

Special Section

Dangerous science: Online promotion of unproven stem cell therapies and global health risks

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ABSTRACT

Stem cell-based therapies represent a potential pathway for a new era of 21st century regenerative medicine. In support of this new form of treatment, a global multibillion-dollar research endeavor is currently underway in an effort to establish a scientific evidence base for safe and effective clinical use of stem cells. At present, due to its early stages, only a few stem cell therapies are approved for use. Yet despite very limited evidence-based data, a proliferation of questionable and often illegal stem cell providers around the world are now offering unfettered access to largely experimental stem cell treatment claiming cures for virtually any disease or condition. These stem cell clinics promote their services globally to patients using unregulated Internet and forms of direct-to-consumer advertising. In this paper we examine marketing characteristics of these questionable stem cell clinics and discuss pathways of access through the globalization of medical tourism. We conclude with an examination of the similarities between unproven stem cell therapy access and illicit online pharmacies and explore possible lessons that can be learned to inform future global regulation and policymaking in this arena.

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INTRODUCTION

THE USE OF stem cells to treat disease or injury is backed by a multi-billion dollar global research effort to identify and develop new clinical intervention strategies. Stem cell work has the potential to change the very nature of 21st century medicine. The development of stem cell therapies and transplantation for clinical treatment, also known as “regenerative medicine,” is rapidly moving forward for a number of diseases including cancers, diabetes, cardiac disease, various muscular and neurological injuries, and a host

of genetic disorders as well as others.^{1,2} Global attention to stem cell therapies has recently peaked with news of human organs grown from adult stem cells (portions of the trachea) that have been successfully transplanted into patients first in 2008 and more recently in a child in the USA in April 2013.^{3,4}

Yet the scientific, clinical, and ethical complexities associated with developing stem cell therapies continue to pose challenges in translational research. This includes ethical controversy regarding use of embryonic stem cells in developing stem cell lines, as well as patient safety concerns regarding the potential for induced pluripotent stem cells (iPSCs) to result in tumor formation.^{1,5} These challenges along with the diversity of stem cell types (which includes embryonic, adult, and iPSC as basic categories) coupled with the complexity of developing and testing effective and evidence-based stem cell treatments, has resulted in the vast majority of stem cell therapies

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