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Deadly Encounters: How infectious disease helped shape Australia

The title of the book “Deadly Encounters: how infectious disease helped shape Australia” suggests an unmissable read for those interested in the history and epidemiology of infectious diseases. It describes the epidemics of notable infectious diseases that have affected Australia over the last century, with eight chapters focusing on smallpox, Murray Valley encephalitis, influenza, dengue, poliomyelitis, HIV/AIDS, SARS, and a summary and conclusion. The author, Peter Curson, makes the point that a full history of infectious diseases in Australia is yet to be written, which is unfortunate as the data to write such a history from a public health perspective are available.

Generally the book does well at explaining the importance of fundamental epidemiological principles and communicable disease control, such as transmission routes, vaccination, case isolation, contact tracing, epidemic curves, and outbreak investigation. At times it fails to fully distinguish between concepts such as transmissibility and virulence, likely because, rather than solely having a medical or disease burden focus, “it specifically aims to examine the way Australians have reacted to epidemics and the associated societal impact”. The main premises underlying the significance of the book are that despite its geographic isolation, Australia is vulnerable to epidemics and we should therefore learn from past encounters what to do and what not to do; the comparatively small population in Australia means that many outbreaks have had less impact in terms of case and death numbers than has occurred elsewhere, but the effects from fear and hysteria have nevertheless often been profound; it is illuminating to examine the role played by human emotion, fear, and hysteria during epidemics; and outbreaks are often the catalyst of reform in public health systems.

The book specifically examines the links between crises surrounding infectious disease outbreaks and human behavioural responses, asserting that such observations “reveal much about social attitude” and lead to “significant changes in human values, attitudes and behaviour”. The book describes not just how organisms spread, but how both rational and irrational fear also spread like a contagion through communities. This slant presumably results from the author’s background—public health plus geography and historical demography.

Curson asks “what exactly is an epidemic?” For an epidemiologist the answer is simple and clear, but for the public, this is not the case. Curson defines the term “epidemic” not merely with the epidemiological definition of a widespread occurrence of a greater than expected number of cases of infection for that time and place, but also as an event for which the significance stems “as much from the public reaction to the disease agent involved”, comprising “important aspects of human reaction, response and behaviour, often manifesting in outpourings of fear, hysteria and panic”. Australians share with the rest of the world a fear of many severe epidemic-prone diseases, particularly those that spread quickly. Indeed, if you want to send a message of urgency then the word “epidemic” is useful; to damp down response to an outbreak, “cluster of cases” is a better phrase to use.

The book highlights the important human dimension of epidemics, as well as the importance of recognising that governments and medical authorities are prone to ignoring the discord between how they as experts perceive risk compared with views held by “ordinary people”. It also comments on the often illogical and emotive aspects of risk perception which mean that people worry about small risks (eg from SARS, of which there were no Australian cases) and overlook real, larger risks such as being injured in motor vehicle accidents.

Our understanding of disease transmission has markedly improved over the last century. In many of the epidemics described, the mode of transmission was not known, resulting in control measures that often proved ineffective, leading to many changes of strategy. Our perception of epidemics and pandemics has also shifted over the last century. Australian influenza notifications reached 89,941 in 1919, the highest ever recorded number of notifications to Australian health authorities, for an incidence of 1733·2 per 100 000 population. The 2009 influenza season was also regarded as a pandemic, yet it in no way rivalled the events of 1919. In fact, the number of cases was not markedly higher than in most other seasons, it was not geographically more widespread, and the severity of illness was not significantly greater than in other seasons. However, the term pandemic was nevertheless constantly repeated, and the perception of a pandemic was propagated, presumably partly because young people were affected more than older people, but most importantly also because of the role the media played in inciting public anxiety.

Curson describes the responses of Australian health authorities to epidemics of communicable diseases. The response to smallpox was to offer immunisation; to quarantine cases and, sometimes, contacts; and to disinfect premises. A proposal to compel immunisation was defeated due to parliamentary opposition. This
failure to secure compulsory vaccination might have had disastrous consequences had the outbreak been due to a more virulent strain of smallpox. In dealing with influenza in 1919, the federal government had only quarantine powers, and it promptly applied maritime quarantine to ships arriving in Australia. The Commonwealth and states agreed to a national uniform response to the epidemic in November, 1918. By February, 1919, this agreement had collapsed, with Australia applying their own quarantine restrictions to interstate travel. The states imposed and removed travel restrictions several times over the next few months. Ultimately the measures imposed failed and influenza penetrated nearly the entire country, including very remote Aboriginal communities. This critical review of management of the influenza pandemic provides an example of the potential for poor public health response when states and territories provide conflicting advice and fail to work cooperatively, thereby providing a historical perspective of why a nationally consistent approach to outbreaks across individual states and territories is so important.

Given that the book spans 100 years from 1910, most of its content predates the establishment of the national surveillance and response systems in place in Australia. Australia now has a unified, comprehensive surveillance system for imported and native communicable diseases of interest (the National Notifiable Diseases Surveillance System [NNDSS] established in 1991) as well as a national network of public health personnel (the Communicable Disease Network of Australia [CDNA] established in 1989), which provides information necessary for public health knowledge and action at the national level. Disease notifications are made to state health authorities, which enables each state and territory to have some flexibility regarding specific details collected, but each then reports cases to the national system. This system is not without some residual inconsistencies, because national agreement is often hard to establish, but having national systems for surveillance and communication facilitates uniformity in approaches to outbreaks, rather than enabling blatant opposition in policies and practices across states as used to historically occur. Notably, Australia does not have a centre of widely respected public health expertise like the US Centers for Disease Control and Prevention.

The outlook provided by the book is very interesting, and the stories surrounding the outbreak facts and the examination of individual and community behaviours under stressful conditions make the book both entertaining and surprisingly easy to read given its factual and serious content. However, this book would have benefited from greater editorial scrutiny to avoid at-times frustrating repetition and to ensure adequate inclusion of references. Although some chapters included minuscule detail of certain aspects of outbreaks, other issues are skimmed over, a case in point being a disproportionate focus on how events affected New South Wales often at the expense of including relevant data on other states. Additionally, in some sections it would have been helpful to provide better explanations of the diseases’ medical principles—eg, readers unaware that Murray Valley encephalitis virus can cause a wide clinical spectrum of infection (completely asymptomatic to death) might not fully appreciate that the apparent distribution of cases represented just the tip of the iceberg. To counterbalance these criticisms is the fascinating perspective of the human impact of outbreaks, bringing events to life beyond the statistics. For instance, many chapters describe how many people lost jobs during outbreaks; highlight the personal impacts of superstition, scapegoating, and discrimination; describe the role the media has played during epidemic crises; and commented on economic impacts including the opportunistic behaviour of businesses selling “quack cures”. Some humorous examples of the latter which emerged during the influenza pandemic include “Warns Wonder Wool” which claimed to save lives by offering “magic wrap and medicated cotton-wool fibres” to keep people warm; motorcycle advertisements based on being “a sure way to keep you out of germ-haunted trains and trams”; and shoppers being offered a visit to Grace Brother’s “Inhalatorium Chamber” to ensure at least 24 h of protection. A fascinating image of a message issued by the New South Wales department of public health includes the slogan “Mosquitoes carrying dengue fever—as dangerous as an enemy bomber. Can cripple an army, disorganise a community”.

The chapter on dengue includes a review of the geographical coverage of the main vector Aedes aegypti, which is topical and enlightening given current predictions of vector distribution in the face of climate change. However, in some ways the lack of mention of recent and current health threats such as Middle East respiratory syndrome coronavirus, Ebola virus, chikungunya virus, and Zika virus, while understandable, makes this just-published book seem somewhat outdated already, and one could question some of the disease choices included.

Overall, the historical perspective and story-telling nature of the book, as well as its focus on social impact rather than epidemiological principles, makes it unsuitable for recommendation to Australian students of infectious disease epidemiology as a core text. However, it remains an enjoyable read and a source of reflection on how infectious diseases control can be influenced by irrational factors.

Karin Leder, Robert Hall