted to be on-site. As the COVID-19 pandemic has taught us, remote delivery of cancer care is achievable and should be embraced.[5] Second, reduce technological complexity through the offering of simplified interfaces and workflows for inexperienced users (so-called single button operation). Another valuable proposition is to lower barriers in commissioning treatment machines and tasks that typically require additional experts such as medical physicists, without of course compromising on quality. Third, offer clinical education and training along the whole continuum of cancer care that are specific to the defined cancer patient care pathways.

Second, how can we simultaneously scale up both treatment and imaging modalities to achieve the desired synergistic effect? Early diagnosis is key to maximising cure rates and optimising outcomes in patients with cancer. The earlier a cancer is detected, the higher the cure rate, because local therapy alone, such as surgery, radiotherapy, or ablation, is often sufficient to eradicate disease. To enable early detection, imaging—eg, low-dose CT for lung cancer or mammograms for breast cancer—will play a key role. As cancer care becomes more personalised, imaging will play a more important role during the course of a patient's therapy. Imaging is routinely used to follow-up responses after treatment. However, identifying imaging responses early during treatment through use of artificial intelligence (AI) and machine-learning algorithms can inform doctors on how effective a treatment is likely to be and will allow physicians to adapt the treatment course, which could improve patient outcomes.[6]

Third, how might we bring state-of-the-art know-how to remote areas? We strongly believe that digitalisation is the key to more humane and equal health care. We envision the digital twin of the patient as the framework for gathering all relevant patient information (examples beyond imaging here include liquid biopsies and digital pathology). With an AI-powered pathway companion, we will quantify the effect of digitalisation towards a personalised and affordable treatment that will provide clinical decision support to deliver the right treatment at the right time.

By holistically focusing on both advanced imaging techniques and modern radiation, we expect to better understand the biology of cancer to ensure that a treatment approach is appropriate. Moreover, we see the potential of automated systems for looking at images longitudinally over time, understanding effects of treatment interventions, and correlating with treatment and patient-reported outcomes to readjust treatment algorithms.

The future of cancer is personalised care based on all aspects of a patient's situation, including socioeconomic and demographic features, tumour molecular and genetic make-up, imaging, and a patient's sensitivity to treatment and ability to induce an immune response. Above all, quality of care everywhere is important: where you live should not determine if you live.

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