

Halifax Cholera: An Anthropological and Geographical
Analysis of an Epidemic's Social Determinants of Health

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This thesis is dedicated to those who suffered the most during the 1834 cholera epidemic in Halifax and all those who continue to suffer today from treatable diseases. With any hope, research and advocacy encompassing social determinants of health will continue to help create more equitable global healthcare systems in the coming decades.

Abstract

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An increased awareness of the social determinants of health and their interdisciplinary applications has led to a wealth of new research in the last two decades. Anthropologists are using these constantly evolving determinants to explore the human dynamics of healthcare as it relates to cultures and communities. Utilization of the social determinants of health helps guide better decision-making when approaching health crises. This in turn, better accommodates cultural perceptions and concerns. Analyzing past epidemics in light of these facets is one way to examine recurring historical themes necessitating attention today. This research covers an historic epidemic through social determinant frameworks for the purpose of highlighting similarities among human reactions during an epidemic. Variables such as immigration, poverty, gender, and spatial distributions are addressed in the investigation of a cholera epidemic in 1834 Halifax. The goal is to tie in a broad historical narrative that depicts a generalized state of healthcare in nineteenth-century Halifax before developing contemporary medical and anthropological frameworks to which it can be applied in scrutinizing responsible organizations and institutions, and their community impacts. Quantitative evidence further develops a physical representation of the 1834 landscape to discuss topographical factors potentially contributing to the epidemic's outcome. A final discussion compares the nineteenth-century realities to the contemporary COVID-19 epidemic, contrasting the human approaches taken in managing an outbreak.

April 16, 2021

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Introduction

Cholera is often associated with the congested and dirty cities of the nineteenth century, overrun with human and animal waste, facilitating invisible transmission among the population, and killing without discrimination (Aberth 2011, 101). Yet, the disease persists today, infecting between 74,000 and 595,000 people annually (Davis et al. 2018, 303). It is estimated that the lives of between 21,000 and 143,000 globally per annum are lost to cholera with some statistical modelling reporting between 1.3 and 4.0 million cases annually (World Health Organization 2019). Like many health-related issues, cholera tends to prevail inequitably among populations. While some regions of the world can dismiss the bacterium's potential presence, it persists as a constant danger for others (World Health Organization 2008). This imbalance is illustrated through the Social Determinants of Health (SDH). Factors encompassed by SDH today include employment conditions, social exclusion, public health programs, gender equity and equality, childhood development, globalization, and urbanization. Among these prominent themes are the key inequities contributing to shortcomings in global healthcare systems (World Health Organization, 2008). This implies that people and their decisions have played a critical role in disease management and mitigation throughout history. Cholera's continuing persistence can be associated within the SDH conceptual framework as medical solutions available for the bacterium today approach the disease with both social and environmental factors in mind (Quinn and Kumar 2014, 263).

SDH offers anthropology a resource to contextualize many broader issues influencing healthcare and provides a foundation from which solutions to health inequities can be built. SDH themes and, more generally, medical anthropology, examine

how cultural and physical environments relate to human biology such that differential health outcomes among human populations might occur. In this way, health-based research is refocused on addressing more fundamental causes of illness rather than ‘downstream’ resolutions that place the onus of health on affected individuals (Yates-Doerr 2020, 379). The latter of which was more commonly addressed in traditional medicine until the application of social theories such as SDH. Adopting SDH theories place healthcare responsibilities in the social actions and transformations rather than narrower models focused on only curing the individual (Yates-Doerr 2020, 379). Halifax’s first cholera experience became a quintessential example whereby blame was placed on individuals rather than searching for root causes. SDH have allowed healthcare solutions to move beyond reactive stages of medicine into proactive forms of disease and illness management through addressing imbalances.

Contemporary utilization of applied medical anthropology is situated in overcoming detrimental or unhealthy behaviours among living populations. For example, anthropologists might analyze how marginalization may lead to health-based disadvantages despite publicly funded health care (O’Donnell et al. 2016, 197) In researching an historical epidemic, this thesis offers a theoretically based approach of medical anthropology wherein the data is aimed at understanding the functions of Halifax’s medical system in 1834 as separate cultural phenomena (Pool and Geissler 2005, 31; Nunes 2014, 404). SDH serve as an extension of this in that by defining the relevant non-medical factors, the reasons behind decisions, and attitudes towards disease can be analyzed as the triggers that perpetuate assimilative or divisive strategies. Historical ideologies and representations of events emerge from key SDH variables

present in the archival data, presenting a past cultural form that can be understood in relation to the social lives of the existing population. The development of medical practices and opinions through Chapters 1 and 2 sets the stage for later discussions of inequity that are implicated within contemporary circumstances as a form of historicity (Hirsch and Stewart 2005, 263).

By using SDH to focus the collected historical information, the effectiveness of such a framework in studying populations is examined in light of persistent its multi-faceted inequities. Irwin and Scali (2007, 251) recognized the value of using an historical record to highlight the challenges in addressing longstanding SDH issues. For instance, reviewing past approaches to public health in the latter decades of the twentieth century helped to formulate more community-based systems that better support community health rather than hospital-centric programs focused on quantifiable expectations (Irwin and Scali 2007, 237-238). This progression offers a perspective of mutually implicated past, present, and futures embedded in history and the study of people in association with healthcare planning strategies (Hirsch and Stewart 2005, 261). Likewise, historical inquiry can be used to link enduring inequities among specific populations such as patterns of tuberculosis (TB) morbidity (Wilbur et al. 2016, 113). And while cholera is not meant to be linked to a specific population through this research, the socio-economic and infrastructural vulnerabilities serve as enduring vulnerabilities in combating the bacterium. These and other SDH explored in succeeding chapters help anthropology better understand the conditions and behaviours of people within a given historical environment and how some reactions can emerge as detrimental to equitable health systems.

Although cholera, has taken a metaphorical backseat in recent decades to other global health crises due to its perceived treatability, the bacterium remains catastrophic to those who find themselves infected (Ries et al. 1992; Beau De Rochars et al. 2011; Cerda and Lee 2013; Lemos-Paião et al. 2020). Using cholera as a subject in this thesis, an historically situated examination the disease draws on the similarities between populations still at greater risk during epidemic events. Exploring glossed over imbalances in the disease's prevalence, infection rates, and deaths serves as a template for health concerns that prevail today. Framed in the social and political functions of the period, the relationships between the public and health systems provide a more holistic view of the epidemic (Nunes 2014, 406). Later, situating the analysis in an historical dialogue and contrasting public and government reactions with today's response to the COVID-19 pandemic some persistent SDH institutional deficiencies emerge that link us with the past. These associations between past and present begin to connect the human experience during epidemic events and gather the similarities that arise in resolutions generated today in mitigating diseases like cholera.

The remaining sections in this and the immediately succeeding chapter include a description and history of cholera, an overview of legislative measures put in place by Halifax leading up to the 1834 epidemic along with details regarding influential factors impacting SDH variables, and an account of the 1834 outbreak. The general exploration of the social implications serves as the culminating analysis of this thesis which contrasts steps taken to combat cholera in 1834 in light of SDH frameworks and analyzes spatial considerations which potentially contributed to outcomes then and now. This work covers historical, geographical, and medical contextualization, however, the ultimate goal is to

draw out associative human behaviours that are representative in the norms and values that emerge from the research.



Figure 1: A busy and vibrant Halifax from the 1830s lacking evidence of cholera, yet hinting at the town's vulnerability to such a disease. SOURCE: Eager, William H. 1830-1839. Market Wharf and Ferry Landing, Halifax. Watercolour over pencil on paper. 14.7 x 23.2 cm. Royal Ontario Museum. Toronto.

Chapter 1: Cholera and the Unpreparedness of Early Medical Systems

1.1 Cholera as a Disease

The bacterium *Vibrio cholerae*, more commonly known as cholera, emerged as an international threat in the early nineteenth century when unattributable pandemics swept across the globe (Lacey 1995, 1409-1414). Nevertheless, descriptions of a disease resembling cholera exist in literature pre-dating its initially documented 1817 pandemic. Greek and Sanskrit records dating back over 2,000 years allude to a sporadic summer-time illness that caused patients to vomit profusely, though insufficient details are unable to directly attribute these outbreaks to early forms of cholera (Lacey 1995, 1409). A more accurate depiction of an endemic illness resembling the modern bacterium's symptoms began in the seventeenth and eighteenth centuries when authors described violent diarrheal diseases that included vomiting. Despite the vivid descriptions, medical practitioners had yet to understand cholera, let alone any form of bacteriology, well enough to mitigate its nineteenth-century advance as it left many seeking fault in the daily habits of others.

Increased mobility and the migration of people during the nineteenth century transformed the rapidly spreading bacterium into a persistent and invisible killer before science of this era understood the presence or effects of microorganisms (Buchholz and Collins 2013, 3748-3752). People unknowingly ingested cholera through unsanitary water supplies; however, indirect methods such as food surfaces or environmental contamination was just as likely a contributing infection pathway. Consuming the bacterium resulted in profuse internal multiplication (Lacey 1995, 1416; Davis et al. 2018, 304-306). An infected individual's gut lining would become more permeable as the

bacteria released toxins causing structural deterioration, leading to rapid dehydration, and accompanied by intense muscle cramps (Sanchez and Holmgren 2011, 153). Other visible manifestations of cholera turned a patient's skin blue as respiratory failure occurred (Figure 2) and was established as a popular diagnostic symptom in earlier epidemics, earning cholera the term "blue death" (Muench 2009, 64). A sick individual would then expel the cholera organisms either through watery diarrhea, often described as "rice-water," or vomiting. In extremely violent cases, kidney failure and the collapse of bodily functions before death could follow within hours of symptom onset (Tariq et al. 2009, E7552). Soiled materials and expelled contents found their way into expanding, poorly maintained or unseparated waste and freshwater systems in early, densely populated regions, a feature commonly witness in contemporary outbreaks (Blackburn et al. 2014, 1516). This contaminated environment acted as a conduit for the replication and continuation of cholera's infection cycle, serving as a source of confusion in early epidemics (Davis et al. 2018, 304). The pervasive bacterium passed among populations in this manner without true detection until late in the nineteenth century when Robert Koch eventually identified the microscopic cholera during autopsies conducted in Alexandria, Egypt and Calcutta, India (Aberth 2011, 101).



Figure 2: Early depiction of a young woman having contracted cholera and her skin turning blue as a result of the dehydration prior to death. SOURCE: Author Unknown. 1831. A young woman of Vienna who died of cholera, depicted when healthy and four hours before death. Coloured stipple engraving. SOURCE: Wellcome Collection. Attribution 4.0 International (CC BY 4.0).

India, presumed as the origin of cholera, was involved frequently in references made by visiting European sailors to an endemic disease that killed hundreds of thousands. After repeatedly suffering from smaller epidemics in this region, the first of several known cholera pandemics passed from Bengal in 1817 when soldiers involved in the Oman and Persian-Turkey wars contracted the disease and spread it throughout the Southeast Asia, China, Japan, the Middle East, and southern Russia (Lacey 1995, 1410; Aberth 2011,102). This first pandemic had concluded by 1824 and afforded the world a short reprieve with little understanding of its cause or treatment before setting off across the globe again in 1829.

Cholera's initial place of origin, and concentration, on the Asian continent gave rise to a racial and stigmatized divide among the infected that evolved as the bacterium

spread globally (Hamlin 2012, 451). European's first encounters with cholera and their conceptions of the disease were derived from the Orientalism theory described by Edward Said, which positioned non-Europeans inferiorly to their colonizers (1978, 40). This mentality was projected onto cholera's victims as it began to ravage European populations such that only those individuals perceived as inferior to the idealised, virtuous European image were seen as being affected. What emerged in subsequent epidemics were prejudices represented in historical data such as those of Halifax's 1834 epidemic, where the poor and migrant communities replaced intercontinental othering. Rather than face the responsibility of enabling the bacterium's movement across borders, the point of origin bore much of the stigmatization (Hamlin 2012, 451) with terminology such as "Asiatic Cholera" being applied to the affected. As testament to the enduring bias towards cholera victims, these prejudices continue to resurface in epidemics today. For example, blame was leveraged on the poor or indigenous communities in Venezuela during the 1991 epidemic (Briggs et al. 2003, 45).

The second cholera pandemic came to involve the greater part of colonized North America, including Nova Scotia. As one of twelve communicable diseases to visit the province in the first half of the nineteenth century, cholera killed 2,780 people, an overwhelming majority of which occurred in Halifax (Marble 2006, 175). Aberth (2011, 102) splits this pandemic into two separate occurrences, 1827 to 1835 and 1839 to 1856. In contrast, Lacey (1995, 1410-1411) combines these into an extended pandemic due to a resilient outbreak in Mecca during 1835 that helped sustain cholera's presence throughout this period until 1851. As a region well known for pilgrimages, Mecca offered a prime location for the bacterium to unleash itself on the rest of the world. And consequently,

what was once largely a concern for Asian regions slowly became a reality for Europeans and the Americas. This pandemic also generated a wealth of literature from medical practitioners treating cholera in Halifax and abroad during the period as each sought to publish their own remedies and experiences (Commission Appointed the Sanitary Board of the City Councils 1832; Donnelly 1832; Morris 1832; Twinning 1833; Bayard 1837; Cogswell 1849; Snow 1849). Likewise, it set one important doctor towards assisting in developing the modern field of epidemiology and discovering the source of the disease, despite his theories being disregarded until well after his death.

Dr. John Snow's research and eventual testing of his theories using the Broad Street pump in Soho, London are renowned among introductory lessons on map making, epidemiology, and influential in research similar to this thesis. Snow's early experience with London's first epidemic in 1832 led to his suspicion that cholera was a water borne sickness, however, he was not furnished an opportunity to test his theory until the city's second outbreak in 1854 and the subsequent third pandemic (Lacey 1995, 1410-1411). Snow's data guided him to the key conclusions regarding cholera rather than pursuing the stigmatizing narratives derived earlier. Ultimately, his advice about removing the water pump at Broad Street, Figure 3, likely reduced the number of deaths in the neighborhood. Snow's work remained peripheral and largely ignored in a scientific community that envisioned the disease based on miasmatic theory, a concept to be discussed below, and public narrative that focused on superficial or ethical habits contradictory to a perceived rational or virtuous lifestyle.

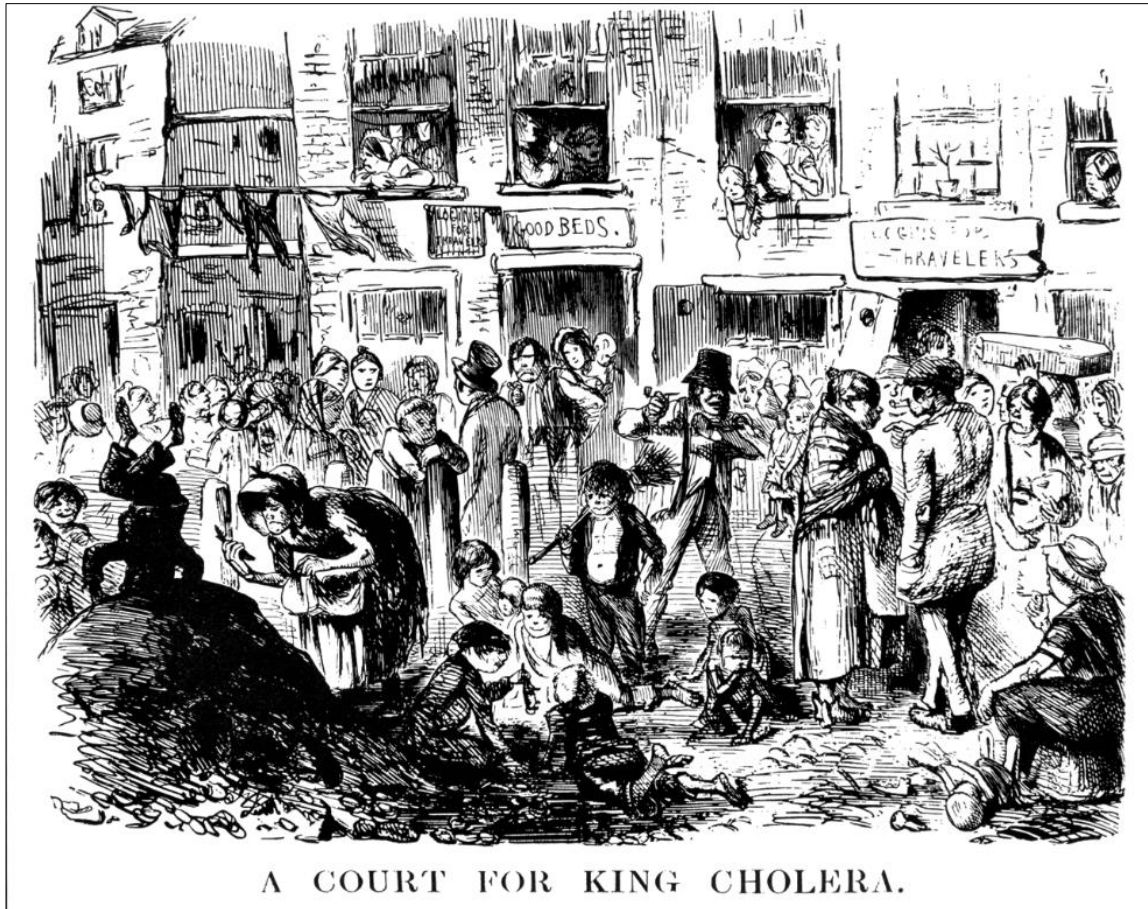


Figure 3: Crowded London as John Snow might have seen it during his work to trace the patterns of cholera. SOURCE: 'A court for King Cholera' - Illustration by John Leech, 1852. Published in *Punch, or, the London Charivari*. Page 139, V23 (July-Dec 1852).

Concurrent with the epidemiological work undertaken by Snow, other physicians began experimenting with intravenous rehydration therapy during the second pandemic (Lacey 1995, 1411). This groundwork in treating cholera patients by replacing lost fluids suffered similar setbacks as Snow in the limited scope of belief in treatments by more senior physicians at the time. In spite of the latter's denouncements, intravenous fluid therapy continued to provide positive results in the late eighteenth and through the twentieth centuries before oral rehydration solutions (ORS) were developed in the 1960s to combat cholera more effectively (Lacey 1995, 1441).

By the end of the nineteenth century, the world had experienced three more cholera pandemics, with a fourth arriving in 1899 and carrying through into 1923 (Aberth 2011, 102). Koch had identified the bacterium by this time and a more complete understanding of cholera's epidemiology emerged as water supply systems were improving in developing nations. A period with few outbreaks characterized the mid-twentieth century until cholera's return in the 1960s as ORS therapies became a vital tool in reducing mortality rates. The seventh pandemic began in 1961 in Southeast Asia and persisted beyond the publication date of Aberth's research (2011, 102). Despite the relative treatability of the disease through clean drinking water, sanitation, and ORS therapy, cholera continues to be endemic in regions of the world along with its persistent stigmatization, making it a seasonal uncertainty for many (Aberth 2011, 102).

The disease burden that cholera places on the global population is still known to disproportionately affect marginalized and impoverished communities (Davis et al. 2018, 303). Those impacted by natural disasters (Beau De Rochars et al. 2011) or lacking sufficient resources to maintain safe drinking water, proper sanitation measures, and access to health care like ORS, are placed at an inequitably high risk compared to more affluent countries or communities (Davis et al. 2018, 304). The World Health Organization identifies peri-urban slums and camps for internally displaced persons of refugees as areas of higher risk to choleric outbreaks (World Health Organization 2019), a factor that becomes important in the historical investigation of cholera in 1830s North America. Davis et al. similarly cites population migration and urbanization as a transmission risk when predicting susceptibility to outbreaks (2018, 306). Ultimately, cholera's prevalence in more impoverished regions means that many cases are likely not

recorded and the breadth of its impact is not entirely known or understood (World Health Organization, 2019). And the prejudices that have been repeatedly applied to affected populations serves as a reminder of persistent ideologies linking disease and people, a feature that underscores the social and political relationships arising between culture and health (Nunes 2014, 406). These factors make cholera a suitable candidate in evaluating the social implications of disease and as a complement to contemporary epidemic discussions (Cohn 2016).

Central themes in the following pages highlight ideas of the social impacts associated with healthcare. A cholera outbreak in Halifax during the late summer and autumn of 1834 is used to disclose inequities in early medical systems and draw connections to the disparities found today, as other authors have also explored (Cohn 2016; Pellecchia 2017; Wilkinson et al. 2017). Previously referenced themes such as migration, poverty, and urbanizing environments persist as factors that likely played a role in the localization and density of Halifax's cholera cases, as they likewise did for other regions (Martell 1942; Godfrey 1968; Tuite et al. 2011). The slow changes in perceptions of migrants and the poor, in advance of the 1834 epidemic, evolved from several years of ineffectual migration standards that levied a healthcare burden on colonies. Halifax suffered from similar failings that, coupled with the stigma cholera, developed in its transference from foreign nations. Both migration and social discrimination are anthropologically important in examining the demographics of those most affected by the town's first epidemic. Continuing conversations focus on relevant SDH that draws attention to the persistently unequal treatment of populations even as governments grapple with today's COVID-19 pandemic (Nunes 2014, 411).

1.2 Unpreparedness of an Early Medical System

Examining a nineteenth-century epidemic while seeking to understand the social complexities of its outcomes requires a degree of contextualization. Without the knowledge of key social issues such as the progression of healthcare practices, condition of general treatment facilities, and public perceptions of those institutions it is difficult to illustrate the social significance of disease. To connect the 1834 Halifax cholera epidemic with more contemporary issues, the remainder of this chapter will focus on building a general framework of the town's social institutions and programs as they relate to disease. These factors will then be developed in succeeding chapters to understand decisions made by magistrates, council, and, in a broader sense, the general population.

Haligonians in the early 1800s viewed their world differently than today's inhabitants, despite apparent similarities found among underlying systems such as healthcare. As described above, the town's early residents had little awareness of disease etiology in this period let alone the importance of accessible and equitable social institutions. Perceptions of community and culture can clash with foreign ideals of healthcare structures even today and contribute to downplaying the importance of safety measures (Wilkinson et al. 2017, 20160305). For instance, the lack of community engagement in Guinea, Sierra Leone, and Liberia during the West African Ebola epidemic resulted in resistance to clinic and healthcare measures (Cohn 2016). Investigating the cholera epidemic requires illumination of Halifax's circumstances after the turn of the nineteenth century and forward into 1834 to draw out these similarities. This will offer an explanation about how and why cholera spread while taking the lives of so many in a period of a few weeks.

Knowledge of public health systems leading up to the 1834 cholera epidemic, are invaluable in developing an awareness of how the town reacted to poverty, sanitation, immigration, and disease. As such, Marble (2006) incorporates these facets of early nineteenth-century colonial life in a more expanded manner and many of his findings are vital in developing the following narrative which frames Halifax's response to the epidemic. Examining these specific areas of interest reveals a sense of the high disease mortality rate. It becomes clear that an epidemic is more than an isolated event, much like epidemics today which are inextricably linked to a web of circumstances. Cholera and similar disease outbreaks arise from a series of decisions and practices that occur well before their arrivals. Research from primary and secondary sources helps develop an impression of Halifax in the early nineteenth century beginning with disease theory and culminating in the town's infrastructure considerations.

1.2.1 Theories of Disease

A large contributor to the ideals and practices surrounding disease management, particularly cholera, in European nations and their colonies during the nineteenth century involved the debate between contagionism and miasmatic theory. Now known as the "germ theory of disease," contagionism asserted that short range person-to-person lead to the proliferation of disease. This theory is better understood today with knowledge of microorganisms, also know as pathogens, that infect host bodies. Unfortunately, this theory was not fashionable until well after Snow began to link drinking water to cholera (Shultz 2007, 288). And only long after Snow's death did Koch finally attribute cholera outbreaks to a bacteria microbe (Shultz 2007, 290; Aberth 2011 101).

Despite this substantial evidence to overturn the dominant theory that directed public health guidelines, these discoveries arrived too late for Halifax residents in 1834. The town's medical practitioners followed the dominant theory of miasmas, which the highly influential Sir Edwin Chadwick had advocated during the London cholera epidemics and influenced subsequent colonial practices (Halliday 2001, 1469). The commanding narrative of miasmatic theory emerged from the United Kingdom's leading doctors and influenced reactions to cholera as well as other diseases which arrived in the decades before 1834. Miasma theory possessed a unique social implication that fostered stigmatization toward lower classes regarding the air circulating slums in prominent European cities (Walters 2019, 595). This application could either be applied in rejecting social deviants, those seen as possessing immoral qualities, or rebuffing outsiders as agents of introducing 'bad air' (Auestad 2015, 66).

Miasma's theory draws its roots from both religious and 'rational' medicine, reaching back to Hippocrates (Jouanna and Allies 2012, 122). It is defined as an oppressive or unpleasant atmosphere which surrounds or emerges from some thing, whether person, plant, or waste materials, transferring disease throughout those susceptible to its odours (Halliday 2001, 1469). Ideas of environmental purification or the descending of a plague-like disease on a city were associated with concepts of miasma prior to nineteenth-century medical practices which helped inform preventative efforts during the early cholera epidemics. Medical efforts towards preventing disease focused on the disease collecting in the air rather than contact-based transmission, directly, or in the case of cholera, indirectly (Jouanna and Allies 2012, 126). This doctrine served as the driving force behind Halifax officials' instating quarantine measures for other diseases

well before cholera had been a concern for Europe or the Americas. These concepts of bad air and unhealthy smells as the cause of illness were so prevalent by the time of cholera's appearance in Halifax that the curative actions taken by doctors appear as more preventative in nature (Halliday 2001, 1469; Jouanna and Allies 2012, 126). An example of such treatments is seen in the advertisement below from Dr. Samuel Head who sold the necessary ingredients for producing chlorine gas with the intention of purifying household air.

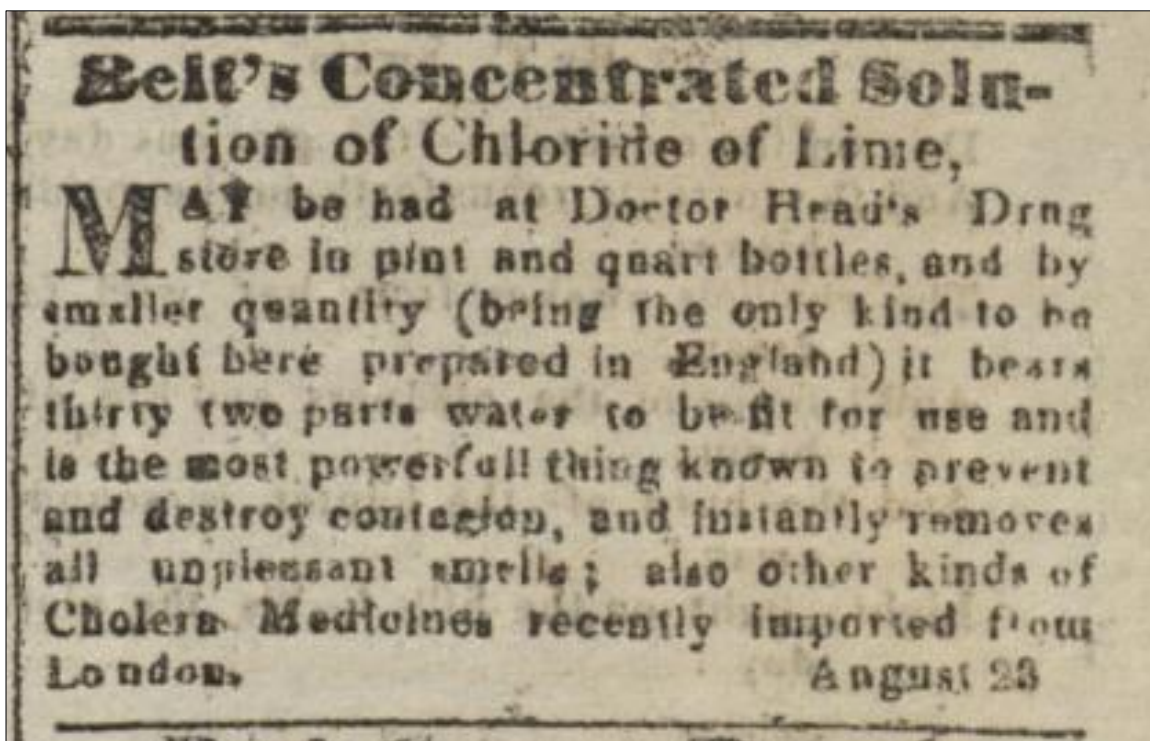


Figure 4: Advertisement for Dr. Samuel Head's drug store selling Chloride of Lime to purify air and remove contagions. SOURCE: NSA Acadian Recorder 23 August 1834. Microfilm 5207.

Dominant medical theories also associated transmission of disease with religious ideals as part of the persecution of those seen as acting immorally. The temperance movements and heavy advocacy against alcohol consumption (Figure 4) that evolved from associated religious beliefs with medicine may have caused further deaths as alcohol has since been proven to kill the cholera bacterium (Guthrie et al. 2007, 91).

Residents drinking more water instead of alcohol conceivably increased their probability of exposure to cholera, exemplifying some of the more religious ideological influences from which early medicine suffered. It could be argued that today, considering dominant religious narratives are still a vital part in structuring equitable healthcare practices as this facet influences medical decisions (Koenig 2004, 1194). There is another factor, though, which contributed to temperance movements, Figure 5, during this period beyond the perceived health incentives and will be introduced below.

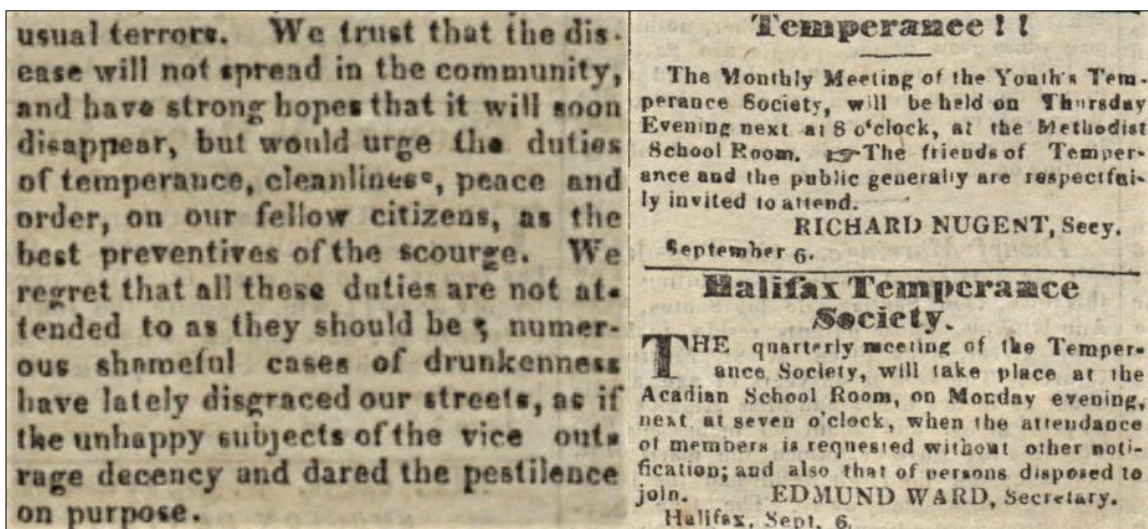


Figure 5: 23 August directions given to Haligonians in the newspapers with temperance as the first listed preventative to cholera. By 6 September, less than two weeks after the proclaimed start of the pandemic, advertisements began appearing for the Halifax Temperance Society. SOURCE: Left Acadian Recorder 23 August 1834 Microfilm 5207; Right Acadian Recorder 6 September 1834 Microfilm 5207.

1.2.2 Disease in Halifax and its Healthcare Practitioners

As more expansive transport and trade networks began to flourish in the nineteenth century, smallpox, TB, typhus, yellow fever, and other diseases took their toll on towns and cities around the globe. Diseases regularly visited Halifax and its residents, cholera among them with communicable forms causing 23.5% of deaths recorded in Nova Scotia between 1800-1850 (Marble 2006, 173-174). This figure was more than

double from the fifty years prior and became broadly attributed to the increasing number of immigrants arriving in Nova Scotia.

Halifax served as a confluence of marine economies, military visitations, international trade, all while possessing a tenuous relationship with the United States of America (USA) despite Great Britain's opinions of the newly independent colony (Fingard et al. 1999; Marble 2006, 279). These elements generated a continuing flow of transient people who found their way to the growing town (Fingard et al 1999, 52). The steady immigration influenced Halifax's risk of disease during the nineteenth century and concerns regarding immigrants became more prominent as diseases like typhus fever became associated with migrant ships (Vineberg 2015, 280). Legislation enacted in the colonies sought to remedy the perceived disease origins despite being in frequent opposition to opinions in Europe that encouraged the industry of migration (Donnelly 1829, 11; Vineberg 2015, 279).¹ The one- or two-month voyage supplied ample time for diseases to proliferate among the cramped quarters of transport and trade ships then spread anew once people disembarked (Page 1911, 737).

The turn of the nineteenth century heralded little change in health practices and beliefs as many of Halifax's physicians and surgeons still lacked adequate training or knowledge of disease. This would slowly change during the century with the passing of Nova Scotia's first Medical Act in 1828 that sought to regulate the industry and at the time, only two of the sixteen practicing doctors in Halifax had not received professional university training (Marble 2006, 94). The Act contained no penalties for those continuing to illegally practice medicine in Nova Scotia, however, it was a step towards establishing healthcare as a profession. In spite of this, doctors still dealt with limited

scientific capability and difficulty overcoming the deep-seated prejudices informing operational theory as knowledge of disease etiology, transmission, prevention, and treatment was still distant from contemporary medicine.

In Halifax, those who could afford a doctor's attendance were often unimpressed with their efficacy or abilities and often turned to self-medication. The accusations against two doctors in 1824 and 1825 killing of their patients likely also encouraged efforts to seek treatment elsewhere (Marble 2006, 74). Likewise, the repetitive and sometimes-public disputes between doctors over their professional opinions and variety of treatments each made available potentially further diminished public confidence in their abilities. Marble (2006, 70) characterizes some relationships between doctors as a "vindictive rivalry and personal assaults in which some medical practitioners took part." Disagreements arose concerning qualifications, diagnoses, and therapies applied. One particular instance involved Dr. Matthias Hoffman striking Dr. John Stirling with his walking cane during a public dispute. These incidents were not isolated to Halifax and a trend of violent altercations ending in convictions or dismissals played out across the province among quarrelling surgeons and physicians (Marble 2006, 71). It was only in 1834, as practitioners began to take active public roles in lecturing and publishing, as well as charitable organizations like medical dispensaries or social support societies did a semblance of public trust in their knowledge and capabilities begin to form.

Further contributing to negative connotations towards nineteenth-century Nova Scotia doctors, their allopathic procedures reflected more archaic medical practices still believed effective by the doctors themselves rather than patients who endured the painful procedures. Bleeding and purgative drugs were frequently applied with limited success,

resulting in public perceptions of apathetic professionals and skepticism towards sanctioned healthcare facilities (Marble 2006, 78). Throughout this period a flourishing number of alternative therapies or patent medicines also acted to undermine the medical field. Readily accessible self-medication practices described in available medical texts at the time in conjunction with botanical medications were also easier to comprehend and apply when compared with harsh medical treatments. For instance, by 1832, Morison's Universal Vegetable Medicines were available in Nova Scotia, promoted as a treatment for cholera among other diseases or conditions.² These more readily available and less-harrowing cures were considered by the general population as equally effective. In light of commonplace 'prescribed' drugs containing high doses of opium, lower dose medications might not have cured patients, yet the general public embraced the milder effects compared to allopathic treatment such as what was advertised in the image below (Figure 6).

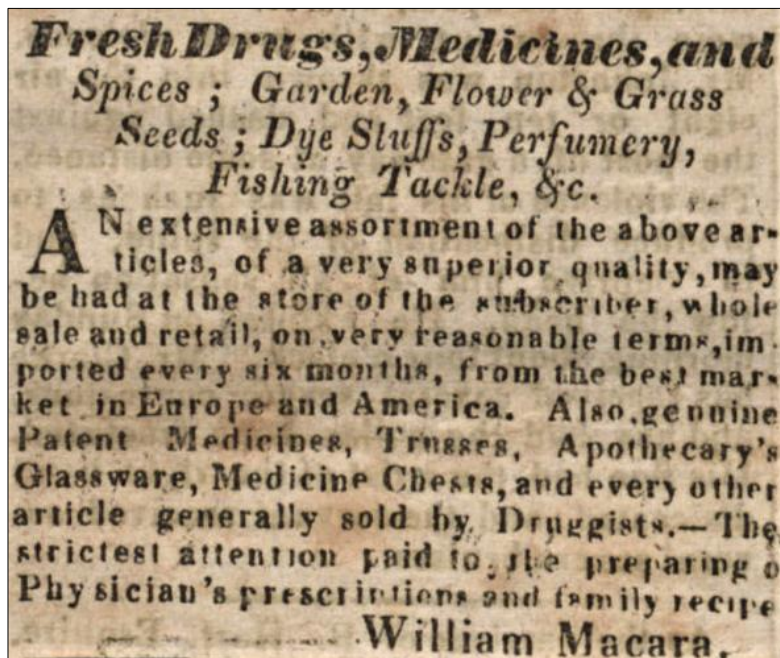


Figure 6: Advertisement for medicines in 1832. SOURCE: *Acadian Recorder* 20 July 1833. Microfilm 5205.

In contrast, the poor were left to experience public healthcare in Halifax's first hospital facility at the poor house and often departed in fear of returning to the facility. In 1844, one individual claimed that "they would prefer death to the poor house," which represented a potentially popular opinion among many residents sent to the poor house for treatment.³ Despite these protests, a growing number of the town's poor received treatment at the facility with little other options available. It remained the only medical centre for Halifax civilians until 1867 when the city established a proper public hospital (Young 2013, 199). By this time, the stagnating progress of nineteenth-century healthcare and its practices had slowly developed into a marginally better system.

Perceptions of health care practitioners are still altered by epidemic events in conjunction with conduct in general care. The Liberian response to the Ebola Virus Disease (EVD) and subsequent quarantine measures is indicative of such patterns which altered impressions of authoritarian public-health measures. These perceptions resulted in changing of health-seeking behaviours (Pellecchia 2017, 15). In this instance, negative behaviours of medical practitioners portrayed in media drove individuals to hide EVD patients rather than disclose any illness. Liberians sought ways to circumvent quarantine orders that made them feel as though they were prisoners in their own homes, even bribing officials to allow private burials. Care centres, established to treat patients, were viewed as facilities employed in killing local people rather than treating the epidemic (Wilkinson 2017, 20160305). Largely attributed to a breakdown in confidence between healthcare policies and programs, and the general populations at a sociocultural level, the difficulties faced in West Africa from 2013-2016 were unintended consequences of ineffectual programs and a failure to generate confidence in medical practitioners. Similar

difficulties are reflected in the dwindling confidence of Halifax's doctors during the early nineteenth century as citizens sought care beyond formalized institutions, often viewing doctors as a greater threat to their lives than the ailments themselves.

1.2.3 Healthcare Institutions

Conditions in the poor house and its adjunct hospital facilities were described as abominable. City officials crowded Halifax's impoverished residents, deemed part of the 'deserving poor,' (those not perceived as lazy or hopelessly infirm) into a rat-infested building measuring sixty feet by twenty-five feet which had existed as early as 1759 (Marble 2006, 194). And until 1815, when the Legislature established a separate building as a bridewell, also known as a jail, the poor were left to reside among a growing number of convicted criminals (Akins 1895, 166). The reason for the separation likely stemmed from a substantial influx of residents in the first decade of the nineteenth century rather than risk to residents. From 1802 to 1809, the annual number of admitted inhabitants jumped from 162 to 282 and in this same period, of the 1501 total admissions, 294 deaths occurred (Marble 2006, 192-193). The annually admitted population would continue to rise another 149% per year until 1820 such that by 1821, there were 704 being treated at the poor house (Marble 2006, 198-199). As a testament to conditions, Marble (2006, 367) noted that the average mortality rate in the poor house remained above 10% during the first half of the nineteenth century compared to the 1% to 1.5% mortality for Nova Scotia's general population. By the time cholera became a concern, the council had made only minor efforts to improve the poor house conditions.

During later disputes regarding care at the Poor House Hospital, a visiting Committee of the House of Assembly reported an absence of comfort or cleanliness and

that any opportunity to bath or maintain basic health practices was impossible due to the overcrowded condition of the facility (Pryke 1988, 43). The committee also observed the addition of a cellar and renovations in the attic to accommodate further residents into the increasingly unsanitary environment. This state of the poor house persisted throughout the first half of the nineteenth century as governing individuals frequently overlooked the poor and their wellbeing. For example, in 1817 Lieutenant-Governor Dalhousie neglected an opportunity to expand the overcrowded facility. Instead, he opted to use funds acquired during the War of 1812 towards the construction of a college building in Halifax's Grand Parade, Figure 7, because he felt that providing better conditions might not inspire the poor to improve their circumstances (Waite 1994, 14). When faced with the prospect of residing in the poor house, a woman in 1815 wrote to her husband's employer explaining that she would "rather go into the woods and perish with her husband than to be left in the poor house with her children to be devoured by vermin and die there."⁴



Figure 7: *The Dalhousie College building set in the background of a winter scene of the Grand Parade in 1851. SOURCE: Belfield, William. 1851. Dalhousie Square, Halifax Nova Scotia. Watercolour. 36.2 x 21.8 cm. Library and Archives Canada, Ottawa.*

Complaints aimed at the poor house and the treatment of the poor were not isolated to patient experiences. In 1820, a vocal social advocate, William Wilkie, accused the Halifax magistrates of negligence, simultaneously campaigning to replace the Commissioners of the Poor (Wilkie 1820, 7-9). Accusations continued as conflicting letters in the newspapers from anonymous individuals cast the poor house as either a miserable gesture towards looking after destitute Haligonians or as a sufficient facility. The debate reached its peak in the early 1830s when mounting charges and petitions disclosed nepotism among the administrators (Fingard et al. 1999, 57). One report noted that the only doctor permitted to help the poor house sick, Dr. William B Almon, averaged about eighty patients for the one hour a day he was in attendance (Marble 2006, 230). Patients were crowded together, in one case eighteen to a room with little attention paid to ailments, often contracting anything communicable from their bedmates. Such discoveries, coupled with the epidemical tragedies that occurred within the poor house, led to the dismissal of four Commissioners of the Poor and the resignation of seven others in 1835. These dismissals occurred as a result of Joseph Howe's famous libel trial which centred on a scathing publication in the *Novascotian*, to which he was the editor at the time, that accused some of Halifax's elite of profiteering from the poor house (Howe 1835, 4-5). Essentially, an abysmal facility awaited the sick who could not afford better care and the public perception likewise evolved as cholera struck at the height of mismanagement and overcrowding.

Today, similar healthcare circumstances are met in contemporary examples of inequitable case dispersion of disease. Analysis of latent TB among migrants to Canada in 2005 showed that poverty-related issues such as overcrowding, poor sanitation, and

lack of access to healthcare undermined healthcare benefits found in high-income countries (Reitmanova and Gustafson 2012, 407). Likewise, institutionalization in hospitals and prisons suppressed immunity to TB leading to vulnerabilities expressed through other SDH patterns. The contrasting approaches to treatment between the poor house facility and in-home visitation exposes drastically different social and political approaches to healthcare based on socioeconomic status in early nineteenth-century Halifax. Given contemporary examples of inequitable exposures to disease, it is likely the conditions and situations leveraged on Halifax's early poor similarly amplified susceptibility to disease. Yet, the poor were not the only institutionalized body that suffered from extenuating circumstance and congested living in Halifax as a declining military force resulted in shrinking care for military members.

The military fared little better regarding healthcare in Halifax leading up to the cholera epidemic. Officials established temporary medical facilities when necessary, however, even the more permanent hospitals suffered from closures or an inability to cope with disease. The departure of international navies from Halifax at the conclusion of the War of 1812, left the Halifax Naval Yard in a state of decline and, with it, the larger naval hospital (Raymond et al. 1999, 2). A fire at the deteriorating naval hospital in November 1819 reduced sailors' access to medical care further, forcing them into the army hospital on the northeast slope of the Citadel Hill (Raymond et al. 1999, 16). Treatment for officers likely continued at an occasionally referenced 'naval hospital' hosted out of the old surgeon's house in the victualling yard for the next several decades, but this was limited based on rank and affluence similar to public options (Marble 2006, 282). Thus, the regiments stationed in Halifax during the cholera epidemic, likewise had

limited treatment from a sole facility. They would similarly suffer substantial casualties in 1834 from cholera which will be discussed in Chapter 2.

1.2.4 Origins and Perceptions of Disease

Previously, the increasing inability to manage and assist poor house residents resulted in the Commissioners of the Poor petitioning Halifax for assistance in supporting the rising number of admissions. The Commissioners regarded “the practice of masters of vessels bringing persons as sailors or passengers to this Town, who were shipped, evidently poor, infirm, or diseased” among the crucial issues of poverty and their distress in Halifax.⁵ Not alone in their accusations, much of the blame had a tradition of falling on immigrants, either from Ireland and England either directly, or via other provinces (Marble 2006, 199). Opinions are evidenced in such references as the Newfoundland Irish being alluded to as “nothing more than a gang of impoverished drinkers” by Thomas McCulloch in the early 1820s (Punch 1981, 11). While slightly more than a decade earlier in 1806, Sir John Wentworth bemoaned the “useless Irish” who arrived in Nova Scotia from Newfoundland. A further 2,312 “destitute and starving” people from Newfoundland who arrived in Nova Scotia during the summer of 1816 (Marble 2006, 198) encountered a province led by men of these opinions, fueling an already depreciating perception of the poor and migrant classes.

Dialogue among Halifax’s local population resonated with the above opinions through the portrayal of the poor in the newspapers. A disdain for immigrants only further amplified in the succeeding decades as migration efforts in Europe, especially Ireland, continued to rise into the 1840s. Newly arrived migrants found themselves faced with many who perceived them as competition for work as well as carrying a stigma of

disease and drunken violence (Fingard et al. 1999, 52). As cholera's pathways became better understood during early epidemics, these prejudices were further enhanced by fear of disease arriving among migrants. Those who were in some way unfortunate enough to be considered the 'deserving poor' or otherwise sick found themselves cast into the overextended poor house facilities and faced looming threats brought on by overcrowding and poor sanitation.

Halifax's leadership developed a habit of sending ill migrants directly to the poor house for treatment with little regard for contagion. The first health crisis attributed to immigrants began in 1814 with the arrival of several hundred Black refugees from Virginia (Winks 1997, 114). From this number, 158 were admitted to the Poor House Hospital by the Halifax leadership despite being aware of the smallpox infection among them (Marble 2006, 196). Lieutenant-Governor John Sherbrooke decreed that "all [of the Blacks] who required medical aid or were by age or infirmity unable to earn a comfortable subsistence should be received into the poor house in Halifax."⁶ Even the continuance of an elevated death rate in the poor house, after smallpox had ravaged Halifax's poor, did little to alter quarantine measures. In 1827, the poor house would again fall victim to insufficient healthcare practices when a further 400 emigrants arrived on vessels that summer and at least 34 were admitted to the Poor House Hospital with fever (Marble 2006, 201). By the time the wave of Typhus fever, and subsequent smallpox, had passed among the poor house residents from these new arrivals, it was estimated that at least two thirds of the over 800 deceased individuals that year were either sick immigrants or Haligonians as the result of ill migrants.⁷ Learning nothing from their errors, Halifax's poor house again received sick emigrants from a wrecked ship

among the town's most vulnerable again in 1828 (Marble 2006, 153). It would eventually take the cholera epidemic that extended beyond the poorest socioeconomic classes and a continuing flow of 'newcomers' to the province before Nova Scotian officials realized in the 1840s that a temporary immigrant hospital was necessary to protect the city from disease (Grant 1938, 499-500).

The 1827 smallpox epidemic did inspire some additional healthcare measures. It is likely that Nova Scotia's first Health Act passed in 1828 was based on the town's apprehension about another epidemic occurring as the result of emigration (Marble 2006, 154). Halifax established a Board of Health in 1829 to address the general lack of sanitation, although the Board never truly assembled until 1832 under growing fears of cholera. A changing legislative mindset is evidenced from the quick response of city officials when smallpox broke out in 1831. This time, patients were immediately quarantined temporarily at established facilities on Melville Island (Marble 2006, 154). Limited biosocial understanding of the linkages between disease and SDH left efforts such as establishments of boards and isolated quarantines of sick as half measures against epidemic events. Without addressing social perceptions and inequities between various community members, the town inevitably experienced repeated outbreaks through its development. These latter aspects are highlighted in contemporary outbreaks where oversights in complex social issues undermine efforts to care for affected populations, such as in the 1991 Venezuelan cholera outbreak (Briggs et al. 2003).

These instances are testimony to slowly changing attitudes in some regards, the town had sanitary protocols and quarantine practices prior to the Health Act and Board of Health. Halifax Council repeatedly applied quarantine measures, the sole public health

measure, at least nine times between 1799 and 1820 (Marble 2006, 59). Declarations from the council required the visitation of an appointed health officer on board each inbound vessel into Chebucto harbour. For instance, from April to July 1832 when fears of cholera's arrival from Europe were beginning to take hold, the Superintendent of Quarantine, David Watson, boarded and inspected 24 ships, 50 brigs, 30 brigantines, 99 schooners, 2 sloops, and 1,050 coasters.⁸ And from these inspections, only one vessel arriving from Cork, Ireland was found to contain any disease, smallpox. While this may have inflamed growing animosity towards the Irish emigrants specifically, the publishing of their quarantine at Melville Island in newspapers cautioned Halifax citizens as to where contagions seemed to originate as much as quelled fears of an immediate outbreak.

1.2.5 Public and Social Services

In response to the limited institutions providing medical advice to the poor and the growing incidence of epidemics, Doctors William Grigor and John Stirling opened a medical dispensary on George street in 1829 (Grant 1938, 301). Dependant largely on donations or subscription-based support to fund purchases of medical supplies, Grigor and Stirling freely offered the poor limited access to medical care and consultation.⁹ Later Lieutenant-Governors approved petitions for remuneration, confirming a marginal government funding for the dispensary in what can be taken as an acknowledgement of the insufficient care being provided to the greater part of Halifax's population (Figure 8). The dispensary reduced the volume of patients at the Poor House Hospital by offering the privilege to recover at home rather than be subjected to the potential horrors that may have awaited them in the overcrowded public facility.

The petition of John Stirling and
William Grigor surgeons
Humbly sheweth
That the Halifax Dispensary
still continues under their direction in action and daily
operation and has during the present Year afforded
Medicines and Medical aid to 1330 patients. That the
Dispensary during the melancholy visitation of Cholera
was productive of great benefit to the Town by affording
to the Poor the advantages of an early application of
Medicines - That the sum of £50 granted last Year by

Figure 8: Excerpt from John Stirling and William Grigor's petition for remuneration in treating 1330 patients at the Halifax dispensary during 1834, including those who sought care during the cholera epidemic. SOURCE: NSA RG5 Series P Vol.42 #83.

Several societies such as the Society for the Relief of the Poor, Poor Man's Friend Society, Methodist Female Benevolent Society, and Charitable Irish Society, among thirty others during the first half of the nineteenth century supported the poor chiefly through public donation. These groups were primarily founded, managed, and subscribed to by clergymen, their wives, physicians, and merchants rather than broader sects of the population and no less than ten societies were active in 1831-1832, just prior to the cholera epidemic (Marble 2006, 360-361). Their focus was to provide basic needs to the poor in Halifax who did not qualify as 'in need' of lodgement at the poor house (Marble 2006, 351-364). Yet, it is difficult to assess the effectiveness of their efforts beyond the fact that the mortality rate among those living outside the poor house was considerably

lower throughout this period. Despite the perceived benefits of these societies, the prevailing Malthusian notions that supporting the poor discourages them from working, and the growing incidence of widespread poverty in the wake of the War of 1812 boom, attributed to many of their demises (Marble 2006, 349). With limited tax money funding the decaying poor house and many residents suffering the effects of a decline in industry, the availability of healthcare for those who could not afford it was intermittent at best if not completely absent for many. The societies which existed offered occasional support to those worst off in Halifax, however, insufficient government and public support limited their abilities to apply more than a “band aid” fix to an expanding issue of poverty and health in the town.

Critical medical anthropology began examining the relationships between capitalism and society wherein economic growth played a role in the development of relationships between healthcare institutions and disease distribution (Nunes 2014, 411). Limitations placed upon, or disregard for the general health and welfare of, the poor is an aspect of the “social production of illness” which develops from ideologies and policies established within the culture (Good 1994, 56). Good (1994, 57) develops this model further using Foucault’s genealogy of power to describe hegemonic systems that force imbalanced social relations. In regard to the medical attention provided for impoverished Haligonians, Malthusian ideologies constrained attempts to provide care for less affluent residents. The emergent thought from this perspective suggests that the misrepresentation of the relationship between disease and the poor served the interests of those seeking to maintain the dominant power structure. Therefore, far from being a passive system, popularist thought from Malthusian theory to miasma worked as social instruments to

subdue and subvert a more numerous lower class, including the discouragement of independent societies for the poor.

Finally, public services such as sewer systems and water supply for Halifax were still a distant realization. Cholera may have served as motivation to maintain a relevant level of sanitation in the town, efforts made prior to the epidemic were minimal and could be considered almost detrimental to the town's health. Until prevailing ideas of miasmas linked the smells and pollution emanating from stagnant water supplies and waste, government officials took an apathetic approach to intervention and cleaning. Rainwater likely carried the filth collecting in the streets along with the overflow of cesspits and latrines into what existed as an open sewer or drainage system. Runoff also potentially flowed into public wells confined within the town's main center between Salter Street and Jacob Street. The intermixing of contaminated and freshwater sources would have exacerbated cholera's potential effects considering the placement of the 'slum' neighbourhood on the eastern slope of Citadel Hill and the wealthier district directly downslope along Water Street (Fingard et al. 1999, 59-60).

By April 1832, the Legislature granted funds to begin excavation of ditches along the main streets to carry waste downslope into the harbour (Marble 2006, 169), though, these were largely ineffective as most residents continued to dispose of most human and animal waste in open cesspits (Fingard et al. 1999, 60). The smell emanating from open cesspits and drains, especially in the summer months, no doubt reaffirmed miasmatic conclusions as sanitary measures were taken more seriously. In cholera's aftermath, these drains were a focal point of grievance. Between the £10,000 construction investment and the system's inability to properly remove waste, they became further sources of bad

smells and strong opinions.¹⁰ The inadequate sewer systems would persist well into the nineteenth century with completion dates as late as the 1870s (Marble 2006, 167).

Halifax's water supply was even worse off than its sewer systems and the arrival of early nineteenth-century epidemics underscored ineffectiveness of both systems. The town did not begin construction of a proper freshwater supply system until 1848 (Halifax Water Commission 1995, 13). And prior to its limited installment of water supplies, residents accessed a diminishing number of public wells in town or shallow backyard wells for their water needs (Raddall 1993, 159; Waite 1994, 7; Fingard et al. 1999, 60). These wells were often dry in summer and found with an assortment of contaminants in them, though given their exposed position within the town (example depicted in the foreground of Figure 9), water contamination was highly likely. In a speech given by Reverend James Cuppaidge Cochrane, he recollected that water seekers regularly encountered dead animals and other waste floating in their wells.¹¹ An editorial letter in 1833 mentioned the three remaining public wells along Barrington Street with only one new well having been dug in the last twenty-five years as a further five were closed in the same time frame (Marble 2006, 168). The existing wells seen on the 1851 Fuller map, discussed in greater detail later, are the likely remaining public water pumps. From their immediate downhill position of the most densely populated area in Halifax, they were likely filled with an array of contaminants as accounts suggest. Likewise, the shallow, private wells associated with households potentially suffered from contamination via ground water seepage between wastewater in nearby cesspits, as is commonly the case in contemporary cholera epidemics (Tamrakar et al. 2009, 272; Goel et al. 2010, 69; Luque Fernandez et al. 2012, 442).



Figure 9: A drawing of Saint Paul's church by James Fox Bland included the depiction of an individual accessing one of the remaining public wells before the installment of a water supply system later in the nineteenth century. SOURCE: Bland, James Fox. 1854-1895. St. Paul's Cathedral of Halifax. Pen and ink and pencil. 17.3 x 27.1 cm. Library and Archives Canada, Ottawa.

1.2.6 Conclusions

The culmination of weak social support for the poor, limited and ineffective public services, and inept or inconsiderate government practices presented here all contributed to an exacerbation of disease in the early nineteenth century. Some of these, however, should be noted as beyond the period's ability to recognize and make efforts to remedy. Regardless, other aspects were blatantly overlooked despite an approximate understanding of their implications as it relates to public health. The post war stagnation of the town, primarily in the ineffectual government structure, did little to inspire expenditures towards better health practices until concerned public officials and doctors joined in the condemnation of public services (Marble 2006, 233-235). As will become more evident in the next chapter, discussions of measures instituted leading up to cholera and during the epidemic, the factors discussed above were the pre-existing weaknesses in Halifax's approach to healthcare. The inequities alluded to here, coupled with an

epidemic, highlight the socially determining factors that escalated case numbers and deaths disproportionately among Haligonians. These facts and details strive to shed light onto contemporary instances of cholera and other widespread health concerns, as other historical instances have likewise shown (Briggs et al. 2003; Cohn 2016), in order to better understand disease transmission and social issues that undermine attempts to overcome epidemics.

Chapter 2: Halifax and Cholera in the 1830s

While Halifax was spared the initial wave of cholera, governing bodies wasted little time implementing emergency medical response groundwork in preparation of a potential outbreak. Acting on news regarding cholera's spread in Europe, Lieutenant-Governor Sir Peregrine Maitland and Halifax Council drafted quarantine regulations in August 1831.¹² As the 'Cholera Morbus' or 'Asiatic Cholera' took hold closer to Halifax, later measures were included with a focus on further preventing the introduction, and spread, of cholera in Nova Scotia (Grant and Grant 1935, 588). Under Maitland's leadership, Halifax developed more robust health measures specifically aimed at limiting infectious disease during his remaining years as Lieutenant-Governor.

After Maitland's departure in 1832, the town soon returned to its previously unsanitary conditions. Sir Colin Campbell, a man known for rigidity and unwillingness to heed advice (Marble 2006, 159), was appointed to the Lieutenant-Governor position on 2 July 1834. Campbell neglected the health measures enacted by Maitland despite warnings from health officers and indications of further outbreaks in North America. The incoming Lieutenant-Governor would delay enacting quarantine orders among other safeguards, contributing to lost lives only a month into taking office. In consequence, preparations made in the three years prior to cholera's arrival were partly wasted due in part to pride and unwillingness of leadership to acknowledge the bacterium's presence among Halifax's poor during the initial weeks of the outbreak.

Returning to an examination of the West Africa and the EVD epidemic, a delayed governmental response characterized the outbreak's initial stages (Abramowitz 2017, 422). Underdevelopment of healthcare systems and confusion regarding responsibilities

delayed and blocked responses to the increasing EVD cases. While the more substantial EVD situation led to the collapse of healthcare systems rather than a delayed response from a Lieutenant-Governor, repeated unpreparedness and denial of epidemics continue to characterize lagging responses to health crises. Hoffman and Silverberg (2018, 329-330) point to limited surveillance capacities and deferred response mobilization as key weaknesses in disease mitigation. An inability to accurately diagnose or detect cases within a population ultimately delays decision making and, as will be shown, is not novel to contemporary epidemics. During the 1834 epidemic, the absence of quarantine measures left Campbell and Halifax officials without an advanced warning system in case detection. In both this historical instance as well as lessons from today, complacency and cost underscore the human miscalculations made in preparing for epidemics.

Despite postponing a quarantine in 1834 until too late, the measures established under Maitland inevitably provided a faster response once the town acknowledged its predicament. The individuals designated health wardens and officials were remarkably similar in the two years apart. This connection serves as an example of how the pre-existing measures saved time reacting to the rising cases. Similarly, before Halifax doctors made their firsthand observations with cholera in the town, officials relied on information conveyed through international news and letters. In this way, experience garnered from published responses to other epidemics helped inform the original cholera-centric regulations and medical actions once cholera arrived. Thus, the measures enacted, even by Maitland, were reflective of prevalent, though largely ineffective beliefs such as the miasma theory and safeguards advised by foreign council (Halliday 2001, 1469).

2.1 The Pre-Cholera Dialogue

The Halifax Assembly's August 1831 quarantine regulations focused on international vessels similar to previous quarantine measures and in this instance, concern focused on those originating from Western Europe.¹³ Given the town's experience with smallpox and typhus fever in 1827, among other instances of disease importation, the resultant perception was that the primary vector of infection originated beyond provincial boundaries (e.g., Donnelly 1829, 11; Vineberg 2015, 280). Such animosities were not novel to cholera, nor have they ceased to emerge during epidemics, as discussions in Chapter 1 addressed the 'othering' fostered by disease. Rising discrimination targeting Asian Americans is the most recent instance of prejudice towards a perceived international population during the COVID-19 pandemic as blame is fixated on foreign bodies of people (Gover et al. 2020, 648-649).

In nineteenth-century Halifax, the regulations stipulated that transatlantic ships, which departed or were in contact with other vessels from suspected ports containing cholera, required an inspection from the appointed health officer. Vessels remained anchored beyond George's Island for four days and any identified with sick passengers were required to quarantine there for an additional 40 days. From the initial enactment until April 1832, Halifax's health officer, Doctor William B. Almon, inspected forty-one ships (Marble 2006, 156); however, medical practitioners had divided opinions regarding the transmission of cholera with some believing the Atlantic Ocean to be a sufficient barrier from the contagion and no need for quarantine was necessary. Page (1911, 739) noted that contrary to this idea, as many regions of North America experienced in 1832, overcrowded vessels often carried bacteria like cholera for years and delivered the

bacterium to their shores. The disease repeatedly attacked new passengers and continued to convey new epidemics between frequented ports. Despite the lack of medical knowledge, establishing a quarantine order that required an extended time at anchor at least allowed officials to use their judgements in allowing passengers ashore.

Based on standing healthcare perceptions and practices explored in Chapter 1, these regulations were considerably stricter than previous measures regarding international arrivals. The subsequent response from many wealthy shipowners and merchants located in other regions was ultimately to broadly protest quarantine measures (Durey 1974, 20; Godfrey 1968, 37). Arguing against the protracted isolation periods for economic reasons, often at the cost of lives, is a familiar story during the COVID-19 epidemic as well which is addressed in the final chapter. It is likely that a similar dialogue existed in Halifax during 1831 as businesses were already suffering economic strains; however, nothing is available in the researched documents.

2.1.1 Early Remedies and Improvements

Early publications of cholera in newspapers disclose stories of its appearance in Western Europe and suggested preventative measures arising from these experiences. Short notes and recommendations became part of a pattern throughout later segments about the disease. The articles related to cholera in the *Acadian Recorder* show efforts made by other districts, cities, or countries to enforce quarantine laws and treat patients. And from the beginning, there is a consistent attempt to stress the importance of measures enacted by council as much as the ideologies at play in their creation. As the 27 August 1831 column notes, "...such vigilance should not excite apprehension in a community – extreme fears on any subject are as detrimental as they are foolish."¹⁴ This cautious

quality to the writing persists into the first few weeks of the 1834 epidemic, almost to the point of dismissing the arrival of cholera in Halifax. This attempt to caution dwindled as the town's health deteriorated and conversation became more dramatic as preventative efforts failed to show improvements.

Newspaper articles quoted the Health Warden directly or summarized publications emerging rapidly from other regions regarding accessible remedies for Haligonians. Proposed medicines contained crude recipes or steps to presumably reduce symptoms, Figure 10, and although the prescribed remedies follow similar patterns, the variation among medicines likely served to confuse the public, raising questions regarding the capabilities of doctors in controlling the epidemic when it arrived. A similar theme had persisted throughout the first decades of the nineteenth century in which choleric cures were only a continuation of vague diagnostic methods that were a detriment in public confidence toward medical practitioners (Murison 2014, 428; Leeson et al. 2020, 275-276). After publishing the initial regulations in 1831, public discussion about cholera was brief and intermittent during the year, including little mention of further curatives. General reports on its European progress attempted to quell anxieties about the bacterium's virulence as much as offer personal methods for prevention.¹⁵

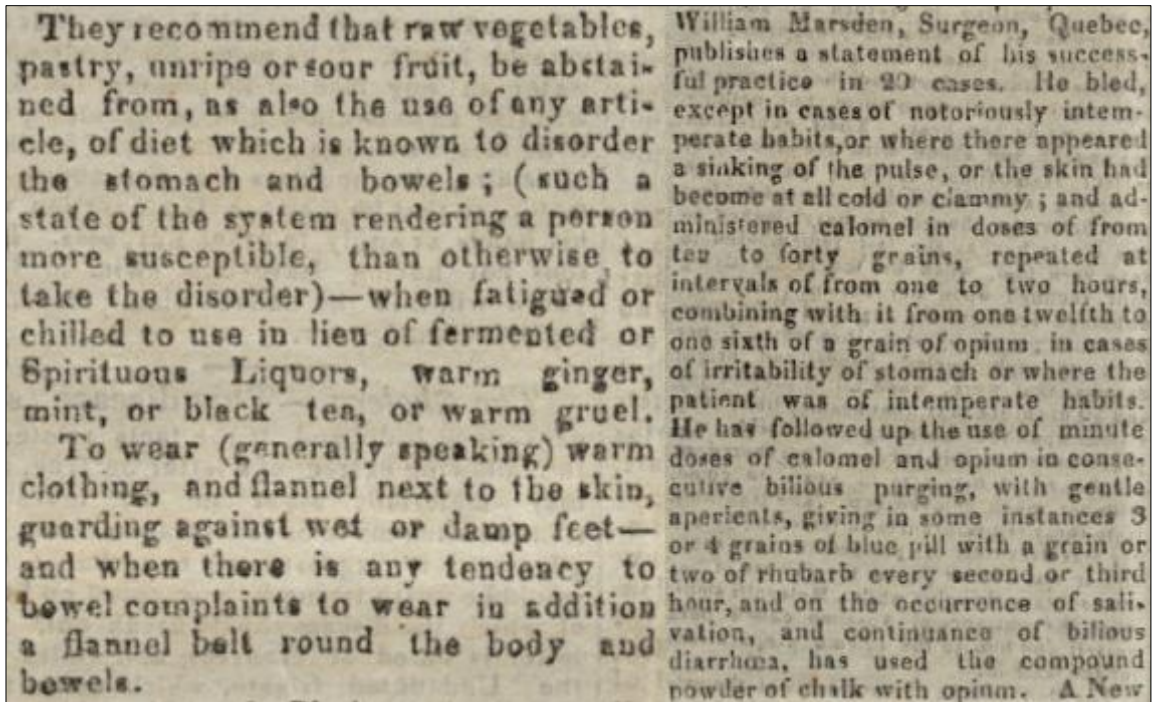


Figure 10: Examples of medical advice and remedies offered in the newspapers. Left, Halifax Central Board of Health recommendations. Right, A Quebec doctor's recommendation for treating cholera. SOURCE: Left, *Acadian Recorder* 23 August 1834. Microfilm 5207. Right, *Acadian Recorder* 20 September 1834. Microfilm 5207.

A further example of preventative measures distributed through the news was an article on how to produce chlorine gas. Given the predominant belief that cholera resulted from a miasma, the prescribed solution became purification of the air using chlorine. Fortunately, the *Acadian Recorder* included a caveat that the gas is harmful to human life if used in confined spaces.¹⁶ Despite the warning, chlorine gas production became a widely used preventative measure for cholera during this period (Imperato et al. 2015, 1226; Engelmann 2018, 375) with Halifax liberally applying it throughout the streets during the epidemic.¹⁷

External to individual bodies, the town sought to remedy perceived disease attractors. The prevailing theory of disease, miasmatic emissions, focused concerns on urban areas of human and animal activity which generated considerable 'effluvia.' An article on improvements in Halifax published by the *Acadian Recorder* on 17 March 1832

underscored the lack of a proper urban-wide sewerage system, though with no mention was made of clearing away stagnant bodies of water, as a method for limiting the summer “poisonous miasmas.” The situation had reached a point where “the want of proper regulations and public sewers, causes an accumulation of nuisances in the upper parts of the town.”¹⁸ Likewise, Maitland’s attempts at removing the slaughterhouses from Halifax’s central district was an extension of the effort to reduce any putrefying animal matter left in the streets that caused a considerably potent smell during the summer months (Marble 2006, 167). Food waste and garbage had continued to accumulate throughout the city as well and what existed for sewers in their early stages of construction, served to collect and deposit much of the garbage under the wharves along Water Street rather than further out into the harbour.¹⁹ Evidently, attention turned to removing the smell of rot in Halifax rather than healthcare in early stages of prevention and ‘remedy.’

The *Acadian Recorder* suggested a regular sanitary program as it was reported to be effective elsewhere. Here too is a suggestion to readers that they should “throw small quantities of slacked lime into the drains and reservoirs attached to their premises” as a method of purifying the contaminated water and waste.²⁰ What is lacking from these initial measures is any sense of expanding on the sewerage system to better remove waste, or provide the town with better drinking water, a factor which had yet to be discovered as a primary medium for cholera. While clearing the town of its accumulated waste may have reduced the number of stagnant pools and festering sewage, the core of the issues was not yet being addressed.

Attempts to “purify” the town are reflective of miasma theory rationale, but they focused on more superficial causes of disease. Yet, these measures were no more effective than those employed in other North American populations. Preparations ahead of cholera’s arrival in New Jersey spurred similar miasmatic fears as health practitioners advised mixtures of chloride of lime poured into cesspits at least once each week (Petriello 2020, 99). And, as experienced by New Jersey residents, initial laws and pronouncements were met with delayed public action when the bacterium arrived. This opened the door for a plethora of medicines and suggested remedies sold by physicians and merchants to panicked residents seeking cures and preventatives (Petriello 2020, 100). Attention to these cures and physical beautification projects redirected efforts to address social conditions that perpetuated the circumstances in which many impoverished people found themselves (Reitmanova and Gustafson 2012, 412). Whether it was pursuing an easy “cure-all” or clearing streets of refuse and human waste, public attitudes and mentalities persisted. Therefore, stagnation, waste accumulation, and general complacency continued as soon as the narrative drifted away from immediate threat.

2.1.2 Approving Regulations, Assessing Deficiencies, and Addressing Anxieties

News of cholera in Europe continued to portray a deteriorating situation. The disease reached London 1832 and one column reported that many people were cast out of employment due to the poor being “admirably suited to the spread of the disease.”²¹ An expanding framework of blame began to be established in these stories as cholera prevailed in neighbourhoods “well known to be the crowded resort of the reckless, the intemperate, the dissolute and the uncleanly.”²² In response to the growing threat, on 29 March 1832 during parliamentary sessions, the assembly unanimously approved £3000,

supported by a grant of £1000 from the British government, to be used by Maitland in enacting regulations against cholera (Bilson 1980, 92).²³ A sum equivalent to roughly £451,000 or \$784,000 Canadian today. The funding supported measures aimed at preventing cholera's intrusion under the oversight of health officials. This initial legislation requiring international vessel quarantines as well as authorizing visitations to Halifax residences, ensuring adequate cleanliness and order. The latter measure directly targeting tenement housing and impoverished neighbourhoods as fears of the disease issuing forth from poorer communities began to formulate in European dialogue.

The *Acadian Recorder* offered examples of the more domestically legislated preventative actions taken by Saint John, New Brunswick. These illustrations afforded readers an example of what was to come for Halifax. For instance, in Saint John, the magistrates and physicians divided up the town into districts, placing Board of Health representatives in charge of “regularly visiting for the purpose of ventilating, cleansing, white-washing, and removal of nuisances.”²⁴ The Saint John council also established a supplementary hospital and mandated the creation of health reports. The report continued to stress the value in a moderate approach to dealing with cholera such that restrictions did not limit administering relief to the sick or personal freedoms of citizens. At this same time, a quarantine regulation bill had only been recently introduced to the House of Assembly with an emphasis on clearing waste from the central zone of Halifax.²⁵

Contrasting London with Halifax, the 31 March 1832 edition of the *Acadian Journal* highlighted the progress made in London regarding freshwater supply to homes and sewer systems. In lamenting over these deficient services in Halifax, key daily habits were illustrated. For example, the population along the waterfront tended to discard their

waste along the shoreline where the lackluster sewers were already dumping waste from the upper streets, a convergence of which caused an elevated anxiety regarding effluvia. Water supply was also a concern in Halifax since it was suggested that the public wells were in need of cleaning and pump repairs were required.²⁶ From this, an image of decaying or neglected public supply was presented. The notable indifference on behalf of the Halifax government toward the sanitary conditions found among houses, streets, and public places appears in these contrasts as concern only reflected a desire to remove potential risk to the town rather than improve the lives of its poor. The prevalent view taken by the wealthy indicated that cholera only attacked the squalid lower classes of society; therefore, they were less concerned about the town's general condition (Marble 2006, 155).

Contemporary lessons from cholera demonstrate that initial efforts to prevent the disease rapidly slip from categorization of at-risk populations to stereotyping and stigmatization (Hamlin 2012, 446). By 1832, Halifax officials were already applying the experiences of European cities in their preventative measures. This pattern of misinformed narrative continues today where cholera retains its designation as a disease predominantly of the poor due to the relative treatability of the bacterium (Hamlin 2012, 449). The 1991 Venezuelan cholera epidemic evolved similarly with coordinated prevention and control methods set in place ahead of the bacterium's arrival; however, the disease rapidly became racialized as an "indigenous problem" linked to the infected group's behaviours (Briggs et al. 2003, 9). Initial preventions in Halifax targeted broad sweeping deficiencies in the town, although much of the funding and focus subjected the poor to further intrusion and oversight rather than assistance.

The anxieties of Haligonians can be understood in the volume of content and space set aside to discuss cholera in newspaper publications. Early April letters to the editor discuss cholera directly or address perceived concerns related to cholera. Articles from doctors regarding the disease's treatment or prevention, specifically emphasizing temperance, are common alongside the commentaries from or about temperance societies in Halifax (See Figure 5).²⁷ At the same time, the association with immigrants and alcohol was being furthered by the publicly distributed opinions of Halifax's elite seen in Chapter 1 (Punch 1981, 11; Fingard et al. 1999, 52). The growing push for temperance by the Irish Roman Catholic community during this period (Fingard et al. 1999, 52) was likely a means to avoid the stereotyped connections between disease, migration, and poverty.

Initial efforts from governing bodies in Nova Scotia focused on establishing acts and advisory boards that sought to prevent cholera's arrival or minimise its effects once present. The Council received the *Internal Quarantine Bill* at the end of March detailing the regulations, commissioner positions, penalties for ignoring orders, and measures to be put in place for cholera's prevention,²⁸ however, not all were in favour of the Bill. Alexander Stewart regarded the measures as "cumbrous and unnecessary machinery" that would be costly to Halifax. Despite the objections, the Board of Health members began their visitations of Halifax properties within their assigned wards by early April.²⁹ In the newspapers, the concern and flurry of initial activity apparently waned after eventual passage of the "An Act to Prevent the Spreading of Contagious Diseases and for the Performance of Quarantine" and "An Act more Effectually to Provide Against the Introduction of Infectious or Contagious Disease, and the Spreading thereof in this

Province.”³⁰ The *Acadian Recorder* attributed the slackening of effort to a perceived loss of power by the Council who would have to defer to established Boards.³¹

As part of these Acts, Lieutenant-Governor Maitland named and designated health wardens for Halifax.³² The recorded appointments provide clarity on where and how doctors were situated initially as these posts largely carried forward into 1834 with only the addition of more personnel (Tables 1 and 2).³³ In total, Maitland appointed a Superintendent of Quarantine, seven health officers and twenty-five health wardens, fourteen of whom were physicians or surgeons, on 17 April 1832 (Marble 2006, 156), though not all of them were included on the initial orders. Despite variable population densities, the distribution of wardens and doctors displayed below is based on ward boundaries. This division reveals a lack of emphasis on providing attention where it may have helped more.

Table 1: A list of wards and designated health wardens provided as part of the legislation enacted in 1832 for the prevention and management of cholera in Halifax and Nova Scotia. Source: NSA RG1 Vol.174 p.334 Microfilm 15283.

| Ward | Health Wardens |
|-------------------------------|--|
| South Ward | M. Tobin, James Tremain, Dr. Grigor |
| St. Peter’s Ward | John Albro, J E Fairbanks, Dr. Carritt |
| St. Matthew’s Ward | R Tremain, M. Almon, Dr. Hume |
| St. Paul’s Ward | G. N. Russell, W. A. Black, Dr. Hoffman |
| County Court House Ward | John Howe, H. Locksyer, Dr. Stirling |
| St. John’s Ward | W. Carritt, J McNeil, Dr. Head |
| North Barrack Ward | J N Shannon, J A Creighton, Dr. Avery |
| Jacobs to Cornwallis Streets | J L Starr, G P Lawson, Dr. J Hume |
| Cornwallis to Gerrish Streets | Mr. Tidmarsh, E Cunard, Joseph Starr, Dr. Sawers |
| North Suburbs | W. H. Snelling, E Bartlett, Dr. McQueen |

Table 2: Additional health wardens appointed on 25 August 1834 to support the existing Board of Health positions from 1834. Source: NSA RG1 Vol.196 p.92 Microfilm 15292.

| Ward | Additional Health Wardens |
|------------------------------|------------------------------------|
| St. Peter's Ward | Jas C. Hume |
| St. Paul's Ward | Joseph Howe |
| County Court House Ward | S. Van Buskirk, J. Smith |
| St. John's Ward | William Murdock, J. Duffus |
| St. Matthew's Ward | William B. Almon, William Snelling |
| North Barrack Ward | James G. Creighton |
| Jacobs to Cornwallis Street | J. Morrow |
| Cornwallis to Gerrish Street | A. G. Fraser, James Cogswell |
| North Suburbs | Peter P. James |

A letter sent to the *Acadian Recorder* between Viscount Goderich and Lieutenant-Governor Maitland in early May 1832 offers further lessons learned in London. The Viscount advised Maitland to provide specific attention to the poor and to maintain quarantine regulations only so far as necessary, reminiscent of the advice from Saint John. The perspective given by the Viscount advocated a less fearful approach to cholera despite the 2,279 fatalities in England at that point.³⁴ With the increasing deaths, a growing consensus among the poor in Europe fixated on the theory that medical professionals did not have their best interests in mind. Cholera's strain on impoverished neighbourhoods coupled with allegations of doctors receiving exhumed remains to dissect eventually set off riots in Scotland and France (Figure 11).³⁵ The English legislature subdued some of their rioting with the passage of an Anatomy Act in August 1832 that legalized the use of the "unclaimed" deceased poor from workhouses or hospitals for medical dissection, clarifying medical practices (Gill et al. 2001, 233; Burrell and Gill 2005, 492). While Halifax delayed any similar decision until 1870, the implications arose in an atmosphere of mistrust of doctors and government among many

migrants, leading to difficulties in admitting them to temporary hospital facilities such as the cholera hospital in 1834.³⁶

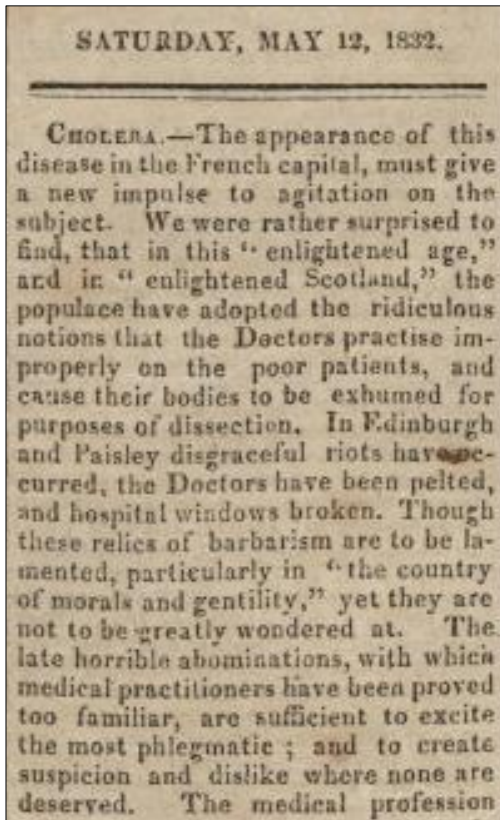


Figure 11: Report of European medical riots.
SOURCE: NSA Acadian Recorder 1 May 1832.
Microfilm 5206.

Anti-cholera riots also erupted in other regions of Europe during the 1830 cholera wave, resulting in the murder of healthcare practitioners and destruction of medical facilities. Furthermore, the suspected conspiratorial motives were strikingly similar across continents (Cohn 2016). The pattern of human reaction described here was neither unique to cholera alone nor the nineteenth century as similar riots took place during the 2014 EVD outbreaks in West Africa (Wilkinson et al. 2017, 20160305). Even the COVID-19 pandemic has borne witness to open public resistance to health measures despite clearer information distribution and giving rise to politicised movements across the USA (Han and Schoch-Spana 2021, 101331). A common thread between all cases is the public’s

perception of draconian quarantine regulations. Whether such measures were valid or not, such groups developed because of limited transparency offered by governing bodies. A lack of knowledge regarding the Cholera's cause and prevention in the nineteenth century inevitably led to conspiratorial feelings from the public. No rioting occurred in Halifax as a result of the 1834 epidemic, however, and could be attributed to the sudden onset and recession of the disease or publicly circulated information through the news on behalf of governing bodies such as the Board of Health.

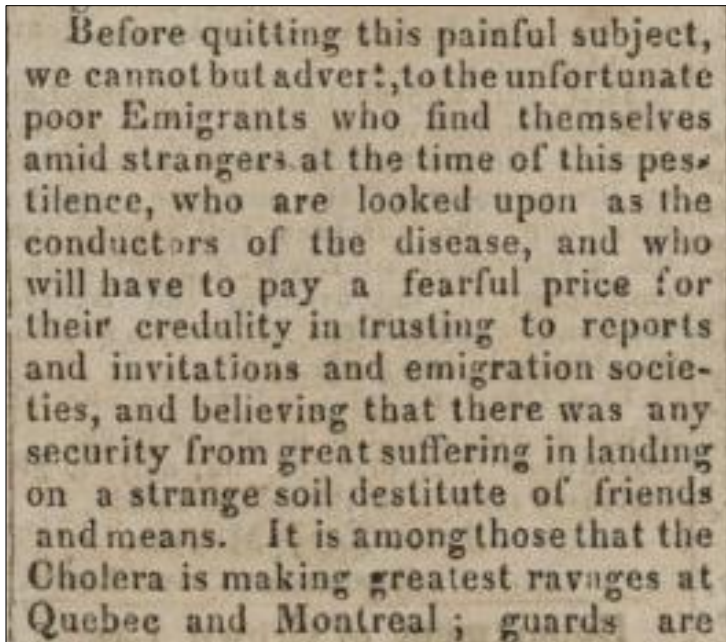
The *Acadian Recorder* noted an “absence of extensive poverty...” during the early spring in 1832 occasioned by the establishment of further societies directed towards assisting the poor.³⁷ The positive outlook regarding assistance to the poor presented in this article is also reflective of nongovernment efforts to support the broader Halifax community rather than a changing mindset. A separate observation could be made from the substantial intake of Irish immigrants in 1831-32 into the poor house due to smallpox and typhus fever (Marble 2006, 360) which reduced the ratio of those residing outside the facility and also likely attributed to the positive perception. Yet, the percentage of what was called “industrious” or “deserving” poor, whether housed in the poor house or living externally, remained relatively constant at 20-22% from 1800 to 1867 (Marble 2006, 360). The inability to decrease abject poverty in Halifax despite independent efforts ultimately reflects poorly on the town's capacity to manage adequate care and sanitation among those most desiring assistance. Thus, regardless of regulation and quarantining of ships, a disease, once introduced, had a considerable number of poor to infect before any alarm was given.

In a governmental attempt to remedy the lacking funds to treat the poor, and in particular, immigrants, a poll tax was announced on 19 May 1832 to be placed on all individuals arriving from Great Britain.³⁸ Due in part to the rising number of foreign individuals entering the province and across the Americas, it was predominantly an effort to financially support the health of the poor or migrant populations. A publication in the *Acadian Recorder* estimated that a sum of \$80,000 could be gained annually by taxing each person one or two dollars based on possession of a government certificate.³⁹ Despite its overwhelming support in the House of Assembly, opposed by only two members, the *Acadian Recorder* argued against leveraging a tax on the “stranger and friendless.”⁴⁰ Likewise recognizing that many immigrants were being driven from monopolized homelands and asked “should not a fund for their relief come from those who consider themselves benefited by a reduction of the population?”⁴¹ This challenge sits at the heart of many difficulties faced by the colonies and the continuing flow of people. Undeterred by the proliferation of disease and death caused by overcrowded vessels, incentives and legislation favoured a depopulation of some European nations during the nineteenth century. The only solution created by the aristocracies resulted in a further taxation on those most likely to suffer, placing migrants in a position of selling further belongings to cover this new fee and leaving them further underprepared on arrival in Halifax and abroad.

Ironically, the scathing review of migrant taxation was followed up in the next week’s issue with a politically charged article inquiring as to why people would depart their places of birth for the wilderness of the Americas. Situated as a comfort to readers, immigration in 1832 was expected to be beneficial to the province compared to previous

years as, “those leaving home this spring, are generally represented to be persons who have amassed a little store of money.”⁴² Here the perceived implications of demanding further funds from the immigrants themselves insinuates that they will be more affluent than those previously arriving. The opinions towards immigration are made clearer in a rebuttal to a negative response in the *May Acadian Recorder* stressing that “a steady *well directed* tide of Emigration” would improve Nova Scotia’s prosperity.⁴³ Evident are the misgivings about the health and financial capabilities of new residents as Halifax had begun to slightly improve economically after the post-War of 1812 downturn, although, the next few years would see the community suffer further economic difficulties in the wake of crop failures, falling property values, and cholera (Punch, 1981, 18).

During the years of heightened paranoia about disease, cholera especially, the circulated public perception regarding poorer emigrants often found them ostracised strangers and depicted as carriers of disease (Figure 12). Among existing communities within the general population, it was noted that they were disproportionately attacked by cholera in Quebec and Montreal, a story that continued later in Upper Canada (Godfrey 1968, 11). Armed guards were placed along roadways to prevent their movement into the province while it was reported that the USA acted to repel migrants from landing.⁴⁴ Evidently, cholera’s presence in the Americas rested with immigrants rather than in the institutional beliefs that enabled the proliferation of disease. And among these elements were the taxation measures and laws that left migrants further destitute upon arrival (Campbell 2015, 65; Vineberg 2015, 282).



Before quitting this painful subject, we cannot but advert, to the unfortunate poor Emigrants who find themselves amid strangers at the time of this pestilence, who are looked upon as the conductors of the disease, and who will have to pay a fearful price for their credulity in trusting to reports and invitations and emigration societies, and believing that there was any security from great suffering in landing on a strange soil destitute of friends and means. It is among those that the Cholera is making greatest ravages at Quebec and Montreal; guards are

Figure 12: Emigrants cast as conductors of disease among popular conversations and noted in the newspapers even before cholera's arrival in Halifax. SOURCE: NSA Acadian Recorder 30 June 1832. Microfilm 5206.

Cholera's emergence was one of several diseases to spark legislative change in Europe and North America throughout the nineteenth century. as governments attempted to manage epidemics beyond local boundaries. Immigrants were especially targeted due to their visibility and associations with transference of disease. In later decades, governments required migrants to possess health certifications or endure extended stays at isolated quarantine points (Reitmanova and Gustafson 2012, 409). Poll taxes continued well into the twentieth century with Chinese immigrants facing steadily increasing financial barriers in attempting to support their families in Canada (Wohl et al. 2013, 714). These forms of taxation directly prejudiced individuals under the guise of collecting funds to support their transit or care upon arrival (Gilmour 2013, 177); however, institutions available to the newly arrived were underfunded leaving many to seek support in close-knit insular communities. In the case of the Chinese Head Tax, it became the first step toward social exclusion from the right to vote or hold public office to

practicing law or to practice medicine (Chan 2016). Although European immigrants faced less of this escalating discrimination in the nineteenth century, the clear prejudiced nature of taxations and expectations of gaining more economically secure residents through such measures are evident in the above dialogue.

The first report from the Central Board of Health appeared on 30 June 1832.⁴⁵ The members (Grant and Grant 1935, 588) – Henry H. Cogswell as President, Drs. Allan and Johnston as Vice Presidents, William Cogswell as secretary, and J. Foresman, M. Tobin, G. P. Lawson, Drs. Shoreland, Hume, Wallace, Stirling, and Grigor – continued to echo the advisements from other regions, including temperance and cleanliness.⁴⁶ Extended measures were also provided to rural doctors in handling any cases of cholera and were included in the 30 June 1832 *Acadian Recorder* issue. It is noted here that Marble’s (2006) observations of the often-confusing number of remedies presented to the public were similarly acknowledged in the newspaper commentary (Figure 13). Steps prescribed by the Central Board of Health were occasionally admitted as too complicated for private individuals to follow and other available advice exhibited a “vague and unsatisfactory” form that would make it unusable for the reader.⁴⁷

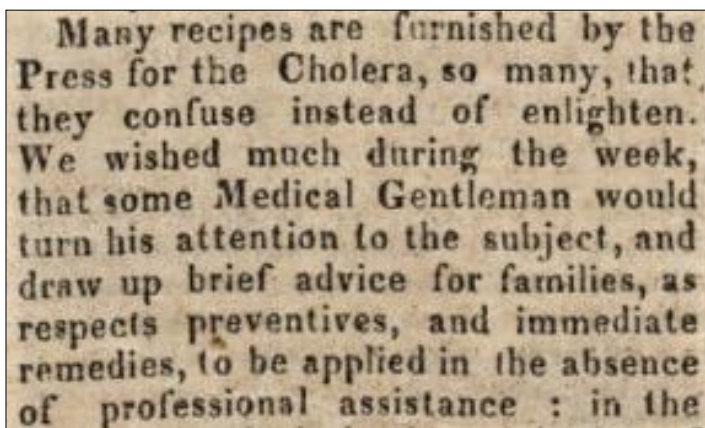
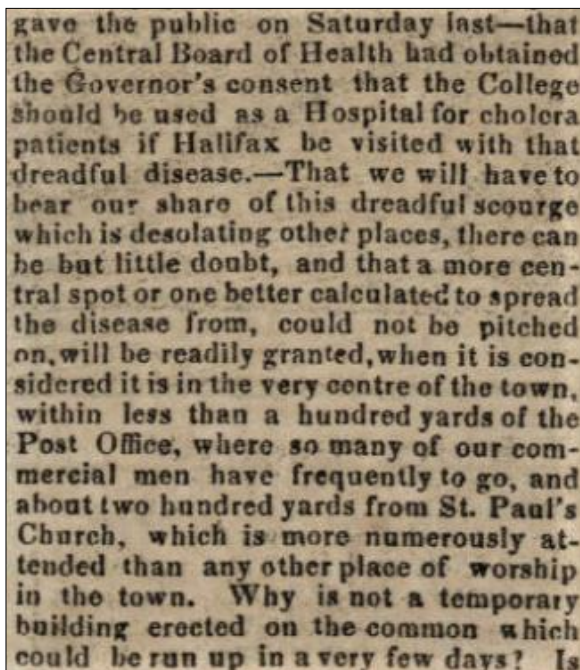


Figure 13: Confusing the people with remedies. SOURCE: NSA *Acadian Recorder* 7 July 1832. Microfilm 5206.

The Board of Health also announced that the Dalhousie College building would become a cholera hospital in the event of an outbreak (Grant and Grant 1935, 587-589).⁴⁸ The chosen site, while efficient based on its central location was also the reason for its greatest drawback. As the misconceptions of miasmas suggested, centralizing patients in the middle of town placed others at risk and, therefore, the facility was looked upon negatively. Immediately following the announcement, editorials appeared objecting to the decision (see Figure 14).⁴⁹ Beyond the cited proximity to the post office and St. Paul's Church, the immediacy of the three remaining public wells was overlooked. One writer suggested constructing a temporary facility on the common to be funded by the House of Assembly or otherwise private subscription, however, this suggestion was evidently ignored.⁵⁰ Shortly thereafter, two other facilities were named as cholera hospitals, a large house in Halifax's north end near the dockyard and the north wing of the Government House.⁵¹



gave the public on Saturday last—that the Central Board of Health had obtained the Governor's consent that the College should be used as a Hospital for cholera patients if Halifax be visited with that dreadful disease.—That we will have to bear our share of this dreadful scourge which is desolating other places, there can be but little doubt, and that a more central spot or one better calculated to spread the disease from, could not be pitched on, will be readily granted, when it is considered it is in the very centre of the town, within less than a hundred yards of the Post Office, where so many of our commercial men have frequently to go, and about two hundred yards from St. Paul's Church, which is more numerously attended than any other place of worship in the town. Why is not a temporary building erected on the common which could be run up in a very few days? Is

Figure 14: Complaint about the placement of the temporary cholera hospital. SOURCE: NSA Acadian Recorder 7 July 1832. Microfilm 5206.

The dissenting opinions toward cholera hospital locations necessitated a published response from the Central Board of Health on 14 July 1832.⁵² The Board restated the importance of the facility, based on experiences from Boards of Health in other nations, especially regarding the treatment of the poor due to their overcrowded homes. The approval for the hospital's location overrode miasmatic concerns as the site favoured a proximity to the greater number of Haligonians, particularly the poor, for rapid treatment. In fact, the public statement made by the Board further addressed the issue of establishing temporary hospitals beyond the town's central area by noting the ineffectiveness of the isolated temporary shelters in other regions such as Quebec and Montreal, which were aptly known as "dying sheds" (Godfrey 1968, 23). Estimates were that these sites facilitated further loss of life at the cost of attempting to segregate emigrants from the local population.⁵³

Notwithstanding the publicly applauded efforts made by Lieutenant-Governor Maitland, citizens still recognized the overwhelming amount of filth accumulating in Halifax during the summer months.⁵⁴ In particular, the effort to clear away waste had limited effect in the poorer regions of the town, such as the upper streets of the city's centre to the east of Citadel Hill. The inability to keep this area clean was also attributed to the overcrowded situation in which Halifax's poor found themselves. By the 1830s parts of Halifax astonishingly had upwards of 276 people per acre in the denser areas (Punch 1981, 24). In comparison, New York city in 1850 reported 163.5 people per acre in the same analysis. An 1842 watercolour from Alexander Mercer captures the built density in Halifax during this period and although no people were included, the number of overlapping dwellings betrays the town's closeness (Figure 15). In mentioning a town

“now swarming with a needy population,” one anonymous writer, who named themselves *An Old Inhabitant*, suggested that “part of the population of those crowded streets could be removed to some convenient place on the peninsula, or elsewhere.”⁵⁵ before cleaning and fumigating the overcrowded districts to prevent the disease from appearing in the town. These statements indicate a growing dissatisfaction with the number of poor in the city and a perception that the poor were unable to act in preventing cholera from appearing among themselves, such as by maintaining cleanliness.



Figure 15: A view of one courtyard area among the packed together buildings in central Halifax.
SOURCE: Mercer, Alexander Cavalié. 1842. View from the 1st Floor Window, Halifax Hotel. Watercolour. 33.3 x 24.6 cm. Library and Archives Canada, Ottawa.

Immigrants were also becoming grouped among those unable to prevent cholera from appearing among their number. As the disease struck Upper Canada, migrant groups were reportedly forced away by municipalities, having to camp in rural areas or isolated

islands.⁵⁶ In Brockville, Ontario a ship carrying immigrants came ashore, where police granted the crew access ashore while delivering the “strangers, during a chilling rain storm, to an uninhabited island, where no shelter or provision had been provided for them.”⁵⁷ These behaviours were reflective of the opinions among some of the governing elite in North America. The *Acadian Recorder* included a quote from the New York Governor stating that, “It is certain, that a very malignant disease, in its type resembling the much-dreaded cholera, is ravaging the hordes of squalid emigrants which have been recently disgorged from transport ships near our borders” before recommending more stringent measures of quarantine. The governor concluded by saying that, “an infinitely wise and just God has seen fit to employ pestilence as one means of scourging the human race for their sins.”⁵⁸ Here, the governor associated migrants with the sinful and infers a misguided justification of their plight. As the disease raged in major cities, these associations became a prevalent theme in the news, developing a framework of belief among the readership (Walton 2007, 198), although not everyone held these misplaced ideologies. Rebuttals to the above commentary focused on denouncing migrants as “cholera agents” and, moreover, that to neglect those foreign to the Americas was to go against Christian religious belief and practice.⁵⁹

To quell the rising association of emigrants with cholera, as epidemics prevailed in several major ports along the coast of the Americas and into the Great Lakes, the *Acadian Recorder* began deliberately advocating against these misconceptions. Stating in an article titled Humanity that, “Emigrants are not more liable to cholera than others,”⁶⁰ denoting an attempt to remind Halifaxians that prejudice did not prevent cholera. The conduct of many terrified North American colonists exhibited a form of ‘othering’

towards newly arrived citizens that resulted in healthcare and immigration mismanagement. Whereas news also attempted to equally leverage blame on the wealthy landowners and laws in Europe which forced the poor to the Americas, and the growing perceptions linking migration to disease. Yet, these attempts were followed immediately by passages connoting the popularity of alcohol among the poor and immigrant groups, especially rum. In the latter case, the writer does so because they believe “it is too visible amid the droppings of emigration here, and no doubt is of corresponding importance where greater numbers land.”⁶¹ The very advocacy of temperance as a preventative measure became the justification of disease among a perceived drunken migrant population resulting in a resituating of blame on an “ignorant migrant” group. These latter discussions reveal the slippage from initial categorization of the most heavily effected to stereotyping of the accused cause as alluded to by Hamlin (2012, 446). Even today, fear of cholera rapidly devolves into prejudicing innocent victims whether separated by socioeconomic class or ethnicity (Briggs et al. 2003, 108).

2.1.3 Looking Toward 1834

By August, the reported cases and intensity of cholera outbreaks in New York, Boston, Quebec, Montreal, and much of Europe began to decline.⁶² The fervour of reporting incidents in their greatest detail and describing the social complexities associated with the disease began to wane as attention shifted to other news. Among more local reports, council made progress in securing land to construct a public slaughterhouse on the north-west corner of the Halifax commons as a result of the growing support in removing “contagious effluvia” or smells from the central parts of town. Likewise, a further discussion about moving the poor house premisses further from the town also

allegedly took place. Framed as a “wise and benevolent measure” whereby “inmates would have purer air, and better lodgings” the much-needed update to the poor house facilities ran counter to the very objections recently given regarding placing a hospital beyond an effective distance from potential patients.⁶³ No such transfer would occur prior to or during the initial cholera epidemic in Halifax.

Rather than easing regulations, Lieutenant-Governor Maitland further reiterated the quarantine measures for all inbound vessels into Halifax on 20 August 1832. Maitland also appointed further individuals as health wardens in the town to compensate for any dereliction throughout the wards.⁶⁴ To the public, it appeared that, despite the lack of cholera in Halifax, the governing body made a continuing effort to uphold preventative measures throughout the summer and into the autumn. Maitland departed Nova Scotia in October 1832, having, along with many health wardens, officers, and labourers tasked to cleaning the streets, successfully prevented cholera’s arrival while several coastal ports suffered epidemics (Bowsfield 1985).

On 10 December 1832, Halifax suspended its quarantine order, nevertheless, by 15 May 1833, the town again re-established quarantine regulations, though only for ships arriving from Ireland in advance of migrants during that summer (Marble 2006, 159). A reflection of the misinformed associations developed between intemperance, the Irish, and disease. Cholera remained a distant reality again in 1833 as Halifax continued to wait for its inevitable arrival. In the preceding months after Lieutenant-governor Maitland’s efforts to protect the town, complacency and a lack of funding allowed the streets to fill again with detritus by the summer of 1834.⁶⁵ The cholera epidemic would be left to the incoming Lieutenant-Governor, as Sir Colin Campbell took charge on 2 July 1834 amid a

tumultuous period for healthcare and political reform, one month before the first cases in Halifax are now understood to have emerged (Buckner 1988).

2.2 The Epidemic

Halifax citizens were informed of renewed cholera epidemics appearing in Quebec, Montreal, major cities in the USA, and as close as Charlottetown, Prince Edward Island by early August 1834.⁶⁶ And the awareness of arriving emigrants from these locales raised anxieties prior to the disease's introduction into Halifax. Yet, unease among the population was not enough to open the provincial accounts to have quarantine regulations and sanitary measures in place until too late. In fact, cholera arrived largely unimpeded by the laws enacted two years prior and the delayed reaction, coupled with inability to handle rapidly blooming epidemic effects, overwhelmed Halifax in a time of political and economic downturn.⁶⁷ An unrest fueled by delayed action incited public criticism.⁶⁸ Newspapers suggested that a "town of the same size of less energetic local government perhaps nowhere exists or one where it is more difficult to get authoritative interference for the suppression of evil."⁶⁹ The epidemic followed similar courses during this period as initial cases were found among the poorest residents before expanding outward through the remaining population. Ultimately, the historical account highlights SDH patterns that are directed by public action or reaction to disease.

2.2.1 Initial Appearances

Conflicting reports regarding cholera's first appearance in Halifax coupled with confusion in diagnosing the disease and prejudices toward the migrant populations blamed for its introduction created difficulties in locating the first case in the town during 1834. By the time cases of the deadly "malignant cholera" were announced, they had

appeared among the garrison members, the poor house inmates, and sporadically throughout town.⁷⁰ The greatest initial difficulty arose from the inability to diagnose symptoms as reports of choleric symptoms occurred early in August. Physicians designated early cases as “common cholera” compared to the deadly “malignant cholera” or “Asiatic cholera” which had yet to appear in the town by their diagnoses.⁷¹ To further compound issues, the quarantine regulations established during 1832 were neglected until a meeting of the council on 9 August where Lieutenant-Governor Campbell eventually deemed it “inexpedient to enforce the Quarantine Regulations.”⁷² This meant that any individuals carrying the cholera bacterium arriving prior to this date entered the town unimpeded by a health officer’s examination of their condition.

Several vessels arriving from abroad during July and early August invited the opportunity to be considered as a conveyor for cholera. In 1849, Doctor Charles Cogswell reflected on the epidemic stating, “On the twentieth of that month (July 1834), a vessel from Quebec... entered the harbour of Halifax. During the voyage, the crew had suffered severely from bowel complaints, and one was admitted to the poor house with symptoms of cholera, of which he died.”⁷³ Cogswell does not name the vessel, although Martell (1942) provides a hint from his accounting of passengers arriving from other ports that summer. The schooner *Brothers*, having most recently departed Miramichi, New Brunswick arrived in Halifax on 17 July 1834 carrying twenty passengers. No other ship carrying emigrants from other British North American colonies was recorded by Martell (1942) during this period. Lieutenant-Governor Campbell, similarly adamant of cholera’s origin among migrants, blamed a number of shipwrecked Irish who came ashore in Cape Breton only to visit Halifax while seeking work or assistance.⁷⁴ Yet, Haligonians

exhibiting cholera symptoms only appear considerably later, even in consideration of the milder “common cholera” diagnoses previously mentioned.

A more likely alternative is the brig, *Halifax*, that arrived 7 August 1834 after a five-day sail from New York. A minor cholera epidemic took hold of New York that same summer, with their first patient admitted on 9 August (Ferris 1835, 50). Given the inability to immediately diagnose isolated cases and a lack of quarantine measures being exercised, there is a strong possibility that one individual departing New York contracted the disease and transported it to Halifax. With cholera’s two hour to five-day incubation period (Azman 2013, 435), the bacterium could have potentially gone unnoticed throughout the entire journey. The 16 August *Acadian Recorder* edition published a resolution from the Board of Health dated 12 August asserting that, “no account of any case of *Malignant Cholera* at present in existence, in any part of the town.” indicated that there were concerns regarding recent deaths in the poor house.⁷⁵ A fact supported in the Commissioners of the Poor record book which cited at their 7 August meeting that, “four men died last night supposed by the cholera and that there are at present four persons dangerously ill.”⁷⁶

The other potential source of introduction comes from the local garrison. A news article on 30 August proclaimed that cases of cholera appeared among the rifle corps as early as 5 August.⁷⁷ The listed potential causes (excessive drill practice, bad bread, contaminated clothing) are difficult to associate with interaction or movement outside the town making the appearance of cholera among the garrison difficult to trace, though the latter two suggestions are indicative of other known cholera vectors.⁷⁸ Regardless, the guard station positioned on the King’s wharf placed militia in direct contact with

incoming vessels and their passengers. The location, as the article suggests, is situated along the confluence of several newly dug sewer trenches draining from Sackville and Prince Streets up to and beyond Barrack Street.⁷⁹ Fowler (2018, 60) supports the theory of initial introduction among the soldiers. Despite this, aside from the date provided by the *Acadian Recorder*, little evidence suggests cholera beginning among Halifax's garrison.

Proximity shared between Halifax's poor and the town's regiments is a reasonable conclusion in the overlapping emergence between poor house residents, migrants, and regiments. For much of the nineteenth century, tenement housing packed a substantial portion of the town's poorer population into the upper streets, a slum area known as "the hill" (Raddall 1993, 151). Bounded by Duke Street in the north and Sackville Street to the south, Halifax's early 'slums' backed onto Citadel Hill running along Barrack (now Brunswick) Street and reached as far downslope as Argyle Street by the 1840s (Fingard 1989, 18; Fingard et. al. 1999, 59-60). The barrack buildings were located on either end of "the hill," with the south barracks adjacent to the poor house facilities (see Chapter 4, Figure 36). Soldiers and sailors alike frequented the upper most street, Barrack, commonly referred to as "Knock Him Down" Street, for its array of grog shops, brothels, and boarding houses (Akins 1895, 158). This close association between the tenement and boarding house residents, and regiments, alludes to the simultaneous rise in cases among the poor admitted to the Poor House Hospital and the military early in the epidemic. The delay in declaring quarantine regulations and announcing cholera's arrival ultimately presents the appearance of dual origin in Halifax.

During initial epidemics, cholera struck with such a regular pattern, first and foremost among the poorest class, that many assumed wealthier classes had poisoned the water in these areas (Briggs 1961, 85). Rapidly perceived as a tactic to suppress the rights and freedoms of the poor through deliberate introduction of sickness throughout impoverished neighbourhoods (Briggs 1961, 88), the origin points in Halifax come as no surprise. The physical realities of tenement housing and general infrastructure now linked to the disease's proliferation were more superficially applied in the conjuring of prejudice and ideologies toward hygiene and disease. As in the contemporary instance of the Venezuelan outbreak, news of cholera's advance was announced months before its arrival. Such advance awareness provided ample time for the creation of stigmatizations and expectations regarding where cases would initially occur (Briggs et al. 2003, 6-7). The resultant effect was an expectation of deaths in the poor house with little concern for raising an alarm in the town even while four deaths had already occurred in the general population by 7 August. SDH provide the means to recognize these patterns today; however, in a less scientific way, they were already recognized in this period, though little effort was exerted in attempting to remedy institutional weaknesses.

2.2.2 The Epidemic Begins

Only as the disease began to markedly appear among the local regiments and throughout the town was the alarm raised about cholera's presence in Halifax.⁸⁰ And even as the disease spread, medical practitioners still debated whether the deadly form of the disease had arrived. News and government made the same reiterations of temperance, cleanliness, and peaceful behaviour as effective preventatives.⁸¹ As such, damnatory allegations of public intoxication permeated initial reports of Halifax's cholera epidemic.

To individuals advocating temperance, the actions of some appeared to invite the pestilence into Halifax.⁸² As a response to this, the Magistrates ordered the Commissioners of the Bridewell to construct public stocks in the market square to punish drunkenness.⁸³ Meanwhile, the ongoing struggle to locate an appropriate hospital facility continued as the number of patients and victims rose in the Poor House Hospital. The *Acadian Recorder* proffered a popularized method of treatment regarding emigrants from the Upper and Lower Canadas. “Cholera sheds” were used as a form of quarantining sick individuals, especially in the case of emigrants. Despite the suggestion to remove sick immigrants, poor house residents, and now those in town to Melville Island, the council decided on a course of action reflective of the 1832 measures.⁸⁴

The Board of Health initially set aside the “Lunatic Building” adjacent to the poor house as a cholera hospital with room for twenty-six patients.⁸⁵ Although it quickly became apparent that the facility was incapable of supporting adequate patient care and condemned for use as a hospital by doctors Almon and Sawers.⁸⁶ The Central Board of Health once again recommended Dalhousie College, despite public grievance about the proximity to other inhabitants. Campbell sanctioned its use on 25 August and not until 27 August that the college received its first patients based on the Board’s published statistics.⁸⁷ Attempts to fill positions at the impromptu cholera hospital lagged well into the epidemic as evidenced by a 6 September advertisement seen in the image below seeking to hire six nurses.⁸⁸ With the opening of the temporary hospital, the poor house admitted cases only until 28 August, finally ceasing the treatment of cholera patients on 5 September.⁸⁹ Supplementary treatment facilities, such as the school owned by the Reverend Uniacke, were also utilised, but with limited or no data (Grant and Grant 1935,

591) preserved. Other independent facilities external to the hospital, likewise, offered to treat patients with Dr. John Adamson's being the most noted.⁹⁰

As the situation continued to worsen, further sanitary guidelines ignored the capability for Haligonians to carry out the basic safety protocols. While the Medical dispensary operated by doctors Grigor and Stirling provided access to medical advice, the exceptional circumstances of an epidemic placed further strain on an already economically disadvantaged class. A cleanliness order requested all inhabitants to place gathered domestic dirt and filth in boxes or tubs outside their doors to be collected by a contractor. Yet, as pointed out by the *Acadian Recorder* in advance of the outbreak, "even some families of middling circumstances, a parcel of tubs, barrels, or boxes are not on hand for such uses."⁹¹ Readers were clearly aware that "the poor now have enough to do to live" and that "they pay more dearly than those who are at ease can imagine for every little inroad or addition in their daily tasks."⁹² Facing a disadvantage within the cramped quarters of "the hill," the regulations were unachievable for many, in an area which necessitated the most attention from healthcare professionals.

The 26 August regulations enacted by the Board of Health in an effort to limit the waste accumulation on the streets similarly reflected insensitivities to poverty. Magistrates granted health wardens the ability to fine residents from ten shillings up to £5 to "any person or persons who shall place, or cause to be placed, any dung, ashes, or offal, to the annoyance of neighborhood or passengers, or to the encumbrance of streets... or near any public streets or highways thereof, or common or in any dwelling house, building, boat, or vessel."⁹³ The open cesspits which Halifax households backed onto (Marble 2006, 168), doubtless drew attention among the cramped tenements. And

without the ability to leave waste in spare boxes or tubs, the decaying matter continued unchecked.

Given the contemporaneously understood nature of cholera, the matter of filled cesspits seems like less of a concern than Halifax's undeniably lacking supply of sanitary drinking water. For instance, one startling account of the pollution in the public wells comes from Reverend Jas. C. Cochrane in his recollections of the epidemic. In discussing the water supply, Cochrane stated that the "street pumps [were] often choked by dead cats and the other."⁹⁴ Likewise, other anonymous complaints regarding watersupply occasionally appeared in the newspapers (e.g., Figure 16). These facets are considerably intertwined as the notably dark and rainy weather that had occurred through late August and into September⁹⁵ would have washed any overflowing cesspit contents downhill or into water tables (Rebaudet 2017, 381; Rosbjerg 2020, 4576), propagating the bacteria throughout the town's lower streets. Evidently, the ineffectual recently excavated sewer lines draining downhill through the principal East-West running streets in central Halifax became the focus of disputes in newspapers, but only as it regards the odours emanating from the gratings often covered with waste.⁹⁶ What material did make its way through the gratings accumulated under the wharves and along the shoreline of Halifax creating a smell that was reported a mile from town by travellers.⁹⁷

FOR THE ACADIAN RECORDER,
PUMPS.

Mr. Holland,

SIR,—It has been matter of surprise to others beside your humble servant, that, after late alarms of fire, our public pumps should be left in such bad order. Not less than three are at this very moment, except for fire wood, not worth one straw. The one opposite the Post Office, seems to have been allowed to remain for life within its “Charley box” for the service it has done ; since the time of casing, it has been minus the bolt on which it originally worked ; that at the tank was in full operation until the workmen on the parade made their exit ; but that at the north end of the Province House, in George street, has not been in operation for the last three months at least ; and owing to some unaccountable anomaly did not receive its winter suit with its brethren.”

March 28, 1832. HYDRAULIC.

Figure 16: One anonymous individual named 'Hydraulic' complaining about the condition of Halifax's water supply in early 1832. SOURCE: NSA Acadian Recorder 31 March 1832. Microfilm 5206.

Miasmatic beliefs again influenced health care decisions in Halifax. By 30 August, the Central Board of Health began recommending fumigation of households with chlorine gas. A publication from an Edinburgh Doctor supported the practice as a method of cleaning household air, although, this measure was estimated to cost families a shilling a week to acquire the necessary items to create chlorine gas.⁹⁸ Given that the average salary for a labourer in 1836 Manchester, England was five shillings and six pence (Council of the Statistical Society of London 1841, 326), the expenditure among families that could hardly afford extra containers for waste disposal amounted to further inequities. Public money supported the burning of tar barrels throughout the city and a wagon was circulated through the streets, emitting “a powerful purifying vapour.”⁹⁹

Similarly, bonfires set throughout the city sending up “volumes of black smoke” and Dalhousie College, with a bonfire lit out front covering the structure in black ash, would have been a horrific sight “with its ominous looking attendants peering from the doors and windows, and the flitting in and out of its professional directors.”¹⁰⁰ Marble (2006, 162) also noted that the burning tar and chlorine gas throughout the city would have created an assuredly darkened atmosphere throughout September.

2.2.3 Treatment of the Poor

Early in August 1834, the situation at the poor house was dire. The Commissioners of the Poor House reported that “it is quite impossible to separate the sick and well from each other.”¹⁰¹ Among the 216 residents at that time, there were two dead and two new cases of cholera as they desperately sought to transfer the healthy inhabitants to a different facility despite misgivings about cholera’s severity at this point. The 12 August briefing discussed the construction of two large sheds on the poor house property such that new applicants to the poor house could be housed there instead; however, no further mention or record of the construction can be found.¹⁰² Thus, well before the town began to acknowledge the severity of the epidemic, cholera already caused several deaths among the poor.

Before Halifax Council appropriated Dalhousie College, it was evident that the situation among the poor had reached a critical point. For instance, the space set aside in the poor house facilities for cholera patients lacked sufficient staffing and space.¹⁰³ Even as facilities were transferred to the college building, staffing continued to be an issue with an advertisement appearing in the newspapers as late as 6 September (Figure 17). And, following practices from past epidemics, poor house inhabitants were employed in

making coffins (Simpson 2011, 46) to offset the rapidly deteriorating conditions within the facility and throughout the town. The August accounts show 101 large coffins and fifteen small coffins assembled and sold from the poor house.¹⁰⁴ Many of which likely carried away fellow poor house inmates as it was noted that individuals began succumbing to cholera by at least 7 August.¹⁰⁵ Campaigns from churches, echoing the various attempts from relief societies existing in the town, sought to distribute medicine, warm clothing, and food to the poor. For example, cholera's impacts were extensive enough that Saint George's rector, Reverend Robert F. Uniacke, began dispensing medicines to those in his parish needing assistance.¹⁰⁶ Unfortunately, the transfer of patients to the college building and distribution of basic comforts did little to remedy cholera's pervasiveness.

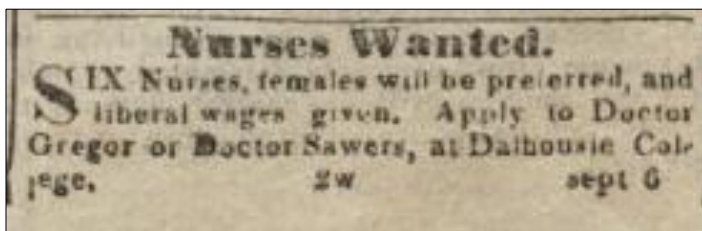


Figure 17: Advertisement seeking nursing staff for the temporary cholera hospital in Halifax. SOURCE: NSA Acadian Recorder 6 September 1834. Microfilm 5207.

The fears exhibited in earlier decades regarding hospitals and healthcare in Halifax also played a role during the epidemic. For the poor, their aversion to requesting aid or transfer to the Dalhousie College building for care resulted in many experiencing the late stages of cholera, even death, before doctors were notified.¹⁰⁷ While opinions among more affluent classes echoed in the 13 September statement from the *Acadian Recorder* that though they commiserate with the poor, their independence should be overridden. The article stated that “the feelings of the poor, their desire of independence of being near their friends and of ministering to them in their necessities should be

respected but exertions should be made to point out and remove the delusions under which they labour.”¹⁰⁸ The contrasting accessibility to private practice and home care for wealthier Haligonians evidently contrasted when regarding those living in less affluent areas. With the elevated chances of death in the poor house hospital described in chapter one, anxieties over admission to the cholera hospital were well founded. Especially as medical professions internationally continued to fail in mitigation or preventing cholera outbreaks.

Not all members of Halifax’s medical profession aligned with the belief that the poor needed to be admitted to the hospital. Bilson (1973, 326) recognized the close association between Dr. Adamson and Halifax’s poor, indicated by the list of patients treated during the epidemic. Adamson had also hosted a dispensary alongside the temporary treatment facility for cholera patients. His efforts focused on providing an accessible service to the poor where they could remain in their own homes while sick was probably preferred as they compared the reputation of Halifax’s history with providing hospital facilities. In this way, Adamson offered an extension to the service previously unobtainable beyond the Grigor and Stirling’s dispensary which wealthier Haligonians had previously enjoyed. This facet that may have contributed to the higher patient numbers through Adamson’s door during the epidemic (Bilson 1973, 326). Not completely alone in his efforts, others like Reverend Robert F. Uniacke converted his own house and stable area into a north end hospital to provide relief as well (Hill 1870, 12). For the poor, these smaller impromptu facilities and dispensaries were a solution to avoiding the poor house hospital and, in the middle of an epidemic when legislation had

mandated that those who were sick must be taken to the cholera hospital,¹⁰⁹ a way to circumvent ending up among the numerous others sick with cholera.

As noted previously, the military suffered a considerable number of casualties during the epidemic. As one of the original epicenters, the local militia lost at least twenty men to cholera before August ended (Marble 2006, 161). Newspapers reported the 1st Battalion Rifle Brigade's departure for the Sackville area, near the head of the Halifax Basin on 24 August where public reports, a week later, observed an immediate improvement among the removed soldiers.¹¹⁰ The 83rd Regiment, who shared a barracks with the 1st Battalion reported far fewer cases, however, their guard station held at the King's wharf was transferred to a hall in the Province House.¹¹¹ The latter adjustment being a reaction to the perceived effluvia rising from the sewers which terminated in proximity to the wharf. Meanwhile, the 96th Regiment, which continued to suffer from cholera, established a temporary camp on Windmill Hill and were joined by the 83rd where they resided until the week of 4 October.¹¹² The navy fared little better as the Admiral's ship, the HMS President, sailed from the city into the basin and camped ashore.¹¹³

The suggestion to transfer the sick poor to Melville Island was also fielded as a means to effectively sanitize the more destitute areas of Halifax.¹¹⁴ although the proposal only suggested a few days reprieve from the epidemic before transferees returned to their homes and, unknown, contaminated water supplies. Yet, the editorial's author felt as though the measure would get "at the seeds and the roots of the malady and for eradicating them in the most efficient manner."¹¹⁵ Again there was a perception that Halifax's poor were unable to ensure adequate sanitation among their households and

family groups without their temporary removal from the town despite efforts of other citizens and health wardens. Ultimately, this perception of a child-like incapability was leveraged onto those most suffering from cholera, subtly revoking any conceptions of individual agency among the poor. The proposed transfer leveled blame more so at the individual level rather than institutional systems which failed to support programs that enabled the poor – a fact that is more critically examined in the next chapter.

2.2.4 Treatment of the Dead

A further issue related to the rapidly multiplying dead filling Halifax's burial grounds. By early September, daily activities in Halifax had mostly ground to a halt and throughout the night the only sound to be heard was "the chaise of the doctor in one direction, the car of the sick and the truck of the dead in another."¹¹⁶ With the rising number of deceased Haligonians, the Commissioners for Public Cemeteries received approval from the Council on 3 September to seek a burial place for cholera victims. The Commissioners requested that part of the Halifax commons be made available for burials, the area later known as Camp Hill Cemetery which had been approved the year prior.¹¹⁷ Difficulties and expenses associated with drawing up impromptu boundaries for the new grounds delayed the opening of Camp Hill during the epidemic. In lieu of this delay, Council met again on 6 September, this time resolving that "all persons who shall die of the said disease [cholera] should be buried, not only with all convenient dispatch, but also, in some place at a distance from town."¹¹⁸ This was followed up with the order that, "the internment of all persons, to whom the said Disease may prove fatal, shall take place as early as possible, but in all cases, within twelve hours after death, - and in the burying ground allotted for the purpose at Fort Massey until the new Cemetery on the Common

shall be enclosed.”¹¹⁹ It seemed that disease ultimately necessitated, above all else, equal treatment for both the rich and poor in death (Simpson 2011, 78).

Resistance to poorly conveyed epidemic burial practices continues today. Abramowitz (2017, 429) noted that policies implemented by West African governments during the EVD epidemic faced substantial community pushback. Anthropological work among communities eventually encouraged a revision of the overarching protocols to ensure safe burials while remaining as respectful as possible of cultural sensitivities. The 1834 cholera epidemic was not approached with a critical analysis of the legislation enacted for the burial of deceased persons as the fears of further cases overrode religious or historical consideration.

Interestingly, during the months of August and September 1834, Marble (1999), included reference to three deceased individuals with gravestone inscriptions found at Camp Hill Cemetery: Catherine Smith, 29, died 20 September of cholera; William Woodill, 55, died 19 August, cause of death not provided; Reverend William Black, 74, died 8 September. Reverend Black is suspected to have died from heart disease, not cholera, but it does suggest early use of Camp Hill as a burying ground, including for cholera victims, despite its official 1844 opening (French 1987). Likewise, the prevalence of deceased from the cholera epidemic are also in limited representation in the Old Burying Grounds along Spring Garden Road. Counting only those described as having succumbed to cholera, only five headstones remain in marking the epidemic’s victims. One example, Michael Donovan’s headstone provides no mention of cholera, neither does his obituary in the *Acadian Recorder* (Figure 18), however, his manner of death is recorded in the Saint Paul’s burial register as cholera.¹²⁰



Figure 18: Above, photograph of Michael Donovan's headstone in Halifax's Old Burying Ground. Below, Donovan's obituary appearing in the 30 August 1834 *Acadian Recorder* edition. SOURCE: NSA *Acadian Recorder* 30 August 1834. Microfilm 5207.

2.2.5 Public Reactions to Cholera

Exceptional cases identified among Halifax's wealthier citizens were dismissed in favour of continuing an intemperance and unacceptable behaviour narrative. Affluent families could either afford the many available cholera cures, attention of a doctor, private household well access, or else flee the city. For instance, the *Acadian Recorder* announced that, "Lady Campbell and younger branches of his Excellency the governor's family are on a visit to Windsor" and likewise, "Vice Admiral Sir George Cockburn lady and miss Cockburn miss Sims and Lord Valentia are also at Windsor" in the 13

September edition. Even the Lord Bishop and his family abandoned Halifax as the epidemic stretched out from the slums and barrack buildings.¹²¹ Ironically, the repeated inference that fear invited a cholera epidemic was dismissed among the reactions of the wealthy as they fled the town. The excuse that “persons who cannot control their fears and who believe their lives to be endangered may be excused for seeking refuge” was given to accommodate their departure from Halifax as the epidemic worsened.¹²²

Fear-related behaviours are known to influence epidemiological outcomes (Abramowitz 2017, 428). The above example of abandonment, in conjunction with rampant cholera riots, provide insight into the social ecology of early cholera epidemics. The strong emotive response to cholera’s emergence, aside from other communicable diseases in the past and present, reveals historically common and consistent similarities in human reactions to these events. Fear influenced communal and individual behaviour, and response to EVD rekindled divisive inter-community entanglements between ethnicities, nationalities, classes, and linguistic groups. A contemporary example linked to cholera could be made from the Venezuelan epidemic in which discourse around nationalism, poverty, and race were utilized in media reports as cases came closer to crossing the border (Briggs et al. 2003, 32). The fear, stoked through language in reporting, advanced and enhanced emotive reactions, whether it was the abandonment of communities or prejudicing of ethnic groups.

Despite clear advantages in avoiding contact with cholera or its victims, the dialogue continued to attack the poor for their perceived deficiencies. In true Malthusian form, the concentration of cases among the poor in comparison to those of “comfortable and excellent habits,” was the fault of “filthy and intemperate habits” born of

incompetence.¹²³ Such comparisons continued to reflect opinions in Britain as the New Poor Law passed in 1834 which denied funds to stigmatized individuals (Hood 2010, 12). Additionally, the poor were divided between those with good dispositions seen as capable of rising above their station and contrasted with “the filthy and vicious.”¹²⁴ With cholera’s appearance among the elite despite these beliefs and their subsequent retreat from infected urban centres, public doubts of earlier assurances regarding the causes of cholera arose. The meager plight of the wealthy in contrast to the poor, however, shook assumptions of temperance and “correct habits” as preventatives against the disease.¹²⁵

Not all Haligonians were apt to abandon those most adversely affected by cholera. Several active societies discussed above represented a greater effort to support individuals unable to supply themselves with basic necessities. Cholera’s presence amplified the inequities throughout the town and beyond the delivery of common goods. Donations and subscriptions were taken up to provide medicines and exercise sanitary measures for the poor.¹²⁶ As case numbers continued to climb and the effects of cholera began to wear on the town, the Council co-funded a soup kitchen whereby health wardens were supplied with tickets to distribute among the most destitute families.¹²⁷ The devastating effects of the epidemic were still present well into October as a Mr. Seriven took over the soup kitchen to continue providing the poor with meals after the Council terminated funding.¹²⁸ As noted by the *Acadian Recorder*, “those who were sick and poor could not fly” from the town and were subjected to the entirety of the epidemic. The philanthropy of subscribers and donators supplemented the grossly underfunded social support systems and undoubtedly prevented further loss of life during and after the epidemic.

2.2.6 Nearing the end of the Epidemic

As September drew to a close, case numbers reduced sufficiently such that daily reports in newspapers were terminated.¹²⁹ The declining daily content relating to Halifax reopened the debate between miasma and contagion; specifically, the onus of emigration in bringing cholera to the Americas.¹³⁰ A brief historical account of the disease provided in one report, implied a form of responsibility on travellers regarding disease transmission. Yet, there was a continuing assertion of secondary causes, such as intemperance and uncleanness, mentioned as links to cholera's origin in Halifax. The early cases among locally stationed military conflicted with the emigrant narrative and had to be rationalized differently than the strikingly concentrated outbreaks in York or Montreal that attacked migrant and poor populations (Special Sanitary Committee of Montreal 1835, 7; Tuite 2011, 322-323). Nevertheless, cholera remained a "mysterious visitor" yet to be explained by medical means.¹³¹ One that amid the chaos and confusion of the peak epidemic weeks, left people searching for answers, and in one case, news of whether loved ones had survived (Figure 19). The slow return to normalcy looked beyond the epidemic's aftermath with hopes set on a revival of business in Halifax.

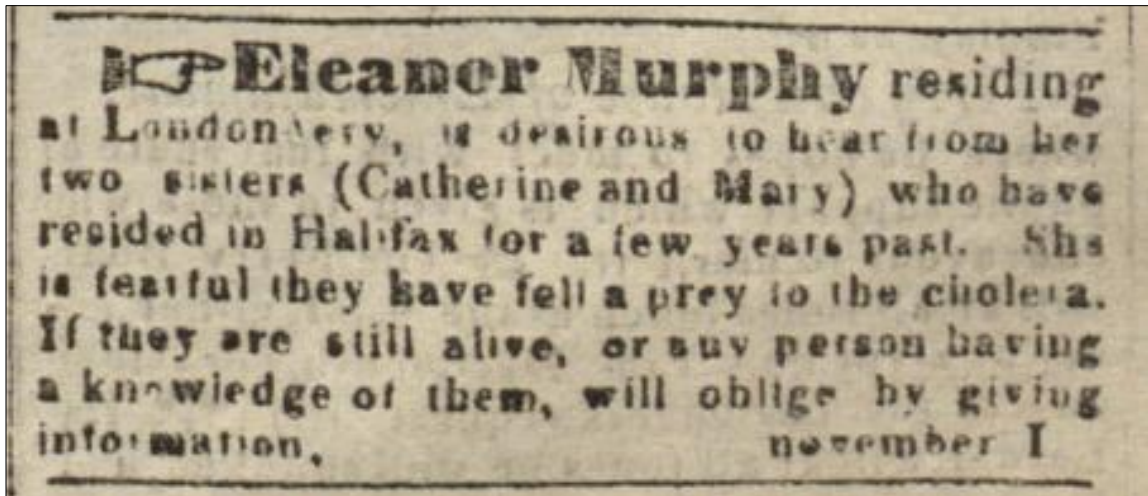


Figure 19: Eleanor Murphy seeking news about sisters Catherine and Mary in the weeks after the epidemic. SOURCE: NSA Acadian Recorder 1 November 1834. Microfilm 5207.

Cholera's wrath would continue to be felt for many inhabitants well after the epidemic's peak. Despite the declarations of improving health, cases continued for a further three weeks before the Board of Health officially declared an end to the epidemic and closed the temporary hospital.¹³² More significantly, during the final week of September, 115 children were admitted into the poor house as orphans.¹³³ Though the accounts say nothing of the number of widows admitted to the poor house resulting from cholera's decimation of the population which was likely substantial as well as subscriptions and donations were collected to aid the recently widowed and orphaned.¹³⁴ Yet, Lieutenant-Governor Campbell, in an effort to lay blame on migrants for cholera's ravages, took a separate course of action. In labeling many of the poorer residents that required support during the epidemic as emigrants, Campbell's fixation resulted in the deportation of seventy-six people who were listed on an attachment to a colonial office letter (Figure 20). Among them were Pensioners, widows, and orphans.¹³⁵ These examples show that while the epidemic waned, suffering persisted for those most impacted medically, economically, and relationally by the disease.

| Number | Name | Number | | | Total | |
|------------------|---------------------|--------|-------|-------|-------|-----------------------|
| | | Men | Women | Child | | |
| 91 st | Thomas O'Neal | 1 | 0 | 0 | 1 | |
| 52 nd | Elizabeth O'Neal | 1 | 6 | 0 | 7 | |
| 1 st | Isabella Deane | 1 | 5 | 0 | 6 | |
| 52 nd | Margaret M. Furlong | 1 | 1 | 0 | 2 | |
| | Eliza M. Furlong | 1 | 1 | 0 | 2 | |
| Wife | Mary Hogan | 1 | 1 | 0 | 2 | will provide for them |
| 12 th | Margaret M. Smith | 1 | 1 | 0 | 2 | ditto |
| | John M. Smith | 1 | 1 | 0 | 2 | |
| 52 nd | Mary M. Gardell | 1 | 2 | 0 | 3 | |
| 96 th | Barbara Downie | 1 | 5 | 0 | 6 | |
| Wife | M. Alice | 1 | 1 | 0 | 2 | ditto |
| Wife | Mrs. Williams | 1 | 1 | 2 | 4 | ditto |
| Wife | Robt. Hobb | 1 | 0 | 0 | 1 | |
| 2 nd | Charles Diet | 1 | 0 | 0 | 1 | |
| 96 th | John Deane | 1 | 1 | 5 | 7 | |
| 52 nd | William Delleate | 1 | 1 | 3 | 5 | ditto |
| 73 rd | George Weston | 1 | 0 | 2 | 3 | ditto |
| 36 th | Michael Kelly | 1 | 0 | 1 | 2 | |
| 2 nd | William Gordon | 1 | 1 | 5 | 7 | ditto |
| 49 th | John Callaghan | 1 | 0 | 0 | 1 | ditto |
| 42 nd | Edw. Smith | 1 | 1 | 3 | 5 | ditto |
| 24 th | H. J. Jennings | 1 | 1 | 2 | 4 | |
| 27 th | Thos. Leighton | 1 | 1 | 1 | 3 | |
| Family of 3 | Elizabeth | 1 | 1 | 1 | 3 | |
| 83 rd | Elizabeth | 1 | 1 | 1 | 3 | |
| | Total | 12 | 15 | 49 | 76 | |

Figure 20: List of families deported by Lieutenant-Governor Campbell. SOURCE: NSA C.O. 217/159, Campbell to Stewart, Oct. 28, 1834, enclosed in Stewart to Hay, May 13, 1835.

2.2.7 Lingering Affects and Accusations

As Halifax reflected on the outcome of its encounter with cholera, criticisms toward the lackluster governmental efforts to prevent disease in the town arose. Health wardens had faced public accusations in mid-September. The *Acadian Recorder* indicated that, “among portions of the community their existence was little better than a mockery; and that as far as they [health wardens] were concerned, the poor might lie and die unnoticed.”¹³⁶ A call for replacement followed, referencing numerous volunteers who had made efforts to alleviate some hardships among the poor. Likewise, the slowly

developing sewers attracted attention. The smells emanating from the often-clogged gratings running down main streets and the outfall collecting along the shoreline were viewed as olfactory evidence of governmental complacency.¹³⁷ The initial investment of £10,000, in the wake of cholera, seemed a poor investment of public money in retrospect.¹³⁸ The delayed reaction of enacting quarantine measures was left disregarded as these more evident failures welcomed public critique.

Finally, the Central Board of Health supplied all remaining ships at anchor with a clean bill of health on 11 October and announced cholera's cessation in Halifax. For the council, the only apparent remaining task was the closure of public programs associated with the epidemic including the Dalhousie hospital and the supplementary soup kitchen. Though contrarily to this motion, the Court of General Sessions of Halifax established Jacob Currie as Halifax's first, post epidemic health inspector early in 1835. Currie hired men and horse carts to continue cleaning the city through the following year, however, the Court abolished his position in 1838, likely due to the annual cleaning expenses (Marble 2006, 168).

As writers of newspapers appealed to the Board of Health for an inquiry into adopting future means of prevention, the financial situation of Halifax was near bankruptcy due to its ongoing expenditures.¹³⁹ Campbell's deflection of blame toward drunkenness and emigrants resulted in the House of Commons reporting on the topics of temperance and migration instead.¹⁴⁰ Marketplace stocks were finally erected for the perceived perpetrators of cholera, those who acted with intemperance, as little else was done to address the social and economic issues in the town during the immediate aftermath.¹⁴¹ As final recompense, Campbell and the Council declared 18 December as a

“public day of general thanksgiving to almighty God – that, with humbled and grateful hearts, we may acknowledge the unmerited goodness of God in removing from us the grievous disease with which in just punishment for our numerous offenses and transgressions we were lately afflicted.”¹⁴² Despite the pleas from the public, it appeared that few accommodations or inquiries were to be put forward in solving systemic issues in maintenance of the town. Solutions passed on from governing bodies appeared more to lead through force rather than support.

The result of misdirected blame from Halifax’s leadership led to amplified fears of diseased emigrants. The town’s recognition that a separate, temporary hospital in which to quarantine sick passengers rather than admission to the poor house by 1840 provided a constructive though prejudicious-driven healthcare practice (Marble 2006, 207). Ultimately, the Irish became the focus of the increasing stereotyping. Terence Punch emphasized in *Aspects of Irish Halifax at Confederation* (1981), four notable Halifax figures from the period who impressed upon Haligonians values that deliberately sought to ostracise this body of people. Among these four were highly affluent members of legal council, media, religion, and the scientific community. Thomas Chandler Haliburton, Thomas McCulloch, Abraham Gesner, and Joseph Howe furthered many well-entrenched beliefs towards alcohol and the Irish through their writing which laid groundwork for the epidemics that followed (Punch 1981, 4). A more in-depth examination into the dynamics of immigration and perceptions takes place in Chapter 3 as SDH are introduced to portray an understanding of the epidemic’s outcome.

Chapter 3: Social Determinant Frameworks and the Epidemic

Interpreting the social complexities of an event such as an epidemic is difficult without a framework within which evidence can be evaluated. And situating an historical event such as the 1834 cholera epidemic within the context of today's pandemic offers further challenges. Primary and secondary written sources provide anthropological interlocutors when inquiring into past events and can often suffer from lack of anticipated data while no witnesses remain to provide first-hand testimonials, trends and correlations. Therefore, the limitations of applying anthropological analysis are constrained by the depth of information preserved from the period. The preceding chapters sought to concentrate the relevant aspects into a narrative that can now be explored in the contemporary contexts and theory.

Before drawing out an understanding or implying lessons, theory is required to focus what written accounts remain and provides critical engagement with past experience. This research's introduction suggested that by using SDH variables to explore social conditions during an epidemic a semblance of its pathway through the population could be analyzed. As such, these inequities become a focal point in a comparative dialogue with interpretations of historical disease beyond its spatial contextualization. The merit arising from this analysis can reveal potentially persistent institutional and/or societal deficiencies wherein similar shortcomings are experienced over time.

SDH variables have long been discussed in healthcare, however, it has only been since the early 2000s that they were applied to recognize and acknowledge systemic healthcare inequities. One of the most substantial initial SDH research undertakings came

in 2008 when the World Health Organization (WHO) published a 256-page document outlining key determinants impacting variable populations. Employment conditions, social exclusion, public health programs, gender equity and equality, childhood development, globalization, and urbanization partisanship were recognized as inequities contributing to a healthcare system's ability to handle illness and disease (WHO, 2008). These factors revealed how distinctly social conditions influence healthcare decisions as much as the infection itself and potentially more so as persistent examples of inequity occur today during the SARS-CoV-2, better known as COVID-19, pandemic. Presently, the growing breadth of SDH variables continue as research uncovers additional areas of inequity and historical encounters with disease could serve as an invaluable tool in highlighting or testing new variables.

Admittedly, the WHO's list of SDH factors covers more than this condensed research was able to identify. In some cases, preserved early nineteenth-century information is too limited in scope to consider themes, such as childhood development. This research exposed some limitation in applying anthropological theory to historical events in that certain questions cannot be asked in the same ways. Yet, what remains affords an opportunity to explore select variables which can accommodate data. For example, the 1834 Halifax cholera epidemic records contain frequent references and discussions of the poor and immigrant families living in the town during the epidemic, both as victim to the disease and direct or indirect accusation as the precipitators. Therefore, in creating a more concise synthesis of the event, this research provides a focused examination of the epidemic largely situated around immigration as the primary

SDH. Other variables can be broadly explored; however, further research may better elucidate their complicity in the events preceding and during the historical epidemic.

Conclusions reached or suggested by individuals during the period were not borne of this isolated event. The notions of immigration and other biases, particularly as they relate to preventative measures of disease, arose from popular dialogue and prejudice. Although not all channels or negative contextualizations are considered in full for this research, the pertinent aspects are applied within an appropriate theoretical framework to help explain inequity in individuals' outcome with the disease.

Considering timeline of cholera in Chapter 1, the disease had yet to become even remotely understood in 1834. No bacterial knowledge, let alone a conception of waterborne illnesses, was yet associated with the disease. Moreover, this lack of bacterial understanding put citizens in 1834 on a relatively even footing regarding their chance of encountering the disease. When contrasted with contemporary epidemiological knowledge, approaches to combating cholera, and public funding to support clean water and sanitation projects, more privileged communities and countries are vastly better prepared against cholera outbreaks. In this way, a conversation of cholera today may potentially highlight different SDH variables. Some of those inequities lay in the very things discussed such as migration, poverty, or government attention to infrastructure. And likewise extending into other epidemics as intersections between these health crises become more relevant during the review of collected data, especially as differential treatment and community impacts are recognized in the news during COVID-19 (Berkowitz et al. 2020; Chotiner 2020; Diamond 2020; Pollack and Kelly 2020).

3.1 Discussing Frameworks

Attitudes towards emigrants and the treatment of the sick in early nineteenth-century Halifax described in the initial chapters attempts to portray a general overview of preconceptions that can be brought to bear on a discussion of SDH. The changing colonial landscape in Nova Scotia made arriving in Halifax a varying experience for those willing to sacrifice everything in an attempt to find a new home. On arrival emigrants were met with less open arms and available, workable land than initially presumed (Martell 1942, 7).¹⁴³ In many cases, the poor were sent out into peripheral areas of the province, meeting with greater difficulties and perpetual struggles. One notable example is the resettlement of formerly enslaved Chesapeake Bay refugees in 1815.¹⁴⁴ The previously presented research details some sentiments held by the governing bodies or individuals residing in Halifax at the time. These animosities towards receiving Europe's poor, epidemic or otherwise, advanced the core line of SDH considerations when examining the epidemic's outcome. Before these attitudes can be interpreted, a theoretical framework is required to illuminate the broader systemic issues at play.

Much of the SDH literature until recently considered immigration as secondary to the variables outlined by the WHO due to its interconnectivity to a wide variety of systemic issues. Yet, Castañeda et al. (2015) posit that examining migration as a determinant in its own right allows for a more holistic interpretation of the factors affecting these populations. A migrant's status often limits behaviour choices and social positioning, such as the language barriers which can prevent access to resources (Fleischman et al. 2015, 94). Therefore, migrant people were, and continue to be, placed in disproportionately unfair relationships with government and institutions. Direct

admission to the poor house hospital from a transport ship prior to 1834, regardless of outcome, exemplifies this confiscation of agency.

In their article, Castañeda et al. (2015, 378-282) discuss three dominant frameworks utilized in analysis of healthcare factors affecting migrant populations. Because the primary focus from more the popularized frameworks explored below places the onus of change on the individual it is difficult to evaluate the effectiveness of these concepts in a historical context. Yet, a review of literature argues for a more extensive investigation into immigration for its role in SDH while shifting the responsibility toward supportive structures. In this way, historic examples, such as the one under review in this research, can become an area of investigation when seeking to apply SDH concepts. A brief review of these frameworks will help clarify the progression of immigration as an SDH and how it is best applied in a broad spectrum and historically situated generalized, top-down, viewpoint.

The most common framework utilized in research prior to 2015 is characterized as the behavioural framework (Castañeda et al. 2015, 378). This methodology emphasises an individual's actions and choices as what requires intervention in creating healthcare solutions. Recommendations for changing inequities examines attitudes and expectations towards health and healthcare that arise from the target population. For example, attempting to educate recently arrived migrants on domestically normalised health practices and 'culturally appropriate' behaviours towards health emulate these individual centric methods (Garcés et al. 2006, 378).

Reviewing the 1834 cholera epidemic, a solution under the behavioral framework might be to suggest ways of educating and enabling trust among migrant and

impoverished families regarding the cholera hospital. In this way, rather than treating cases at home and risking the proliferation of cholera among the household, an individual would be admitted to the hospital and reduce the bacterium's spread in the community. The resistance from many with having their family members taken to the Dalhousie College and subsequent legislative acts referenced in Chapter 2 are attempts by the government to address these behaviours. Even so, these decrees failed to address the reasons why people feared hospitals.

Beyond this observation, the behavioural framework displays minimal applicability. While it might be considered an effective approach in limited contemporary settings, such as adjusting COVID-19 awareness media for culturally diverse communities (Griffin 2020, m4860), there appears to be too little effort on behalf of the institution to make adjustments in practice. Castañeda et al. (2015, 379) suggest that this framework is also too narrow as it does not address the “upstream” issues at hand in healthcare. The result leads toward seeking a more extensive understanding of the barriers placed between migrants and health systems.

Analysis broadens with a less individualised cultural framework method (Castañeda et al. 2015, 379), though proposed resolutions again largely fixate on individualized models. This framework examines the role of an assumed group's traits, beliefs, practices, and traditions which are linked to an ethnicity or nationality. For example, this framework was applied in examining depression among migrant Korean women in the USA provoked by acculturation (Choi et al. 2009, 14). Clusters of demographically similar individuals suffered feelings of alienation and depression resulting from acculturation or biculturalism. Though these negative health changes reach

beyond direct physical or mental implication as social capital becomes an embroiled aspect of cultural frameworks (Bhattacharya 2011, 763).

This demographic-based conceptualization is evidenced in 1834 with the fabricated associations between the Irish and intemperance prevalent during the early nineteenth century. This served to alienate community members seeking to gain social capital in relation to holding positive reputations in Halifax social structure as well as toward minimising accusations of communicating cholera. The awareness that marginalized group identification becomes part of the factors influencing status as an SDH is apparent here. Furthermore, Castañeda et al. (2015, 380) note that using culturally based explanations depends on underlying assumptions which support apolitical or ahistorical models which can be seen in the outcomes of ethnic prejudices. The inferences made between temperance and susceptibility to cholera suit this model because misinformed generalizations were extracted from popular dialogue as an explanation of case concentration. And again, the second framework fails to address the overall systemic issues in Halifax during the 1834 cholera epidemic. Its focus on individual resolutions so far as to promote acculturation only addresses partial aspects of animosity between the 'local' Haligonian and newly arrived immigrants where disease and health were concerned.

Contrasted with the above models, the third framework interprets large-scale social factors that impact health by reviewing access to healthcare or examining outcomes directly associated with status as a migrant (Castañeda et al. 2015, 381). This macrostructural approach explores broader systems in place that promote inequities in care rather than focusing on the nuances of the individual. This wider approach is

exemplified in recent studies that focus on limitations in access to healthcare due to unclear status (Varga 2020, 137). Based on the data originating from general or summative sources such as council notes, news articles, or legislative acts, this framework is most applicable to the current research.

Examining SDH themes, in particular immigration, in light of the institutional and public practices offers the best opportunity to evaluate their effectiveness and draw inferences toward contemporary instances during similar events. The analysis of these broader social conceptions, rather than focusing on individual changes, can also highlight factors addressed in the above frameworks, however, conclusions drawn exist as institutional critiques. This ties into the original thesis question that sought to understand the instituted programs and resources implemented during the epidemic and whether SDH facets such as immigration created inequities.

Ultimately, highlighted aspects of the 1834 cholera outbreak included in the narrative contained in Chapter 2, with the contextualisation preceding it, are examined through the institutional structures that enabled the epidemic's outcome. From the evolution of attitudes towards migrants that shifted public policy, to addressing preventative measures that leveraged blame of circumstance on the individual using Malthusian reasoning, the shortcomings of Halifax's early healthcare system can be viewed in terms of these more publicly situated policies. Subsequently, the following analysis uses the structural model to critique the development of healthcare and actions taken during 1834, applying SDH to cast light on the importance of addressing culturally influenced governance systems.

3.2 Analyzing the Epidemic

Academic analysis of past epidemics often reveals that details neglected during the outbreak became equally important as, or more so than, the factors being considered at the time (Farmer 1996, 267). Halifax's 1834 cholera epidemic was no different. Officials initially undertook preventative measures or fixated on areas such as temperance which happened to have a loose inference to the true problem at hand, the overwhelming poverty and a lack of sanitation in the sprawling town. For example, the socio-economic inequities that created outcome differences across economic classes in several cholera outbreaks beyond Halifax wherein the wealthy were able to flee infected areas and remain at a distance until case numbers subsided (e.g., Durey 1974, 25). Other variables such as population densities of differently classes neighbourhoods led to strong associations between cholera and poverty, to the extent that much of the period's art featuring the disease fixated on this issue (Figure 21). These inequities continue to shape disease pathways and only from a retrospective consideration are many of the deeper issues elucidated. What is apparent from the cholera outbreak in Halifax is that while mitigation was undertaken with the best intentions, SDH played an unseen role in influencing outcomes. Albeit validations emerge through the biases or prejudices represented in historical data.



Figure 21: One of the many striking images that emerged during nineteenth-century cholera epidemics. In this instance the linkage between a high number of cases among the poor and their water being made openly. Pinwell, George John. 1866. Death's Dispensary. Woodcut Print. William Helfand Collection, New York.

Yet, the opinions and critiques can tread close to anachronisms in considering events nearly 200 years previous. Opinions and social practices let alone normalized patterns were reasonably different in 1834 compared with contemporary examinations of healthcare. For instance, the Commissioners of the Poor had little control over the provided facility and resources. And despite the previously noted corruption, Simpson

(2011, 125) noted that the Commissioners provided adequate care in life and death when placed in context of social services made available in early Halifax. The undeniability that similar inequities persist today offers the historical epidemic as a comparative foil for analysis. Epidemics do not appear randomly (Farmer 1996, 262) and research such as that into SDH suggests broader, longstanding systemic issues requiring resolution before global health security can be declared (Quinn and Kumar 2014, 263). Thus, the following analysis may broach anachronistic theory, however the goal is to provide a backward glance into factors not considered during the 1834 epidemic and demonstrate their unfortunate persistence into this century.

Discourse surrounding ancestry, class, and place-based inequities have shown to be determining factors in previous historical disease research (Grineski et al., 2005, 603). For instance, the analysis of TB reveals that migrants sought a remedy for their symptoms of the disease by moving to Phoenix, Arizona beginning in the late nineteenth century. Grineski et al. (2005, 604) explored the social and political structuring that stigmatized a place as well as newly arriving inhabitants. In this instance, the “poor ‘unproductive’ migrants with TB were stigmatized and excluded” while wealthier migrants were included in the growing economic structure (Grineski et al. 2005, 604). Like cholera, no cure for TB was available in the examined period and, more importantly, a diagnosis sometimes originated through social construction meaning those of a certain status were frequently not diagnosed. TB became feared not only for its detriment to human life, but the structural stigmatization forced upon the infected. In 1834 Halifax, the thriving associations between drunkenness and migrants, particularly the Irish (Punch 1981, 13), intermingled with misconceptions of temperance as a cholera preventative. Overlapping

prejudices were likely inflamed with repetitive publications arriving from Upper and Lower Canada (Godfrey 1968) of emigrants introducing cholera into otherwise safe communities.

Phoenix's TB patient migrants also underscore the structural frameworks that both influenced prejudices and encouraged the movement of people. For TB patients, the western states were advertised as places one could heal although the true impetus from marketers resided in urban and economic gain (Grineski et al. 2005, 603). Those seeking passage to North America were following European advertisements of a better economic life (Donnelly 1829, 11). Yet, the two stories share a similar design. Those perceived of low economic capability were viewed as a burden. As an example, the Poll Tax introduced in 1823 appeared to create a changing public attitude towards migrants such that if migrants could afford to support themselves through paying for this levy, then they were perceived as positive contributors. The creation of a 'Native American' political party in 1835 in direct consequence to the influx of Irish labourers exemplifies the institutional practices that supported inequities among Haligonians. That party's creation despite those immigrants being initially seen as healthy and productive, while many became paupers for lack of work (Punch 1981, 48).

Another manifestation of the idealized migrant profiles emerged in the Phoenix TB cases which resulted in the segregation of marginalized classes and groups (Grineski et al. 2005, 608). While the Halifax population at the time represented a town about a third of the size with unclear neighbourhood boundaries, some semblance of affluent separation likewise existed. The slum area, which began expanding towards Argyle Street inspired wealthier Haligonians to begin purchasing and moving to properties in the South

Suburbs and outward along Spring Garden Road. A growing middle class found its home in the Northern suburbs, particularly along Brunswick, Creighton, and Maynard Streets (Fingard et al. 1999, 59-60). Though in the nineteenth century's early period, the small walking size town of Halifax would have hosted overlap in socio-economic difference until these divisions gradually evolved (Punch 1981, 26). Ultimately, while these newly developing areas enjoyed a relative distance between neighbours, "the hill" remained a densely packed patchwork of tenements, shops, and crafts accumulating the refuse of various domestically situated economic endeavours and full of stigmatization. Apparent in the news reports and perspectives of Chapter 2, it was common to approach the poorer locations in Halifax with generalizations such that their conditions invited disease.

It is helpful at this point to contrast the description of Halifax's tenement housing, which housed the town's poorest, with accommodations advertised to those who were able to purchase independent property. Along the more densely packed streets such as Albemarle, two houses were often situated on a 40-foot by 60-foot lot, possessing two floors with an attic space each (Punch 1981, 23). Each room in the tenement was described as being in a cold and filthy condition. Fingard (1989, 20) described one such structure from 1847 in that "one room was occupied by a family of seven, a second by two families amounting to six or seven, in the third a newly married couple shared the space with a family of four, and in the fourth room lived a widowed mother and her four children." These cramped quarters afforded few if any comforts and in terms of medical practices and beliefs of the time, lacked sufficient air exchange to deter miasmas (Figure 22). Even as late as 1870, a visiting doctor noted the governmental neglect along these streets as health officials failed to make any attempt to clear away rotting waste in yards

(Fingard 1989, 20). The strain on cesspits and latrines would have been immense with the density of residents in these neighbourhoods. Upon revisiting Halifax in the early 1870s, Charles Roger described the wooden tenements along “the hill” as having remained largely unchanged from his initial stay some 38 years prior (Roger 1873, 11-13). From this portrayal, the pattern of systemic neglect which resulted in cholera intensifying among the poor during the epidemic is a brief instance that extends well beyond health concerns related to the disease at hand.



Figure 22: Though photographed in 1889, this image of New York tenement rooms displays the crowded nature of the poorer nineteenth-century neighbourhoods. SOURCE: Jacob Riis. 1889. "Lodgers in a Crowded Bayard Street Tenement--'Five Cents a Spot.'" Photograph 12,0x16,7 cm. <https://www.flickr.com/photos/preusmuseum/5389940908/in/album-72157625909173714/>.

In stark contrast, an Upper Water Street house available to let during 1834, far removed from the tenement area, serves as an example of the growing residential

differences between the upper- and middle-classes and the poor. Within Figure 23, on the left, the property advertises ample indoor and outdoor space for both economic and residential purposes. Most importantly, the house contains a private well and outhouse. Another property listed suggests that for some, in-house pumps supplied some families with direct and private access to water. Thus, on one hand the overcrowded tenement housings are met with apathy and negligence from government while, on the other hand, improving sanitary conditions are evident among wealthier citizens that can afford amenities.



Figure 23: Examples of houses available to rent in Halifax during the time period of the cholera epidemic. Important to note accessibility to private water compared to communal wells. SOURCE: Left, NSA Acadian Recorder 8 November 1834. Microfilm 5207. Right, NSA Acadian Recorder 25 October 1834. Microfilm 5207.

With the fundamentals of miasmatic theory in mind and the arrangement of residences coupled with contemporary knowledge of cholera's epidemiology, it comes as no surprise that high case numbers among Halifax's poor caused further stigmatization rather than inspiring governmental assistance. This pattern was evident with the Earl of Dalhousie's decision to use money acquired during the War of 1812 towards a college rather than expanding the poor house or hospital facilities as mentioned in Chapter 1. Without adequate facilities, or the early allocation of emergency facilities as occurred in 1832,¹⁴⁵ Halifax's poor were left vulnerable to the cholera epidemic well before it arrived in 1834. What could reasonably be pointed out from this are the deficiencies in funding through insufficient taxation that supported only the meagerest of programs for the poor.

Likewise, a migrants' social status further inflamed this problem as the town frequently refused to support those deemed the 'transient poor' (Marble 2006, 367-368).

A final case of failing leadership structures occurred in the aftermath of the epidemic. At that time, Lieutenant-Governor Campbell's deportation of impoverished and grievously affected individuals is demonstrative of inequities that are beyond the control of the disenfranchised individual. In this case, the structural and cultural formulations that led to Campbell's decision, which caused outrage among some other members of government, evidently removed any personal agency potentially afforded to the pensioners, widows, and orphans who were sent back to the United Kingdom.¹⁴⁶ Campbell's efforts to cast blame fell on emigrants themselves. People who had sought improved quality of life in Nova Scotia as political framing of differing ethnic and cultural groups obfuscated humanitarian concerns. Unfortunately, these behaviours continue today as the Texas Governor Greg Abbott blamed the spread of COVID-19 directly on immigrants in a March 2021 speech (Higgins-Dunn 2021). This theme that will be elaborated upon in Chapter 5 during discussions of COVID-19. As in the contemporary situation as well, borderlines became solidified in an attempt to prevent the distribution of disease once again. Though in both instances, travellers and migrants became regarded as disease vectors, or carriers of the virus, rather than as human beings (Seglins et al. 2020).

3.3 Trust in Medical Practitioners and Healthcare

In 1834, many Haligonians lacked trust in physicians after witnessing interpractitioner conflicts, interspersed instances of patient death, and confusing or conflicting opinions of remedies and treatments (see Marble 2006). Newly arriving

emigrants brought with them a potential other aversion discussed in Chapter 2 that had evolved into anti-medical protests. The unauthorized autopsies of deceased poor and neglect from practitioners in resolving steadily climbing deaths as the result of earlier cholera outbreaks fueled riots in many international cities (Cohn 2017, 162-163). Cultural and economic barriers presented on arrival in a small town beginning to distance itself from a welcoming acceptance of migrants created a disconnect that materialized through SDH. Thus, the same hesitencies toward healthcare systems described in research of contemporary migrant communities appear in historical analysis.¹⁴⁷

Complications referenced in the 1834 council minutes regarding removal of cholera victims from their homes by family members highlights the resistance in turning over deceased friends and family to Board of Health representatives.¹⁴⁸ Governmental response to this issue was to mandate that all individuals suffering from cholera and not able to recover in a “well-ventilated” residence had to be transferred to the cholera hospital. Defiance of the orders resulted in summoning police to intervene when necessary displaying the level of force required to carry out the measures. This description singled out the poorer Haligonians based on the above description of their homes. Unable to afford the spacious accommodations left to the subjective opinion of officials, Halifax’s poor were to be removed from their homes when discovered with cholera symptoms. Conversely, the wealthy effectively avoided the risks of admission to a cholera hospital if they desired based on these stipulations.

Similar officials who managed the poor house, a facility that suffered mortality rates shown to be ten times the value of the remainder of the town (Marble 2006, 367), operated the temporary hospital at Dalhousie College. The hospital likewise suffered an

even higher percentage of deaths during the epidemic based on published case numbers from the Central Board of Health. Of the 258 individuals listed as admitted to the college building from 27 August to 27 September, 142 died, a mortality rate of 55.0%. Comparatively, of the 736 people treated through private practices, only 181 died which reduced the percentage to 24.6%. The initial days at the poor house, 36 cases and 20 deaths, represent a similar mortality rate as in the college numbers (55.5%). The similarities between the college and poor house contrasted with the private practice values indicate a discrepancy in care. Many cases likely went unreported among the poor until too late, or not until advanced stages of cholera symptoms appeared (Enemark 2012, 67),¹⁴⁹ which doubled the effect of chances of death serve as a stark reminder that hospitals may not have been viewed as a place of healing. Despite the differences in survival rates, in death, affluence was met with equality as all burials were to occur within twelve hours of death.¹⁵⁰

One perceived escape from the cholera hospital resided in the private medical practices established and made available during the epidemic. As mentioned, Reverend Robert F. Uniacke had converted his house and stable area to provide medical relief for members of the parish regardless of affluence (Hill 1870, 12).¹⁵¹ Likewise, Dr. Adamson, referenced in Chapter 2, submitted the only remaining list of patients treated at his clinic during the epidemic that contained several members of what would have been Halifax's poorer class, Appendix A, based on occupation. Through his attempts to administer care, Adamson faced scrutiny and ostracisation from other Halifax medical practitioners for his contrasting practices with the, sometimes legal, disputes eventually leading to his departure from the town. Bilson's (1973, 330) analysis of Adamson sets him apart from

his colleagues of the time likely contributing to his openness in providing healthcare for the poor. His clinic advertised through the *Acadian Recorder* during the epidemic and Bilson's account (1973, 328-329) of Adamson's fight to keep one of the poor at home for care represent the conflicting perspectives held by the doctor, but openness towards less affluent clients.

Adamson's epidemic report evidences continued attempts to administer private care to many of Halifax's poor based on the description of professions listed. Of the trades reported among the sick and dead, labourers are the most evident, although several carpenters and masons also appear. Adamson similarly treated widows and seamen, some with no registered name, and, finally, he tended to those listed as 'Black'. Fingard (1989, 19) noted that both Black and Irish residents were drastically overrepresented among Halifax's poor and working classes with the former making up approximately 15% of Adamson's list. The Halifax ethnic representation is not divided in the 1838 census summary, however, the neighbouring village of Dartmouth provided a value of 8%.¹⁵² These values suggests that Dr. Adamson treated a higher minority percentage, whether by increased exposure rates or by his accessibility to the poor and marginalized. An 1840s report observed that these inhabitants, especially Black community members, were left in the most poverty stricken conditions might be testament to either conclusion (Fingard 1989,19). The overall perception of Adamson's clientele list supports a theory that he largely addressed poorer patients, those seeking medical attention external to the cholera hospital.

Examining the reported mortality rate from Adamson's clinic offers some indication of his success in comparison to the above mentioned values. During the

epidemic, 174 of Adamson's 198 patients successfully recovered. The dramatically lower 11.7% mortality rate more than halved the total values provided by private practice. Despite these values, Adamson's opposing treatment methodologies coupled with his forceful resistance to having patients he visited removed to the hospital by health wardens, cost him his career in Halifax. Yet, his theory of restoring heat and, more importantly, moisture, to a cholera patient (Bilson 1973, 326), may well have saved the lives of many poor in Halifax. The mortality rates presented are a testament to this possibility.

Other persistent structural deficiencies existed for doctors during periods of normal operation let alone while combating an epidemic. In 1834, financial burdens of disease among the poor or ill were often handled via remuneration for services. The Halifax council allocated payments for certified officials to visit arrival international ships as part of a mandated protocol during periods of declared quarantine. Otherwise, remunerations were made based on petitions from medical practitioners after collaborating to repel outbreaks. For example, a December 1834 petition from John Stirling and William Grigor (Figure 24) sought assistance in covering medical costs for 1330 patients seen during the epidemic. This "billing" practice underscores an inability to maintain adequate fiscal support at any stage of the health care model,¹⁵³ however, remuneration was not always guaranteed. Again, it was Adamson who discovered, when petitioning for compensation after treating Haligonians, that the house committee had denied his request (Bilson 1973, 329). Despite Adamson's successful handling of patients during the 1834 epidemic, his public demeanour and relations with influential members of the medical community cost him his reputation and financially ruined him. Thus,

doctors during the period not only faced distrust among a growing patient body, but among themselves as the institution drove itself towards medical monotheism.

The petition of John Stirling and
William Grigor surgeons
Humbly sheweth
That the Halifax Dispensary
still continues under their direction in action and daily
operation and has during the present Year afforded
Medicines and Medical aid to 1330 patients - That the
Dispensary during the melancholy visitation of Cholera
was productive of great benefit to the Town by affording
to the Poor the advantages of an early application of
Medicines - That the sum of £50 granted last Year by

Figure 24: Excerpt from the petition submitted by Halifax surgeons John Stirling and William Grigor for remuneration after treating 1330 patients at their medical dispensary during 1834. SOURCE: NSA RG5 Series P Vol.42 #83.

3.4 Examining Gendered Inequities

Among the many developing SDH variables present in academic literature is gender, which plays a substantial role in the outcome of health (WHO 2008, 145). Biases arise in accessibility to resources, normative practices, personal values, and in organization of services that differentially support people. Likewise, gender becomes intertwined with other factors such as migration and poverty wherein cultures intermix and create complex socio-economic dependent healthcare issues (Farmer 1996, 264). Similarly, gender has proved to be an SDH in other communicable diseases such as TB

(Rasanathan et al. 2011, S33). For those in the nineteenth century, cholera also displayed gendered bias in the pathways it took through a population.

The 1832 outbreak in York, England followed typical patterns of cholera's emergence. A contaminated water supply in the pre-industrial area supplied the bacterium directly to the homes of many victims (Durey 1974, 11). Having begun in these confined systems the only mode of transmission between isolated supplies came from the movement of men to and from their places of employment. This meant that men were at greater risk of contracting the disease initially, shortly followed by localized outbreaks among women in the surrounding homes (Durey 1974, 11). John Snow's 1854 analysis of the St. James Parish in Westminster also showed a similar pattern and furthermore, that women were disproportionately the victims of cholera (1855, 28). For York, the role of nursing fell onto women, increasing their chances of ingesting the bacterium (1974, 11) a fact not recognized in Snow's analysis that may have attributed to the rising number of female victims. Despite the occupational vulnerability incurred by nurses, York displayed the inverse outcome which was attributed to a greater number of homeless men living in the town (Durey 1974, 13). Contrasting gendered outcomes require further analysis of these epidemics to draw better conclusions regarding the ties between cholera and gender. The gender topic is a valuable source of engagement when looking to 1834 Halifax and subsequently, the COVID-19 pandemic in Chapter 5.

The sole data set that provides a substantial sample of gendered individuals from 1834 Halifax resides again with Dr. Adamson. The report attached a suffix to surnames or he referenced "wife" in other instances, allowing for a semblance of gendered distribution in Halifax. Rather than replicating Snow's gender theory, 110 men to 59

women were represented on the report with 29 children listed without gender and two unknown sailors. Gender-based mortality rates show a relatively balanced outcome with men suffering slightly higher casualties. Of the admitted men, only 14 died providing a mortality rate of 12.7%. Among the 59 women, the six deaths amount to 10.2% deaths and nongendered children at 10.3% with 3 deaths. Snow's explanation may admittedly be considered reasonable, the size and density of Halifax likely contributed to a more balanced representation in values. If a broader period is considered, census returns of 1817, 1827, and 1838, display a relatively balanced representation of men and women in the town. Yet, women represent only 64.5% of the number of male deaths (Marble 2006, 179). This may suggest that the "closing of the gap" during the epidemic may have been the disproportionate affects Snow alluded to in his reports.

3.5 Summations

Unravelling the complexities of SDH in the 1834 Halifax cholera epidemic requires expanding beyond this thesis. Facets briefly touched on in this section hint at the very real fact that determinants beyond the control of any one individual played a role in the outcome of the epidemic. Migrant and/or gender status likely contributed to disease susceptibility although not always in direct forms. These factors ultimately acted as both culturally and socially pertinent influencers of cholera's impact in Halifax. Utilization of the SDH continues to be an effective template in modern treatment of illness (Scott et al. 2016; Burström and Tao 2020; Ataguba and Ataguba 2020; Turner-Musa, et al. 2020) as well as a reflection of historical events (Kunitz 2006; Pellowski et al. 2013, Poleykett 2018). What has been attempted here is to highlight the importance of considering SDH when approaching healthcare systems and resources so that the often-repetitive nature of

failed prevention can be reduced. Granted, SDH issues reach far beyond the scope of this chapter alone, even this thesis.

Cholera is still a prevalent disease and research is endeavouring to nullify its inequities (e.g., Khan et al. 2019; Beau De Rochars et al. 2011; Ali et al. 2012). A 2017 report from the WHO's Global Task Force on Cholera Control set out an initiative to reduce global cholera deaths by 90% and eliminate it as a threat in 20 countries (Global Task Force on Cholera Control 2017, 4). As Harris et al. (2019, 1643) note, very little progress in one country, Bangladesh, has been made since the declaration. Despite a clear understanding of cholera's epidemiology and how to resolve outbreaks; marginalization, human displacement, war, and disasters, among other factors, still present nearly insurmountable financial barriers in providing safe drinking water and sanitary measures. Historical examples of cholera epidemics may illuminate variables that expose populations to outbreaks and help inform cholera vaccination efforts on where to focus next while other factors are being mitigated.

Among the many SDH, immigration, willing or forced, is a growing concern as the movement of people internationally continues to magnify. Recent research has highlighted migration, coupled with aspects such as gender and cultural differences, as part of systemic inequities that are beyond the capability of individuals to resolve (Lee et al. 2013; Kontunen et al. 2014; Fleischman 2018; Gurrola and Ayón 2018; Stathopoulou et al. 2018). Inevitably, these critiques return to the structural framework described by Castañeda et al. (2015) whereby resolutions must come from a higher level than situating blame on the individual or cultural group. As will be described in Chapter 5, the current COVID-19 pandemic represents the broader inequities that were experienced among

differentially treated populations. Ultimately, migration, while recent in SDH discussions, is a deeply complex and longstanding facet in approaching healthcare accessibility in an increasingly globalized world.

Chapter 4: Quantifying and Spatializing Cholera in 1834 Halifax

Experiences from the 1834 Halifax cholera epidemic are found in more than the verbal accounts and comparisons of qualitative data. A closer examination of reports to create a spatialization of the epidemic's spread offers a unique opportunity to highlight emerging themes from Chapter 3 while building on new dynamics. The Central Board of Health's quantitative data published during the worst weeks of the epidemic allows for a comparison of general medical effectiveness between public and private institutions. This information offers additional valuable insight such as daily changes in active case numbers and death rates which track the disease's progression as well as case growth rates. The latter factors (disease progression and case growth rates) are also vital in understanding contemporary outbreaks such as COVID-19 (Miller 2020). Such knowledge is aided by the public availability of statistics during contemporary epidemic events.

Further examining quantitative data involves mapping geographical features important in understanding the epidemic's path. These data are enhanced with aspects of the town's built environment such as wells and sewers. Additional data, preserved in Dr. Adamson's patient record during the epidemic, offers an opportunity to evaluate the epidemic in light of one medical professional's efforts to administer care. The discussion that follows explores these quantitative resources and expresses the value and limitation of their interpretive capabilities during an historic event.

4.1 Numbers of the dead

Throughout the course of Halifax's first cholera epidemic, the Central Board of Health published daily statistics which local newspapers circulated with varying levels of

detail. Some papers released detailed day-to-day counts while other, smaller publications provided values from the day before publication. Together the 25 August to 27 September *Acadian Recorder, Journal*, and *Novascotian* issues provide a complete data series which is still available on microfilm. After cholera began to dissipate sufficiently by 27 September, the Board discontinued their public notices.¹⁵⁴ This particular data set is collected in Appendix B. Nevertheless, cholera cases continued after 27 September. For example, the cases listed in Dr. Adamson's records.

Adamson's list of cholera patients goes on until 6 October and is the only existing detailed inventory of patients providing details explored in later sections of this examination. A brief note from the Board on 11 October announced "that as there has not been a case of Cholera reported for the last two days" suggests that a conclusion to the epidemic can be inferred from this timeframe.¹⁵⁵ Thus, while the beginnings of the epidemic suffer from extensive conjecture in origin and timing, the case number bell curve reaches a partial terminus where the Board ceased their public records, Figure 25. The dwindling intake of patients on Adamson's list from 26 September on depict the few cases occurring throughout the town before cholera abated.

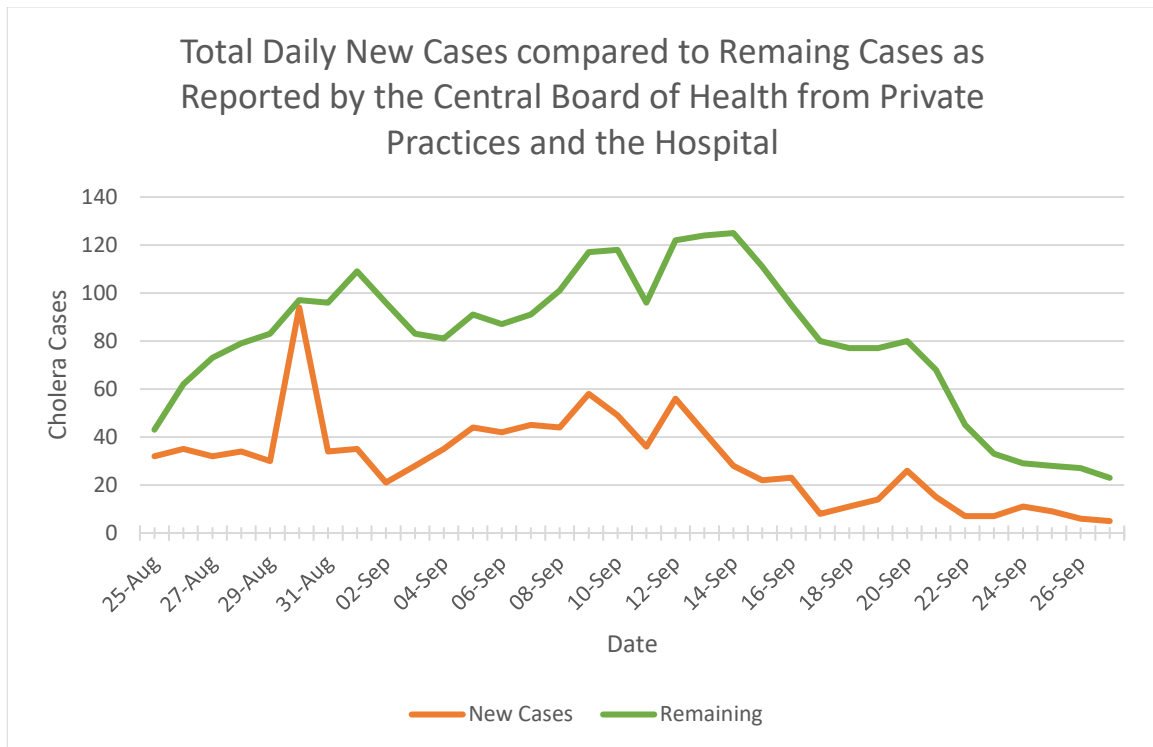


Figure 25: Comparison of New cases recorded at Dalhousie College and among Private Practices versus the remaining number of cases.

These data offer a more complete picture as to the extent of the epidemic’s presence in Halifax, though this does not include the full number of patients and victims in Halifax during 1834. The varying reports attempting to tabulate totals range from Marble’s (2006, 163) estimations of approximately 1027 cases and 442 deaths to an undeclared number of cases and 659 deaths (Cogswell 1840, 130). Resistance to external medical treatment and confusion regarding diagnosis likely contributed to many cases going unreported or misinterpreted. Though with what data exists, the curve of the epidemic can be plotted from the recorded cases of cholera, beginning on 25 August and persisting through 6 October.

The Board of Health’s published information separated statistics between three primary treatment spheres: the poor house facility, the Dalhousie College building, and private practices. Once graphed separately, the data from each classified site details the

varying outcomes in each, Figure 26. For instance, the graphed daily recorded deaths show with some regularity, fluctuations between the cholera hospital and private practices. In spite of these comparatively similar patterns, Figure 27 below shows the daily reported cases from either, which highlights the substantially higher case volume managed in private practices. What this confirms is the increased mortality rate for cholera hospital patients.

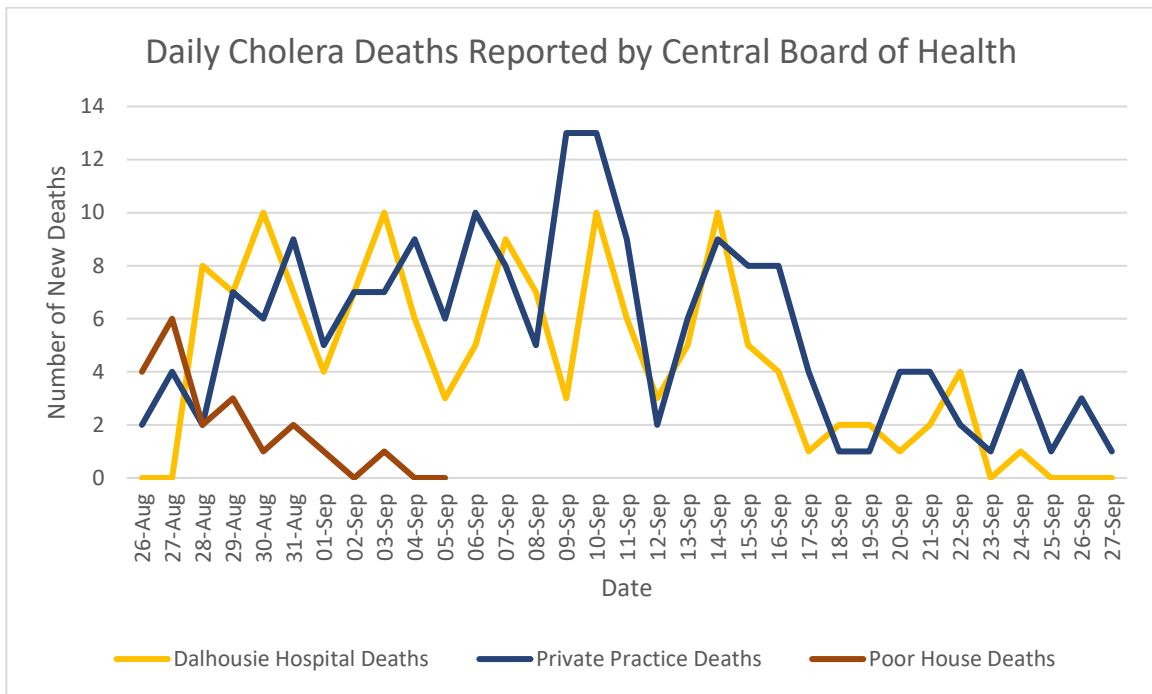


Figure 26: Comparison of daily reported deaths between the Dalhousie College hospital, private practices, and the poor house.

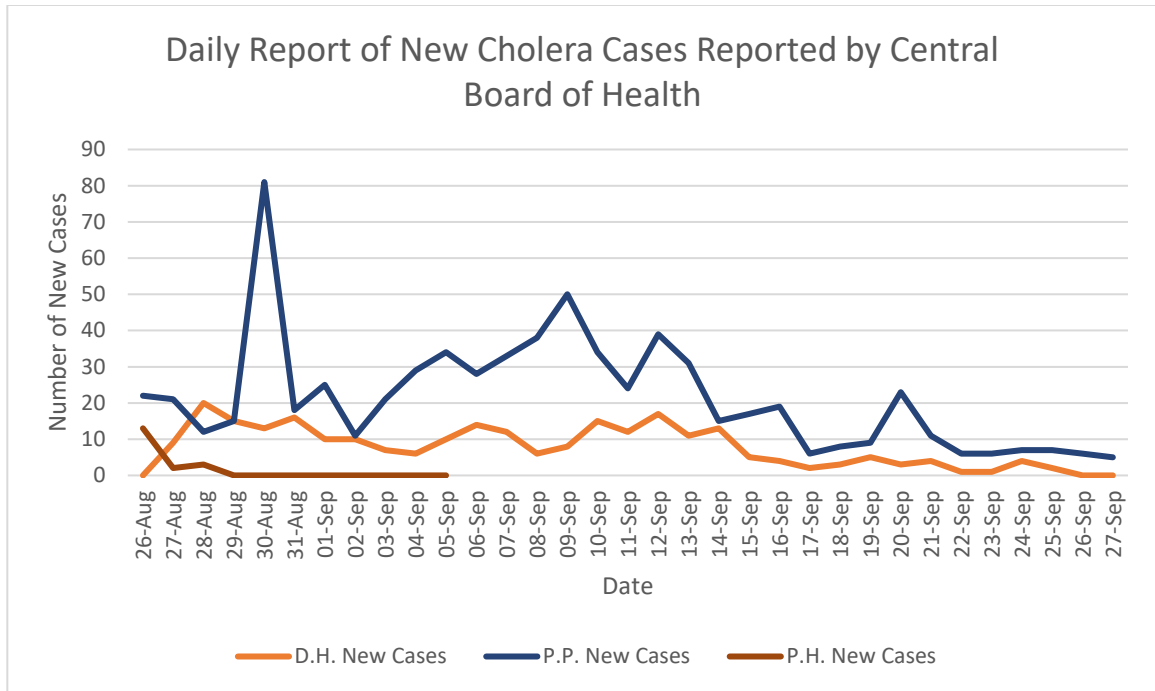


Figure 27: Comparison of daily reported cases between the Dalhousie College hospital, private practices, and the poor house.

The contrast between the cholera hospital and private practice facility in cases admitted compared to deaths belie an inequity in treatment. This may be amplified by the hesitancy alluded to regarding the poor and their trust in physicians and hospitals. Resisting removal to the hospital until the choleric symptoms had worsened beyond treatability may have caused the elevated deaths in comparison. Likewise, the concentration of cholera patients in the town’s centre increased the likelihood of recontaminating proximal water supplies, aggravating an already deteriorating condition of patients. Regardless of these difficulties, it is important to note the discrepancy in values as they reflect the SDH variables previously discussed. The more impoverished Haligonians were subjected to considerably lower chances of survival based on what data remains and are reflective of the numbers which emerge from more recent epidemics which betray case concentrations among poorer and more densely populated communities.

4.2 Mapping an Epidemic

Visualizations are a powerful medium that bring discussions to life. Today during the COVID-19 pandemic, maps and graphics are effective tools in conveying information (Hamaguchi et al. 2020,1). Whether data is broken into municipality, county, or internationally, the mapping of COVID-19 has supplied research and media alike with ample opportunity in exploring the virus' progress (Jha et al. 2021, 120679). The preceding chapters focused on what this research's accumulated data can illuminate regarding Halifax's first encounter with cholera and the subsequent SDH patterns. In this section, attention turns to what that same data can visually demonstrate.

The growing urban environment of Halifax in 1834 supported ample opportunities for surveyors to produce drawings of the town throughout this period. In consequence, the Nova Scotia Archives (NSA) still possess several quality maps from this period, each with distinctly important elements for this exercise. As reference, all maps utilized in the process of digitizing data associated with the 1834 epidemic are included in Appendix C and can be referred to during discussions providing an unobscured view of the landscape as depicted by the artist.

Map accuracy in the nineteenth century warrants a caveat as questions of truthfulness and reliability arise during any historical research. Biases emerge in written accounts and depictions of events, intentional or unintentional and these same concerns are pervasive in literature regarding historical map accuracy, often becoming the research subject itself (e.g., Reid 2012; Baker 2013; Jongepier et al 2016; Schaffer et al. 2016). For example, political motivations behind mapping Nova Scotia after the Seven Years War (1756-1763) generated multiple investments into cartographic projects as the region

became more important for both English and French empires (Reid 2021, 19). Thus, at times, features can be omitted for strategic purposes or embellished to support claims. Similarly, the cartographer's or map commissioner's motivations may alter select elements such that a "plan" may simply be just that and never have come to fruition. Despite these pitfalls, historic mapping provides ample resources and contextual details for anthropologically situated research. Bearing this in mind, the demand for critical and detailed accuracy is supplanted by the value in generating a visual framework to interpret the details provided in primary and secondary sources.

Many nineteenth-century Halifax mapping projects concentrated on the urbanization and planning of the town, while earlier works depict a more natural environment dominating the peninsula. Joseph F. W. Des Barres' 1779 *The Harbour of Halifax* and Charles Blaskowitz's 1784 *Plan of the Peninsula upon which the Town of Halifax is Situated* are valuable portrayals of a pre-urbanized ecosystem. For these cartographers, the town is situated at each map's centre, yet, capturing the natural environment's detail surpassed etching Halifax's small footprint in priority. A discussion of waterways will call attention to the significance of their preferred thematic features in light of cholera.

Human features are more prominent in later mapping. Artistically drawn landscapes are underemphasized in favour of highlighting key institutions or services throughout Halifax. Interpretive difficulties arise from such aspects as discerning what still existed in 1834 or which features had yet to be constructed reveals one of many pitfalls in presuming complete accuracy. For example, the brief discussion of Halifax's early sewer system in Chapter 2 implicates the Fuller (1851) map. By 1851, several

extensive drains existed throughout the town, however, with construction beginning around 1832 (Marble 2006, 169), many of these lines were likely not present during the epidemic. This nearly twenty-year difference without other reference makes it difficult to apply Fuller's (1851) map as a one-to-one comparative tool leaving it as a general guide to the extent of work completed by this period. Terse descriptions and miasma-based claims refuting their presence in news articles exist as the only uncovered evidence describing which drains serviced the town in 1834. Furthermore, these human-centric maps offer the opportunity to display the general dispersion of cases where, in this instance, streets are recorded in association with the deceased. This exercise follows a retrospective attempt to visualize the 1834 cholera epidemic similar to the design of earlier researchers such as John Snow (1854).

Bringing these sources together required the utilization of Geographic Information System (GIS) software. GIS is designed as a framework to store, analyze, and display multiple 'layers' of data relative to geographically referenced position (ESRI, n.d.). Likewise, GIS has been shown to be an effective tool in both historical (Hinman et al. 2006; Séguy et al. 2012; Skog and Hauska 2013; Galanaud et al. 2015) and contemporary research applications (Young et al. 2013; Valcour et al. 2016; Olanrewaju and Adepoju 2017) possessing similar contextual information to the data in this thesis. This research employed ArcGIS Pro Version 2.5 throughout. By digitizing specific information, in this case the historical data, direct comparisons can be made among the spatial relationships between various layers and sources (Figure 28). Thus, employing the detail from previous chapters and visually contextualizing the epidemic through GIS helps reveal the disease pathways that followed underlying social structures centered around SDH inequities.

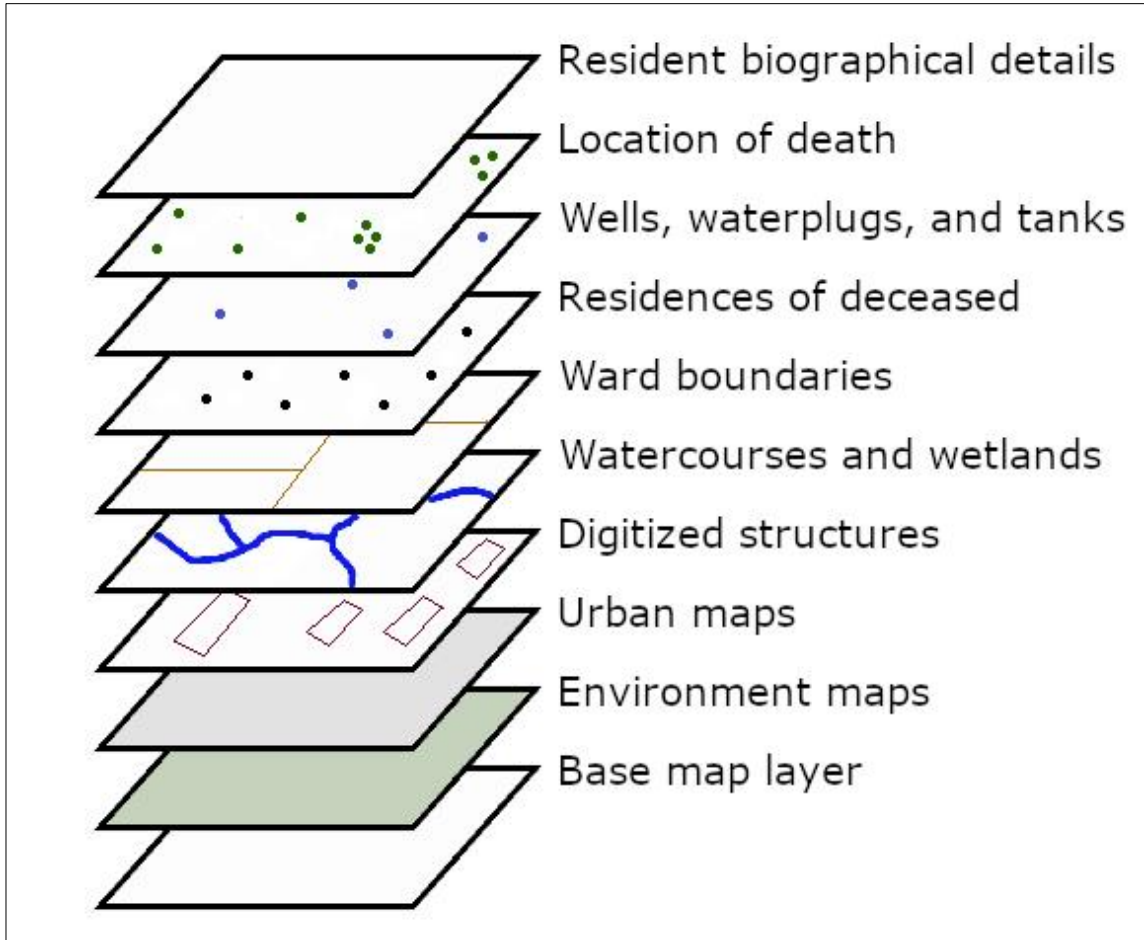


Figure 28: A depiction of the many layers potentially employed in this and similar historical epidemiological research to extract details from various undigitized data sources.

In order to discuss the necessary geographical elements below, Figure 29 displays the relevant locations and serves as a reference for topics in this section. Important buildings employed during the epidemic or otherwise used in a manner to delineate the space are coloured and labelled. The Halifax Dispensary described as at the corner of Granville and George streets, for instance (Marble 2006, 244), is identified using a generalized area on the map encompassing the intersection. The Fort Massey Burying Ground, where council approved the mass burial trenches. Torcot (1830) is used as a base map to represent the city throughout the discussion aside from the initial environmental mapping and where this map is included, the scale is kept at a consistent 1:14,000.



Figure 29: Important locations and buildings during the 1834 Halifax Epidemic using the Torcott (1830) cadastral map to overlay digitized data in ArcGIS Pro 2.5.

4.2.1 Waterways and Water Supply

While cholera is a human and, more specifically, an urban concern in this research, Blaskowitz's (1784) and Des Barres' (1779) maps provide important insight into the pre-existing watercourses across the peninsula, many of which still reside below Halifax today through a series of engineering projects to control the flow of water. The many tributaries continue to undermine infrastructure today as the rivers and streams, pushed underground into decaying Victorian era drainage systems, resurface and flood areas of Halifax during heavy rainfall (Stoodley 2020). For instance, in the area covering the Des Barres (1779) map, Reid's (2012, 35) modeling estimated approximately 82 hectares of wetlands. These extensive wetland areas, once digitized, reveal a substantial territory occupied by waterways on the historic landscape. Figures 30 and 31 show watercourse extents depicted on the Blaskowitz (1784) and Des Barres (1779) maps.

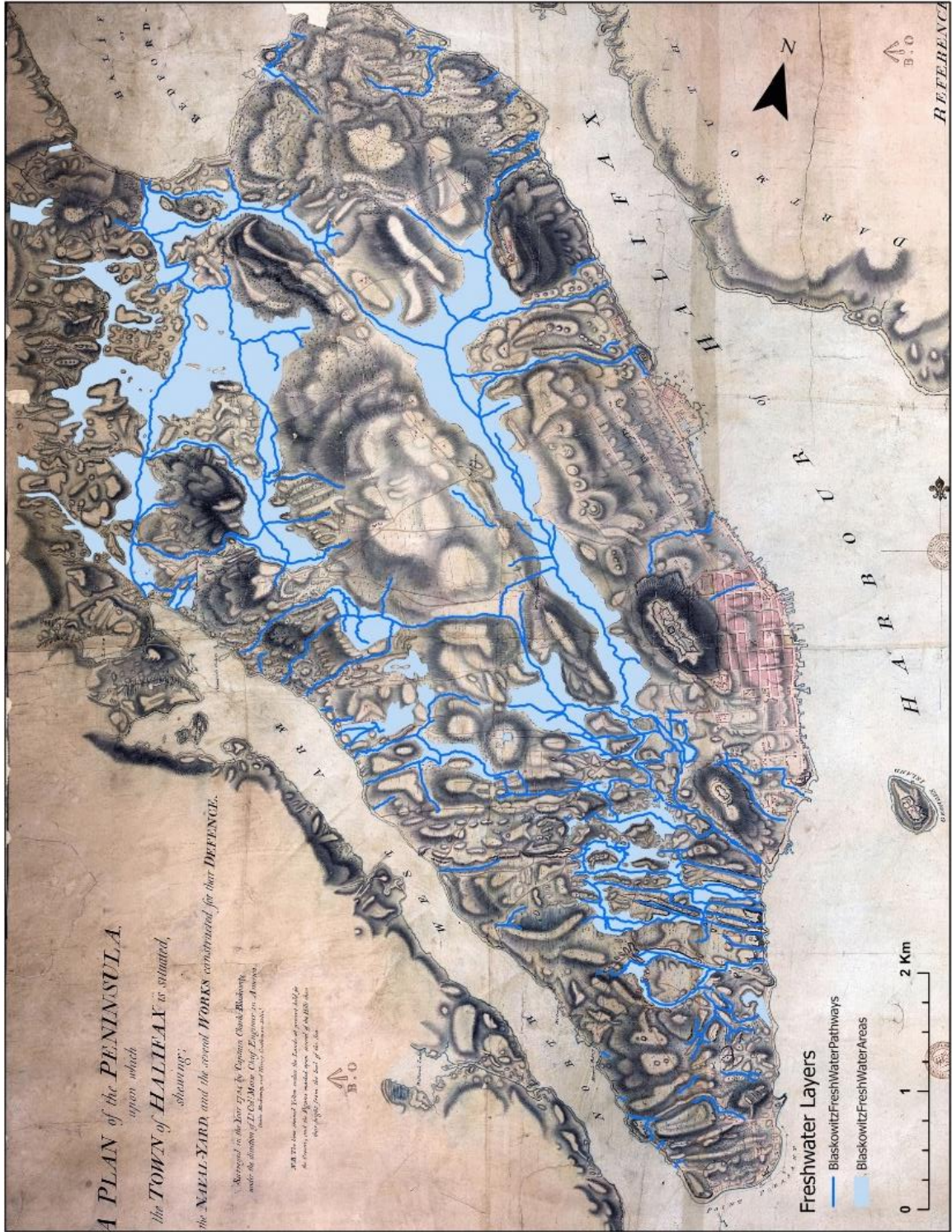


Figure 30: Digitized waterways and wetlands from Blaskowitz (1784).

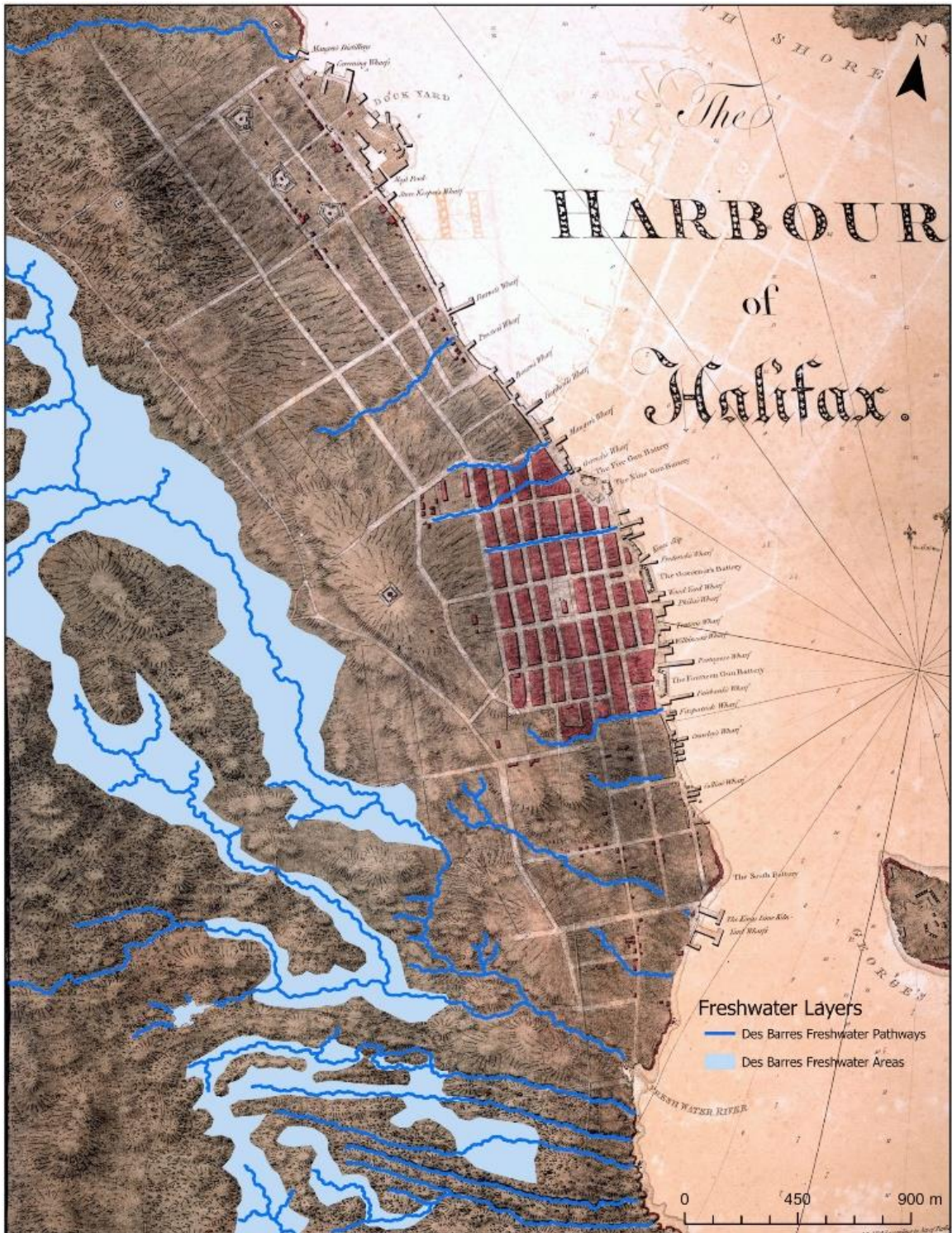


Figure 31: Digitized waterways and wetlands from Des Barres (1779). Important to note the watercourses following the East-West or downslope streets in Halifax.

Watercourses are important in tracking cholera as these avenues often become a medium for transmission (Constantin De Magny et al. 2009, 380-381; Mari, 2011, 376; Rinaldo et al. 2011, 6602; Pasetto et al. 2017, 350). The peninsular waterways provide insight into what pathways the bacterium potentially followed, or areas in which cholera cases may concentrate once it arrived in a watershed. Comparisons between the proximity of waterways, wells, and cholera cases remains an effective tool in understanding reasons behind case concentration.

In the above figures, Des Barres (1779) especially, illustrates the town's proximity to waterways. Within the north end of Halifax's original gridded streets, from Duke Street to Jacob Street and what would become Cogswell Street, Des Barres (1779) traced three watercourses along these primary roadways. The streams bookended the North Barracks and the southern most boundary of "Dutch Town" (Blakeley 1973, 4) before draining into the harbour. Likewise, a stream bounded the densely urbanized area's south end along Spring Garden Road before following Salter Street downslope. The prevalence of freshwater sources evidences some convenience of establishing a town in this location, aside from its strategic importance (for example, emphasis on military positioning in Raddall 1993 or Waite 1994). This detail stands in opposition to the vulnerability to waterborne disease. These streams represent hydrological catchments which contained a potential risk for spreading cholera among a sector of the community as waterways transmitted biological waste from the upper streets toward the harbour. The downslope topography of the waterfront area also lends itself to a similar theory of shoreline case concentration exposed by South African cholera modelling (Mari et al. 2012, 383).

Even if several community wells provided water in 1834, historical accounts reference their slowly diminishing number through the early nineteenth century before private water supply was installed throughout the town (Doane 1892, 2). Moreover, Chapter 2 highlighted the prevalence among dwellings outside the central zone of the town as possessing their own water supplies, reducing the potential for larger communal infections in these regions. Given the preponderance of wells to go dry in the summer,¹⁵⁶ Haligonians may have been tempted to seek out freshwater from freely flowing supplies in town or at its periphery such as in near commons (Figure 32).



Figure 32: View of the Halifax common in 1840 displaying the wetland area in the middleground. SOURCE: Mercer, Alexander Cavalier. 1840. Halifax Citadel and Common from Cogswell's Barn. Watercolour. 33.3 x 24.4 cm. Library and Archives Canada, Ottawa.

The plethora of water sources, regardless of risk to contamination, can be understood when layered together (Figure 33). Using Torcot's (1830) map to represent

Halifax's built-up area in 1834, the many waterways, wells, and hydrants or fireplugs are illustrated in relation to the town's residential areas. Two maps published in 1851 provided well and hydrant data. Fuller (1851) recorded a more extensive network of the plugs found in Halifax, however, the concentration of public water access still resided within the above-described waterway confines. The other map, an unauthored plan of water supplies in 1851, focused more on the central zone and the convergence of both maps allude to the town's population concentration along its original streets. As shown, the diminished number of public wells (marked in red on the map below) is evident as they appear at that time.

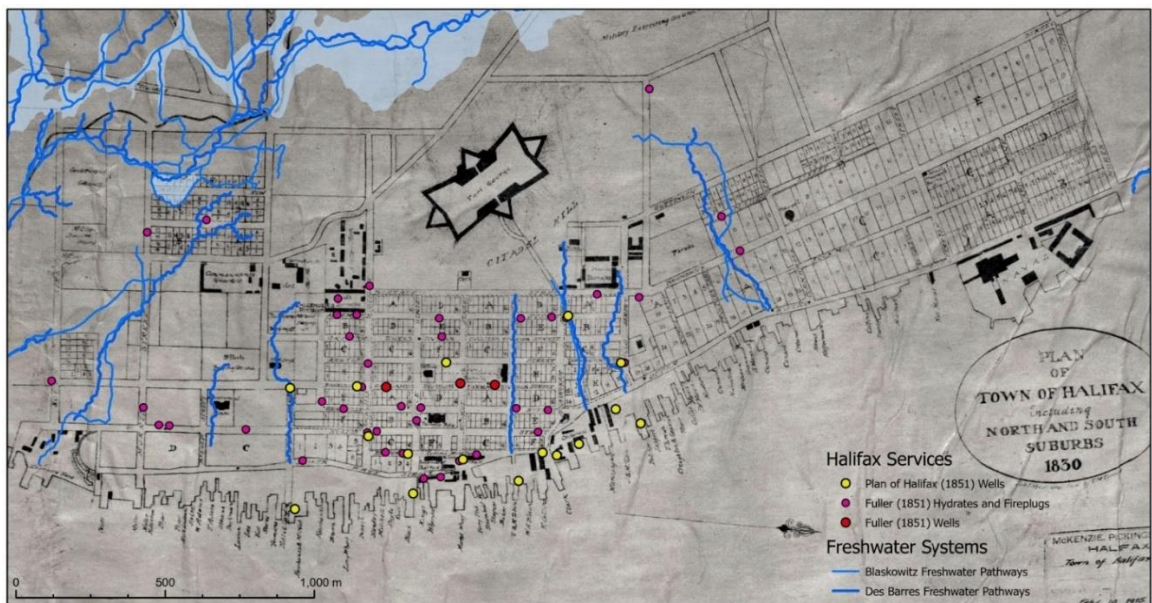


Figure 33: Halifax water service point data taken from 1851 maps combined with pre-existing waterways from Blaskowitz (1784) and Des Barres (1779). Torcot (1830) base map.

Two other major points of interest surface from this data. Firstly, the overall number of wells, particularly from the *Plan of Halifax* (1851), that overlay onto the original waterways through the town's streets. Any cholera bacterium that invaded these sites would likely have spread throughout the extent of the watercourse as it had in the London's public water supplies (Snow 1854, 23). Secondly, the remaining public water

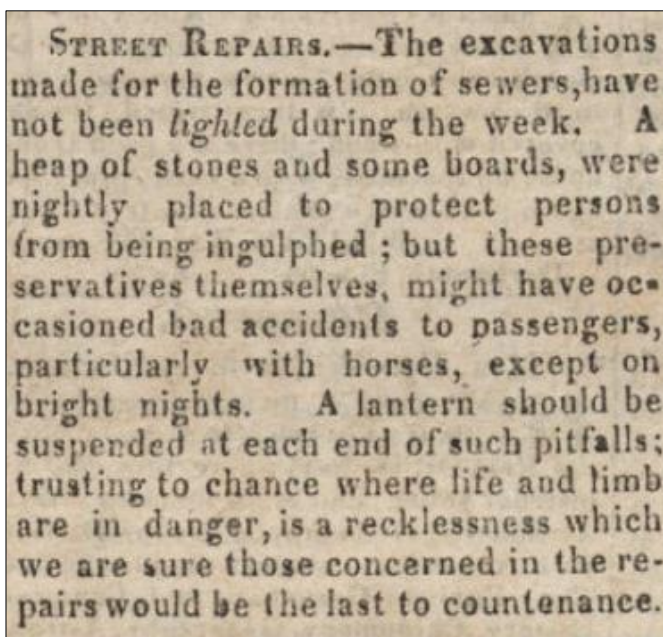
collection points in 1851 resided at the interface between “the hill,” or tenement area, and the wealthier lower streets. The town’s small size meant that those without private water supplies shared this resource extensively, expanding the potential are for cholera exposure.

From conversations in Chapter 2 of this paper, limited access to sanitary water supplies had reached a critical point by the mid-nineteenth century despite cholera’s appearance. The overshared and drastically limited man-made public collection points exacerbated Halifax’s water concerns. As the focus shifted to the implications of public waste and sewerage disposal, including suspicious odours, the unseen intermixing of these mediums belowground manifested into the town’s contaminated water. The above maps created through GIS highlight these issues helping to unravel potential extenuating circumstances leading to cholera’s rapid progress throughout Halifax. Regardless the efforts to isolate initial cases to the poor house, the watercourse that ran through the open grounds proximal to the facility may have been one of many pathways for the bacterium’s dissemination. Limited historical data can only allude to these situations and as such, the mapping of waterways and supply during this period offers indications of potential case propagation.

4.2.2 Sewers

An initial petition was made in November 1830 requesting a grant for the construction of sewers in Halifax, though no action took place until 1832 (Marble 2006, 169). As part of a movement to have the slaughterhouses moved to the town’s extremities, the sewer system was proposed again in the House of Assembly.¹⁵⁷ Acquiring funding to begin work required appropriation of funds through a Licence Bill

being passed¹⁵⁸ as well as private funding offered by Sir James Kempt (Marble 2006, 170). Work on the sewer lines began shortly thereafter as public safety complaints began appearing intermittently throughout the *Acadian Recorder*, though with no location described (Figure 34).¹⁵⁹ No clear mention as to which drains were initially dug and existed in 1834 are available. One council member, Mr. Roach, is reported to have advocated for a priority on having a drain extended from the poor house, although there is no mention of where work began.¹⁶⁰



STREET REPAIRS.—The excavations made for the formation of sewers, have not been *lighted* during the week. A heap of stones and some boards, were nightly placed to protect persons from being *ingulphed*; but these preservatives themselves, might have occasioned bad accidents to passengers, particularly with horses, except on bright nights. A lantern should be suspended at each end of such pitfalls; trusting to chance where life and limb are in danger, is a recklessness which we are sure those concerned in the repairs would be the last to countenance.

Figure 34: Complaints about the early excavation work for Halifax's initial sewer and drainage system. SOURCE: NSA *Acadian Recorder* 21 April 1832. Microfilm 5206.

The first physical depiction of Halifax sewers appears on the Fuller (1851) map (Figure 35). The effort to create an effective drainage system throughout the town by this time is apparent in the network of sewer lines which had commenced two decades prior. This research did not explore the conditions or structuring of the original Halifax sewer systems, however, contemporary archaeological assessments within the city reference numerous stone and brick sewer vaults uncovered during excavation projects (e.g., Glen

et al. 2018, 5). The same report indicates that the brick sewer lines began installation around 1862, suggesting that the earlier designs were stone constructions. Yet, no indications toward each vault's relative completion or composition by 1834 are noted in the newspapers, only that open trenches created a nighttime risk to Haligonians.¹⁶¹ A continual referral to clogged or covered sewer gratings implies some degree of completion among the 1851 drains.

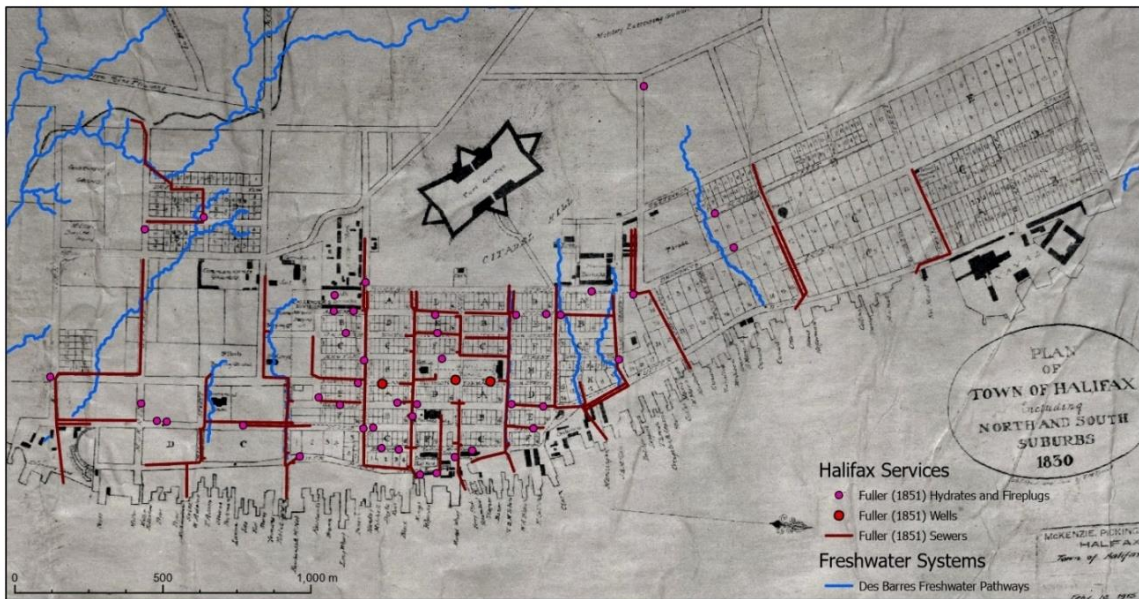


Figure 35: Water service point data and sewer lines from Fuller (1851) combined with Des Barres (1779) waterways. Torcot (1830) base map.

GIS overlays demonstrate the incorporation of existing waterways and systems in the design of the sewer lines. The two areas of particular interest in the discussion of waterways above are again highlighted as the Spring Garden Road to Salter Street waterway which is superseded by the sewer. In providing direct drainage from the poor house, this may have been the trench that Roach referenced. Likewise, stemming from the watercourses on either side of the North Barracks, sewer lines followed Buckingham and Jacob Streets along the downhill slope. Evidence brought forward in Chapter 2 remarked on the presence of an outfall situated below the King's Wharf guard station.

With no shoreline outfall for the Sackville Street line, the polluted area may have resulted from water and sewage draining from either Prince or Sackville Streets. In the latter case, this conduit passed along the South Barrack's north side, another site of early cholera cases which caused the eventual movement of regiments beyond the town. The military, however, was not displaced before the bacterium had opportunity to spread along this possible drain system, polluting any downslope water supplies such as the most southerly remaining well.

Water supplies and sewerage systems were notorious for their lack of separation during the nineteenth century until better construction practices were implemented (Brewer and Pringle 2015, 128; Luby et al. 2020, A111). Cholera's arrival, contamination of soils, and dissemination through the water table in other regions (Rebaudet 2017, 381; Rosbjerg 2020, 4576) is a pattern that likely continued among minimally insulated water supplies. This discussion only covers one medium by which cholera travelled. Case dispersion through food and soiled or contaminated clothing are untraceable elements this far removed from the epidemical event, though Phelps et al. (2017: e0006103) suggest these could be significant transmission modes.

4.2.3 Initial Case Concentrations

As discussed in Chapter 2, the initially suspected sites (Figure 36) are situated on either end of "the hill," Halifax's tenement area. This tightly woven network of the poorer classes afforded the bacterium potential short-cycle transmission routes before prevailing throughout the town. Short-cycle transmission involves household and/or foodborne vectors that are difficult to trace, even today (Phelps et al. 2017: e0006103). Without the presence of isolated water supply companies providing contaminated or

freshwater to various neighbourhoods acting as long-cycle transmission routes, such as in early London epidemics (Snow 1854, 23), discerning between transmission modes is difficult. The initial case concentration suggests greater sharing of various resources contributed to cholera's advancement, leading to a prominence of short-cycle systems once cholera was established in Halifax.



Figure 36: Poor house and barrack locations in relation to "the hill." Torcot (1830) base map.

Figure 36 depicts the poor house's location, which contained Halifax's early hospital facility, in relative proximity to the south barracks. Well and water supply maps for this period do not include any on the poor house property, and the nearest supplies are either the centrally located Barrington Street pumps or the hydrants listed on the South Barrack property. The possibility that poor house residents drew water from the western freshwater streams also remains. Yet, accessibility, especially where the South Barracks sat between the poor house and "the hill," likely contributed to case transference. A contemporary example of this pattern emerged in Haiti when human-to-human transmission contributed to an initial period of elevated cases in 2011 (Kirpich 2015,

e0004153). With the North Barracks set on the northern margin of the tenement area and military members' reputation for frequenting the establishments along its streets, these buildings may well have been collected into a singular high-risk area.

Given Halifax's limited urbanized extent and topography in 1834, the initial outbreak among these elevated zones positioned cholera to effectively disperse throughout the lower town. Ultimately, council established the temporary cholera hospital at Dalhousie College once cases were discovered among the poor house residents and the military, thereby broadening cholera's footprint, but only within the confines of the original catchments. Case distribution may not have been altered in the northern suburbs even if the governing bodies had decided to place the sick in temporary structures on the common given that waterways trended downhill into the harbour. For inhabitants in Halifax's south end, cholera may have transited along the Freshwater Brook, which still manages to partially flood Halifax today (Stoodley 2020) and intensify cases among properties along Dresden Row or further south along the watercourse. Establishing the hospital nearer the higher risk zone did, however, offer convenience in conveying patients to the facility.

Conversely, anxieties expressed by residents regarding the disease's proximity to the greater population were manifest in the decision to bury victims at a greater distance from town. In 1827, council chose to treat smallpox and typhus patients at Bank Head farm¹⁶² which resided west, beyond the commons, situated along what is today Oxford and Jubilee Streets (Withrow 2004, 5). Many of this epidemic's victims were buried at the Old Burying Ground, proximal to the urbanizing area. The inverse occurred in 1834 with the dead and dying. Burial requests rapidly overwhelmed the churches' ability to

uphold the legislative requirement to entomb deceased parishioners within twelve hours. Fort Massey's burial grounds offered comfort from unease about the dead's potential for contagion and the inevitable aroma of an open mass burial trench. Despite the fact that Fort Massey is now set aside as one of three exclusively military cemeteries (Watts 2016), somewhere beneath its surface (Figure 37) resides many victims of Halifax's 1834 cholera epidemic.

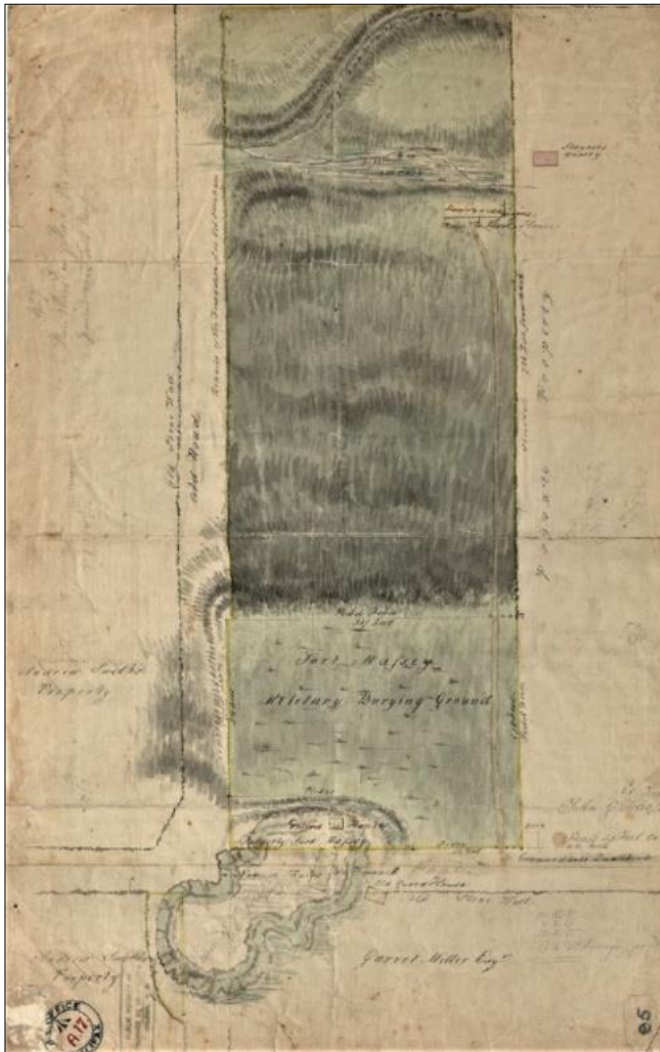


Figure 37: 1828 map of the Fort Massey Burying Grounds. SOURCE: Toler, John G. 1828. Fort Massey - Military Burying Ground. 59 x 37.5 cm (scale 55 ft = 1 in). 25 June 1828. Nova Scotia Archives, Halifax.

4.2.4 Adamson's Data

Dr. Adamson's patient report provides a crude examination of Halifax's cholera case dispersion during 1834. Archival research suggests that this is the sole case list incorporating a street of residence associated with individuals. Thus, while this data is highly valuable in plotting the epidemic, there are considerable limitations. The resultant case mapping portrays some previously described patterns associated with cholera's disease pathways such as watercourses; however, limited data and unknown biases, such as population representation in Adamson's report, accessibility to the clinic, and/or the prejudices against Adamson mentioned in Chapter 3, make the report unsuitable for a proper random sample or adequate scientific analysis.

Case values were subsequently arranged in a modified table containing a field or column for each street and rows listing the daily reported cases (see Appendix D). Despite the 201 patients on Adamson's list, only 187 individuals reported an address and, of this number, only 154 were within the bounds of the Torcot (1830) map allowing for plotting on known digitized streets or areas. Cases residing beyond the map's limits included: Three Mile House, which was situated at the contemporary Windsor Street Exchange, Fort Needham, First Street, Philips Hill (near the district of Preston), and Vernon (likely Vernon Street west of Camp Hill Cemetery). Likewise, several cases were untraceable despite a listed residence: Bigby's wharf, Brig Industry, Brig Jane, Cape Breton Steamer, Velocity M boat, and West's schooner. Other issues involving the combination of streets or general interpretations arose in organizing the data added to the GIS. The Dock Yard Gate and Dock Yard Street cases were combined and are represented along Dockyard Street. Water Street cases are combined with both Upper and

Lower Water Streets as Adamson did not delineate between the two in his report. And finally, Hogg Street was a layman term for a portion of Grafton Street along which a prominent Brothel owner lived and operated their business (Akins 1895, 158). Because no better location is available, the Hogg Street cases were placed along Grafton Street.

Furthermore, Halifax only began to add house numbers in 1843 (Fingard et al. 1999, 78) necessitating a less precise location method for mapping. The solution was to create a line overlaying each street or a polygon encompassing a referred neighbourhood (e.g., Dutch Town) and randomly plotting the associated case numbers using the Create Random Points tool. The resulting distribution of cases in figure 38 is a randomized representation of street-based case reports. Updating the data's symbology in ArcGIS Pro produced a heat map showing Adamson's patients based on the street of their home addresses.

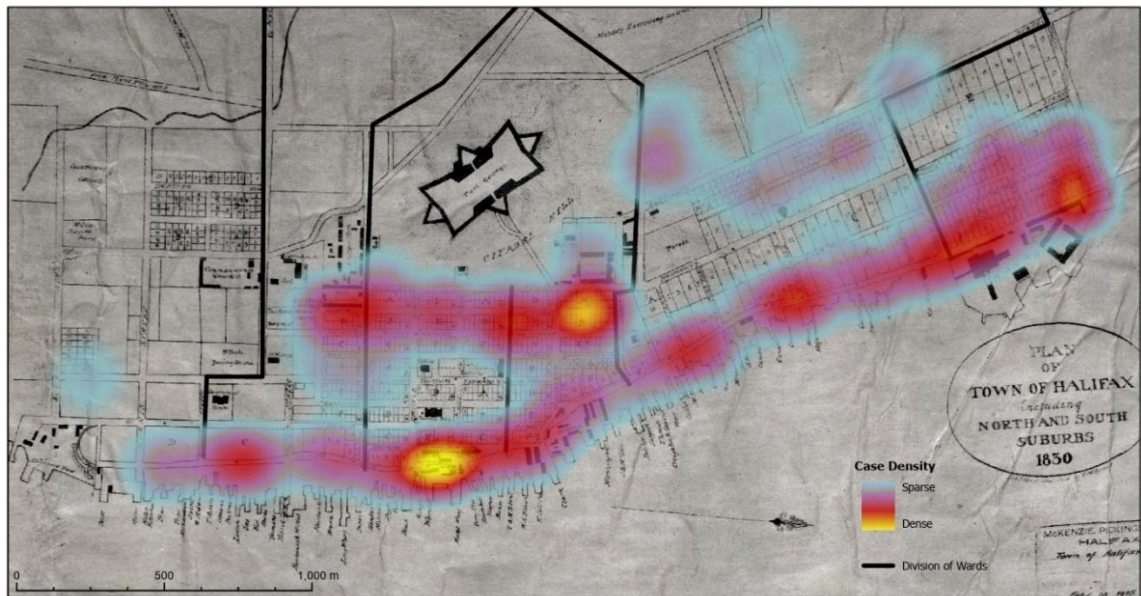


Figure 38: Using Dr. Adamson's case data to create a heat map combined with McKenzie and Morris (1841) division of wards. Torcot (1830) base map.

Principal among its values, the South African study by Mari et al. (2012) evidences a pattern of cholera cases to concentrate at the terminus of water catchment

basins. In Halifax, the highest case value based on streets reported by Dr. Adamson resided in this exact type of zone. Water Streets represent a drastically elevated number of cases despite the population concentration in the tenement area which shows the second greatest zone of concentration. This would support previously held opinions of cholera's transference downslope from the original epidemic sites via any number of watercourses. Potentially, either the newly dug sewers, overflowing latrines and cesspits, or the water table provided a conduit. The latter case cluster along "the hill" may be indicative of Adamson's preponderance towards treating the poor, an inflated or overrepresentation of cases among poorer classes in contrast to Halifax's total case numbers, or a high-risk zone during the epidemic. Regardless, without further knowledge, that detail remains unavailable. This interpretation must, therefore, be left incomplete for this research.

Notwithstanding the previously mentioned caveats regarding the data and historical mapping, the heat map presents its own issues despite being a valuable interpretive tool. The process takes non-contiguous point data, such as Adamson's randomly distributed cases, and GIS reinterprets the value as though they were a continuous layer. With so few data points, the surface of a heat map may contain larger than anticipated visual errors (DeBoer 2015, 40). This is likely the reason behind a high value return centred over the waterfront market and courthouse above (Figure 38). While it might be convenient to infer that the location of Dr. Adamson's clinic and store, situated across from the T&L Piers Warehouse beside that was beside the Market on Water Street,¹⁶³ resides in the most case dense area, this anomaly is likely only due to the random generation along Water Street itself. Likewise, Adamson recorded most of the

residents in reference to the North-South running streets. The heat map's represented apparent linearity could be attributed to this as cases were randomly plotted along similar linear spaces and did not consider property depth (recall the multi-dwelling tenement properties in Chapter 3). Finally, the scale at which the map is displayed created further errors (DeBoer 2015, 41). By changing the scale, the data representation is altered, and a smaller scale can come to display higher densities as each point is interpreted as more proximal to its neighbours given the extent of the map's surface.

Keeping the above concerns in mind, Figure 39 and Figure 40 help situate some of the remaining spatial data. Establishing ward boundaries during the epidemic allowed the council, health officers, and wardens to better organize personnel distribution throughout Halifax, though any potential interpretation based on these nontangible borders is limited based on the randomized case distribution. Figure 39 includes Adamson's case data and digitized wards in perpendicular contradiction. Had Adamson recorded residents along the East-West running streets similar to the defined wards, some semblance of detail could be ascertained in case concentration. Likewise, the small geographic footprint of the city and cholera's (among other diseases) propensity to ignore human-made borders creates further difficulties in garnering any valuable information with these layers alone.



Figure 39: Dr. Adamson's case data represented as randomized point data along the digitized Torcot (1830) roadways. Torcot (1830) base map.

A similar case can be made with the inclusion of the De Barres (1779) waterways, Figure 40. The false positives offered by random case clustering in the generated heat map below offer suggestions toward some correlation between the data. Few cases exist on an East-West running street, for example Dockyard Street in the north end of the city, or in a concentrated area such as the North Barracks. Ultimately, data limitations restrict much of the valuable interpretation potential for this research though the exercise in visualization offers a unique perspective of the epidemic not yet undertaken in this instance.

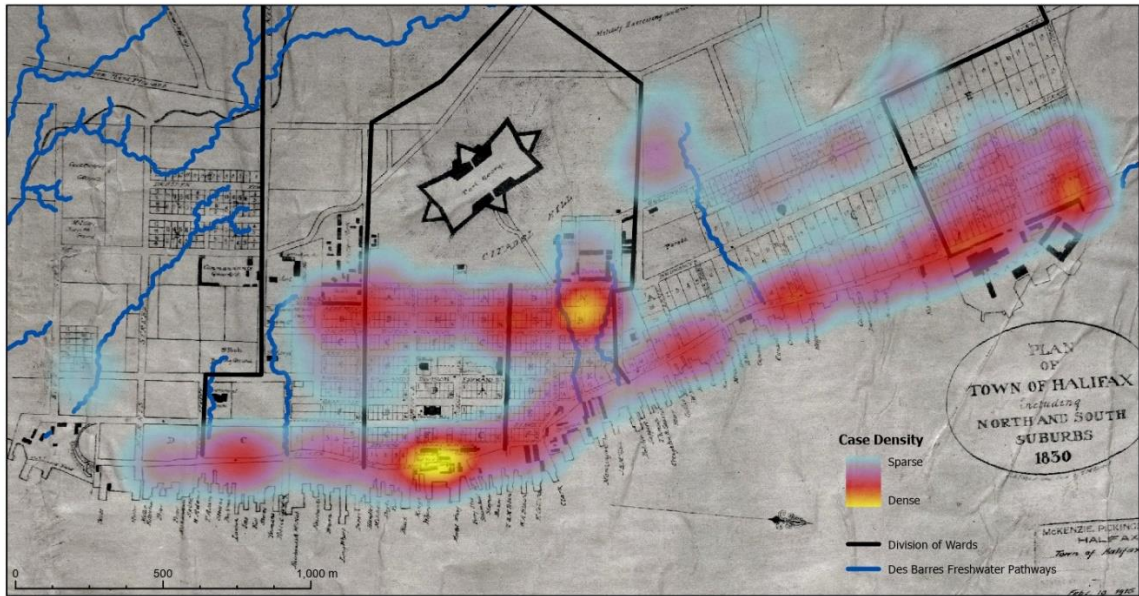


Figure 40: Heat map displaying Dr. Adamson's randomized cases with the inclusion of waterways from Des Barres (1779). Randomization has led to several higher concentration points in proximity to the waterways, however, care should be taken in interpretation of this visualization method. Torcot (1830) base map.

Halifax's mapped cases follow the general trend in cholera's appearance among contemporaneously researched outbreaks. Failing¹⁶⁴ or non-existent systems likely contributed to a common pattern that originates and spreads throughout more vulnerable population sectors as suggested with SDH with high incidence in the tenement housing area and few cases until the waterfront. In this way, mapping provides further confirmation or evidence of the SDH's influence. Likewise, the data also shows that regardless of the complex social factors, gravity may well still play an important roll in disease transmission as in this case, where it could be interpreted that the bacterium followed a path of least resistance in its spread downhill. To confirm these correlations, a more in depth analysis is required, including further time spent researching across provincial archives to uncover missed evidence during this initial analysis.

Chapter 5: COVID-19, Comparisons and Conclusions

Cholera, both historically and with contemporary outbreaks, is only one example whereby SDH influences epidemiological outcomes. The growing breadth of factors under the SDH umbrella is a testament to emerging dynamics and difficulties in health and global healthcare systems. While the underlying goal is to achieve equitable care for all, achieving that goal will continue to demand great effort. Expanding research continues to uncover new SDH variables and expose persistent disparities. For instance, investigating immigration (Lee et al. 2013; Kontunen et al. 2014; Fleischman 2018; Gurrola and Ayón 2018; Stathopoulou et al. 2018) as an influencer provides a better understanding behind medical shortcomings and possible solutions. Comparative literature emerging from the COVID-19 pandemic offers an opportunity to re-examine the social disparities from the 1834 cholera epidemic findings and evaluate current similarities. Subsequently, the structural framework concept in which solutions can be situated comes from this review, illustrating Castañeda et al.'s (2015, 381) applicability.

Comparison of past epidemics and the contemporary pandemic occurred early in COVID-19's development as media and academics alike drew attention to parallels between historical instances and COVID-19, noting their marked similarities (Gutoskey 2020; Peterson et al. 2020; Wilson 2020; Woodward 2020). For example, people began to perceive a world wherein a vaccine, or lack of one, impacts daily interactions or activities previously taken for granted (Donovan 2019; Gutoskey 2020; Patterson 2020; Tattrie 2020). Among the articles, authors used the 1918 Influenza pandemic to underscore some of the very same measures that saved lives a century ago and historic actions were emphasized for their value as preventative measures today. These articles often only

superficially approached SDH themes until recent months as data began to show inequities between communities (Diamond 2020). The resulting dialogue indicates that some enduring, yet unresolved, systemic deficiencies still exist; although there is an opportunity to learn from these illustrations.

Chapter three of this research concluded with an exploration of cholera in a contemporary setting; however, the SDH associated with the bacterium in the 1834 Halifax cholera epidemic are also persistent variables in the literature today (Lee and Dodgson 2000; Njagarah and Nyabadza 2015; Awofeso and Aldabk 2020). Despite medical advances in the treatment of cholera through oral vaccination (Jeuland et al. 2009; Ivers et al. 2015), cholera's implicated burden of disease or morbidity still looms large in global health and healthcare equity. Evidently, the factors contributing to Halifax's outcome in 1834, addressed in the preceding chapters, extend beyond cholera's influence (Woodward 2020). Equivalent concerns addressed in 1834 re-emerge when investigating health inequity patterns during the COVID-19 pandemic.

5.1 Comparing Patterns

Associations and similarities between the past and the present offer unique perspectives for understanding some of the intricate disease patterns woven into human interaction. In this instance, an opportunity to highlight deficiencies in a system that sought to provide equitable support for individuals and global communities is offered. By expanding on and focusing the content of this thesis into some of the SDH that were critical to the 1834 cholera epidemic's outcome conclusions can be compared to COVID-19.

Areas where difficulties occur in acquiring adequate knowledge of the 1834 epidemic can also be included in seeking to understand an historic epidemic event. One such example is the tracing of disease victims. The rapid COVID-19 related deaths in Bergamo, Italy through early March 2020 filled newspapers with obituaries. In most instances, the cause of death was not clearly mentioned; rather announcements alluded to circumstances of death in statements such as, “direct transportation to the crematorium” or that funerals were held privately (Harlan and Pitrelli 2020). Similar examples appeared in Halifax newspapers during the 1834 cholera epidemic. Not only did the number of reported deceased increase, but repetitive use of the term “short illness” (Figure 41) in varied forms indicates a similar pattern. Without government recording-keeping of cholera victims beyond daily numerical values, the true number and name of the deceased from 1834 remains unknown. Part of this issue stems from limited medical knowledge with diagnosing cholera cases. Yet, much of the difficulty resides in the human way in which these events are contextualized in the moment. Just as Bergamo residents understood that the growing number of obituaries were related to COVID-19, nineteenth-century Haligonians were probably aware that they were witnessing the death of their neighbours at the hands of cholera. What then appears in the *Acadian Recorder* can only be taken as a list of potential cholera victims. For instance, only three of Adamson’s twenty-three deceased patients were announced in obituaries, none of which included reference to cholera (Figure 41).

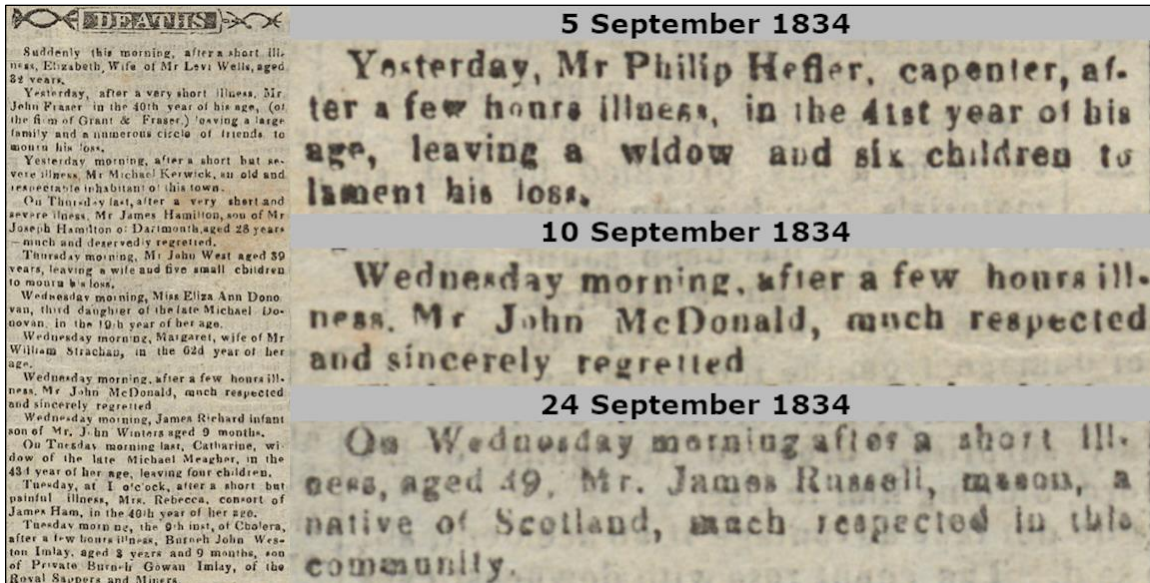


Figure 41: Left, obituary excerpt listing numerous deceased from short illnesses or cholera. Right, obituaries from Adamson’s deceased patients listed in his report. SOURCE: NSA Acadian Recorder 5 September 1834; *ibid.*, 10 September 1834; *ibid.*, 13 September 1834; *ibid.*, 24 September 1834. Microfilm 5207.

Other references, direct and indirect, made during the historic epidemic are more easily determined when analysed in the SDH contexts. Observing that infectious disease outcomes are more frequently a social problem than one of healthcare limitations, Singu et al. (2020, 8) stress that populations who live “in poverty and in neighborhoods that are overcrowded with poor maintenance and sanitation” are “disproportionately affected by COVID-19.” Themes explored throughout this paper underscore this observation and infer that any outcomes extend beyond the empirical medical treatments of those infected with cholera, or COVID-19. Persistent health conditions and socio-economic situations imposed through financial and cultural practice place undue vulnerabilities on specific populations during epidemic or pandemic events (Turner-Musa, et al. 2020, 2).

As indicated by Singu et al. (2020, 8), living conditions were impactful throughout cholera outbreaks in the early nineteenth century as much as they are relevant during COVID-19. For instance, crowded multigenerational households increase

potential for exposure in today's pandemic persist within specific populations (Burström and Tao 2020, 617). This factor is, however, only partly at fault for the disproportionate number of COVID-19 cases among Marshallese in the USA where the CDC found these communities to be more than 71 times more likely to be infected by COVID-19 (Diamond 2020). Quinn and Kumar (2020, 265-266) also suggest a correlation between household composition as a contributor to differential exposure, a situation more prevalent among minorities and people of lower socio-economic status. Again, this is reflected in the research surrounding the 1834 cholera epidemic where case numbers and deaths were purportedly primarily among Halifax's poor and ethnically ostracised.

Another example of common threads between the cholera epidemic and COVID-19 is a disinclination to seek medical attention among some socio-economic sectors of society. In referenced contemporary research from the USA, this reluctance manifests itself as a result of lacking health insurance which inhibits or deters those who view medical attention as unfeasible (Singu et. al. 2020, 3). In many cases, more affordable clinics operating in low income or minority neighbourhoods were closed due to the emergence of COVID-19, further restricting services available to a particular body of people (Singu et al. 2020, 4). Historical research indicated a comparable unwillingness and limitations within similar migrant and low-income sections of Halifax's early nineteenth-century population to seek medical attention. In this latter instance, differential access included a reduction in services available to these communities as above, coupled with a distrust of the medical body with which they had infrequent interactions apart from poor house hospital experiences.

In this way, stigmatization follows close behind perceived reluctance to seek medical attention causing an increase in unique cases. Like any fatal disease, pandemics generate fear and anxiety, often stemming from misinterpretations, misconceptions, or falsities. During the COVID-19 pandemic, those who travelled abroad or were perceived as having originated from the virus' country of initial discovery became victims of negative attention such as stereotyping (Seglins et al. 2020; Turner-Musa, et al. 2020, 2). Discriminatory practices, in the case of COVID-19, that could be related to associations of nationality with the virus were manifest through denial of care to physical violence (Cabral 2020). The 1834 cholera epidemic illuminated false connections made between intemperance, the Irish or migrant communities, and poverty which led to elevated cases among those groups. Rather than addressing the insufficient healthcare and social practices that furthered prejudices, the claims were used to rationalize, and justify, concentrations of deaths.

Reports of emigrants arriving at other North American cities and towns, wherein cholera, among other diseases, was shortly thereafter discovered, resonated with past experiences¹⁶⁵ and cemented beliefs that immigrants were primary carriers or architects of disease. This resulted in the detrimental treatment of severely impoverished people. Being turned away from landing or secluded on isolated islands while government made decisions about their circumstances became routine practice (Godfrey 1968, 15; Osborne 2008, 31). Similar circumstances were experienced in Africa during the EVD pandemic when survivors were socially isolated, discriminated against, and harassed. These patterns continued during COVID-19 (Turner-Musa, et al. 2020, 4). Today, travellers, tourists, migrants, or perceptively different people are routinely blamed for the transmission or

proliferation of COVID-19 (Grambell 2021), in particular as new variants of the virus emerge. In many ways, combating regional naming of the variants is an extension of efforts to reduce regional and population stigmatization (Callaway 2021).

Ultimately, the perpetuation of misconceptions surrounding susceptibility and transmission to any disease, including cholera and COVID-19, detracts from the critical issues afforded through SDH that cause inequity in care and case numbers. Social structuring of communities and cultural beliefs surrounding disease are described as a facet of overall health behaviours (Turner-Musa, et al. 2020, 4). Ethnic bias in medical treatments and medical research has a long history that reaches beyond Halifax's cholera epidemic. A prominent example was the damaging effects involving autopsy practices in early nineteenth-century Britain. These practices generated mistrust toward the medical system across a broad sector of the population (Burrell and Gill 2005, 484-485). Today, patterns of bias and mistrust continue. For instance, early clinical trials of vaccines in the USA and UK indicate disproportionately low minority group representation (Ballantyne and Ganuli-Mitra 2021, 99). These behaviours perpetuate further imbalances in seeking care and eventual lower uptakes of the vaccine as it becomes available (Etutu and Goodman 2021). Not only does this lead to potentially less-informed drug testing, but the detrimental effects of communities more heavily impacted by COVID-19 persist as reluctance towards medical care continues.

5.2 Major Themes

Paramount to the discussion of disease and its propagation are the fears and anxieties over transmission when theories regarding virus conveyance occur. Emerging SDH themes during the 1834 Halifax cholera epidemic stemmed from attitudes towards

migrants, especially those who were lower in socio-economic status. Notions of outsiders as transmitters of disease were no more novel in 1834 than they are now during the COVID-19 era. License plate shaming became commonplace in Canada's Atlantic region during 2020 (Battis and Jones 2020) wherein vehicles with out-of-province licenses were targeted. Meanwhile, more destructive and pervasive shaming behaviours shifted online to social media (Tufekci 2021). Numerically based data returns of inequities continue to appear in literature, as COVID-19 cases soar among minority communities. As such, the direction of this research lends more toward the social perceptions that arise from such linkages rather than the medical and epidemiological discrepancies between communities in the same geographic region (The Intelligence 2020; Suhardiman et al. 2021).

Human migration as a contributing factor in cholera's spread was explored in Chapter 3; subsequent prejudices made against human actors, and inequitable vulnerability to cholera can all be equally transposed onto the COVID-19 pandemic (Smith and Wesselbaum 2020; Varga 2020). In many instances, migrant and minority populations were inequitably affected by COVID-19, such as Marshall Islanders living in the USA, who faced many cases of misdirected public discrimination (Diamond 2020). Likewise, the framing of discussions regarding immigrants was situated around weighing economic benefits and labour shortages against health guidelines (Ruxandra 2020, 243). These debates played out as details of worker exploitation and deplorable living conditions came to the forefront in Canadian media (Jones and Thomas 2020; Ayres 2020; CBC News 2020).

Social perceptions of migrant workers resulted in negligence that led to outbreaks among workers in Southern Ontario in the summer months of 2020 (Ferguson 2020;

Bogart 2020). Rather than leveraging the onus onto the migrants themselves, as had occurred in 1834, reports and migrant rights advocates exposed the systemic exploitation thereby affecting government engagement (Caregivers Action Centre et al. 2020). Migrant workers face a multitude of difficulties and the rising COVID-19 case numbers revealed that, beyond housing deficiencies, workers encountered language barriers shown to amplify healthcare inequities (Diamond et al. 2020, 1451). Healthcare coverage biases were exacerbated with difficulties in accessing sick leave and medical care (Caregivers Action Centre et al. 2020, 31). Structural and legislative oversights surrounding migrant worker rights had enabled the agricultural sector to take advantage of employees through legal systems. The lack of political power and representation among the minority communities created difficulties in pushing back against these overlooked maltreatments. The COVID-19 outbreaks among migrant workers highlighted these flaws and, while resolutions have yet to be made, an indication that commitments now being heard suggest future changes. As summer 2021 approaches, access to vaccines and priority for migrant worker as part of the vaccine rollout are now being considered (Jones 2021).

COVID-19 highlighted the above disparities among migrant workers in developed countries, however, this is only one facet of immigration as an SDH as it relates to the current pandemic. Zapata and Rosas (2020, 16) reported that those living as refugees or migrants prior to COVID-19's emergence in South America were likewise at greater risk of exposure to the virus. Similar extenuating circumstances experienced by migrant workers confronted South American communities as living and working conditions produced additional vulnerabilities (Zapata and Rosas 2020, 20). The authors noted that while lower socio-economic classes faced challenges as case numbers rose, migrants and

refugees confronted further difficulties. These communities, like the Marshallese discussed above, encountered social exclusion amid rising anti-immigration tensions (Zapata and Rosas 2020, 19).

This review serves as a basis to emphasize the value in a structural framework as proposed by Castañeda et al. (2015, 381-382). Whether as a migrant worker in Canada, a refugee in South America, or part of a marginalized community perceived as foreign, immigration status contributes to the barriers placed on individuals with respect to their accessibility to healthcare. Many of these social, economic, and political factors are often beyond the control of the individuals themselves as their situations are influenced by domestic policy and attitudes. COVID-19 has provided governments and communities an opportunity to reassess their priorities and begin addressing previously less visible inequities (Kamdi and Deogade 2020, 278; Nelson 2020, 2).

Little changed for migrants and the poor after the 1834 Halifax cholera epidemic. Marble (2006) noted a general continuation of the pre-existing health care practices through to the terminus of his research in 1867. Likewise, there is clear evidence of rising anti-immigration sentiments in following decades as epidemics and poverty continued to displace people. For example, Native American political party formed in 1835 in consequence to rising numbers of Irish migrant labourers (Punch 1981, 48). Thus, understanding immigration as an SDH in its own right helps to bring attention to the healthcare issues faced by marginalized communities. In essence, the issues experienced by migrants in 1834 are still present today, however, public acknowledgement of these failings might assist in creating changes such as the WHO's mandate regarding

elimination of cholera epidemics in several high-risk countries by 2030 (Global Task Force on Cholera Control 2017, 4).

A final note addressing the gendered inequities in care situates the conversation of similarities between cholera and COVID-19 as more than at the interface of human migration. An early review of COVID-19 cases suggested that the case distribution between genders relied on factors that ranged from institutional and social bias to individual assessment of risk-taking behaviours (Bischof 2020, 3715). Results tending towards higher case numbers and mortality among men suggested a biological sex-based difference (Tadiri et al. 2020, E1041), however, broader social inequities stemming from culturally situated gender biases also led to differential outcomes in sections of the population.

Occupational role differences played an important part in gendered case distribution for both cholera and COVID-19. In 1834, aspects such as domestic economic activities were revealed by Snow in London to have caused an imbalance in the cases among women after cholera's initial introduction into a water supply. Several women likely also fell ill with cholera while acting as attendants and nurses, such as had happened during the smallpox and typhus fever outbreak in 1827.¹⁶⁶ Yet, the death of Dr. Adamson's male apprentice reveals the risks taken by both male and female healthcare professionals during cholera.¹⁶⁷ Likewise, severe cases of COVID-19, especially among healthcare personnel (HCP), was shown to be adversely affecting nursing staff, a predominantly female profession (Healy 2020). Kambhampati et al. (2020, 1577) revealed that 71.9% of the HCP admissions were female. While case numbers among men still remain higher, there are potential institutional inequalities that impact potential

for exposure or ability to be tested for the virus (Tadiri et al. 2020, E1041). The imbalance in HCP cases suggests gendered differences appearing among culturally entrenched roles. Nursing emerges as one connection between the past and present wherein gender is a factor.

Further research into sex- and gender-based outcomes regarding COVID-19 are suggested as current limited data restricts the opportunity to explore beyond differences such as occupation and health practices (Tadiri et al. 2020, E1041-E1042). And yet, the presence of gender as an SDH is subtly present in the conversation of both diseases. Contemporary research into cholera outbreaks alludes to relatively balanced encounters and outcomes with the disease (Schaetti 2013, 216). Though these findings do not remove gender considerations when adapting healthcare programs targeting disease such as cholera (Schaetti 2012, 1224).

5.3 Summations and Reflections

Returning to the overall thesis question within the historical narrative, spatial evaluation, and comparison with today's current pandemic in mind, some answers may be garnered. When considering SDH, if the question was: "Do programs and resource accessibility vary by individuals based on their ability to afford medical care or treatment?" Reflecting on the 1834 cholera epidemic reveals a rather complicated 'yes.' Albeit this is not blatantly stated in documents, the subcurrent of government resource allocation and opinions that emerged regarding variable treatment of differentially situated socio-economic classes and country of origin assuredly influenced the epidemic's outcomes. Whether this lies in deeply engrained cultural beliefs regarding medical practitioners or status as a migrant, socially determinant factors inevitably set

people apart. This condition persists today and is ubiquitous in the dialogue surrounding COVID-19 as health and healthcare have come to the forefront of media and general conversation.

Yet, these findings are a generalization built from a few perspectives which can be a limiting factor in historically positioned anthropology. Thus, the lessons offered here recommend a direction for how interviews and data gathered today can be conducted so that future questions centred on COVID-19 can be answered from archived information. Likewise, it is apparent that the severity of current ongoing cholera epidemics persists outside of the attention of mainstream media sources. Today, many developing nations and communities face difficulties in achieving adequate fresh water supplies and sanitation measures as vaccine programs strive to combat localized epidemics. The current roadmap to resolving many of the cholera related epidemics on behalf of the Global Task Force on Cholera Control (2017, 18) aims to apply community engagement and program adaptations in achieving their goals. Essentially, SDH have rapidly become an integral part of the conversation about disease and with treatment considerations as deeply temporal patterns in epidemical outcomes emerge.

As concerns surrounding the COVID-19 pandemic continue to dominate public health dialogue, it is important to be reminded that there are numerous other persistent diseases. While many developed nations are privileged to be unconcerned by disease burdens stemming from bacterium like cholera, underlying conditions identified by SDH should not be ignored. The current pandemic has exposed inequities in healthcare as marginalized communities defined by a plethora of factors continue to suffer more grievously. In some instances, this extends to a severely diminished vaccine supply

toward developing nations as COVID-19 continues to take lives at an unprecedented rate (Safi 2021). This research provides a glimpse into the difficulties encompassing the many articulations found in topics such as historical epidemics linked with SDH and, although research continues regarding COVID-19, the greater body of experience to draw on can be garnered from such historic events.

Notes

- ¹ Despatches from Governors of N. American Colonies on Regulations for Conveyance of Passengers, 1827. British Parliamentary Papers 1828 (112) XXI.621.
- ² NSA Novascotian 25 July 1832 Microfilm 8068.
- ³ NSA The Times, 2 April 1844 Microfilm 8322.
- ⁴ NSA RG1 Vol.305, document 22, Fairbanks to Wilkins Halifax, 8 March 1815.
- ⁵ NSA The Journal, minutes of 7 June 1803. Petition of William Sabatier.... Microfilm 7013.
- ⁶ PANS RG1 Vol.111: 101-3 Sherbrooke to Cochrane, 5 October 1814.
- ⁷ NSA Acadian Recorder 3 November 1827 Microfilm 5203. Memorial of the Commissioners of the Poor 1828, Also Numbers of Persons Admitted to the Poor House 1822-1827, Accounts 1826-1827. NSA MG100 vol. 56 #30/30a Microfilm 15198.
- ⁸ NSA RG1 Vol.195: 504. Report from the Superintendent of Quarantine to Council, 20 September 1832.
- ⁹ NSA Acadian Recorder 7 November 1829 p.3 col.2 Microfilm 5204.
- ¹⁰ NSA. Acadian Recorder 25 October 1831 Microfilm 5206.
- ¹¹ NSA MG1 Vol.1783 F6 "Recollections of Half a Century, 1864" by Reverend Jas. C. Cochrane. Pg. 22.
- ¹² NSA. Acadian Recorder 27 August 1831 Microfilm 5206.
- ¹³ *ibid.*, NSA 1 William 4th, cap. 8. "An Act to Prevent the Spreading of Contagious Diseases and for the Performance of Quarantine"; NSA 1 William 4th, cap. 9. "An Act more Effectually to Provide Against the Introduction of Infectious or Contagious Disease, and the Spreading thereof in this Province."
- ¹⁴ NSA. Acadian Recorder 27 August 1831 p.3 col.1 Microfilm 5206.
- ¹⁵ *ibid.*, September 1831 p.3 col.3 Microfilm 5206.
- ¹⁶ *ibid.*, 21 April 1832 p.2 col.5 and p.3 col.2 Microfilm 5206.
- ¹⁷ *ibid.*, 30 August 1834 p.3 col.3 Microfilm 5206.
- ¹⁸ *ibid.*, 17 March 1832 p.3 col.2 Microfilm 5206.
- ¹⁹ *ibid.*, March 1832 p.3 col.2 Microfilm 5206.
- ²⁰ *ibid.*, 17 March 1832 p.3 col.3 Microfilm 5206.
- ²¹ *ibid.*, 31 March 1832 p.3 col.2 Microfilm 5206.
- ²² *ibid.*, March 1832 p.3 col.2 Microfilm 5206.
- ²³ *ibid.*, March 1832 p.3 col.2 Microfilm 5206.
- ²⁴ *ibid.*, March 1832 p.3 col.2 Microfilm 5206.

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- ²⁵ *ibid.*, March 1832 p.3 col.3 Microfilm 5206.
- ²⁶ *ibid.*, March 1832 p.3 col.3 Microfilm 5206.
- ²⁷ *ibid.*, April 1832 p.2 col.2-4 Microfilm 5206.
- ²⁸ *ibid.*, April 1832 p.3 col.1 Microfilm 5206.
- ²⁹ *ibid.*, April 1832 p.3 col.3 Microfilm 5206.
- ³⁰ NSA 1 William 4th, cap. 8. "An Act to Prevent the Spreading of Contagious Diseases and for the Performance of Quarantine"; NSA 1 William 4th, cap. 9. "An Act more Effectually to Provide Against the Introduction of Infectious or Contagious Disease, and the Spreading thereof in this Province."
- ³¹ NSA. Acadian Recorder 21 April 1832 p.3 col.2 Microfilm 5206.
- ³² NSA RG1 Vol.174 p.334 Microfilm 15283.
- ³³ NSA RG1 Vol.196 p.92 Microfilm 15292.
- ³⁴ NSA. Acadian Recorder 5 May 1832 p.3 col.4 Microfilm 5206.
- ³⁵ *ibid.*, 12 May 1832 p.2 col.5 Microfilm 5206.
- ³⁶ NSA RG1 Vol.196 pg. 95-96 Microfilm 15292.
- ³⁷ NSA. Acadian Recorder 12 May 1832 p.3 col.6 Microfilm 5206.
- ³⁸ *ibid.*, 19 May 1832 p.3 col.1 Microfilm 5206.
- ³⁹ *ibid.*, 19 May 1832 p.3 col.1 Microfilm 5206.
- ⁴⁰ *ibid.*, 19 May 1832 p.3 col.2 Microfilm 5206.
- ⁴¹ *ibid.*, 19 May 1832 p.3 col.2 Microfilm 5206.
- ⁴² *ibid.*, 26 May 1832 p.3 col.1 Microfilm 5206.
- ⁴³ *ibid.*, 2 June 1832 p.3 col.2 Microfilm 5206.
- ⁴⁴ *ibid.*, 30 June 1832 p.3 col.2 Microfilm 5206.
- ⁴⁵ *ibid.*, 30 June 1832 p.3 col.3 Microfilm 5206.
- ⁴⁶ *ibid.*, 7 July 1832 p.3 col.2 Microfilm 5206.
- ⁴⁷ NSA. Acadian Recorder 7 July 1832 p.2 col.2 Microfilm 5206.
- ⁴⁸ *ibid.*, 30 June 1832 p.3 col.4 Microfilm 5206.
- ⁴⁹ *ibid.*, 7 July 1832 p.2 col.2 Microfilm 5206.
- ⁵⁰ *ibid.*, 7 July 1832 p.2 col.2 Microfilm 5206.
- ⁵¹ NSA RG1 Vol.195 p.475, minutes of council, 31 July 1832.

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- ⁵² NSA. Acadian Recorder 14 July 1832 p.2 col.5 Microfilm 5206.
- ⁵³ *ibid.*, 14 July 1832 p.3 col.2 Microfilm 5206.
- ⁵⁴ *ibid.*, 14 July 1832 p.2 col.4 Microfilm 5206.
- ⁵⁵ *ibid.*, 14 July 1832 p.2 col.4-5 Microfilm 5206.
- ⁵⁶ *ibid.*, 21 July 1832 p.3 col.1 Microfilm 5206.
- ⁵⁷ *ibid.*, 21 July 1832 p.3 col.1 Microfilm 5206.
- ⁵⁸ *ibid.*, 21 July 1832 p.3 col.1 Microfilm 5206.
- ⁵⁹ *ibid.*, 21 July 1832 p.3 col.1 Microfilm 5206.
- ⁶⁰ *ibid.*, 28 July 1832 p.2 col.6 Microfilm 5206.
- ⁶¹ *ibid.*, 1 September 1832 p.3 col.2 Microfilm 5206.
- ⁶² *ibid.*, 4 August 1832 p.3 col.2 Microfilm 5206.
- ⁶³ *ibid.*, 11 August 1832 p.2 col.6. Microfilm 5206.
- ⁶⁴ *ibid.*, 25 August 1832 p.3 col.3 Microfilm 5206.
- ⁶⁵ *ibid.*, 9 August 1834 p.3 col.3 Microfilm 5207.
- ⁶⁶ *ibid.*, 2 August 1834 Microfilm 5207.
- ⁶⁷ *ibid.*, 26 July 1834 pg.3 col.2 Microfilm 5207.
- ⁶⁸ NSA MG1 Vol.1783 F6 "Recollections of Half a Century, 1864" by Reverend Jas. C. Cochrane. Pg. 13.
- ⁶⁹ NSA Acadian Recorder 13 September 1834 Microfilm 5207.
- ⁷⁰ *ibid.*, 23 August pg.3 col.2 1834 Microfilm 5207.
- ⁷¹ NSA NovaScotian 13 August 1834 Microfilm 8068.
- ⁷² NSA RG1 Vol.196 pg. 90 microfilm 15292.
- ⁷³ Cogswell, C. 1849. On the propagation of cholera by contagion. Medical Gazette, Vol.9 752-755 London.
- ⁷⁴ NSA Campbell to Rice, 2 September 1834, CO 217/156.
- ⁷⁵ NSA. Acadian Recorder 16 August 1834 pg.3 col.3. Microfilm 5207.
- ⁷⁶ NSA. RG25 series C Vol 5. Commissioners of the Halifax Poor Asylum 1829-1887. Microfilm 16923.
- ⁷⁷ NSA. Acadian Recorder 30 August 1834. pg.2. col.5. Microfilm 5207.
- ⁷⁸ NSA Novascotian 27 August 1834 pg.274 col.2 Microfilm 8068.

⁷⁹ See Appendix C Map 3 for Fuller, E. G. 1851. *Plan of The City of Halifax*. Published by E.G. Fuller, Bookseller & Stationeer, Halifax. Halifax Municipal Archives CR 10-021.

⁸⁰ NSA Acadian Recorder 23 August 1834 pg.3 col.2. Microfilm 5207.

⁸¹ *ibid.*, 23 August 1834 pg.3 col.2 Microfilm 5207.

⁸² *ibid.*, 23 August 1834 Microfilm 5207.

⁸³ *ibid.*, 30 August 1834 pg.3 col.5 Microfilm 5207.

⁸⁴ NSA RG1 Vol.196 p.92 Microfilm 15292.

⁸⁵ NSA. RG25 series C Vol 5. Commissioners of the Halifax Poor Asylum 1829-1887. Pg. 106 Microfilm 16923.

⁸⁶ NSA RG1 Vol.196 pg. 92 Microfilm 15292.

⁸⁷ *ibid.*, 30 August 1834 pg.2 col.6. Microfilm 5207.

⁸⁸ *ibid.*, 6 September 1834 pg.3 Col.4 Microfilm 5207.

⁸⁹ *ibid.*, 6 September 1834 pg.3 Col.1 Microfilm 5207.

⁹⁰ *ibid.*, 6 September 1834 pg.3 Col.1 Microfilm 5207. "Cholera – Mrs. Adamson feels happy to announce to Mr. Holland, that since Wednesday 8 days, no less than 151 persons were relieved from Cholera. Who had taken her specific draught, with the exception of one who had the vomiting so violent that he threw it off, and before another could be administered the patient died. There were three other poor persons who had neither clothes, beds nor attention; as soon as this necessity was understood, the Rev. Mrs. Uniacke was informed who humanely sent everything for their relief, but it was too late. There were five calls for the Dr. since 12 o'clock last night, the draught was sent to each with orders to return if not relieved; none of which have yet returned. Saturday morning, Sept. 6th."

⁹¹ NSA Acadian Recorder 9 August 1834 pg.3 col.3 Microfilm 5207.

⁹² *ibid.*, 9 August 1834 pg.3 col.3 Microfilm 5207.

⁹³ *ibid.*, 30 August 1834 pg.3 col.5 Microfilm 5207.

⁹⁴ NSA MG1 Vol.1783 F6 "Recollections of Half a Century, 1864" by Reverend Jas. C. Cochrane. Pg. 22.

⁹⁵ NSA Acadian Recorder 13 September 1834 pg.2 col.5 Microfilm 5207.

⁹⁶ NSA Acadian Recorder 6 September 1834 pg.3 col.2-3 Microfilm 5207; NSA Acadian Recorder 27 September 1834 pg.3 col.1 Microfilm 5207; NSA Acadian Recorder 25 October 1834 pg.2 col.4 Microfilm 5207.

⁹⁷ NSA Acadian Recorder 25 October 1835 Microfilm 5207.

⁹⁸ *ibid.*, 30 August 1834 pg.3 col.3 Microfilm 5207.

⁹⁹ NSA MG1 Vol.1783 F6 "Recollections of Half a Century, 1864" by Reverend Jas. C. Cochrane. Pg. 13

¹⁰⁰ NSA Acadian Recorder 13 September 1834 pg.2 col.6 Microfilm 5207.

¹⁰¹ NSA. RG25 series C Vol 5. Commissioners of the Halifax Poor Asylum 1829-1887. Pg. 103 Microfilm 16923.

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- ¹⁰² *ibid.*, Pg. 104 Microfilm 16923.
- ¹⁰³ *ibid.*, Pg. 106-107 Microfilm 16923.
- ¹⁰⁴ *ibid.*, Pg. 109 Microfilm 16923.
- ¹⁰⁵ *ibid.*, Pg. 101 Microfilm 16923.
- ¹⁰⁶ NSA Acadian Recorder 30 August 1834 pg.3 col.3 Microfilm 5207.
- ¹⁰⁷ NSA Acadian Recorder 6 September 1834 pg.3 col.3 Microfilm 5207; NSA Acadian Recorder 13 September 1834 Microfilm 5207.
- ¹⁰⁸ NSA Acadian Recorder 13 September 1834 Microfilm 5207.
- ¹⁰⁹ NSA RG1 Vol.196 pg. 95-96 Microfilm 15292.
- ¹¹⁰ NSA The Times 1 September 1834 pg.111 col.2 Microfilm 8312.
- ¹¹¹ NSA The Times 26 August 1834 pg.103 col.1 Microfilm 8312; NSA Novascotian 27 August 1834 pg.274 col.2 Microfilm 8068.
- ¹¹² NSA The Journal 8 September 1834 pg.2 col.4 Microfilm 7018; NSA The Times 9 September 1834 pg.118 col.2 Microfilm 8312; NSA Acadian Recorder 11 October 1834 Microfilm 5207.
- ¹¹³ NSA The Journal 8 September 1834 pg.2 col.4 Microfilm 7018.
- ¹¹⁴ NSA Acadian Recorder 6 September 1834 pg.2 col.6 Microfilm 5207.
- ¹¹⁵ *ibid.*, 6 September 1834 pg.2 col.6 Microfilm 5207.
- ¹¹⁶ *ibid.*, 13 September 1834 pg.2 col.6 Microfilm 5207.
- ¹¹⁷ NSA RG1 Vol.196 pg. 94 Microfilm 15292; NSA Acadian Recorder 6 September 1834 Microfilm 5207.
- ¹¹⁸ NSA RG1 Vol.196 pg. 96 Microfilm 15292.
- ¹¹⁹ *ibid.*, pg. 96 Microfilm 15292.
- ¹²⁰ Saint Paul's Anglican Church Record for Burials 1833 – 1837. Microfilm 11554.
- ¹²¹ NSA Acadian Recorder 13 September 1834 pg.3 col.4 Microfilm 5207.
- ¹²² *ibid.*, 6 September 1834 Microfilm 5207.
- ¹²³ *ibid.*, 13 September 1834 pg.2 col.5 Microfilm 5207.
- ¹²⁴ *ibid.*, 13 September 1834 pg.2 col.5 Microfilm 5207.
- ¹²⁵ *ibid.*, 13 September 1834 Microfilm 5207.
- ¹²⁶ Mentioned as early as 6 September in the *Acadian Recorder* and continued to be mentioned until 11 October.
- ¹²⁷ NSA Acadian Recorder 20 September 1834 Microfilm 5207.

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- ¹²⁸ NSA Acadian Recorder 11 October 1834; NSA Acadian Recorder 25 October 1834 Microfilm 5207.
- ¹²⁹ NSA Acadian Recorder 27 September 1834 Microfilm 5207.
- ¹³⁰ *ibid.*, 20 September 1834 Microfilm 5207.
- ¹³¹ *ibid.*, 20 September 1834 Microfilm 5207.
- ¹³² *ibid.*, 11 October 1834 Microfilm 5207.
- ¹³³ *ibid.*, 27 September 1834 Microfilm 5207.
- ¹³⁴ *ibid.*, 27 September 1834 p.3 col.1 Microfilm 5207.
- ¹³⁵ NSA C.O. 217/159, Campbell to Stewart, Oct. 28, 1834, enclosed in Stewart to Hay, May 13, 1835.
- ¹³⁶ NSA Acadian Recorder 13 September 1834 pg.2 col.6 Microfilm 5207.
- ¹³⁷ *ibid.*, 27 September 1834 Microfilm 5207.
- ¹³⁸ NSA Acadian Recorder 25 October 1834 Microfilm 5207; NSA Acadian Recorder 15 November 1834 Microfilm 5207.
- ¹³⁹ NSA Acadian Recorder 25 October 1834 Microfilm 5207.
- ¹⁴⁰ *ibid.*, 25 October 1834 Microfilm 5207.
- ¹⁴¹ *ibid.*, 8 November 1834 Microfilm 5207.
- ¹⁴² NSA RG1 Vol.196 pg. 104 Microfilm 15292.
- ¹⁴³ NSA *Journal of the House of Assembly* 1815 p. 107. Microfilm 3528.
- ¹⁴⁴ NSA RG 1 vol. 419 no. 47 Commissioner of Public Records. Microfilm 15460; NSA RG 1 vol. 420 no. 93 Commissioner of Public Records. Microfilm 15464.
- ¹⁴⁵ NSA RG1 Vol.195 p.475, minutes of council, 31 July 1832.
- ¹⁴⁶ NSA C.O. 217/159, Campbell to Stewart, Oct. 28, 1834, enclosed in Stewart to Hay, May 13, 1835.
- ¹⁴⁷ NSA Acadian Recorder 13 September 1834 p.3 col.1 Microfilm 5207.
- ¹⁴⁸ NSA RG1 Vol196 Council Minutes for 1834 pg.95 Microfilm 15292; A similar example occurred in Upper Canada as many poor resisted the removal of family members from homes. In this instance, the wealthy were in equal opposition as cultural and financial custom typically required in-home care (Godfrey 1968, 23).
- ¹⁴⁹ NSA Acadian Recorder 13 September 1834 p.3 col.1 Microfilm 5207.
- ¹⁵⁰ NSA RG1 Vol196 Council Minutes for 1834 pg.96 Microfilm 15292.
- ¹⁵¹ NSA Acadian Recorder 30 August 1834 pg.3 col.3 Microfilm 5207.
- ¹⁵² NSA "General Abstract of Census for the County of Halifax" Journal of Assembly 1839 Appendix. No. 32. Pg.53 J104 K3 1839.

¹⁵³ NSA RG5 Series P Vol.42 #83.

¹⁵⁴ NSA Acadian Recorder 27 September 1834 p.3 col.3 Microfilm 5207.

¹⁵⁵ *ibid.*, 11 October 1834 Microfilm 5207.

¹⁵⁶ NSA MG1 Vol.1783 F6 "Recollections of Half a Century, 1864" by Reverend Jas. C. Cochrane. Pg. 22.

¹⁵⁷ NSA Acadian Recorder 17 March 1832 p.3 col.2 Microfilm 5207.

¹⁵⁸ *ibid.*, 31 March 1834 p.3 col.1 Microfilm 5207.

¹⁵⁹ For example, NSA Acadian Recorder 21 April 1832 p.3 col.3 Microfilm 5207.

¹⁶⁰ NSA Acadian Recorder 31 March 1832 p.3 col.1 Microfilm 5207.

¹⁶¹ *ibid.*, 21 April 1832 p.3 col.3 Microfilm 5207.

¹⁶² Minutes of Executive Council 1826-1832. 8 November 1827. PANS RG1 Vol. 195. Microfilm 15291.

¹⁶³ NSA Acadian Recorder 27 September 1834. Microfilm 5207.

¹⁶⁴ Similar pump systems in Upper and Lower Canada were continually in need of repair. Godfrey (1968, 45) mentions advertisements in newspapers during this period which sought contractors for the repair of wells, pumps, and sewers.

¹⁶⁵ See Donnelly's (1829) remarks on the smallpox and typhus fever epidemic.

¹⁶⁶ Memorial of the Commissioners of the Poor 1828, Also Numbers of Persons Admitted to the Poor House 1822-1827, Accounts 1826-1827. NSA MG100 vol. 56 #30/30a. Microfilm 15198.

¹⁶⁷ NSA RG5 Series R Reports and Resolutions, 1816-1896. Vol.20 "Cholera Deaths Reported by Dr. John Adamson 1834."

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Appendix A

A digitized version of Dr. Adamson's list of patients treated during the cholera epidemic. Adamson recorded the individual's suffix and surname except for cases where a guardian's surname is used or a general description such as 'A sailor' appears. Each person's street of residence is noted where possible along with their stated profession. The spouse's or guardian's profession is occasionally input to fill the line. Finally, notable symptoms, which have been left off in this compact version, and the individual's result of treatment provide medical details and some statistical chances of surviving cholera while in Dr. Adamson's care during 1834.

| Num | Date | Name | Residence | Profession | Result of Treatment |
|------------|-------------|---------------------------|----------------------|--------------------|----------------------------|
| 1 | Sept 3 | Mr. Connors | Water Street | Cooper | Recovered |
| 2 | | Mrs. Howell | Water Street | Widow | Recovered |
| 3 | | Mr. Howard's child | Water Street | Musician | Recovered |
| 4 | | Mr. Whelan | Albemarle Street | Labourer | Recovered |
| 5 | | Mr. Carsted | Lockman Street | Shoemaker | Recovered |
| 6 | | Mr. Whelan Junior | Albemarle Street | Labourer | Recovered |
| 7 | | Mr. Coleman | Albemarle Street | Labourer | Recovered |
| 8 | | Mr. Coleman's Daughter | Albemarle Street | Labourer | Recovered |
| 9 | | Miss Proctor | Water Street | Labourer child | Recovered |
| 10 | | Mr. McQuillan | Lockman Street | Yeoman | Recovered |
| 11 | | Mrs. McQuillan | Lockman Street | Yeoman | Recovered |
| 12 | | Mr. O'Neil | Albemarle Street | Labourer | Died |
| 13 | | Mr. Bateman | Blowers Street | Clerk of Market | Recovered |
| 14 | | Mr. Scott | Water Street | Seaman | Died |
| 15 | | Mr. Howard | Water Street | Musician | Recovered |
| 16 | | Mrs. Gammon | Marchingtons Lane | Grocers wife | Recovered |
| 17 | | Mr. Moffatt | Dock Yard Street | Tinman | Recovered |
| 18 | | Mr. Crosskill Junior | Water Street | Clerk | Recovered |
| 19 | Sept 4 | Mr. O'Meara | Water Street | Grocer | Recovered |

| Num | Date | Name | Residence | Profession | Result of Treatment |
|------------|-------------|--------------------------|-------------------|-------------------|----------------------------|
| 20 | | Mrs. Bellard | N. Barrack Street | Grocer | Recovered |
| 21 | | Mrs. McFarlane | | | Recovered |
| 22 | | Mr. W. Parker | Water Street | Labourer | Recovered |
| 23 | | Mr. John Fraser | Dutch Town | Black | Recovered |
| 24 | | Mr. Welsh's Child | | | Recovered |
| 25 | | Mr. Talbot | Dutch Town | Labourer | Recovered |
| 26 | | Rev.d J. Preston | Dutch Town | Black | Recovered |
| 27 | | Mrs. Watts | | Poor woman | Recovered |
| 28 | | Mrs. Gardner's Child | Albemarle Street | | Recovered |
| 29 | | Mr. Forbes | | Labourer | Recovered |
| 30 | | Mr. McKay | Dock Yard Street | Labourer | Recovered |
| 31 | | Mr. | Water Street | Labourer | Recovered |
| 32 | | Mrs. Clark | do | Masons Wife | Recovered |
| 33 | | Mr. Harney | Bigby's Warf | Carpenter | Recovered |
| 34 | | Mr. Maswell | Brig Industry | Captain | Recovered |
| 35 | | Mr. Young's two children | Albemarle Street | Mason | Died |
| 36 | | Mr. Young's two children | Albemarle Street | Mason | Died |
| 37 | | Mrs. Davis | Water Street | Black | Recovered |
| 38 | | Mary A. Davis | Water Street | Black | Recovered |
| 39 | | Mrs. Kenny | | Poor woman | Recovered |
| 40 | Sept 5 | Mr. Fubler | Hamiltons Wharf | Ships Cook | Recovered |
| 41 | | Mrs. Gunson | Water Street | Poor woman | Recovered |
| 42 | | Mr. Woodiman | Dutch Town | Labourer | Recovered |
| 43 | | Mr. Power | Water Street | Cooper | Recovered |
| 44 | | Mrs. Martin | | Poor woman | Died |
| 45 | | Mr. Jones | Water Street | Seaman | Recovered |
| 46 | | Mrs. Lance's Child | Water Street | Black | Died |
| 47 | | Mr. Brereton | N. Barracks | Labourer | Recovered |
| 48 | | Mrs. Brereton | N. Barracks | Labourer | Recovered |
| 49 | | Mrs. Thomas | Water Street | Black | Died |
| 50 | | Mr. Hinkles | Water Street | Labourer | Recovered |
| 51 | | Mr. Rogers | Water Street | Seaman | Recovered |

| Num | Date | Name | Residence | Profession | Result of Treatment |
|------------|-------------|-----------------------------|------------------|-------------------|----------------------------|
| 52 | | Mr. Heffler | Phillips Hill | Carpenter | Died |
| 53 | | A Sailor | Brig Industry | Second Mate | Recovered |
| 54 | | Mr. Vigors | Hamiltons Wharf | Labourer | Recovered |
| 55 | | Mrs. Johnston | Albemarle Street | Masons Wife | Recovered |
| 56 | Sept 6 | Mr. Cantrin | Albemarle Street | Labourer | Recovered |
| 57 | | Mrs. Dalton | Albemarle Street | Married | Recovered |
| 58 | | Mr. Slattery | Albemarle Street | Labourer | Recovered |
| 59 | | Mr. Donnelly's Child | Albemarle Street | Labourer | Recovered |
| 60 | | Mr. Place | Water Street | Black | Recovered |
| 61 | | Martha Place | Water Street | Black | Recovered |
| 62 | | Mrs. George | Water Street | Married | Recovered |
| 63 | | Mrs. Bigby | Water Street | Married | Recovered |
| 64 | | Mrs. Howel's three children | Water Street | Widow | Recovered |
| 65 | | Mrs. Howel's three children | Water Street | Widow | Recovered |
| 66 | | Mrs. Howel's three children | Water Street | Widow | Recovered |
| 67 | | Mrs. Taylor | Water Street | Widow | Recovered |
| 68 | | Mr. Bussey's Son | Dock Yard Street | Labourer | Recovered |
| 69 | | Mr. Carey | Hog Street | Pedlar | Died |
| 70 | | Mr. Lance | Water Street | Black | Recovered |
| 71 | | Mrs. Smithers | Water Street | Black | Recovered |
| 72 | | Mr. Batt | Water Street | Labourer | Recovered |
| 73 | | Mr. Polgreen | Velocity M Boat | Seaman | Recovered |
| 74 | Sept 7 | Mr. Short | Maitland Street | Hair dresser | Recovered |
| 75 | | Mrs. Short | Maitland Street | Hair dresser | Recovered |
| 76 | | Mrs. Short's servant | Maitland Street | Hair dresser | Recovered |
| 77 | | Mrs. Pace | Water Street | Black | Recovered |
| 78 | | Mrs. Harey | Lockman Street | Poor woman | Recovered |

| Num | Date | Name | Residence | Profession | Result of Treatment |
|------------|-------------|-------------------------------|-------------------|-------------------|----------------------------|
| 79 | | Mr. Briscott | Water Street | Carpenter | Recovered |
| 80 | | Mr. Johnston | Albemarle Street | Mason | Recovered |
| 81 | | Miss Phillips | Phillips Hill | | Recovered |
| 82 | | Mrs. Harris | New Town | Carpenters Wife | Died |
| 83 | | Mr. Downie | New Town | Labourer | Died |
| 84 | | Mr. Plummer's Son | Water Street | | Recovered |
| 85 | | Mr. Drew | Albemarle Street | Labourer | Recovered |
| 86 | | Mr. Farrell | Dutch Town | Black | Died |
| 87 | | Mr. O'Brien | Water Street | Labourer | Recovered |
| 88 | | Mr. Smith | New Town | Labourer | Recovered |
| 89 | | Miss Smith | New Town | Black | Recovered |
| 90 | | Miss F. Reeves | New Town | Black | Recovered |
| 91 | Sept 8 | Mr. Martin | Hog Street | Labourer | Recovered |
| 92 | | Mr. York | Grafton Street | Labourer | Recovered |
| 93 | | Mr. Wallis and three children | Hog Street | Labourer | Recovered |
| 94 | | Mr. Wallis and three children | Hog Street | Labourer | Recovered |
| 95 | | Mr. Wallis and three children | Hog Street | Labourer | Recovered |
| 96 | | Mr. Wallis and three children | Hog Street | Labourer | Recovered |
| 97 | | Mr. E. Donovan | Water Street | Labourer | Recovered |
| 98 | | Mr. A. Gordon | Barrington Street | Cabinet maker | Recovered |
| 99 | | Mrs. Thompson | Barrington Street | | Recovered |
| 100 | | Mrs. Harris's child | New Town | Carpenter | Recovered |
| 101 | | Mr. Tupper | New Town | Labourer | Recovered |
| 102 | | Mr. A. Green | | Labourer | Recovered |
| 103 | | Mr. Davison | | Labourer | Recovered |
| 104 | | Mr. McKenzie | Water Street | Labourer | Recovered |
| 105 | | Nancy Mallory | Water Street | Black | Recovered |
| 106 | Sept 9 | Ben Cooper | Water Street | Black | Recovered |
| 107 | | Mr. Norwood | Lockman Street | Labourer | Recovered |
| 108 | | Mr. Thompson | Water Street | Labourer | Recovered |
| 109 | | Mr. Price | Water Street | Labourer | Died |

| Num | Date | Name | Residence | Profession | Result of Treatment |
|------------|-------------|------------------------|------------------|-------------------|----------------------------|
| 110 | | Mr. Grose | Dutch Town | Black | Recovered |
| 111 | | Mrs. Lightizer and son | Lockman Street | Married | Died |
| 112 | | Mrs. Lightizer and son | Lockman Street | | Recovered |
| 113 | | Mr. Boaden | Dock Yard Street | Labourer | Recovered |
| 114 | | Mr. Barry | Hog Street | Labourer | Recovered |
| 115 | | Mrs. Cotton | Dutch Town | | Recovered |
| 116 | | Mr. Robert | Dutch Town | Labourer | Recovered |
| 117 | | Mr. Heustis | Water Street | Police clerk | Recovered |
| 118 | | Mrs. Corbyn | Water Street | Widow | Recovered |
| 119 | | Mr. McLaurin | Albemarle Street | Mason | Recovered |
| 120 | | Mrs. Cody | First Street | | Recovered |
| 121 | | Mr. Fitzpatrick | Hog Street | Grocer | Recovered |
| 122 | Sept 10 | Miss Phillips | Phillips Hill | | Recovered |
| 123 | | John Thomas | Water Street | Black | Recovered |
| 124 | | Mrs. Bell | Fort Needham | Widow | Recovered |
| 125 | | Mrs. Croke | Water Street | | Recovered |
| 126 | | Mrs. Rayne | Phillips Hill | | Recovered |
| 127 | | Mr. Nugent | W. Dougah Corner | Labourer | Recovered |
| 128 | | Mr. Ryan's child | Dutch Town | | Recovered |
| 129 | | Mr. T Coren | | My apprentice | Died |
| 130 | | Mrs. Fraser | Dock Yard Gate | | Recovered |
| 131 | | Mr. McIntosh | Water Street | Cooper | Recovered |
| 132 | | Mr. McKenzie | Water Street | Labourer | Recovered |
| 133 | | Mr. Conrad | Dutch Town | Labourer | Recovered |
| 134 | | Mr. Casey | Water Street | Labourer | Recovered |
| 135 | | Mr. McDonald | Water Street | Clerk | Died |
| 136 | | Mr. Kerwick | Water Street | Word Measurer | Died |
| 137 | Sept 11 | Mr. McKinlay | Barrack Street | Mason | Recovered |
| 138 | | Mrs. Bamberry | Water Street | Widow | Recovered |
| 139 | | Mr. Asbury | Water Street | Labourer | Died |
| 140 | | Mr. Nowlan | Water Street | Labourer | Recovered |
| 141 | | Mr. J. Johnston | | Labourer | Recovered |

| Num | Date | Name | Residence | Profession | Result of Treatment |
|------------|-------------|----------------------|------------------|-------------------|----------------------------|
| 142 | | Mrs. McDade | Water Street | Married | Died |
| 143 | Sept 12 | Mrs. Spencer's child | Water Street | Black | Recovered |
| 144 | | Mrs. Morrisons child | Phillips Hill | | Recovered |
| 145 | | Mr. Cotton | Dutch Town | Labourer | Recovered |
| 146 | | Mrs. McDonald | Dutch Town | Black | Recovered |
| 147 | | Mrs. Rice | Water Street | Poor woman | Recovered |
| 148 | | Miss Bradley | Water Street | | Recovered |
| 149 | Sept 13 | Mr. McLellan | Water Street | Tailor | Recovered |
| 150 | | Mr. McAndrew's child | Water Street | Labourer | Recovered |
| 151 | Sept 14 | Mr. Bowers | New Town | Black | Recovered |
| 152 | | Mrs. Heffler | Phillips Hill | Widow | Recovered |
| 153 | | Mrs. Powers child | Water Street | Cooper | Recovered |
| 154 | Sept 15 | Mr. Johnstons child | Albemarle Street | Mason | Recovered |
| 155 | | Mr. Long | Albemarle Street | Labourer | Recovered |
| 156 | Sept 16 | Mr. Hugh Purvis | New Town | Black | Recovered |
| 157 | | Mr. Barnes | Water Street | Carpenter | Died |
| 158 | | Mrs. Wilson | Water Street | | Recovered |
| 159 | | Mr. Power | Water Street | Cooper | Recovered |
| 160 | | Mr. McCarthy | Water Street | Labourer | Taken to Hospital |
| 161 | | Mr. White's child | Water Street | | Recovered |
| 162 | | Mr. Ter. Hill | Albemarle Street | Painter | Died |
| 163 | | Mr. Holderness | Albemarle Street | Labourer | Recovered |
| 164 | | A Sailor | West's Schooner | Mate | Recovered |
| 165 | Sept 17 | Mrs. Fitzhugh | Albemarle Street | Black | Recovered |
| 166 | | Mr. Finlay's child | Water Street | | Recovered |
| 167 | | Mrs. Woodrow | Water Street | | Recovered |
| 168 | Sept 18 | Mrs. Sanders | Water Street | Widow | Recovered |
| 169 | Sept 19 | John Leach | Water Street | Black | Recovered |

| Num | Date | Name | Residence | Profession | Result of Treatment |
|------------|-------------|-----------------------|-------------------|-------------------|----------------------------|
| 170 | | Mr. Matthews | C. Breton Steamer | Seaman | Recovered |
| 171 | | | | | |
| 172 | Sept 20 | Mrs. Muir and child | Water Street | | Recovered |
| 173 | | Mrs. Muir and child | Water Street | | Recovered |
| 174 | Sept 22 | J. Brown's Son | Maitland Street | Black | Died |
| 175 | Sept 23 | Mr. Longard's Son | Lockman Street | | Recovered |
| 176 | | Mr. W Oliver | | Labourer | Recovered |
| 177 | | Mr. McDade | Water Street | Labourer | Recovered |
| 178 | | Mrs. Lanigan | Water Street | Fruit Woman | Recovered |
| 179 | Sept 24 | Mrs. Russell | Albemarle Street | Mason | Died |
| 180 | | Jane Matthews | Water Street | Black | Recovered |
| 181 | Sept 25 | Mr. Beatties child | Albemarle Street | | Recovered |
| 182 | | Mrs. Carroll | | | Recovered |
| 183 | | Mrs. H Grant | Maitland Street | | Recovered |
| 184 | | Mr. Tennant | | | Recovered |
| 185 | | Mr. Flinn's 2 Sons | Water Street | | Recovered |
| 186 | | Mr. Flinn's 2 Sons | Water Street | | Recovered |
| 187 | | Mr. Brown | Maitland Street | Black | Called in Dr. Hume |
| 188 | | Mr. Ray | Barrack Street | Mason | Recovered |
| 189 | Sept 26 | Mr. Johnson and child | Albemarle Street | Mason | Recovered |
| 190 | | Mr. Johnson and child | Albemarle Street | Mason | Recovered |
| 191 | Sept 30 | Mr. Finlay's child | Water Street | | Recovered |
| 192 | | Mr. Dravis | Dock Yard Street | Seaman | Recovered |
| 193 | | Mr. oBucks child | Water Street | | Recovered |
| 194 | Oct 2 | Mr. Longard | Lockman Street | Sailmaker | Recovered |
| 195 | | Mr. Newham | Brig Jane | Seaman | Recovered |
| 196 | Oct 3 | Mr. Lennard | Water Street | Labourer | Recovered |
| 197 | | Mrs. Evans | 3 Mile House | | Recovered |

| Num | Date | Name | Residence | Profession | Result of Treatment |
|------------|-------------|-------------------------|------------------|-------------------|----------------------------|
| 198 | Oct 5 | Mr. Wards child | 3 Mile House | | Recovered |
| 199 | Oct 6 | Mr. Gregory and Wife | Water Street | Black | Taken to Hospital |
| 200 | | Mr. Gregory's Wife | Water Street | Black | Recovered |
| 201 | | Clemt Cobbett | Vernon | Seaman | Recovered |

Appendix B

Published newspaper statistics issued daily by the Halifax Central Board of Health. Reports were separated between the poor house, private practices, and the cholera hospital at Dalhousie College. The cases remaining at end of the day mostly carried over into the next day's reporting and changed based on new cases, deaths, and individuals discharged from care. These statistics closely resemble today's COVID-19 statistics published by provincial governments. For example, Nova Scotia's public COVID-19 statistics can be found online at <https://novascotia.ca/coronavirus/data>.

| Date | Reports | Cases Remaining | New Cases | Total | Died | Discharged | Remaining |
|-------------------|--------------------|----------------------------|----------------------|--------------|-------------|-------------------|------------------|
| 25 Aug | Totals | 32 | 32 | 64 | 5 | 1 | 43 |
| 26 Aug | Poor House | 18 | 13 | 31 | 4 | 0 | 27 |
| | Private Practice | 25 | 22 | 47 | 2 | 10 | 35 |
| | Totals | 43 | 35 | 78 | 6 | 10 | 62 |
| 27 Aug | Poor House | 27 | 2 | 29 | 6 | 2 | 21 |
| | Dalhousie Hospital | 0 | 9 | 9 | 0 | 0 | 9 |
| | Private Practice | 35 | 21 | 56 | 4 | 9 | 43 |
| 28 Aug | Totals | 62 | 32 | 94 | 10 | 11 | 73 |
| | Poor House | 21 | 3 | 28 | 2 | 4 | 17 |
| | Dalhousie Hospital | 9 | 20 | 29 | 8 | 0 | 21 |
| 29 Aug | Private Practice | 43 | 12 | 55 | 2 | 12 | 41 |
| | Totals | 73 | 34 | 107 | 12 | 16 | 79 |
| | Poor House | 17 | 0 | 17 | 3 | 2 | 12 |
| 30 Aug | Dalhousie Hospital | 21 | 15 | 36 | 7 | 0 | 29 |
| | Private Practice | 41 | 15 | 56 | 7 | 5 | 44 |
| | Totals | 79 | 30 | 109 | 17 | 7 | 83 |
| 30 Aug | Poor House | 12 | 0 | 12 | 1 | 2 | 9 |
| | Dalhousie Hospital | 29 | 13 | 42 | 10 | 3 | 29 |
| | Private Practice | 44 | 81 | 75 | 6 | 10 | 59 |

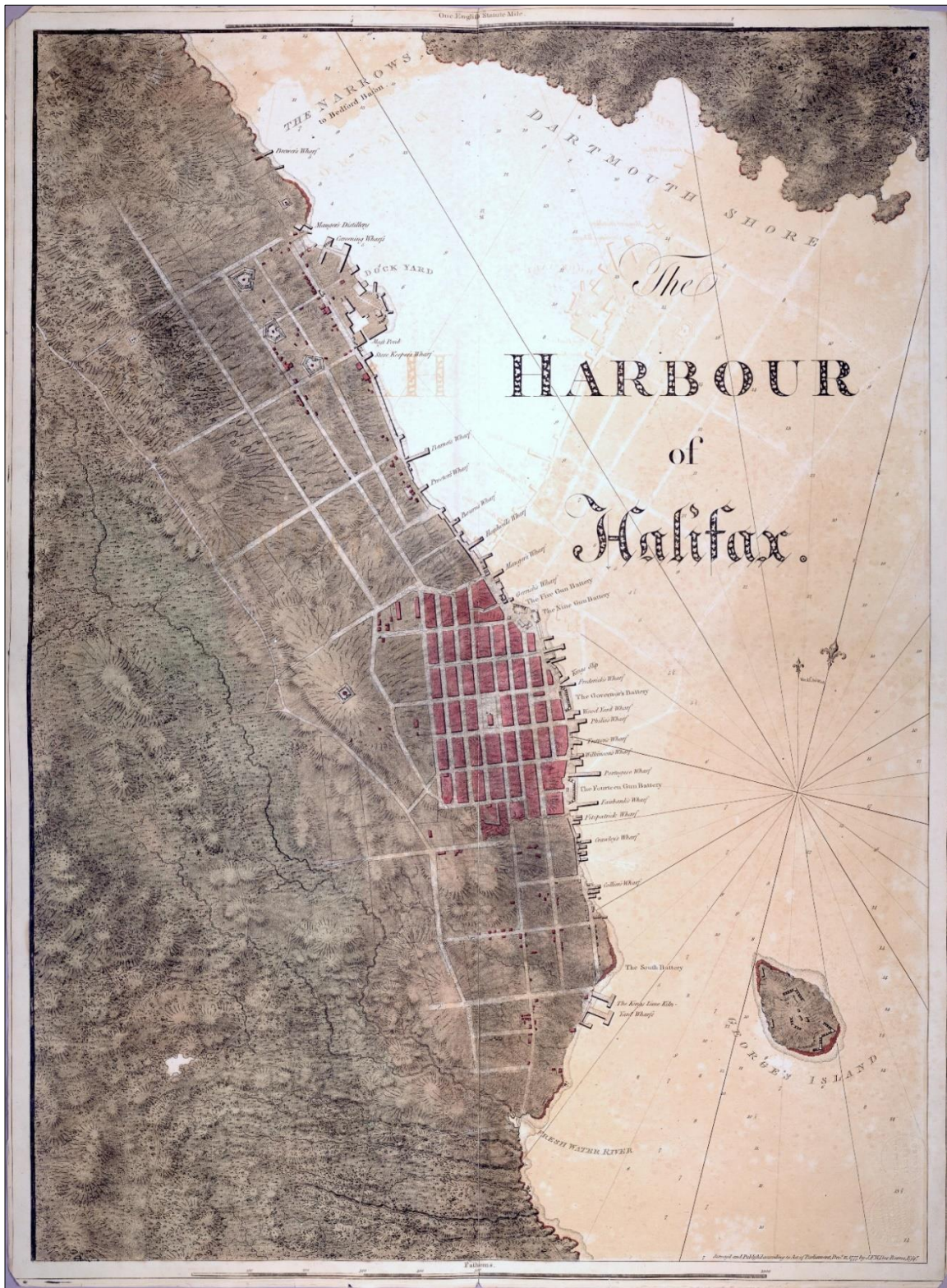
| Date | Reports | Cases Remaining | New Cases | Total | Died | Discharged | Remaining |
|-------------------|-----------------------|----------------------------|----------------------|--------------|-------------|-------------------|------------------|
| | Totals | 83 | 94 | 129 | 17 | 15 | 97 |
| 31 Aug | Poor | 9 | 0 | 9 | 2 | 0 | 7 |
| | House | | | | | | |
| | Dalhousie Hospital | 29 | 16 | 45 | 7 | 2 | 36 |
| | Private Practice | 59 | 18 | 77 | 9 | 15 | 53 |
| | Totals | 97 | 34 | 131 | 18 | 17 | 96 |
| 1 Sept | Poor | 7 | 0 | 7 | 1 | 3 | 3 |
| | House | | | | | | |
| | Dalhousie Hospital | 36 | 10 | 46 | 4 | 1 | 41 |
| | Private Practice | 53 | 25 | 78 | 5 | 8 | 65 |
| | Totals | 96 | 35 | 131 | 10 | 12 | 109 |
| 2 Sept | Poor | 3 | 0 | 3 | 0 | 2 | 1 |
| | House | | | | | | |
| | Dalhousie Hospital | 41 | 10 | 51 | 7 | 0 | 44 |
| | Private Practice | 65 | 11 | 76 | 7 | 18 | 51 |
| | Totals | 109 | 21 | 130 | 14 | 20 | 96 |
| 3 Sept | Poor | 1 | 0 | 1 | 1 | 0 | 0 |
| | House | | | | | | |
| | Dalhousie Hospital | 44 | 7 | 51 | 10 | 4 | 37 |
| | Private Practice | 51 | 21 | 72 | 7 | 20 | 46 |
| | Totals | 96 | 28 | 124 | 18 | 24 | 83 |
| 4 Sept | Poor | 0 | 0 | 0 | 0 | 0 | 0 |
| | House | | | | | | |
| | Dalhousie Hospital | 37 | 6 | 43 | 6 | 12 | 25 |
| | Private Practice | 46 | 29 | 75 | 9 | 10 | 56 |
| | Totals | 83 | 35 | 118 | 15 | 22 | 81 |
| 5 Sept | Poor | 0 | 0 | 0 | 0 | 0 | 0 |
| | House | | | | | | |
| | Dalhousie Hospital | 25 | 10 | 35 | 3 | 1 | 31 |
| | Private Practice | 56 | 34 | 88 | 6 | 22 | 60 |
| | Totals | 81 | 44 | 123 | 9 | 23 | 91 |

| Date | Reports | Cases Remaining | New Cases | Total | Died | Discharged | Remaining |
|--------------------|-----------------------|----------------------------|----------------------|--------------|-------------|-------------------|------------------|
| 6 Sept | Dalhousie Hospital | 31 | 14 | 45 | 5 | 0 | 40 |
| | Private Practice | 60 | 28 | 88 | 10 | 31 | 47 |
| | Totals | 91 | 42 | 133 | 15 | 31 | 87 |
| 7 Sept | Dalhousie Hospital | 40 | 12 | 52 | 9 | 0 | 43 |
| | Private Practice | 47 | 33 | 79 | 8 | 23 | 48 |
| | Totals | 87 | 45 | 133 | 17 | 23 | 91 |
| 8 Sept | Dalhousie Hospital | 43 | 6 | 49 | 7 | 4 | 38 |
| | Private Practice | 48 | 38 | 86 | 5 | 18 | 63 |
| | Totals | 91 | 44 | 135 | 12 | 22 | 101 |
| 9 Sept | Dalhousie Hospital | 38 | 8 | 46 | 3 | 0 | 43 |
| | Private Practice | 63 | 50 | 113 | 13 | 27 | 74 |
| | Totals | 101 | 58 | 159 | 16 | 27 | 117 |
| 10 Sept | Dalhousie Hospital | 43 | 15 | 58 | 10 | 2 | 46 |
| | Private Practice | 74 | 34 | 104 | 13 | 22 | 72 |
| | Totals | 117 | 49 | 162 | 23 | 24 | 118 |
| 11 Sept | Dalhousie Hospital | 46 | 12 | 58 | 6 | 8 | 44 |
| | Private Practice | 72 | 24 | 96 | 9 | 35 | 52 |
| | Totals | 118 | 36 | 154 | 15 | 43 | 96 |
| 12 Sept | Dalhousie Hospital | 44 | 17 | 61 | 3 | 0 | 58 |
| | Private Practice | 52 | 39 | 91 | 2 | 25 | 64 |
| | Totals | 96 | 56 | 152 | 5 | 25 | 122 |
| 13 Sept | Dalhousie Hospital | 58 | 11 | 69 | 5 | 7 | 57 |
| | Private Practice | 64 | 31 | 95 | 6 | 22 | 67 |
| | Totals | 122 | 42 | 164 | 11 | 29 | 124 |
| 14 Sept | Dalhousie Hospital | 57 | 13 | 70 | 10 | 0 | 60 |
| | Private Practice | 67 | 15 | 82 | 9 | 8 | 65 |

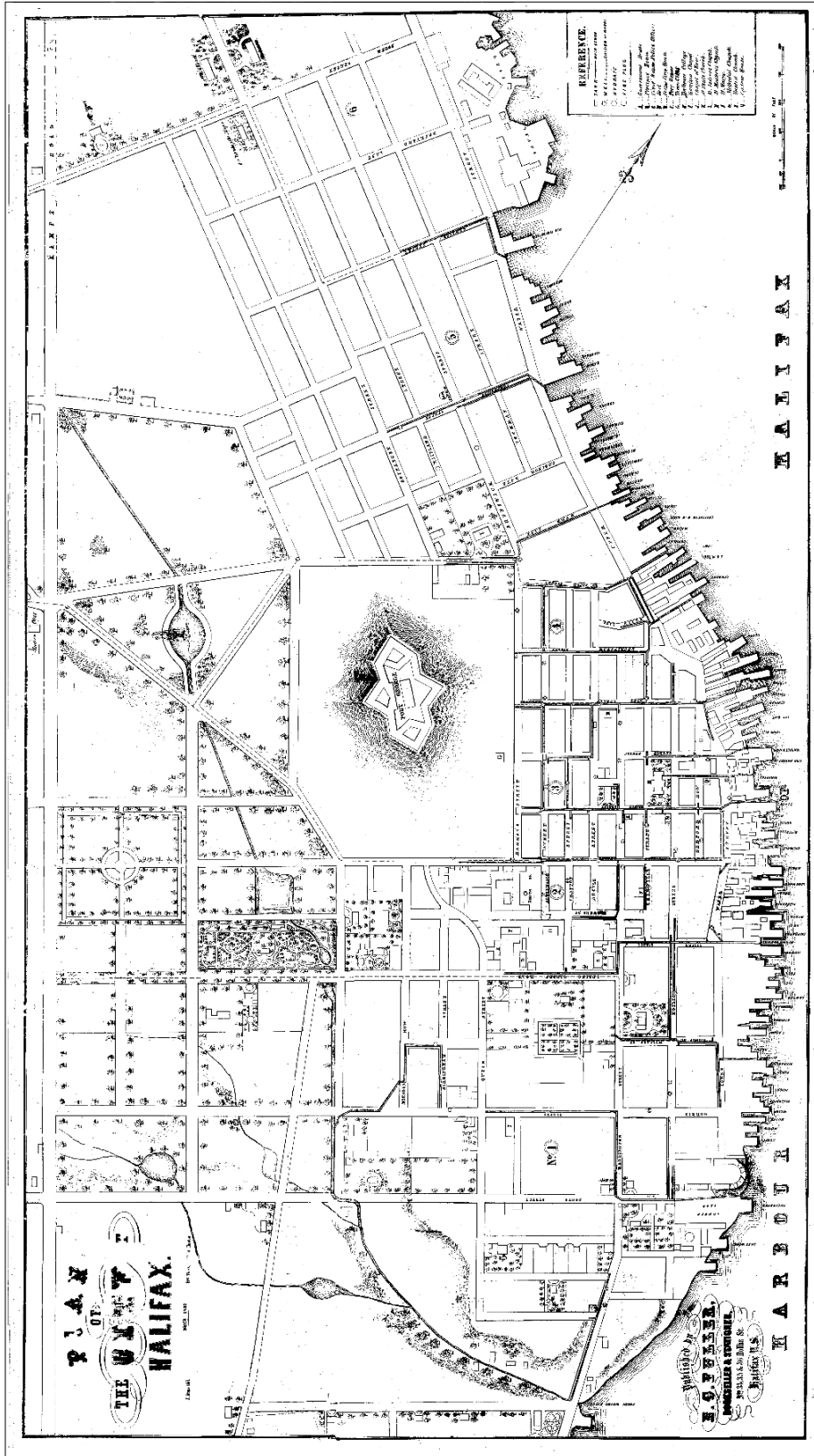
| Date | Reports | Cases Remaining | New Cases | Total | Died | Discharged | Remaining |
|--------------------|-----------------------|----------------------------|----------------------|--------------|-------------|-------------------|------------------|
| | Totals | 124 | 28 | 152 | 19 | 8 | 125 |
| 15 Sept | Dalhousie Hospital | 60 | 5 | 65 | 5 | 8 | 52 |
| | Private Practice | 65 | 17 | 82 | 8 | 15 | 59 |
| | Totals | 125 | 22 | 147 | 13 | 23 | 111 |
| 16 Sept | Dalhousie Hospital | 52 | 4 | 56 | 4 | 7 | 45 |
| | Private Practice | 59 | 19 | 78 | 8 | 90 | 50 |
| | Totals | 111 | 23 | 134 | 12 | 27 | 95 |
| 17 Sept | Dalhousie Hospital | 45 | 2 | 47 | 1 | 2 | 44 |
| | Private Practice | 50 | 6 | 56 | 4 | 16 | 36 |
| | Totals | 95 | 8 | 103 | 5 | 18 | 80 |
| 18 Sept | Dalhousie Hospital | 44 | 3 | 47 | 2 | 5 | 40 |
| | Private Practice | 36 | 8 | 44 | 1 | 6 | 37 |
| | Totals | 80 | 11 | 91 | 3 | 11 | 77 |
| 19 Sept | Dalhousie Hospital | 40 | 5 | 45 | 2 | 4 | 39 |
| | Private Practice | 37 | 9 | 46 | 1 | 14 | 31 |
| | Totals | 77 | 14 | 91 | 3 | 11 | 77 |
| 20 Sept | Dalhousie Hospital | 39 | 3 | 42 | 1 | 5 | 36 |
| | Private Practice | 31 | 23 | 54 | 4 | 6 | 44 |
| | Totals | 77 | 26 | 96 | 5 | 11 | 80 |
| 21 Sept | Dalhousie Hospital | 36 | 4 | 40 | 2 | 7 | 31 |
| | Private Practice | 44 | 11 | 55 | 4 | 14 | 37 |
| | Totals | 80 | 15 | 95 | 6 | 21 | 68 |
| 22 Sept | Dalhousie Hospital | 31 | 1 | 31 | 4 | 14 | 14 |
| | Private Practice | 37 | 6 | 43 | 2 | 10 | 31 |
| | Totals | 68 | 7 | 75 | 6 | 2 | 45 |
| 23 Sept | Dalhousie Hospital | 14 | 1 | 15 | 0 | 6 | 9 |

| Date | Reports | Cases Remaining | New Cases | Total | Died | Discharged | Remaining |
|--------------------|-----------------------|----------------------------|----------------------|--------------|-------------|-------------------|------------------|
| | Private Practice | 31 | 6 | 37 | 1 | 12 | 24 |
| | Totals | 45 | 7 | 52 | 1 | 18 | 33 |
| 24 Sept | Dalhousie Hospital | 9 | 4 | 13 | 1 | 3 | 9 |
| | Private Practice | 24 | 7 | 31 | 4 | 7 | 20 |
| | Totals | 33 | 11 | 44 | 5 | 10 | 29 |
| 25 Sept | Dalhousie Hospital | 9 | 2 | 11 | 0 | 3 | 8 |
| | Private Practice | 20 | 7 | 27 | 1 | 6 | 20 |
| | Totals | 29 | 9 | 38 | 1 | 9 | 28 |
| 26 Sept | Dalhousie Hospital | 8 | 0 | 8 | 0 | 1 | 7 |
| | Private Practice | 20 | 6 | 26 | 3 | 3 | 20 |
| | Totals | 28 | 6 | 34 | 3 | 4 | 27 |
| 27 Sept | Dalhousie Hospital | 7 | 0 | 7 | 0 | 0 | 7 |
| | Private Practice | 20 | 5 | 25 | 1 | 8 | 16 |
| | Totals | 27 | 5 | 32 | 1 | 8 | 23 |

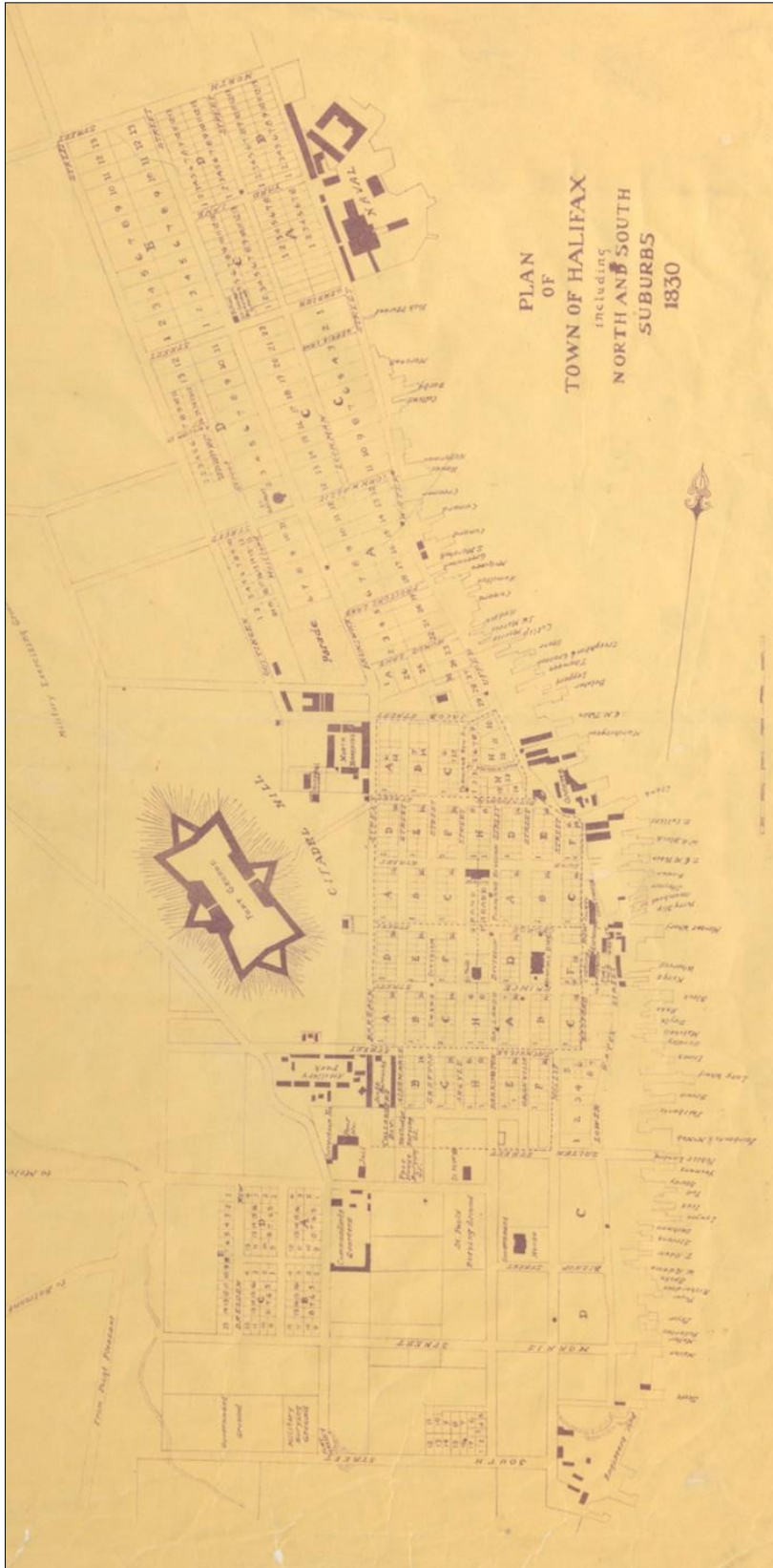
Map 2 – Des Barres, Joseph F. W. 1779. *The Harbour of Halifax.*



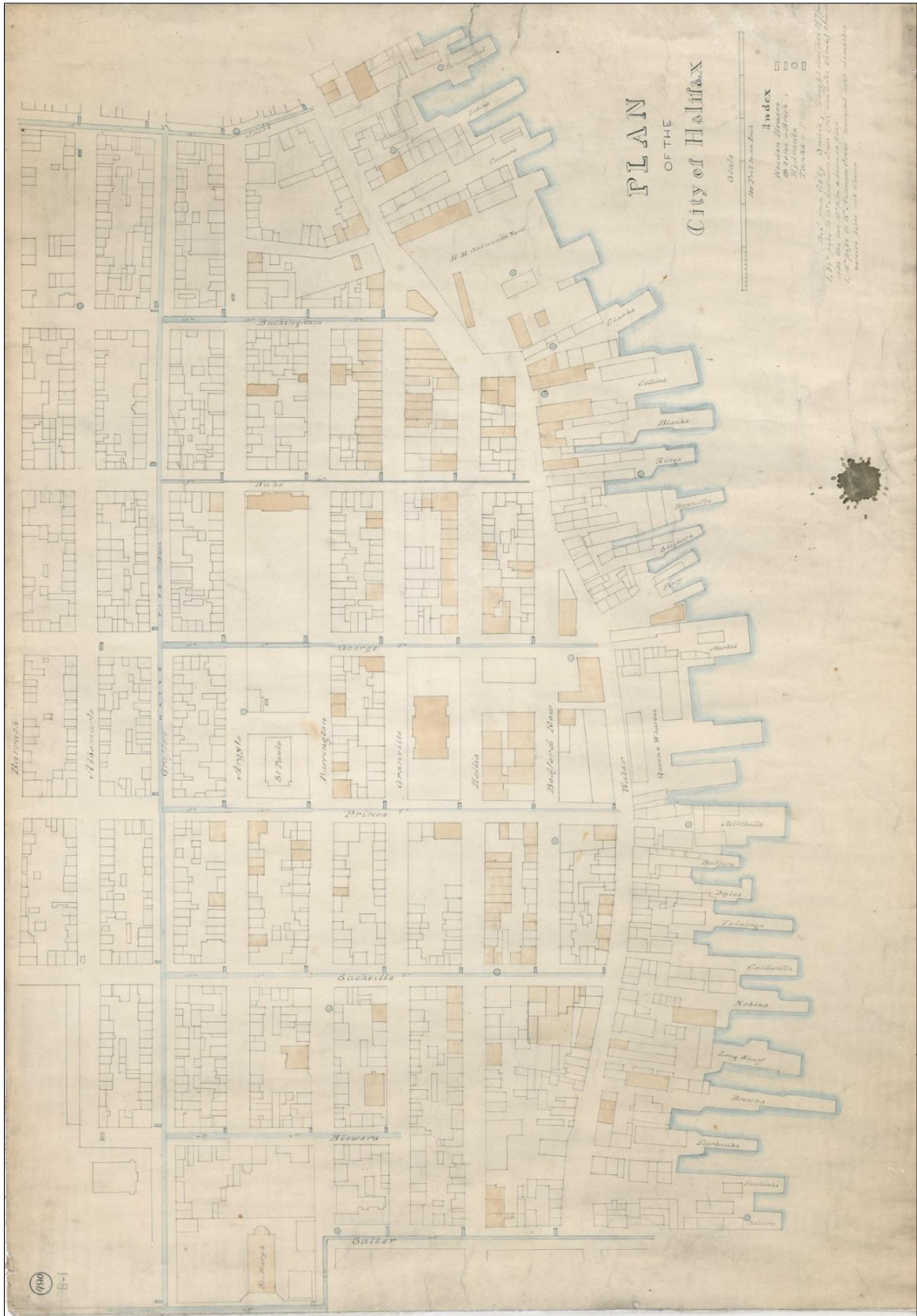
Map 3 – Fuller, E. G. 1851. *Plan of The City of Halifax*. Published by E.G. Fuller, Bookseller & Stationeer, Halifax. Halifax Municipal Archives CR 10-021.



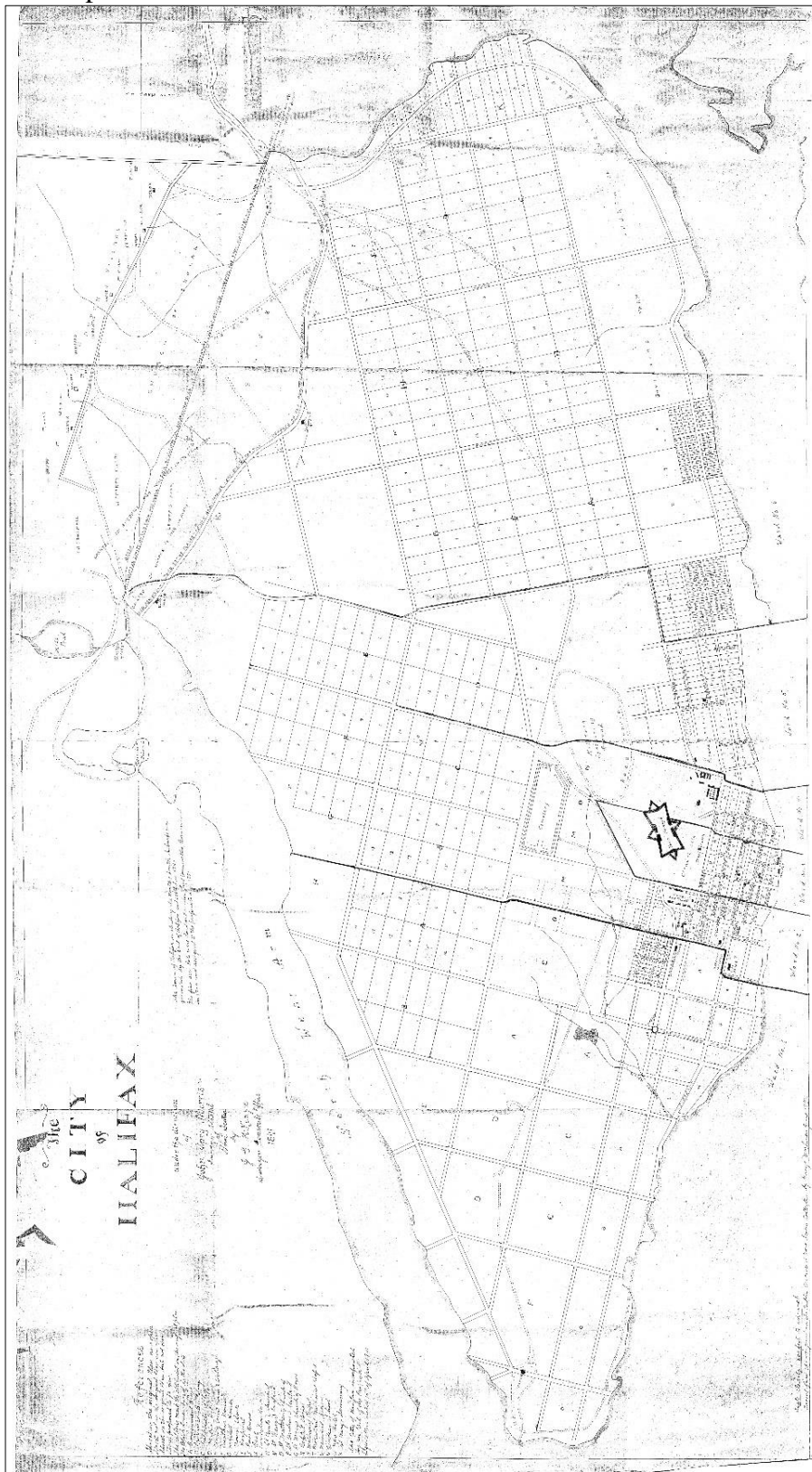
Map 4 – Torcot, T. M. 1830. *Plan of the Town of Halifax Including the North and South Suburbs.* NSA V6 240.



Map 5 – Author Unknown. 1851 *Plan of the City of Halifax*. NSA V6 240.



Map 6 – McKenzie, J. G., and John S. Morris. 1841. *The City of Halifax*. Halifax Municipal Archives. CR 10-022.



Appendix D

Modified data table taken from John Adamson's cholera patient list for case digitization in GIS.

| Date | 3 Mile House | Albemarle Street | Barrack Street | Barrington Street | Bigby's Wharf | Blowers Street |
|---------------|--------------|------------------|----------------|-------------------|---------------|----------------|
| 1834-09-03 | 0 | 5 | 0 | 0 | 0 | 1 |
| 1834-09-04 | 0 | 3 | 0 | 0 | 1 | 0 |
| 1834-09-05 | 0 | 1 | 0 | 0 | 0 | 0 |
| 1834-09-06 | 0 | 4 | 0 | 0 | 0 | 0 |
| 1834-09-07 | 0 | 2 | 0 | 0 | 0 | 0 |
| 1834-09-08 | 0 | 0 | 0 | 2 | 0 | 0 |
| 1834-09-09 | 0 | 1 | 0 | 0 | 0 | 0 |
| 1834-09-10 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-11 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1834-09-12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-15 | 0 | 0 | 0 | 2 | 0 | 0 |
| 1834-09-16 | 0 | 2 | 0 | 0 | 0 | 0 |
| 1834-09-17 | 0 | 1 | 0 | 0 | 0 | 0 |
| 1834-09-18 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-19 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-20 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-21 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-22 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-23 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-24 | 0 | 1 | 0 | 0 | 0 | 0 |
| 1834-09-25 | 0 | 1 | 1 | 0 | 0 | 0 |
| 1834-09-26 | 0 | 2 | 0 | 0 | 0 | 0 |
| 1834-09-27 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-28 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-30 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-01 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-02 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-03 | 1 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-04 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-05 | 1 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-06 | 0 | 0 | 0 | 0 | 0 | 0 |
| Totals | 2 | 23 | 2 | 4 | 1 | 1 |

| Date | Brig Industr y | Brig Jane | Cape Breton Steamer | Dock Yard Gate | Dock Yard Street | Dutch Town |
|------------|----------------------|-----------|------------------------|-------------------|------------------------|---------------|
| 1834-09-03 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1834-09-04 | 1 | 0 | 0 | 0 | 1 | 3 |
| 1834-09-05 | 1 | 0 | 0 | 0 | 0 | 1 |
| 1834-09-06 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1834-09-07 | 0 | 0 | 0 | 0 | 0 | 1 |
| 1834-09-08 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-09 | 0 | 0 | 0 | 0 | 1 | 3 |
| 1834-09-10 | 0 | 0 | 0 | 1 | 0 | 2 |
| 1834-09-11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-12 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1834-09-13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-16 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-17 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-18 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-19 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1834-09-20 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-21 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-22 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-23 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-24 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-25 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-26 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-27 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-28 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-30 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1834-10-01 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-02 | 0 | 1 | 0 | 0 | 0 | 0 |
| 1834-10-03 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-04 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-05 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-06 | 0 | 0 | 0 | 0 | 0 | 0 |
| Totals | 2 | 1 | 1 | 1 | 5 | 12 |

| Date | First Street | Fort Needham | Grafton Street | Hamilton's Wharf | Hog Street | Lockman Street |
|---------------|--------------|--------------|----------------|------------------|------------|----------------|
| 1834-09-03 | 0 | 0 | 0 | 0 | 0 | 3 |
| 1834-09-04 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-05 | 0 | 0 | 0 | 2 | 0 | 0 |
| 1834-09-06 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1834-09-07 | 0 | 0 | 0 | 0 | 0 | 1 |
| 1834-09-08 | 0 | 0 | 1 | 0 | 5 | 0 |
| 1834-09-09 | 1 | 0 | 0 | 0 | 2 | 3 |
| 1834-09-10 | 0 | 1 | 0 | 0 | 0 | 0 |
| 1834-09-11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-16 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-17 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-18 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-19 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-20 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-21 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-22 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-23 | 0 | 0 | 0 | 0 | 0 | 1 |
| 1834-09-24 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-25 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-26 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-27 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-28 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-30 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-01 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-02 | 0 | 0 | 0 | 0 | 0 | 1 |
| 1834-10-03 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-04 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-05 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-06 | 0 | 0 | 0 | 0 | 0 | 0 |
| Totals | 1 | 1 | 1 | 2 | 8 | 9 |

| Date | Maitland Street | Marchington's Lane | North Barrack Street | North Barracks | New Town |
|---------------|-----------------|--------------------|----------------------|----------------|----------|
| 1834-09-03 | 0 | 1 | 0 | 0 | 0 |
| 1834-09-04 | 0 | 0 | 1 | 0 | 0 |
| 1834-09-05 | 0 | 0 | 0 | 2 | 0 |
| 1834-09-06 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-07 | 3 | 0 | 0 | 0 | 5 |
| 1834-09-08 | 0 | 0 | 0 | 0 | 2 |
| 1834-09-09 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-10 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-11 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-12 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-13 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-14 | 0 | 0 | 0 | 0 | 1 |
| 1834-09-15 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-16 | 0 | 0 | 0 | 0 | 1 |
| 1834-09-17 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-18 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-19 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-20 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-21 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-22 | 1 | 0 | 0 | 0 | 0 |
| 1834-09-23 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-24 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-25 | 2 | 0 | 0 | 0 | 0 |
| 1834-09-26 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-27 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-28 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-29 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-30 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-01 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-02 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-03 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-04 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-05 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-06 | 0 | 0 | 0 | 0 | 0 |
| Totals | 6 | 1 | 1 | 2 | 9 |

| Date | Phillips Hill | Velocity M Boat | Vernon | W. Doughah Corner | Water Street | West's Schooner |
|---------------|---------------|-----------------|----------|-------------------|--------------|-----------------|
| 1834-09-03 | 0 | 0 | 0 | 0 | 7 | 0 |
| 1834-09-04 | 0 | 0 | 0 | 0 | 5 | 0 |
| 1834-09-05 | 1 | 0 | 0 | 0 | 7 | 0 |
| 1834-09-06 | 0 | 1 | 0 | 0 | 11 | 0 |
| 1834-09-07 | 2 | 0 | 0 | 0 | 4 | 0 |
| 1834-09-08 | 0 | 0 | 0 | 0 | 3 | 0 |
| 1834-09-09 | 0 | 0 | 0 | 0 | 5 | 0 |
| 1834-09-10 | 2 | 0 | 0 | 1 | 7 | 0 |
| 1834-09-11 | 0 | 0 | 0 | 0 | 4 | 0 |
| 1834-09-12 | 1 | 0 | 0 | 0 | 3 | 0 |
| 1834-09-13 | 0 | 0 | 0 | 0 | 2 | 0 |
| 1834-09-14 | 1 | 0 | 0 | 0 | 1 | 0 |
| 1834-09-15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-16 | 0 | 0 | 0 | 0 | 5 | 1 |
| 1834-09-17 | 0 | 0 | 0 | 0 | 2 | 0 |
| 1834-09-18 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1834-09-19 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1834-09-20 | 0 | 0 | 0 | 0 | 2 | 0 |
| 1834-09-21 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-22 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-23 | 0 | 0 | 0 | 0 | 2 | 0 |
| 1834-09-24 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1834-09-25 | 0 | 0 | 0 | 0 | 2 | 0 |
| 1834-09-26 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-27 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-28 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-09-30 | 0 | 0 | 0 | 0 | 2 | 0 |
| 1834-10-01 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-02 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-03 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1834-10-04 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-05 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1834-10-06 | 0 | 0 | 1 | 0 | 2 | 0 |
| Totals | 7 | 1 | 1 | 1 | 80 | 1 |