

## Research Ethics Considerations Regarding the Cancer Moonshot Initiative

Marilyn J. Hammer, PhD, DC, RN

Hammer is an assistant professor in the College of Nursing at New York University in New York.

No financial relationships to disclose.

Hammer can be reached at [marilyn.hammer@nyu.edu](mailto:marilyn.hammer@nyu.edu), with copy to editor at [ONFEditor@ons.org](mailto:ONFEditor@ons.org).

Key words: ethics; genetics; biology of cancer; comorbidities

ONF, 43(4), 428–431.

doi: 10.1188/16.ONF.428-431

If the Precision Medicine Initiative was the launching pad, the Cancer Moonshot Initiative is the liftoff. A billion-dollar mission to “eliminate cancer as we know it” (Whitehouse.gov, 2016, para. 1), the Cancer Moonshot Initiative underscores the Precision Medicine Initiative’s near-term focus in oncology research and translation, described in the March 2016 Research Ethics column (Hammer, 2016). Spearheaded by Vice President Biden, the goal is to condense a decade of research into actionable results within five years (Kaiser & Couzin-Frankel, 2016). Such an effort has not been put forth since the War on Cancer was announced in the early 1970s (Kaiser & Couzin-Frankel, 2016). Priority areas have been outlined to reach this goal, and those areas are creating new challenges in the ethical conduct of research. The following is a summary of these priorities and ethical considerations for each.

### Prevention and Cancer Vaccine Development

The focus of this priority is to target microbial-associated cancers and alter genotypes of various malignancies. The vaccine to prevent infection from the human papillomavirus (HPV) is an exemplar for the prevention of 93%–98% of cervical cancer cases (Malmqvist, Helgesson, Lehtinen, Natunen, & Lehtinen, 2011). Creating other

vaccines for microbial-associated cancers can potentially have similar positive effects.

About 80% of the population is HPV positive, and about 12,990 cases of cervical cancer are expected to be diagnosed in 2016 (American Cancer Society, 2016), which would affect 0.007% of the female population in the United States. With regular Papanicolaou screening, this number could be even lower. Although it may seem overzealous to vaccinate to prevent cancer in less than 0.001% of this population, the link with HPV and the ability to prevent cervical cancer and other HPV-associated cancers in both sexes is compelling. Using this model for the prevention of other microbial-associated cancers is intriguing; however, other infective agents are not as prevalent. Creating these vaccines, identifying the populations who would benefit most, and conducting clinical trials can take time. Weighing the risks and benefits of entering these trials will take careful consideration.

Aside from microorganisms, targeted cancer vaccines are a large part of this priority area (Whitehouse.gov, 2016). Using retroviral and lentiviral vectors to introduce healthy DNA into individuals with leukemia is showing great promise (Berkhout, 2013). Also called oncolytic viruses, these viral vectors are programmed to solely target malignant tissue and trigger an immune response against cancerous