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Short Communication

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Ensuring the Ethical and Responsible Conduct of Oncology Research for the Next Generation

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Abstract

As cancer researchers, we instinctively execute the responsible conduct of experimental and clinical oncology research. The standards for the ethical and responsible conduct of research are ingrained in our universal research practices. However, as we train the next generation of oncology researchers in our clinics and laboratories, we should consider our responsibility for ensuring that these standards are passed on. In doing so, rather than meeting minimum standards for training in a compliance-driven approach, we should exercise forethought and regularly consider how we can improve the ethical landscape for those who will fill our shoes.

Discussion

In the 2008 *World Cancer Report* released by the International Agency for Research on Cancer, it was predicted that cancer would become the leading cause of death, worldwide, by 2010 [1]. The analysis of the worldwide cancer statistics for 2010 has yet to be released. Irrespective of the final analysis, it is a fact that few lives have been untouched by the devastating impacts of cancer. As public funding associated with clinical oncology research increases, so does public scrutiny regarding the way it is conducted. The fact that public funds support a growing proportion of all oncology research throughout the world means that we, as oncology researchers, spend a growing portion of our time employed, indirectly, by the public. Since the advent of public access to the primary literature documenting scientific research, there has been an increasing public awareness regarding the rare but vicious threat of research misconduct. This conjures images of the shamed South Korean stem cell researcher, Hwang Woo-suk. Once one of the most respected scientists in his field, he was disgraced, dismissed, and prosecuted following the revelation that he had fabricated results and embezzled research funding [2]. Misconduct on this scale can even be found within our own ranks of clinical oncology. Perhaps the most infamous example is that of Werner Bezwoda at the University of Witwatersrand in Johannesburg, South Africa who reported that high risk breast cancer patients who were treated with extreme doses of chemotherapy followed by bone marrow transplants achieved a higher rate of survival than patients on traditional chemotherapy. An investigation into his findings revealed that the majority of his data were fraudulent and he had failed to obtain approval for his study from his institutional review board [3]. In response to such highly publicized research misconduct, many public funding agencies have endorsed strict policies regarding the *responsible conduct of research* (RCR). These policies are intended to ensure a culture of ethical practices in research, to safeguard the integrity of the research findings upon which we rely for therapeutic advances in health care, and alleviate public reservations regarding the potential misuse of public funds. We, as clinical and experimental oncology researchers, should take a moment to consider the relevance of RCR and these recent agency guidelines to our own research.

Our contributions to science are grounded on a foundation of integrity. The basis for publishing the findings of our research is to create a global environment of collaboration in which we may each build upon the work of our fellow researchers. Thus it is incumbent upon each of us to ensure that the results we report are valid and that our methods used to arrive at those results are conducted in an ethical and responsible manner. If we are to maintain the rapid rate of advancement toward clinical therapies that have marked the last decade of cancer research, we must be able to trust the published work of our colleagues. Therefore, it is paramount that we conduct our work truthfully, professionally, and impartially using the best ethical practices available.

Of equal importance to our own ethical practices, we must each do our part to ensure that the next generation of researchers is prepared by our example to responsibly continue our progress. Thus, as we reflect upon our own practices and how they contribute to responsible cancer research, we should also consider how we will impart the values and standards that drive those practices to our students, post-docs, and other research personnel. Among new researchers, moderately questionable practices in research are certainly more usual than flagrant misconduct. These are often the result of misunderstandings and naivety toward accepted standards. Common examples include failure to properly recognize co-authors in poster presentations, failure to properly document procedures, findings, and/or conflicts of interest, or failure to include adequate citation of previous work. In turn, as senior researchers, our failure to highlight questionable practices among our junior staff and appropriately deal with them simply because we deem the transgressions too trivial for our valuable time may result in a cascade of such practices throughout the career of that junior scientist, ultimately leading to acts of serious misconduct. Simple educational practices such as training on the use of laboratory notebooks, highlighting RCR resources related to conflicts and transparency, and thorough review/revision of junior researchers' output related to publications, citations, and presentations can prevent the development of patterns leading to questionable practices.

Fundamentally, the responsible conduct of research is simply the practice of sound, ethical science. RCR is particularly vital in the emotionally charged field of cancer research as it touches the lives of so many. As a common tool to establish baseline practices and guide our conduct of research, the Office of Research Integrity at the United States Department of Health and Human Services

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(HHS) has published nine core factors in RCR [4]. As the curator of the world's largest biomedical research consortium, HHS has a vested interest in helping to guide and facilitate RCR in the United States and throughout the world. The cores of RCR stressed by the HHS are: *1) research misconduct; 2) conflicts of interest; 3) data management practices; 4) mentor and trainee responsibilities; 5) collaborative research; 6) authorship and publication; 7) peer review; 8) protection of human rights and welfare of laboratory animals; 9) societal expectations of scientists, environmental and societal impacts of scientific research, and ethical considerations in biomedical research.*

Each core can be more thoroughly reviewed and considered in the introduction to RCR published by the HHS [4]. However, the meaning and value of each of these cores should be self-evident to any biomedical researcher. As ethical researchers, we habitually practice the cores of RCR without consciously considering them. It is simply what we are trained to do. However ordinary these cores may be in our research routine, we must be cautious against complacency. Rather than meeting minimum standards in a compliance-driven manner, we should practice forethought and regularly reflect upon how we can advance. As leaders in oncology research, we should encourage our peers in other clinical disciplines to do the same. In doing so, we will become a model discipline in the responsible conduct of research.

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