The Work of Nurses in the Fever Unit at the Ontario Hospital, Toronto:

A Qualitative Descriptive Case Study

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A thesis submitted in partial fulfillment of the requirements for the
Master of Science in Nursing

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Abstract

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The aim of this study was to describe the process and practices that informed fever therapy treatment at the Ontario Hospital, Toronto, and to describe the work of mental health nurses providing fever therapy at the Ontario Hospital, Toronto from 1941 to 1950.

For almost a decade (1941 to 1950) the Ontario Hospital, Toronto operated a fever therapy unit for the treatment of neurosyphilis, an advanced stage of syphilis. This unit, the only one of its kind in Ontario, used specially designed cabinets to elevate patient temperatures in an attempt to kill the bacterium known to cause neurosyphilis. These treatments, lasting 8 to 10 hours, was taxing on patients, both mentally and physically, and often left the patient in a compromised medical state.

The fever unit at the Ontario Hospital, Toronto was managed entirely by mental health nurses with next to no oversight from physicians, even in times of adverse medical reaction. This image of the mental health nurse as a highly skilled and competent practitioner is not one that has been historically assigned to this area of nursing.

This thesis contributes to the history of mental health nursing in Ontario and nursing overall.

Acknowledgements

I dedicate this thesis to the memory of my wee brother, Nicholas. The true historian.

The work and commitment required to complete a thesis is impossible to achieve without the love and support of others. I was blessed to have an abundance of both and for this I am grateful.

To the professors and staff at the University of Ottawa who expanded my world view, and challenged me to achieve more, I am grateful.

To my thesis advisor, who showed me exceptional kindness, I am grateful.

To the Archivists, who were as excited about finding the truth as I was, I am grateful.

To my children, Peter and James, who constantly reminded me of the unconditional love of a child, I am grateful.

To my husband, Julian, who always believed that I could. For his selflessness and love in the pursuit of a goal that wasn't his own, I am grateful.

To my mother, whose quiet strength and prayers kept me going, I am grateful.

To my father, who taught me the importance of defending those who struggle for acceptance, you were the inspiration for this thesis. I am grateful.

To the mental health nurse, who has always cared for and continues to care for some of the most vulnerable members of our society. I am grateful to tell your story.

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Chapter 1: Introduction

The Case

Between 1941 and 1950, the Ontario Hospital, Toronto installed and ran a fever unit for the purpose of treating neurosyphilis patients. Fever therapy was a classification of treatment that induced fever, by various methods, in the hope of eradicating the spirochete (bacterium) that was responsible for neurosyphilis. Dr. Bromley, the hospital superintendent during the time period, was appointed to the staff of the Ontario Hospital, Toronto in 1938. He was an advocate of this treatment regime and spearheaded its instigation at the Ontario Hospital, Toronto beginning in early 1941. Unlike all other forms of interventionist care within the asylum, fever therapy was managed almost entirely by nurses. Importantly, the day-to-day operations, assessment, and treatment of patients were at the discretion of the nurse following medically delegated protocols. As a result, nurses diligently documented their interactions with the patient, and the patient's response to treatment. These nurses' notes (i.e. treatment records) provided an important data source.

Insights that can be drawn from the experiences of nurses who provided care to patients with neurosyphilis at the Ontario Hospital, Toronto can be used to understand important elements of nursing care. Despite the devastating recounting of the undue harms that patients may have experienced when being treated in the fever cabinet (largely due to lack of knowledge and newly emerging/available antimicrobials), nurses' actions and work readily link to early evidence of specialized practice, critical care foundations (including intensive observation and acute intervention), and nursing practice that was beyond task-oriented care but rather demonstrated keen assessment skills and critical thinking. Much like narrative accounts that can be obtained through face-to-face interviews, the treatment records, nurses' notes and details

therein, are amenable to analysis through a qualitative approach. Analyzing these documents allows for a detailed description of nurses' work, and makes way for interpretation by creating an iterative process whereby we can consider not only what was done, but also what has remained constant in nurses' work over time.

Syphilis

Syphilis is a highly infectious, sexually transmitted infection caused by the spiral-shaped bacterium, *Treponema pallidum.*[1] Syphilis has three distinct stages, with symptoms and treatments specific to each stage.[2] The first stage, known as primary syphilis, is when the patient is most contagious and exhibits the 'heralding sore,' or chancres, typically three weeks post exposure.[3] The sore appears at the location where the bacteria entered the body. This stage is often painless, and the sore can usually heal on its own.[4] If the location of the sore is difficult to see, such as on the rectum or in the vagina, and is painless, the patient will be unaware that they have contracted the infection thus making communicability more likely. The patient remains contagious even when the sore has healed.[5]

The second stage is characterized by the development of a rash within two to eight weeks after the chancre first appears. A reddish-brown rash covers most of the body, including the palms of the hands and soles of the feet, indicating the bacteria has spread throughout the body and has become systemic.[6] The systemic nature of the illness at this stage is demonstrated by fever, sore throat, and a feeling of general malaise.[7] The individual is more likely to seek medical intervention in the secondary stage due to the symptoms. Intervening at the secondary stage reduces the potential that the infection will advance to the chronic stage of syphilis, which is more difficult to treat.[8]

The next stage is referred to as the latent or hidden stage of syphilis. During this phase, the individual may experience a remission of the disease (absence of any symptoms), anywhere from one to 20 years. They continue to be communicable during both the early and late stages of the latent period. Tragically, women who become pregnant during this stage, or any untreated stage of syphilis, can give birth to a child with congenital syphilis. This transmission can occur via the placenta or during labour and delivery when the infant comes into contact with infected tissue. If the infant survives, they will live a shortened life complicated by illness.[9]

The last stage, known as tertiary syphilis, may occur anywhere from one to twenty years post initial infection. The symptomology during this stage is dependent upon the part of the body infected by the bacteria.[10] For example, cardiovascular syphilis will exhibit symptoms associated with the heart and blood vessels. Neurosyphilis, the focus of this study, presents with symptoms associated with neurology, such as the inability to regulate behaviours and challenges with judgement and memory.[11] The disease at this stage can no longer be treated with antibiotics, but will instead focus on comfort measures and symptom mitigation. For example, behaviours associated with frontal lobe involvement, such as aggression or hallucinations, may be treated with antipsychotic medications.[12]

Treatment of syphilis has not always been as linear and prescriptive as described above. Historically, syphilis was a formidable foe to scientists and physicians alike.[13] During the era of the fever unit, the most challenging factor for successful treatment was that the thermal-lethal point to kill the spirochete responsible for syphilis required a core body temperature of 112°F. This temperature is incompatible with life. As an examination of patient records will show, some patients came dangerously close to achieving this core temperature and were ultimately, in most cases, revived by the nurse.[14] This study provides insight into a very small part of this

challenging journey, the role of mental health nurses (historically referred to as 'mental nurses' during the period of study) in the treatment of neurosyphilis.[15] Through a descriptive case study, the work of mental health nurses working in the fever unit at the Ontario Hospital, Toronto, will be explored. This case study and the files included from the Ontario Hospital, Toronto facilitate insight into a nursing role that was highly specialized and required keen assessment and intervention skills that predate any specialization that took place in nursing, including critical care units. In fact, evidence from the patient exemplars included closely resemble the work performed by nurses in early Canadian intensive care units in the late 1950s and early 1960s. Notably, unlike critical care nursing and the historical accounts associated with its development, the story of the mental health nurse is relatively silent. Furthermore, where the work of nurses in other areas of specialty practice has been celebrated, the work of mental health nurses has been scrutinized and seen in a less than favorable light. In contrast to these less than favourable views, this case study explores possible alternatives to viewing the work of these nurses.

The Mental Health Nurse

The principal carers of 'mental patients' during the time of this study were attendants, graduate nurses, and nurses in training.[16] The 1943 *Annual Report for the Ontario Hospitals for the Mentally Ill, Mentally Subnormal and Epileptic* reported that the Ontario Hospital, Toronto had 57 attendants: 34 graduate nurses and 29 nurses in training. Although they are not differentiated within the annual report, the nurses that worked within the fever unit (i.e. nurse technicians) are grouped with the overall number of graduate nurses. Nurses employed in Ontario at this time (1930s to 1950s) had formalized training in Nightingale-modeled schools of nursing.[17] This meant that nursing practice was standardized, followed a stringent course of training and evaluation, and ensured that only suitable candidates were trained and went on to

achieve that designation.[18] The ideal candidate was female, white, middle-class, usually Christian, from a good family, achieved a high-school diploma, and was in possession of moral character beyond reproach.[19] This characterization of the 'suitable nurse' is well documented in Canadian historiography.[20]

Nurses working with mental patients required additional competencies.[21] This was a recognized area of nursing 'specialization' after 1909 in Ontario. [22] Dr. C.K. Clarke, Medical Superintendent at the Ontario Hospital, Toronto, introduced training programs for the female attendants working at the Toronto asylum, an idea that soon spread to other asylums in the province and the country. These former attendants would not have had equivalent skills to the nurses from the general hospital training system and therefore registered nurses would still be needed in the asylum infirmary. Two factors occurred during the 1930s that increased the number of registered nurses working in asylums. The first resulted from the Great Depression. There were significant levels of unemployment amongst working class groups, including nurses.[23] Trained nurses unable to find work in the general hospitals applied to mental hospital nurse-training schools. [24] This was a significant benefit to mental hospitals, as they were able to attract a 'more qualified' nursing workforce.

The second event was the introduction of psychiatric nurse training for nurses within the general hospital training system. This insight arose out of the report *Survey of Nursing Education in Canada* by Dr. George M. Weir, head of the department of education at the University of British Columbia, in 1932. The Weir Report (as it would later be known) highlighted the need for nurses to have a better quality of education. Dr. Weir was also motivated by the mental hygiene movement and asserted that nursing needed to close the gap between general and mental hospital nursing.[25] Interestingly, the data from this study will show that the majority of mental

health nurses did not rise from the ranks of the middle class, but instead from more impoverished backgrounds, and often with a grade-school education or less.[26] Nurses employed by the Ontario Hospital, Toronto at the time of Dr. Weir's study underwent a 12-week training program delivered by a psychiatrist.[27] Nurses from general practice hospitals that wished to attain this additional skill enrolled in a three month internship at the asylum.[28] This involved both classroom and ward training, which was taught by a psychiatrist.[29] This resulted in mental health nurses, and their practice, being heavily influenced by the perceptions of medicine, and more specifically, psychiatry. Nursing leadership would eventually challenge this perspective and gain control over the education of nursing in the decades to follow.[30]

An additional factor that heavily influenced the training of mental health nurses was the idea of mental hygiene. Mental hygiene was based on the belief that mental illness and the social problems it created could be prevented through scientific knowledge and greater professional expertise.[31] Interconnected with this notion was the belief that some people were, either by class or genetics, inferior.[32] Moreover, hospitals received considerable financial support from the social elite, who believed that morality and health or eligibility for health care was closely linked.[33] Nurses were therefore intended to be the enforcers of this belief and to teach those with low moral character the way to moral redemption.[34] Illness due to 'sexual impropriety,' such as those suffering from syphilis, became the focus of this movement.[35]

The role of the mental health nurse had only just started to be told from the perspective of these nurses. Traditionally, if anyone thought it was important enough to mention, the nurse's role would have been related by the psychiatrist or an administrator.[36] In a 1960s address to the British Medico-Psychological Association, President Alexander Walls related his regret over the "almost complete neglect of mental health nursing in the current histories of both psychiatry and

nursing," and went on to caution confusing the history of psychiatrists with the history of psychiatry, as the latter comprised far more than the biographies of medical men.[37] Remarkably, even the shift of care from attendants to trained mental health nurses, a pivotal moment in the care of the insane, did not merit much mention.[38] This shift signified the change in focus of mental care from custodial to a treatment-based care where mental illness was seen as curable and not a death sentence. Psychiatric nurse historians assert that the story of mental health nursing and their role in the care of mental patients has not advanced at the same pace as other areas of nursing. [39] Veryl Tipliski, in her study on psychiatric nurses in three Canadian provinces, remarks that Nurse Historian Kathryn McPherson excluded psychiatric nurses from discussion in her book, *Bedside Matters* (2003).[40] Nursing historians consider McPherson's book to be foundational in the understanding of Canadian nursing history, so the omission of mental nursing is a notable gap.[41]

The advent of social history brought the image of the mental health nurse more closely into focus, but the perspective has almost always been that of the patient, not the nurse. Through the research of psychiatric historians like Geoffrey Reaume, the brutal and cruel existence of the mental patient has been brought out into the open, and rightfully so. Reaume describes the role of the mental health nurse through direct quotes from patients telling their stories, and although these reflect the patient's experience, they do not unequivocally represent the nurse, her role or nursing work. In 2009, a collaboration amongst Canadian, American, and British scholars established a website, *The History of Madness in Canada,* with the explicit purpose of bringing research on mental health and psychiatric medicine into the public domain.[42] It offers a wealth of information on mental health history in Canada but, once again, its vision is to offer representation to "patients/survivors/consumers," the perspective is not the nurse's.[43] In recent

years, several studies have been published that use oral histories, nursing documentation, training manuals, and legislation specific to psychiatric practice to focus specifically on the mental health nurse in relation to working conditions, education, and social constructs of gender.[44] This focus is essential, as the domain of mental nursing requires a skillset and specialized knowledge unique to that area of practice, which in turn has implications for patient care.[45] In 1936, the Provincial Commissioner of Mental Institutions in Manitoba stated: "The nursing of mental patients requires women of finer personality, of wider sympathies, greater self-control, and higher intelligence than the nursing of those who are physically ill."[46]

The Role of The Nurse on the Fever Unit

A review of the literature for published studies on fever cabinet nursing in Canada returned a dearth of research into this unique area of nursing practice. One of the few articles found referring to the fever cabinet nurse, published in the December 1936 *American Journal of Nursing* and written by a physician, describes the role of the nurse during fever cabinet therapy in considerable detail.[47] According to the article, the nurse administering this therapy was required to monitor the patient's vital signs frequently, observe the skin for burns, administer medications and fluids, monitor the patient for signs of vascular or respiratory failure, and be prepared to administer emergency treatment.[48] In addition, as this was usually a lengthy treatment taking five to seven hours, the nurse was also expected to "have good temperament, unfailing good cheer, poise and influence in seeing the patient through this period."[49] The ability to play music or tell a story was considered an asset.[50] This provides a good understanding of mental health nurses' assigned tasks, but does not describe the experience in the nurses' own words, nor does it reveal the skill and ability required of the mental health nurse during this treatment. This case study will provide the opportunity to observe and therefore understand the

work of the mental health nurse by studying nursing documentation from the fever unit.

Purpose of the Research Study

The purpose of this descriptive case study was to gain an understanding of the role of nurses in the treatment of patients receiving fever therapy for neurosyphilis at the Ontario Hospital, Toronto from 1941 to 1950. This research was guided by the following objectives:

1. To describe the process and practices that informed fever therapy treatment at the Ontario Hospital, Toronto.
2. To describe the work of mental health nurses providing fever therapy at the Ontario Hospital, Toronto from 1941 to 1950.

Organization and Structure

This thesis will be comprised of five chapters, each addressing different aspects of the practice of nurses working in the fever unit. Chapter One, includes a brief description of the case, an overview of syphilis and its treatments historically and today, a description of the mental health nurse and her role in the care of neurosyphilis patients and concludes with the purpose and objectives of the thesis. In Chapter Two, using a historiographical approach, I provide a description of important conceptual underpinnings for the case including the advent of fever therapy and its progression to the fever cabinet, the demographics of mental health patients and the care of neurosyphilis patients in Ontario up to the time of the fever unit at the Ontario Hospital, Toronto. Additionally, Chapter Two includes an overview of the training of mental health nurses within relative proximity to the time of the case described. In Chapter Three, I provide an in-depth description of case study methodology that includes its underlying ontology and epistemology. Additionally, I define the case in detail and identify the primary sources used for the study. In Chapter Four, I present the findings from the case study analysis. This chapter is

divided into two sections. First, the focus is on the creation of the fever unit at the Ontario Hospital, Toronto and the mental health nurse as the principle carer. Second, by using patient records, I establish the standard of fever therapy and highlight the work of the nurse through cases files. In Chapter Five, I summarize the case study and provide a discussion of the study's findings. Journal articles written by nurse experts performing fever therapy will be used to support the discussion. I close Chapter Five by presenting this study's limitations, and implications for future research and nursing practice.

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[1]CDC, "Syphilis Fact Sheet," ed. Division of STD Prevention (Atlanta, Georgia: Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention, 2017); Adam Perkovic, "The Changing Treatment for Syphilis," in *Damage Control: The Untold Story of Venereal Disease in Hamilton, 1900 - 1950*, ed. D.A. Herring (Hamilton, Ontario: Department of Anthropology McMaster University, 2014).

[2] CDC, "Syphilis Fact Sheet."

[3] CDC; K. Holmes, Sparling, P.F., Stamm, W.E., Piot, P., Wasserheit, J.N., Corey, L.,Cohen, M.S., *Sexually Transmitted Diseases: Edition 4* (New York: McGraw Hill Professional, 2007).

[4] *Sexually Transmitted Diseases: Edition 4*; Health Wise Staff, "Stages of Syphilis," Health Wise, https://www.healthlinkbc.ca/health-topics/tm6404.

[5] CDC.

[6] Staff, "Stages of Syphilis".

[7] Staff; Holmes, *Sexually Transmitted Diseases: Edition 4*.

[8] *Sexually Transmitted Diseases: Edition 4*.

[9] Staff, "Stages of Syphilis".

[10] Holmes, *Sexually Transmitted Diseases: Edition 4*.

[11] Holmes

[12] Francis M Sanchez and Marc H Zisselman, *Treatment of Psychiatric Symptoms Associated with Neurosyphilis*, vol. 48 (2007).

[13] John Frith, "Syphilis-Its Early History and Treatment until Penicillin, and the Debate on Its Origins," *Journal of Military and Veterans Health* 20, no. 4 (2012).

[14] No Author, "<1944 Medical Journal Fever Therapy.Pdf>," (1944); W.M. Simpson, "Artificial Fever Therapy of Syphilis and Gonococci Infections," *British Journal of Venereal Diseases* 12, no. 3 (1936); W.M. Simpson, Kendell, H,W., Rose, D., "Developments in the Treatment of Syphilis with Artificial Fever Therapy Combined with Chemo-Therapy During the Past Decade," *British Journal of Venereal Disease* 17, no. 1-2 (1941); Warren A Shoecraft, "Artificial Fever Therapy," (1936).

[15] It should be noted that this thesis will use a number of terms such as 'mental health nurse', 'mental patient', 'mental hospital', 'insane', and 'queer' that are considered derogatory or offensive in today's context. However, to stay true to the time studied and avoid issues of presentism, I will use these terms throughout the thesis. Also, the nurse will be referred to as female, which is also consistent with the time under study and the reality of practice in the fever unit.

[16] All nurses working in the fever unit at this time were female. All references to the mental health nurse in this thesis will be in the feminine.
[17] Katherine McPherson, *Bedside Matters: The Transformation of Canadian Nursing, 1900 – 1990* (Toronto: University of Toronto Press, 1996), 27-73
[18] Lynn Kirkwood, "Enough but Not Too Much: Nursing Education in English Language Canada – 1874 -2000," in *On All Frontiers: Four Centuries of Canadian Nursing (*Ottawa: University of Ottawa Press, 2005*),* 183-196
[19] McPherson, Bedside Matters, 1-25
[20] K, "The Nightingale Influence and the Rise of the Modern Hospital" , in all Frontiers: Four Centuries of Canadian Nursing, ed. Christina Bates, Dianne Dodd, Nicole Rousseau (Ottawa: University of Ottawa Press, 2005), 79; McPherson, *Bedside Matters,* 20; McPherson, 24
[21] Dr. Bromley, Letter to the Minister of Health, 1939
[22] Tipliski, *Parting at the Crossroads: The Emergence of Education of Psychiatric Nursing in Three Canadian Provinces, 1909-1955,* 253; Tipliski, *Parting at the Crossroads, 256*
[23] Geertje Boschma, Olive Yonge, Lorraine Mychajlunow, "Gender and Professional Identity in Psychiatric Nursing Practice in Alberta Canada, 1930 – 75," *Nursing Inquiry,* no 12 (2005):245
[24] Boschma, "Gender and Professional Identity," 245
[25] Tipliski, "At the Crossroads," 257; Julia Kinnear, "The Professionalization of Canadian Nursing, 1932-32: Views in the CN and CMAJ," *Canadian Bulletin of Medical History,* no 11 (1994): 156
[26] Ontario College of Nurses, "Asylum Inspection Report," (Toronto, 1920 - 1950).
[27] Toronto General School of Nursing. 1943. Yearly update on nursing training to the Hospital Administrator. Toronto General School of Nursing Fonds, University Health Network Archives, Toronto.
[28] Mary Smith, Nazilla Khanlou, "An Analysis of Canadian Psychiatric Mental Health Nursing Through the Junctures of History, Gender, Nursing Education, and Quality of Work Life in Ontario, Manitoba, Alberta, and Saskatchewan," *International Scholarly Research Notices,* April 1st, 2013, accessed February 5th, 2016 http://www.hindawi.com/journals/isrn/2013/184024/
[29] Toronto General School of Nursing. 1934. Description of the mental health requirement for general hospital certification. Toronto General School of Nursing Fonds. University Network Archives, Toronto.
[30] Tipliski, "Parting at the Crossroads," 253
[31] Boschma, "Gender and Professional Identity," 246
[32] Boschma , 245
[33] Katherine McPherson, "Bedside Matters," 1-23
[34] McPherson, 1-23
[35] Suzann Buckley and Janice Dickin McGinnis, "Venereal Disease and Public Health Reform in Canada," *Canadian Historical Review* 63, no. 3 (1982).
[36] Tipliski, "Parting at the Crossroads," 254
[37] Peter Nolan, "Celebrating Our History of Care," *Journal of Psychiatric and Mental Health Nursing,* no 10 (2003):1
[38] Tipliski, "Parting at the Crossroads," 255
[39] Tipliski, 256
[40] Tipliski, 256; McPherson, *Bedside Matters,* 1-4
[41] Tipliski, "Parting at the Crossroads," 255
[42] The History of Madness in Canada, http://historyofmadness.ca/index.php?option=com_content&view=article&id=154&Itemid=35&lang=en (accessed on March 10th, 2016)
[43] The History of Madness in Canada
[44] Erika Dyck, "Dismantling the Asylum and Charting New Pathways into the Community: Mental Health Care in Twentieth Century Canada," *Social History* 44, no 88 (2011):181-196; Boschma, "Gender and Professional Identity, 245; OM Church, " Emergence of Training Programs of Asylum Nursing at the Turn of the Century," *Advances in Nursing Science* 7, no 2 (1985):35-46; Chris Dooley, "They gave their care, but we gave loving care: Defining and

defending the boundaries of skill and craft in nursing service of a Manitoba mental hospital during the Great Depression," *Canadian Bulletin for Medical History* 21 (2004):229-51; Tipliski, "Parting at the Crossroads". 257; Smith, "An Analysis," 1-13

[45] Tipliski, "Parting at the Crossroads," 257

[46] Charles Doan, "The First Annual Conferrence on Fever Therapy," *The Science Monthly* 44, no. 5 (1937), www.jstor.org/stable/16160.

[47] Leon Bromberg, "Artificial Fever Therapy," *American Journal of Nursing* 36, no. 12 (1936): 1183-1298

[48] Bromberg, "Artificial Fever Therapy," 1189

[49] Bromberg, 1189

[50] Bromberg, 1189

Chapter 2: Constructing the Context of Nurses' Work in the Fever Unit Using a Historiographical Approach

This chapter uses relevant literature (including published historical accounts and professional literature) to provide a historiographical construction of the context wherein 'mental health nurses' worked and cared for patients with syphilis. The included literature provides a rich description of the advent of fever therapy and its progression to the fever cabinet, the composition of mental health patients and the care of syphilis patients in Ontario up to the time of the fever unit. Further, considerations regarding the training of mental health nurses are presented. This historiographical account provides the essential contextual foundation upon which this case is situated.

A comprehensive search of the literature using title searches in Medline, CINAHL and Google Scholar and the terms *mental nursing, fever therapy, fever cabinet, hypertherm,* and *neurosyphilis* produced eighteen articles in total. The topics ranged from an overall description of fever therapy to complications associated with its administration. The publication dates ranged from 1935 to 1943, with the majority clustered around 1937. Of these eighteen articles, only seven dealt specifically with the role of nurses within this treatment modality, of which three were written by nurses and four by physicians. A manual search of the journal *Canadian Nurse* from 1932 to 1950 produced no articles about fever therapy nursing in Canada. The articles that were retrieved will be used as practice standards and comparators with the care provided by nurses working in the fever unit at the Ontario Hospital, Toronto. A search of Toronto media outlets at the time produced no mention of the introduction of the hypertherm in Toronto except for a brief article in the July 17th, 1941 edition of the Toronto Daily Star. This article chronicled

the success of diathermy treatment, via a fever cabinet, at the Burwash Prison in Sudbury, Ontario.[1]

With respect to other primary sources that might have been available such as textbooks, none were found. An exhaustive search was conducted at the Archives of Ontario, The Centre for Addiction and Mental Health archives (CAMH, formally Queen Street Mental Health Centre), and all hospital archives and universities mentioned in the Kettering Family Papers as participants in the original pilot test of the Kettering hypertherm.[2] To this day, no Kettering training manual to direct nursing care in the fever unit has been found.

The History of Fever Therapy and the Evolution of the Fever Cabinet

The Induction of Fever

Knowledge of the curative effects of fever or heat on an underlying illness has existed since the time of Hippocrates and Galen.[3] Hippocrates is quoted as saying, "give me the power to produce fever and I will cure disease."[4] Early users of heat sources, such as the sun or hot springs, would have been unaware of the true physiological impact of heat beyond the skin or considered the systemic properties of heat on different organs in the body. Beginning understandings of health and illness were based on beliefs that all illnesses were caused by an imbalance of one of the four humors: blood; phlegm, yellow bile, and black bile. Treatment was based on making changes to the patient's environment that would restore the balance of the effected humor.[5] To rid the body of the excess causing the imbalance, methods such as blood-letting, vomiting, evacuation of the bowels and diaphoresis were used.[6] The connection between heat and diaphoresis, for example, is described by Galen (AD 160) when relating the treatment for dropsy (generalized edema) "by heating the patient in a barrel, it caused an evacuation [sweating] of the entire body greater than in the bath."[7] Early examples of the use of heat are

plentiful. The Egyptians (around the 5th Century BC) used the sun to heal skin afflictions and natural hot air caverns caused by volcanic sources as a method to manage arthritic-type ailments. Hippocrates ordered hot baths for what he diagnosed as "thickened and tense skin" (which was later determined to be dermatoses).[8] Chinese and Japanese healers used hot springs arising from volcanic formations to treat syphilis, arthritis, and genito-urinary infections, as well as respiratory, digestive, nervous, and ocular diseases.[9] It has been suggested that these early uses of heat in the treatment of illness and disease were precursors of later therapies utilized in psychiatric practice, such as blanketing, hot baths, hot packs, and fever therapy.[10]

The use of heat, and eventual fever treatment modalities, intersected with an evolving understanding of illness and disease. For hundreds of years, there was little to no scientific rigor associated with fever therapy, nor evidence to inform factors such as therapeutic body temperature or an appropriate course of treatment.[11] Prior to the invention of the thermometer in 1595 by Galileo, the presence of temperature (or fever) was confirmed using three criteria: the patient's appearance, the patient's own perception of temperature, and the educated hand of the physician.[12] The physician's hand was considered the most reliable of the three.[13] However, with the invention of the thermometer, the opportunity to connect science and fever therapy became possible. In 1611, a scientist by the name of Sanctorius adapted Galileo's thermometer and began to use it to establish a 'normal' body temperature and, in doing so, established deviations from normal as an aid to diagnosis certain diseases.[14] Unfortunately, the instability of the early thermometer produced marked variations in temperature and made readings both inaccurate and unreliable. For example, in an early study (around the year 1611) investigating the temperature of a patient who fell from a horse, an axillary temperature of 122°F was recorded.[15] With continued experimentation, the functionality and reliability of the thermometer improved. In

1835, Antoine Cesar Becquerel and Gilbert Breschet determined the body temperature of a healthy adult to be 37°C or 98.6°F.[16] From this point forward, thermometric observation would become an important diagnostic tool prominently featured in physical assessment and recorded in the patient record.

Despite being a useful piece of information in tracking the progress of an illness, physicians still lacked a foundational understanding of the laws of heat, what processes in the body produced heat, or how heat external to the body could be manipulated in ways that were therapeutic. Work by scientists such as Mayer, Hermann, and Von Helmholtz in the 1840s produced an understanding of how physiological processes worked, in addition to the development of early theories of how temperature was a convertible force governed by certain laws of science.[17] Their work led to four principles of body temperature that are still recognized today: 1) variations in temperature have pathological and physiological causes and are significant in understanding disease, 2) body heat is an end-product resulting from chemical processes in the repair and production of waste in the body, 3) body temperature resulting from these chemical processes is uniform and rarely varies from individual to individual, and 4) factors such as diet, exercise and age can produce variations in a normal body temperature.[18] Armed with these principles, scientists began to document the progress of certain diseases, making diagnoses easier and courses of treatment more prescribed and predictable. Notably, while taking patient temperatures was a major diagnostic tool belonging to the physician, it would not be until approximately 1878 that it was relegated to the status of a task and became the work of the nurse.[19]

The Fever Cabinet

Dr. Charles Kettering was an American inventor and entrepreneur responsible for a number of revolutionary inventions, starting from his time as the head of research for General Motors in 1920 until his death in 1958.[20] In all, he was responsible for 186 patents, including the electric start motor, leaded gasoline, Freon used in refrigeration and air-conditioning, paints used in the mass production of automobiles, and the world's first aerial missile.[21] In 1927, after considerable financial and business success, Kettering established the Kettering Foundation, a non-partisan research foundation dedicated to the pursuit of inventions to better mankind and relieve human suffering.[22] It was from this research initiative that the fever cabinet was born.

In the fall of 1931, Kettering was entertaining a number of eminent American physicians in his home, when informal discussions led to the burgeoning syphilis crisis (discussed in more detail later in this chapter), and the work of Nobel Prize laureate and psychiatrist Dr. Julius Wagner-Jauregg.[23] Wagner-Jauregg's research suggested that, although purported to be effective, the use of fever to cure disease could be hazardous to the patient's health, was time consuming, and rendered the patient unable to work, which had implications for the patient's social wellbeing and ability to remunerate the hospital for treatment.[24] The conversation then turned to the experience of short-wave radio operators that were in contact with Admiral Byrd during the polar expedition in 1926.[25] These operators developed fever while they were in the short-wave radio field due to a one kilowatt radio transmitter directed from an aerial. Subsequently, Kettering pursued the hypothesis of *artificially* produced fever via radio waves, which led him to the research of Dr. Willis R. Whitney, the Director of Research at General Electric.[26] Whitney had also made this observation and created a cabinet that housed a one-kilowatt radio transmitter with the energy conducted between two large condenser plates instead of an aerial. This cabinet

became known as the radiotherm. Kettering asked Whitney to produce a similar cabinet that could be used to investigate the use of artificial fever in the treatment of neurosyphilis.[27]

The History of Syphilis

To recount a history of syphilis as we currently understand the disease today is complicated given that the set of symptoms we now associate with the early stages of that sexually transmitted infection, such as mild sores, rash, sore throat and fever, has changed in the five hundred years since it was first documented around 1496.[28] Medical historians assert that in its initial period of communicability, the symptoms were much more severe than today due to the newness of the disease in a population with no immunity against it.[29] Those unfortunate enough to have acquired this new illness experienced the 'heralding' chancre sore, fever, and a generalized rash. The symptoms then progressed to debilitating pain and ulcers that destroyed bone and connective tissue, causing facial deformities and decreased mobility.[30] Many early victims of syphilis became bedridden, were unable to work and support their families, and died shortly thereafter. Although causing the same types of medical and socio-economic issues as in its early history, syphilis at the time of this case study (1941 to 1950) saw a more protracted course of illness that resulted in people suffering much longer, with a greater likelihood of progression to neurosyphilis.[31]

Debate regarding the origins of syphilis has resulted in three main theories: 1) it was brought from the Americas to the Old World by Christopher Columbus, 2) it had always existed in the Old World as an old treponemal (spiral-shaped bacterium) disease that evolved into a more virulent strain in the late 15th century, and 3) all treponemas are a single disease where the environmental and social factors of the 15th century favoured its transmission by sexual intercourse, resulting in syphilis.[32] The timing of the first documented epidemic in 1495 makes

the Columbus theory the one espoused by modern scientists and historians.[33] In 1495, when Charles VIII of France invaded Naples using Spanish mercenaries who had been part of Columbus' crew, syphilis (or the 'grande verole' because the term syphilis would not be introduced until 1530) raged through the French forces, rendering them unable to fight.[34] Its swift spread was facilitated by camp followers, including prostitutes. Prostitutes, then considered a necessary fixture in any military force, have been linked to the spread of sexually transmitted infections throughout military history.[35]

Once back in France, the army disbanded, returning to their towns and villages carrying with them the scourge of syphilis. By the end of 1495, syphilis had spread throughout France, Germany and Switzerland and reached Britain by late 1497. Three years after the occupation of Naples, syphilis could be found in Scandinavia, Hungary, Greece, Poland, and Turkey, and by 1520, due to an increase in exploration, it reached Africa, China, Japan and Oceania.[36] Those wishing to counter the Columbus theory point to the discovery of what appeared to be Syphilitic Periostitis and Periostitis Gummosa in prehistoric burial remains; however, these claims have never been substantiated.[37]

The term venereal disease, the overall classification that would comprise diseases acquired through sexual contact, was first used in 1527 by a physician from Rouen, France named Jacques Bethencourt. Bethencourt suggested that since the disease arose from 'illicit love' it should be called the malady of Venus or venereal disease (morbus veneris).[38] This terminology became more significant after the discovery of germ theory when it was evident that there was more than one sexually transmitted infection. The actual name 'syphilis' is credited to a Latin poem named *Syphilis Sive Morbus Gallicus* written by Girolamo Fracastoro in 1530.[39] The poem relates the story of a shepherd called Syphilis who was stricken with an odious disease by the

Sun god as punishment for blasphemy.[40] Fracastoro blended historical writings about the disease with a fable written by Ovid to produce a three-volume poem that disseminated information on the disease's pathology, symptoms, diagnosis, and therapy to physicians. While the poem became very popular and is credited with the adoption of the word 'syphilis,' the term did not find its way into popular culture until the early nineteenth century.[41]

Understanding Syphilis Transmission and Early Therapies

The shift from a humoral to bacterial understanding of disease did not occur until the 1860s, despite some early recognition of contagion as a source of disease in the early 1500s by the Viennese physician Fracastoro.[42] Fracastoro mixed humoral and contagion theories by suggesting that individuals with balanced humors could still contract disease when 'seeds of corruption' passed from one person to another by direct contact, indirect contact and long-distance transmission. These diseases were classified as 'contagious fevers' and included poxes, measles, rabies, leprosy, scabies, and syphilis. The origin of syphilis would remain unknown until the genesis of germ theory in the 1860s by Pasteur, Lister and Koch.[43] The ability to distinguish microbes using the microscope facilitated the diagnosis of different bacterium, and therefore many diseases. The first bacterial infection to be identified, anthrax (caused by *Bacillus anthracis*), was discovered by the German doctor Robert Koch in 1877.[44] *Treponema pallidum*, the bacteria that causes syphilis, was discovered in 1903 by Schaudinn and Hoffmann.[45]

Patients diagnosed in the early stages of syphilis were effectively treated with arsenic compounds injected intramuscularly. These treatments were painful, with brutal side effects (e.g., rashes and liver damage), but allowed patients to experience some relief from symptoms.[46] However, arsenic compounds did not cross the blood-brain barrier and therefore had no effect on the neurological symptoms associated with late stage general paresis or *neurosyphilis*.

Neurosyphilis is associated with memory loss, confusion, complete personality change, psychosis, and eventually, death.[47] As a result, there was an explosion of research examining biological treatments that could reach the brain (which was imperative in the treatment of syphilis, namely neurosyphilis). This resulted in a vast production of literature on the topic. Influenced by the heightened attention in the scientific community, a Russian psychiatrist named Alexander Rosenblum intentionally induced fever in patients using malaria, typhoid, and relapsing fever in 1876.[48] As done by Wagner-Jauregg, Rosenblum injected his subjects with live malaria and typhoid bacteria removed from ill patients in the hopes of producing fevers. His study produced a fifty percent success rate, with 11 of his 22 psychiatric patients cured of their psychoses.[49] However, because his study was published in Russian and in a relatively unknown scientific journal, it garnered little attention.[50] Rosenblum never received the credit he deserved until Wagner-Jauregg recognized his work at a conference fifty-nine years later, in 1935.

Wagner-Jauregg, whose primary focus was on treating syphilis, did not begin his study into the use of fever-causing infectious diseases in the treatment of mental patients until 1887, almost a decade after Rosenblum. Wagner-Jauregg's initial interest into the therapeutic use of fever began four years earlier (1883) during his first clinical position, where he observed a woman with severe psychosis experience considerable alleviation of her symptoms during an attack of erysipelas, an infection of the upper layers of the skin similar to cellulitis, accompanied with a high fever.[51] His initial experiment, inspired by his observation of the psychotic woman, involved inoculating streptococci from erysipelas into several patients. The results were unsatisfactory, with none of the patients showing an improvement in symptoms.[52] After a lull in experimentation, Wagner-Jauregg began a study in 1900 that compared 69 paretic (neurosyphilis) patients treated with tuberculin with 69 paretic patients who did not receive

treatment. The results showed that those treated with tuberculin, especially those that had the strongest reaction, went into remission.[53]

As promising as these findings were, ongoing experimentation with tuberculin as a therapeutic agent resulted in high death rates among study participants, so Wagner-Jauregg needed to find another agent. By chance, in 1917, Wagner-Jauregg received word of a soldier afflicted with tertian malaria. Using a sample of the soldier's blood, nine of his neurosyphilitic patients were injected with live malaria.[54] Of the nine patients inoculated, one died, two had worsening psychosis and were sent to asylums, and the six remaining had marked improvement of their symptoms. Four of these patients relapsed, leaving two patients with a significant enough recovery to permit them to return to their families and work. Enthused by these results, over the next five years Wagner-Jauregg used malaria to inoculate another 200 patients whose syphilis related symptoms had progressed to paresis.[55] Forty percent of these patients recovered the ability to resume lives that had been interrupted by syphilis.[56] This provided psychiatry with a link between a biological cause of disease and treatment, and proved to be a monumental shift in psychiatric practice.[57] This development provided a reprieve from the classification period, during which patients were diagnosed and provided supportive care, to the interventionist period, where the etiology of some psychiatric conditions had a biological cause and a specific corresponding treatment.[58] Wagner-Jauregg declared a 'rosy future' for psychiatric practice.

Wagner-Jauregg received the Nobel Prize in Medicine in 1927 for his malarial treatment of neurosyphilis giving him the notable distinction of being one of only three recipients of a Nobel Prizes in Medicine awarded in the area of psychiatry.[59] Unfortunately, he also had the distinction of being the only Nobel Prize winner to be tried at Nuremberg due to his unethical treatment of patients, in addition to his associations with the Nazis.[60] Wagner-Jauregg was never

found guilty of committing a war crime, but his unethical treatment of human subjects in a clinical trial was recognized.

Malarial Fever Treatment, Antimicrobials and the Fever Cabinet

The initial course of treatment used in Wagner-Jauregg's first experiment remained the gold standard in neurosyphilis treatment until the protocol was altered by Dr. John Mahoney to include penicillin in 1942.[61] Malarial treatment began with the patient being inoculated subcutaneously with malaria infected blood from a live donor. The patient was left to incubate the bacterium and develop fever over a period of seven to twelve days. The optimal course of treatment was a minimum of forty hours of febrility, with some patients experiencing up to eighteen fevers.[62] At the end of this period, the patient was given quinine (an anti-malarial) to treat the malaria, in addition to the arsenic compound Neosalvarsan, which was a standard treatment for syphilis.[63] Adjuvant treatments of mercury and iodine could also be added, since it was well known at that point in time that a fever of 106°F caused by malaria was insufficient to kill the *Treponema pallidum*.[64] Malaria continued to be used after the discovery of penicillin in 1942 because many doctors felt it inconceivable that penicillin could cure syphilis on its own and therefore, still required the induction of fever. It eventually took a comparative study that investigated penicillin on its own, malaria on its own, and a combination of penicillin and malaria together to persuade the disbelievers.[65] After following participants for a number of years, researchers decided that penicillin had the highest efficacy and was the least disruptive to the patient's life. Malaria therapy was permanently discontinued in the early 1950s when penicillin became the standard of care.[66]

Given the perceived need to induce fevers higher than the 106°F that could be obtained through malarial based treatments, alternative approaches to reach desired core temperatures

were considered. The latter provided entry of the fever cabinet to be considered in the treatment of neurosyphilis. In November of 1931 at the Miami Valley Hospital in Dayton, Ohio, Dr. Fred Kislig, Dr. Walter Simpson, Charles Kettering, and Miss Florence Storck, nurse technician, began their investigation of the radiotherm.[67] It should be noted that Miss Storck's contributions were highlighted in the 1937 summary by Dr. Simpson. He stated, "much of the credit for any success attributed to this work has been due to the loyalty, intelligence and industry of Miss Storck."[68]

The research was carried out over a two-year period and followed the standard course of translational research: development of a research idea or concept; development of clinical trials; and, lastly, human trials.[69] Studies began by capturing baseline data on previous modalities in the production of fever such as hot baths, hot air blankets, and electric blankets.[70] This progressed to animal studies using the radiotherm. In the animal studies, a serious risk became apparent. Due to the increased body temperature, pools of perspiration would accumulate on the surface of the skin, which caused the short waves to gather in the moisture, resulting in severe burns.[71] In an effort to eliminate this risk, Kettering developed the concept of the air-conditioned cabinet. This was a concept that would have been very familiar to Kettering, given that he was the inventor of Freon in the use of air-conditioning.[72] The basic premise of the cabinet was to have heated, dry air passing over the patient, reducing the relative humidity to zero while radio currents elevated that patient's body temperature. This prevented pools of perspiration forming on the body and therefore reduced the incidence of burns. Despite this improvement, it was still the responsibility of the nurse caring for the patient to make regular checks to ensure there were no significant areas of perspiration.[73]

Over the next two years, a number of adjustments were made to how the cabinets were

heated, what material(s) they were built from, how much relative humidity was required, and the benefits of new versus recycled air. In February of 1932, they settled on a cabinet made of balsa wood that used recycled air and produced an optimal cabinet temperature of 300°F with dry lightbulbs.[74] Treatment at this time involved having the patient in the cabinet until the desired rectal temperature was reached (105-106°F), which usually took about sixty minutes.[75] The patient was then removed from the cabinet and placed in a bed with two warming blankets and several electric heating pads. This method was very effective in maintaining the patient's temperature, but was an extremely unpleasant experience for them. This post cabinet set-up was called a 'maintenance pack' and the patient would remain in this pack for five to six hours.[76] Unfortunately, in an event that transpired on December 4th, 1932, the switch that controlled the heaters was left on and the cabinet was destroyed by fire.[77] This may at first have seemed tragic, but it proved to be an essential turning point in the research that led to the prototype that would eventually be used at the Ontario Hospital, Toronto.[78]

After the fire and considering the research that had been conducted until that point in time, two cabinets were constructed that were simpler, more cost effective, and had the ability to control the variables (e.g. temperature and humidity) within the cabinet. The air-conditioning was controlled by fans, the dry-bulb temperature was controlled by a thermostat, the relative humidity was controlled by a humidistat, and the air velocity was controlled by blowers at the base of the cabinet.[79] Dials at the top of the cabinet allowed the user (which we will see was predominantly a nurse) to monitor and control all aspects of the patient's environment. In an effort to reduce patient discomfort during the maintenance stage, a second cabinet called the 'maintenance cabinet' was constructed. Once the patient's temperature reached the desired reading of 106-107°F in the hypertherm, they were moved to the 'maintenance cabinet.'[80] This

second cabinet contained a comfortable air mattress that could be moved in and out of the structure, allowing easy access to the patient for the purpose of monitoring of vital signs, and an air-conditioning unit that increased the patient's comfort and compliance during the five to six hour treatment.[81]

On May 18th, 1933, while treating a young boy, a nurse accidentally forgot to turn on the switch that controlled the radio waves. The desired rectal temperature of 106-107°F was reached in the usual time, however, it was remarked that the temperature had elevated by the air from the air-conditioning unit passing over the dry-bulbs alone.[82] Over the next couple of months, an experiment was conducted comparing the efficacy of radio waves and air-conditioning and air-conditioning alone.[83] The study concluded that the desired temperature could be reached and maintained more safely, and at a significantly lower cost, by using the air-conditioning alone. This final product consisted of an air temperature of 140°F, relative humidity of 50%, and an air velocity of 425 cubic feet per minute. The ideal rectal temperature could still be reached in fifty minutes to one hour. This discovery resulted in the 'Kettering hypertherm' that was subsequently distributed to specially approved treatment centres throughout the United States.[84]

The Impact of the Kettering hypertherm for Syphilis Treatment

The creation of the Kettering hypertherm was considered a major victory in the battle against neurosyphilis. Treatment was safer, more cost efficient, and less inconvenient for patients, as they could be treated and released almost immediately back to their family and job because no hospitalization was required.[85] The only potential complication remaining with this treatment was the considerable loss of the electrolyte chloride through diaphoresis. This was resolved by having the patient consume two to four litres of sodium chloride by mouth during the treatment.[86] While the latter was easily accomplished by an otherwise healthy patient, patients

with a compromised vascular system would have been unable to tolerate this volume of fluid replacement and as a result were not considered candidates for this treatment.[87] However, this contraindication to treatment was changed over the course of three years. With the increase in research on fever cabinet therapy, patients previously thought to be too medically fragile to receive fever therapy were now considered candidates. By 1935, over 100 research articles about fever therapy were published worldwide, though few were written from a nursing perspective. In May of 1931, researchers attended the first conference on fever therapy that was held in Rochester, New York. By March of 1937, the conference became international, with over 120 practitioners in attendance who were actively participating in fever therapy research.[88]

Although pleased with the success of the hypertherm and the possibility of alleviating the suffering of patients, Kettering was wary of the possibility of harm caused by those interested only in the financial benefits of fever therapy. To control patient safety and further research, Kettering set stringent criteria to control the cabinet's use.[89] First, he had twelve cabinets built by General Motors, who did so on a not-for-profit basis, to be loaned to medically distinct collaborating institutions. These institutions would need to follow strict training protocols for all doctors and nurses who would be administering care using the hypertherm. Once the training was complete, medical institutions would receive the fever cabinet and the 'go ahead' to begin treating patients. Second, there would be no commercial sale of the hypertherm. Third, no fever treatment was to occur in clinics or doctor's offices, Lastly, compliance would be monitored on a yearly basis by the directors of the Department of Fever Therapy at the Miami Valley Hospital. Non-compliance would result in the removal of the cabinet.[90]

Ontario Mental Hospitals and the Treatment of Neurosyphilis

As Ontario entered the 1930s, there were eleven mental hospitals spread throughout the

province. They were situated in urban centres and strategically placed to offer mental services in each corner of the province.[91] The financial support of charities and local philanthropists was an additional factor that determined the location of asylums in Ontario. Because the city of Toronto was the largest urban centre, with a large pool of benefactors, it had two hospitals serving its population: Toronto and Mimico.[92] Toronto also had the distinction of having the oldest mental hospital, with an asylum existing within the city boundaries since 1864.[93] Despite areas of specialization (some offered surgical interventions such as lobotomies, electroconvulsive therapy and fever therapy) and differences in some admission criteria (not all hospitals accepted children as patients), the mental services provided by these eleven hospitals, and the people they treated, were alike. If an individual required one of the specialized treatments, such as fever therapy, they were transferred from the hospital closest to their home to the hospital offering that specialization.[94]

In 1921, approximately 20% of all admissions to Ontario psychiatric asylums were due to general paresis secondary to syphilis.[95] The symptoms of general paresis included headache, altered behavior, difficulty coordinating muscle movements, paralysis, sensory deficits, and dementia.[96] The eventual outcome was death. Admission notes from the Ontario Hospital, Toronto suggest that these patients were brought to the hospital by police on warrants for behaviour such as public drunkenness or by family members who could no longer cope with their bizarre conduct.[97] Additionally, as the only hospital in the province that provided fever cabinet treatment for general paresis, patients were often transferred from outlying mental and general hospitals.

Despite being fourth on the list of the most common causes for admission during this time period (other common causes for admission were schizophrenia, manic depression, senility,

and cerebral arteriosclerosis), a considerable amount of resources and effort were put towards efforts to eradicate syphilis.[98] There were four main reasons for this focused attention. First, the vast majority of cases were among young to middle-aged working men and women, which had a significant impact on the economy. For example, an American study looking at economic loss due to general paresis after World War I (including both treatment costs and loss of work potential) in 1500 residents of New York State found an estimated total cost of $5,398,644.99.[99] This study was repeated in 1929 and found that the estimated loss was $16,570,596.00, almost triple the cost in eleven years.[100]

The second reason for a focus on syphilis was the mental hygiene movement. To some, the mental hygiene movement was progressive and signified a literal and philosophical break from the brutal and inhumane past of the asylum.[101] Others subscribed to the belief that it was merely an exchange of torture of the body for torture of the mind.[102] In Canada, the initiators and custodians of the movement were the Canadian National Committee for Social Hygiene (CNCSH).[103] The CNCSH had five principle functions: 1) the psychiatric examination of army personnel and the adequate care of returned soldiers suffering from mental disabilities; 2) mental examination of immigrants to ensure the best selection; 3) safeguarding adequate facilities for the diagnosis and treatment of mental disease; 4) guaranteeing adequate care of the mentally deficient; and 5) the prevention of the mental deficiencies in the first place.[104] Their overall goal; however, was to eradicate 'feeblemindedness,' which was responsible, according to the CNCSH, for all social problems (i.e. disease, immoral conduct, unemployment, crime, and pauperism).[105] It was the belief of leaders in the Canadian mental hygiene movement, such as Dr. Helen McMurchy, that all behaviours had a biological basis and were passed along through families, genetically, over generations.[106] The sin and moral depravity associated with syphilis and

subsequent diagnosis of general paresis put these patients directly in the path of the CNCSH.

The third reason for the focus on syphilis was the opportunity, through biology, to secure the professionalism of psychiatry and put it on equal footing with medicine. Syphilis, unlike other psychiatric disorders, had a biological cause and could be identified under a microscope.[107] The predictable sequelae of syphilis meant it could be authoritatively diagnosed, certified and treated by experts.[108] By the early nineteenth century, psychiatry had positioned itself as creators and proprietors of this specialized knowledge.[109] The latter was fortuitous for psychiatrists, given that psychiatry itself was suffering from significant reputational damage resulting from decades of warehoused 'madmen' who had no prospect of a cure.[110] The assertions of modern psychiatry, fashioned by Pinel and Turk, that insanity was one of the 'most readily cured of the afflictions to which human flesh was heir,' did not materialize.[111] In fact, other than those admitted for pauperism or the wealthy recovering in private asylums, the chances of discharge from an asylum was almost zero.[112] More patients left asylums in coffins than were reintegrated back into the community with their faculties intact.[113] Syphilis, in addition to psychiatry's expansion beyond the asylum and into the social spheres of society, served as a life preserver to the profession.[114]

The fourth reason was due to timing and war. During periods of conflict, venereal disease infection rates were double those found in peacetime.[115] In World War One, Canada established itself as a nation capable of standing alongside its allies in the battlefields of Europe.[116] The Canadian military proved formidable in battles such as Vimy Ridge despite catastrophic casualties and deaths totaling almost 10,000 men.[117] Unfortunately, the Canadians outdid their allies in the theatre of venereal disease. Despite being the smallest force amongst the allies, the Canadian Forces had the highest rate of venereal disease among all military units serving in

Europe.[118] The rates of venereal disease among Canadian soldiers were six times higher than that of the British expeditionary forces.[119] This meant that nearly one in nine Canadian soldiers was diagnosed with a venereal disease at some point during the war. It was the belief of the Canadian Government, under Prime Minister Robert Borden, that because Canadian soldiers were paid more than the British and some other Dominion expeditionary forces, they were the target of British prostitutes, which increased their infection rates.[120] In an attempt to slow the rates of infection, a fine of fifty cents per day while hospitalized for treatment, in addition to field allowances, was imposed as a deterrent.[121] As the soldiers or "men" were paid one dollar per day, this fine was substantial; however, it did little to slow the rate of infection.[122] In the interwar years, the government aimed to reduce civilian infection rates resulting from the return of military personnel by applying lessons learned during war, such as instituting good public health practices, and not being overly influenced by those wanting to fight infection on moral grounds (as opposed to medical reasons).[123] As it became apparent that the world was heading toward another conflict, the need to garner allied support and ensure a healthy and able military became more crucial. Combating syphilis was essential in this regard.

Emergence of the Ontario Hospital, Toronto

The first asylum in the Province of Ontario was opened in Toronto at the county jail in 1841. At this time, the insane were considered a public nuisance and were incarcerated with all other criminals. The jail had a capacity of seventeen beds. As space became limited and the practice of separating madness from the rest of the community became the fashion of the day, a location dedicated solely to these patients opened on the corner of Front Street and Bathurst Street later in 1841. A permanent site was built at 999 Queen Street West in January 1850.[124] As the first asylum built in Ontario, it became the architype of all future asylums in the province.[125]

Built on the outskirts of the city, the structure was an imposing feature on the local landscape.[126] With its neoclassical dome, fashioned on the moral architecture of Samuel Turk's York Retreat, it was the tallest building in Toronto and the surrounding area.[127]

Asylums, usually situated far from the sane, were monuments intended to distance psychiatric practice from the brutal past of mechanical restraints and the poor treatment of its inhabitants.[128] Under this model, the architecture of the asylum was as much a part of the treatment as the medical management of the illness.[129] Turk based his concept of the asylum on Quaker beliefs of comfort, care, kindness and a deep skepticism of the medical management of the insane. Turk felt the asylum should be a place of confinement and serenity with a strong connection to nature and feelings of home.[130] This was called moral treatment.[131] Turk's architect, George Hine, described moral treatment as follows:

> "Asylums are built for people who cannot take care of themselves, and who have to be watched and nursed, and provided with employment and recreation under conditions inapplicable to sane people; and to provide for all these, while the subjects are under enforced detention, a very special knowledge is required to make their lives bearable, and, as far as possible, comfortable".[132]

Situated on one hundred acres of farmland, the Toronto Asylum provided its residents with a tranquil connection to nature. In its early days, patients were encouraged to take long walks in the fresh air and to enjoy a number of social outings in the countryside. Nature was used to calm insanity.[133] Historians more critical of this claim suggest that the asylums' location was actually rooted in the Quaker belief that those receiving care were obligated to be grateful and assist in the cost of their charity. The large plots of land surrounding the asylum were farmed by patient labour, with proceeds from the sale of produce, meat, and milk used to ensure the asylum was

self-sufficient and profitable.[134] Much attention and effort went into ensuring a pleasant, 'homey' physical environment within the asylum, and in fact, most annual reports from the Toronto Asylum to the Province contained a preponderance of information on renovations to produce a more 'pleasant' effect, almost to the exclusion of information on treatments.[135]

Contagion or Germ Theory also influenced the design of the asylum. Large verandahs or 'airing courts' were built because it was believed that fresh air prevented the spread of disease from patient to patient. These airing courts were referred to as 'sanitizing social space.'[136] Geoffrey Reaume suggests that the verandahs were disciplinary and were used as restraining or isolation rooms for disruptive patients at the Toronto Asylum (2009). The asylum was divided into wards where patients were segregated based on a number of factors: sex, social status, and symptomology. Wealthy patients were situated in the better wards at the front of the hospital and those unable to pay (usually elderly patients) were hidden far from view in the recesses of the building.[137]

Sexual behaviour presented asylums with two additional problems that impacted space and practice: sexual activity between men and women, and sexual activity between men. Symptoms of insanity, rather than its underlying cause, were the criteria used to determine which ward patients lived on and how they lived. The Toronto Asylum had three categories of patient behaviour: mania, melancholia, and dementia. The vast majority of patients were diagnosed with mania. Moral treatment held the belief that quiet and orderly patients should not be disturbed, especially during meals, by loud and disruptive behaviour.[138] These separations did nothing to support the medical management or treatment of patients, but instead were about making the day-to-day operations of the asylum run smoother.

Overcrowding, limited financial resources, inability to retain staff, level of acuity at time

of admission, and encroachment of the city into the tranquil natural space around the Toronto Asylum made the humane care desired by Turk's followers impossible.[139] This period is also referred to as the non-interventionist period or the time of custodial care.[140] Dr. Daniel Clark, who served as the hospital's Medical Superintendent from 1882 to 1905, stated that the classification of mental disorders was impossible.[141] He believed the only solution to the care of the insane was good custodial care. To his credit, Clark initiated a number of more humane practices, such as standard dental care for all mental patients, the reduction of antipsychotic medications including Haldol, and the end of debilitating gynecological surgeries.

Clark believed the classification of disorders would do nothing to improve the condition of patients.[142] However, his successor, Dr. Charles Kirk Clarke, felt differently.[143] In 1905, at the beginning of Clarke's career at the Ontario Hospital, Toronto, the issue of professional legitimacy persisted as an issue for psychiatry. Administrators of mental hospitals in North America and Britain were looking to Europe, Germany in particular, to doctors who had created a scientific classification system for mental disorders. Some of these psychiatric luminaries included Pinel, Greisinger, Kahlbaum, Krafft-Ebing, Wernicke, Kraepelin, and Bleuler.[144] This classification system could provide psychiatrists with the legitimacy they were seeking. A psychiatric nosology would provide a common language and understanding of mental illness, a set of symptoms which could result in treatment, and a way to accurately determine the prevalence of a given disorder.[145] Eventually, Clarke selected Emil Kraepelin's classification system based on the course of illness for use at the Ontario Hospital, Toronto.[146] Criticism leveled at this method of classification was based on its preconceived notions about the essential features of an illness, established by the observation of a few, and the fact it was not verifiable empirically.[147] Kraepelin's perspective determined the course of admissions, assessment,

treatment, medical practice, and the training of other health workers such as nurses. Clarke was a noted supporter of specialized training for mental health nurses and developed a training curriculum adopted across Canada.[148]

During the classification period, extending from 1905 to 1924 (a monumental period in the establishment of mental health nursing and the treatment of the mentally ill in Ontario) a number of notable elements in the treatment of mental illness emerged. [149] Including, the introduction of hydrotherapy, a training school for nurses, the introduction of weekly medical conferences, a provincial standardized classification system of mental illness, out-patient services, the updating of patient files, and the beginning of the patient record.[150] Each of these elements contributed to the professionalization of psychiatric practice and impacted the work and role of the nurse. Nurses evolved from being untrained individuals who provided custodial care to a group with specialized skills and knowledge who were responsible for providing care to mental patients in a variety of settings, such as the ward and the community.[151] In addition, they were required to maintain a detailed account of their care and patients' reactions to treatment and progress in the form of nurses' notes. These nurses' notes comprised the bulk of information used during weekly medical rounds.[152]

Psychiatrists trained during the period of classification were strongly influenced by this perspective and became the clinical leaders in the next period of medical therapeutics at the asylum in Toronto, the Interventionist Period. The final years of the Classification Period focused heavily upon individual treatments and finding a way to treat and perhaps cure insanity.[153] This infamous period, influenced by what was happening with respect to psychiatry in the rest of the world, is known for some of the most invasive treatments ever levelled against patients in the history of psychiatry. It is this period of psychiatry that fueled the anti-psychiatry

movement and the period in which the treatment studied in this thesis, fever therapy, emerged.[154]

The Ontario Hospital, Toronto and Mimico (Toronto Psychiatric Hospital) engaged in a number of invasive procedures during this period. Patients sometimes moved between the two hospitals depending on the type of procedure they needed.[155] For example, lobotomies were performed at Mimico and fever therapy was conducted at the Ontario Hospital, Toronto. The move to 'heroic' treatments started in 1924 as psychiatrists moved from non-invasive interventions such as baths to the injection of sulfoxyl salvarsan in the treatment of syphilis.[156] The use of this arsenic compound was felt to be highly effective in treating syphilis but had some troubling and debilitating side effects and was replaced by Neosalvarsan. The use of other compounds such as manganese chloride and tryparsamide were also used in Toronto in the early 1930s. These, in combination with Neosalvarsan, continued to be the chief treatment used in early syphilis until the advent of penicillin in 1942.[157] Because there was no known compound able to cross the blood-brain barrier, Toronto psychiatrists, along with psychiatrists worldwide, shifted their focus to fever therapy in order to wipe out neurosyphilis.[158] In Toronto, fever induction was accomplished by a number of methods, including aseptic meningitis, hot blanket wraps, hot baths, malarial fever therapy and finally, the use of the Kettering hypertherm or fever cabinet.[159]

Although this study focuses on and ends with the period of fever therapy, it should be mentioned that none of these interventions occurred in isolation and multiple therapies were trialed and continued for decades. For example, patients receiving Neosalvarsan treatment in 1933 might also have had a lobotomy in 1938, or a patient receiving fever therapy via the Kettering hypertherm in 1943 might have had a preceding treatment of Metrazol in 1937. Psychiatrists worked to refine their system of classification and diagnosis making patients

susceptible to multiple diagnoses and interventions throughout their residency at both Toronto hospitals.[160] This period began with a heavy focus on syphilis but ended in the pursuit to cure all causes of insanity.

The Mental Health Nurse

According to Peter Nolan, those who cared for mental patients during this time (late nineteen to early twentieth century) hailed from the lower echelons of society, were "largely uneducated and unable to secure more rewarding work elsewhere".[161] Although described as hardworking, most were viewed as being no better than their patients; in fact, some had risen from the ranks of patient to the position of nurse or attendant.[162] Asylum inspection records belonging to the Ontario College of Nurses from 1920 to 1950 support these statements. This represents 'ground zero' for the separation of all other nurses from the mental health nurse; a delineation that would remain in place for decades.

Notably, the move to a professionally trained nurse in Canada lagged behind the push in both Britain and the United States. While Elizabeth Fry had established the Institute for Nursing in 1840, and Nightingale Training School appeared nearly 20 years later, the first training school for nurses in Canada was established in 1874 by Dr. Theophilus Mack in Saint Catharine's, Ontario.[163] Wanting to meet the health care needs of labourers working on the Welland Canal, Mack, keenly aware of the negative image of public hospitals, decided to begin training professional nurses. He felt that having professionally trained nurses would elevate the public's perception of care at the hospital and thereby increase its use. The Saint Catharine's General and Marine Hospital retained two nurses from the Nightingale Training School in England in addition to hiring two young, local women as their students. Thus, training in the Nightingale tradition began. Over the next quarter of a century, Canada would see the opening of twenty-five

schools of nursing, not all in the Nightingale tradition. Smaller institutions, and some larger hospitals with difficulty recruiting enough staff, continued to use untrained domestics as nurses. This would eventually cause a crisis in Canadian health care that resulted in the need to identify clear criteria of who could be called a nurse and what were the skills required of a professional nurse.[164] Inadvertently, this crisis bolstered the quest for professional status and self-determination for nursing as a profession.[165]

Some Canadian women who wished to become trained, professional nurses sought training in Nightingale schools in the United States.[166] Some, such as Isabel Hampton Robb and Mary Adelaide Nutting, stayed in the United States after their training and became nurse-leaders in that country. Others, like Mary Agnes Snively, finished her training at Johns Hopkins and returned to Canada to assume the superintendency at Toronto General Hospital and champion the profession.[167] In Canada's formative years of nursing education, leaders such as Snively transferred the Nightingale belief of what constituted a nurse—the woman herself being the most important factor in the making of a nurse—into Canadian society.[168] But, as nurse historians such as Kathryn McPherson have pointed out, despite the credit that has been afforded the Nightingale model in the development of Canadian nurses, few of the concepts from that model were sustained. Instead, it became a type of hybrid. A central tenet of Nightingale training was administrative authority and autonomy over nurses' education and work; this was not actualized in Canada due to the dominance of medicine and the lack of private or government funding.[169] In fact, on two occasions when Nightingale nurses were brought to Canada, they left before their tenure due to ongoing conflicts with physicians and hospital administration. However, Nightingale's vision of nursing becoming a respectable occupation for women was actualized, but only for those who trained in the general hospital system.

The path to becoming a mental health nurse was not considered to be as divine or respectable. Historians have speculated, though minimally, as to why this was the case. Contemporary historians suggest that mental health nurses had little to nothing in common with the nursing elite and the rank-and-file. They were not the white, middle-class, females from large urban centres who trained at prestigious nursing schools.[170] They had considerably more in common with their patients than their peers in the general hospital system. It was a commonly held belief that mental health nurses were inferior with respect to their character, training and skills.[171] A survey of British nurses concluded that mental health nurses suffered the same prejudice as their patients: "the fortunes of mental nursing have been ultimately linked to those of the mental sector as a whole… they are marginal to the concerns of the wider nursing profession and something of an embarrassment to health care providers."[172]

It could be said that all who found themselves working in asylums experienced this same type of distain from the greater health care system. Psychiatrists were constantly at odds with the rest of the medical community, and took pains to demonstrate their credibility as physicians and distance themselves from the bizarre and ineffectual treatments of the past.[173] Just as the work and status of the general hospital nurse was impacted by the scientific advances of medicine, so too were mental health nurses affected by their association with psychiatrists. Mental health nurses became part of the optics of this second tier of care.

Additionally, there were no nurse administrators or nurse leaders in asylums to influence or direct nurse training or day-to-day work life; the psychiatrist had dominion over all staff and operations.[174] The authority of the male psychiatrist was imposed upon the gendered limitations of nurses, particularly in the asylum.[175] In reality, the psychiatrist had complete control over every aspect of the mental health nurses' day, from where she slept and ate to the content and

scope of her education.[176] The psychiatrist used this authority to model and fashion the mental health nurse is such a way as to bring credibility to the asylum, much in the same way medicine did with nurses in the general hospital.

This control did not go unchallenged. The Graduate Nurses' Association of Ontario (GNAO) began a long and heated fight with medical superintendents to ensure its mental health members, as a requirement of registration, had training at a nurse-run general hospital training program.[177] This battle began in 1905 in a more general way as the GNAO urged its members to support their fellow nurses working in specialized disease areas, such as psychiatry and tuberculosis, to receive registration and equal status to those trained in the general hospital system. At the time, nurses trained in what was known as 'mental and nervous disorders' had to register with other associations. For example, the June 1905 issue of *Canadian Nurse* congratulates a group of nurses trained at the Brockville Hospital for the Insane for sitting the exam for the British Medico-Psychological Association and awaiting registration from that association: "The Brockville institution deserves credit for taking the lead in Ontario in securing registration to Canadian nurses who train in this special area of mental and nervous disorders."[178] This battle came to a head in 1922, resulting in a draw: medical men, with their influence and associated power with government officials, ensured that when the GNAO achieved the Registration Act in 1922, its board included 'level-headed medical men,' but nursing achieved its ultimate goal to secure mental health nurses training in the general hospital system. In 1925, a six-month general hospital affiliation was instituted for mental health nurses; over the next five years, this would increase to nine months.[179]

The 1930s brought a number of economic and social issues that influenced many women's decisions to enter nursing, particularly mental nursing, as the bar for entry was set a bit

lower.[180] This resulted in a quality control crisis from an overproduction of nurses that was said to be "a dilution of the profession with poorly selected and poorly prepared nurses."[181] What resulted from this crisis was the Weir Report, a study commissioned by the Canadian Nurses' and Medical Associations to investigate the status of nursing education in Canada. Weir's weighty summary, consisting of over five hundred pages, was sympathetic to the plight of nurses and made some very direct recommendations. One such recommendation was to better integrate mental health education into the curriculum of general hospital nurses, but also to ensure that mental health nurses had clinical experience that could only be offered in the general hospital environment.[182]

These recommendations were accepted and instituted, but still left the education of nurses in mental health under the authority of psychiatrists. The Registered Nurses' Association of Ontario, as a result of the Weir Report findings, petitioned the government (circa 1934) to close all nine specialized training schools and use these facilities for general hospital training. In that way, all nurses would receive both general and psychiatric training. Psychiatrists were vehemently opposed to this action, because it would remove mental health nurse training from their control. A compromise was reached and only three smaller schools closed, but more significantly, two nurse leaders were appointed to oversee and direct the psychiatric affiliations for nurses, something medical superintendents were not thrilled about but were forced to accept. This remained unchanged until 1955 when nursing leadership in Ontario finally gained authority over mental health nurse education in that province.[183] Psychiatry's grip on education continued in the provinces west of Ontario as "psychiatrists' authority intersected with the gendered limitations of nursing's leaders."[184] Because the focus of this study is mental health nurses trained prior to 1950, the influence of psychiatry was a contributing factor in the scope of work

for nurses practicing in the fever unit at the Ontario Hospital, Toronto.

Due to the environment of the mental hospital and the negative associations with psychiatry, mental health nursing was less appealing to middle class women than the general hospital.[185] As a result, 'nurses' were fashioned from attendants, many of whom were former patients and domestics. Nurses with training were rare in mental hospitals. For example, during the period of 1893 to 1905, the Ontario Hospital, Toronto had only one trained infirmary nurse.[186]

As the nineteenth century came to a close and the twentieth dawned, so came the discovery of somatic treatments that required a competent and obedient workforce to deliver.[187] Nurse training shifted from the apprenticeship model that which had been the favoured method of learning in the asylum to one which involved lectures and classroom training. The first of its kind in Ontario was the vision and creation of Dr. Charles Kirk Clarke at the Rockwood Asylum in Kingston, Ontario in 1874.[188] This was the same year that the first general hospital training program opened in Ontario. Dr. Clarke was a supporter of education for nurses because he saw it as a means to better care for his patients, not because he was interested in the advancement of mental health nurses.[189] Clarke was not of the opinion that mental health nurses were an inferior type of nurse; instead, he felt it required a more skilled and caring person: "The ideal mental health nurse should possess kindness, tact, infinite patience, sympathy and truthfulness with skills and knowledge as important as her character."[190] He was also ahead of his time in his belief that reciprocal agreements should exist between general hospitals and hospitals for the insane with respect to nurses' training; it took two decades for his successors to come to the same conclusion.

Clarke's training program for mental health nurses became the standard in all Ontario

Hospitals, except three, in 1911. The provincial government wanted to project the same professional image of nurses in hospitals for the insane as in the general hospital. This training consisted of a three-year curriculum and was focused around the general care of insane patients and somatic treatments, such as hydrotherapy.[191] Gradually, mental health nurses replaced female attendants, while male patients continued to receive care from untrained male attendants. This gradually changed, not because male attendants received training, but because female nurses were assigned to the male wards.[192] This is a transformational change in determining who could care; it would take decades for males to be accepted and seen in this way.[193] Male attendants played a significant role in the care of patients at the Ontario Hospital, Toronto but were never involved in the care of patients in the fever unit. Nursing largely became the expression of medical knowledge through the demonstration of a specialized skillset.

It was also the nurse's job to manage the patient experience. Mental health nurses played a significant and central role in assisting in these so called 'heroic' treatments, and were at times solely responsible for their execution. In fact, unlike nurses trained in the general hospital system, who were given a very broad scope of education, mental health nurses received training that was purpose-driven and focused specifically on the treatments or tasks that comprised their day-to-day work in the asylum.[194] A more comprehensive education, which included foundational elements such as anatomy and physiology, was introduced to mental health nurses training curriculum later in this period.

Importantly from a general perspective of mental health nurse training and, in particular, the training of nurses who worked in the fever unit, no detailed accounts exist in the literature of what that training consisted of at the Ontario Hospital, Toronto and how it impacted the care they gave to their patients. This case study will fill this knowledge gap related to the training of

mental health nurses and fever unit nurses. The overall goal of this case study will be to show the knowledge and clinical skill that was required to do this work in the fever unit and that mental health nursing was not a substandard type of nursing but rather a specialized area within the discipline of nursing.

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[1] "Cut Medical Staff," *The Toronto Daily Star* 1941.
[2] From January 2016 to April 2016 all hospitals mentioned in the Kettering hypertherm trials were called and all documents related to nursing and the administration of fever therapy was requested. No documents were found.
[3] William Arthur Heidel, "Hippocratic Medicine. Its Spirit and Method," (1941).
[4] William Bierman, "The History of Fever Therapy in the Treatment of Diseases," *Bulletin of the New York Academy of Medicine* 18, no. 1 (1942).
[5] Peregrine Horden and Elisabeth Hsu, *The Body in Balance: Humoral Medicines in Practice*, vol. 13 (Berghahn Books, 2013).
[6] Paul Thagard, "The Concept of Disease: Structure and Change," *Communication and Cognition* 29 (1996).
[7] S. Mattern, "Galen and His Patients," *Lancet* 378, no. 9790 (2011); Bierman, "The History of Fever Therapy in the Treatment of Diseases."; E. T. Renbourn, "The History of Sweat and the Sweat Rash from Earliest Times to the End of the 18th Century," *Journal of the History of Medicine and Allied Sciences* 14, no. 2 (1959).
[8] Norman N Epstein, "Artificial Fever as an Adjunct in the Treatment of Neurosyphilis," *Archives of Dermatology and Syphilology* 37, no. 2 (1938).
[9] Bierman, "The History of Fever Therapy in the Treatment of Diseases."; John Frith, "Syphilis-Its Early History and Treatment until Penicillin, and the Debate on Its Origins," *Journal of Military and Veterans Health* 20, no. 4 (2012).
[10] Mary de Young , *Encyclopedia of Asylum Therapeutics, 1750 -1952.* (Jefferson, North Carolina: McFarland & Company Inc., 2015).
[11] J.S. Hallur, "Medical Thermometry: A Short History," *The Western Journal of Medicine* 142, no. 1 (1985).
[12]J.S. Hallur.
[13] J.S. Hallur.
[14] J.S. Hallur.
[15] J.S. Hallur.
[16] André Cournand, "Historical Details of Claude Bernard's Invention of a Technique for Measuring the Temperature and the Pressure of the Blood within the Cavities of the Heart," *Transactions of the New York Academy of Sciences* 39, no. 1 Series II (1980).
[17] David Cahan, "The Awarding of the Copley Medal and the 'Discovery'of the Law of Conservation of Energy: Joule, Mayer and Helmholtz Revisited," *Notes and Records of the Royal Society* 66, no. 2 (2011); Howard Gruber and Valmai Gruber, "Hermann Von Helmholtz: Nineteenth-Century Polymorph," *The Scientific Monthly* 83, no. 2 (1956).
[18] Federico M Butera, "—Principles of Thermal Comfort," *Renewable and Sustainable Energy Reviews* 2, no. 1-2 (1998); Hallur, "Medical Thermometry: A Short History."
[19] The earliest mention of North American nurses using thermometers as part of their clinical practice was in the Bellevue Hospitals 1878 manual of Nursing. The following year, thermometer use was added to the Connecticut Training School Manual of Nursing; M. Sandelowski, *Devices and Desires: Gender,Technology and American Nursing* (Chapel Hill, North Carolina: The University of North Carolina Press, 2000).

[20] Marc A. Shampo, Robert A. Kyle, and David P. Steensma, "Charles F. Kettering—Medical Philanthropist and Inventor," *Mayo Clinic Proceedings* 87, no. 5 (2012); Heather JE Simmons, "Cranky No More: The Life and Legacy of Charles Franklin Kettering," *World Patent Information* 44 (2016).
[21] Charles F Kettering, "The Role of Invention in Industry," *J. Pat. Off. Soc'y* 14 (1932).
[22] Kettering Institute, "History," https://www.kettering.org/about/history.
[23] William. M. Simpson, "The Kettering Family Papers, Special Collections and Archives, University Libraries," (Dayton, Ohio: Wright State University, 1937); R.M. Stecher, Solomon, W.M., "The Complications and Hazzards of Fever Therapy: Analysis of 1000 Consecutive Fever Treatments with the Kettering hypertherm," *annals of Internal Medicine* 10, no. 7 (1937).
[24] Willian Bynum, "Experimenting with Fire: Giving Malaria," *The Lancet* 376, no. 9752 (2010).
[25] Simpson, "The Kettering Family Papers, Special Collections and Archives, University Libraries."; Walter M Simpson, Fred K Kislig, and Edwin C Sittler, "Ultrahigh Frequency Pyretotherapy of Neurosyphilis: A Preliminary Report," *Annals of Internal Medicine* 7, no. 1 (1933).
[26] Willis R Whitney, "Research and Industry," *The Scientific Monthly* 35, no. 1 (1932).
[27] Charles F Kettering and Edwin C Sittler, "Method of and Apparatus for Creating an Artificial Fever," (Google Patents, 1937).
[28] Brenda J. Baker et al., "The Origin and Antiquity of Syphilis: Paleopathological Diagnosis and Interpretation [and Comments and Reply]," *Current Anthropology* 29, no. 5 (1988); A.M. Brandt, *No Magic Bullet. A Social History of Venereal Disease in the United States since 1880* (Cambridge, Massachusetts: Cambridge University Press, 1984); C.M. Crawford, "Paretic Neurosyphilis. History, Pathogenesis, Neuropathology, Treatment. ," *The Ontario Journal of Neuro-Psychiatry* (1921); Frith, "Syphilis-Its Early History and Treatment until Penicillin, and the Debate on Its Origins."; J.D. Rolleston, "Venereal Disease in Literature," *British Journal of Venereal Diseases* 10, no. 3 (1934).
[29] John Frith, "Syphilis-Its Early History and Treatment until Penicillin, and the Debate on Its Origins."; J Johnston Abraham, "Some Account of the History of the Treatment of Syphilis," *British Journal of Venereal Diseases* 24, no. 4 (1948); Kevin Brown, *The Pox: The Life and near Death of a Very Social Disease* (Stroud, Glouchester. England: Sutton Publishing, 2006); P. J. Garcia, "Historical Perspective of Sexually Transmitted Infections and Their Control in Peru," *Int J STD AIDS* 21, no. 4 (2010); Eugenia Tognotti, "The Rise and Fall of Syphilis in Renaissance Europe," *Journal of Medical Humanities* 30, no. 2 (2009).
[30] L.W. Harrison, "The Origin of Syphilis," *The British Journal of Veneral Diseases* 35, no. 1 (1959); John Parascandola, *Sex, Sin, and Science: A History of Syphilis in America* (West Port, Connecticut: Praeger Publishers, 2008); L Thompson, *Syhilis* (New York: Lea & Febiger, 1920); HP WEISS, "Comments on the History of Syphilis," *Revista de la Sociedad Peruana de Dermatologica* 4, no. 2 (1970).
[31] J. Lobdell, Owsley, D., "The Origin of Syphilis," *The Journal of Sex Research* 10, no. 1 (1974); Brandt, *No Magic Bullet. A Social History of Venereal Disease in the United States since 1880*.
[32] Jay Cassel. *No Magic Bullet. A Social History of Venereal Disease in the United States since 1880*; *The Secret Plague. Venereal Diseases in Canada, 1838 - 1939* (Toronto: University of Toronto Press, 1987); Kristin N Harper et al., "The Origin and Antiquity of Syphilis Revisited: An Appraisal of Old World Pre-Columbian Evidence for Treponemal Infection," *American journal of physical anthropology* 146, no. S53 (2011); Heather MacDougall, "Sexually Transmitted Diseases in Canada, 1800-1992," *Sexually Transmitted Infections* 70, no. 1 (1994); Thompson, *Syhilis*; Alfred W Crosby, "The Early History of Syphilis: A Reappraisal," *American Anthropologist* 71, no. 2 (1969).
[33] Harper et al., "The Origin and Antiquity of Syphilis Revisited: An Appraisal of Old World Pre-Columbian Evidence for Treponemal Infection."; Abraham, "Some Account of the History of the Treatment of Syphilis."; Cecil John Hackett, "On the Origin of the Human Treponematoses: Pinta, Yaws, Endemic Syphilis and Venereal Syphilis," *Bulletin of the World Health Organization* 29, no. 1 (1963).
[34] David Mabey and Philippe Mayaud, "Sexually Transmitted Diseases in Mobile Populations," *Genitourinary medicine* 73, no. 1 (1997); William L Fleming, "Syphilis through the Ages," *Medical Clinics of North America* 48, no. 3 (1964); William L Fleming.
[35] Z. Abram, "The Comforts of Home: Sex Workers and the Canadian War Novel," 80 (2016), https://eccs.revues.org/643; JG O'shea, "'Two Minutes with Venus, Two Years with Mercury'--Mercury as an

Antisyphilitic Chemotherapeutic Agent," *Journal of the Royal Society of Medicine* 83, no. 6 (1990); I Sarbu et al., "Brief History of Syphilis," *Journal of medicine and life* 7, no. 1 (2014).

[36] Kevin A Fenton et al., "Infectious Syphilis in High-Income Settings in the 21st Century," *The Lancet infectious diseases* 8, no. 4 (2008).

[37] Kevin A Fenton.

[38] Fleming, "Syphilis through the Ages."; O'shea, "'Two Minutes with Venus, Two Years with Mercury'--Mercury as an Antisyphilitic Chemotherapeutic Agent."; Laura Statescu, Cristian Statescu, and Laura Gheuca Solovastru, "For a Night with Venus, a Lifetime with Mercury," *Romanian Journal of Artistic Creativity* 3, no. 1 (2015); WEISS, "Comments on the History of Syphilis." The strong influence of astrologers at the time of Bethencourt swayed the naming of the disease (add time period) with some suggesting that it was caused by planetary influences like the conjunction of Mars and Saturn. Bethencourt felt that if any planet were to blame it sould be Venus saying that 'one night with Venus, a lifetime with Mercury'.

[39] Clarence Mendell, "A Bibliography of the Poem Syphilis Sive Morbus Gallicus by Girolamo Fracastoro of Verona," *Yale Journal of Biology and Medicine* 8, no. 4 (1936); Margaret M. Hudson and Robert S. Morton, "Fracastoro and Syphilis: 500 Years On," *The Lancet* 348, no. 9040 (1996).

[40] "Fracastoro and Syphilis: 500 Years On."; Berlinger Wochenschrift Klinische, "The Origin of Syphilis and How It Got Its Name," *Lancet* 43, no. 11 (1909); Mendell, "A Bibliography of the Poem Syphilis Sive Morbus Gallicus by Girolamo Fracastoro of Verona."

[41] Marie E McAllister, "Stories of the Origin of Syphilis in Eighteenth-Century England: Science, Myth, and Prejudice," *Eighteenth-Century Life* 24, no. 1 (2000); Hackett, "On the Origin of the Human Treponematoses: Pinta, Yaws, Endemic Syphilis and Venereal Syphilis."

[42] Cynthia Tsay, "Julius Wagner-Jauregg and the Legacy of Malarial Therapy for the Treatment of General Paresis of the Insane," *Yale Journal of Biology and Medicine* 86, no. 2; Hudson and Morton, "Fracastoro and Syphilis: 500 Years On."

[43] Gian Franco Gensini, Andrea Alberto Conti, and Donatella Lippi, "The Contributions of Paul Ehrlich to Infectious Disease," *Journal of Infection* 54, no. 3 (2007).

[44] Stefan HE Kaufmann and Ulrich E Schaible, "100th Anniversary of Robert Koch's Nobel Prize for the Discovery of the Tubercle Bacillus," *Trends in microbiology* 13, no. 10 (2005).

[45] Brandt, *No Magic Bullet. A Social History of Venereal Disease in the United States since 1880*; Frith, "Syphilis-Its Early History and Treatment until Penicillin, and the Debate on Its Origins."; John W. Ward, "Twelve Diseases That Changed Our World," *Emerging Infectious Diseases* 14, no. 5 (2008).

[46] Young de, *Encyclopedia of Asylum Therapeutics, 1750 -1952.*

[47] Adam Perkovic, "The Changing Treatment for Syphilis," in *Damage Control: The Untold Story of Venereal Disease in Hamilton, 1900 - 1950*, ed. D.A. Herring (Hamilton, Ontario: Department of Anthropology McMaster University, 2014); B BARKER BEESON, "The Treatment of Syphilis According to Jacques De Bethencourt, 1527: Extracts from the French Translation by Alfred Fournier, 1871," *Archives of Dermatology and Syphilology* 14, no. 4 (1926); L.W. Harrison, *Modern Diagnosis and Treatment of Syphilis, Chancroid and Gonorrheoea* (Toronto: McClelland & Stewart, 1925).

[48] S. C. Austin, P. D. Stolley, and T. Lasky, "The History of Malariotherapy for Neurosyphilis: Modern Parallels," *JAMA* 268, no. 4 (1992); Bynum, "Experimenting with Fire: Giving Malaria."

[49] Tsay, "Julius Wagner-Jauregg and the Legacy of Malarial Therapy for the Treatment of General Paresis of the Insane."

[50]Tsay.

[51]Tsay.

[52]Tsay.

[53] Austin, Stolley, and Lasky, "The History of Malariotherapy for Neurosyphilis: Modern Parallels."; Brandt, *No Magic Bullet. A Social History of Venereal Disease in the United States since 1880*.

[54] Bynum, "Experimenting with Fire: Giving Malaria."; Tsay, "Julius Wagner-Jauregg and the Legacy of Malarial Therapy for the Treatment of General Paresis of the Insane."; Gretchen Vogel, "The Forgotten Malaria," *Science* (2013), www.science.sciencemag.org/content/342/6159/684.

[55] Tsay, "Julius Wagner-Jauregg and the Legacy of Malarial Therapy for the Treatment of General Paresis of the Insane."
[56] Magda Whitrow, "Wagner-Jauregg and Fever Therapy," *Medical history* 34, no. 3 (1990).
[57] Whitrow.
[58] Geoffrey Reaume, *Remembrance of Patients Past. Patient Life at the Toronto Hospital for the Insane, 1870 - 1941* (Toronto: University of Toronto Press, 2012).
[59] H. Houston Merritt, "Julius Wagner-Jauregg," *American Journal of Psychiatry* 97, no. 4 (1941).
[60] Merritt.
[61] John Parascandola, "John Mahoney and the Introduction of Penicillin to Treat Syphilis," *Pharmacy in History* 43, no. 1 (2001).
[62] Nolan D. C. Lewis, Lois D. Hubbard, and, and Edna G. Dyar, "The Malarial Treatment of Paretic Neurosyphilis," *American Journal of Psychiatry* 81, no. 2 (1924); Vogel, "The Forgotten Malaria"; Nolan D. C. Lewis, Lois D. Hubbard, and Edna G. Dyar, "The Malarial Treatment of Paretic Neurosyphilis."
[63] Jeffrey S Sartin and Harold O Perry, "From Mercury to Malaria to Penicillin: The History of the Treatment of Syphilis at the Mayo Clinic—1916–1955," *Journal of the American Academy of Dermatology* 32, no. 2 (1995).
[64] Austin, Stolley, and Lasky, "The History of Malariotherapy for Neurosyphilis: Modern Parallels."; Crawford, "Paretic Neurosyphilis. History, Pathogenesis, Neuropathology, Treatment. ."
[65] Parascandola, "John Mahoney and the Introduction of Penicillin to Treat Syphilis."
[66] Parascandola; Vogel, "The Forgotten Malaria"; Nolan D. C. Lewis, Lois D. Hubbard, and Edna G. Dyar, "The Malarial Treatment of Paretic Neurosyphilis."; Edzard Ernst, "A Leading Medical School Seriously Damaged: Vienna 1938," *Annals of internal medicine* 122, no. 10 (1995).
[67] Kettering and Sittler, "Method of and Apparatus for Creating an Artificial Fever."; Walter M Simpson, "Artificial Fever Therapy of Syphilis," *Journal of the American Medical Association* 105, no. 26 (1935).
[68] "Artificial Fever Therapy of Syphilis."; Robert J Streitwieser, "The Kettering hyperthermia; a Form of Fever Therapy," (1935).
[69] Steven H Woolf, "The Meaning of Translational Research and Why It Matters," *Jama* 299, no. 2 (2008).
[70] Catherine Hui, "Fever Therapy in the Treatment of Syphilis" (paper presented at the 11th Annual History of Medicine Days, Calgary, Alberta. University of Calgary, March 22nd and 23rd, 2002 2002).
[71] Simpson, "Artificial Fever Therapy of Syphilis."
[72] Simpson.
[73] Edith Pegg, "The Nursing Aspect of hyperthermy Treatment," *British Journal of Venereal Diseases* 19, no. 4 (1943); F.M. Lutz, "Nursing Care in Artificial Fever Therapy," *The American Journal of Nursing* 36, no. 12 (1936).
[74] Simpson, "Artificial Fever Therapy of Syphilis."
[75] Pegg, "The Nursing Aspect of hyperthermy Treatment."
[76] Leon Bromberg, "Artificial Fever Therapy," *The American Journal of Nursing* (1936).
[77] Simpson, "The Kettering Family Papers, Special Collections and Archives, University Libraries."
[78] A.J. Bromley, 1939.
[79] Streitwieser, "The Kettering hyperthermia; a Form of Fever Therapy."; Simpson, "Artificial Fever Therapy of Syphilis."; Kettering and Sittler, "Method of and Apparatus for Creating an Artificial Fever."
[80] Simpson, "The Kettering Family Papers, Special Collections and Archives, University Libraries."
[81] Lutz, "Nursing Care in Artificial Fever Therapy."
[82] Simpson, "The Kettering Family Papers, Special Collections and Archives, University Libraries."
[83] Simpson.
[84] Simpson.
[85] Henry Beall Gwynn, "The Present Status of Artificial Fever Therapy," *Physical Therapy* 20, no. 3 (1941); Robert F Day, "Induced Pyrexia: A Resume of Artificial Fever Therapy with Especial Emphasis on Recent Methods," (1935); Charles Doan, "The First Annual Conference on Fever Therapy," *The Science Monthly* 44, no. 5 (1937), www.jstor.org/stable/16160; Epstein, "Artificial Fever as an Adjunct in the Treatment of Neurosyphilis."; CA

Owens, Willis D Wright, and Murray D Lewis, "The Value of Fever Therapy in Sulfanilamide-Resistant Gonorrhea," *The Journal of Urology* 40, no. 6 (1938); Warren A Shoecraft, "Artificial Fever Therapy," (1936).
[86] H. Keutmann E, Samuel H.B., Stafford L.W., "Electrolyte Balance During Artificial Fever with Special Reference to Loss through Skin," *Journal of Clinical Investigation* 18, no. 2 (1939).
[87] Franklin G Ebaugh, Clarke H Barnacle, and Jack R Ewalt, "Delirious Episodes Associated with Artificial Fever: A Study of 200 Cases," *American Journal of Psychiatry* 93, no. 1 (1936); Keutmann E, "Electrolyte Balance During Artificial Fever with Special Reference to Loss through Skin."; Phillip T Knies, "The Electrocardiogram in Induced Fever," *American Heart Journal* 22, no. 6 (1941).
[88] Doan, "The First Annual Conference on Fever Therapy"; Simpson, "The Kettering Family Papers, Special Collections and Archives, University Libraries."
[89] "The Kettering Family Papers, Special Collections and Archives, University Libraries."
[90] "The Kettering Family Papers."
[91] Christopher A Smith, David Wright, and Shawn Day, "Distancing the Mad: Jarvis's Law and the Spatial Distribution of Admissions to the Hamilton Lunatic Asylum in Canada, 1876–1902," *Social science & medicine* 64, no. 11 (2007).
[92] John Court, "A Historical Synopsis- the Department of Psychiatry at the University of Toronto," University of Toronto, http://www.psychiatry.utoronto.ca/wp-content/uploads/2011/03/UT-Psychiatry-Historical-Synopsis-to-2008-.pdf; Barry Edginton, "The Provincial Asylums in Toronto and Mimico: Reflections on Social and Architectural History," *Canadian Bulletin of Medical History* 22, no. 2 (2005); Hospital Division Department of Mental Health, "66th Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Babituate Patients of the Province of Ontario for the Year Ending October 31st, 1933," (Toronto: T.E. Brown., 1934).
[93] Edginton, "The Provincial Asylums in Toronto and Mimico: Reflections on Social and Architectural History."; Geoffrey Reaume, "999 Queen Street West: Patient Life at the Toronto Hospital for the Insane, 1870-1941" (National Library of Canada= Bibliothèque nationale du Canada, 1997).
[94] *Remembrance of Patients Past. Patient Life at the Toronto Hospital for the Insane, 1870 - 1941*.
[95] Crawford, "Paretic Neurosyphilis. History, Pathogenesis, Neuropathology, Treatment. ."
[96] CDC, "Syphilis Fact Sheet," ed. Division of STD Prevention (Atlanta, Georgia: Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention, 2017).
[97] Admission notes from the 451 fever unit records indicate that on only a very small number of occasions were patients admitted by themselves. Most often they were brought in on a warrant for behavior that could not be managed in the home by the family. Please see the following patient files as an example: "Stephen O. Patient Record 26599. Q339, B364731.Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."; "Connie B. Patient Record 22834 (Two Records), Q236, B354042. Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."; "Peter M. Patient Record [Two Records with Different Casebook Numbers: 23249 and 23671].23249, Q249, B352641 and 23671, Q262, B 355308. Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[98] Hospital Division Department of Mental Health, "73rd Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for the Year Ending March 31st, 1941, P.28.," (Toronto: Baptist Johnson Printer, 1941); Hospital Division Department of Health, "76th Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for the Year Ending March 31st, 1942," ed. Department of Health (Toronto: T.E Brown, 1943); "76th Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals Fro the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for the Year Ending March 31st, 1943.," (1944).
[99] H.M. Pollock, "The Economic Loss to the State of New York on Account of Syphilitic Mental Diseases During the First Fiscal Year Ending June 30th, 1917.," *Mental Hygiene* 2 (1918).
[100] "Economic Loss on Account of Hospital Cases of Mental Disease and Associated Physical Disorders in New York State, 1928," *Psychiatric Quarterly* 3, no. 195 (1929).

[101] Clarence M. Hincks, "Conserving Mental Health in Canada," *Canadian Journal of Public Health / Revue Canadienne de Sante'e Publique* 38, no. 7 (1947); William A White, "The Origin, Growth, and Significance of the Mental Hygiene Movement," *Science* 72, no. 1,856 (1930); JW Bridges, "The Mental Hygiene Movement," *The Public Health Journal* 19, no. 1 (1928); The American Public Health Association, "The Social Hygiene Movement," ed. Public Health (New York: American Public Health Association, 1913).
[102] Andrew Scull, "Psychiatry and Social Control in the Nineteenth and Twentieth Centuries," *History of Psychiatry* 2, no. 6 (1991); M. Foucault, *Madness and Civilization. A History of Insanity in the Age of Reason* (Penguin Random House, 1988).
[103] The CNCMH had many elite and influential members. These included: From the political world was the Governor General, the Duke of Devonshire, who agreed to act as patron for the CNCMH. From the academic worldwere C. K. Clarke, Dean of Medicine at the University of Toronto, who became Medical Director of the CNCMH, Charles F. Martin, Professor of Medicine at McGill, and Sir Robert Falconer, President of the Universityof Toronto. Finally, from the economic world were numerous individuals who agreed to sit on the Board of Directors: "Lord Shaughnessy, president of the Canadian Pacific Railway; Mr. E. Beatty (later Sir Edward), Vice President of the C.P.R.; . . . Sir Vincent Meredith, President of the Bank of Montreal; . . . [and] Mr. F. W. Molson
[104] E. Leung, "Cncmh: Canadian National Committee for Mental Hygiene," (2013); Sheila L Cavanagh, "From a Belief In 'biology as Destiny' to an Environmental Perspective of Mental Health: The Impact of the Canadian National Committee for Mental Hygiene on Education in Ontario, Canada, 1920-1950," (2001); David MacLennan, "Beyond the Asylum: Professionalization and the Mental Hygiene Movement in Canada, 1914–1928," *Canadian Bulletin of Medical History* 4, no. 1 (1987).
[105] "Beyond the Asylum: Professionalization and the Mental Hygiene Movement in Canada, 1914–1928."
[106] Evelyn Molson Russel, "The Origin, Organization and Scope of the Canadian National Committee for Mental Hygiene," *Canadian Medical Association Journal* 8, no. 6 (1918).
[107] BEESON, "The Treatment of Syphilis According to Jacques De Bethencourt, 1527: Extracts from the French Translation by Alfred Fournier, 1871."; Frith, "Syphilis-Its Early History and Treatment until Penicillin, and the Debate on Its Origins."; Perkovic, "The Changing Treatment for Syphilis."
[108] MacLennan, "Beyond the Asylum: Professionalization and the Mental Hygiene Movement in Canada, 1914–1928."
[109] MacLennan; Scull, "Psychiatry and Social Control in the Nineteenth and Twentieth Centuries."; *The Insanity of Place/the Place of Insanity: Essays on the History of Psychiatry* (Routledge, 2006); *Madhouses, Mad-Doctors, and Madmen: The Social History of Psychiatry in the Victorian Era* (University of Pennsylvania Press, 2015); J. Toms, "Mind the Gap: Mind, the Mental Hygiene Movement and the Trapdoor in Measurements of Intellect," *J Intellect Disabil Res* 54 Suppl 1 (2010).
[110] Edward Shorter, "A History of Psychiatry: From the Age of the Asylum to the Era of Prozac," (New York, NY: Wiley, 1997); A. Scull, "Somatic Treatments and the Historiography of Psychiatry," *History of Psychiatry* 5, no. 17 (1994).
[111] Anthony Ossa-Richardson, "Possession or Insanity?: Two Views from the Victorian Lunatic Asylum," *Journal of the History of Ideas* 74, no. 4 (2013); Peter Sedgwick, "Michel Foucault: The Anti-History of Psychiatry1," *Psychological Medicine* 11, no. 2 (1981); Andrew Scull, "Psychiatry and Its Historians," *History of Psychiatry* 2, no. 7 (1991).
[112] Laurence J Ray, "Models of Madness in Victorian Asylum Practice," *European Journal of Sociology/Archives Européennes de Sociologie* 22, no. 2 (1981); G. Boschma, Groening, M., "Psychiatric and Mental Health Nursing: From Past to Present," in *Psychiatric & Mental Health Nursing for Canadian Practice*, ed. W. Austin, Boyd, M.A. (Philadelphia: Wolters Kluwer, 2015).
[113] Andrew T Scull, "Museums of Madness: The Social Organization of Insanity in Nineteenth-Century England," (1979); Scull, "Psychiatry and Social Control in the Nineteenth and Twentieth Centuries."
[114] Scull, "The Art of Medicine: Madness in Civilization," *The Lancet* 385, no. 9973 (2015).
[115] E. Beardsley, "Allied against Sin: British and American Response to Venereal Disease During World War I," *Medical History* 20, no. 2 (1976).
[116] Brereton Greenhous and WAB Douglas, *Out of the Shadows: Canada in the Second World War* (Dundurn, 1996).

[117] Ministry of Veterans Affairs, "The Battle of Vimy Ridge," Government of Canada, http://www.veterans.gc.ca/eng/remembrance/history/first-world-war/fact_sheets/vimy; Tim Cook, "The Battle of Vimy Ridge," The Canadian War Museum, http://www.warmuseum.ca/the-battle-of-vimy-ridge/; J.L. Granatstein, "The Battle at Vimy Ridge," The Vimy Foundation, http://www.vimyfoundation.ca/learn/vimy-ridge/.
[118] D.A. Herring, "The Untold Story of Venereal Diseases in Hamilton, 1900 - 1950," in *Damage Control: The Untold Story of Venereal Diseases in Hamilton, 1900 - 1950*, ed. D.A. Herring (Hamilton, Ontario: Department of Anthropology McMaster University, 2014); Mark Harrison, "The British Army and the Problem of Venereal Disease in France and Egypt During the First World War," *Medical history* 39, no. 2 (1995); Beardsley, "Allied against Sin: British and American Response to Venereal Disease During World War I."
[119] Herring, "The Untold Story of Venereal Diseases in Hamilton, 1900 - 1950."; Canadian War Museum, "Life at the Front: Behind the Front Lines," Goverment of Canada, http://www.warmuseum.ca/firstworldwar/history/life-at-the-front/behind-the-front-lines/fraternization/; J. O'Leary, "Researching Canadian Soldiers of the First World War: The Wounded and Sick," http://regimentalrogue.com/misc/researching_first_world_war_soldiers_part14.htm.
[120] Beardsley, "Allied against Sin: British and American Response to Venereal Disease During World War I."; "War Cabinet and Cabinet Minutes," in *"Venereal Disease"* (Whitehall Gardens. SW. London1918).
[121] O'Leary, "Researching Canadian Soldiers of the First World War: The Wounded and Sick"; J. O'Leary, "Researching Canadian Soldiers of the First World War: Rank, No Simple Progression," http://regimentalrogue.com/misc/researching_first_world_war_soldiers_part11.htm.Canadian Officers were given addition funds or field allowances according to their rank. Field allowances were not given to soldiers or "regular men".
[122] "Researching Canadian Soldiers of the First World War: Rank, No Simple Progression"; The Canadian Welfare Council, "Budgetting," ed. Canadian Military Services (Ottawa: Runge Press Limited, 1943).
[123] Ontario Legislative Assembly, "Interim Report on Venereal Diseases and Copy of an Act for the Prevention of Venereal Diseases," Sessional Papers (Government of Ontario, 1918).
[124] Court, "A Historical Synopsis- the Department of Psychiatry at the University of Toronto"; University of Toronto, "Annual Report, the Department of Psychiatry: Annual Report - a Century of Learning, a Century of Caring, 1907 - 2007," ed. University of Toronto (Toronto: University of Toronto Press, 2007); Thomas Edward Brown, "" Living with God's Afflicted": A History of the Provincial Lunatic Asylum at Toronto, 1830-1911," (1982); Edginton, "The Provincial Asylums in Toronto and Mimico: Reflections on Social and Architectural History."; Health, "76th Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for the Year Ending March 31st, 1942."; "76th Annual Report of the Hospital Division Department of Health Upon the Ontarion Hospitals Fro the Mentally Ill, Mentally Defective, Epileptic and Babituate Patients of the Province of Ontario for the Year Ending March 31st, 1943.."; Hospitals Divsion Department of Mental Health, "81st Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for the Year Ending March 31st 1946.," ed. Department of Health (Toronto: Baptist Johnson, 1947); Hospital Division Department of Mental Health, "82rd Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for the Year 1948," ed. Mental Health (Toronto: Baptist Johnson, 1949); Hospitals Division of Health, "83rd Annual Report of the Hosptial Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario Calendar Year 1949.," (Toronto: Baptist Johnson Printer, 1950); Reaume, "999 Queen Street West: Patient Life at the Toronto Hospital for the Insane, 1870-1941.". Please note that the years 1942, 1945,1946 and 1948 are missing from the collection but the years available support the information related about the Queen Street patient population during the fever unit years.
[125] Wendy Mitchinson, "The Toronto and Gladesville Asylums: Humane Alternatives for the Insane in Canada and Australia," *Bulletin of the History of Medicine* 63, no. 1 (1989).
[126] Edginton, "The Provincial Asylums in Toronto and Mimico: Reflections on Social and Architectural History."; Reaume, *Remembrance of Patients Past. Patient Life at the Toronto Hospital for the Insane, 1870 - 1941*.
[127] Barry Edginton, "Moral Architecture: The Influence of the York Retreat on Asylum Design," *Health & place* 3, no. 2 (1997); W. Brown, *Dr. C. K. Clarke and the Training School for Nurses." In the Provincial Asylum in*

Toronto: Reflections on Social and Architectural History, ed. E. Hudson (Toronto: Toronto Region Architectural Conservancy, 2000); Nathan Flis, "Images of the Toronto Provincial Asylum, 1846-1890," *Scientia Canadensis: Canadian Journal of the History of Science, Technology and Medicine/Scientia Canadensis: Revue canadienne d'histoire des sciences, des techniques et de la médecine* 32, no. 1 (2009).

[128] Edginton, "Moral Architecture: The Influence of the York Retreat on Asylum Design."; J.T. Arlidge, "On the Construction of Public Lunatic Asylums," *Asylum Journal of Mental Science* 4 (1857); B. Edginton, "Architecture's Quest for Sanity," *Journal on Developmental Disabilities* 4 (1995).

[129] Brown, *Dr. C. K. Clarke and the Training School for Nurses." In the Provincial Asylum in Toronto: Reflections on Social and Architectural History*; R. Hunter, Mcalpine, I., "Samuel Turk's First Publication on the Treatment of Patients at the Retreat, 1811," *British Journal of Psychiatry*, no. 111 (1965).

[130] "Samuel Turk's First Publication on the Treatment of Patients at the Retreat, 1811."; Edginton, "Architecture's Quest for Sanity."; Edginton, "Moral Architecture: The Influence of the York Retreat on Asylum Design."

[131] For a definition of moral treatment please see

[132] Edginton, "Moral Architecture: The Influence of the York Retreat on Asylum Design."

[133] Edginton; Jenny Alexander, "Mapperley Hospital and George Thomas Hine (1841–1916), Consulting Architect to the Commissioners in Lunacy," *Transactions of the Thoroton Society of Nottinghamshire* 112 (2008).

[134] Peter Nolan, *A History of Mental Health Nursing* (Nelson Thornes, 2000); Reaume, *Remembrance of Patients Past. Patient Life at the Toronto Hospital for the Insane, 1870 - 1941*.

[135] See Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for all years.

[136] D. Armstrong, *Political Anatomy of the Body* (Cambridge: Cambridge University Press, 1983).

[137] Reaume, *Remembrance of Patients Past. Patient Life at the Toronto Hospital for the Insane, 1870 - 1941*; Brown, "" Living with God's Afflicted": A History of the Provincial Lunatic Asylum at Toronto, 1830-1911."; Edginton, "The Provincial Asylums in Toronto and Mimico: Reflections on Social and Architectural History."

[138] Mitchinson, "The Toronto and Gladesville Asylums: Humane Alternatives for the Insane in Canada and Australia."

[139] Bridges, "The Mental Hygiene Movement."; R. Castel, *The Regulation of Madness: The Origins of Incarceration in France* (Berkeley, California: University of California Press, 1988); C.K. Clarke, "The Fourth Maudsley Lecture," *The Public Health Journal* 14, no. 12 (1923); Henry Farrand-Griffin, "The Mental Hygiene Movement: A National Campaign against Insanity," *Outlook* 31, no. 2 (1913); MacLennan, "Beyond the Asylum: Professionalization and the Mental Hygiene Movement in Canada, 1914–1928."; Mitchinson, "The Toronto and Gladesville Asylums: Humane Alternatives for the Insane in Canada and Australia?."; Danielle Terbenche, "'Curative'and'custodial': Benefits of Patient Treatment at the Asylum for the Insane, Kingston, 1878-1906," *The Canadian Historical Review* 86, no. 1 (2005).

[140] Reaume, "999 Queen Street West: Patient Life at the Toronto Hospital for the Insane, 1870-1941."

[141] *Remembrance of Patients Past. Patient Life at the Toronto Hospital for the Insane, 1870 - 1941*; B. Craig, "Clark, Daniel," Dictionary of Canadian Biography (Toronto: University of Toronto 2003).

[142] "Clark, Daniel."; Brown, "" Living with God's Afflicted": A History of the Provincial Lunatic Asylum at Toronto, 1830-1911."; Flis, "Images of the Toronto Provincial Asylum, 1846-1890."; E.A. Montigny, ""Foisted Upon the Government":Institutions and the Impact of Public Policy Upon the Aged. The Elderly Patients of Rockwood Asylum 1866 - 1906," *Journal of Social History* 28, no. 4 (1995); Reaume, *Remembrance of Patients Past. Patient Life at the Toronto Hospital for the Insane, 1870 - 1941*.

[143] C.K Clarke and Daniel Clark were unrelated and varied greatly in their beliefs and approach to mental illness.

[144] Kenneth S Kendler, "An Historical Framework for Psychiatric Nosology," *Psychological medicine* 39, no. 12 (2009); H. Hippus, Muller, N., "The Work of Emil Kraepelin and His Research Group in Muchen," *European archives of psychiatry and clinical neuroscience* 258, no. 2 (2008).

[145] Ajit Avasthi, Siddharth Sarkar, and Sandeep Grover, "Approaches to Psychiatric Nosology: A Viewpoint," *Indian Journal of Psychiatry* 56, no. 3 (2014).

[146] Kendler, "An Historical Framework for Psychiatric Nosology."; E. Shorter, *A Historical Dictionary of Psychiatry* (New York, NY.: Oxford University Press, 2005).

[147] Kendler, "An Historical Framework for Psychiatric Nosology."; S. Kawa, Giordano, J., "A Brief Historicity of the Diagnostic and Statistical Manual of Mental Disorders: Issues and Implications for the Future of Psychiatric Canon and Pracitce," *Philosphy, Ethics, Humanities and Medicine* 7 (2012); M. Wilson, "Dsm-Iii and the Transformation of American Psychiatry: A History," *American Journal of Psychiatry*, no. 150 (1993); D. Double, "The Limits of Psychiatry," *British Medical Journal - International Edition*, no. 324 (2002); JD. Pressman, "Psychiatry and Its Origins," *Bulletin of the History of Medicine*, no. 71 (1997).
[148] D. Sillars, "The Develpment of Community Mental Health Nurses in Toronto from 1917 - 1947" (Toronto, 1983); Geoffrey Reaume, "Portraits of People with Mental Disorders in English Canadian History," *Canadian Bulletin of Medical History* 17, no. 1 (2000).
[149] Reaume, *Remembrance of Patients Past. Patient Life at the Toronto Hospital for the Insane, 1870 - 1941*.
[150] Please see Annual Reports, 1870 to 1941; AO, RG 10-B-20, Queen Street Mental Health Centre Records, Clinical Files.
[151] Sillars, "The Develpment of Community Mental Health Nurses in Toronto from 1917 - 1947."; Nolan, *A History of Mental Health Nursing*; Olga Maranjian Church, "Emergence of Training Programs for Asylum Nursing at the Turn of the Century," *Advances in Nursing Science* 7, no. 2 (1985); Sandra Harrisson, "Psychiatric Nurses: An Invisible Role in the Transition between the General Hospitals and the Community35-36," *Déshospitalisation psychiatrique dirigée au sein de la communauté francophone Est-ontarienne, 1976-2006, une approche socio-historique* (2017); V. Long, "'Surely a Nice Occupation for a Girl?' Stories of Nursing, Gender, Violence and Mental Illness in British Asylums 1914 - 1930," in *Mental Health Nursing: The Working Lives of Paid Carers in the Nineteenth and Twentieth Century*, ed. A. Borsay, Dale, P. (Manchester, England: Manchester University Press, 2015).
[152] Nurses' progress notes were copied almost exactly – except for a few changes in grammar or terminology – and presented as the psychiatrist's update on the patient. The psychiatrist presented these observations as his/her own despite not having been present during the recorded event(s). Please see the appendix for an example of the nurses' progress note.
[153] Brown, "" Living with God's Afflicted": A History of the Provincial Lunatic Asylum at Toronto, 1830-1911."; Reaume, "999 Queen Street West: Patient Life at the Toronto Hospital for the Insane, 1870-1941."
[154] H. Merskey, "Somatic Treatments, Igonorance and the History of Psychiatry," *History of Psychiatry* 5 (1994); L.B. Kalinowsky, "The Discoveries of Somatic Teatments in Psychiatry: Facts and Myths," *Comprehensive Psychiatry* 21, no. 6 (1980); P. Brown, "The Mental Patients' Rights Movement and Mental Health Institutional Change," *International Journal of Health Services* 11, no. 4 (1981); J. Chamberlain, ""The Ex-Patient's Movement: Where We've Been and Where We're Going,"" *Journal of Mind and Behaviour* 11, no. 3 (1990); H. Murray, ""My Place Was Set at the Terrible Feast": The Meaning of the' Anti-Psychiatry ' Movement and Responses in the United States, 1970s-1990s," *The Journal of American Culture* 37, no. 1 (2014); N. Crossly, "R.D. Lang and the British Anti-Psychiatry Movement: A Socio-Historical Analysis," *Social science & medicine* 47, no. 7 (1998).
[155] Reaume, *Remembrance of Patients Past. Patient Life at the Toronto Hospital for the Insane, 1870 - 1941*; H.G. Simmons, "Unbalanced: Mental Health Policy in Ontario, 1930 - 1989," (Toronto: Wall and Thompson, 1990); Geoffrey Reaume, "Lunatic to Patient to Person: Nomenclature in Psychiatric History and the Influence of Patient' Activism in North America," *International Journal of Law and Psychiatry* 25 (2002).
[156] J.F. and Rule Schamberg, A., "The Effects of Extremely Hot Baths in Experimental Syphilis," *Archives of Dermatology and Syphilology* 17 (1928).
[157] J. Braslow, *Mental Ills and Bodily Cures: Psychiatric Treatment in the First Half of the Twentieth Century* (Berkeley: University of California Press, 1997); J.M. Pearce, "Brain Disease Leading to Illness: A Concept Initiated by the Discovery of General Paralysis of the Insane," *European Neurology* 67 (2012); J.E. Ross, Tomkins, S.M., "The British Reception of Salvarsan," *Journal of the History of Medicine and Allied Sciences* 52, no. 4 (1997); KAARE WEISMANN, "Neurosyphilis, or Chronic Heavy Metal Poisoning: Karen Blixen's Lifelong Disease," *Sexually Transmitted Diseases* 22, no. 3 (1995); L.J. King, "The Best Possible Means of Benefiting the Incurable: Walter Bruetsch and the Malarial Treatment of Paresis," *Annals of Clinical Psychiatry* 12 (2000).
[158] W.M. Simpson, "Artificial Fever Therapy of Syphilis and Gonococcic Infections," *British Journal of Venereal Diseases* 12, no. 3 (1936); W.M. Simpson, Kendell, H,W., Rose, D., "Developments in the Treatment of Syphilis with Artificial Fever Therapy Combined with Chemo-Therapy During the Past Decade," *British Journal of Venereal*

Disease 17, no. 1-2 (1941); James A Taylor and Charles F Von Salzen, "Prognosis in Dementia Praecox," *Psychiatric Quarterly* 12, no. 3 (1938).

[159] It should be recognized that these treatments were no less dangerous or invasive to the patient just because they didn't invade the dermis or enter an orifice. As will be discussed in the data section of this study, these treatments impacted the patient systemically and could cause critical issues such as cardiogenic shock.

[160]M. Connell, "Personal Research Diary," (2012 - 2015). It is clear in the patient records, even though the fever unit record is the only record available for many of the patients; they tried multiple treatments on patients in an attempt to cure them of their insanity. For those whose case seemed hopeless, a shotgun approach was used in the pursuit of a cure.

[161]Mick Carpenter, "The Struggle Is Never Over," in *Mental Health Nursing: The Working Lives of Paid Carers in the Nineteenth and Twentieth Century*, ed. A. Borsay, Dale, P. (Manchester, England: Manchester University Press, 2015); Nolan, *A History of Mental Health Nursing*.

[162] *A History of Mental Health Nursing*; Tommy Dickinson, *'Curing Queers' Mental Nurses and Their Patients, 1935 - 74* (Manchester, England: Manchester University Press, 2015); J. Court, 2016.

[163] Pauline Paul and Janet C Ross-Kerr, "The Origins and Development of Nursing Education in Canada: The Mack Training School," 5 vols., vol. 5, *Canadian Nursing-E-Book: Issues and Perspectives* (Amsterdam: Elsevier Health Sciences, 2014).

[164] John Murray Gibbon and Mary S Mathewson, *Three Centuries of Canadian Nursing* (Macmillan Co. of Canada, 1947). For more on the quality control crisis in Canadian nursing, please see the Weir Report, G. Weir, "Survey of Nursing Education in Canada," ed. Canadian Nurses' Association and the Canadian Medical Association (Toronto: University of Toronto Press, 1932).

[165] Gibbon and Mathewson, *Three Centuries of Canadian Nursing*; Kathryn McPherson, *Bedside Matters: The Transformatin of Canadian Nursing, 1900-1990* (Toronto: University of Toronto Press, 2011).

[166] *Bedside Matters: The Transformatin of Canadian Nursing, 1900-1990*; "The Nightingale Influence and the Rise of the Modern Hospital," in *On All Frontiers: Four Centuries of Canadian Nursing*, ed. C. Bates, Dodd, D., Rousseau, N. (Ottawa: University of Ottawa Press, 2005).

[167] Mary Adelaide Nutting and Lavinia L Dock, *A History of Nursing: The Evolution of Nursing Systems from the Earliest Times to the Foundation of the First English and American Training Schools for Nurses*, vol. 2 (GP Putnam's Sons, 1907); Diana Mansell, "Profile of a Leader. Mary Agnes Snively: Realistic Optimist," *Canadian journal of nursing leadership* 12, no. 1 (1999).

[168] Mary Agnes Snively, "What Manner of Women Ought Nurses to Be?," *The American Journal of Nursing* 4, no. 11 (1904).

[169] McPherson, "The Nightingale Influence and the Rise of the Modern Hospital."For more information on why the Nightingale Model did not translate to the Canadian hospital, please see Judith Godden and Carol Helmstadter, "Woman's Mission and Professional Knowledge: Nightingale Nursing in Colonial Australia and Canada," *Social History of Medicine* 17, no. 2 (2004).

[170] A. Borsay, Dale, P., "Mental Health Nursing: The Working Lives of Paid Carers in the Nineteenth and Twentieth Centuries," in *Mental Health Nursing: The Working Lives of Paid Carers in the Nineteenth and Twentieth Centuries*, ed. A. Borsay, Dale, P. (Manchester, England: Manchester University press, 2015); Robert Dingwall, Anne Marie Rafferty, and Charles Webster, *An Introduction to the Social History of Nursing* (Routledge, 2002).

[171] Borsay, "Mental Health Nursing: The Working Lives of Paid Carers in the Nineteenth and Twentieth Centuries."

[172] Dingwall, Rafferty, and Webster, *An Introduction to the Social History of Nursing*; Weir, "Survey of Nursing Education in Canada."

[173] Shorter, "A History of Psychiatry: From the Age of the Asylum to the Era of Prozac."; Scull, *Madhouses, Mad-Doctors, and Madmen: The Social History of Psychiatry in the Victorian Era*; Scull, "Somatic Treatments and the Historiography of Psychiatry."; David Wright, "Getting out of the Asylum: Understanding the Confinement of the Insane in the Nineteenth Century," *Social history of medicine* 10, no. 1 (1997).

[174] Court; Borsay, "Mental Health Nursing: The Working Lives of Paid Carers in the Nineteenth and Twentieth Centuries."

[175] M. Smith and N. Khanlou, "An Analysis of Canadian Psychiatric Mental Health Nursing through the Junctures of History, Gender, Nursing Education, and Quality of Work Life in Ontario, Manitoba, Alberta, and Saskatchewan," *ISRN Nurs* 2013 (2013).
[176] Boschma, "Psychiatric and Mental Health Nursing: From Past to Present."; Mick Carpenter, "Asylum Nursing before 1914: A Chapter in the History of Labour," in *Rewriting Nursing History*, ed. Celia Davies (Ringwood, Hampshire. England: Antony Rowe Ltd., 1986); "The Struggle Is Never Over."; Claire Chatterton, "The Weakest Link in the Chain of Nursing? Recruitment and Retention in Mental Health Nursing in England, 1948 - 68," in *Mental Health Nursing: The Working Lives of Paid Carers in the Nineteenth and Twentieth Centuries* ed. A. Borsay, Dale, P. (Manchester, England: Manchester University Press, 2015); Nolan, *A History of Mental Health Nursing*; Veryl Margaret Tipliski, "Parting at the Crossroads: The Emergence of Education for Psychiatric Nursing in Three Canadian Provinces, 1909–1955," *Canadian Bulletin of Medical History* 21, no. 2 (2004); W.H. Brown, "Dr. C.K. Clarke and the Training School for Nurses " in *The Provincial Asylum in Toronto: Reflections on Social and Architectural History*, ed. E. Hudson (Toronto: Toronto Region Architectural Conservancy, 2000).
[177] Tipliski, "Parting at the Crossroads: The Emergence of Education for Psychiatric Nursing in Three Canadian Provinces, 1909–1955."; Graduate Nurses' Association of Ontario, "Second Meeting of the Graduate Nurses' Association of Ontario," *The Canadian Nurse* 1, no. 2 (1905).
[178] M. Hargrave, "Hospital and Training School Items."
[179] Tipliski, "Parting at the Crossroads: The Emergence of Education for Psychiatric Nursing in Three Canadian Provinces, 1909–1955."; Registered Nurses' Assciation of Ontario, "Provincial Education Committee," (1925).
[180] Margaret Breay, "Nurses as Citizens," *The Canadian Nurse* 39, no. 1 (1938); Smith and Khanlou, "An Analysis of Canadian Psychiatric Mental Health Nursing through the Junctures of History, Gender, Nursing Education, and Quality of Work Life in Ontario, Manitoba, Alberta, and Saskatchewan."; Boschma, "Psychiatric and Mental Health Nursing: From Past to Present."
[181] Weir, "Survey of Nursing Education in Canada."; George Moir Weir, "Survey of Nursing Education in Canada," *AJN The American Journal of Nursing* 32, no. 5 (1932); Ontario, "Provincial Education Committee."
[182] Weir, "Survey of Nursing Education in Canada."
[183] Tipliski, "Parting at the Crossroads: The Emergence of Education for Psychiatric Nursing in Three Canadian Provinces, 1909–1955."; Boschma, "Psychiatric and Mental Health Nursing: From Past to Present."; Sillars, "The Develpment of Community Mental Health Nurses in Toronto from 1917 - 1947."
[184] For a more thorough understanding of the divide between mental nursing in Ontario as compared to the provinces to the west, see Tipliski, "Parting at the Crossroads: The Emergence of Education for Psychiatric Nursing in Three Canadian Provinces, 1909–1955."
[185] Carpenter, "Asylum Nursing before 1914: A Chapter in the History of Labour."; "The Struggle Is Never Over."; Church, "Emergence of Training Programs for Asylum Nursing at the Turn of the Century."; Long, "'Surely a Nice Occupation for a Girl?' Stories of Nursing, Gender, Violence and Mental Illness in British Asylums 1914 - 1930."; Ouahiba Temouh, "George Bernard Shaw's Feminist Vision in Mrs. Warren's Profession, Man and Superman and Pygmalion" (2012).
[186] Brown, "Dr. C.K. Clarke and the Training School for Nurses ".
[187] Dickinson, *'Curing Queers' Mental Nurses and Their Patients, 1935 - 74*; Harrisson, "Psychiatric Nurses: An Invisible Role in the Transition between the General Hospitals and the Community35-36."; Scull, "Somatic Treatments and the Historiography of Psychiatry."; Young de, *Encyclopedia of Asylum Therapeutics, 1750 -1952.*
[188] "Provence Care Archives: Kph School of Nursing Alumnae Fonds," (Kingston, Ontario1909 - 1947); M. Kerrigan, January, 5th, 2017 2017.
[189] Tipliski, "Parting at the Crossroads: The Emergence of Education for Psychiatric Nursing in Three Canadian Provinces, 1909–1955."
[190] "Fonds - Dr. Charles Kirk (C.K.) Clarke Collection," (1870 - 1924); J.M. Forester, "Annual Report of the Medical Superintendent of the Hospital for the Insane, Toronto Ontario," Forty-Fourth Annual Report of the Inspector of Prisons and Public Charities (Toronto: King's Printer, 1911).
[191] Tipliski, "Parting at the Crossroads: The Emergence of Education for Psychiatric Nursing in Three Canadian Provinces, 1909–1955."

[192] Brown, *Dr. C. K. Clarke and the Training School for Nurses." In the Provincial Asylum in Toronto: Reflections on Social and Architectural History*.
[193] Joan Evans, "Men Nurses: A Historical and Feminist Perspective," *Journal of advanced nursing* 47, no. 3 (2004); Michael J Villeneuve, "Recruiting and Retaining Men in Nursing: A Review of the Literature," *Journal of Professional Nursing* 10, no. 4 (1994); W.J. Bartfay, "Men in Nursing in Canada: Past, Present and Future Perspectives," in *Men in Nursing. History, Challenges and Opportunities*, ed. C. O'Lynn, Tranbarger,R.E. (New York, New York: Springer Publishing, 2007); Robert William Connell and Raewyn Connell, *Masculinities* (Univ of California Press, 2005).
[194] Sillars, "The Develpment of Community Mental Health Nurses in Toronto from 1917 - 1947."; M.A. Doucett, "Our Concept of a Psychiatric Nursing Affiliation," *The Canadian Nurse* 49, no. 10 (1953); Toronto General School of Nursing, "Nursing Education Update," (Toronto General Hospital, 1937); Nolan, *A History of Mental Health Nursing*.

Chapter 3: Methods

Research Design

This chapter provides an overview of the study's research methods, including the rationale for the use of a single, descriptive case study design. In addition, a fulsome account of the case, the use of primary historical sources, propositions, and method of data analysis are included. The chapter will conclude with a discussion of the strategies used to increase trustworthiness.

Researcher's Stance

Beyond my clinical experience as a student nurse, I had never worked in a mental health setting. Although, it would be accurate to say that mental health, or the absence of it, has been a constant theme running through every clinical care setting. This limited exposure gave me the impression that mental health nursing was about keeping people safe and giving medications—basically, custodial care. This viewpoint changed in 2012, while working as a research assistant transcribing patient records from the Queen Street Mental Health Hospital in Toronto (formerly the Ontario Hospital, Toronto). The majority of the records confirmed my original prejudices, with lists documenting bowel movements and fluid intake, test results, and monotonous notes on day-to-day interactions with the nurse.

However, in four boxes marked 'fever unit', I found a collection of nurses' notes that resembled what I might have written during my time as an intensive care nurse. They demonstrated a nurse who utilized intensive observation and monitoring in order to triage, respond to life-threatening crises, and administer advanced interventions such as oxygenation, medication titration, and the insertion and maintenance of an intravenous infusion. In addition,

the fever unit nurse did all of this with little to no oversight from a physician. Even during my time as an intensive care nurse (some 50 years later), I required the input of a physician.

Suddenly I felt a connection to these nurses; this was unexpected. I began to look for evidence of the fever nurses' work in the literature and in the archives of professional organizations such as the College of Nurses of Ontario and the Registered Nurses' Association of Ontario, but there was none. When I spoke to nurses who had once practiced and to those who were currently practicing in mental health, they had never heard of the fever unit nurse. This, to me, was an unfortunate gap in the story of nursing, especially in an area that had traditionally been left out of the story: mental health nursing from the nurse's perspective. This is what inspired me to pursue an investigation of the fever unit nurse working at the Ontario Hospital, Toronto.

Philosophical Underpinnings

Research is seldom the result of happenstance. It is always firmly connected, whether conscious or not, to the researcher's worldview or set of beliefs about who they are, how they come to know the world around them, and how they fit into it.[1] In order to understand how a study was conceived, it is necessary to appreciate these underlying philosophical assumptions on the part of the researcher, their ontological and epistemological outlook.[2] This understanding not only determines how a phenomenon is viewed, but also the methodology that should be used to study it. Methodology is the strategy used to translate ontological and epistemological principles into the procedures and practices of a study.[3] These three pieces—ontology, epistemology and methodology—constitute the researcher's paradigm.[4]

One's ontological perspective can be viewed in one of two ways, either through realism or relativism. Realism is the belief that there is only one reality and this reality does not evolve

or change but instead remains constant.[5] Relativism holds that reality is subjective and that multiple realities may exist at once, depending on whose perspective is considered. In addition, relativists posit that reality can change over time, it is not a constant.[6] This study is grounded in an ontological relativist perspective. This means that the study of nurses working in the fever unit may be seen differently by others and, with additional data and consideration, my own perspective could change over time.

Epistemology is based on one's ontological perspective and asks the questions: "What is the relationship between the knower and what is known?", "How do we know what we know?", and "What counts as knowledge?"[7] The researchers' epistemology may take on several forms on a trajectory from positivist to constructivist. The positivist maintains that research is to provide a scientific explanation that is empirically based and consists of facts that exist apart from personal ideas or thoughts. In other words, knowledge is out there and needs to be discovered. In the positivist's view, they have no influence on reality at all.[8] Their goal is to be as objective as possible. The constructivist, however, asserts that the world is constructed and interpreted based on people's interaction(s) with others and with the larger society. The phenomenon that they are studying is influenced by their understanding of reality and associations that they have made based on their own experiences. Because the work of fever unit nurses occurred over eighty years ago, it is not possible for me to influence the collection and interpretation of that data directly; however, as I have already identified, my previous experience as an intensive care nurse has influenced my desire to study this subject and will impact how I interpret their actions as they care for their patients. This study will assume a constructivist lens and utilizes a case study methodology to interpret this reality. Case study methodology is consistent with a constructivist approach.

Case Study Methodology

A descriptive case study design was the methodological approach used in this study. The case or unit of analysis was the work of nurses in the fever unit at the Ontario Hospital, Toronto from 1941 to 1950. Case study design was selected because it is most commonly used in the following circumstances: when how and why questions need to be answered in greater depth than other methods could provide; when the investigator has little or no control over a real life situation; and when the boundaries between a unique phenomenon and context are not well known.[9] A study of nursing practice in the fever unit situates this study as descriptive in nature, as it focuses on a particular phenomenon to increase understanding by answering how and why questions; affords the researcher no control as the phenomenon occurred seventy-eight years ago; and has not been studied in any depth, which means the phenomenon and the context are not well understood.

Boundaries were set around the case to ensure a focused approach and limit investigating content out-of-scope. The boundaries for this study were confined to nurse technicians working in the fever unit at the Ontario Hospital, Toronto from 1941 until 1950.[10] As a descriptive case study, there was no attempt to develop a theory or expand on an existing construct; the study's purpose was simply to better understand the work of fever unit nurses within the defined case.[11] This study utilized a purposeful sampling technique and a homogeneous sampling strategy given that the overall objective of the study was to understand, in greater depth, the work of nurses in this environment so only information-rich primary sources from the fever unit were included for selection.[12]

In his work on case study design, Yin (2003) asserts that propositions are helpful in order to place limits on the focus of study and to guide the analysis of data.[13] In a review of the

literature and through earlier research work with the Ontario Hospital, Toronto data, the following propositions were constructed: nurses practiced independently with little oversight from the psychiatrist; nurses managed complicated and sometimes life-threatening situations on their own; and nurses had knowledge of advanced skills such as the administration of emergency drugs and oxygen. These propositions were used to guide data analysis. As is consistent with case study analysis, the primary sources (discussed below in greater depth), namely nurses' notes, were analyzed for pattern matching or themes, and data was linked back to the propositions. The truth value of the data was verified using peer reviewed journal articles from the same time period, written by nurses who were providing care in a fever unit setting.[14] In addition, to further enhance study quality, a research diary was kept to provide the opportunity for reflection, and a second reviewer was used to provide consensus on themes and alignment with prepositions. [15]

Origin of the Primary Source Data

Primary sources are artifacts created at the time of an event or by a person who directly experienced the event. These can include items such as manuscripts, government documents, patient charts, and newspaper or magazine clippings.[16] The majority of the primary source data used in this case study is located in two sets of fonds (a collection of documents originating from the same source) gifted to the Archives of Ontario. The largest collection, from the Government of Ontario, includes patient and administrative documents housed in Ontario's mental hospitals prior to 1973. The predominant focus of this study is on fever unit patient files from the Ontario Hospital, Toronto from 1942 until 1950. Patient files and administrative records from other Ontario hospitals such as Penetanguishene, Hamilton, and London were also examined and used

as comparators in the analysis to determine homogeneity, standardization of the record and, of course, patient care.

The 451 files of patients receiving treatment in Toronto's fever unit and administration files were located in 4 boxes (B 292485, B 2922487, B 431608, and B431584). Permission to access patient records was covered under an earlier agreement granted to Dr. Thomas Foth for his study of the Fever Unit. This additional research study was added to the original agreement in August 2012. As the requirements of this study were similar to Dr. Foth's and included patient records from the original agreement, the terms of the access permissions were not violated. This study did not use human subjects and was therefore not required to obtain ethics approval from the University of Ottawa. Also, compliance to the Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans was unnecessary. A donor of artifacts to the Archives of Ontario may place additional requirements to protect personal health information. The Ontario Ministry of Health, the donor of the records used in this research, placed the additional condition of no reproduction by photocopy or photography on patient records of 100 years old or less. The records used in this research are between 73 and 52 years old. This meant that records used in this study were copied in their entirety by hand, by the researcher.

A smaller but equally impactful set of documents was gifted to the Archives of Ontario by the Ontario College of Nurses in 2016. This fond includes a set of inspection reports, *The Ontario School of Nursing Report*, for the years 1923 to 1981. These summary reports were generated annually by the College of Nurses of Ontario, detailing the results of on-site inspections of Ontario's mental hospital schools of nursing. They include observations about the working conditions of mental health nurses, the type of education they received, the textbooks recommended, and the prerequisite education required to enter a school of nursing within a

mental hospital in Ontario. Several years are missing within this data set but they do include the years within the timeframe of the fever unit at the Ontario Hospital, Toronto. Disappointingly, the inspection reports for the Ontario Hospital, Toronto were the only group missing entirely from the fonds and the College of Nurses of Ontario was unable to explain the reason for this gap.[17] However, reports for schools within similarly sized hospitals that had a similar patient population and who were geographically close to Toronto, such as Hamilton and London, were used to represent the Toronto school student population. This dataset will help to complete the portrait of who the mental health nurse was before she arrived at training school, what she was taught, what was emphasized in her training, and the flow of her day within the mental hospital. Although no inspection report was found that dealt specifically with the fever unit, it provides a perspective of the work environment in the hospital as a whole.

Two additional sets of archival documents were found outside the Archives of Ontario. The Kettering Family Papers from the Wright State University Special Collections and Archives in Dayton, Ohio, provide a detailed account of the philanthropic work of its patriarch, Dr. Charles Kettering, the inventor of the Kettering hypertherm, or fever cabinet, as it was known at the Ontario Hospital, Toronto. Hidden within 75 linear feet and 136 boxes of Kettering family memorabilia were two documents that described the conceptualization of the hypertherm and its progression to the prototype that was used in Toronto. In addition, the doctor responsible for the testing of the prototype, Dr. Walter Simpson, describes the role of the nurse in providing care to the neurosyphilis patient. This dataset will be used to discuss the complexity of caring for someone receiving fever therapy and the measures that needed to be taken to ensure a safe and competent level of care was provided to the patient. As the mental health nurse was the administrator of this treatment, these documents speak specifically to her role.

Within the administrative records at the Archives of Ontario, a protocol on nursing care during fever cabinet therapy and written by Dr. Bromley was located; this will be discussed later in the study. Considering the scale and prominence of Kettering's original trial, it is exceptional that no protocol exists—further investigation would be merited in order to search private collections for such documentation. The Registered Nurses Association of Ontario, Mental Health Nurses Interest Group also searched their archives for any documents related to fever unit nursing; however, none were retrieved.

The Value of the Fever Unit Patient Files

Patient files from the fever unit will be used to describe the phenomenon of fever therapy nursing at the Ontario Hospital, Toronto. It is fortuitous for this study that the fever therapy unit existed at a time when casefiles were available. Prior to the twentieth century, any documentation on psychiatric patients was confined to either a casebook or a register.[18] Both merely functioned as a way of keeping attendance, and primarily contained information on patient admissions, status in permanent residence, and time of dismissal, either by discharge or death.[19]

As psychiatry evolved its practice to one of intervention and treatment, the patient file took on new meaning and use.[20] The primary purpose of the patient record was to assist the psychiatrist in diagnosis and treatment. The psychiatrist was the principal author in the patient file as well as the intended audience.[21] As others, such as nurses, became involved in the delivery of treatment to psychiatric patients, their contribution to patient care became visible in the patient record, albeit viewed as less important. Interestingly, as will be discussed during the data analysis section of this thesis, the psychiatrist's assessments of fever treatment patients were sometimes based entirely on the observations and notes of the nurse of which he simply copied

and replaced the nurse's signature with his own.[22] This rather deceptively concealed the impact of the nurse and her contribution to diagnosis and care decisions for the patient. [23] De la Cour and Reaume (2011, 243) describe the psychiatric patient file as a rich source of information providing unique observation into the day-to-day operations of the asylum and its inhabitants, including nurses.

The presence of the mental health nurse in the patient file

An understanding of the mental health nurse working in the fever unit and her work are both illuminated and limited by the patient files. They are illuminated in the sense that rare treatment records completed by the mental health nurse herself are available, but limited in that all narrative notes associated with fever treatment (pre, post, and intra-treatment) have been destroyed. According to the Archives of Ontario, all 'extraneous' contents of the record were destroyed by the Government of Ontario prior to their arrival at the archives in 1973. Unfortunately, narrative notes written by the nurse were considered superfluous. Narrative notes are not constrained by the same limitations of self-expression as treatment flowsheets and permit the nurse some latitude to reveal herself and her practice,[24] Reaume and de la Cour (1998, 259) argue that people, usually invisible in a patient record, such as the patient or a nurse, can reveal themselves to others through narrative description. Attempts to locate nursing notes, or even treatment sheets, from the twelve 'medically distinct' institutions participating in the original testing of the Kettering hypertherm resulted in the same outcome: all nursing documentation had been destroyed. It is possible that these documents exist in some unexpected place, but resource constraints, such as time, make it impossible to prove otherwise. Notwithstanding, the availability of fever therapy patient files from the Ontario Hospital, Toronto, make the daily

work of the fever therapy nurse and how she went about her care of patients with neurosyphilis known. Again, this documentation by mental health nurses is indeed a rarity.

There are two types of nurses' notes contained in the files: one from the regular ward and one from the fever unit. As previously mentioned, narrative notes from the ward were destroyed from most of the charts, but there were a handful of patient files where some pre-treatment and post-treatment sheets existed. Documentation from the fever unit consisted of a single sheet of paper intended to capture the entire course of treatment for that day and was called the *Temperature Chart* (See Appendix A). The nurse providing fever treatment was the sole author of this document. The fever chart contained no medical notes.

Patients identified in the 451 records from the fever unit are divided into "successful" and "unsuccessful" cases, with patients ordered alphabetically. The criteria for what constituted unsuccessful with respect to these patients is not explicit, but it is assumed that unsuccessful meant that despite various forms of treatment, including fever therapy, they remained hospitalized for their illness or died. Patients whose care was considered successful, were discharged and monitored through correspondence with family members.

Importantly, there are two types of nurses' notes contained in the patient files: one from the regular wards and one from the fever unit. Nurses' documentation constituted a small portion of the overall patient file. Each file was divided into five sections: *administrative,* an umbrella term used to describe any documentation that is not clinical, including patient financial statements, lists of personal possessions, and legal documents; *medical,* consisting of admission notes, ongoing assessments, round presentations, consults with other professionals, medical orders, and discharge notes or death certificates; *tests and procedures,* such as blood work, x-rays, lumbar punctures, and dental care; *nursing,* consisting of ongoing day-to-day care of the

patient, incidence of behaviour, notes on specialized procedures such as fever treatment and hydrotherapy; and *miscellaneous,* consisting of correspondence with family members, patient letters to the psychiatrist, and items that did not fit into the other categories. The completeness of each patient record varied considerably, with some records containing a lone piece of paper while others were extensive accounts of the patient's life over a thirty-year period.

There were a few records (less than 20) that managed to avoid the culling of nursing notes and included documentation describing the pre-fever treatment given to patients on the ward on the evening prior to fever therapy. These notes were brief paragraphs that described the standard protocol of care prior to treatment as per Bromley's manual (elaborated on in Chapter 4), with some commentary on the behaviour of the patient. In addition, a very limited number of charts included the ward nurse's assessment and care post fever therapy. This also included the carrying out of standard protocols of care in addition to commentary on the patient's medical status and behaviour once back on the ward.

The fever treatment flow sheet (see Appendix A) began by documenting the patient's demographic information, date of admission, and diagnosis, along with the prescribing doctor's name. The remainder of the sheet is divided into five sections. The first section demarks the date and time and is read from left to right across the page. The second section captures the patient's rectal temperature on a scale of 97° Fahrenheit at the lower end to a maximum of 107° Fahrenheit. The temperature was recorded on an hourly basis and is indicated with a solid circle drawn by the nurse. The third section captures the patient's pulse throughout the procedure and ranges from 50 beats per minute to a maximum of 170 beats per minute. Once again, the pulse is captured on an hourly basis. The fourth section documents the patient's respiratory rate during the course of the treatment and is recorded on a scale of zero to a maximum of 60 respirations

per minute. For some unknown reason, this section was not used to record respirations but instead was used by the nurse to record narrative about the patient's response to treatment and their behaviour. In fact, any area of the flow sheet that was not used to record vital signs was used by the nurse to document narrative, likely because there was no designated place on the flow sheet to record this type of information. This sometimes makes the course of treatment difficult to track, since each note is not demarcated by time, making it difficult to know when patients made comments about their treatment or requested a glass of water. The fifth and final section tracks patient output in the form of urine and stool, day of disease (unsure what this means), and day of operation. This final event, day of operation, means that this sheet was used in other service areas that offered specialized treatments or procedures requiring hourly monitoring of patient vital signs. Also, the sheet is credited to "Grand and Toy Toronto" instead of a specific hospital, suggesting that was possibly a standard form used by all hospitals with no particular unit or user in mind. In an unused space on the Temperature Chart, the nurse would write a brief note describing the patient's insight into their disease, their overall response to the course of the treatment and their status on returning to the ward. These notes were then typewritten by a medical secretary. A carbon copy was made and placed in the fever unit record. The typewritten note was then sent to the psychiatrist for review; some small changes to language were made and then they were entered into the medical record as the psychiatrist's assessment of the patient and their treatment.

Finally, included in the files were a number of administrative records such as personnel files, correspondence between physicians and key bureaucrats at the Ministry of Health, and data collected on the patient population. This included patient outcomes from fever therapy. The measurements contained information on the number of patients receiving fever therapy, the total

number of hours of treatment for each patient, and the gender and age of each patient. This type of information defines the magnitude and scope of the nurses' work. It should be noted that the patient records also included nursing documentation from Public Health Nurses who were responsible for monitoring and assessing patient progress once they had been discharged to the community. This component of nursing work is beyond the scope of this study but should be considered as an area for future investigation.

Peer Reviewed Journals as Primary Sources

In the published professional literature, three journal articles written by nurses were located between 1936 and 1944, written by Frances Lutz (1936), Emmy Lehmann (1937) and Edit Pegg (1944). All three articles were written from the perspective of a nurse operating the hypertherm. As such, these articles constitute important primary sources that provide essential information on the role of the nurse providing care to patients receiving fever therapy. The articles were written in a manner that reflected the standard course of treatment: pre-treatment care, inter-treatment care, and post-treatment care.

Notably, the perspectives of the nurse authors differ slightly, and it can be hypothesized that these differences could be based on their nursing experiences and practices. Pegg, for example, was a nurse-in-charge, whereas Lehmann and Lutz were identified as frontline care providers. Another notable difference was the location of the treatment—Lehmann and Lutz worked in general hospitals and Pegg was located on a military base. Further, the patients' course of treatment and the associated nursing care also differed based on the type of patient they were treating. For example, Pegg cared for syphilis patients whereas Lehmann and Lutz treated patients with gonorrhea. None of the three authors were mental health nurses; they were all general hospital nurses trained in the care of fever therapy patients. Although dealing with the

treatment of gonorrhea, Lehmann's summary is the most detailed and fulsome of the three papers. Lehmann practiced at the Strong Memorial Hospital in Rochester, New York, one of the original twelve hospitals involved in Kettering's original thesis. Lehmann's article was used to provide an overview of nursing care in the three distinct phases (pre-, intra- and post-procedural) as the principal representation of care reported in the published professional literature. Additions from Pegg's and Lutz's accounts are included to augment practices that were described, thereby providing a fuller picture of the treatment process.

In addition to peer-reviewed journal articles on fever therapy written by nurses, there were three written by physicians practicing in fever therapy at this time (1930 to 1950).[25] The perspective of physicians working in fever therapy is important because the mental health nurse followed medical directives; how the physician describes the role of the nurse is important. It helps to complete the picture of the mental health nurses' work environment, but this thesis will only rely on the perspective of the nurse to describe the nurses experience working in the fever unit at the Ontario Hospital, Toronto.

Selecting Patient Records to Illustrate the Work of the Fever Nurse

During its tenure, 451 patients were treated in the fever unit at Toronto, many of them multiple times. At its peak, the unit operated seven days a week using four cabinets altogether. Patient numbers dwindled in the late 1940s to the early 1950s. Patient records for the fever unit are incomplete for the years 1941, 1941 and 1942. In the first year where fever unit documentation exists, 1943, 114 patients received fever treatment, whereas in the last year, 1948, only 52 patients received treatment. Twenty-nine different nurses worked in the unit during this time. In 1941, a list of patients who had been 'successfully' treated with fever therapy was created by psychiatrists at Toronto.[26] In sorting through the files, it became apparent that

psychiatrists divided patients into one of two categories: unsuitable and suitable cases. Suitability was based on whether patients had experienced success in previous fever therapies or not. This list contained 48 names in total. These files were selected to represent the work of nurses in the fever unit as it would have been beyond the resources available in this thesis to examine the entire sample (*N*=451). These 48 files were compared to the larger group of files and were found to be representative of nursing work overall. This comparison was done by manually examining the treatment contained in all 451 cases and comparing it to the treatment found in the 48 successfully treated cases. This was done to ensure the files selected did not represent extremes in care or exceptional circumstances, since the goal of the study was to find examples of common treatment or practice. In order to illustrate the skill and scope of the fever unit nurses' work, two data-rich files will be the focus of this study. These files were selected for their completeness and richness of the data. There was no attempt to understand sub-themes or nuances of the fever unit nurses' work, such as differences based on shift worked, gender of patients, or year of treatment.[27] These elements would contribute to a deeper understanding of the work of the fever unit nurse and should be considered for future study if patient files from other institutions are ever located.

Selection of the Cases

Two patient files were selected specifically to highlight different aspects under study in this thesis. Connie's file was unique because it contained hundreds of nursing notes detailing her day-to-day care, and despite receiving fever therapy for a brief period, there were no fever records found in her file. Access to such a large volume of nursing notes offers the opportunity to compare the day-to-day work and skill of mental health nurses working on a ward with those working in the fever unit. Because Connie was also subjected to daily continuous water bath

treatments that sometimes resulted in life-threatening situations, it also permits a comparison of care of these two types of mental health nurses when the patient is critically ill.

Stephen's file included a large number of fever therapy treatment notes that were sequential and were over a significant period of time. These notes included a number of critical incidents that demonstrated the fever nurses' ability to manage complex medical situations on her own thus showing the scope of her practice.

Trustworthiness of the Case Study

Case study design is sometimes criticized for what is perceived to be a lack of rigor.[28] Key elements to increase trustworthiness were included in this study design. For example, ensuring that the research question can be answered by case study methodology, and is clearly written and supported by propositions that guide data analysis. The use of purposeful sampling to avoid the inclusion of extreme or non-representative cases. Utilizing triangulation of data sources to ensure the phenomenon can be viewed from multiple perspectives; the use of peer reviewed literature from the time was included in this study to ensure the nurses working in the fever unit were following the practice standards of the day. In addition, self-reflection through the use of a research diary, which was done in this study, can reduce bias.[29] These strategies support the credibility of this thesis' findings

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[1] Egon G Guba and Yvonna S Lincoln, "Competing Paradigms in Qualitative Research," *Handbook of qualitative research* 2, no. 163-194 (1994).
[2] Guba and Lincoln; Fekede Tuli, "The Basis of Distinction between Qualitative and Quantitative Research in Social Science: Reflection on Ontological, Epistemological and Methodological Perspectives," *Ethiopian Journal of Education and Sciences* 6, no. 1 (2010).
[3] G. Marcyzk, DeMatteo,D. , Festinger, D., *Essentials of Research Design and Methodology* (New Jersey: John Wiley and Sons,Inc., 2005).
[4] Guba and Lincoln, "Competing Paradigms in Qualitative Research."; Tuli, "The Basis of Distinction between Qualitative and Quantitative Research in Social Science: Reflection on Ontological, Epistemological and Methodological Perspectives."

[5] "The Basis of Distinction between Qualitative and Quantitative Research in Social Science: Reflection on Ontological, Epistemological and Methodological Perspectives."
[6] "The Basis of Distinction."
[7] "The Basis of Distinction."
[8] Guba and Lincoln, "Competing Paradigms in Qualitative Research."
[9] Pamela Baxter and Susan Jack, "Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers," *The qualitative report* 13, no. 4 (2008); Bent Flyvbjerg, "Five Misunderstandings About Case-Study Research," *Qualitative inquiry* 12, no. 2 (2006); G. Guest, Namey, E.E., Mitchell, M.M., *Collecting Qualitative Data: A Field Manual for Applied Research* (Thousand Oaks, California: Sage Publishing, 2013); France Légaré et al., "A Conceptual Framework for Interprofessional Shared Decision Making in Home Care: Protocol for a Feasibility Study," *BMC health services research* 11, no. 1 (2011).
[10] The Chief Archivist at the College of Nurse of Ontario reported that the term 'nurse technician' had never been used or recognized by the College.
[11] Baxter and Jack, "Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers."; R.K. Yin, *Case Study Research: Design and Methods* (Thousand Oaks, California: Sage Publishing, 2003).
[12] M. Paton, *Qualitative Evaluation and Research Methods* (Beverley Hills. California: SAGE, 1990); Guest, *Collecting Qualitative Data: A Field Manual for Applied Research*.
[13] Yin, *Case Study Research: Design and Methods*; R.E. Stake, *The Art of Case Study Research* (Thousand Oaks, California: Sage 1995).
[14] Please see for comparisons of nursing work in a fever unit during the same time period: Edith Pegg, "The Nursing Aspect of hyperthermy Treatment," *British Journal of Venereal Diseases* 19, no. 4 (1943); W.M. Simpson, "Artificial Fever Therapy of Syphilis and Gonococcic Infections," *British Journal of Venereal Diseases* 12, no. 3 (1936); Leon Bromberg, "Artificial Fever Therapy," *The American Journal of Nursing* (1936); Emmy Lehmann, "Nursing Care in Fever Therapy," *The American Journal of Nursing* 37, no. 12 (1937).
[15] Sara Nadin and Catherine Cassell, "The Use of a Research Diary as a Tool for Reflexive Practice: Some Reflections from Management Research," *Qualitative Research in Accounting & Management* 3, no. 3 (2006); K.A. Clarke, "Uses of a Research Diary: Learning Reflectively, Developing Understanding and Establishing Transparency," *Nurse Researcher* 17, no. 1 (2009).
[16] Kate Rousmaniere, "Historical Research," in *Foundations for Research* (Routledge, 2003).
[17] Archives of Ontario, "College of Nurses of Ontario Annual Inspection Records," ed. M. Connell (2017).
[18] L. De La Cour, Reasume, G., "Patient Perspectives in Psychiatric Case Files," in *On the Case. Explorations in Social History*, ed. F. Iacovetta, Mitchinson, W. (Toronto: University of Toronto Press, 2011).
[19] L. De La Cour.
[20] L. De La Cour.
[21] Marc Berg, "Practices of Reading and Writing: The Constitutive Role of the Patient Record in Medical Work," *Sociology of health & illness* 18, no. 4 (1996); John Dollard, "Criteria for the Life History: With Analyses of Six Notable Documents," (1935). From the beginning of the twentieth century until the mid-Fifties, the Ontario Hospital Toronto only had one female psychiatrist.
[22] Foth, "Treating through Fear - Nurses and the Fever Unit at the Ontario Hospital, Toronto 1941 - 1951."
[23] In reviewing the 451 case files at the Ontario Hospital, Toronto every file that contained nurses notes had the signature of one of twenty-nine nurses found to document in that unit. All of these twenty-nine nurses was female.
[24] Reference on the value of narrative notes
[25] Bromberg, "Artificial Fever Therapy"; B. Levy, "hyperthermy in the British Army," *Journal of the Royal Army Medical Corps* 98 (1952); AJ King, DI Williams, and CS Nicol, "hyperthermia in the Treatment of Resistant Gonococcal and Non-Specific Urethritis," *British Journal of Venereal Diseases* 19, no. 4 (1943).
[26] The term 'successful' was debatable as this outcome was measured through correspondence with family members while the patient was home on probation. Families often corresponded with the psychiatrist indicating that they felt their family member was no better but they still appeared on the 'successful' treatment list. Many returned for second sessions of fever therapy in later years.

[27] Personnel files from the Ontario Hospital Toronto were available on the majority of nurses working in the fever unit so it was possible to have an understanding of the nurses' educational background, age and years of experience.
[28] M. Sandelowski, "The Problem of Rigour in Qualitative Research," *Advances in Nursing Science* 8, no. 3 (1986); "Rigor or Rigor Mortis: The Problem of Rigor in Qualitative Research Revisited," *Advances in Nursing Science* 16, no. 1 (1993); Yin, *Case Study Research: Design and Methods*; Stake, *The Art of Case Study Research*.
[29] Gary Rolfe, "Validity, Trustworthiness and Rigour: Quality and the Idea of Qualitative Research," *Journal of advanced nursing* 53, no. 3 (2006).

Chapter 4: Results

The purpose of this descriptive case study was to gain an understanding of the role of nurses in the treatment of patients receiving fever therapy for neurosyphilis at the Ontario Hospital, Toronto from 1941 to 1950 and was guided by the following objectives:

1. To describe the process and practices that informed fever therapy treatment at the Ontario Hospital, Toronto from 1941 to 1950.
2. To describe the work of mental health nurses providing fever therapy at the Ontario Hospital, Toronto from 1941 to 1950.

By incorporating analysis of a variety of primary sources, this chapter presents the results of the case study in two distinct sections. In the first section, a rich description of the processes and practices that informed fever therapy at the Ontario Hospital, Toronto is provided. In the second section, using patient files, two exemplars are presented that provide unique insight into the care nurses in the fever unit provided to their patients and shed important light on their work. This thesis differs from other examinations of the mental health nurse that were the perspective of patients or psychiatrists. This examination brings clarity to the questions: who was the mental health nurse and what was her practice within the fever unit?

Preface:

Because patient records for the fever unit are incomplete for the years 1941, 1941 and 1942, it is not possible to determine the precise start date for the unit. However, a document dated February 21st, 1941 provides a list of patients who were treated 'successfully' with fever cabinet therapy.[1] Based on this, the assumption can be made that treatment started shortly after the biographical summaries were constructed in January 1941, one year prior. The list of those

'successfully treated' consisted of 48 patients who were either discharged or on probation following their treatment, and were judged to be adjusting satisfactorily.

Section 1: processes and practices that informed fever therapy treatment at the Ontario Hospital, Toronto

How the Fever Unit Came into Being

Creation of the hypertherm produced incredible excitement among the medical community, especially for those treating patients with neurosyphilis. The benefits of treatment were touted in the mainstream media as well as academia. The 'pomp and circumstance' associated with its initiation in the rest of the world was not present in the Toronto launch, which was decidedly low-key. The impetus for the hypertherm's installation in Toronto began with an investigation by Dr. A.J. Bromley, one of the psychiatrists at the Ontario Hospital, Toronto. It is unknown whether Bromley pursued this investigation of his own volition or whether he was instructed to do so by the hospital or the ministry (no supporting documents were found in the Archives of Ontario). However, he did bring a representative from the provincial government with him on his investigation of fever units in the United States.[2] Bromley's inquiry is captured in two documents, both dated August 29th, 1939. The first document is a letter from Bromley to the then Minister of Health, J. Kirby, Queen's Counsel. The letter is written in considerable detail and relates his experience of visiting a number of hospitals, universities, prisons, and clinics in the United States where fever cabinet treatments were already being conducted to treat patients suffering from a variety of health issues, including neurosyphilis. The second document provides a summary of the travel and observed treatments. Both documents inform this section on the birth of the fever cabinet in Toronto.

Bromley and a medical colleague from the Department of the Provincial Secretary, Dr. H.W. Hill, visited six mental hospitals, three general hospitals, one state prison, and a physiotherapy department at Northwestern University in Illinois. These visits were conducted between August 14th and August 29th, 1939. In his appeal to the Minister of Health, Bromley positioned his case for installation at the Ontario Hospital, Toronto based on the efficacy of treatment compared to other forms of fever induction therapy, patients' ability to receive treatment on an outpatient basis and returning to their occupation the next day, the treatment being more easily tolerated by patients, and its use on patients that were resistant/immune to malarial inoculations. Bromley wrote:

> "While physically induced fever has the disadvantage of requiring expensive equipment and a specially trained personnel, it is of value in that it can be used (a) in patients who are immune to malarial inoculation, either naturally or because of previous inoculation which was terminated before sufficient fever was induced to obtain best results; (b) for patients who do not require hospitalization, it provides a means whereby they can receive fever treatment one day a week and, if necessary, return to their usual occupation for the remainder of the time; (c) the course of the treatment is materially shortened by the fact that chemical therapy can be used simultaneously with the fever; (d) it is perfectly controllable at all time. It is of interest too, that most observers, who have made careful comparative studies, feel that in the case of mentally ill patients, clinical improvement results more quickly from physical fever than from malarial inoculation."[3]

While stating that fever treatment required the use of "specially trained personnel" and the oversight of a physician, he later contradicts this contention when he describes the administration of the treatment at the South Michigan State Prison,

> "The treatments are administered by inmates whose recordings of temperature, pulse, cabinet temperature, etc. are checked from time to time by one of the guards. A doctor is usually in the prison when treatments are being given but may be at a considerable distance from the fever therapy and not immediately available. At time [sic], it is said, a doctor may not visit the treatment unit at all during the day, but ordinarily one of the medical staff looks in from time to time. The inmates who administer the treatment and the guard in charge have been trained to record [sic] pulse, respirations, and temperatures, administer hypodermics, and recognize dangerous signs or symptoms. It is looked upon as a safe procedure…"[4]

Bromley seems to be setting the stage for the Toronto fever experience by suggesting that the treatment is so safe, even a fellow inmate can do it and with almost no oversight from the physician. However, Bromley does not mention, in either his summary or his letter to the minister, who is responsible for administering the treatment in the other fever units he observed. This information is provided only in the case of the prison. At the very least, this could be seen as an attempt to influence the Minister's decision in favour of using less specialized staff and reducing the role of the physician. Evidence from the annual report from the Ontario Hospital, Toronto, to the province repeatedly suggested that the Toronto Hospital was stretched to its limits with respect to resources, such as nurses and physicians.

> "We have been severely handicapped during the past year on both the male and female wards due to a shortage of staff…A number have enlisted in His Majesties Forces and others have gone into factory work. A large number have come for a short time and found the work unsatisfactory or were found unsatisfactory and their services were discontinued."[5]

Additionally, in another set of documents found within the administrative files at the Archives of Ontario, were a series of meeting minutes from the annual meeting of psychiatrists within the province. This data was contained within a single file-folder and included the years 1930 to 1949, with 1941 and 1943 missing. These annual psychiatrist meetings took place at the Ontario hospitals and the Legislative Assembly, and were intended to be an operational and problem-solving discussion about the 'challenges of the day.' The June 1942 meeting minutes detail the medical staff's concerns and their inability to meet patient care demands due to the shortage of doctors. Due to the increased shortage of medical staff, Dr. McGhie felt that it would be necessary to designate other members of staff to do a certain portion of the medical work now being performed by the physician. There were a number of ways of handling this situation, and a great deal of it must be left to the discretion of the superintendent. However, it would always be necessary for the physician to pronounce death, and this was one part of the doctor's work that definitely could not be changed or given to another care provider.[6]

The following year at the September 1943 meeting, there was a discussion about the shortage of nursing staff:

> "Dr. Cumberland did not feel that they could stop outside employment. Nurses were the worst offenders with many taking second jobs at beer salons and the brick and tile plant where they could receive more money on starting than supervisors at the Ontario

> Hospitals …due to this many were absent over 1 ½ days per month. Dr. Crawford requested that the starting salary for nurse attendants be increased. He pointed out that they have 20 nurse attendants who are the most efficient employees and are regularly on duty." [7]

Preparation for Fever Treatment

Although no official document from the Minister of Health giving the 'go ahead' to begin fever therapy was located in the primary sources obtained for this case study, it is apparent from patient assessments found in patient records that preparation for fever therapy had begun by 1941, five months after Bromley's letter and summary report. Patient biographies were found in the front of the patient record. All biographies were dated January 16th, 1941. Notably, all patients screened for fever therapy had a primary diagnosis of neurosyphilis. The biographies contained patient's names, diagnosis, previous fever treatments with response, and medical conditions that would contraindicate fever cabinet therapy. These biographies served to divide patients into one of two groups: suitable or unsuitable cases. Those deemed 'unsuitable' were patients who had already been unsuccessfully treated with multiple other chemicals and/or fever treatments. The biographical descriptions also suggest that these patients tended to be more violent or volatile in their behaviour and were almost always long-term patients in the asylum. Interestingly, many of the successful patients had premorbid medical conditions that should have excluded them from consideration. For example, several were older patients with known cardiac issues. The inclusion of these patients not only contravened Kettering's criteria of being medically fit for treatment, but also the opinions of physicians publishing articles on fever therapy during that time.[8]

Other ‘preparations’ for the fever cabinet were also evident in the primary sources retrieved. For example, an invoice from Abbot Laboratories listed the equipment, with prices, needed to outfit the fever unit. Based on this invoice, the Ontario Hospital, Toronto purchased a fever cabinet or enductotherm and air-conditioned cabinet from General Electric. Given that General Electric was also producing cabinets for Kettering, it could be assumed that the Kettering Institute was aware of Toronto’s plan to start fever cabinet therapy and had consented. However, as previously noted (see Chapter 2), there was no record of the Toronto cabinet in the Kettering papers. Had the use of the unit been approved by Kettering, Bromley would have been obligated to follow the treatment regime and staff training he stipulated. Additionally, he would have been obliged to report back to Kettering about the progress of patient outcomes post fever therapy. While there were extensive notes on patient outcomes in the Toronto files, no correspondence with Kettering or Wright State University was located. Most importantly, for the purposes of this case study, a fever therapy protocol manual, written by Bromley, was found along with standardized treatment sheets for pre- and post-fever therapy care of the patient. because no manual by the Kettering Institute was found, it is difficult to determine if Bromley’s treatment manual and protocol sheets followed the Kettering Standard.

The Fever Unit: Up and Running

The fever unit operated at the Ontario Hospital, Toronto from 1941 to 1953. During its tenure, hundreds of patients were treated, many of them multiple times. At its peak, the unit operated seven days a week using four cabinets altogether. Its numbers dwindled in the late 1941s to early 1950s as research concluded that neurosyphilis was best treated by penicillin alone. A review of the 451 patient records from the fever unit revealed that twenty-nine different nurses worked in the unit during this time. Although Dr. Bromley referred to these nurses as

'nurse technicians,' all signed their documentation as 'nurse.' In discussion with the chief archivist at the College of Nurses of Ontario, the college has no reference to this title in its archives and never regulated a group under this designation.[9] The title of 'nurse' did not become protected under the law until the introduction of the *Regulated Health Professions Act* in 1991. Of note, in journal articles retrieved and incorporated into this case study as primary sources, nurses writing about fever therapy during this period referred to themselves as graduate nurses with additional training in fever therapy. Once they had received this 'additional training,' they then referred to themselves as nurse technicians.[10]

Description of the Fever Cabinet

From a mechanical perspective, the hypertherm was not an overly complicated machine. In fact, it was so simplistic that many hospitals and clinics were able to build their own system based on a list of supplies, much like the Ontario Hospital, Toronto.[11] The actual cabinet was constructed of steel and was built by General Electric in the United States; however, many earlier models, including Kettering's, were made of wood, so theoretically this component could also have been reproduced.[12] The cabinet was divided into upper and lower compartments divided by a platform. The lower compartment contained a water pan supplied by a large bottle of water situated outside the cabinet in an inverted position. The water in the pan was heated electrically by an element controlled by a rheostat (a device that controls electrical current through resistance). The nurse caring for the patient manipulated the temperature using a dial located on top of the cabinet. The heated air was circulated by an electric fan from within the cabinet. The patient was placed in a prone position on a mattress on the platform separating the two compartments. The patient was often naked, but was sometimes covered with a loose towel over the groin. During the treatment, the patient was surrounded by a heated, water-saturated

atmosphere (85% to 100% humidity), which caused a rise in core body temperature.[13] Because the patient was encapsulated within the cabinet, except for his head, there was no loss of temperature through diaphoresis (see Figure 1). This made it possible to both elevate and maintain a consistent temperature. If an adjustment was needed, the nurse made that adjustment using the temperature dial.

The desired maintenance temperature depended upon the disease being treated, but for cases of resistant syphilis or neuro-syphilis the ideal core temperature for the patient was 105.5°F for a period of five to six hours, although it was known that a sustained temperature of 112°F was needed to kill the bacterium. These treatments were carried out over eight to ten weeks and were combined with chemical injections of arsenic and bismuth.[14] Body temperature was monitored continuously using a rectal thermometer. Unfortunately, upon study, conventional rectal thermometers and those specially designed for hyperthermy treatment (resistance thermometers) did not always provide accurate readings. This increased the risk of complications and limited the success of treatment.[15] It is important to re-iterate that the thermal-lethal point to kill the spirochete responsible for syphilis required a core body temperature of 112°F. This temperature is incompatible with life.[16]

Figure 1. Patient Being Cared for in a Fever Cabinet[17]

The Hazards of Hypertherm Treatment

From the very beginning of the hypertherm's use, it was clear that the process of heating the body for prolonged periods of time was not safe for everyone. Kettering's lead physician, Dr. W. M. Simpson, was definite in his messaging to the medical community that premorbid conditions associated with major organs of the cardiovascular, respiratory, renal, or hepatic systems eliminated a patient's candidacy for fever therapy via the hypertherm.[18] Patient records from the Ontario Hospital, Toronto suggest that adherence to these contraindications may have

been followed initially, but as time passed, it appeared that the selection of patients for fever treatment was more random and possibly even disregarded premorbid conditions.

As a new treatment modality, artificial fever therapy was intensely researched from both an efficacy and a risk perspective.[19] One of the largest clinical studies of hyperthermy treatment, with adjuvant chemotherapy, was conducted in Great Britain in 1944, three years after the unit opened in Toronto. This study was conducted over a period of one year and involved observation of 254 patients receiving this treatment combination. Documentation of the study's clinical findings, initiation of emergency management (administration of oxygen, sedation, life-saving medications and intravenous maintenance) and the administration of treatments to reduce clinical symptoms were all the work of nurses. In the summary of this clinical trial by Wallace and Bushby (1944), the authors emphasized the importance of the nurse's role and skill in this procedure. In one instance, the authors remarked that: "nursing staff must pay constant attention."[20] The latter referred to the need to administer oxygen when indicated based on the patient's clinical symptoms. In another instance, Wallace and Bushby (1944) referred to the use of nursing judgement that was used to make necessary decisions regarding treatment termination. The authors stated: "There must be no sense of failure on the part of nursing staff if it is found advisable to stop treatment early."[21]

Research on the hypertherm identified and focused on six specific treatment related risks: anoxia, increase in serum bilirubin, circulatory collapse, renal impairment, blood changes, and clinical features (e.g. confusion, fear, anxiety, aggression). Although there were a few studies that disputed the underlying cause of some of these findings, particularly around the bilirubin levels, all of the studies were in agreement that these conditions were found in most patients who received fever treatment via the hypertherm.[22] Symptoms of anoxia appeared in all patients, and

included drowsiness, stupor, agitation, disorientation, increased respiratory rate and cyanosis. Anoxic symptoms usually began in the first hour of treatment, and could continue up to 4 days post treatment. Other studies noted that patients could sustain severe burns during treatment, but had no sensation of pain (i.e. they were not able to recognize that they were sustaining a significant burn). Their inability to detect being burned was also attributed to cerebral anoxia. In an effort to mitigate the anoxia, oxygen and carbon dioxide treatments were introduced. While there was some benefit (i.e. patients were better able to regulate their respiration) and fewer anoxic incidents, this supportive therapy was not effective for all patients.

The most troubling and longest lasting side effect of treatment noted in the published professional literature of the time was hepatic damage. Jaundice was sometimes evident by the end of a treatment session, but was usually observed 24 to 96 hours after treatment. Because of the often-delayed onset, patients experiencing hepatic compromise were no longer under the watchful eye of the fever unit nurse because they had been transferred back to their inpatient/ward room, or possibly even home. Patients that went on to experience life-threatening reactions such as circulatory collapse were most often those whose bilirubin levels did not return to normal prior to their next treatment. The prescribed treatment regime, which consisted of weekly sessions for eight to ten weeks, put the patient at risk for permanent liver damage.[23] The administration of oxygen and fluids containing either chlorides or glucose, did little to alter the detrimental impact of fever treatment on the liver. In reviewing the treatment notes at the Ontario Hospital, Toronto, it is evident that the most frequent adverse effect was circulatory collapse.[24]

In a thesis that included a comparison of pre- and post-treatment electrocardiograms, no cardiac damage as a result of treatment was observed, suggesting that circulatory collapse was instead attributable to respiratory and vasomotor complications secondary to vasodilation. The

pathophysiology of prolonged vasodilation caused by an extrinsic factor such as extreme heat exposure reduced patients' cardiac outputs and placed them at risk for a life-threatening cardiac event.[25] The most troubling aspect of cardiovascular compromise was that it could happen up to six hours after the completion of fever therapy (again when the patient was back on the ward). A return to normal vital signs, such as systolic blood pressure and heart rate, could take three to four days post-treatment. Given the frequency of treatments (as noted in the treatment regime described earlier), patients had minimal recovery time between treatments.

In all, 15% of patients experienced negative outcomes related to fever therapy at the Toronto Hospital.[26] This meant it was not the low-risk treatment Bromley had presented in his letter to the Minister of Health. From the perspective of the nurse technician who had to manage the unit without oversight from the psychiatrist, this required significant skill, clinical judgement, and expertise in the management of emergency situations. It required substantially more knowledge, assessment skills, and monitoring than simply recording vital signs and having a "cheerful disposition" that Bromley had attributed to the prisoners and prison guards on his tour of American fever therapy units. A review of treatment sheets from the patient records in the fever unit provides invaluable insight into the role of the mental health nurse with respect to fever therapy and care of patients with neurosyphilis.

Patient Selection for Fever Therapy at the Ontario Hospital, Toronto

The overall patient population at the Ontario Hospital, Toronto consisted of an equal mix of both male and female patients. Certainly, in the early days of the Ontario asylum, there were more male patients than females, but into the 1930s, 1940s and 1950s, this leveled out to represent almost an equal proportion of male and female patients.[27] The majority of admitted patients were born in Canada. Among the immigrant patient population, most patients were from

England, Scotland, and Ireland with a smaller proportion from the United States, Italy, and Holland. The majority were Protestant, with Catholics a close second.[28] With respect to employment, most were labourers or had no occupation at all. Other occupations were also represented (albeit to a lesser degree) and included bankers, merchants, accountants, clerks, salesmen, and stenographers.[29] Most were unable to pay for their medical expenses and were supported by family or through charitable means. The age range of patients varied enormously from children to the elderly. Not all asylums took children, but most would if there was no other accommodation available.[30] Patients who received fever therapy for neurosyphilis were selected from this overall population.

In general, selection for fever therapy was based on three standard criteria: 1) having a serologically confirmed primary diagnosis of neurosyphilis; 2) failed other treatment modalities; 3) and free of underlying medical issues or frailties. First, patients were required to have a primary diagnosis of neurosyphilis confirmed by a positive serological test. The Wasserman test for the presence of antibodies in cerebral spinal fluid was the preferred method at the Ontario Hospital, Toronto.[31] Interestingly, studies conducted around the identified time period, found the Wasserman test to be unreliable and as a result, the practices at the Ontario Hospital, Toronto were questionable. Scientist Ludwik Fleck, for example, asserted that "one could achieve a positive Wasserman test with a normal blood sample and a negative result with a leutic blood sample without having committed any major technical mistakes."[32] It was also found that patients suffering from any illness or disease causing tissue inflammation, in particular the meninges, could produce a positive Wasserman.[33] The Wasserman was sometimes combined with other diagnostic tests for syphilis such as the Khan or the Colloid Gold Test as a universal standard for confirming the diagnosis.[34] This was done to bolster confidence in diagnostic

validity, but it was not done in all patients, so again, the results were questionable. Second, patients must have been unsuccessful in previous fever treatments modalities such as malarial injections.

The third criteria stipulated that the patient had to be free of any underlying medical issues or frailties that would compromise their safety during treatment (e.g. hypertension, asthma). However, exclusion based on pre-existing co-morbidities and/or frailty was not always adhered to in the selection of patients at Toronto. In Bromley's letter to the Minister of Health, and in numerous journal articles written at the time, one of the most promising features of artificial fever therapy was the fact it could be administered to patients who had not experienced success with other methods of fever induction, such as malarial treatment. Artificial fever therapy represented a treatment of last resort for these patients. Notably, in reviewing the screening process used by psychiatrists at Toronto, it appears to be contradictory to agreed upon practices of the time. In the screening process from January 1941 (as previously mentioned), psychiatrists divided patients into one of two categories: unsuitable and suitable cases. The suitability was based on whether patients had experienced success in previous fever therapies or not. Patients who had not been successful in previous treatments were deemed 'unsuitable,' the opposite of the standard selection criteria. The list of 'suitable' cases was filled with patients who had some contraindication for treatment, or they were poor historians and had no knowledge of their medical history.

Examples drawn from patient admission notes shed light on the screening processes at the Ontario Hospital, Toronto. Carl H. was an elderly patient with long-standing cardiac issues and had been living in the asylum for many years. He received a full course of treatment in 1941.[35] Fortunately for him, he did not experience any negative consequences during his

treatment despite his heart condition. Conversely, Peter M. who had arrived unaccompanied at the Ontario Hospital, Toronto in 1941, was described upon admission as bizarre and his communication unintelligible. He was unable to provide an adequate medical history. He did not receive an electrocardiogram prior to treatment despite being unable to clearly articulate his own medical history. During his first treatment in November 1941, he experienced a full cardiac arrest but survived. His course of treatment was continued, and he was subsequently discharged as a 'successful case.'[36]

Section 2: Work of Nurses Providing Fever Therapy at the Ontario Hospital, Toronto

In this section, the work of mental health nurses providing fever therapy at the Ontario Hospital, Toronto is described. In order to construct a rich description of their work, the following primary sources were utilized.

First, a series of published articles written by nurses, about the nursing perspective/role in the delivery and care of fever therapy were included. These articles were authored by Pegg in 1943, Lehman in 1937 and Lutz in 1936 (note, these primary sources were described in greater detail in Chapter 3, Methods). A subset of articles authored by physicians have also been included in an effort to further describe the role of the nurse in fever therapy from a non-nursing perspective.

Second, two patient files have been included as exemplars in an effort to elucidate the routine, day-to-day work of the nurse in the fever unit at the Ontario Hospital, Toronto. Additionally, nursing records from the ward were used to compare the work of nurses working in the fever unit with those working on the ward as a mental health nurse. Analysis of these files created a robust description of the role of fever therapy nurses who functioned independently with advanced levels of skills and knowledge reflective of specialized nursing practice.

Nursing Practice and the Administration of Fever Therapy as articulated by Pegg, Lehman and Lutz

Pre-Procedure

Patients were admitted three days prior to treatment in order to control their diet and administer pre-procedural tests, medications, and teaching. To confirm there were no contraindications for treatment, patients received a thorough physical exam, including auscultation of the heart, lungs and abdomen. Routine bloodwork was also taken, along with an electrocardiogram. None of the authors specified what 'routine bloodwork' included. Once patients' suitability for treatment was determined, they received teaching on the treatment and expectations for their behaviour during the treatment. The medical resident provided the latter. Teaching included information about possible effects of the treatment, such as anxiety, heart palpitations, nausea, and shortness of breath. Pegg remarked that teaching also provided information on the use of the oxygen mask and included a trial fitting. Patients' tolerance of the mask had proven to be a significant factor in the discontinuation of treatments.[37]

All three articles placed particular emphasis on obtaining patient consent. Lehmann's article included a copy of the consent. All authors identified that consent was always obtained by the medical intern. It is interesting to note that in each setting mentioned in the journal articles, a medical doctor and not a psychiatrist directed all components of treatment. From a dietary perspective, patients were given increased fluids and salt on the days leading up to the procedure. This was done to combat the fluid loss experienced through excessive perspiration. Patients were given sodium chloride tablets by mouth the day prior to treatment. On the evening before treatment, patients received a light meal (which included protein) and then a 'cleansing' enema. The enema was important for two reasons. First, the patient was unable to leave the hypertherm

during treatment to evacuate their bowels, so this prevented any interruption of treatment. Second, having an empty bowel reduced the gastrointestinal symptoms associated with an elevated body temperature. All three articles stated that sedation the night before treatment was not usual practice but could be given to patients who were particularly anxious or disruptive.

All three articles emphasized the need to begin treatment as early in the morning as possible. This was because all fever treatments, regardless of illness, were lengthy, lasting anywhere from five to 10 hours. All aspects of the patient's pre-treatment regime were performed by the floor nurse. The nurses followed standing orders written by the supervising physician. No additional training was required to prepare the floor nurse for this part of the procedure.[38]

Intra-Procedure

The hypertherm nurse's day began about an hour before the patient arrived for treatment. According to Pegg, the nurse's first duty was to start the hypertherm, so the temperature was at the ideal temperature of between 120°F to 124°F before treatment began.[39] This was the cabinet temperature maintained throughout treatment. Around 7:20 am, patients were greeted by a 'cheery hello'; their weight and vital signs were also taken. These readings formed the baseline vital signs for the remainder of the procedure. A special therapy chart was prepared on which a record of vital signs and patient condition was made at fifteen-minute intervals throughout the treatment. The patient's skin was carefully inspected for drug rashes or blisters, which could be made worse by the hypertherm's heat and would constitute a reason to cancel the therapy. The nurse then informed the patient about how the treatment would proceed and answered any questions they might have. Items such as dentures and jewelry were removed, and the patient was assisted out of their clothing.

Once the patient was on the fever cabinet bed, a rectal thermometer was inserted, and wrist and ankle restraints were loosely applied. Lehmann elaborated on the use of restraints. She remarked that the restraints were another feature of therapy that could cause the patient to feel distressed and panic, thereby causing a delay or termination of the treatment. She stated, "They are loosely applied with a *little apology* [emphasis added] and with the explanation that this is a safety measure in the patient's own interest to prevent him from hurting himself if he should become delirious during treatment."[40] Lehmann also remarked that patients were already familiar with the restraints because the medical resident had explained their use in the pre-treatment teaching. She added, "most patients take this measure sensibly when it is done at the beginning…however, many of them become provoked if we try to put the restraining cuffs on them after their temperature [had] risen."[41] In all three articles it was evident that the nurses did more than simply recite the treatment protocol. They also provided considerable insight into how patients responded to the treatment and how nurses could mitigate the identified challenges in order to provide a better treatment experience for the patient, and ultimately treat their underlying disease.[42]

Once the patient was safely confined in the cabinet (around 8:00 a.m.) every effort was made to provide comfort and diversion. The most challenging part of fever induction was identified at the twenty to thirty-minute mark. The treatment rooms were darkened. Methods of diversion included offering the radio or record player, and nurses would also make efforts to engage patients in quiet conversation.

Using the right-hand door of the cabinet, nurses would draw 15 cubic centimeters (cc's) of blood from the median basilic vein and send the sample for non-protein nitrogen, chlorides, and icteric index.[43] An additional 10 cc's was taken for the complement fixation test (test for the

presence of antibodies or antigens) and any other smears or cultures that were ordered by the physician.[44] These samples could vary depending upon the patient's pre-treatment condition. Patients were then given their first drink. The amount provided varied between articles. Lehmann recommended 100 cc's of water while Lutz and Pegg suggested 200 cc's of water with 6% sodium chloride.[45] Fluid was given every fifteen minutes throughout the induction period. Patients were urged to void because, "voiding seems to help raise their temperature since this volume of fluid would otherwise have to be heated up by the body."[46] It was also felt an empty bladder reduced the number of irritants that could contribute to a difficult induction period.

It took on average 60 to 90 minutes for the optimum core body temperature to be reached. The last 45 minutes of that period (when the core body temperature reached between 102.2°F to 104.9 °F), was identified as the most dangerous and difficult time for the patient. Lehmann suggested that this was the period when "the body trie[d] to adjust itself to the shift in water loss and the increased temperature which [was] too high for comfort and not high enough for the confusion of the delirium to take the edge off."[47] Interestingly, only Lehmann suggests the use of 10 to 20 cc's of whiskey to comfort the patient during this time and for the next eight hours. Both Lutz and Pegg mentioned a reduction of fluids to combat the possibility of vomiting. The recommendation for fluid consumption was approximately four to five litres over the entire course of treatment. All three studies recommended fluids be taken by mouth and not nasogastric tube (interestingly, as the patient files show, nasogastric tubes were often the route used at the Ontario Hospital, Toronto). Additionally, hyperventilation caused by an elevated heart rate or anxiety were treated by oxygen-carbon-dioxide inhalations given by mask. The risk of circulatory collapse was greatest during this period, and the nurse had to be vigilant in monitoring the patient's condition and vital signs.

All three nurses were emphatic in their pronouncement that the patient should never be left alone during treatment due to the potential for extreme complications. Once the body temperature reached the required level, the cabinet temperature was lowered and the most difficult (e.g. physically taxing and highest risk) part of treatment was over. Pegg stated, "A placid uneventful induction period usually foretells a calm successful treatment session… it is in this most trying period that much can be done for the comfort of the patient by the nurse."[48]

The treatment period lasted approximately eight hours, and the nurses' principal duties were to keep the patient entertained, give fluids, offer the urinal, take blood, and change damp pillowcases and towels. However, this does not mean that the later portion of treatment required less diligence. Lehmann remarked, "the nurse must not relax in her observation of the patient…with careful management the cabinet heat can be so controlled that the body temperature never rises above the required level nor drops below 105.8°F; this is when complications and patient discomfort can occur." Lutz stated, "It should be emphasized at this point that every complaint of the patient must be investigated by the nurse in attendance—no matter how minor it may seem at the time."[49,50] Lehmann also shared that particular attention was to be given to obese patients whose body temperature would almost always overshoot the desired temperature. Obese patients were also identified as being at greatest risk for blistering of the skin.[51]

When overheating occurred, the doors of the hypertherm were opened and the patient was sprinkled with water and provided with cool compresses for the face. When this was unsuccessful in reducing their temperature, sedation was used. However, all three nurses remarked that sedation should be avoided except in extreme cases of anxiety. Non-pharmacological strategies such as those that were employed by the nurse were prioritized.

Lehman, as noted, used whiskey; Pegg dispensed alopon (an analgesic); and Lutz mentioned sedation but did not identify a particular product. Lutz and Pegg also described an "extremely restless period" around the four-hour mark. This time was not as challenging as the induction period but still required intervention in order to avoid the treatment being stopped due to restlessness. Pegg suggested ½ gram of alopon and Lutz proposed intravenous glucose as the cause was felt to be due to extreme fatigue.[52] Lutz described her patient as having "marked relief" after the glucose infusion. [53]

After eight hours of treatment, the session was ended. The cabinet was opened, and the patient's vital signs and blood chemistry were taken. The cooling down period, if rushed, could cause the patient to go into shock and experience a rapid drop in blood pressure. This could be avoided by giving the patient a tepid water or alcohol bath with a vigorous massage. The use of fans to cool the body was also avoided in Lutz's article except in extremely hot weather. Both Lehmann and Pegg used fans to bring the patient's body temperature down. The patient was encouraged to drink sugary drinks (e.g. ginger ale) as tolerated. The skin was also inspected for open lesions and, if noted, were dressed with gentian violet and tannic acid, both 1%, and dressed with a dry dressing.[54] The entire cooling process, like the induction process, took approximately 60 to 90 minutes. They were usually returned to the floor when their body temperature was between 100.4°F and 102°F.

Termination of Treatment

If at any time during the induction or treatment phase the patient was found to be at risk for a negative outcome such as respiratory or cardiac arrest or even extreme agitation, the doctor was called by the responsible nurse and the treatment was terminated. It should also be noted that

Pegg and Lutz mentioned that the patient was checked hourly by the physician. The 'Nurse-in-Charge' also provided hourly support to the nurse if a patient was particularly challenging.

Post-Procedure

When it was established that the patient was stable, they were returned to their own floor under the care of the ward nurse. Patients were kept in hospital for up to 48 hours post-treatment. In Pegg's institution, the hypertherm nurse returned to the ward with the patient and continued to provide care for a few hours. She remarked, "care for the first few hours is carried out by one of the hypertherm nursing staff who is well acquainted with the patients and with the happenings of the day and who can foresee any eventuality."[55] Based on the three articles, it was standard practice to send the patient back to the ward with post-treatment orders and precautions. The precautions emphasized the need to alert the medical intern if any of the following were detected: nausea or vomiting, severe perspiration, pains in the extremities or elsewhere in the body, and any other unusual symptoms. The medical intern was to be called "stat" in the following situations: respiratory arrest, cyanosis, rise in rectal body temperature above 104°F, or any unusual or alarming signs. The ward nurse was also advised to be prepared to infuse normal saline and 10% glucose intravenously at any time. Carbon dioxide and oxygen were to be kept on hand in the event of an emergency. The following orders were sent back with patients at all three institutions:

1. Take the rectal temperature every hour until 100.4°F or less is noted in two successive readings.
2. The patient must remain absolutely at bed rest for the next eighteen hours.
3. Give the patient a sponge bath.

4. The patient may have fluids (no alcohol) and light food if desired. Encourage the taking of normal saline by mouth whenever possible, but do not force fluids by mouth if the patient complains of nausea.
5. Have the house officer administer stat: 1,000 cc's of 10% glucose in normal saline intravenously.
6. Tomorrow, if everything is normal, the patient may return to the orders prevailing before fever therapy.

Assuming that all went well, the patient would return for treatment again later that same week or sometime the next week. Lehmann, Pegg and Lutz concurred that subsequent treatments were easier for patients as they knew what to expect. Pegg added, "women are admirable patients."[56] These firsthand accounts of nursing care in a fever unit provide a perspective like no other. The recount of fever therapy care demonstrates the advanced skills, judgement, and knowledge required of nurses to safely and successfully care for neurosyphilis patients. The ability to administer oxygen, sedation, and electrolytes, but most of all to be aware of and respond to potential crisis situations put the fever therapy nurse in a class by herself.

Standard Nursing Practice in Fever Therapy from the Physician's Perspective

As previously noted, a subset of articles were retrieved (authored between 1930 and 1950) that were written by physicians and specifically addressed fever therapy and the care of patients. Levy (1952), Bromberg (1936), and King et al. (1943) all emphasized the importance of excellent nursing care in attaining successful patient outcomes, but did so in a rather cursory fashion. Interestingly, rather than remarking on nurses' requisite knowledge and skills, references to nurses primarily focused on their personal qualities. Bromberg, in an article written for the *American Journal of Nursing* on artificial fever therapy, made the following remark:

"Every reader of this article is to remember that the doctor and nurse who are charged with the responsibility of the patient are far more important than the machine which is used to induce fever." He goes on to identify the qualities required of a fever therapy nurse: "Her temperament, unfailing good cheer, poise and influence in general are invaluable in seeing the patient through the period of the induction."[57] King's view of the nurse is also focused on her personality. He remarked, "the success of this type of treatment depends to a great extent on skilled and experienced nurses. Nurses should be young, of attractive personality and interested in their work.[58] Levy only mentions nursing from the point of view of training and that it took a period of three months to "train a number of nursing sisters."[59] Levy suggests that readers wanting more information on nursing technique refer to an article written by Pegg (1943).

It would seem that, despite nurses being the primary administrators of fever therapy, very little recognition of them and their skills were identified by physicians. In the guide to *Artificial Fever in the Treatment of Neurosyphilis* written by Bromley at the Ontario Hospital, Toronto, the nurse is only mentioned three times in the extensive document. The first reference directs the nurse about her documentation and the need for diligence in recording the patient's response to treatment and their vital signs. The second reference is about the need for the nurse to always be present: "once the patient has been put into the cabinet, the nurse must not leave the room until the treatment is completed. The doctor in charge should be within immediate call at all times."[60] The last reference speaks to the skill of the nurse-technician: "alert attention by a well-trained nurse-technician will ensure safe, satisfactory treatment in nearly every case."[61] Not unlike the perspective of the other physicians, the work of the nurse is absent from the treatment protocol written by Bromley. A litany of tasks is identified, but no responsibility is assigned; the

following detail from the treatment notes from the Ontario Hospital, Toronto, will demonstrate the extent to which nurses were involved in fever therapy treatments.

Fever Therapy Practice and Nurses at the Ontario Hospital, Toronto: The Patient File of Connie B.

Of the patient files retrieved, only one of the files, that belonging to Connie B., contained a rich description on treatment prior to fever therapy. Unfortunately, no chart exists for Connie B.'s actual fever therapy. Notably, because Connie received her therapy as an inpatient, as did all of the patients on the 'successful treatment list,' it is impossible to determine how this pre-treatment regime differed from someone who received treatment as a day patient. It was established that pre-treatment typically adhered to the following practice: "The night before, patient voided, given enemas at 7:00 and 8:00 pm, received Bromide for sedation and had orange juice with 2 tbsp. of glucose."[62]

On the morning of treatment, the following activities occurred: "Patient given and tolerated a light breakfast. Transferred to fever unit for therapy."[63] What was particularly interesting in Connie's file was the additional therapy she received from nurses between fever treatments, namely continuous water pack (CWP) treatments. A CWP involved wrapping the patient in cotton sheets from neck to toe and submerging them in a warm bath for hours at a time. This restricted the patient's movement and was thought to decrease anxiety and agitation.[64] CWP treatment was described in the annual reports as a way to reduce patients' uncooperative behaviour in preparation for fever therapy. This adjuvant therapy was not described in any of the academic journals, nor was it included in Bromley's manual as a way to enhance the effects of fever therapy. Connie B. reportedly spent eight to ten hours per day in CWPs on the days between her fever treatments. On at least two occasions, Connie B. suffered significant cardiac

events. One nurse recorded: “Pulse undetectable. Dr. called. Last rights administered.”[65] Of note, Connie B. survived this incident, but went on to receive fever therapy 48 hours later.

Another pre-treatment regime followed at the Ontario Hospital, Toronto was the use of electroshock therapy. In the 1945 annual report to the Province of Ontario the superintendent at the Ontario Hospital, Toronto stated:

> “Electroshock treatment has been found to be a very useful preparatory treatment in cases of general paresis who are uncooperative because of excitement or in poor physical condition because of a depressive syndrome and several cases have shown surprising mental improvement before starting the course of artificial fever treatment.”[66]

It is difficult to know for certain, but it can be speculated that patients at the Ontario Hospital, Toronto receiving these adjuvant pre-treatments were more medically fragile than those described in the journal articles who did not receive additional pre-treatments. If the latter represents an accurate interpretation of the data, then the nurses working in the fever unit at the Ontario Hospital, Toronto were caring for patients who were at greater risk for adverse reactions, and therefore required a more skilled level of nursing care. Analysis of the data retrieved from the Ontario Hospital, Toronto also suggested that the rate of significant incidences was higher there than was quoted in standard fever therapy practice, which also lends support to the medically fragile state of these patients.[67]

Intra-Treatment

As with the standard identified by Lehmann, Lutz, and Pegg, and in keeping with Bromley’s guide book, all fever treatment started at 07:15 each morning. Pre-treatment vital signs were taken by the nurse and recorded on the fever therapy flow sheet. Pulse and rectal

temperature were taken by the nurse at 15 minute intervals throughout treatment. The patient's blood pressure was assessed and recorded at the onset of treatment and before returning to the ward after treatment. There is no explanation as to why respirations were not recorded during the procedure given that this was standard practice for this treatment and is also an early indicator of cardiac insufficiency and hypoxia.[68] Bromley emphasized in his manual that, "Shallow or irregular respirations occur at temperatures of 104°F or over and often precede Cheyne-Stokes respirations."[69] The nurse also completed a thorough examination of the patient's skin prior to treatment.[70]

According to the treatment records, fever therapy commenced when the cabinet temperature reached between 110°F and 120°F. There does not appear to be a uniform induction temperature at the Ontario Hospital, Toronto despite the fact that all patients were being treated for the same condition. According to the standard of the day, the cabinet start temperature for syphilis patients was 120°F to 124°F.[71] Bromley's manual did not specify a starting cabinet temperature.[72] As patients approached their ideal core body temperature, at around the 90 minute mark, nurses consistently administered sedation, glucose, and oxygen as the standard of practice. The latter item suggests that nurses were aware that most treatments terminated early due to patient behavioural issues caused by elevations in core body temperatures between 101°F and 104°F.[73] One nurse's narrative note written during the induction period described patient behaviours, and her insight as to how the behaviours were managed: "Extremely disturbed by other patients. Very restless [and] excited, pulling at towels. Continually pulling at towels at neck. Given Pantopon with good effect."[74] As the patient's discomfort and anxiety continued, there was no suggestion in the nurse's notes that she did anything to distract or otherwise occupy the patient (recall that non-pharmacological interventions were described by Lehmann, Luck,

and Pegg). At the Ontario Hospital, Toronto, the nurses' primary responsibility (as emphasized by the physicians) was to prevent the patient from causing the treatment to end early.[75] In all of the charts reviewed, there was only one note by a nurse stating that she had put on the radio for the patient.[76] Notably, this does not confirm that nurses were opposed to non-pharmacological intervention or that they did not provide them. Perhaps this aspect of therapy was not significant enough to write about, especially given that nurses had little space to write narrative notes.

Evidence from patient records indicates that nurses attempted to mitigate the risk of dehydration by offering patients sips of fluid, usually water, throughout the treatment; however, fluid intake never reached the four litre mark that was recommended. Bromley stated in his fever treatment instruction manual, "there is a great increase in perspiration, with a resulting loss of sodium chloride. In prolonged fever sessions 4000 cc's or more of sweat may be lost."[77] Nurses consistently documented that patients were sweating, because a lack of perspiration was a sign of heat stroke, a life-threatening complication resulting from fever therapy. Nurses' diligence in documenting perspiration provides evidence of their knowledge of pathophysiology and awareness of risks associated with this treatment. However, documentation of the patient's output (urine and stool) was consistently lacking in the treatment notes. In the column dedicated to 'urine' and 'stool,' both were demarcated by a single vertical slash or line with no indication of quantity or appearance. It is possible that another sheet or document was used to track patient output, but none was found in an examination of patient records.

The content of nurses' narrative notes demonstrated an understanding of the impact of fever therapy on the patient both physically and mentally. For example, all treatments began with the nurse providing a brief summary of the patient's temperament and physical condition. One nurse noted: "pt. perspiring freely. Colour good, volume of pulse good. Pt. behaviour quieter

than usual."[78] This initial documentation provided a baseline for both medical and behavioural issues. Treatments also ended with an overall summary to confirm the patient's physical and mental status before returning to the ward. An example of a summary note included:

> "Tolerated treatment well. Insight fair - says he contracted syphilis in 1939. Well oriented. No apparent mental symptoms. B.P. prior to treatment was 100/68, B.P. post treatment was 100/64. 3 1/2 hours over 105f. colour- good. Pulse- good quality. Temp- 101.2 on ret to ward. Condition on return to ward satisfactory."[79]

The nurse not only completed this assessment of the patient's overall mental and physical wellbeing, demonstrating the skill to do that assessment, but also established accountability to ensure that the patient was safe to return to the regular ward.

Post-Procedure Treatment

Once fever therapy was complete, the nurse was required to follow a process that supported the patient returning to equilibrium. Bromley asserted in his manual that the principal role of the nurse at this point was to safely facilitate the patient's temperature returning to 102°F or less. When the cabinet was turned off and the doors opened, the patient was, "sponged off with luke-warm water and soap, followed by an alcohol rub…and covered with a light blanket."[80] Prior to transfer out of the fever unit, a final set of vital signs were taken, including blood pressure. One post-treatment note contained the following: "B.P. 104/70, $1^{1}/_{2}$ hours over 105°F, colour satisfactory, pulse good quality, temperature on return $101^{2^{\circ}}$F, condition satisfactory."[81] It appears from the nurses' notes that post-treatment, patients were sent to a type of 'step-down' unit or recovery room for observation before returning to the actual ward. All post-treatment flow sheets were marked 'Ward 3B Fever.' Additionally, the post-treatment notes

were written by a different nurse from the one providing fever treatment and began with, "Returned from fever therapy in good condition."[82]

After several hours or days of observation, the notes state the patient is returned to another ward: "Patient returned to Ward 3A."[83] It is hard to know if the nurses who worked in this step-down unit/recovery area were the same nurses who worked in the fever unit, but a comparison of signatures from both sheets during the same time period identified many common names. Because the skills to observe and intervene in crisis situations for the patient post-treatment were also advanced, it would seem likely that these were the same group of nurses as those working in the fever unit. The notes from post-treatment care showed that vital signs were taken every 30 minutes until the rectal temperature and pulse returned to normal. The nurses very judiciously gave fluids and solid food and limited physical exertion. When a patient developed complications post-treatment, such as rebounding temperature or circulatory collapse, the nurse started intravenous infusions of normal saline, gave intramuscular injections of caffeine-sodium-benzoate or Coramine, and provided oxygen-carbon dioxide inhalations via a facemask until the doctor arrived. These actions on the part of the nurse went beyond the standard training for both mental and general hospital nurses.

Interestingly, the course calendars for nurses attending the Toronto General Hospital School of Nursing and the Ontario Hospital, Toronto School of Nursing around the time of the fever unit did not include training in emergency care, but did include a book on first aid as part of required course reading.[84] Both course calendars included several weeks of operating room training, and it is possible that skills such as emergency intervention, intravenous insertion, and the use of oxygen occurred during that training. However this knowledge was attained, it is safe to say that nurses who provided care to fever therapy patients in the intra- and post-treatment

periods largely followed the standard course of therapy described in academic journals, but also exhibited advanced nursing skills.

Further Highlighting the Work of the Fever Nurse using Patient Files as Exemplars

Files selected from the 48 available from the fever unit (as described in Chapter 3), were reviewed for treatments that demonstrated the day-to-day work and skill in a situation that was life threatening or potentially life threatening to the patient. This review resulted in the selection of two files. The first patient file belongs to Stephen O. His file helps to demonstrate the day-to-day expertise and clinical skill of a nurse working in the fever unit, in addition to demonstrating the advanced skills of the fever therapy nurse in life-threatening situations. The second patient file belongs to Connie B. Her file will be used as a comparator to highlight the difference in clinical expertise between fever nurses and other mental health nurses in a life-threatening patient care situation (both names are pseudonyms to protect the privacy of the patient). This comparison serves to illustrate the advanced skill set of the nurses working in the fever therapy environment.

The Nursing Care of Stephen O.

Stephen O. was an immigrant from the former Yugoslavia and had been living in Canada since August of 1925. His early life in Canada was spent as a manual labourer on farms and later as a miner in Northern Ontario. It was in a gold mine in Timmins in 1931, that Stephen's "queer" behaviour began to exhibit itself. In August 1942, he was brought to New Toronto on a warrant for assessment and care. Stephen was transferred from New Toronto to the Ontario Hospital, Toronto on September 1st, 1942, to receive fever therapy. Stephen was 40 years of age at that time. The referring psychiatrist, Dr. Cumberland described Stephen O. as follows:

> "He becomes confused in conversation, has crying spells, he cannot [sic] remember names, becomes difficult to manage at home but could always be persuaded to cooperate although shortly before admission some violence or suicidal tendencies. At present he is disoriented, conversation is irrelevant, and he has had two periods of loud shouting since his admission to this hospital."[85]

Cumberland also stated that Stephen O. had no cardiac or any other physical impairment that would disqualify him for fever therapy. He noted, "heart of normal size, rate and sound. No past history of serious illness related to cardiac, circulatory failure, seizures or tuberculosis."[86]

On September 22nd, 1942, Stephen O. was transferred to the fever unit for his first treatment. He received 18 treatments (occurring weekly) from September 22nd, 1942, to January 12th, 1943. Thirteen different nurses administered treatments over that period of time, with nurses Quinn and Pereira providing the majority of his care. Given the time these nurses spent with him (over 100 hours), Quinn and Pereira would have been more familiar with this patient and perhaps better able to anticipate any life-threatening issues or symptoms that were markedly out of the ordinary. In addition, because the unit had four cabinets operating daily, this also meant that nurses caring for other patients in this small space would have become familiar with the course of treatment for patients other than their own. This familiarity is seen in the narrative notes on the fever record from January 5th, 1943: "Patient much quieter than usual." There is also the adage 'familiarity breeds contempt.' As the treatments progressed, a level of frustration is observed in the nurses' notes that they continue to struggle to keep Stephen O. in the cabinet for a complete treatment,

> "Insight good. Correctly orient as to time and place. Tolerated treatment poorly. Uncooperative after first 1 1/2 hrs of treatment. Appears to be acting childishly rather

> than as though anything was wrong with him. B.P. 118/70 following treatment. Pulse- good. Colour- good, except for 10 mins during 3rd hr of treat. Temp 101.2 on return to ward. Condition on -----satisfactory. "[87]

It should also be noted that as Stephen O.'s treatment progressed, the nurses' narrative notes became longer and more detailed. They also began to speculate on his progress. On December 15th, 1942 nurse Quinn wrote, "This patient's mental condition appears to be improving."[88]

None of Stephen O.'s 18 treatments went the prescribed time of eight to ten hours. Most treatments ended within five to six hours. In all but two instances, the treatments were terminated due to Stephen O.'s extreme agitation and attempts to exit the cabinet. It was noted,

> "Tolerated this treatment very poorly. He becomes very panicky and demands constant attention. Even with sedation he couldn't be kept in the cabinet for longer than 3 hours. By pulling his towels in the cabinet the doors kept pushing open and it was difficult to keep his temperature regulated. Emotionally unable and with pareanoid [sic] tendencies."[89]

Analysis of the treatment tracking sheet suggests evidence of nurses' awareness of the risk of incomplete treatment with this patient and they take measures to mitigate the risk. After the first two treatments, they document the use of bedtime sedation to put the patient in a 'calmer state' for treatment in the morning noting, "h.s. sedation given."

In anticipation of the behaviours associated with the induction phase, nurses began to give sedation prior to the 90-minute mark. Starting on October 9th, 1942, Pantopon was given on admission to the fever unit and as needed during treatment. No other patient in the files studied received sedation on admission to the unit. It was also evident that the nurse was not just trying to stop the behaviour, but to also correct the underlying issues that were causing the problem.

Extreme agitation was sometimes caused by neurological problems associated with hypoxia or fatigue from extreme heating (as previously noted), so the nurse would give oxygen and glucose in an effort to correct the physical state. Unfortunately, these solutions seldom worked for Stephen O. The nurses would end his treatments early due to extreme anxiety and agitation, which were indicators for termination of treatment. Each treatment decision and its corresponding action were that of the fever therapy nurse alone; there were no psychiatrists were present during any of Stephen O.'s treatments.

Nursing Care During a Life-Threatening Situation

As mentioned, all but two of Stephen O.'s treatments were ended early due to extreme agitation. The other two were terminated due to potentially life-threatening complications. Both incidents occurred in November 1942. Nursing care during the first incident, November 17th, was provided by nurse Chapert. From a review of the treatment notes, it would appear that this nurse did not provide care to Stephen O. on any other occasion. The session began at 07:30h with Stephen O. experiencing a more rapid escalation of pulse and temperature than in previous treatments. Within 15 minutes his pulse was over 100 beats per minute (bpm) and his temperature was 99°F; despite the cabinet temperature being low at 111°F. He was given sedation at the one-hour mark but with little effect as his behaviour only escalated. Chapert noted, "Restless, hands out constantly. Moving all parts of his body. Resistive."[90] A second dose of sedation was given three hours later, which resulted in an immediate decrease in his respiratory rate and pulse. Within 15 minutes, his pulse went from 140bpm to being undetectable. His body temperature soared to 107°F. The nurse responded immediately by trying to reverse the effects of the sedation and the hyperthermia by administering a dose of caffeine, D50W, and sodium benzamine. He was also given oxygen by mask and intravenous normal

saline. The nurse charted that she opened the fever cabinet and began to decrease Stephen O.'s body temperature. His vital signs began to move towards normal within 15 minutes and were back to pre-treatment levels within an hour. The psychiatrist did not attend to the patient until the post treatment period two hours later.

The second incident occurred exactly one week later on November 24th. Nurse Pereira cared for Stephen O. during this session. This episode, while less dramatic, had him exhibiting signs of cardiac compromise, such as cyanosis, in combination with a labile, weak pulse. Pereira noted, "Cabinet opened due to pulse losing volume."[91] Nurse Pereira responded immediately with measures to manage Stephen O.'s compromised state. Pereira's summary notes for the session stated,

> "Very restless during entire treatment. Oriented in all spheres. Insight good. No hallucinations or delusions. B.P. prior to treatment was 100/64 and B.P. after treatment was 105/68. 3 1/5 hours temp over 105. Pulse - fair quality – loosing [sic] volume after 3 hrs of treatment. color- flushed - slightly cyanosed after 3 hrs. Cond. on disch. - satisfactory."[92]

Again, the patient was not seen by the psychiatrist until several hours after the incident. In all successive treatments, the nurse altered the dose of sedative. Stephen O. always received the full dose of Pantopon upon admission to the fever unit, but all subsequent doses of sedation during the treatment were decreased to half.

It should be noted that Stephen O.'s record included a document called the 'Treatment Plan.' In addition to fever therapy, his plan included an addendum called 'special treatments.' His record does not specify what these special treatments consisted of, but based on the information quoted earlier in this document from an annual report to the province, it appears to

be a synonym for treatments such as electroshock therapy or continuous water baths. Again, it was believed that these treatments prepared an overly excited patient for fever therapy and were given in between fever treatments. These adjuvant sessions may have placed Stephen O. at an increased risk for adverse reactions during his fever sessions, which may have ultimately required a more complex level of care for the nurse.

The Nursing Care of Connie B.

Connie B. was an Italian immigrant living in Toronto with her husband and grown children. She was brought to the Ontario Hospital, Toronto on October 26th, 1939 by her husband due to 'extreme' behaviour over the previous week. The admitting psychiatrist quotes her husband in the notes as saying she was, "Wildly excited. Lying naked on the floor and screaming. A few days ago, claimed to be divine and to bear the bruises of Christ. No relevant answers but only talked of special revelations."[93]

It is apparent from Connie B.'s daily nursing notes that the ward nurses were occupied chiefly with the tasks of daily living such as intimate care and feeding. Their notes are exclusively about those tasks. Her first day on the ward is an example of this work and forms the pattern of each day to follow for the coming months: "Refused supper. Very restless with shouting, scratching, kicking and biting…Now sleeping quieter. Has had a very restless day."[94] These notes also tended to be less objective, with the nurses using descriptions and terms that were judgmental and derogatory, "back to bed with help of 4 nurses. Violent and noisy. Most uncooperative. Put in tight restraints. Will not keep self properly covered, is self-abusive. Filthy in toileting."[95]

Bedside maintenance care consisted of the ward nurse taking vital signs once per shift and administering medications such as iron supplements and laxatives. Anything beyond this

was performed by the psychiatric resident. For example, Connie B. was tube-fed her meals shortly after she was admitted, because she was too agitated to eat or feared the food was poisoned. The resident administered her feeds at all three meals; this was a skill beyond the scope of the ward nurse. Documentation from the record stated, "High calorie feed by tube feed done by Dr. Henderson."[96]

Because Connie's fever chart is missing from her patient file, it is difficult to say whether the fever unit nurses provided her fluids through a feeding tube, but it is evident from the post-procedure notes that those nurses provided fluids and some food through tube feeding. As mentioned above, these were most likely the same nurses that worked in the fever unit.

Nursing Care During a Life-Threatening Situation

Connie B. received only four fever treatments, as the nurses were unable to keep her in the cabinet. She did not experience any life-threatening incidents in the post-treatment unit according to those nurses' notes. She did, however, experience a number of critical incidents when receiving continuous water bath treatments. Connie B. received these treatments on a daily basis when she was not having fever therapy, and they continued long after her fever therapy ended. She was often in the continuous bath for hours at a time, and on a few occasions her treatment lasted 24 hours. These treatments occurred off the unit. There are no nurses' notes about the care given during the continuous baths, so unfortunately the work of these nurses is missing from the total picture of care at the Ontario Hospital, Toronto.

On January 4th, 1941, Connie B. spent the entire day and most of the evening in a continuous bath. She was removed late in the evening and returned to the ward when the nurse felt she was having a "weak spell"' and appeared "exhausted." Despite this appearance, Connie B. continued to be "uncooperative and unreasonable," so the ward nurse administered sedation.

Almost immediately her pulse was “rapid and of poor quality.” The ward nurse called the doctor immediately and he administered a stimulant which had “poor effect.” The doctor gave a second dose of the stimulant, and the nurse gave Connie B. a cold sponge bath. Approximately 30 minutes into the episode, the nurse called the family and the priest to give last rights. Her documentation throughout the event and into the next morning focused mainly on Connie B.’s behaviour and inconsequential information such as last rites given and family visiting. However, Connie B. survived the night and went on to receive another continuous bath treatment two days later. The next day the ward nurse writes, “Suffered another weak spell last night today appears to be exhausted but is so uncooperative + unreasonable unable to persuade Pt. to remain in bed – given sedative.”[97]

This incident reveals two important differences between the fever therapy nurse and the ward nurse. First, it is apparent that the ward nurses were limited in their responsibilities. Second, they sometimes lacked judgement in their decision making. While the fever nurse was trusted to manage emergency situations by starting an intravenous and giving emergency medication, the ward nurse needed to wait for the resident to come and provide the intervention and direction. All the ward nurse had to offer in this situation was a sponge bath. This is not meant to demean the work of the ward nurse, but rather to illustrate that the fever nurse had significantly more responsibility, autonomy, and skill, especially in life-threatening situations.

The nurses’ ability to assess a critical situation and determine a course of action was also lacking. Unlike the fever therapy nurse, who was able to determine that Stephen O.’s episode may have been caused by over sedation, the ward nurse gives sedation again only hours after Connie B. had an absent pulse. This shows a lack of understanding about the effects of medication and the connection of sedation to a bradycardic incident. It is fair to suggest that the

fever nurse received more training and had a larger scope of responsibility which meant she provided a more advanced level of nursing care than her colleague on the ward.

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[1] "List of Neurosyphilis Patients Who Are Discharged or on Probation Following Treatment and Are Adjusting Satisfactorily. Rg 10-20-B-9-463. Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records, Box #4: 1941."
[2] A.J. Bromley, 1939.
[3] "Letter to the Minister of Health & Report on the Treatment of Neurosyphilis with Special Reference to the Artificial Fever Therapy Doc. Registry: Rg 10-20-B-9-454. Box 4."
[4] "Letter to the Minister."
[5] Hospital Division Department of Mental Health, "66th Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Babituate Patients of the Province of Ontario for the Year Ending October 31st, 1933," (Toronto: T.E. Brown., 1934).
[6] "Minutes of Superintendent's Conference Held at Psychiatric Hospitals for the Years 1930 to 1949. Registry: Rg 10-20-B-9-454) (Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Box: B431584), Box #4 ".
[7] "Minutes of Superintendent's Conference."
[8] B. Levy, "hyperthermy in the British Army," *Journal of the Royal Army Medical Corps* 98 (1952); AJ King, DI Williams, and CS Nicol, "hyperthermia in the Treatment of Resistant Gonococcal and Non-Specific Urethritis," *British Journal of Venereal Diseases* 19, no. 4 (1943); John Wallace and SRM Bushby, "Hazards of Hypertherm Treatment," *Lancet* (1944); Leon Bromberg, "Artificial Fever Therapy," *The American Journal of Nursing* (1936).
[9] "Personal Conversation between Bylthe Koreen and Mary Connell. Discussion About Nurse Technician Designation. February 22nd, 2017."
[10] F.M. Lutz, "Nursing Care in Artificial Fever Therapy," *The American Journal of Nursing* 36, no. 12 (1936); Emmy Lehmann, "Nursing Care in Fever Therapy," *The American Journal of Nursing* 37, no 12 (1937); Edith Pegg, "The Nursing Aspect of Hyperthermy Treatment," *British Journal of Venereal Diseases* 19, no. 4 (1943).
[11] "No Author: Suggested List of Equipment for Clinic. Registry: Rg 10-20-B-9-460 (Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Box: B431584), Box #4n Ed.), 1941 ".
[12] Basil Levy, "Hyperthermy in the British Army," *Journal of the Royal Army Medical Corps* 98, no. 5 (1952); W.M. Simpson, Kendell, H,W., Rose, D., "Developments in the Treatment of Syphilis with Artificial Fever Therapy Combined with Chemo-Therapy During the Past Decade," *British Journal of Venereal Diseases* 17, no. 1-2 (1941).
[13] AJ King, DI Williams, and CS Nicol, "Hyperthermia in the Treatment of Resistant Gonococcal and Non-Specific Urethritis," *British Journal of Venereal Diseases* 19, no. 4 (1943); Levy, "Hyperthermy in the British Army."
[14] "Hyperthermy in the British Army."; Wallace and Bushby, "Hazards of Hypertherm Treatment."; Denys K Ford, "Arthritis and Venereal Urethritis," *British Journal of Venereal Diseases* 29, no. 3 (1953).
[15] Levy, "Hyperthermy in the British Army."
[16] No Author, "<1944 Medical Journal Fever Therapy.Pdf>," (1944); W.M. Simpson, "Artificial Fever Therapy of Syphilis and Gonococcic Infections," *British Journal of Venereal Diseases* 12, no. 3 (1936); W.M. Simpson, Kendell, H,W., Rose, D., "Developments in the Treatment of Syphilis with Artificial Fever Therapy Combined with Chemo-Therapy During the Past Decade," *British Journal of Venereal Diseases* 17, no. 1-2 (1941); Warren A Shoecraft, "Artificial Fever Therapy," (1936).
[17] "Fever Therapy in Ontario," (Unlisted).
[18] W.M. Simpson, "The Kettering Family Papers, Special Collections and Archives, University Libraries," (Dayton, Ohio: Wright State University, 1937); Walter M Simpson, "Artificial Fever Therapy of Syphilis and Gonococcic Infections," *British Journal of Venereal Diseases* 12, no. 3 (1936); "Artificial Fever Therapy of Syphilis," *Journal of the American Medical Association* 105, no. 26 (1935); Walter M Simpson, H Worley Kendell, and Donald Rose, "Developments in the Treatment of Syphilis with Artificial Fever Therapy Combined with Chemo-Therapy During the Past Decade," *British Journal of Venereal Diseases* 17, no. 1-2 (1941); Walter M Simpson, Fred K Kislig, and

Edwin C Sittler, "Ultrahigh Frequency Pyretotherapy of Neurosyphilis: A Preliminary Report," *Annals of Internal Medicine* 7, no. 1 (1933).

[19] Wallace and Bushby, "Hazards of hypertherm Treatment."For other research studies at this time examining the efficacy and risk associated with this treatment please also see: Batchelor, Thompson and Huggan(1942); Bazzett (1938); Blatt, Fouts and Page (1938); Clark (1936); Dunlop, Davidson and McNee (1942); Hargraves and Doan (1939); Hartman (1937); Peters and Van Slyke (1932); Tomb (1941); and Wallace and Sharpey-Schafer (1941).

[20] Wallace and Bushby.

[21] Wallace and Bushby.

[22] Gordon B Tayloe, "Fever Therapy," *Annals of Internal Medicine* 18, no. 6 (1943); Edgar V Allen, "Intermittent hyperthermia of Seven Years'duration," *Annals of Internal Medicine* 10, no. 8 (1937); No Author, "Discussion on the Treatment of Neurosyphilis with Penicillin " *British Journal of Venereal Diseases* (1947); AE Bennett, "Fever Therapy in Tabes Dorsalis: Relief of Gastric Crises and Lightning Pains by the Use of the Kettering hypertherm," *Journal of the American Medical Association* 107, no. 11 (1936); William Bierman, "The History of Fever Therapy in the Treatment of Diseases," *Bulletin of the New York Academy of Medicine* 18, no. 1 (1942); Bromberg, "Artificial Fever Therapy."; A.J. Bromley, "Report on the Treatment of Neurosyphilis with Special Reference to the Use of Artificial Fever Therapy at Certain Institutions in the States of Michigan and Illionois , USA," (1939); Franklin G Ebaugh, Clarke H Barnacle, and Jack R Ewalt, "Delirious Episodes Associated with Artificial Fever: A Study of 200 Cases," *American Journal of Psychiatry* 93, no. 1 (1936).

[23] King, Williams, and Nicol, "hyperthermia in the Treatment of Resistant Gonococcal and Non-Specific Urethritis."

[24] This complication was seen in 15% or 68 of the 451 cases reviewed. For examples of this outcomes please see: “"Stephen O. Patient Record 26599. Q339, B364731.Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."; "Peter M. Patient Record [Two Records with Different Casebook Numbers: 23249 and 23671].23249, Q249, B352641 and 23671, Q262, B 355308. Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."

[25] A Siddiqui, "Effects of Vasodilation and Arterial Resistance on Cardiac Output," *J Clin Exp Cardiolog* 2 (2011).

[26] T. Foth, McWatters, C., Lange, J., Connell, M., "Treating through Fear - Nurses and the Fever Unit at the Ontario Hospital, Toronto 1941 - 1951," in *Patients and Social Practice of Psychiatric Nursing in the 19th and 20th Century*, ed. S. Hahner-Rombach, Nolte, K. (Germany: Franz-Steiner Verlag, 2017).

[27] T. Foth et al.

[28] Hospital Division Department of Mental Health, "73rd Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for the Year Ending March 31st, 1941, P.28.," (Toronto: Baptist Johnson Printer, 1941).

[29] Geoffrey Reaume, *Remembrance of Patients Past. Patient Life at the Toronto Hospital for the Insane, 1870 - 1941* (Toronto: University of Toronto Press, 2012).

[30] Reaume.

[31] All patients receiving fever therapy in Toronto had Wasserman test results in their records. Not all results; however, were positive and treatment was sometimes based on a collection of symptoms.

[32] Ludwik Fleck, *Geneis and Development of a Scientific Fact* (Chicago: University of Chicago Press, 1979).

[33] AW Hedrich and Charlotte Silverman, "Should the Premarital Blood Test Be Compulsory?," *American Journal of Public Health and the Nations Health* 48, no. 2 (1958); Mabel M Malcolm, "Non-Typical Wassermanns in Spinal Fluids," *The Public Health Journal* 18, no. 3 (1927); Diana Patterson et al., "Treatment and Diagnostic Accuracy of Neurosyphilis at Boston City Hospital's Neurological Unit, 1930–1979," *Journal of the neurological sciences* 314, no. 1 (2012); Karl Schaffle and Max Riesenberg, "The Occurrence of Positive Wassermann Reactions in the Spinal Fluid of Tuberculous and Other Nonsyphilitic Cases of Meningitis," *The American Journal of the Medical Sciences* 178, no. 5 (1929); Virgil Scott, FW Reynolds, and CF Mohr, "Biologic False Positive Spinal Fluid Wassermann Reactions Associated with Meningitis," *Am J Syphilis* 28 (1944).

[34] L.W. Harrison, *Modern Diagnosis and Treatment of Syphilis, Chancroid and Gonorrheoea* (Toronto: McClelland & Stewart, 1925); L Rosenthal, "A Rapid Precipitation Test for Syphilis," *Proceedings of the Society for Experimental Biology and Medicine* 27, no. 1 (1929); HAROLD W POTTER, LEWIS H BRONSTEIN, and CHARLES M GRUBER, "Blood and Spinal Fluid Tests for Syphilis in Malarial Patients," *Journal of the American Medical Association* 127, no. 12 (1945).

[35] "Carl H. Patient Record 20649. Q398, B356131. Rg 10 - 278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[36] "Peter M. Patient Record [Two Records with Different Casebook Numbers: 23249 and 23671].23249, Q249, B352641 and 23671, Q262, B 355308. Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[37] Pegg, "The Nursing Aspect of Hyperthermy Treatment."
[38] Pegg.
[39] Pegg.
[40] Lehmann, "Nursing Care in Fever Therapy."
[41] Lehmann.
[42] Lehman.; F.M. Lutz, "Nursing Care in Artificial Fever Therapy," *the American Journal of Nursing* 36, no. 12 (1936); Pegg, "The Nursing Aspect of Hyperthermy Treatment."
[43] The icteric index is described as a semi-qualitative test used to measure bilirubin levels but does not provide a precise result. It is not used to make clinical decisions but can be used as an indication for further testing.
[44] The complement fixation test is used to detect specific antibodies in the patient's blood.
[45] Lehmann, "Nursing Care in Fever Therapy."
[46] Lehmann.
[47] Lehmann 1937.
[48] Pegg, "The Nursing Aspect of Hyperthermy Treatment."
[49] Lutz, "Nursing Care in Artificial Fever Therapy."
[50] Pegg, "The Nursing Aspect of Hyperthermy Treatment."; Lutz, "Nursing Care in Artificial Fever Therapy."
[51] Lehmann 1937.
[52] Alopon was a sedative used in the British military. It's most common use was before surgery.
[53] F.M. Lutz, "Nursing Care in Artificial Fever Therapy," *The American Journal of Nursing* 36, no. 12 (1936).
[54] Lutz, "Nursing Care in Artificial Fever Therapy."; Pegg, "The Nursing Aspect of hyperthermy Treatment."
[55] "The Nursing Aspect of Hyperthermy Treatment."
[56] "The Nursing Aspect of Hyperthermy Treatment."
[57] Bromberg, "Artificial Fever Therapy."
[58] King, Williams, and Nicol, "hyperthermia in the Treatment of Resistant Gonococcal and Non-Specific Urethritis."
[59] Levy, "Hyperthermy in the British Army."
[60] A.J. Bromley, "Artificial Fever in the Treatment of Neurosyphilis [Printed Synopsis About Fever Treatment for Hospital Internal Use] Rg 10-20-B-9-454 Queen Street Mental Health Centre Fever Therapy Box: B431584: Box #4," (1941).
[61] Bromley.
[62] "Connie B. Patient Record 22834 (Two Records), Q236, B354042. Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[63] "Connie B. Patient Record 22834 (Two Records), Q236, B354042. Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[64] M Young de, *Encyclopedia of Asylum Therapeutics, 1750 -1952.* (Jefferson, North Carolina: McFarland & Company Inc., 2015).
[65] "Connie B. Patient Record."
[66] "Health, Hospitals Divsion Department of Mental. "81st Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for the Year Ending March 31st 1944.," Edited by Department of Health, 19 - 20. Toronto: Baptist Johnson, 1945."
[67] The rate of adverse reaction from fever therapy at the Toronto Hospital was 15% and this is significantly higher than those figures quoted in academic journals at 2-3%.
[68] Michelle A Cretikos et al., "Respiratory Rate: The Neglected Vital Sign," *Medical Journal of Australia* 188, no. 11 (2008).

[69] Bromley, "Artificial Fever in the Treatment of Neurosyphilis [Printed Synopsis About Fever Treatment for Hospital Internal Use] Rg 10-20-B-9-454 Queen Street Mental Health Centre Fever Therapy Box: B431584: Box #4."
[70] "Stephen O. Patient Record 26599. Q339, B364731.Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[71] Pegg, "The Nursing Aspect of hyperthermy Treatment."
[72] Bromley, "Artificial Fever in the Treatment of Neurosyphilis [Printed Synopsis About Fever Treatment for Hospital Internal Use] Rg 10-20-B-9-454 Queen Street Mental Health Centre Fever Therapy Box: B431584: Box #4."
[73] Pegg, "The Nursing Aspect of hyperthermy Treatment."
[74] "Stephen O. Patient Record 26599. Q339, B364731.Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[75] Levy, "hyperthermy in the British Army."; King, Williams, and Nicol, "hyperthermia in the Treatment of Resistant Gonococcal and Non-Specific Urethritis."
[76] "Ernest W.W. Patient Record 22905. Q238, B359486. Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[77] Bromley, "Artificial Fever in the Treatment of Neurosyphilis [Printed Synopsis About Fever Treatment for Hospital Internal Use] Rg 10-20-B-9-454 Queen Street Mental Health Centre Fever Therapy Box: B431584: Box #4."
[78] "Stephen O. Patient Record 26599. Q339, B364731.Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[79] "Stephen O. Patient Record 26599. Q339, B364731.Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[80] "Artificial Fever in the Treatment of Neurosyphilis [Printed Synopsis About Fever Treatment for Hospital Internal Use] Rg 10-20-B-9-454 Queen Street Mental Health Centre Fever Therapy Box: B431584: Box #4."
[81] "Stephen O. Patient Record 26599. Q339, B364731.Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[82] "Connie B. Patient Record 22834 (Two Records), Q236, B354042. Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[83] “Connie B. Patient Record.”
[84] Toronto General School of Nursing, "Nursing Education Update," (Toronto General Hospital, 1937).
Ontario College of Nurses, "Asylum Inspection Report," (Toronto1920 - 1950); Lynaugh Fairman ., J.E., *Critical Care Nursing: A History*
(Philadelphia: University of Pennsylvania Press, 1998).
[85] "Stephen O. Patient Record 26599, Q339, B364731. Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[86] "Stephen O. Patient Record.”
[87] "Stephen O. Patient Record.”
[88] "Stephen O. Patient Record.”
[89] "Stephen O. Patient Record.”
[90] "Stephen O. Patient Record.”
[91] "Stephen O. Patient Record.”
[92] "Stephen O. Patient Record 26599. Q339, B364731.Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[93] "Connie B. Patient Record 22834 (Two Records), Q236, B354042. Rg 10-278 Queen Street Mental Health Centre

Fever Therapy Unit Records: Boxes 1-4."

[94] "Connie B. Patient Record 22834 (Two Records), Q236, B354042. Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."

[95] "Connie B. Patient Record."
[96] "Connie B. Patient Record."
[97] "Connie B. Patient Record."

Chapter 5: Discussion and Implications for Nursing Research and Practice

This chapter begins with a summary and discussion of the findings using examples from the treatment files and patient exemplars and literature (both current and historical). Furthermore, this case study provides implications for current nursing research and nursing practice, in particular, nursing documentation.

Summary of Case Study Findings

Nurses working in the fever unit adhered, for the most part, to the standards of fever therapy of the day.[1]The fact that they often cared for patients who were more medically fragile due to adjuvant therapies or pre-existing medical conditions meant that they were often required to provide an advanced level of care, especially in life-threatening situations that occurred during fever therapy. Furthermore, this care was provided in the absence of a physician in the fever unit—the treatment was prescribed by psychiatrists, but they were not usually present during treatments.

Despite the autonomy of fever nurses and the work they assumed, the perspective of the mental health nurse as a highly competent and skilled practitioner is not a view that has been historically assigned to her, yet it begs consideration. It would appear that, from a historical perspective, mental health nurses have been lumped together as an inferior subset of nursing as a whole. I would suggest that these assumptions are made in error or that they only reveal a partial truth. Certainly, mental health nurses worked in difficult and unglamorous settings, unlike many of their colleagues in general hospitals. However, the mental health nurse who worked in the

fever unit had skills and responsibilities advanced for the time and reflective of a skillset that would lend itself well to areas of specialty practice that would soon arise, such as critical care.

These important conclusions lead to the following points for discussion: 1) mental health nurses working in fever units were highly skilled; 2) their level of skill provides evidence of early nursing specialization; and 3) their work has been potentially disregarded given the less than desirable patient population they cared for.

Mental Health Nurses Working in Fever Units Were Highly Skilled

Mental health nurses in fever units were highly competent and skilled practitioners. While this is not a perspective that has been historically assigned to them, the findings from this case study suggest that those assumptions are incorrect. Although nurses in the fever unit followed medical directives and the work was physician driven (i.e. ordered by the physician), nurses also had latitude to make decisions based on their own assessment, and in the case of Ontario Hospital, Toronto, without the oversight of a physician. The autonomy and skill of the nurses working in Toronto is consistent with descriptions of the mental health nurses' day-to-day practices in fever units in Britain and the United States but with some differences.[2]

Lutz, Lehman, and Pegg all begin their discussion on fever therapy with an emphasis on the importance of training. Neither Bromley nor the nurse experts are exact about the amount of training a nurse required for preparation in fever therapy. Dr. Simpson from the Kettering Institute and Dr. Basil Levy (Adviser in Venereology to the British War Office) recommended a nurse-training program of at least 3 months.[3] It is clear from Lutz, Lehman, and Pegg that this specialized training was in addition to their training in the general hospital. Although the Ontario Hospital, Toronto had reciprocal agreements with general hospitals in the area (e.g. Toronto General Hospital), it is not clear whether nurses working in the fever unit had this additional

training in general duty nursing. This can be further questioned because Bromley gave them a designation (nurse technician) that was not a recognized designation assigned by the College of Nurses of Ontario at that time, or at any time since.

However, it would seem unlikely that the fever unit nurses were provided with only a purpose-built education at the Ontario Hospital, Toronto. Nurses working in the fever unit demonstrated an ability to triage, and determine courses of action in an emergency. The also demonstrated a foundational understanding of issues such as oxygenation or hypotension. While limited information exists regarding their baseline education/training (perhaps an experiential learning component played a dominant role), it is evident that it was imperative, and that fever therapy training should be considered specialized and one that not all nurses received. The level of skill they demonstrated in their practices is notable despite the fact that in Bromley's training manual, the nurse is only mentioned three times. Bromley's remarks, however, are focused entirely on the nurses training, "alert attention by a well-trained nurse-technician will ensure safe, satisfactory treatment in nearly every case."[4]

Furthermore, regarding the fever therapy nurses' skill and level of autonomy, at the Ontario Hospital, Toronto, there were no references to the support or intervention of these nurses by other members of the health care team. Others entering the treatment space, as captured by the Ontario Hospital nurses' documentation, were rare at best. Importantly, the physician is essentially absent from frontline care. This was particularly evident in the Connie B. patient exemplar describing a critical incident, where no physician intervened for over 3 hours. Hence, it would appear that the fever therapy nurse in Toronto functioned autonomously and was at times the sole decision-maker for health issues that went beyond the standard patient covered by a medical directive.[5] The lack of

physician presence at the Ontario Hospital, Toronto was a marked difference when compared to the practices described by Lutz, Lehman, and Pegg. For example, Lehman wrote:

> "We appreciate the visits of the intern in whose care the patient is before and after his fever therapy, and we also like to have the nurse in charge of the division drop in occasionally to see the patient who if awake seems pleased to see a familiar face."[6]

Lehman also remarked on physician driven intervention during fever therapy. In Lehman's account, physicians checked patients' vital signs hourly and also intervened as follows:

> "Salt is only given by order of the attending physician, depending mostly upon how much the patient perspires and the volume and characteristics of the heart sounds as the physician finds them at hourly intervals."[7]

The fact remains that, during the years that the fever unit operated (1941 to 1950), many women who became mental health nurses had a lower level of education upon admission to schools, than their counterparts in the general hospital system.

Evidence of Early Nursing Specialization

The nurses at the Ontario Hospital, Toronto worked in a separate area dedicated to fever therapy, with equipment and technology that would not have been available to the ward nurse. This was consistent across other fever therapy units, where all nurses worked in physical settings specifically designed for the care of fever therapy patients. The treatment area was a relatively small space, allowing nurses to care for only a few patients at a time. As noted previously, the fever unit in the Ontario Hospital, Toronto was able to treat four patients at a time when running at full capacity. These specialized units were equipped with the technology needed to support

patient care and provide constant monitoring by nurses, including the fever cabinet itself alongside equipment to measure blood pressure and temperature, take blood and other fluid samples, and provide intravenous medications. This meant that a nurse working in this area needed to be able to function independently, make autonomous decisions, be proficient at using the equipment, and importantly, know when it was appropriate to use that equipment (e.g. supplemental oxygen and available pharmacotherapy).

The fever therapy nurses were diligent in their engagement with what is currently known as the nursing process, which was formally documented later in 1958 by nurse theorist Ida Jean Orlando.[8] The nursing process is defined as "The use of a systematic, dynamic, and rational method of planning and providing individualized nursing care."[9] As demonstrated in the patient files at the Ontario Hospital, Toronto and the publications of Lutz, Lehman, and Pegg, fever therapy nurses constantly assessed, planned, implemented, and evaluated the patient's response to treatment, necessarily identifying and or averting negative patient outcomes (potential and actual).

Fever therapy patients, particularly at the Ontario Hospital, Toronto, could have a number of underlying medical issues beyond neurosyphilis that placed them at higher risk for complications. Lehman summarized the nurses' role in fever treatment remarking that, "By careful attention to the nursing technic [sic], it is possible to avoid most of the unfortunate sequelae reported as accompanying or following fever therapy."[10] Pegg stated that the most dangerous and difficult period of fever therapy (induction period) can be made more manageable for the patient through the intervention of the nurse, "It is at this stage, the most trying part of the whole day, that much can be done for the comfort of the patient by the nurse."[11] Lutz remarked, "She must learn to recognize signs and symptoms of untoward reactions quickly and in many

instances, institute the proper remedy herself."[12]

Although a direct quote from the fever nurse in Toronto does not exist, we can see evidence of close monitoring and observation and use of the nursing process in their documentation. For example, during Stephen O.'s initial fever treatment in December of 1942, he exhibited signs of extreme agitation and anxiety at the start of the treatment: "very restless, apprehensive. Pulling at towels. Pt., very restless and resistive."[13] Stephen O. was given sedation and settled. However, he continued to have wide variability in his pulse despite having a calm behavior. As a result of her assessment and concerns for Stephen O.'s pulse, the nurse autonomously made the decision to end treatment early. This Ontario Hospital, Toronto fever therapy nurse monitored the patient, intervened as she deemed appropriate and averted a potentially life-threatening situation. The ability to think critically, demonstrates that the nurse likely had some general nurse training and was able to determine a course of action independent of a physician.

At the time the fever unit operated in Toronto (1941–1950), the concept of nurses specializing in an area of practice was unheard of and generally not supported. Hospital administrators and physicians alike wanted a nursing workforce with a general scope of practice that could be moved to practice in any setting at any time.[14] However, fever unit nurses demonstrated technological knowledge, skill, and keen assessment and judicious monitoring of fever therapy patients that surpassed those of a generalist nurse.

Interestingly, mental health nursing became specialized before other prominent areas of specialty practice like critical care. Specialization for mental health nursing began after both World Wars due to the large numbers of men returning from war with mental illnesses (shell shock, later identified to be post-traumatic stress, anxiety, or depression) in addition to public

concern for the poor care often attributed to asylums and not wanting the men that had served their country under this type of care.[15] In the United States, a formalized and nation-wide specialization happened in 1946 after the creation of *The National Mental Health Act* and was focused on the practice of the general duty nurse's role becoming more therapeutic and less custodial. However, the Act did not specifically address the education of nurses working in asylums. In Canada, the identification of mental health nursing as a distinct area of practice originated due to the Weir Report[16] and his concern for the isolation of nurses working in this area from the larger nursing profession.[17] Weir was also concerned that general duty nurses working in general hospitals were missing an important component of their education, namely the care of patients with a mental health concern.[18] The Canadian Nurse Association specialty certification for Psychiatry would be established much later in the 1990s.[19]

It can be argued that the work of the mental health nurse in the fever unit represented a distinct and specialized area of knowledge that was not common amongst the nursing profession overall at that time. It many ways, the role and work of the mental health nurse within the fever unit are comparable to the contemporary nursing specialization of critical care nursing. According to Zalumas, critical care nursing is comprised of a number of factors which make it unique and an area of nursing specialization.[20] Those factors that more closely resemble the work of the mental health nurse working in a fever unit include: the nurse becoming an extension of the patient as illness or treatment renders them unable to do for themselves (this could include the fever patient requiring assistance to drink, void or regulate their own body temperature); the use of intensive observation including ongoing observation, triage and critical decision-making; working in an environment that is separated and distinct from the other care

environments in the hospital with the addition of technology and equipment that supports life; and the provision of comfort measures to reduce a negative response to treatment and ultimately produce a better patient outcome (for the fever therapy patient, this often included pharmaceutical and non-pharmaceutical approaches).

Mental Health Nurse Obscurity and Undesirable Patient Population

Mental health nurses worked in difficult and unglamorous settings, unlike many of their colleagues in the general hospital.[21] They also cared for a population that occupied a space on the fringes of society and lived lives that others considered 'not worth living.'[22] Both patient exemplars selected for use in this case study depict individuals who functioned outside societal norms. For instance, Connie B, was a woman with a history of sexually transmitted disease (largely frowned upon at that period in time). An examination of other patient files would reveal vagrants and alcoholics. Yet these mental health nurses cared for their patients without bias and provided the same level of care afforded to everyone else. Unfortunately, these nurses are absent from the Canadian history of nursing.

Three possible explanations for the omission of mental health nurses from the broader historical account are: 1) the stigma surrounding the care and treatment of mental patients and by association, fever therapy nurses;2) the social status held by women who historically became mental health nurses as measured by their education; and 3) psychiatrist control over the mental health hospital ensured their power base and limited the voice of the nurse. Other possible explanations for their absence from nursing history may exist. However, social status and the stigma associated with psychiatry are evident within this case study.

In his work on stigma, Erving Goffman suggested that society creates a means of categorizing people or groups in order to determine if they are to be included in what is

considered ‘normal’ and natural.[23] This categorization is based on a collection of attributes that those living within that society know to be either desirable or undesirable. Often, there is no awareness that this type of categorization is happening; it occurs within the subconscious. When an individual or group possess an attribute that is considered less desirable, especially in the extreme, they are “reduced in our minds.”[24] From the perspective of the individual or group who possess the undesirable quality, they too are aware that they do not fit the definition of normal and natural. As a result, they will attempt to limit others’ knowledge of that characteristic in order to survive and fit in.[25]

Was this the unspoken understanding of mental health nurses? Goffman’s work on stigma and its management would suggest that this is true, whether knowingly or not.[26] In his book on the history of mental health nursing in Britain, Peter Nolan stated that the historical image of the mental health nurse could be described as, “indolent, lacking in motivation, unable or unwilling to demonstrate compassion for patients, and so unintelligent as to be totally dependent on rules and routines.[27] This image was also held by popular culture through the characterization of fictional mental health nurses like Dickens’ Sarah Gamp.[28] This description is contradictory to what constituted a ‘good nurse’ (namely, a middle-class woman demonstrating truthfulness, obedience, punctuality, observation, sobriety, honesty, quietness, devotion, tact, loyalty, sympathy, and humility).[29] This was perhaps undeserved, as again, the voice of the mental health nurse is not actually heard until much later and these images are based on the experiences and histories of others such as psychiatrists and patients.[30]

Moreover, the ‘quackery’ and often ridiculed practices of psychiatrists, by mainstream medicine, would have blemished the mental health nurse solely by their associations.[31] As nurses in the general hospital system were able to find their voice and write their history, mental health

nurses may have purposefully not done so. Although, there exists the possibility that some primary historical data did exist (diaries and letters) that could have shed light on the mental health nurse's experiences as was found repeatedly in this case study, most professional documentation was destroyed, and personal accounts did not exist. Archivists at The Kettering Foundation, The College of Nurses of Ontario and CAMH speculated that, during the 1960s and 1970s, when the stories of mental patients and the horrors of their treatment started to be recounted, nursing notes might have been destroyed to avoid litigation.[32] The archivist at The Kettering Institute went so far as to suggest that institutions probably still had the notes from fever therapy units, but would never share them due to litigation concerns and the resurfacing of negative associations for businesses, such as General Electric, with their past.[33]

Strengths and Limitations

There are several strengths and limitations to consider when interpreting the findings of this case study. The case study of the nurses' role in fever units at the Ontario Hospital, Toronto was based on review of nursing documentation in patient treatment records from 1941 to 1950, which provided the only accessible, firsthand account of their work. Based on the review of these files, a case study was produced with a rich description of the nursing care provided in fever units in Toronto, Ontario, Canada. The description provided increases the transferability of the findings to other sites in Ontario and Canada during this period of time, should other primary source data be retrieved. This case study provides the foundation for other studies to further explore the original case or concepts related to the case in greater depth, having opened the door to a new area of knowledge.

Limitations of this case study are as follows. One limitation was the missing annual inspection reports detailing, among other things, the training of mental health nurses and the

level of education attained prior to admission to a school of nursing at the Ontario Hospital, Toronto from 1941 to 1950.[34] Furthermore, to date, no diaries authored by nurses working in the fever units at the Ontario Hospital, Toronto have been found. These sources of data could have enriched the case study and allowed for comparisons with nursing roles from other institutions. Another limitation was the fact that the nurses' narrative notes were destroyed. The absence of these notes removes the chance to hear the true voice of the fever therapy nurse, why she made the clinical decisions she made, or her use of the nursing process to determine the best course of action in a critical situation. While inferences can be made in an effort to surmise why certain treatment decisions were made, a firsthand account would be the most ideal data source. Narrative notes would also provide clarification whether the nurse made these determinations on her own or if she was simply following a treatment algorithm created by the psychiatrist, an eventuality that is unlikely but possible. Lastly, another key primary source that was missing was the Kettering training manual, the standard of practice for all institutions using fever cabinet from the 1930s to 1950s. Hence, it was difficult to know if the training of nurses in this case study using Bromley's training manual for nurses was similar or different from training elsewhere.

Indications for Future Nursing Research

Three areas of focus for future research emerged from this case study. The first area is based on the lived experience of mental health nurses working in fever units. With the advent of social history in the 1960s, individuals on the fringes of society began to have their experiences told. While this group includes mental patients, the perspectives of mental health nurses should be included as well.[35] Nurses' stories were often overshadowed by the psychiatrist and patient and have remained largely unrecounted. Often these social histories took the form of letters,

diaries, biographies, autobiographies and life stories. In her book *Forbidden Narrative: Autobiography as Social Science*, Kathryn Church claimed that life stories obtained directly from the individual via diaries, letters, and autobiographies have a completeness that presents a truer picture of events and relationships than inferences acquired through less direct means.[36] Should the necessary primary sources surface, a social history of the fever unit nurse is merited.

The second area for further research is an investigation of other 'specialized' areas of mental health nursing practice from this same time period (1941 to 1950). This could include non-ward areas such as operating rooms within asylums that performed lobotomies or electro-convulsive therapy clinics.[37] Investigation of these additional areas of practice might reveal other areas of mental health nursing practice that required an advanced skill set and that these skills were more common in mental health nursing than has been represented historically. This could further challenge and potentially change the negative images and discourses normally associated with mental health nursing. Peter Stearns suggests that knowing one's history helps to provide identity.[38] Positive identification with a group (i.e. mental health nurses) increases self-esteem and supports attachment to the group.[39] This more positive association may increase the number of mental health nurses willing to record their history.

The third area for research expands on the role of the nurse in the treatment of patients with neurosyphilis. Outside of fever units, other nurses cared for and managed the observation of mental patients, including neurosyphilis patients, in clinics and the community. These would have been Public Health Nurses trained at the University of Toronto, the first group of Canadian nurses to receive a university education in Canada (many Canadian nurses from 1920 to the 1950s traveled to the United States to attend university).[40] Kathleen Russell, the Director of Nursing at the Toronto General Hospital and a prominent figure in Canadian nursing history, had

considerable influence over the Public Health Nursing program at the University of Toronto.[41] Russell was concerned that hospital training programs were inadequate and did nothing to dispel the poor image of nurses. She insisted that Public Health Nurses be trained at a university.

> "We have had under-education in the nursing profession, and it produced Sairey-Gamps; let us try over-education, that bogey of the highly imaginative, and see if the results will really be as dire as some pessimists suggest."[42]

Russell placed considerable emphasis on mental health factors in the program at the University of Toronto, and this is evident from University of Toronto Calendars from 1920 to 1947.[43] Notes from those public health nurses were often found in patients' treatment records at the Ontario Hospital, Toronto. Their role was to follow up with patients on probation in the community and report back to psychiatrists at the Toronto Hospital on the patient's progress. Further investigation into their role in the treatment of neurosyphilis patients would help complete the picture of nursing care practices for these patients.

Implications for Nursing Practice

Current nursing practice is complicated with factors that impede nurses' ability to perform their full scope of practice.[44] Often, these factors are caused by limited resources in the form of time and staffing.[45] In an attempt to 'free up' nurses to provide direct care, operational and practice supports have been put into place. Three such supports are best practice guidelines, charting by exception, and electronic documentation or the electronic health record (EHR; electronic documentation has additional purposes outside of nursing, such as improved health information exchange between organizations and professionals).

Best practice guidelines, such as the 50 Best Practice Guidelines created by the Registered Nurses' Association of Ontario, function to standardize practice with the best and

most current evidence. They also function to facilitate the translation of research evidence into practice.[46] Charting by exception is intended to reduce the amount of time nurses spend documenting care, avoid repetition, and provide patient status at a glance.[47] In a time study on nursing documentation, the average nurse in a busy medical surgical unit spent 2.5 hours per shift documenting. After the implementation of charting by exception, time spent charting was reduced by almost one hour.[48] The EHR addresses issues of storage and retrieval, allows nurses to receive orders from physicians working from any location without delay or interruption of patient care, and decreases the likelihood of transcription errors sometimes associated with handwritten notes. Also, recording devices such as tablets are portable and can allow the nurse to document in 'real time' which increases accuracy and reduces errors related to recall.[49]

All three supports have had success in helping nurses to practice with higher levels of satisfaction in resource restricted settings. However, there are those who assert none are a panacea, and may in fact have some negative consequences for nursing. Legal experts, for example, have concerns that charting by exception actually increases the risk of litigation, and that the EHR has serious issues with patient privacy and the protection of patient information.[50] Critics of best practice guidelines assert that often what constitutes best practice is determined by committee and not always by using the best evidence. For example, in a study examining the benefit of practice guidelines, in a review of 2,711 recommendations, 50% were based on data from clinical trials and 48% were based on the opinions of individuals who participated in the committee that developed the practice guideline.[51]

From the perspective of this thesis, the concerns around these three practices (best practice guidelines, charting by exception and the EHR) relate directly to the visibility of the nurse in the care of the patient. As with the mental health nurse during the time of the fever unit,

all three of these tools may, over time, make the nurse invisible. In the rush to modernization and efficiency, charting by exception and the use of electronic records, which are created to reduce narrative notes and focus mainly on templates with tick boxes or drop-down menus, will eliminate our ability to observe how the nurse makes practice decisions or uses the nursing process, especially in cases that deviate from the norm. This is not dissimilar from destruction of nurses' notes from the fever unit before they were sent to the Archives of Ontario. The individuality and uniqueness of each nurse and her practices will be lost. With respect to best practice guidelines, research evidence is only one part of evidence-informed decision making.[52] Factors such as individual patient responses to treatment, a primary focus of the nurse, are lost if the patient does not belong to the homogeneous group for whom guidelines were developed.[53] The nurse will document within parameters of practice guidelines; however, the individuality of her practices or her management of deviations from prescribed practices, when she employs her professional judgement, may be lost.

This is not to suggest that best practice guidelines, charting by exception, and EHRs do not have their place in nursing practices or that nursing has not benefited from their use. This is intended as a caution to future practitioners of nursing that we need to be diligent in ensuring that our history or our voice is not erased from the patient record and that we receive the same recognition and place of prominence as other practitioners whose voices are found in patient records.

Conclusion

This case study sought to understand the role of the mental health nurse within fever therapy units used for treatment of neurosyphilis patients at the Ontario Hospital, Toronto from 1941 to 1950. An examination of nursing documentation from the fever unit revealed that mental

health nurses had an advanced skill set that enabled them to function autonomously while providing safe and competent care. Additionally, they were not second-tier nurses as they have historically been assigned, but instead nurses with skill and specialized knowledge who showed compassion and care to members of society that others had abandoned. In fact, nurses working in the fever unit were forerunners of nursing specialization, which would not be realized in many other areas of nursing practice for decades after their work began. Currently, nurses need to be diligent in ensuring that their history is not erased from the patient's care, and that they receive the same recognition and place of prominence as other healthcare professionals who are described within the patient record. The implication for future nursing documentation is to ensure changes that accurately document care provided and promote efficiency for the nurse, but do not remove the nurse from the patient record. In one hundred years, nurses should be able to read and understand their history, "merely defining ourselves in the present pales against the possibility of forming an identity based on a rich past."[54]

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[1] F.M. Lutz, "Nursing Care in Artificial Fever Therapy," *The American Journal of Nursing* 36, no. 12 (1936); Emmy Lehmann, "Nursing Care in Fever Therapy," *The American Journal of Nursing* 37, no 12. (1937); Edith Pegg, "The Nursing Aspect of Hyperthermy Treatment," *British Journal of Venereal Diseases* 19, no. 4 (1943).
[2] Lutz; Lehman; Pegg.
[3] Basil Levy, "Hyperthermy in the British Army," *Journal of the Royal Army Medical Corps* 98, no. 5 (1952).
[4] Bromley, A.J. "Artificial Fever in the Treatment of Neurosyphilis [Printed Synopsis About Fever Treatment for Hospital Internal Use] Rg 10-20-B-9-454 Queen Street Mental Health Centre Fever Therapy Box: B431584: Box #4." 1941, 3.
[5] "Connie B. Patient Record 22834 (Two Records), Q236, B354042. Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
[6] Lehman,1937, 1321
[7] Lehman,1937,1320
[8] Claire Faust, "Orlando's Deliberative Nursing Process Theory: A Practice Application in an Extended Care Facility," *Journal of gerontological nursing* 28, no. 7 (2002).
[9] NANDA, "Nursing Diagnosis: Classifications and Definitions," (2018).
[10] Lehman, 1937, 1321.
[11] Pegg, 1943, 167.
[12] Lutz, 1936, 1191.
[13] "Stephen O. Patient Record 26599. Q339, B364731.Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."

[14] Julie Fairman and Joan E. Lynaugh, *Critical Care Nursing: A History* (Philadelphia: University of Pennsylvania Press, 1998), 93.
[15] Fairman and Lynaugh.
[16] G. Weir, "Survey of Nursing Education in Canada," ed. Canadian Nurses' Association and the Canadian Medical Association (Toronto: University of Toronto Press, 1932).
[17] The establishment of mental health nursing was complicated in Canada. According to Tiplinksi in her article Parting at the Crossroads: The Emergence of Education for Psychiatric Nursing in Three Canadian Provinces, 1909 – 1955, there was a power struggle between the nursing elite and psychiatrists for control over the training and education of mental nurses. In the end, nurses trained west of Manitoba became general duty nurses with a specialization in mental health and educated by nursing. Nursing west of Manitoba saw mental health nursing become a distinct profession with education in the control of psychiatrists. This distinction still exists today and it is the only place in the world that this distinction is made within the geography of a country.
[18] Weir 1932.
[19] B Vanderspank-Wright, " The Social Construction of Intensive Care Nursing, 1960-2002: Canadian Historical Perspectives. Chapter 6" (University of Ottawa, 2014).
[20] J. Zalumas, *Caring in Crisis: An Oral History of Critical Care Nursing* (Philidelphia: University of Pennsylvania Press, 1995).
[21] Peter Nolan, *A History of Mental Health Nursing* (Nelson Thornes, 2000).
[22] T. Foth, "Nursing and Psychiatric Practice in Germany, 1931 -1943" (University of Ottawa, 2011).
[23] Erving Goffman, *Stigma: Notes on the Management of Spoiled Identity* (New York: Simon and Shuster Inc., 1963), 2.
[24] *Stigam: Notes on the Management of Spoiled Identity* (New York: Simon and Schuster, 1963).p. 3.
[25] *Stigma: Notes on the Management of Spoiled Identity*.
[26] *Stigma: Notes on the Management of Spoiled Identity*.
[27] Nolan, *A History of Mental Health Nursing* (Cheltenham: Stanley Thornes, 1993), 2
[28] C. Dickens, *Martin Chuzzlewit* (New York: Grosset & Dunlop, 1935).
[29] Susan M Duncan, Beverly D Leipart, and Judy E Mill, "Nurses as Health Evangelists"?: The Evolution of Public Health Nursing in Canada, 1918-1939," *Advances in Nursing Science* 22, no. 1 (1999); Kathryn McPherson, *Bedside Matters: The Transformatin of Canadian Nursing, 1900-1990* (Toronto: University of Toronto Press, 2011); Rondalyn Kirkwood, "Blending Vigorous Leadership and Womanly Virtues: Edith Kathleen Russell at the University of Toronto, 1920–52," *Canadian Bulletin of Medical History* 11, no. 1 (1994); Monica Eileen Baly, *Florence Nightingale and the Nursing Legacy: Building the Foundations of Modern Nursing & Midwifery* (Trans-Atlantic Publications, 1997); S. Hawkins, "From Maid to Matron: Nursing as a Route to Social Advancement in Nineteenth Century England," *Women's History Review* 19, no. 1 (2010).
[30] Nolan, *A History of Mental Health Nursing*.
[31] Andrew Scull, *Madhouses, Mad-Doctors, and Madmen: The Social History of Psychiatry in the Victorian Era* (University of Pennsylvania Press, 2015).
[32] J. Court, 2016; Ontario, "College of Nurses of Ontario Annual Inspection Records."; Bill Stoltz, Telephone conversation, January 27th, 2017.
[33] Joelle Kovach, "General Electric Peterborough Workers' Fight for Compensation 'an Uphill Battle'," *The Peterborough Examiner*, January 4t 2019.
[34]Ontario, "College of Nurses of Ontario Annual Inspection Records."
[35] Geoffrey Reaume, "999 Queen Street West: Patient Life at the Toronto Hospital for the Insane, 1870-1941" (National Library of Canada= Bibliothèque nationale du Canada, 1997).
[36] K. Church, Forbidden Narratives: Critical Autobiography as Social Science, (Routledge, 2014). Kindle Edition.
[37] D.A. Herring, "The Untold Story of Venereal Diseases in Hamilton, 1900 - 1950," in *Damage Control: The Untold Story of Venereal Diseases in Hamilton, 1900 - 1950*, ed. D.A. Herring (Hamilton, Ontario: Department of Anthropology McMaster University, 2014); Geoffrey Reaume, *Remembrance of Patients Past. Patient Life at the Toronto Hospital for the Insane, 1870 - 1941* (Toronto: University of Toronto Press, 2012); M Young de, *Encyclopedia of Asylum Therapeutics, 1750 -1952.* (Jefferson, North Carolina: McFarland & Company Inc., 2015);

B. Collins, "Ontario's Leucotomy Program:The Roles of Patient, Physician, and Profession" (University of Alberta, 2012).
[38] Peter N Stearns, "Why Study History," *American Historical Association* (1998).
[39] Naomi Ellemers, Paulien Kortekaas, and Jaap W Ouwerkerk, "Self-Categorisation, Commitment to the Group and Group Self-Esteem as Related but Distinct Aspects of Social Identity," *European journal of social psychology* 29, no. 2-3 (1999).
[40] D. Sillars, "The Develpment of Community Mental Health Nurses in Toronto from 1917 - 1947" (Toronto, 1983).
[41] Sillars.
[42] E. Sylvester, "How One Toronto Woman Changed the Way Canadians View Nursing," *The Torontoist*, May, 12th, 2016, 1.
[43] D. Ansovini, "Archival Material on the Education of Mental Health Nurses at the University of Toronto 1933-1950," (2017).
[44] Donna K McNeese-Smith, "A Content Analysis of Staff Nurse Descriptions of Job Satisfaction and Dissatisfaction," *Journal of advanced nursing* 29, no. 6 (1999).
[45] McNeese-Smith; Ellen Strachota et al., "Reasons Registered Nurses Leave or Change Employment Status," *Journal of Nursing Administration* 33, no. 2 (2003); Bronwyn Hayes, ANN Bonner, and Julie Pryor, "Factors Contributing to Nurse Job Satisfaction in the Acute Hospital Setting: A Review of Recent Literature," *Journal of nursing management* 18, no. 7 (2010).
[46] K. D. Boudoulas et al., "The Shortcomings of Clinical Practice Guidelines," *Cardiology* 130, no. 3 (2015).
[47] Judy Murphy and LAURA J BURKE, "Charting by Exception: A More Efficient Way to Document," *Nursing2018* 20, no. 5 (1990); Margaret S Short, "Charting by Exception on a Clinical Pathway," *Nursing Management* 28, no. 8 (1997).
[48] "Charting by Exception on a Clinical Pathway."
[49] E Ammenwerth et al., "A Randomized Evaluation of a Computer-Based Nursing Documentation System," *Methods of information in medicine* 40, no. 02 (2001); Nir Menachemi and Taleah H Collum, "Benefits and Drawbacks of Electronic Health Record Systems," *Risk management and healthcare policy* 4 (2011).
[50] L.B. Harman, Flite, C.A., Bond, K., "Electronic Health Records: Privacy, Confidentiality and Security," *AMA Journal of Ethics* 14, no. 9 (2012).
[51] Paraschos Geleris and Harisios Boudoulas, "Problems Related to the Application of Guidelines in Clinical Practice: A Critical Analysis," *Hellenic J Cardiol* 52 (2011).
[52] "A Model for Evidence Informed Decision Making in Public Health," https://www.nccmt.ca/about/eiph.
[53] Boudoulas et al., "The Shortcomings of Clinical Practice Guidelines."; Geleris and Boudoulas, "Problems Related to the Application of Guidelines in Clinical Practice: A Critical Analysis."; Steven H Woolf et al., "Potential Benefits, Limitations, and Harms of Clinical Guidelines," *Bmj* 318, no. 7182 (1999).
[54] Stearns, "Why Study History."

Bibliography

"A Model for Evidence Informed Decision Making in Public Health." https://www.nccmt.ca/about/eiph.

"Carl H. Patient Record 20649. Q398, B356131. RG 10 - 278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."

"Connie B. Patient Record 22834 (Two Records), Q236, B354042. RG 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."

"Cut Medical Staff." The Toronto Daily Star, 1941.

"Ernest W.W. Patient Record 22905. Q238, B359486. Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."

"Fever Therapy in Ontario." Unlisted.

"Fonds - Dr. Charles Kirk (C.K.) Clarke Collection." 1870 - 1924.

"Health, Hospitals Division Department of Mental. "81st Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for the Year Ending March 31st, 1944.", Edited by Department of Health, 19 - 20. Toronto: Baptist Johnson, 1945.".

"Letter to the Minister of Health & Report on the Treatment of Neurosyphilis with Special Reference to the Artificial Fever Therapy Doc. Registry: RG 10-20-B-9-454. Box 4."

"List of Neurosyphilis Patients Who Are Discharged or on Probation Following Treatment and Are Adjusting Satisfactorily. RG 10-20-B-9-463. RG 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records, Box #4: 1941."

"Minutes of Superintendent's Conference Held at Psychiatric Hospitals for the Years 1930 to 1949. Registry, RG10-20-B-9-454) (RG 10-278 Queen Street Mental Health Centre Fever Therapy Unit Box: B431584), Box #4

"No Author: Suggested List of Equipment for Clinic. Registry: RG 10-20-B-9-460 (RG 10-278 Queen Street Mental Health Centre Fever Therapy Unit Box: B431584), Box #4n Ed.), 1941 ".

"Personal Conversation between Bylthe Koreen and Mary Connell. Discussion About Nurse Technician Designation. February 22nd, 2017."

"Peter M. Patient Record [Two Records with Different Casebook Numbers: 23249 and 23671].23249, Q249, B352641 and 23671, Q262, B 355308. RG 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."

"Provence Care Archives: KPH School of Nursing Alumnae Fonds." Kingston, Ontario, 1909 - 1947.

"Stephen O. Patient Record 26599, Q339, B364731. RG 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."

"The Symptoms of Syphilis ". Planned Parenthood, https://www.plannedparenthood.org/learn/stds-hiv-safer-sex/syphilis/what-are-the-symptoms-of-syphilis.

"War Cabinet and Cabinet Minutes." In "Venereal Disease", 4 - 5. Whitehall Gardens. SW. London, 1918.

Abraham, J Johnston. "Some Account of the History of the Treatment of Syphilis." British Journal of Venereal Diseases 24, no. 4 (1948): 153.

Abram, Z. "The Comforts of Home: Sex Workers and the Canadian War Novel." 80(2016): 31-46. https://eccs.revues.org/643.

Affairs, Ministry of Veterans. "The Battle of Vimy Ridge." Government of Canada, http://www.veterans.gc.ca/eng/remembrance/history/first-world-war/fact_sheets/vimy.

Alexander, Jenny. "Mapperley Hospital and George Thomas Hine (1841–1916), Consulting Architect to the Commissioners in Lunacy." Transactions of the Thoroton Society of Nottinghamshire 112 (2008): 199-219.

Allen, Edgar V. "Intermittent hyperthermia of Seven Years ‘duration." Annals of Internal Medicine 10, no. 8 (1937): 1204-11.

Ammenwerth, E, R Eichstädter, R Haux, U Pohl, S Rebel, and S Ziegler. "A Randomized Evaluation of a Computer-Based Nursing Documentation System." Methods of information in Medicine 40, no. 02 (2001): 61-68.

Ansovini, D."Archival Material on the Education of Mental Health Nurses at the University of Toronto 1933-1950." 2017.

Archives of Ontario. "College of Nurses of Ontario Annual Inspection Records." 2017.

Arlidge, J.T. "On the Construction of Public Lunatic Asylums." Asylum Journal of Mental Science 4 (1857): 18-204.

Armstrong, D. Political Anatomy of the Body. Cambridge: Cambridge University Press, 1983.

Assembly, Ontario Legislative. "Interim Report on Venereal Diseases and Copy of an Act for the Prevention of Venereal Diseases." Government of Ontario, 1918.

Association, The American Public Health. "The Social Hygiene Movement." edited by Public Health, 1 4. New York: American Public Health Association, 1913.

Austin, S. C., Stolle.P.D., Lasky.T. "The History of Malariotherapy for Neurosyphilis: Modern Parallels." JAMA 268, no. 4 (1992): 516-19.

Author, No. "<1944 Medical Journal Fever Therapy.Pdf>." (1944).

Avasthi.A., Sarkar.A. Sandeep.G. "Approaches to Psychiatric Nosology: A Viewpoint." Indian Journal of Psychiatry 56, no. 3 (Jul-Sep 2014): 301-04.

Beeson, B Barker. "The Treatment of Syphilis According to Jacques De Bethencourt, 1527: Extracts from the French Translation by Alfred Fournier, 1871." Archives of Dermatology and Syphilology 14, no. 4 (1926): 427-33.

Baker. J., Armelagos.G.J., Marshall.J.B., BrothwellD., Drusini.A., Clabeaux Geise.M., Kelley.M.A. et al. "The Origin and Antiquity of Syphilis: Paleopathological Diagnosis and Interpretation [and Comments and Reply]." Current Anthropology 29, no. 5 (1988): 703-37.

Baly, Monica Eileen. Florence Nightingale and the Nursing Legacy: Building the Foundations of Modern Nursing & Midwifery. Trans-Atlantic Publications, 1997.

Bartfay, W.J. "Men in Nursing in Canada: Past, Present and Future Perspectives." Chap. Twelve In Men in Nursing. History, Challenges and Opportunities, edited by C. O'Lynn, Tranbarger,R.E., 205 -18. New York, New York: Springer Publishing, 2007.

Baxter, Pamela, and Susan Jack. "Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers." The Qualitative Report 13, no. 4 (2008): 544-59.

Beall Gwynn, Henry. "The Present Status of Artificial Fever Therapy." Physical Therapy 20, no. 3 (1941): 163-67.

Beardsley, E. "Allied against Sin: British and American Response to Venereal Disease During World War I." Medical History 20, no. 2 (1976): 189 - 202.
Bennett, AE. "Fever Therapy in Tabes Dorsalis: Relief of Gastric Crises and Lightning Pains by the Use of the Kettering hypertherm." Journal of the American Medical Association 107, no. 11 (1936): 845-49.
Berg, Marc. "Practices of Reading and Writing: The Constitutive Role of the Patient Record in Medical Work." Sociology of Health & Illness 18, no. 4 (1996): 499-524.
Bierman, William. "The History of Fever Therapy in the Treatment of Diseases." Bulletin of the New York Academy of Medicine 18, no. 1 (1942): 65 - 75.
Borsay, A., Dale, P. "Mental Health Nursing: The Working Lives of Paid Carers in the Nineteenth and Twentieth Centuries." Chap. 1 In Mental Health Nursing: The Working Lives of Paid Carers in the Nineteenth and Twentieth Centuries, edited by A. Borsay, Dale, P., 1 - 27. Manchester, England: Manchester University press, 2015.
Boschma, G., Groening, M. "Psychiatric and Mental Health Nursing: From Past to Present." Chap. 1 In Psychiatric & Mental Health Nursing for Canadian Practice, edited by W. Austin, Boyd, M.A., 2 - 11. Philadelphia: Wolters Kluwer, 2015.
Boudoulas, K. D., C. V. Leier, P. Geleris, and H. Boudoulas. "The Shortcomings of Clinical Practice Guidelines." [In eng]. Cardiology 130, no. 3 (2015): 187-200.
Brandt, A.M. No Magic Bullet. A Social History of Venereal Disease in the United States since 1880. Cambridge, Massachusetts: Cambridge University Press, 1984.
Braslow, J. Mental Ills and Bodily Cures: Psychiatric Treatment in the First Half of the Twentieth Century. Berkeley: University of California Press, 1997.
Breay, Margaret. "Nurses as Citizens." The Canadian Nurse 39, no. 1 (1938): 28 - 29.
Bridges, JW. "The Mental Hygiene Movement." The Public Health Journal 19, no. 1 (1928): 1-8.
Bromberg, Leon. "Artificial Fever Therapy." The American Journal of Nursing (1936): 1183-90.
Bromley, A.J. "Artificial Fever in the Treatment of Neurosyphilis [Printed Synopsis About Fever Treatment for Hospital Internal Use] RG 10-20-B-9-454 Queen Street Mental Health Centre Fever Therapy Box: B431584: Box #4." 1941.
Bromley, A.J. Letter to the Minister of Health. 1939.
Bromley, A.J. "Report on the Treatment of Neurosyphilis with Special Reference to the Use of Artificial Fever Therapy at Certain Institutions in the States of Michigan and Illinois, USA." 1939.
Brown, Kevin. The Pox: The Life and near Death of a Very Social Disease. Stroud, Glouchester. England: Sutton Publishing, 2006.
Brown, P. "The Mental Patients' Rights Movement and Mental Health Institutional Change." International Journal of Health Services 11, no. 4 (1981): 523 - 40.
Brown, Thomas Edward. "" Living with God's Afflicted": A History of the Provincial Lunatic Asylum at Toronto, 1830-1911." (1982).
Brown, W.H. "Dr. C.K. Clarke and the Training School for Nurses ". Chap. 9 In The Provincial Asylum in Toronto: Reflections on Social and Architectural History, edited by E. Hudson, 167-80. Toronto: Toronto Region Architectural Conservancy, 2000.
Buckley, Suzann, and Janice Dickin McGinnis. "Venereal Disease and Public Health Reform in Canada." Canadian Historical Review 63, no. 3 (1982): 337-54.
Butera, Federico M. "—Principles of Thermal Comfort." Renewable and Sustainable Energy Reviews 2, no. 1-2 (1998): 39-66.

Bynum, Willian. "Experimenting with Fire: Giving Malaria." The Lancet 376, no. 9752 (2010): 1534-35.
CDC. "Syphilis Fact Sheet." edited by Division of STD Prevention. Atlanta, Georgia: Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention, 2017.
Cahan, David. "The Awarding of the Copley Medal and the 'Discovery'of the Law of Conservation of Energy: Joule, Mayer and Helmholtz Revisited." Notes and Records of the Royal Society 66, no. 2 (2011): 125-39.
Canadian War Museum."Life at the Front: Behind the Front Lines." Government of Canada, http://www.warmuseum.ca/firstworldwar/history/life-at-the-front/behind-the-front-lines/fraternization/.
Carpenter, Mick. "Asylum Nursing Before 1914: A Chapter in the History of Labour." Chap. 6 In Rewriting Nursing History, edited by Celia Davies, 123 - 46. Ringwood, Hampshire. England: Antony Rowe Ltd., 1986.
"The Struggle Is Never Over." Chap. Forward In Mental Health Nursing: The Working Lives of Paid Carers in the Nineteenth and Twentieth Century, edited by A. Borsay, Dale, P., 9-13. Manchester, England: Manchester University Press, 2015.
Cassel, Jay. The Secret Plague. Venereal Diseases in Canada, 1838 - 1939. Toronto: University of Toronto Press, 1987.
Castel, R. The Regulation of Madness: The Origins of Incarceration in France. Berkeley, California: University of California Press, 1988.
Cavanagh, Sheila L. "From a Belief In 'biology as Destiny 'to an Environmental Perspective of Mental Health: The Impact of the Canadian National Committee for Mental Hygiene on Education in Ontario, Canada, 1920-1950." (2001).
Chamberlain, J. ""The Ex-Patient's Movement: Where We've Been and Where We're Going"." Journal of Mind and Behaviour 11, no. 3 (1990): 323 -36.
Chatterton, Claire. "The Weakest Link in the Chain of Nursing? Recruitment and Retention in Mental Health Nursing in England, 1948 - 68." Chap. 8 In Mental Health Nursing: The Working Lives of Paid Carers in the Nineteenth and Twentieth Centuries edited by A. Borsay, Dale, P., 169 - 89. Manchester, England: Manchester University Press, 2015.
Church, K. Forbidden Narratives: Critical Autobiography as Social Science. Routledge, 2014. Kindle Edition.
Church, Olga Maranjian. "Emergence of Training Programs for Asylum Nursing at the Turn of the Century." Advances in Nursing Science 7, no. 2 (1985): 35-46.
Clarke, C.K. "The Fourth Maudsley Lecture." The Public Health Journal 14, no. 12 (1923): 531 - 41.
Clarke, K.A. "Uses of a Research Diary: Learning Reflectively, Developing Understanding and Establishing Transparency." Nurse Researcher 17, no. 1 (2009). doi:10.7748/nr2009.10.17.1.68.c7342.
College of Nurses of Ontario. "Asylum Inspection Report." Toronto, 1920 - 1950.
College of Nurses of Ontario. "Annual Inspection: Ontario Hospital, Kingston." Toronto, 1941.
Collins, B. "Ontario's Leucotomy Program: The Roles of Patient, Physician, and Profession." University of Alberta, 2012.
Connell, M. "Personal Research Diary." 2012-2015.
Connell, Robert William, and Raewyn Connell. Masculinities. Univ of California Press, 2005.

Cook, Tim. "The Battle of Vimy Ridge." The Canadian War Museum, http://www.warmuseum.ca/the-battle-of-vimy-ridge/.
Council, The Canadian Welfare. "Budgeting." edited by Canadian Military Services. Ottawa: Runge Press Limited, 1943.
Cournand, André. "Historical Details of Claude Bernard's Invention of a Technique for Measuring the Temperature and the Pressure of the Blood within the Cavities of the Heart." Transactions of the New York Academy of Sciences 39, no. 1 Series II (1980): 1-14.
Court, John. "A Historical Synopsis- the Department of Psychiatry at the University of Toronto." University of Toronto, http://www.psychiatry.utoronto.ca/wp-content/uploads/2011/03/UT-Psychiatry-Historical-Synopsis-to-2008-.pdf.
Court, John. 2016.Private conversation.
Craig, B. "Clark, Daniel." Toronto: University of Toronto 2003.
Crawford, C.M. "Paretic Neurosyphilis. History, Pathogenesis, Neuropathology, Treatment." The Ontario Journal of Neuro-Psychiatry (1921): 32 Cretikos, Michelle A, Rinaldo Bellomo, Ken Hillman, Jack Chen, Simon Finfer, and Arthas Flabouris. "Respiratory Rate: The Neglected Vital Sign." Medical Journal of Australia 188, no. 11 (2008): 657.
Crosby, Alfred W. "The Early History of Syphilis: A Reappraisal." American Anthropologist 71, no. 2 (1969): 218-27.
Crossly, N. "R.D. Lang and the British Anti-Psychiatry Movement: A Socio-Historical Analysis." Social science & Medicine 47, no. 7 (1998): 877 - 89.
Day, Robert F. "Induced Pyrexia: A Resume of Artificial Fever Therapy with Especial Emphasis on Recent Methods." (1935).
De La Cour, L., Reaume, G. "Patient Perspectives in Psychiatric Case Files." Chap. 11 In On the Case. Explorations in Social History, edited by F. Iacovetta, Mitchinson, W., 242 - 65. Toronto: University of Toronto Press, 2011.
Dickens, C. Martin Chuzzlewit. New York: Grosset & Dunlop, 1935.
Dickinson, Tommy. 'Curing Queers' Mental Nurses and Their Patients, 1935 - 74. [in English] Manchester, England: Manchester University Press, 2015.
Dingwall, Robert, Anne Marie Rafferty, and Charles Webster. An Introduction to the Social History of Nursing. Routledge, 2002.
Doan, Charles. "The First Annual Conference on Fever Therapy." The Science Monthly 44, no. 5 (1937): 483 - 86. www.jstor.org/stable/16160.
Dollard, John. "Criteria for the Life History: With Analyses of Six Notable Documents." (1935).
Double, D. "The Limits of Psychiatry." British Medical Journal - International Edition, no. 324 (2002): 900- 04.
Doucett, M.A. "Our Concept of a Psychiatric Nursing Affiliation." The Canadian Nurse 49, no. 10 (1953): 791 - 93.
Duncan, Susan M, Beverly D Leipart, and Judy E Mill. "" Nurses as Health Evangelists": The Evolution of Public Health Nursing in Canada, 1918-1939." Advances in Nursing Science 22, no. 1 (1999): 40-51.
Ebaugh, Franklin G, Clarke H Barnacle, and Jack R Ewalt. "Delirious Episodes Associated with Artificial Fever: A Study of 200 Cases." American Journal of Psychiatry 93, no. 1 (1936): 191-217.

Edginton, B. "Architecture's Quest for Sanity." Journal on Developmental Disabilities 4 (1995): 12-21.
Edginton, B. "Moral Architecture: The Influence of the York Retreat on Asylum Design." Health & Place 3, no. 2 (1997): 91-99.
Eddington, B. "The Provincial Asylums in Toronto and Mimico: Reflections on Social and Architectural History." Canadian Bulletin of Medical History 22, no. 2 (2005): 387-88.
Ellemers, Naomi, Paulien Kortekaas, and Jaap W Ouwerkerk. "Self-Categorization, Commitment to the Group and Group Self-Esteem as Related but Distinct Aspects of Social Identity." European Journal of Social Psychology 29, no. 2-3 (1999): 371-89.
Epstein, Norman N. "Artificial Fever as an Adjunct in the Treatment of Neurosyphilis." Archives of Dermatology and Syphilology 37, no. 2 (1938): 254-66.
Ernst, Edzard. "A Leading Medical School Seriously Damaged: Vienna 1938." Annals of Internal Medicine 122, no. 10 (1995): 789-92.
Evans, Joan. "Men Nurses: A Historical and Feminist Perspective." Journal of Advanced Nursing 47, no. 3 (2004): 321-28.
Fairman, Julie, and Joan E. Lynaugh. Critical care nursing: A history. University of Pennsylvania Press, 2000.
Farrand-Griffin, Henry. "The Mental Hygiene Movement: A National Campaign Against Insanity." Outlook 31, no. 2 (1913): 311 - 17.
Faust, Claire. "Orlando's Deliberative Nursing Process Theory: A Practice Application in an Extended Care Facility." Journal of Gerontological Nursing 28, no. 7 (2002): 14-18.
Fenton, Kevin A, Romulus Breban, Raffaele Vardavas, Justin T Okano, Tara Martin, Sevgi Aral, and Sally Blower. "Infectious Syphilis in High-Income Settings in the 21st Century." The Lancet Infectious Diseases 8, no. 4 (2008): 244-53.
Fleck, Ludwik. Geneis and Development of a Scientific Fact. Chicago: University of Chicago Press, 1979.
Fleming, William L. "Syphilis through the Ages." Medical Clinics of North America 48, no. 3 (1964): 587-612.
Flis, Nathan. "Images of the Toronto Provincial Asylum, 1846-1890." Scientia Canadensis: Canadian Journal of the History of Science, Technology and Medicine/Scientia Canadensis: Revue Canadienne d'Histoire des Sciences, des Techniques et de la Médecine 32, no. 1 (2009): 21-50.
Flyvbjerg, Bent. "Five Misunderstandings About Case-Study Research." Qualitative Inquiry 12, no. 2 (2006): 219-45.
Ford, Denys K. "Arthritis and Venereal Urethritis." British Journal of Venereal Diseases 29, no. 3 (1953): 123.
Forester, J.M. "Annual Report of the Medical Superintendent of the Hospital for the Insane, Toronto Ontario." Toronto: King's Printer, 1911.
Foth, T. "Nursing and Psychiatric Practice in Germany, 1931 -1943." University of Ottawa, 2011.
Foth, T., McWatters, C., Lange, J., Connell, M. "Treating through Fear - Nurses and the Fever Unit at the Ontario Hospital, Toronto 1941 - 1951." In Patients and Social Practice of Psychiatric Nursing in the 19th and 20th Century, edited by S. Hahner-Rombach, Nolte, K., 133 - 83. Germany: Franz-Steiner Verlag, 2017.

Foucault, M. Madness and Civilization. A History of Insanity in the Age of Reason. Penguin Random House, 1988.
Frith, John. "Syphilis-Its Early History and Treatment until Penicillin, and the Debate on Its Origins." Journal of Military and Veterans Health 20, no. 4 (2012): 49.
Garcia, P. J. "Historical Perspective of Sexually Transmitted Infections and Their Control in Peru." Int J STD AIDS 21, no. 4 (Apr 2010): 242-5.
Geleris, Paraschos, and Harisios Boudoulas. "Problems Related to the Application of Guidelines in Clinical Practice: A Critical Analysis." Hellenic J Cardiol 52 (2011): 97-102.
Gensini, Gian Franco, Andrea Alberto Conti, and Donatella Lippi. "The Contributions of Paul Ehrlich to Infectious Disease." Journal of Infection 54, no. 3 (2007/03/01/ 2007): 221-24.
Gibbon, John Murray and Mathewson.M.S. Three Centuries of Canadian Nursing. Macmillan Co. of Canada, 1947.
Godden, Judith, and Carol Helmstadter. "Woman's Mission and Professional Knowledge: Nightingale Nursing in Colonial Australia and Canada." Social History of Medicine 17, no. 2 (2004): 157-74.
Goffman, Erving. Stigam: Notes on the Management of Spoiled Identity. New York: Simon and Schuster, 1963.
Graduate Nurses' Association of Ontario. "Second Meeting of the Graduate Nurses' Association of Ontario." The Canadian Nurse 1, no. 2 (1905): 1 - 11.
Granatstein, J.L. "The Battle at Vimy Ridge." The Vimy Foundation, http://www.vimyfoundation.ca/learn/vimy-ridge/.
Greenhous, Brereton, and WAB Douglas. Out of the Shadows: Canada in the Second World War. Dundurn, 1996.
Gruber, Howard, and Valmai Gruber. "Hermann Von Helmholtz: Nineteenth-Century Polymorph." The Scientific Monthly 83, no. 2 (1956): 92-99.
Guba, Egon G, and Yvonna S Lincoln. "Competing Paradigms in Qualitative Research." Handbook of qualitative research 2, no. 163-194 (1994): 105.
Guest, G., Namey, E.E., Mitchell, M.M. Collecting Qualitative Data: A Field Manual for Applied Research. Thousand Oaks, California: Sage Publishing, 2013.
Hackett, Cecil John. "On the Origin of the Human Treponematoses: Pinta, Yaws, Endemic Syphilis and Venereal Syphilis." Bulletin of the World Health Organization 29, no. 1 (1963): 7.
Hallur, J.S. "Medical Thermometry: A Short History." The Western Journal of Medicine 142, no. 1 (1985): 108 - 16.
Hargrave, M. "Hospital and Training School Items." The Canadian Nurse 1, no. 2 (1905): 35.
Harman, L.B., Flite, C.A., Bond, K. "Electronic Health Records: Privacy, Confidentiality and Security." *AMA Journal of Ethics* 14, no. 9 (2012): 712 - 19.
Harper, Kristin N, Molly K Zuckerman, Megan L Harper, John D Kingston, and George J Armelagos. "The Origin and Antiquity of Syphilis Revisited: An Appraisal of Old World Pre-Columbian Evidence for Treponemal Infection." American Journal of Physical Anthropology 146, no. S53 (2011): 99-133.
Harrison, L.W. Modern Diagnosis and Treatment of Syphilis, Chancroid and Gonorrheoea. Toronto: McClelland & Stewart, 1925.
Harrison, Mark. "The British Army and the Problem of Venereal Disease in France and Egypt During the First World War." Medical History 39, no. 2 (1995): 133.

Harrisson, Sandra. "Psychiatric Nurses: An Invisible Role in the Transition between the General Hospitals and the Community35-36." Déshospitalisation Psychiatrique Dirigée au sein de la Communauté Francophone Est-ontarienne, 1976-2006, une Approche Socio-Historique (2017): 128.

Hawkins, S. "From Maid to Matron: Nursing as a Route to Social Advancement in Nineteenth Century England." Women's History Review 19, no. 1 (2010).

Hayes, Bronwyn, Ann Bonner, and Julie Pryor. "Factors Contributing to Nurse Job Satisfaction in the Acute Hospital Setting: A Review of Recent Literature." Journal of Nursing Management 18, no. 7 (2010): 804-14.

Hedrich, AW, and Charlotte Silverman. "Should the Premarital Blood Test Be Compulsory?". American Journal of Public Health and the Nation's Health 48, no. 2 (1958): 125-32.

Heidel, William Arthur. "Hippocratic Medicine. Its Spirit and Method." (1941).

Herring, D.A. "The Untold Story of Venereal Diseases in Hamilton, 1900 - 1950." Chap. 1 In Damage Control: The Untold Story of Venereal Diseases in Hamilton, 1900 - 1950, edited by D.A. Herring, 2 - 7. Hamilton, Ontario: Department of Anthropology McMaster University, 2014.

Hincks, Clarence M. "Conserving Mental Health in Canada." Canadian Journal of Public Health / Revue Canadienne de Sante'e Publique 38, no. 7 (1947): 317-22.

Hippus, H., Muller, N. "The Work of Emil Kraepelin and His Research Group in Muchen." European Archives of Psychiatry and Clinical Neuroscience 258, no. 2 (2008): 3 - 11.

Holmes, K., Sparling, P.F., Stamm, W.E., Piot, P., Wasserheit, J.N., Corey, L.,Cohen, M.S. Sexually Transmitted Diseases: Edition 4. New York: McGraw Hill Professional, 2007.

Horden, Peregrine, and Elisabeth Hsu. The Body in Balance: Humoral Medicines in Practice. Vol. 13: Berghahn Books, 2013.

Hospital Division Department of Mental Health. "66th Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Barbiturate Patients of the Province of Ontario for the Year Ending October 31st, 1933." Toronto: T.E. Brown., 1934.

Hospital Division Department of Mental Health. "73rd Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for the Year Ending March 31st, 1941, P.28.". Toronto: Baptist Johnson Printer, 1941.

Hospital Division Department of Mental Health. "76th Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for the Year Ending March 31st, 1942." edited by Department of Health, 17. Toronto: T.E Brown, 1943.

Hospitals Division Department of Mental Health. "81st Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for the Year Ending March 31st, 1946.", edited by Department of Health, 19 - 20. Toronto: Baptist Johnson, 1947.

Hospitals Division of Mental Health. "83rd Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic

and Habituate Patients of the Province of Ontario Calendar Year 1949.". Toronto: Baptist Johnson Printer, 1950.
Hudson, Margaret M., and Robert S. Morton. "Fracastoro and Syphilis: 500 Years On." The Lancet 348, no. 9040 (1996): 1495-96.
Hui, Catherine. "Fever Therapy in the Treatment of Syphilis." Paper presented at the 11th Annual History of Medicine Days, Calgary, Alberta. University of Calgary, March 22nd and 23rd, 2002.
Hunter, R., McAlpine, I. "Samuel Turk's First Publication on the Treatment of Patients at the Retreat, 1811." British Journal of Psychiatry, no. 111 (1965): 769 - 72.
Institute, Kettering. "History." https://www.kettering.org/about/history.
Kalinowsky, L.B. "The Discoveries of Somatic Teatments in Psychiatry: Facts and Myths." Comprehensive Psychiatry 21, no. 6 (1980): 428 - 35.
Kaufmann, Stefan HE, and Ulrich E Schaible. "100th Anniversary of Robert Koch's Nobel Prize for the Discovery of the Tubercle Bacillus." Trends in microbiology 13, no. 10 (2005): 469-75.
Kawa, S., Giordano, J. "A Brief Historicity of the Diagnostic and Statistical Manual of Mental Disorders: Issues and Implications for the Future of Psychiatric Canon and Pracitce." Philosphy, Ethics, Humanities and Medicine 7 (2012): 2 - 20.
Kendler, Kenneth S. "An Historical Framework for Psychiatric Nosology." Psychological Medicine 39, no. 12 (2009): 1935-41.
Kerrigan, M. January 5th, 2017.Private conversation.
Kettering, Charles F, and Edwin C Sittler. "Method of and Apparatus for Creating an Artificial Fever." Google Patents, 1937.
Kettering, Charles F. "The Role of Invention in Industry." J. Pat. Off. Soc'y 14 (1932): 500.
Keutmann E, H., Samuel H.B., Stafford L.W. "Electrolyte Balance During Artificial Fever with Special Reference to Loss through Skin." Journal of Clinical Investigation 18, no. 2 (1939): 239 - 50.
King, AJ, DI Williams, and CS Nicol. "Hyperthermia in the Treatment of Resistant Gonococcal and Non-Specific Urethritis." British Journal of Venereal Diseases 19, no. 4 (1943): 141.
King, L.J. "The Best Possible Means of Benefiting the Incurable: Walter Bruetsch and the Malarial Treatment of Paresis." Annals of Clinical Psychiatry 12 (2000): 197 - 203.
Kirkwood, Rondalyn. "Blending Vigorous Leadership and Womanly Virtues: Edith Kathleen Russell at the University of Toronto, 1920–52." Canadian Bulletin of Medical History 11, no. 1 (1994): 175-205.
Knies, Phillip T. "The Electrocardiogram in Induced Fever." American Heart Journal 22, no. 6 (1941): 804-10.
Kovach, Joelle. "General Electric Peterborough Workers' Fight for Compensation 'an Uphill Battle'." The Peterborough Examiner, January 4th, 2019.
Lehmann, Emmy. "Nursing Care in Fever Therapy." The American Journal of Nursing (1937): 1315-21.
Leung, E. "CNCMH: Canadian National Committee for Mental Hygiene." 2013.
Levy, Basil. "Hyperthermy in the British Army." Journal of the Royal Army Medical Corps 98, no. 5 (1952): 276-84.
Lobdell, J., Owsley, D. "The Origin of Syphilis." The Journal of Sex Research 10, no. 1 (1974): 76 - 79.

Long, V. "'Surely a Nice Occupation for a Girl?' Stories of Nursing, Gender, Violence and Mental Illness in British Asylums 1914 - 1930." Chap. 6 In Mental Health Nursing: The Working Lives of Paid Carers in the Nineteenth and Twentieth Century, edited by A. Borsay, Dale, P., 123 - 44. Manchester, England: Manchester University Press, 2015.

Lutz, F.M. "Nursing Care in Artificial Fever Therapy." The American Journal of Nursing 36, no. 12 (1936): 1191-94.

Légaré, F., Stacey.D, Brière.N, Desroches.S, Dumont.S, Fraser.K, Murray.A.M., Sales.A, and Aubé.D. "A Conceptual Framework for Interprofessional Shared Decision-Making in-Home Care: Protocol for a Feasibility Study." BMC health services research 11, no. 1 (2011): 23.

Mabey, David, and Philippe Mayaud. "Sexually Transmitted Diseases in Mobile Populations." Genitourinary Medicine 73, no. 1 (1997): 18.

MacDougall, Heather. "Sexually Transmitted Diseases in Canada, 1800-1992." Sexually Transmitted Infections 70, no. 1 (1994): 56-63.

MacLennan, David. "Beyond the Asylum: Professionalization and the Mental Hygiene Movement in Canada, 1914–1928." Canadian Bulletin of Medical History 4, no. 1 (1987): 7-23.

Malcolm, Mabel M. "Non-Typical Wassermanns in Spinal Fluids." The Public Health Journal 18, no. 3 (1927): 115-17.

Mansell, Diana. "Profile of a Leader. Mary Agnes Snively: Realistic Optimist." Canadian Journal of Nursing Leadership 12, no. 1 (1999): 27-29.

Marcyzk, G., DeMatteo,D. , Festinger, D. Essentials of Research Design and Methodology. New Jersey: John Wiley and Sons,Inc., 2005.

Mattern, S. "Galen and His Patients." Lancet 378, no. 9790 (2011): 478 - 79.

McAllister, Marie E. "Stories of the Origin of Syphilis in Eighteenth-Century England: Science, Myth, and Prejudice." Eighteenth-Century Life 24, no. 1 (2000): 22-44.

McNeese-Smith, Donna K. "A Content Analysis of Staff Nurse Descriptions of Job Satisfaction and Dissatisfaction." Journal of Advanced Nursing 29, no. 6 (1999): 1332-41.

McPherson, Kathryn. Bedside Matters: The Transformation of Canadian Nursing, 1900-1990. [in English] Toronto: University of Toronto Press, 2011.

McPherson, K. "The Nightingale Influence and the Rise of the Modern Hospital." Chap. 5 In On All Frontiers: Four Centuries of Canadian Nursing, edited by C. Bates, Dodd, D., Rousseau, N. Ottawa: University of Ottawa Press, 2005.

Menachemi, Nir, and Taleah H Collum. "Benefits and Drawbacks of Electronic Health Record Systems." Risk Management and Healthcare Policy 4 (2011): 47.

Mendell, Clarence. "A Bibliography of the Poem Syphilis Sive Morbus Gallicus by Girolamo Fracastoro of Verona." Yale Journal of Biology and Medicine 8, no. 4 (1936): 417 - 18.

Merritt, H. Houston. "Julius Wagner-Jauregg." American Journal of Psychiatry 97, no. 4 (1941): 1004-2-06.

Merskey, H. "Somatic Treatments, Igonorance and the History of Psychiatry." History of Psychiatry 5 (1994): 387 - 91.

Mitchinson, Wendy. "The Toronto and Gladesville Asylums: Humane Alternatives for the Insane in Canada and Australia". Bulletin of the History of Medicine 63, no. 1 (1989): 52.

Montigny, E.A. ""Foisted Upon the Government":Institutions and the Impact of Public Policy Upon the Aged. The Elderly Patients of Rockwood Asylum 1866 - 1906." Journal of Social History 28, no. 4 (1995): 819 - 32.
Murphy, Judy, and LAURA J BURKE. "Charting by Exception: A More Efficient Way to Document." Nursing 2018 20, no. 5 (1990): 65-69.
Murray, H. ""My Place Was Set at the Terrible Feast": The Meaning of the' Anti-Psychiatry ' Movement and Responses in the United States, 1970s-1990s." The Journal of American Culture 37, no. 1 (2014): 37 - 51.
NANDA. "Nursing Diagnosis: Classifications and Definitions." (2018).
Nadin, Sara, and Catherine Cassell. "The Use of a Research Diary as a Tool for Reflexive Practice: Some Reflections from Management Research." Qualitative Research in Accounting & Management 3, no. 3 (2006): 208-17.
Neuburger, Max, and Linn J Boyd. "The Doctrine of the Healing Power of Nature Throughout the Course of Time." The Journal of Nervous and Mental Disease 80, no. 3 (1934): 374-75.
Nolan D. C. Lewis, Lois D. Hubbard, and, and Edna G. Dyar. "The Malarial Treatment of Paretic Neurosyphilis." American Journal of Psychiatry 81, no. 2 (1924): 175-225.
Nolan, Peter. A History of Mental Health Nursing. Nelson Thornes, 2000.
Nutting, Mary Adelaide, and Lavinia L Dock. A History of Nursing: The Evolution of Nursing Systems from the Earliest Times to the Foundation of the First English and American Training Schools for Nurses. Vol. 2: GP Putnam's Sons, 1907.
O'Leary, J. "Researching Canadian Soldiers of the First World War: Rank, No Simple Progression." http://regimentalrogue.com/misc/researching_first_world_war_soldiers_part11.htm.
O'Leary, J. "Researching Canadian Soldiers of the First World War: The Wounded and Sick." http://regimentalrogue.com/misc/researching_first_world_war_soldiers_part14.htm.
O'Shea, JG. "'Two Minutes with Venus, Two Years with Mercury'--Mercury as an Antisyphilitic Chemotherapeutic Agent." Journal of the Royal Society of Medicine 83, no. 6 (1990): 392.
Ossa-Richardson, Anthony. "Possession or Insanity: Two Views from the Victorian Lunatic Asylum." Journal of the History of Ideas 74, no. 4 (2013): 553-75.
Owens, CA, Willis D Wright, and Murray D Lewis. "The Value of Fever Therapy in Sulfanilamide-Resistant Gonorrhea." The Journal of Urology 40, no. 6 (1938): 847-53.
Potter, Harold W, Lewis H Bronstein, and Charles M Gruber. "Blood and Spinal Fluid Tests for Syphilis in Malarial Patients." Journal of the American Medical Association 127, no. 12 (1945): 699-701.
Parascandola, John. "John Mahoney and the Introduction of Penicillin to Treat Syphilis." Pharmacy in History 43, no. 1 (2001): 3-13.
Parascandola, John. Sex, Sin, and Science: A History of Syphilis in America. West Port, Connecticut: Praeger Publishers, 2008.
Paton, M. Qualitative Evaluation and Research Methods. Beverley Hills. California: SAGE, 1990.
Patterson, Diana, Joel A Vilensky, Wendy M Robertson, and Joseph Berger. "Treatment and Diagnostic Accuracy of Neurosyphilis at Boston City Hospital's Neurological Unit, 1930–1979." Journal of the neurological sciences 314, no. 1 (2012): 1-4.

Paul, Pauline, and Janet C Ross-Kerr. "The Origins and Development of Nursing Education in Canada: The Mack Training School." In Canadian Nursing-E-Book: Issues and Perspectives Amsterdam: Elsevier Health Sciences, 2014.

Pearce, J.M. "Brain Disease Leading to Illness: A Concept Initiated by the Discovery of General Paralysis of the Insane." European Neurology 67 (2012): 222 - 78.

Pegg, Edith. "The Nursing Aspect of Hyperthermy Treatment." British Journal of Venereal Diseases 19, no. 4 (1943): 166 - 69.

Perkovic, Adam. "The Changing Treatment for Syphilis." Chap. 2 In Damage Control: The Untold Story of Venereal Disease in Hamilton, 1900 - 1950, edited by D.A. Herring, 8 - 15. Hamilton, Ontario: Department of Anthropology McMaster University, 2014.

Pollock, H.M. "Economic Loss on Account of Hospital Cases of Mental Disease and Associated Physical Disorders in New York State, 1928." Psychiatric Quarterly 3, no. 195 (1929).

Pollock, H.M. "The Economic Loss to the State of New York on Account of Syphallitic Mental Diseases During the First Fiscal Year Ending June 30th, 1917.". Mental Hygiene 2 (1918): 282.

Pressman, JD. "Psychiatry and Its Origins." Bulletin of the History of Medicine, no. 71 (1997): 129 - 39.

Ray, Laurence J. "Models of Madness in Victorian Asylum Practice." European Journal of Sociology/Archives Européennes de Sociologie 22, no. 2 (1981): 229-64.

Reaume, Geoffrey. "999 Queen Street West: Patient Life at the Toronto Hospital for the Insane, 1870-1941." National Library of Canada/ Bibliothèque Nationale du Canada, 1997.

Reaume, Geoffrey. Remembrance of Patients Past. Patient Life at the Toronto Hospital for the Insane, 1870 - 1941. Toronto: University of Toronto Press, 2012.

Reaume, Geoffrey. "Portraits of People with Mental Disorders in English Canadian History." Canadian Bulletin of Medical History 17, no. 1 (2000): 93-125.

Reaume, Geoffrey. "Lunatic to Patient to Person: Nomenclature in Psychiatric History and the Influence of Patient' Activism in North America." International Journal of Law and Psychiatry 25 (2002): 405-26.

Registered Nurses' Association of Ontario. "Provincial Education Committee." 1925.

Renbourn, E. T. "The History of Sweat and the Sweat Rash from Earliest Times to the End of the 18th Century." Journal of the History of Medicine and Allied Sciences 14, no. 2 (1959): 202-27.

Rolfe, Gary. "Validity, Trustworthiness and Rigor: Quality and the Idea of Qualitative Research." Journal of Advanced Nursing 53, no. 3 (2006): 304-10.

Rolleston, J.D. "Venereal Disease in Literature." British Journal of Venereal Diseases 10, no. 3 (1934): 147 - 74.

Rosenthal, L. "A Rapid Precipitation Test for Syphilis." Proceedings of the Society for Experimental Biology and Medicine 27, no. 1 (1929): 61-63.

Ross, J.E., Tomkins, S.M. "The British Reception of Salvarsan." Journal of the History of Medicine and Allied Sciences 52, no. 4 (1997): 398 - 423.

Rousmaniere, Kate. "Historical Research." In Foundations for Research, 47-66: Routledge, 2003.

Russel, Evelyn Molson. "The Origin, Organization and Scope of the Canadian National Committee for Mental Hygiene." Canadian Medical Association Journal 8, no. 6 (1918): 538.

Sanchez.M, Zisselman.F. Treatment of Psychiatric Symptoms Associated with Neurosyphilis. Vol. 48, 2007. doi:10.1176/appi.psy.48.5.440.

Sandelowski, M. "The Problem of Rigor in Qualitative Research." Advances in Nursing Science 8, no. 3 (1986): 27-37.
Sandelowski, M. Devices and Desires: Gender, Technology and American Nursing. Chapel Hill, North Carolina: The University of North Carolina Press, 2000.
Sandelowski, M. "Rigor or Rigor Mortis: The Problem of Rigor in Qualitative Research Revisited." Advances in Nursing Science 16, no. 1 (1993): 1-8.
Sarbu, I, C Matei, V Benea, and SR Georgescu. "Brief History of Syphilis." Journal of Medicine and Life 7, no. 1 (2014): 4.
Sartin, Jeffrey S, and Harold O Perry. "From Mercury to Malaria to Penicillin: The History of the Treatment of Syphilis at the Mayo Clinic—1916–1955." Journal of the American Academy of Dermatology 32, no. 2 (1995): 255-61.
Schaffle, Karl, and Max Riesenberg. "The Occurrence of Positive Wassermann Reactions in the Spinal Fluid of Tuberculous and Other Nonsyphilitic Cases of Meningitis." The American Journal of the Medical Sciences 178, no. 5 (1929): 632-37.
Schamberg, J.F. and Rule, A. "The Effects of Extremely Hot Baths in Experimental Syphilis." Archives of Dermatology and Syphilology 17 (1928): 322 - 31.
Scott, Virgil, FW Reynolds, and CF Mohr. "Biologic False Positive Spinal Fluid Wassermann Reactions Associated with Meningitis." Am J Syphilis 28 (1944): 431-42.
Scull, Andrew. "The Art of Medicine: Madness in Civilization." The Lancet 385, no. 9973 (2015): 1066 -67.
Scull, Andrew. *Madhouses, Mad-Doctors, and Madmen: The Social History of Psychiatry in the Victorian Era.* University of Pennsylvania Press, 2015.
Scull, Andrew. *The Insanity of Place/the Place of Insanity: Essays on the History of Psychiatry.* Routledge, 2006.
Scull, Andrew. "Somatic Treatments and the Historiography of Psychiatry." History of Psychiatry 5, no. 17 (1994): 1 - 12.
Scull, Andrew. "Psychiatry and Its Historians." History of Psychiatry 2, no. 7 (1991): 239-50.
Scull,Andrew. "Psychiatry and Social Control in the Nineteenth and Twentieth Centuries." History of Psychiatry 2, no. 6 (1991): 149-69.
Scull, Andrew T. "Museums of Madness: The Social Organization of Insanity in Nineteenth-Century England." (1979).
Sedgwick, Peter. "Michel Foucault: The Anti-History of Psychiatry1." Psychological Medicine 11, no. 2 (1981): 235-48.
Shampo, Marc A., Robert A. Kyle, and David P. Steensma. "Charles F. Kettering—Medical Philanthropist and Inventor." Mayo Clinic Proceedings 87, no. 5 (2012): e35-e35.
Shoecraft, Warren A. "Artificial Fever Therapy." MD Theses 466 (1936).
Short, Margaret S. "Charting by Exception on a Clinical Pathway." Nursing Management 28, no. 8 (1997): 45.
Shorter, E. *A Historical Dictionary of Psychiatry.* New York, NY.: Oxford University Press, 2005.
Shorter, Edward. "A History of Psychiatry: From the Age of the Asylum to the Era of Prozac." New York, NY: Wiley, 1997.
Siddiqui, A. "Effects of Vasodilation and Arterial Resistance on Cardiac Output." J Clin Exp Cardiology 2 (2011): 170.

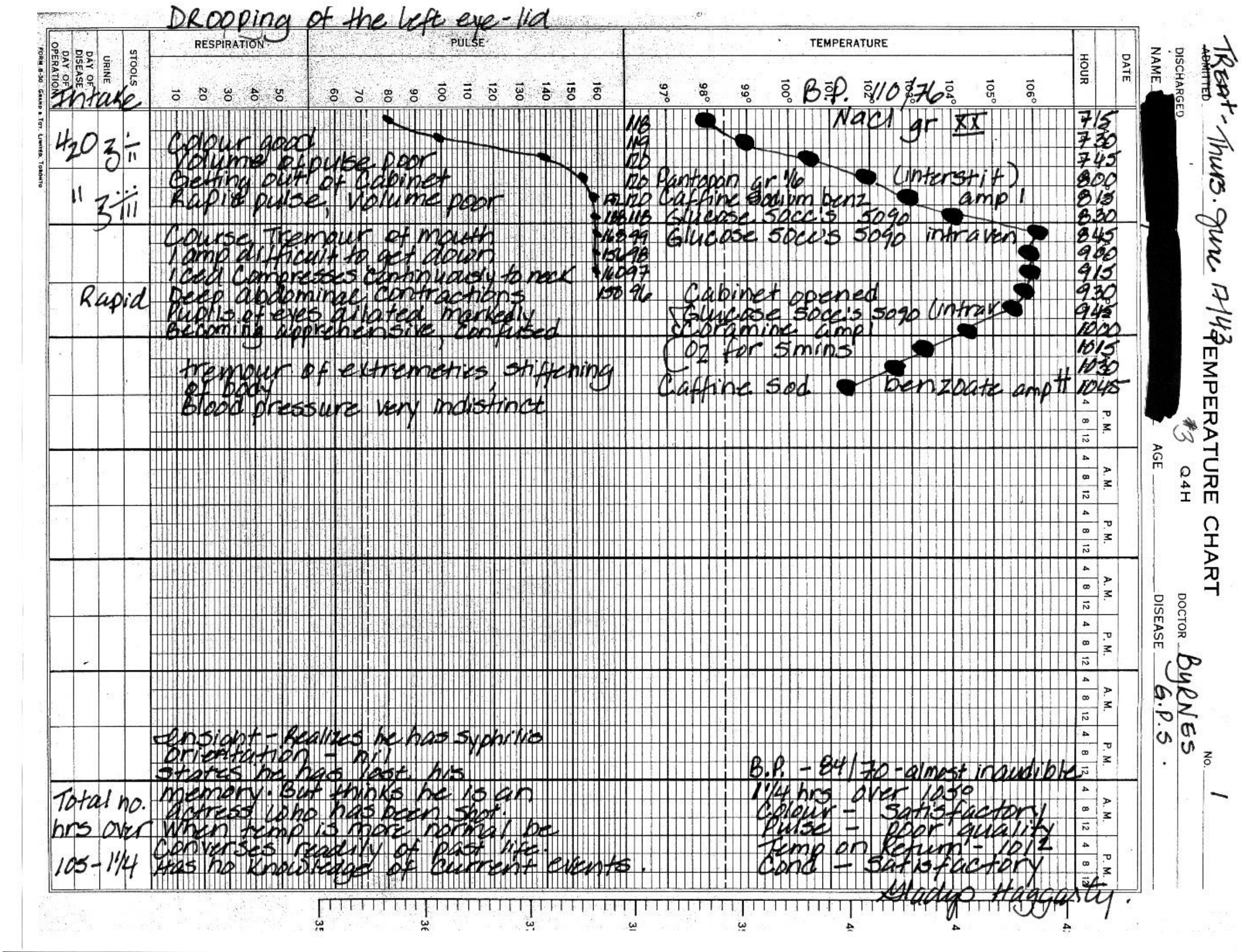
Sillars, D. "The Development of Community Mental Health Nurses in Toronto from 1917 - 1947." Toronto, 1983.
Simmons, H.G. "Unbalanced: Mental Health Policy in Ontario, 1930 - 1989." Toronto: Wall and Thompson, 1990.
Simmons, Heather JE. "Cranky No More: The Life and Legacy of Charles Franklin Kettering." World Patent Information 44 (2016): 1-9.
Simpson, Walter..M. "Artificial Fever Therapy of Syphilis and Gonococcic Infections." British Journal of Venereal Diseases 12, no. 3 (1936): 133-66.
Simpson, W.M., Kendell, H, W., Rose, D. "Developments in the Treatment of Syphilis with Artificial Fever Therapy Combined with Chemo-Therapy During the Past Decade." British Journal of Venereal Diseases 17, no. 1-2 (1941): 2-66.
Simpson, Walter M, Fred K Kislig, and Edwin C Sittler. "Ultrahigh Frequency Pyretotherapy of Neurosyphilis: A Preliminary Report." Annals of Internal Medicine 7, no. 1 (1933): 64-75.
Simpson, Walter M, H Worley Kendell, and Donald Rose. "Developments in the Treatment of Syphilis with Artificial Fever Therapy Combined with Chemo-Therapy During the Past Decade." British Journal of Venereal Diseases 17, no. 1-2 (1941): 1.
Simpson, Walter M. "Artificial Fever Therapy of Syphilis." Journal of the American Medical Association 105, no. 26 (1935): 2132-40.
Simpson, Walter M. "Artificial Fever Therapy of Syphilis and Gonococcic Infections." British Journal of Venereal Diseases 12, no. 3 (1936): 133.
Smith, Christopher A, David Wright, and Shawn Day. "Distancing the Mad: Jarvis's Law and the Spatial Distribution of Admissions to the Hamilton Lunatic Asylum in Canada, 1876–1902." Social Science & Medicine 64, no. 11 (2007): 2362-77.
Smith, M., and N. Khanlou. "An Analysis of Canadian Psychiatric Mental Health Nursing through the Junctures of History, Gender, Nursing Education, and Quality of Work Life in Ontario, Manitoba, Alberta, and Saskatchewan." ISRN Nurs 2013 (2013): 184024.
Snively, Mary Agnes. "What Manner of Women Ought Nurses to Be?" The American Journal of Nursing 4, no. 11 (1904): 836-40.
Staff, Health Wise. "Stages of Syphilis." Health Wise, https://www.healthlinkbc.ca/health-topics/tm6404.
Stake, R.E.The Art of Case Study Research. Thousand Oaks, California: Sage 1995.
Statescu, Laura, Cristian Statescu, and Laura Gheuca Solovastru. "For a Night with Venus, a Lifetime with Mercury." Romanian Journal of Artistic Creativity 3, no. 1 (2015): 25-34.
Stearns, Peter N. "Why Study History." American Historical Association (1998): 1-7.
Stecher, R.M., Solomon, W.M. "The Complications and Hazzards of Fever Therapy: Analysis of 1000 Consecutive Fever Treatments with the Kettering hypertherm." Annals of Internal Medicine 10, no. 7 (1937): 1014 - 20.
Stoltz, Bill. Telephone conversation, January 27th, 2017.
Strachota, Ellen, Pamela Normandin, Nancy O'brien, Mary Clary, and Belva Krukow. "Reasons Registered Nurses Leave or Change Employment Status." Journal of Nursing Administration 33, no. 2 (2003): 111-17.
Streitwieser, Robert J. "The Kettering hyperthermia; A Form of Fever Therapy." (1935).
Sylvester, E. "How One Toronto Woman Changed the Way Canadians View Nursing." The Torontoist, May 12th, 2016.

Tayloe, Gordon B. "Fever Therapy." Annals of Internal Medicine 18, no. 6 (1943): 968-73.
Taylor, James A, and Charles F Von Salzen. "Prognosis in Dementia Praecox." Psychiatric Quarterly 12, no. 3 (1938): 576-82.
Temouh, Ouahiba. "George Bernard Shaw's Feminist Vision in Mrs. Warren's Profession, Man and Superman and Pygmalion." 2012.
Terbenche, Danielle. "'Curative'and'custodial': Benefits of Patient Treatment at the Asylum for the Insane, Kingston, 1878-1906." The Canadian Historical Review 86, no. 1 (2005): 29-52.
Thagard, Paul. "The Concept of Disease: Structure and Change." Communication and Cognition 29 (1996): 445-78.
Thompson, L. Syphilis. New York: Lea & Febiger, 1920.
Tipliski, Veryl Margaret. "Parting at the Crossroads: The Emergence of Education for Psychiatric Nursing in Three Canadian Provinces, 1909–1955." Canadian Bulletin of Medical History 21, no. 2 (2004): 253-79.
Tognotti, Eugenia. "The Rise and Fall of Syphilis in Renaissance Europe." Journal of Medical Humanities 30, no. 2 (2009): 99.
Toms, J. "Mind the Gap: Mind, the Mental Hygiene Movement and the Trapdoor in Measurements of Intellect." J Intellect Disabil Res 54 Suppl 1 (Mar 2010): 16-27.
Toronto General School of Nursing. "Nursing Education Update." 17: Toronto General Hospital, 1937.
Tsay, Cynthia. "Julius Wagner-Jauregg and the Legacy of Malarial Therapy for the Treatment of General Paresis of the Insane." Yale Journal of Biology and Medicine 86, no. 2: 245 - 54.
Tuli, Fekede. "The Basis of Distinction between Qualitative and Quantitative Research in Social Science: Reflection on Ontological, Epistemological and Methodological Perspectives." Ethiopian Journal of Education and Sciences 6, no. 1 (2010).
University of Toronto. "Annual Report, the Department of Psychiatry: Annual Report - a Century of Learning, a Century of Caring, 1907 - 2007." edited by University of Toronto. Toronto: University of Toronto Press, 2007.
Vanderspank-Wright, B. " The Social Construction of Intensive Care Nursing, 1960-2002: Canadian Historical Perspectives. Chapter 6." University of Ottawa, 2014.
Villeneuve, Michael J. "Recruiting and Retaining Men in Nursing: A Review of the Literature." Journal of Professional Nursing 10, no. 4 (1994): 217-28.
Vogel, Gretchen. "The Forgotten Malaria." Science (2013): 684 - 87. Published electronically November 8th, 2013. www.science.sciencemag.org/content/342/6159/684.
Weismann, Kaare. "Neurosyphilis, or Chronic Heavy Metal Poisoning: Karen Blixen's Lifelong Disease." Sexually Transmitted Diseases 22, no. 3 (1995): 137-44.
Weiss, H.P. "Comments on the History of Syphilis." Revista de la Sociedad Peruana de Dermatologica 4, no. 2 (1970): 55-75.
Woolmer, Ronald. "Analgesic Drugs." British Journal of Anesthesia 27, no. 6 (1955): 276-85.
Wallace, John, and SRM Bushby. "Hazards of hypertherm Treatment." Lancet (1944): 459-64.
Ward, John W. "Twelve Diseases That Changed Our World." Emerging Infectious Diseases 14, no. 5 (2008): 866-66.
Weir, G. "Survey of Nursing Education in Canada." edited by Canadian Nurses' Association and the Canadian Medical Association, 591. Toronto: University of Toronto Press, 1932.

White, William A. "The Origin, Growth, and Significance of the Mental Hygiene Movement." Science 72, no. 1,856 (1930): 77.
Whitney, Willis R. "Research and Industry." The Scientific Monthly 35, no. 1 (1932): 34-41.
Whitrow, Magda. "Wagner-Jauregg and Fever Therapy." Medical History 34, no. 3 (1990): 294-310.
Wilson, M. "Dsm-Iii and the Transformation of American Psychiatry: A History." American Journal of Psychiatry, no. 150 (1993): 399 - 410.
Wochenschrift Klinische, Berlinger. "The Origin of Syphilis and How It Got Its Name." Lancet 43, no. 11 (1909): 1359 - 60.
Woolf, Steven H, Richard Grol, Allen Hutchinson, Martin Eccles, and Jeremy Grimshaw. "Potential Benefits, Limitations, and Harms of Clinical Guidelines." BMJ 318, no. 7182 (1999): 527-30.
Woolf, Steven H. "The Meaning of Translational Research and Why It Matters." JAMA 299, no. 2 (2008): 211-13.
Wright, David. "Getting out of the Asylum: Understanding the Confinement of the Insane in the Nineteenth Century." Social History of Medicine 10, no. 1 (1997): 137-55.
Yin, R.K. Case Study Research: Design and Methods. Thousand Oaks, California: Sage Publishing, 2003.
Young de, M. Encyclopedia of Asylum Therapeutics, 1750 -1952. Jefferson, North Carolina: McFarland & Company Inc., 2015.
Zalumas, J. Caring in Crisis: An Oral History of Critical Care Nursing. Philadelphia: University of Pennsylvania Press, 1995.
———. "73rd Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for the Year Ending March 31st, 1941, P.28." Toronto: Baptist Johnson Printer, 1941.
———. "76th Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals For the Mentally Ill, Mentally Defective, Epileptic and Barbiturate Patients of the Province of Ontario for the Year Ending March 31st, 1943." 1944.
———. "82rd Annual Report of the Hospital Division Department of Health Upon the Ontario Hospitals for the Mentally Ill, Mentally Defective, Epileptic and Habituate Patients of the Province of Ontario for the Year 1948." edited by Mental Health, 20 - 22. Toronto: Baptist Johnson, 1949.
———. "Discussion on the Treatment of Neurosyphilis with Penicillin ". British Journal of Venereal Diseases (1947): 100-03.
———. "The Kettering Family Papers, Special Collections and Archives, University Libraries." Dayton, Ohio: Wright State University, 1937."Connie B. Patient Record 22834 (Two Records), Q236, B354042. Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."
Doan, Charles. "The First Annual Conferrence on Fever Therapy." *The Science Monthly* 44, no. 5 (1937): 483 - 86. www.jstor.org/stable/16160.
Harman, L.B., Flite, C.A., Bond, K. "Electronic Health Records: Privacy, Confidentiality and Security." *AMA Journal of Ethics* 14, no. 9 (2012): 712 - 19.
Lutz, F.M. "Nursing Care in Artificial Fever Therapy." *The American Journal of Nursing* 36, no. 12 (1936): 1191-94.

"Stephen O. Patient Record 26599. Q339, B364731.Rg 10-278 Queen Street Mental Health Centre Fever Therapy Unit Records: Boxes 1-4."

Appendix A


DRooping of the left eye-lid
RESPIRATION
PULSE
TEMPERATURE
STOOLS
URINE
DAY OF DISEASE
DAY OF OPERATION
Intake
HOUR
DATE
NAME [redacted]
DISCHARGED
ADMITTED
Treat. Thurs. June 17/43
TEMPERATURE CHART
#3
Q4H
AGE
DOCTOR Byrnes
DISEASE G.P.S.
NO. 1
B.P. 110/76
Nacl gr XX
Colour good
Volume of pulse poor
Getting out of Cabinet
Rapid pulse, Volume poor
Course, Tremour of mouth
1 amp difficult to get down
1 Cold Compresses continuously to neck
Rapid
Deep abdominal contractions
Pupils of eyes dilated markedly
Becoming apprehensive, confused
tremour of extremeties, stiffening of body
Blood pressure very indistinct
Pantopon gr 1/6 (Interstit)
Caffine sodium benz amp 1
Glucose 50cc's 50%
Glucose 50cc's 50% intraven
Cabinet opened
Glucose 50cc's 50% (intrav
Coramine amp 1
O2 for 5mins
Caffine Sod benzoate amp II
7 15
7 30
7 45
8 00
8 15
8 30
8 45
9 00
9 15
9 30
9 45
10 00
10 15
10 30
10 45
Insight - Realizes he has Syphilis
Orientation - nil
States he has lost his memory. But thinks he is an Actress who has been shot.
When temp is more normal he converses readily of past life.
Has no knowledge of current events.
Total no. hrs over 105 - 1 1/4
B.P. - 84/70 - almost inaudible
1 1/4 hrs over 105°
Colour - Satisfactory
Pulse - poor quality
Temp on Return - 101 2
Cond - Satisfactory
Gladys Haggarty.