

Public Health Care Systems: Do They Contribute to Climate Change?

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Research Objectives

- Assess the literature to determine the amount of greenhouse gases (GHGs) emitted by public health sectors
- Identify sectors of the public health care system that can be targeted to reduce emissions

Introduction

- Since the pre-industrial period (1800-1850), the Earth's temperature has risen by 1°C and may continue to rise more rapidly in the 21st century (Allen et al. 2018).
- Climate change is classified as the greatest threat to global public health in the 21st century (Paterson et al., 2014).
- Air pollution, the most potent environmental factor that affects human health, has caused approximately 9 million premature deaths in 2015 alone (Landrigan et al., 2018).

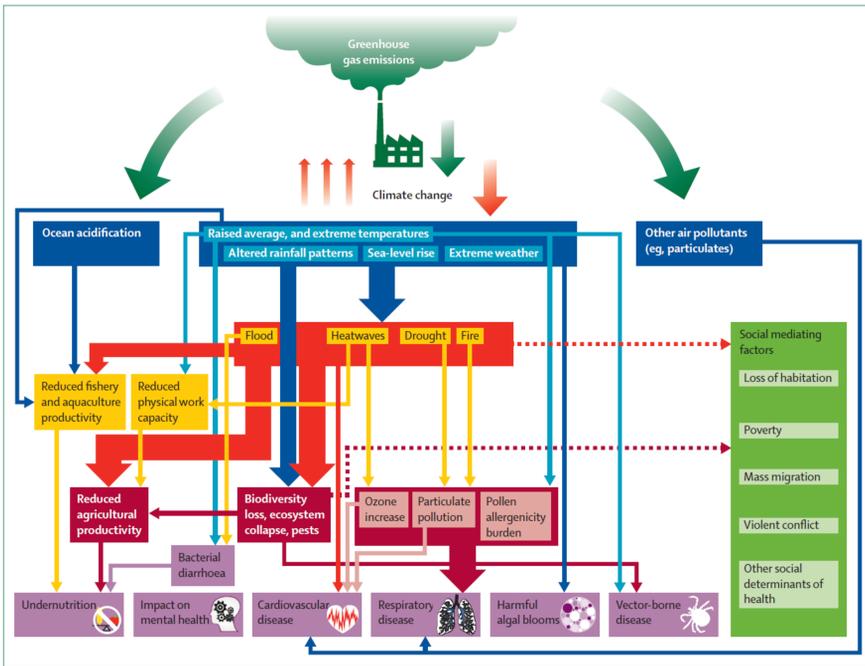


Figure 1: Anthropogenic and natural pressures on climate change and health change and health (Watts et al. 2015).

Literature Review

- In 2013, the U.S. Federal government spent 3 trillion USD on health care services (Eckelman & Sherman, 2016).
- In 2014-2015, Australia spent \$161.6 billion AUD on their health care system (Malik et al., 2018).
- In 2017, Japan's total health care expenditure totaled \$520 billion USD (Nansai et al., 2020).
- The U.S. health care system emitted 655 million tonnes of carbon dioxide equivalents (CO_{2eq}) from 2003-2013 (Eckelman & Sherman, 2016).
- The Australian health care system contributed 7% of Australia's total GHG emissions (Malik et al., 2018).
- In 2009-2015, Canadian health care facilities emitted 23,000 tonnes of GHG emissions and over 200,000 tonnes of non-GHG emissions (4.6% of total emissions) (Sherman et al., 2018).
- Approximately 23,000 disability-adjusted life years (DALYs, a year of healthy living lost) lost annually due to pollution from health care services in Canada (Sherman et al., 2018).

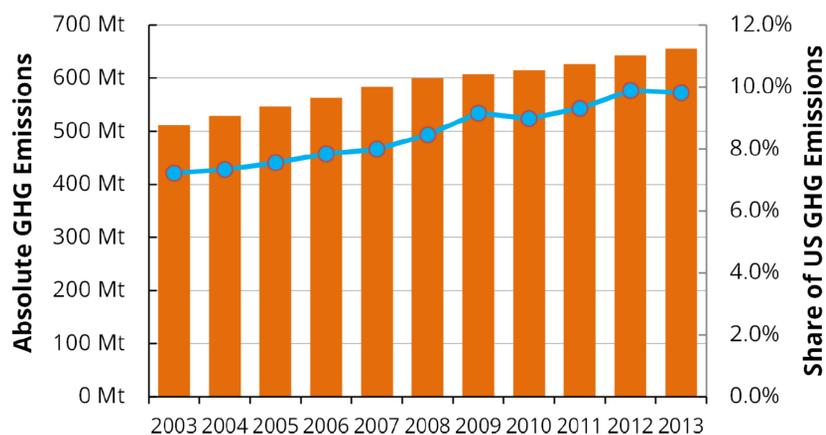


Figure 2: Life cycle greenhouse gas emissions from the U.S. health care sector from 2003-2013 (Eckelman and Sherman, 2016).

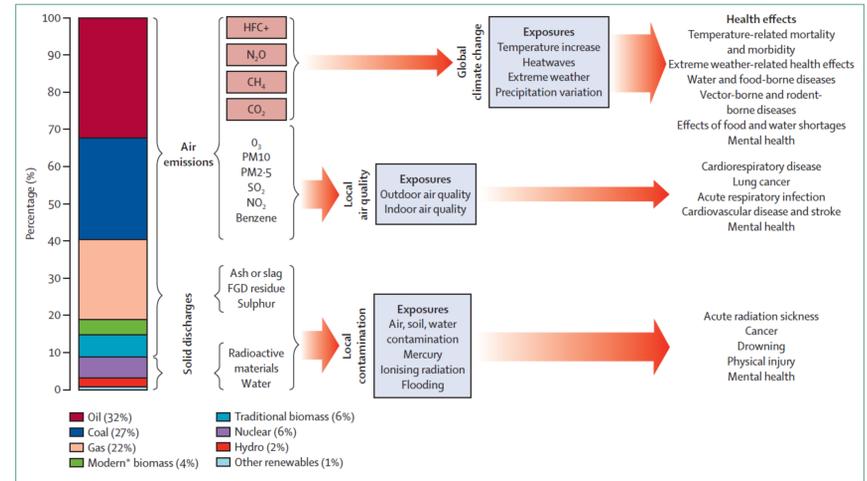


Figure 3: Impacts of global energy system on global health (Watts et al. 2015).

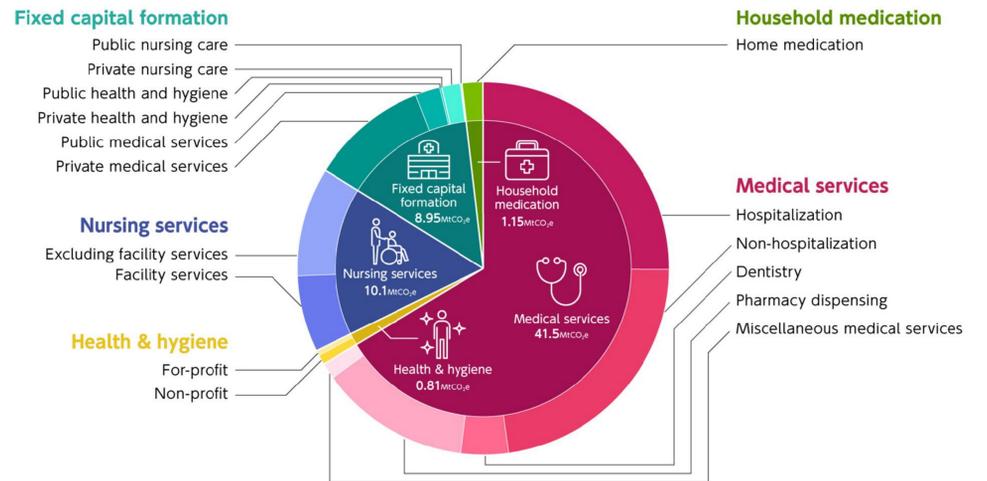


Figure 4: Japan's carbon footprint from the health care sector in 2011 (Nansei et al. 2020).

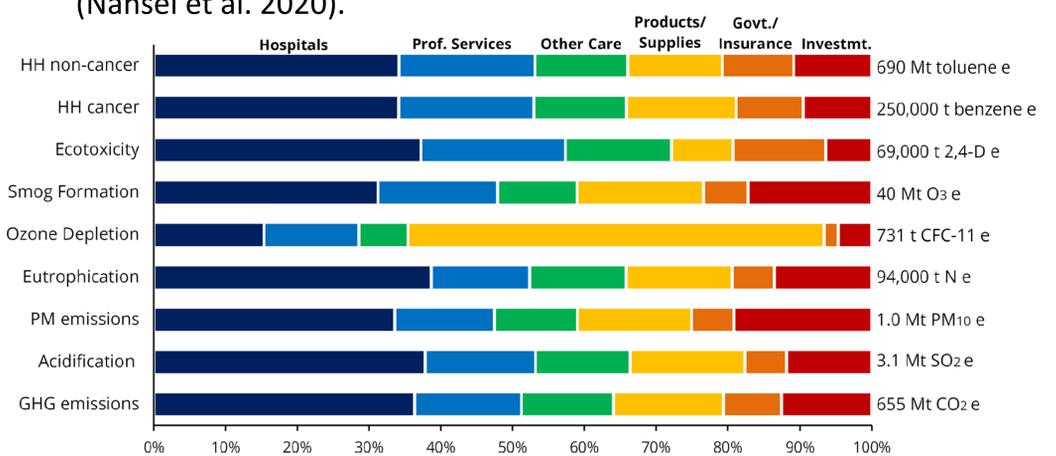


Figure 5: The impact of emissions from the U.S. health care sector on the environment and public health (Eckelman and Sherman 2016).

Discussion & Conclusion

- Hospital practices (medical waste), energy source used (fossil fuels) and pharmaceutical products are sectors in the health care supply chain that must be targeted to reduce greenhouse gas (GHG) emissions.
- Building energy efficient buildings, transitioning to renewable energy sources and reducing electricity demand can significantly reduce emissions.
- Healthy lifestyle changes can reduce the burden placed upon the health care system.
- Reducing emissions from the health care sector could reduce the impacts of climate change on human health, with approximately 150,000 deaths avoided annually (Eckelman & Sherman, 2016).

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