Published in final edited form as:

Am J Bioeth. 2018 ; 18(11): 21–22. doi:10.1080/15265161.2018.1523494.

Practical Problems Related to Health Research Funding Decisions

David B. Resnik, JD, PhD

National Institute of Environmental Health Sciences, National Institutes of Health

In their target article, “Health Research Priority-Setting: The Duties of Individual Funders,” Leah Pierson and Joseph Millum (2018) develop a comprehensive moral framework for allocating research resources and apply it to four different types of funders: government agencies, multilateral organizations, non-profit organizations, and for-profit organizations. They argue that, while all funders have moral obligations to allocate health research resources based on expected contribution to social value, the obligations of different funders vary, depending on their goals and commitments and underlying philosophical assumptions. For example, government organizations, such as the National Institutes of Health (NIH), are required to make funding decisions that aim to maximize either global or national social value, depending on whether one assumes a cosmopolitan or statist view of international justice. For-profit organizations, such as pharmaceutical companies, are obligated to fund socially valuable research consistent with reasonable returns to investors. Non-profit organizations, such as the Bill and Melinda Gates Foundation, are required to maximize social value consistent with their overall mission. In the commentary, I will describe some practical problems that contribute to the complexity of health research funding decisions.

The first practical problem is that the relationship between research funding and health outcomes is much more complex and uncertain than Pierson and Millum recognize. The road from research funding related to a health problem (such as cancer) to social benefits (such as reduction in mortality and morbidity) is seldom direct, steady, or predictable. For example, the United States has invested tens of billions of dollars on cancer research since the early 1970s, and while significant progress has been made in the “war” against this disease, at times it has been plodding, discontinuous, and erratic (Dresser 2001, Faguet 2005). Progress on other health problems, such as Alzheimer’s dementia, obesity, drug addiction, and depression has also been mixed, despite ample government and private funding. Paradoxically, medical progress sometimes happens unexpectedly, with very little research funding, as occurred when Alexander Fleming discovered that penicillin is an effective treatment for bacterial infections (Porter 1999).

Many different factors can impact the efficacy of health research funding. First, the medical problem itself may be more technically and scientifically complex than researchers and funders initially realize. For example, researchers once thought that they could develop drugs that would cure all types of cancer, but they now understand that tumors are genetically, morphologically, and immunologically diverse collections of rogue cells that grow and propagate in different ways and can become resistant to chemotherapy and the body’s own defenses (Dresser 2001, Faguet 2005). Second, basic research in biology,

chemistry, and physics is usually needed to lay the groundwork for medical research, and it may take decades for this research to bear fruit. For example, for many decades there was a significant gap between knowledge of the structure of DNA and applications of that knowledge in clinical medicine (Ridley 2000). The structure of DNA was discovered in 1953, but genomic medicine did not make significant impacts on human health until the 21st century (Ridley 2000). Third, medical problems often have psychosocial and socioeconomic dimensions that influence the effectiveness of diagnosis, treatment, and prevention (Porter 1999). Many diseases, such as cancer, hypertension, type II diabetes, obesity, heart disease, and HIV/AIDS are influenced by lifestyle, cultural, economic, and environmental factors that are difficult to control. Research on lung cancer, for example, may have little impact on the incidence of this disease if smoking rates do not decline. Likewise, development of a drug for HIV/AIDS may have little impact if people cannot afford it.

The second practical problem is that health research funding is often highly politicized (Dresser 2000, Resnik 2009). Patient advocacy groups, medical and scientific organizations, universities, and other stakeholders often substantially influence biomedical research budgets and allocations. For example, in the 1980s, political activists lobbied government leaders for increased funding for HIV/AIDS research and women's health groups advocated for more funding for breast cancer research (Dresser 2000). In the same decade, leaders of scientific and medical organizations argued that the government fund the human genome project (Resnik 2009). Conversely, political interest groups have pressured government agencies to defund research on abortion, sex education, prostitution, and other sexual behaviors (Resnik 2009). Since the 1980s, US federal agencies have been prohibited from funding research that involves the creation or destruction of human embryos. During the 2000's, the Bush Administration placed significant restrictions on federal funding for research involving human embryonic stem cells (Resnik 2009).

Politics can impact government funding decisions at many different levels. In the United States, Congress appropriates public funds to government research organizations (such as the NIH and the National Science Foundation) through the budgeting process, subject to Presidential approval. Government organizations allocate funds within their budgets to different research institutes, centers, or programs, with Congressional and Executive oversight. Some research organizations, such as the NIH, also solicit input from members of the public and advocacy groups, when making these allocation decisions. Specific research projects are funded by means of grants or contracts that have been vetted through peer review (Resnik 2001). Although peer review evaluations focus on scientific criteria, such as the originality and rigor of a research proposal, reviewers may also consider the potential social impact of proposal. Members of the public and advocacy groups often influence judgements related to social impact (Resnik 2001).

Leaders of research organizations who are attempting to make funding decisions that promote social value must therefore deal with uncertainty and politics. Uncertainties related to the relationship between health research investments and potential health outcomes can make it difficult for government leaders to know whether funding allocations are likely to maximize social value. Government leaders may find it difficult, for example, to decide whether to fund research with potentially high public health impacts but uncertain outcomes,

or whether to invest public resources in safer bets. Justifying investments in basic science may be especially challenging, given the long time-lag between basic science discoveries and clinical applications. Government leaders may need to deal with the political ramifications of funding decisions. They may, for example, face pressures to divert funds from diseases with high public impacts toward those that have low impacts and well-organized and powerful constituencies. Government leaders may also have to deal with pressures to scale back funding for research that is politically controversial, such as research on human sexuality or the public health impacts of climate change. Leaders of multilateral organizations and non-profit and for-profit organizations are likely to face similar difficulties arising from uncertainty and politics. While the practical problems I have described in this commentary do not undermine the philosophical justification of the framework Pierson and Millum defend in their target article, they do create some difficulties for individual agents attempting to apply it to actual decisions. Pierson and Millum should consider taking these complexities into account when revising their theory, so that it can provide useful guidance for leaders of research funding organizations.

Acknowledgments

This research was supported by Intramural Program of the National Institute for Environmental Health Sciences (NIEHS), National Institute of Health (NIH). It does not represent the views of the NIEHS, NIH, or U.S. government.

References

- Dresser R 2001 *When Science Offers Salvation: Patient Advocacy and Research Ethics* New York, NY: Oxford University Press.
- Faguet GB. 2005 *The War on Cancer: An Anatomy of Failure, A Blueprint for the Future* Dordrecht, The Netherlands: Springer.
- Pierson L Millum J. 2018 Health Research Priority-Setting: The Duties of Individual Funders *American Journal of Bioethics*.
- Porter R 1999 *The Greatest Benefit to Mankind: A Medical History of Humanity* New York, NY: W.W. Norton.
- Resnik DB. 2001 Setting biomedical research priorities: justice, science and public participation. *Kennedy Ethics Institute Journal* 11(2):181–205.
- Resnik DB. 2009 *Playing Politics with Science: Balancing Scientific Independence and Government Oversight* New York, NY: Oxford University Press.
- Ridley M 2000 *Genome: The Autobiography of a Species in 23 Chapters* New York, NY: Harper Collins.