Infectious disease, social determinants and the need for intersectoral action

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Abstract

Effectively addressing infectious diseases requires a broad multifaceted approach. Public health efforts in the 19th century emphaasized cleanliness and good living conditions. The germ theory of disease that subsequently prevailed led to some important breakthroughs in vaccines and antimicrobials—but also bred complacency. Now, in light of emerging and re-emerging infections and antimicrobial resistance, we know that a unidisciplinary approach to infectious disease control is no longer sufficient and that it is through working with others that we can identify practical ways to address all the factors at play in the emergence and persistence of infectious diseases. When working across sectors, inter-professionally or with intergovernmental or coalition activities, there are four important principles to apply: respect, practicality, the rule of three and having something to offer.

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Introduction

Tackling the challenge of infectious disease has always required a broad multifaceted approach. As our understanding has evolved, this approach has expanded to include the concept of social determinants of health (SDOH) to better address the complex interplay between the conditions in which we live and our ability to foster health and recover from illness (1). This paper describes the history of our understanding of infectious diseases, from germ theory to the determinants of health and beyond, identifies the need for an intersectoral approach and relates principles that foster coalition building and effective intersectoral action.

Germ theory

The germ theory of disease led to some important breakthroughs that helped in the eradication of some diseases and the near elimination of others through the use of vaccines and antimicrobials. Nevertheless, the theory was very controversial and much debated in the 19th century. There were, for example, those who feared that if we concluded germs were the actual cause of disease, people would no longer be motivated to clean up the dirty conditions in which infections often arose (2).

The mid-20th century was marked by the hubris that infection was no longer a serious threat to humanity (3). As germ theory became widely embraced, the tendency to become a little more complacent with the surrounding conditions became an issue. For example, during surgery, people assumed that antibiotics could address any risk of postoperative infection and became a little more lax with aseptic technique. Overall, less attention was paid to infection control and public health efforts.

Complacency regarding infectious diseases is now largely absent. This change began in the 1980s and 1990s with the onset of the HIV epidemic and continued through the 2000s, with the SARS and pandemic H1N1. The emergence of antimicrobial resistance (e.g. multidrug-resistant tuberculosis), new infectious diseases (e.g. the Ebola virus) and the re-emergence of old infectious diseases thought to be vanquished (e.g. pertussis) have also challenged complacency.

The more we know about infection, the more we realize we have to learn. Prions and related protein misfolding disorders point to a type of infectious disease not caused by a microorganism—and this will likely not be the last form of infectious organism we discover (4). And with each year, new insights increase our understanding of how microorganisms cause or promote a growing range of diseases and immune disorders.

The interplay of microbes and social determinants

We have come to recognize, or perhaps rediscover, the significant influence of social determinants on rates of infectious and noninfectious disease and mortality. Where we live and how we behave—our social, environmental and economic context—all bear on our well-being and survival.

So, in a way, we have come full circle. We realize that the germ theory of disease was a little too simple, and now have a more nuanced understanding of the role microorganisms play in a range of diseases, their function in promoting normal physiological processes, such as digestion, and their complex interplay with immunity (5). But we also realize that there was a lot of substance in the early public health movement, with its focus on better sanitation and generally improving economic and

social conditions. While, overall, social and economic conditions for health have significantly improved over the last century, especially in developed countries, neglecting to address social determinants has given rise to inequity (6,7). To successfully prevent and manage disease and injury, we must take into account all we know about microorganisms, vaccines, treatments and SDOH. With that in mind, the concept of One Health is gaining acceptance as another way of thinking about the problems we face. The interface of animal, human, environment and economic factors is where many solutions to our more complex challenges lie.

A fascinating example of the interplay of SDOH and microbes is the fact that the incidence of TB started to decline in much of Western society prior to the advent of successful medical therapies (8). Better housing, less overcrowding, improved nutrition and living conditions, and pasteurization, among other factors, contributed to a precipitous decline in rates of TB in the 19th and early 20th century in Europe and North America (9).

Ironically, although a number of effective treatments for TB were developed in the latter half of the 20thcentury, the disease has not been eliminated. This is due to a complex combination of SDOH, immunological factors (such as the increase in TB in those with HIV), and the emergence of multidrugresistant strains of the bacteria (10). TB remains endemic in many countries including in the Americas, among indigenous populations. One key to a longer-term solution to TB in Canada's North is access to adequate housing in addition to prevention and treatment (11-13).

TB is not the only example of an important interplay between microbes and SDOH. The burden of methicillin-resistant *Staphylococcus aureus* (MRSA) and respiratory syncytial virus (RSV) is associated with inadequate housing and poverty (14,15). Even the burden of HIV/AIDS—who gets it and how well they respond to treatment—is related to SDOH. For example, people with HIV who have stable housing are more likely to have better treatment adherence (16).

Effectively addressing infectious disease means no longer debating whether to focus on social or on medical, biological or environmental factors (17,18); all these factors are important. This also suggests that no one person or group can address all infectious diseases. In fact, to effectively address infectious diseases today requires multiple skill sets—knowledge of infectious disease, public health and SDOH and the ability to work with local communities, governments and non-governmental organizations.

Why we need coalitions and intersectoral action

Unidisciplinary disease control strategies will never be truly sufficient to combat many infectious diseases: the underlying determinants of health also need to be addressed. If we keep in mind the importance of SDOH and other non-microbial factors when organizing health services, we are more likely to come up with effective strategies.

An example of the effective multidisciplinary application of infectious disease control is the use of a vaccine to stop the periodic outbreaks of hepatitis A in small remote communities in Saskatchewan. While advocating for improvements in housing and social conditions, the health care system offered immunization and, as a result, brought down the rates of the disease in those communities to below that of the province as a whole. (*Unpublished Saskatchewan Communicable Disease data 1994–99, Dr. Shauna Hudson*).

One of the challenges of addressing SDOH is that they are not simply deterministic. In other words, just because a person is financially better or worse off is not in itself a reason for good or ill health. Poverty is not just an economic issue; it is a constellation of lack of assets, connections, self-determination, environment, etc. Some communities thrive much better than others with similar levels of income, environment, genetics and basic culture. And these can be mitigated further with appropriate supports in education, health and social services.

With such diversity in the human condition and approaches to dealing with issues, one of our key challenges is helping communities journey from where they are to what they could be.

Sometimes the issues of poverty, social, environmental and economic factors and our ability to influence them seem overwhelming. While no one can do it all, and some challenges seem insurmountable, breaking the problems down in practical ways can be helpful in assuring positive action.

Principles for working with multiple sectors and coalitions

No one ideal technique or model is suited to all people or situations. The key is improving our understanding of the various factors underlying risks and benefits to health through working with others so that we can identify practical ways to address all the factors that may be at play.

The skills required to address infectious diseases in the context of social determinants may take us beyond our usual roles. Diplomacy, coalition building, community development are just some of the key capacities that allow us to address the risks and underlying factors. Four important principles apply.

Respect

We cannot influence who or what we do not respect. While it is not necessary to look on those we work with to achieve shared goals as friends—or even to agree with them—we need to respect them as people and appreciatethe challenges they face and their aspirations. Only then can the conversation about potential change take place. When we feel frustrated over differences, a harangue may feel therapeutic but these rarely lead to a significant change in perspective; the most common reaction is wanting as little as possible to do with the haranguer. So working in a spirit of respect is critical.

Make it practical

It is not enough to identify the problems. Policymakers and others also need practical, doable solutions that are demonstrable and/or feasible. Applying what we already know or can gather from experience elsewhere and understanding effective implementation can mean going a long way without the need for new strategies and technology.

The rule of three

Too often the things people disagree about become the focus of meetings and hinder progress. To address this, stop, take

stock and divide the issues up into three areas: those that can be agreed on, those that are not perfect but can be lived with, and those that are very unlikely to be agreed on. While not completely ignoring the last category, focussing most of the effort on the others prevents just the one category consuming more than a small part of the available time and energy.

Have something to offer

It is rare that one single organization has either the mandate or capacity to address large complex issues alone. The reason for coalitions is that different groups have different things to offer, so identifying what you or your organization can offer is very useful. A conversation that goes along the lines of "We could do this if you could do that" has been a useful technique for breaking the logjam of problems circling between organizations.

Conclusion

Enhancing our biomedical approach to address infectious diseases with effective approaches based on the SDOH and One Health will be a key to long-term success. Whether in medicine or policy, the basics matter. Ensuring the least intrusive, most effective approaches with the fewest side effects serves us all well.

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Conflict of interest

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