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The promise and challenges of nanovaccines and the question of global equity

ABSTRACT. Among the many potential benefits arising from the rapidly advancing field of nanomedicine is the possibility of a whole new range of nanovaccines in which novel delivery mechanisms utilizing nanoparticles could make obsolete the use of needles for administering any vaccine. However, as the massive resources of the worldwide pharmaceutical industry are deployed to develop nanovaccines, urgent questions arise as to which diseases should be targeted and which populations will benefit most. This paper explores how such targeting of nanovaccines might be decided in an ethically optimal way and considers some of the practical considerations and potential problems of implementing such a global nanovaccine policy. There seems little doubt that nanomedical research could develop vaccines against most major global infectious diseases. Throughout the history of medicine, however, it is well recognized that insufficient attention and resources have been given to public health and preventive medicine and the environmental causes of ill-health remain under-researched. We urge that national governments and regional authorities of wealthier countries incentivize their powerful pharmaceutical corporations to develop nanovaccines within a global and long term perspective and not just to focus on the diseases of the developed world.

Keywords: adjuvant, developing countries, equity, global health, nanomedicine, nanotechnology, nanotoxicology, nanovaccine, preventive medicine, resource allocation ethics

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