


Information, Expertise, and Authority: The Many Ends of Epidemics

▼ **SPOTLIGHT ARTICLE** in *How Epidemics End*, ed. by Erica Charters

▼ **ABSTRACT** What does it mean for an epidemic to end, and who gets to declare that it is over? This multidisciplinary spotlight issue provides 18 case studies, each examining specific epidemics and their ends as well as the methodologies used to measure, gauge, and define an epidemic's end. They demonstrate that an epidemic's end is often contentious, raising issues of competing authority. Various forms of expertise jostle over who declares an end, as well as what data and information should be used to measure and define the end of an epidemic. As a result, it is more accurate to describe multiple endings to an epidemic: the medical end, the political end, and the social end. At the same time, multidisciplinary research into the ends of epidemics highlights the crucial role of information and measurement in an epidemic's end, as well as the ways in which ending forces observers to rethink and reconceptualize time. Whereas the declaration of an epidemic suggests a neatly defined period of emergency, the end is a messy process incorporating competing accounts of what went wrong and fears of the next epidemic, in which cycles of multiple diseases and overlapping social crises disrupt a simple return to normal life, articulating the nature of epidemics not just as medical phenomena, but also as fundamentally political and social ones. The end period therefore looks both forward and backward, often applying "lessons learned" from the history of the ended epidemic to the future, in anticipation of the next outbreak. Re-envisioning the future is a way to analyse and understand the past epidemic, and thereby to restore human agency into society's relationship with disease.

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In 1645–1646, the English market town of Colyton suffered from a devastating plague epidemic, losing 20% of its entire population—a remarkably high death rate. This grim death toll was documented through a careful list of church burials. Over 13 months, handwritten names registered the 400 or so parishioners who were buried in the churchyard during the epidemic—a sevenfold increase in Colyton's normal death rate. After 10 pages of names—just a few entries after the death of “Marie Steevens daughter of Anne Steevens widow” on November 22, 1646—the left margin shows the scrawl, “here the sickness ended.”¹

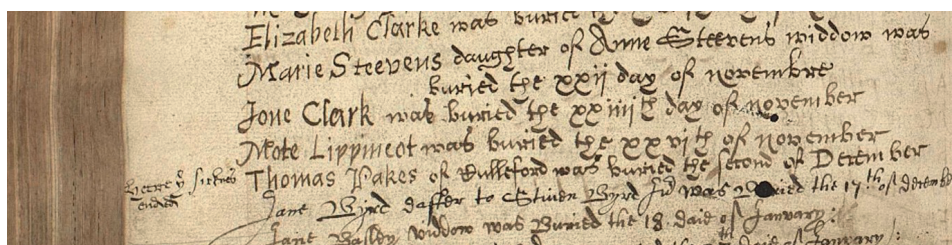


Figure 1. Colyton parish burial record, entries from end of November 1646. The left margin note reads: “here ye sickness ended.” From DHC 3483A/PR/1, Devon Record Office, Exeter, UK. Reproduced with kind permission of the Rector and PCC of Colyton.

This historic document provides one of the earliest explicit recordings of an epidemic's end. After an exact tally of deaths, an observation that tracks a decline of cases identifies the ending, precisely inserted to mark out a clear-cut conclusion of the crisis that engulfed the town of Colyton. Yet, the closer we examine this observation, the less definite it becomes. As a 19th-century historian identified, the marginalium's handwriting belongs to John Wilkins, who moved to Colyton in 1647. In other words, his scrawled declaration is certainly a retrospective diagnosis of an end, recorded—at the earliest—a full year after the epidemic's supposed end.²

What does it mean for an epidemic to end, and who gets to declare that it is over? As with Wilkins's declaration—“here the sickness ended”—the more closely we analyse an end, the more its certainty dissolves. Instead, the end of an epidemic is neither straightforward nor unified. As the articles in this spotlight issue demonstrate,

1 Schofield (1977, pp. 95–99); Colyton Parish Burial Register (1646), DHC 3483A/PR/1, Devon Record Office, Exeter, UK.

2 Schofield (1977, p. 99); G. E. Evans (1898, pp. 4–7).

an epidemic's end is often contentious, raising issues of competing authority. Various forms of expertise jostle over who declares an end, as well as what data and information should be used to measure and define the end of an epidemic. As a result, it is more accurate to describe multiple endings to an epidemic: the medical end, the political end, and the social end. When we ask how an epidemic ends, we wish to know when this disease will stop disrupting our lives and allow a return to normalcy. This necessarily encompasses a range of endings, often overlapping, but usually different and sometimes even conflicting: the end of disease (the medical end), the end of the crisis and regulations (the political end), and the return to normalcy (the social end).

This multidisciplinary spotlight issue provides 18 case studies examining how epidemics end, serving as the main academic output of the multidisciplinary “How Epidemics End” project that ran during the second year of the COVID-19 pandemic (2021).³ The project's initial framework article, published early in 2021, pointed out that little attention has been paid to the process of the ending of an epidemic. This absence can be explained by the very definition of an epidemic as a crisis, a period when attention—medical, political, and social—is focused on the disease and its outbreak. By contrast, “when the crisis recedes and the disease is no longer a cause for alarm, a society's attention can be directed elsewhere.” The end of an epidemic is therefore when observations and discussions of the epidemic stop.⁴ To remedy this dearth, the “How Epidemics End” project encouraged analysis of an epidemic's end across a variety of disciplines and epidemics, redirecting attention to the very process of ending.

Each article in this issue examines specific epidemics and their ends as well as the methodologies used to measure, gauge, and define an epidemic's end. A range of disciplinary approaches and methods are included: anthropology, biology, history, politics, and mathematical modelling, to name a few. Given the constraints and pressures of disease research in 2021, many of the project's participants were not able to provide full case studies. As a result, just as is the case for COVID-19, analysis is weighted towards regions and examples that produce data and have the benefit of resourced infrastructures that absorb the strain of a pandemic: too often Western urban centres, with plague serving as an archetype of epidemic disease. Consequently, this spotlight issue is not a comprehensive overview of methodologies and epidemics, but instead a demonstration of the varied ways in which researchers analyse and define epidemics and their ends.

First and foremost, these contributions highlight the crucial role of information and measurement. As Colyton's burial records demonstrate, it is the data that guides us to define an end. And yet as Wilkins's observation reminds us, such definitions are most easily done in retrospect. In the midst of a disease outbreak it can be difficult to know what data is crucial to the declaration of an end, with many often complaining of a data deluge—whether in the 17th century or today. An epidemic's end thus raises

³ Full details can be found on the project's website (<https://epidemics.web.ox.ac.uk/>).

⁴ Charters & Heitman (2021, p. 213).

fundamental questions about what measurements should be considered in order to define the ending. Second, as Wilkins's retrospective declaration shows, the end of an epidemic encourages observers to rethink and reconceptualize time. Not only does our understanding of the epidemic change by the end from what was forecast at the outset, but the end process also involves a rethinking of earlier linear narratives of time and causality. Whereas the declaration of an epidemic suggests a neatly defined period of emergency, the end is a messy process incorporating competing accounts of what went wrong and fears of the next epidemic, in which cycles of multiple diseases and overlapping social crises disrupt a simple return to normal life.

More broadly, the end of an epidemic underscores the nature of epidemics as not just medical phenomena, but also as fundamentally political and social ones.⁵ The insights gained and the frustrations felt about human behaviour and political differences during an epidemic clarify to participants and observers that, although the epidemic is triggered as a biological event, it is also a social and political process. The end of an epidemic therefore not only factors in the decline of disease incidence, but is a crucial period of sense-making and moral interpretation as well. Endings are a period of retrospective diagnosis, with divisive accusations of responsibility and blame as part of broader processes of reconciliation. The end period therefore looks both forward and backward, often applying "lessons learned" from the history of the ended epidemic to the future, in anticipation of the next outbreak. Re-envisioning the future is a way to analyse and understand the past epidemic, and thereby to restore human agency into society's relationship with disease.

At the medical level, the end of an epidemic is the end of the disease. Yet, as disease specialists point out, this is by no means straightforward to ascertain, particularly given that most epidemics end not with the eradication of the disease but with its decline to endemic levels.⁶ For Colyton's 17th-century plague, it was much easier to pinpoint the end of the plague once it had disappeared from records, than to observe its decline in the midst of the outbreak. As epidemiologist Lorenz Von Seidlein explains in defining the end of modern-day cholera epidemics, "you have to wait for a year, and then look back at your epidemic curve It is something that you decide in retrospect."⁷ In part, this is because a decline in cases may not mean an outbreak has ended, as epidemics often follow cyclical patterns and thus a decline can signal an impending increase as much as an end. When British epidemiologist Major Greenwood wrote his comprehensive report on the 1918 influenza pandemic in 1920, he predicted that "destructive epidemics or pandemics of respiratory disease will recur during the present generation," a mistaken prediction that added urgency to his analysis. Only later, when another deadly wave of the epidemic failed to materialize, was the 1918 epidemic understood as having ended.⁸

⁵ See also Charters & Vermeir (2020).

⁶ Charters & Heitman (2021); Pelling (2020).

⁷ Von Seidlein (2021).

⁸ *Report on the Pandemic* (1920). See also Caduff (2015); Lakoff (2017); Lynteris (2021).

An outbreak is clinically defined as an event in which the number of cases exceeds what is usually described as “the expected range.” Thus, the end of an epidemic can be quantitatively defined by the absence of cases or by the number of cases subsiding to normal, or expected (that is, endemic), levels. However, as epidemiologists Natalie Linton et al. explain in their overview of statistical modelling methods, “Establishing that an outbreak is over is often less clear cut than confirming that an outbreak has started.”⁹ Mathematical modelling has therefore become a crucial methodology for ascertaining the end of an epidemic, often underpinning official declarations such as those by the World Health Organization.¹⁰ Such modelling is not simply a record of reported cases. Instead, statistical modelling incorporates sophisticated analyses of transmission and the dynamic nature of infected populations to assess the probability that an epidemic has ended, as well as to project its coming end. Yet, as the modellers explain, such analyses necessarily depend on reliable data and detailed understandings of disease transmission.¹¹

Even though mathematical modelling is a relatively young discipline, the reporting of disease during epidemics has a long history, with pre-modern societies (Colyton, for example) documenting deaths and cases through either qualitative or quantitative records. As historians have pointed out, it was in the 19th and 20th centuries that such data began to be part of an international surveillance network. Rather than tracking vital statistics to determine causality, modern methods of information focus on surveillance, often described as a form of “epidemic intelligence” that practices a continued watchfulness over disease.¹² It is this international network of disease reporting that biologists Nils Christian Stenseth, Katharine Rose Dean, and Barbara Bramanti credit for the ending of plague in Europe. They point out that, given the lack of plague reservoirs in Europe, these sophisticated methods of communication and monitoring, combined with improved sanitation and hygiene, meant that “local outbreaks could be effectively managed with the epidemiological interventions available to authorities.” Successful local medical interventions—in the British city of Glasgow or the Italian city of Taranto—thus depended on an international system of disease reporting alongside European disease ecology.¹³

Yet the case of plague's end is also a reminder that local and international understandings of an epidemic's end could be in conflict. Although the last epidemic of plague in England was in the late 17th century, English contemporaries were still debating the nature of this emblematic epidemic disease decades into the 18th century. In her analysis of early modern English medical texts, historian Lori Jones demonstrates that the history of plague was written into local, national, and religious accounts. As a result, “plague outbreaks had become part of a visible, traceable epidemic pattern that stretched from the past and into the future,” including for those texts published during what we now know was the last English outbreak in

⁹ Linton et al. (2022).

¹⁰ Nishiura (2016).

¹¹ Linton et al. (2022); see also Anderson (2021).

¹² Harrison (2016); Fearnley (2010); Declich & Carter (1994); MacPhail (2014, Ch. 4).

¹³ Stenseth, Dean, & Bramanti (2022); see also Varlik (2020).

the 1670s.¹⁴ Likewise, historian Paul Slack outlines English debates over plague's causation and transmission well into the 18th century, a debate that was at times as much about international economic rivalries and national identity as it was about medical theories of causation. If, after the 1670s, plague no longer appeared in England and yet continued on the Continent, some theorized it must be the result of English environmental and social reforms, or what one English author proudly described as “our own change of manners, our love of cleanliness and ventilation.”¹⁵

As the historical analyses of both Jones and Slack demonstrate, the end of an epidemic is thus as much a political accomplishment as a medical event. For English writers, after years of integrating plague into local and national histories, once plague disappeared from its shores the disease was described as foreign, one which could be held at bay through English national practices and policies. Likewise, as Xiaoping Fang describes for the case of 20th-century China, epidemics were political crises as much as they were medical problems. Political considerations—particularly the danger that epidemic diseases pose to political legitimacy—therefore shaped how epidemics were handled and reported. Political authorities either publicly celebrated a quick end to an outbreak, or kept the extent and details of more problematic outbreaks secret, recognizing that epidemics can undermine a government's public image and authority, both at home and internationally. In this context, charting the end of an epidemic is difficult because “data on disease prevalence and control are collected, reported, framed, and archived by political authorities.”¹⁶

Atsuko Naono's study of the end of malaria in Myanmar also highlights the difficulty in disentangling medical aims from political priorities. As she explains, the World Health Organization's malaria-free certification is understandably “a symbol of great success for countries in Southeast Asia.” Yet such international health goals can be at odds with indigenous concerns, particularly given that local populations have lived with endemic malaria for centuries. As a result, “the identification of malaria as epidemic may thus be better understood as a political choice rather than as a precisely defined medical category.”¹⁷ Similarly, Jean Segata's ethnographic study of the chikungunya virus disease in Brazil and Argentina outlines the ways in which political categories shape medical records, including the category of an epidemic. Compared with Zika, yellow fever, and dengue, chikungunya has a much lower national and international profile. Segata explains that this is in part due to the symptoms of the disease: “its effects are generally materialised in pain, which is difficult to measure and quantify.” Political records therefore do not capture the experience of chikungunya, rendering it imperceptible in administrative documents, and thus invisible to state bureaucracy. Thus Segata points out, “as long as the epidemic remains invisible, it will remain endless.”¹⁸

¹⁴ Jones (2022); see also Cummins, Kelly, & Ó Gráda (2016) for a recent suggestion of a later end date.

¹⁵ Slack (2022).

¹⁶ Fang (2022); see also Mason (2016).

¹⁷ Naono (2022).

¹⁸ Segata (2022).

Virginia Berridge explicitly separates out the political end of epidemics from the medical end, defining the political end as when “politicians decide that an epidemic no longer poses political problems or delivers political gains.”¹⁹ By analyzing the various ends to HIV/AIDS (1980s–1990s) and swine flu (2009–2010) in Britain, Berridge also points to the crucial role that media reporting can play in determining when an epidemic over—or, at least, when it is no longer a crisis of public interest. As she demonstrates through her incorporation of local, national, and global perspectives, medical and political endings come to different groups at different times, even in the same country. Indeed, drawing on her research in the US and Brazil, the anthropologist Cristiana Bastos also describes the end of HIV/AIDS as “elusive and a work in progress conditioned by political decisions and multiple other factors.”²⁰ Similarly, Mandisa M. Mbali underlines the crucial role of socio-economic restructuring and other “mundane” reforms necessary to ending AIDS in Africa that can be easily overlooked in the excited reporting on medical breakthroughs.²¹

While medical and political ends can thus conflict with one another, they can also work in tandem, shaping one another, in ways that are not always productive. As both Berridge and Bastos observe, medical therapeutics transformed HIV/AIDS from a highly-publicized and killer epidemic disease into a chronic condition. Likewise, treatments for syphilis and vaccines for measles have resulted in what Bastos describes as an “asymptotic quasi-end—a fading away from public concern.” The growing invisibility of these diseases in Western media, combined with the difficulties in accessing necessary medical and social infrastructure for many in the world, meant that successful medical therapeutics actually prolonged epidemics, pushing “their actual end further away” for those in the Global South.²² Historian Christoph Gradmann also highlights the paradox of medical progress in the end of tuberculosis. Although the discoveries of 19th-century bacteriology identified the cause of tuberculosis alongside the development of successful vaccines for rabies and a host of other diseases, the promise of ending tuberculosis has remained frustratingly out of reach. Indeed, Gradmann's history is a record of failures: Koch's 19th-century tuberculin, the BCG (*Bacillus Calmette–Guérin*) vaccine, and combination chemotherapies. Gradmann thus uses a long-term historical perspective to argue for a reshaping of future research away from pharmaceutical and biotechnological interventions, and instead for a return to long-standing social and infrastructural approaches to health: “family economy, nutrition, treatment of co-morbidities, and access to hospital or outpatient care required to cure a person suffering from tuberculosis.”²³

The lack of a medical end for tuberculosis thus underscores the disease's social context. Accordingly, bioarchaeologists Clark Spencer Larsen and Fabian Crespo incorporate long-term social circumstances—such as nutrition, sanitation, and community organization—into their analysis of the end of plague and leprosy in medieval

19 Berridge (2022); see also Chigudu (2020).

20 Bastos (2022).

21 Mbali (2020, quote on p. 82).

22 Bastos (2022).

23 Gradmann (2022).

Europe. As they explain, “genetics, heredity, and experimental (in vitro) immunology provide important biological information, but immunological studies in laboratory settings do not account for social and ecological factors that operate within and between populations.” As a result, they call for a biosocial approach to understanding epidemics, particularly their ends—that is, a methodology that incorporates the interaction between biological and social factors in explaining disease and immunity.²⁴

More specifically, Larsen and Crespo propose a paleosyndemic approach, combining bioarchaeological and historical methods with the syndemic theory of disease first proposed by anthropologist Merrill Singer in the 1990s. Drawing on his experience of U.S. urban public health issues and the HIV/AIDS epidemic, Singer observed that infectious disease did not act alone. Instead, its incidence was explained through its interactions with other diseases as well as social circumstances. In particular, recognition of poverty, malnutrition, substance abuse, gang violence, chronic illnesses, and disrupted social networks was necessary to understand the nature of the AIDS epidemic. These were “synergistic or intertwined and mutual enhancing health and social problems facing the urban poor.”²⁵ This was not simply an observation about the coexistence of multiple diseases, or social pathologies unfolding alongside disease. Instead, proponents of social medicine as well as syndemic theory argue that disease—its incidence, transmission, and the ways in which immune systems respond to infection—is fundamentally shaped by social factors and by other forms of ill health. As medical and social reformers had argued for tuberculosis and cholera from at least the 19th century, Singer observes that AIDS is “an opportunistic disease, a disease of compromised health and social conditions, a disease of poverty. It is for this reason that it is important to examine the social origins of disease and ill health, whatever the immediate causes.”²⁶

James Webb explains that a syndemic approach—particularly one that analyses interactions between pathogens—contrasts with many standard accounts of epidemics, which focus on a single pathogen: plague, smallpox, or influenza. Webb instead analyses co-infections of hookworm and malaria, rural environments, and the seasonal mobility of labourers, pointing to the pitfalls of scholars' focus on large cities, static populations, and a single infectious disease.²⁷ These conventional subjects yield rich data (urban populations maintain better records of peaks and troughs of feared diseases), but just as with the burial records at Colyton, such information conceals malnutrition, chronic illness, and social factors that determined who died, who recovered, and who escaped the epidemic altogether. To gain a true understanding of the progress, end, and outcome of epidemics, one must therefore capture the ways in

²⁴ Larsen & Crespo (2022).

²⁵ Singer (1994, p. 933); see also Singer & Snipes (1992).

²⁶ Singer (1994, p. 937); on social medicine, see Rosen (1974); Hamlin (1998); as applied to global health, see especially Farmer (1996; 1999).

²⁷ Webb (2022); see also Geissler & Prince (2020).

which epidemic disease interacts with chronic illness, mobile populations, and rural environments.²⁸

The end of an epidemic is thus also a social process. Because epidemics expose—and exacerbate—economic strains, social disparities, and internal conflicts, their ends necessarily entail social resolutions and moral restitution. In his magisterial account of cholera in 19th-century Hamburg, Richard Evans likened the epidemic to a flash of lightning that illuminated the workings of society, “throwing even the obscurest features into sharp and dramatic relief.” He explains: “The structures of social inequality, the operations of political power, the attitudes and habits of mind of different classes and groups in the population, come to light with a clarity of profile unimaginable in more normal times.”²⁹ Cholera laid bare the social disparities within Hamburg, amplifying social tensions and, then, as part of the end process, encouraging attempts at widespread social and moral reform. Yet as Evans and other scholars demonstrate, protests, riots, and attacks that took place during epidemics were not random in their targets. Instead, in most cases, these crowd actions reflected long-standing grievances. Given the power of medical and political authority in the modern period, such unrest usually targeted state and medical officials held responsible for implementing intrusive public health measures. As Evans points out, it is not epidemic disease “so much as the actions taken by the state against it which sparked off popular unrest.”³⁰

An epidemic can truly end only when society reunites, reconvening its various segments that have become increasingly fragmented through the differentiated experience of illness and divisive public health regulations. For the end of plague epidemics in Renaissance Italy, historian Samuel Cohn describes lavish public celebrations that included the foundation of churches, public processions, poetry, song, and fireworks—with those attending amazed at the “great throng of people” attending that survived the plague.³¹ Such social events were occasions of thanksgiving and reconciliation; the U.S. city of Memphis celebrated the end of the 1878 yellow fever epidemic on Thanksgiving Day, thanking the physicians and nurses as well as the many other organizations “who remained on duty during the pestilence” while also memorializing those who had died.³² This also means that a lack of ending is marked by the continuation of social divisions. As historian Paul Kelton delineates, the end of smallpox among American Indigenous peoples has received little attention in either local

²⁸ Epidemics generate enormous amounts of information. For historians, they have produced some of the earliest quantitative records, including early records of social conditions, of the movement of populations, and even of national statistics. Yet as contemporaries point out today as well as in the past, this often takes the form of a data deluge—with such flows not providing more certain knowledge but instead even increasing uncertainty. As a historian of the 2009 pandemic pointed out, echoing early modern commentators, “it has become increasingly apparently to everyone working in public health that more information is not, in fact, necessarily better information”: MacPhail (2014, p. 154). On socio-economic details of the Colyton epidemic: Schofield (1977); for fruitful analysis of pre-modern disease records, see, for example, Carmichael (1986) and Hanson (2011); on problems even with 20th-century records, see, for example, Echenberg (2002). For a recent analysis of the relationship between data and ends, see Robertson & Doshi (2021).

²⁹ R. Evans (2005, p. 567).

³⁰ R. Evans (1992, p. 163); see also Cohn (2007).

³¹ Cohn (2022).

³² Cohn (2022).

indigenous or academic accounts. Instead, the successful campaign against smallpox is overshadowed by an increase in other diseases such as tuberculosis, pneumonia, and measles, alongside military defeats and forced removals. Kelton points out that the absence of an end “stems from the circumstances in which eradication occurred”: the biological end of smallpox went unnoticed due to subsequent social and physical trauma.³³

Charles Rosenberg's classic analysis of epidemics outlines three acts in the progress of an epidemic—the revelation, managing randomness, and collective action—but the epidemic drama ends with an epilogue in which society focuses on lessons and reforms. Rosenberg notes that “Epidemics have always provided occasion for retrospective moral judgment.”³⁴ To these acts of social drama, anthropologists Sheila Lindenbaum and Alice Desclaux add a “post-epidemic period,” which is “crucial in creating meaning for the epidemic.”³⁵ As the intensity of the drama declines, reflective narratives of the epidemic provide retrospective accounts in which the epidemic's final significance retroactively shapes memory of its beginnings, points to heroes and villains, and identifies ways to prevent such crises in the future.³⁶

Historian Margaret Pelling traces the genealogy of one such post-epidemic narrative as it travelled across the Atlantic to the US: the story of how John Snow supposedly ended a 19th-century cholera epidemic in London by removing the Broad Street water-pump handle. This often-repeated myth, written after Snow's death, should not be seen simply as a fabricated bit of history. Instead, Pelling highlights its role in defining professional medical expertise and status. More profoundly, the popularity and durability of this story is a reminder of the desire societies have to assert human ability to triumph over nature, and quickly end epidemics: “Public health involves collective endeavour, most often over years, but the Broad Street pump represents an instant individualistic triumph which was, and is, hard to resist.”³⁷ Likewise, Roderick Bailey distinguishes between American and Italian histories of the end of typhus in Naples during the Second World War. Whereas Allied accounts boasted of their successful application of DDT in averting a public health disaster, producing narratives that bolstered postwar faith in modern technological solutions for the problem of disease, records from the time demonstrate that DDT's success depended on more traditional interventions such as contact tracing and quarantine. More generally, Italian histories hardly took notice of typhus, likely because bombings and deprivation wreaked far more havoc than the disease.³⁸

Arthur Rose therefore usefully distinguishes between ending and closure. Drawing on narratology and the philosophy of history, he points out that a “disease might

³³ Kelton (2022).

³⁴ Rosenberg (1989, p. 9). See also Vargha (2016); Greene & Vargha (2020); Charters & Heitman (2021); Fissell, Greene, Packard, & Schafer (2020).

³⁵ Desclaux (2020, p. 163); Lindenbaum (2001). On afterlives of epidemics, see, for example, Vargha (2016); Graboyes (2014).

³⁶ See also Peckham (2020); Jurecic (2012); Roth (2020); Kahneman (2000); Wald (2008).

³⁷ Pelling (2022).

³⁸ Bailey (2022).

be eradicated, while leaving no firm feeling of finality for those who continue to bear its scars.”³⁹ Rose’s careful attention to the differences between closure and an ending alerts scholars to the interpretive power of the ways in which an ending is crafted. Likewise, Einar Wigan’s analysis of the temporality of epidemics highlights how the outbreak may be “easy to locate in time,” as it serves as a single event that can synchronise our experiences.⁴⁰ By contrast, the unfolding of an epidemic takes place on “diverging time scales”—with the lifetimes of microbes that are measured in seconds and minutes outpacing those of human beings (measured in days, weeks, and months), and the even slower-moving human institutions, which struggle during disease outbreaks to catch up and adapt to the speed of the spread of pathogens and to the reactions and adjustments of the population. The end of an epidemic is therefore necessarily asynchronous: it involves human beings chasing after lightning-fast biological developments, and slow-moving bureaucracies following suit later on.⁴¹

Medical, social, and political ends are therefore all crucial parts of the end of an epidemic, but necessarily different—and often occur at different times and in different forms. This also explains why the various methodological approaches outlined in this spotlight issue assess ending in different ways, disagreeing about precisely when an epidemic ends and what evidence should be used to ascertain its end. Indeed, tensions between disciplinary understandings of disease are part of the process of an epidemic: while scientific analysis tends to focus on universal models and theories, humanities scholarship emphasizes the specificity of culture, time, and place. As the epidemiologist Major Greenwood observed, “Epidemics behave so willfully. The population will not stay put; all kinds of disturbing and—as we think—irrelevant factors destroy the simplicity and symmetry of the phenomenon.”⁴² The contributions here demonstrate that anthropologists and historians are drawn to the unique experience of individuals, the ways in which cultural behaviour disrupts models, and the specificity of moments in history. While medical endings focus on disease in terms of pathogens and populations, often relying on models drawn from animal husbandry, social and political endings focus on human agency (emphasizing lived experiences and social compliance, avoidance, and resistance), including retrospective reinterpretations.⁴³ This spotlight issue is therefore necessarily torn between overarching understandings of how epidemics end—between timeless universal principles, and the particulars of each ending—according to the nature of the pathogen and society under examination, and according to the academic discipline of the author.

Yet what the contributions do all emphasize is a need to integrate such disciplinary methodologies in order to accurately understand the behaviour of epidemics and thus also their ends. More particularly, it is the messy nature of endings that highlights how epidemics are simultaneously biological, social, and political processes that continue

³⁹ Rose (2022).

⁴⁰ On contested origins, see, for example, Green (2020); Iliffe (2005, Ch. 2); Giles-Vernick, Gondola, Lachenal, & Schneider (2013).

⁴¹ Wigan (2022).

⁴² Greenwood (1935, p. 68).

⁴³ On these tensions see for example, Amsterdamska (2001); Gradmann (2010); Robertson (2021).

long after attention to the outbreak has waned. These case studies point out that standard accounts of epidemics as discrete events—a long list of diseases that broke out and then disappeared—fail to capture the reality of epidemics. Not only does the overarching pattern of epidemics require an understanding of interactions with other diseases, as in the case of tuberculosis and HIV/AIDS, but the ways in which societies interpret and remember (or forget) previous outbreaks shape the ways in which future epidemics are handled. The messy process of ending demonstrates that epidemics should not be visualized as a great series of individual and self-contained events that disrupt society's natural trajectory, but instead as continuous waves that interact both with one another and with society. Epidemics are only one part of a world of emerging and submerging diseases that co-evolve with human society, often more akin to icebergs in which we see only the tip above water, with the mass of disease and human activity hidden below.

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Appendix

The “How Epidemics End” project's first publication was an initial framework article, which project members were encouraged to build on, revise, challenge, and respond to through their own case studies:

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Abstract

As COVID-19 drags on and new vaccines promise widespread immunity, the world's attention has turned to predicting how the present pandemic will end. How do societies know when an epidemic is over and normal life can resume? What criteria and markers indicate such an end? Who has the insight, authority, and credibility to decipher these signs? Detailed research on past epidemics has demonstrated that they do not end suddenly; indeed, only rarely do the diseases

in question actually end. This article examines the ways in which scholars have identified and described the end stages of previous epidemics, pointing out that significantly less attention has been paid to these periods than to origins and climaxes. Analysis of the ends of epidemics illustrates that epidemics are as much social, political, and economic events as they are biological; the “end,” therefore, is as much a process of social and political negotiation as it is biomedical. Equally important, epidemics end at different times for different groups, both within one society and across regions. Multidisciplinary research into how epidemics end reveals how the end of an epidemic shifts according to perspective, whether temporal, geographic, or methodological. A multidisciplinary analysis of how epidemics end suggests that epidemics should therefore be framed not as linear narratives—from outbreak to intervention to termination—but within cycles of disease and with a multiplicity of endings.

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