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Improving Huntington’s Disease Education for New Staff in a Voluntary Mental Health Facility

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Declaration Form

I declare that this dissertation, which I submit to RCSI for examination in consideration of the award of a higher degree MSc Physician Associate Studies, is my own personal effort. Where any of the content presented is the result of input or data from a related collaborative research programme this is duly acknowledged in the text such that it is possible to ascertain how much of the work is my own. I have not already obtained a degree in RCSI or elsewhere on the basis of this work. Furthermore, I took reasonable care to ensure that the work is original, and, to the best of my knowledge, does not breach copyright law, and has not been taken from other sources except where such work has been cited and acknowledged within the text.

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Date: 19th September 2018
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Abstract

Huntington’s Disease (HD) is rare neuro-degenerative disease that affects over 700 people in Ireland with a further 9,000 requiring information, support and care. Given the rarity of HD it appears that more education for healthcare professionals is needed. Without this education, people with HD may not receive the high quality care they require. Using the DMAIC framework for quality improvement (QI), this project investigated the need for HD education for healthcare staff in a voluntary mental health service in Dublin. Utilising QI tools such as driver and swim lane diagrams, a fishbone diagram and staff survey, the primary drivers leading to lack of specific HD education were identified. The result of the staff survey highlighted that 92% (N=25) of respondents ‘Strongly agreed’ and ‘Agree’ that, there is a need for HD education for staff and only 24% ‘Strongly agreed’ that they received appropriate HD training and education for caring for patients with HD. The staff induction process was identified as a potential implementation area to address this problem. The QI plan proposes to introduce three improvement strategies to the induction process: online access to HD videos and other resources, the provision of original HD leaflets and HD caregiver handbooks published by Huntington’s disease Association of Ireland, and finally to provide a HD presentation during the staff induction process. As a result, it is hoped that if staff can understand how care unfolds in HD, they could be better equipped to address patients’ needs. Therefore, providing best practice and care to patients in this facility.
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List of Abbreviations

HD: Huntington’s Disease
HDAI: Huntington’s Disease Association Ireland
HDPW: Huntington’s Disease Peer Workgroup
HSE: Health Service Executive
PAs: Physician Associates
MDT: Multidisciplinary Team
DMAIC: Define Measure Analyse Improve
PSDA: Plan Do Study Act
MHC: Mental Health Commission
QIP: Quality Improvement Plan
QI: Quality Improvement
LGBT: Lesbian Gay Bisexual Transgender
RCSI: Royal College of Surgeons
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Chapter 1.0 Introduction

1.1 Introduction

The Irish healthcare system is experiencing a climate of rapid change against a background of new government policies, severe financial constraints, staff shortages and the increasing expectations of service users\(^1\). The need for change in the health service is undeniable\(^1\). It is time to embrace a culture of change, one that promotes continuous quality improvement to be at the heart of providing high standards of care for patients\(^2\). Improving quality is everybody’s business and to achieve real and sustained improvements we must find new and better ways to achieve the outcomes that we want\(^3\).

This Quality Improvement Project Plan (QIP) will discuss the need for education and training amongst healthcare professionals involved in the care of people with Huntington’s disease (HD) in the context of potentially improving the quality of care for this cohort of patients. To put this QIP into context for the reader, a brief overview regarding HD will be discussed along with the organisation in which the project was conducted. Subsequently, the rationale for the project will be explained before setting out the aims and objectives of the QIP. It then outlines the role of the student both within the chosen organisation and in conducting the project. The final section in this introductory chapter will provide an outline of the structure of the QIP and a brief overview of each chapter.
1.2 Organisational Context

The organisation in which this project is set is a voluntary mental health teaching hospital located in south Dublin. The hospital is registered with the Mental Health Commission as an Approved Centre and aims to deliver quality care to patients\(^1\). The hospital provides specialist assessment, treatment and care to adults suffering from a range of severe and enduring mental health issues, such as Alzheimer’s disease, Schizophrenia, Parkinson’s and Huntington’s Diseases\(^4\). Patient care is provided by a multidisciplinary team (MDT). The MDT consists of psychiatry, medicine, psychology, social work, nursing, occupational therapy, physiotherapy and pharmacy. The facility is situated in a secluded site thus creating an environment that offers tranquillity, privacy and comfort to patients\(^5\). It consists of 114 beds with units for male and female residents\(^6\). This allows for an individualised approach to patient care. Referrals to the hospital are accepted from general practitioners, consultant psychiatrist and neurologists throughout the Republic and Northern Ireland\(^7\). A key focus area is the care and treatment of patients with HD coupled with family support structures. There is a specialised ward for patient with HD. This initiative is unique to this facility. It is the only national centre in Ireland that offers a high level of specialised care for those with Huntington’s. Thus, this will be a key focus area for this QIP and the subsequent section will highlight the rationale for quality improvement in this area.
1.3 Rationale for Quality Improvement

Huntington’s disease (HD) is named after Dr George Huntington, an American physician, who published the first article in 1872 detailing the symptoms and course of the disease. HD is an autosomal dominant inherited neurodegenerative disease. Each child with a parent with HD has a 50% chance of inheriting the condition. This progressive, incurable disease affects men and women, who usually exhibit symptoms in their 4th to 5th decade of life. However, in Juvenile HD about 5-10% of people experience symptoms before the age of 20 and about 10% experience onset of symptoms after the age of 60 (late onset HD). The cardinal symptoms of HD are involuntary movements and unsteady gait. The disease is progressive in nature; in the early stages, patients usually show some changes in personality and intellectual function. The mid-stage of the disease is characterised by an exacerbation of initial symptoms and difficulty in speech and swallowing. In the advance stage, patients become highly dependent on healthcare staff for their activities of daily living and may require long-term residential care.

HD has a prevalence of 10.6 to 13.7 individuals per 100,000 in western populations. The Huntington’s Disease Association of Ireland (HDAI) suggest that there are about 700 people with HD in Ireland and a further 3,000 at risk. It is estimated that 9,000 Irish families who are affected by HD require support, information and care but do not have access to specialist services. Despite the rapid growth in our understanding of the disease progression, and the pathogenesis of HD at both cellular and microscopic level, there is still no cure.
for HD\textsuperscript{13}. The Huntington’s Disease Society of America recommend that services need to be improved to provide the best care for this patients cohort\textsuperscript{14}. Simpson and Rea suggest that, there is no internationally recognised standard of care for patients with HD despite the need for such work on this topic\textsuperscript{8}. There is a real potential to create awareness, provide support and information for those impacted by HD.

1.4 Aim & Objectives

1.4.1 Aim

To improve Huntington’s disease education for new staff in a mental health facility that provides specialised HD care by at least 80% in 12 months.

1.4.2 Objectives

The objectives of this project are as follows:

1. To identify staff levels of knowledge about Huntington’s disease.
2. To investigate the number of staff requiring HD education.
3. To identify areas within the staff induction process which could include specific education on HD.
1.5 Role of the student in the organisation and project

This QIP was carried out as part requirement for the award of a Master of Science degree in Physician Associate (PA) Studies, School of Medicine at the Royal College of Surgeons (RCSI). My role within the chosen organisation is unique given my background as a psychiatric nurse within this facility. As a PA student, I was given the opportunity to complete a one-week clinical rotation at this hospital to gain clinical experience. However, it was during my time as a psychiatric nurse that I was fortunate enough to care for patients with HD. Following this experience and discussions with the nurses, healthcare assistants, clinical nurse manager and the clinical director, it became apparent that there is a need to improve HD education for new staff involved in the care of patients with HD. As a PA student, my influences and decision-making powers are limited, placing me at the bottom of the hierarchy. Therefore, it is crucial to seek the advice of key stakeholders and gain their approval in order to increase the chances of implementing the proposed QI into practice. As project lead I will establish a team, organise meetings with the relevant stakeholders to identify problems within the process and ultimately develop a QI plan to improve education for new staff.

1.6 Summary

This dissertation is divided into five chapters with subsections within each chapter. The introductory chapter has set the context of the QIP and highlighted the background, aims and objectives and the rationale behind the project. The
literature is reviewed in chapter two. This chapter presents evidence to support the need to improve HD education for healthcare professionals involved in the care of people with HD. The chapter ends by exploring the international standards in the treatment of HD. Chapter three describes the methodology and framework used in carrying out the project, while the outcomes and evaluation are presented in chapter four. In chapter five, the student presents a detailed discussion of the findings. The final chapter concludes by sharing the lessons learned and makes recommendation for future improvements.
Chapter 2.0 Literature Review

2.1 Introduction

This chapter reviews the literature for relevant research that can inform QIP. Building on the information presented in the preceding chapter, section 2.2 will outline the search strategy used to gather the relevant research. Section 2.3 organises the relevant research into themes. The first theme discusses the impact of staff knowledge levels on patient care. In the second theme, the impact of education and training in mental health is explored. Finally, the need for HD education and quality improvement in a mental health setting is considered. Section 2.4 discusses the implications of research on the QIP. Section 2.5 concludes the chapter with a summary.

2.2 Search Strategy

The databases used to search the literature relevant to the topic area were; Google Scholar, PubMed, CINAHL, PsycINFO and Cochrane library. The initial search was too broad and yielded several results, of which only three studies were relevant to the topic. To identify a comprehensive range of relevant literature a mesh style search was performed. Phrases included were ‘huntington’s disease/education,’ ‘training/education/mental health’, ‘education/training/healthcare professionals’ and ‘quality improvement/mental health’. To further focus the search, it was limited to a five-year timeframe. This was later extended back another five years, as the timeframe did not yield
enough relevant papers. The oldest paper cited dates as far back as 2005; this was included in the literature review as it still had current relevance. Additionally, research and studies pertaining to Huntington’s disease were obtained from key websites such as www.huntingtons.ie and www.ehdn.org. A total of 35 studies were reviewed and only 15 were included in the literature review. The studies included came from Ireland, India, United Kingdom, Malta, Norway, Canada, America and Netherlands.

2.3 Review of the Themes

Upon review of the literature, the four main themes that emerged are the impact of staff knowledge levels on patient care, the impact of education and training in mental health care, importance of education for staff caring for patients with HD and the role of quality improvement in healthcare. These themes will guide the main topic of discussion while also exploring the impact it will have on the QIP.

2.3.1 The impact of staff knowledge levels on patients care

Caring for patients with enduring mental health problems brings with it unique challenges. Mental health problems vary in terms of their aetiology and severity. The more complex the disease, the more challenges it poses for staff caring for patients with specific mental health conditions\textsuperscript{15}. In 2018, Kumar et al\textsuperscript{16} in a study conducted in India, investigated the challenges associated with the management of patients with Multiple Sclerosis (MS). The study identified 4 areas affecting the management of MS. Lack of early diagnosis, misinterpretation of MRI, lack of
continuous and early initiation of treatment\textsuperscript{16}. It suggests that early diagnosis of MS and early initiation of treatment are imperative in dealing with the challenges relating to management of MS. The study concludes that, there is a lack of knowledge among physicians regarding the importance of early diagnosis and treatment of MS\textsuperscript{16}. It suggest that, the higher the level of knowledge physicians have about the complexity and progression of MS, the better the treatment and patients outcomes. The study reports that, increasing physicians’ knowledge about early diagnosis, interpreting MRIs and early treatment would result in better management of MS. It recommends education for physicians on an annual basis to help increase MS awareness\textsuperscript{16}. It also suggests the need for educational programmes for patients and caregivers to help understand the complexity of the disease.

Similarly in the UK, a study was conducted by Baker\textsuperscript{17}, which set out to explore the relatives’ perspectives on the need for education and training for staff caring for patients with complex neurological conditions. A questionnaire was distributed to relatives who are related to patients with complex neurological conditions. The questionnaire consisted of 20 Likert statements and was measured on a five-point Likert-type scale, ranging from Strongly Agree to Strongly Disagree\textsuperscript{17}. The results suggested that the majority of respondents, 87.2\% (N=34) believe that, staff working in this specialised setting require specific education and training regarding complex neurological conditions\textsuperscript{17}. The study suggested that there is a direct link between the level of staff knowledge and the quality of care the
patients receive. The study suggested that staff working in specialist settings often rely on previous clinical experience and self-education to get the knowledge required to care for these specialised patient population\textsuperscript{17}. Thus, the author recommends specific staff education tailored to meet the need of this patient population. It proposes that staff in the specialised setting can educate other staff new to the setting, by promoting individualised care for each patient. The study concluded that, the more knowledge staff have about the complex neurological conditions they are treating, the better the health outcomes for patients\textsuperscript{17}. Furthermore, it recommends that an educational programme for staff needs to be patient-centered, incorporating the MDT, which includes patients, relatives and families. It is worthy of note that, more than one third of the relatives who responded in the survey did not know the medical diagnosis of their relatives\textsuperscript{17}. This is a limitation of the study, as it raises concerns about their recommendation for the need of staff education.

In keeping with the recommendation for adequate staff education and training for a specialised patient population, a 2014 Irish study by McCann and Sharek\textsuperscript{18} explored the lesbian, gay, bisexual and transgender (LGBT) people’s experiences, of mental health service provision in Ireland. The study set out to investigate service gaps and identify good practice in addressing mental health needs for this patient cohort. The survey sample consisted of LGBT people (n=125) who were over 18 years of age, and have received a psychiatric diagnosis\textsuperscript{18}. The finding indicates that 64% of respondents felt that mental health
professionals did not have the knowledge about LGBT issues. In addition, 43% of respondents felt that staff were insensitive to their needs\textsuperscript{18}. The authors suggested that a gap in the knowledge of mental health professionals' surrounding the experiences of LGBT and the Irish mental health services is still a problem. The study suggested that, lack of staff knowledge surrounding the issues concerning the LGBT people affects the therapeutic mental health interventions for this already marginalised group\textsuperscript{18}. It recommends the need for mental health professionals to increase their awareness and knowledge around the experience of the LGBT group. Similarly the College of Psychiatry of Ireland\textsuperscript{19} suggest that, by being aware of the issues concerning LGBT group, mental health professionals can help reduce and eliminate the barriers to accessing support within the Irish mental health service for the LGBT group\textsuperscript{19}.

Scerri and Casser\textsuperscript{20} in a 2013 study conducted in Malta explored the perceptions of nurses on the appropriateness of a psychiatric setting for patients with Huntington’s disease. Interviews were conducted with 10 nurses involved in the care of patients with HD\textsuperscript{20}. There were three themes emerging from the study. The need for staff knowledge regarding HD, lack of specialised staff within a mental health setting and need for an alternative care options. The findings suggested, that the psychiatric setting was deemed an appropriate setting for this patient cohort, during specific periods, specifically, when behavioural and mental health problems are most debilitating. Furthermore, participants suggested that, staff who have the knowledge in caring for patients with Huntington’s are better
able to provide comfort, safety and prevent falls for these patient cohort. The authors suggested that lack of staff knowledge regarding HD prevents quality care from being delivered to patients and their families. Furthermore, the study concluded with a recommendation for an ongoing education and training programme for staff on neurological conditions such as HD.

2.3.2 The impact of education and training in mental health care

The publication of ‘Quality Framework for Mental Health Services’ published in 2007 by the Mental Health Commission (MHC) highlights the impact of staff education and training, in improving quality in the mental health service. The MHC is an independent body established under the mental health act 2001 to promote the continuous improvement of high standards and good practices in the delivery of mental health services in Ireland. This report proposed that above everything else, the staff delivering the mental health service drive the quality of the patients experience and outcome. MHC outlines the need for mental health staff to receive education and training to develop an understanding of mental health issues and its impact on patients and their families. The publication’s success was highlighted five years later when ‘Your Views of Mental Health Inpatient Services’ was released. This was a national survey which examined 710 service users experiences of their recent stay across 28 approved centres. The findings from this survey highlighted the positive improvements made by healthcare professionals in the delivery of high standards of mental health care. Furthermore, the report suggested that education and training for healthcare
professionals is the foundation from which care that is both safe and of the highest quality can be provided\textsuperscript{22}.

A UK study by Tabet et al\textsuperscript{23} explored the use of an educational package in increasing awareness and knowledge of delirium among medical and nursing staff in an acute medical admission ward. There were a total of 250 participants recruited\textsuperscript{23}. The education package for staff consisted of a one-hour formal presentation, written management guideline, group discussion and follow-up sessions. The result of the study concluded that the incidence of delirium was reduced by 19.5\% in comparison to 9.8\% in the control ward. Additionally, there was more recognition of delirium cases in the ward where the clinical staff received the educational package\textsuperscript{23}. This is consistent with a similar study in Australia by Davison et al\textsuperscript{24} on evaluating the impact of training programmes for healthcare staff in dementia related challenging behaviours\textsuperscript{24}. The pre and post evaluation of the training programme suggest that, there was significant improvement in staffs’ attitudes regarding their knowledge and skills in managing residents with challenging behaviours.

Comparatively in Norway, Testad et al\textsuperscript{25} examined whether a two-day staff education programme followed by continuous monthly supervision could reduce agitation, reduce restraint and reduce the use of antipsychotic drugs in a nursing home. The study included 144 patients with dementia in four different Norwegian nursing homes\textsuperscript{25}. The results reported that the two-day educational programme
for staff improved quality of care for patients by reducing the number of restraints as well as the severity of agitation\textsuperscript{25}. The authors propose that staff education on the management of patients with dementia can have a significant impact in reducing the behavioural and psychological symptoms of dementia\textsuperscript{25}. In addition Spector et al\textsuperscript{26} in 2013 UK study suggested that providing the appropriate education and training for staff to manage patients with dementia improves safety and quality of life of these patient cohort.

In the Netherlands, A’Campo et al\textsuperscript{27} examined the impact of patient education programmes for Huntington’s disease. The premise of the study was to improve the quality of life for both patients and caregivers by educating and training them to develop coping techniques to deal with the psychosocial stressor of HD. The participants were divided into two groups that consisted of HD carriers that do not have symptoms (pre-manifest patients) and the other participants are HD patients with known symptoms (manifest patients). There were 40 manifest patients with 28 caregivers and 19 pre-manifest carriers with 14 partners\textsuperscript{27}. The education programme was delivered by specially trained healthcare professionals, which consisted of eight two-weekly sessions of 90 minutes duration. The eight sessions had HD specific content that was standardised across groups. In the first session, there was HD specific information about where to find information regarding HD, such as HD websites, names of experts in the field and specialised HD institutions\textsuperscript{27}. 
After completion of the HD education programme, participants were asked to fill out a programme evaluation questionnaire. The data was then analysed and the authors concluded that, there was a significant improvement in behavioral symptoms as well as anxiety in manifest HD patients\textsuperscript{28}. Furthermore, caregivers of the manifest HD patients reported less psychosocial burden. The Pre-manifest carriers and their partners improved their coping skills by seeking social support more often. The study demonstrated that the use of HD education programme is helpful in improving psychological wellbeing.

2.3.3 Importance of education for staff caring for patients with HD

According to Nance et al\textsuperscript{29}, HD is a complex neurological condition and not a lot is understood about this devastating disease by the general population and by healthcare professionals alike\textsuperscript{29}. The progressive nature of the disease over time may lead to dependence on healthcare staff for basic needs, activities of daily living and may progress to long-term care. This poses a high degree of complexity of care for healthcare professionals caring for patients with HD. Skirton et al\textsuperscript{30} suggest that patients with HD have complicated needs that necessitates specific education and training for healthcare staff\textsuperscript{30}.

In 2010 the Huntington’s Disease Peer Workgroup\textsuperscript{31} (HDPW) published a cardinal report titled ‘Lifting the veil of Huntington’s disease’. This peer group consisted of 16 members representing physicians, psychologist, nurses, ethicist, social workers, therapist and educators with experience in the care of people with
HD\textsuperscript{31}. This also includes family members whose children have HD. This expert group was created to promote excellent care for people with HD. The group had subcommittees in order to focus on issues consisting of education, care, research and public policy. The recommendation for healthcare professionals suggested that, it is paramount to educate patients, caregivers, family members and healthcare professionals about the various problems associated with HD\textsuperscript{31}. It recommended that, it should be mandatory to provide education for all new healthcare professionals working within a specialised HD unit. The authors concluded that, the lack of familiarity of healthcare staff about the unique needs and behavioural manifestations of HD compromises the provision of excellent care\textsuperscript{31}.

In 2011 Etchegary\textsuperscript{32} carried out a qualitative study in Canada. This consisted of 24 interviews of members of families affected by HD\textsuperscript{32}. The study sample was chosen to reflect a wide range of experience with HD that includes patients, caregivers and family members. The findings suggested the need for improvement in the quality of care for patients with HD\textsuperscript{32}. Participants recommended the need for better education for healthcare professionals about the complex nature of HD. Additionally, the author proposed that ignorance surrounding HD could have a detrimental effect on the provision of high standard of care to patients with HD\textsuperscript{32}. This resulted in a general lack of trust in the standard of care being delivered for HD patients. It recommended the need for the policy makers to recognise that HD is a complicated and devastating disease
that necessitates a high degree of care. The study suggested the need to provide patient centered care to individuals with HD and their families. Specifically, education and training programmes for healthcare staff caring for patients with HD\textsuperscript{32}. The same conclusion was drawn in Ireland whereby, the 2017 \textit{Slaintécare Report} recommends the need for the continuous support of staff in the delivery of patient centered care\textsuperscript{33}

### 2.3.4 Quality improvement in healthcare

According to Ross and Naylor QI has risen to the top of the healthcare plan over the past couple of decades, moving from relative obscurity to centre stage\textsuperscript{34}. The words ‘quality’ and ‘quality improvement’ have different meaning to people\textsuperscript{35}. The Institute of Medicine best describes quality in healthcare as one that encompasses six dimensions: safe, effective, person-centered, timely, efficient and equitable\textsuperscript{35}. While the HSE defines quality improvement as the collective and robust effort of all members of the MDT, patients and their families, researchers and educators to make changes that will lead to better patient experience and outcome\textsuperscript{3}. The level of quality care in mental health is moving at a slower rate in comparison to general medical conditions\textsuperscript{36}. Ross and Naylor recognises the importance of embracing quality improvement in mental health care in order to improve patient experience and outcomes\textsuperscript{34}. The MHC propose that to improve quality in mental health services the MDT must work collaboratively to monitor and evaluate what is working effectively and what needs to be done differently\textsuperscript{21}. 
In 2015 Brown et al conducted a QI project on reducing the occurrence of violence in an elderly mental health facility. The Plan-Do-Study-Act (PDSA) model was used to help decrease the number of violent incidents by 20% in three psychiatric wards\textsuperscript{37}. The authors reported a decrease in the number of violent incidents over a one year period and consequently, a reduction in rates of injury among staff. The QI project suggested that the improvements created a therapeutic environment on the ward, which enhanced staff morale. Similarly, in 2017 Taylor-Watts et al\textsuperscript{38} reported similar findings in a project conducted in The East London NHS Foundation Trust\textsuperscript{38}. The aim of the project was to reduce violence by 40% by the end of 2015 in six wards. The project adopted the PDSA cycles to test ideas for change and to determine whether change would result in an improvement. The result showed a 40% reduction in physical violence across the six wards. Additionally physical violence reduced from 12.1 incidents per 1000 occupied bed days in 2014 to 7.2 in 2015\textsuperscript{38}.

2.4 Implications for the Project

The literature highlighted that HD is a unique and complicated disease that, necessitates the need for specific HD education and training for healthcare professionals. The literature suggests that HD is a rare neuro-degenerative disease and not a lot is known about HD amongst healthcare professionals. Thus, the studies recommend specific education and training for staff caring for this cohort of patients. Furthermore, the literature suggests that, the more knowledge staff have about complex neurological conditions they are treating,
the better the health outcomes for patients\textsuperscript{17}. A key theme emerging from the literature is the impact of education and training on healthcare professionals. This is a strategy that could be adopted for this QIP. The above studies from the UK, Norway and Australia demonstrated favourable results in using education and training for healthcare professionals to improve patient experience and outcomes. The strategies used in these studies could be considered for this QIP. The literature suggests that the use of formal presentations, online resources and follow up sessions to test knowledge has demonstrated positive results. This ensures that healthcare professionals are equipped with the necessary education and training that contributes to maintaining high quality care for patients with neurological conditions. This is in keeping with the MHC in providing a mental health system that prioritises patient safety above all other concerns\textsuperscript{21}.

\section*{2.5 Summary}

This chapter presented the literature in support of the importance of HD education and training for healthcare professionals. The emerging themes from the literature explore the impact of staff knowledge on patient care. The need for HD education and the impact education will have on healthcare professionals was discussed. The implications for the project were considered. The subsequent chapter will discuss the methods adopted to guide this QIP.
Chapter 3.0 Methodology

3.1 Introduction

Having explored the relevant literature in the previous chapter, this chapter provides an overview of the different approaches to quality improvement in healthcare and the rationale for the application of the DMAIC (Define, Measure, Analyse, Improve and Control) framework to this QIP. Each stage of the DMAIC framework will be discussed in detail to provide a systematic breakdown of the QI process.

3.2 Approaches to Quality Improvement

QI has gained widespread recognition in the healthcare sector over the past few years and has become an ever-present feature in the global health system in the context of continuously delivering high quality service for patients. According to the HSE, QI is a collective and robust effort of all members of the MDT, patients and their families, researchers and educators, to make changes that will lead to better patient experience and outcome.

While the QI approaches discussed in this chapter vary, they inherently share a few comparisons. QI originated from the work of Dr. W. Edwards Deming and Dr. Joseph Juran, and was initially used by engineers at Bell laboratories in the 1930s and gained even more recognition in the 1950s by Toyota the Japanese car manufacturer. It was not until decades later that paediatrician Dr. Donald Berwick of the Institute for Healthcare Improvement explored quality control...
models in other industries before considering their application in the health care setting. The subsequent sections briefly discuss The Institute for Healthcare Improvement (IHI) Model for Improvement with the Plan-Do-Study-Act (PDSA) cycle, Lean, Six Sigma and the DMAIC framework.

### 3.2.1 The IHI Model for Improvement and Plan-Do-Study-Act Cycle

The IHI Model for Improvement is a simple strategy that is frequently used by many healthcare organisations to accelerate their improvement initiative. The model is unique in that, it provides a cyclical nature in impacting and assessing change by first seeking to answer three questions, which can be viewed below in Figure 1.

**Figure 1: IHI Model for Improvement**

![Diagram of the IHI Model for Improvement](image)
The cycle provides a guided process to problem solving in an experimental way to ascertain whether an intervention works or not, and to make adjustments accordingly in order to sustain the required improvement. The initial step Plan identifies the problem and area for which improvement can be made. The second step Do requires implementing the planned intervention. The Study phase is the diagnostic stage in which the data is collected and analysed to determine the effectiveness or lack thereof for the proposed intervention. The final phase, Act, is based on what has been learned from the preceding phases that is, either to implement or maintain the planned intervention or to end the project and return to the initial phase of the cycle.

3.2.3 Lean

Lean methodology was developed and used in the manufacturing process of Toyota cars. Lean is a continuous improvement process that is driven by the early identification of customer needs in order to reduce waste and improve value for the customers. Some leading health care institutions have also adopted the Lean principles as a way of reducing non-value added activities that may lead to poor patient experience and outcome. Lean is a cultural transformation that requires new skills, new attitudes and a new way of looking at quality improvement. The successful application of Lean is dependent on the use of root cause analysis to discover the causes of errors and then prevent against similar errors from occurring, that in turn improves the continuous quality
improvement process for patients. According to Jones and Pereira\textsuperscript{45} another aspect that is critical to achieving the best results in the application of Lean is the involvement of front-line service providers as well as senior management throughout the process\textsuperscript{46}.

3.2.4 Six Sigma

Motorola was credited with the development of Six Sigma, but the concepts used in Six Sigma are rooted in the quality improvement principle developed by the work of Dr. Edward Deming and that of Dr. Joseph Juran\textsuperscript{46}. The Six Sigma methodology uses a systematic method that relies on statistical analysis and mathematical modeling to identify the causes of errors in order to reduce the error rate. This QI strategy also examines variations within a given system or process and removing this variation to improve quality\textsuperscript{47}. Consistent with Toussaint and Berry\textsuperscript{41}, Lean and Six Sigma are often used in combination by a way of minimising variations and reducing waste whilst also intending to improve quality\textsuperscript{41}.

3.2.5 DMAIC Framework

The DMAIC framework is a combination of two individual models, Lean and Six Sigma. DMAIC provides a structured framework to help guide the quality improvement process whilst using various QI tools to gain thorough understanding of the process through each phase and a visual representation can be viewed in Figure 2 below\textsuperscript{48}. This approach consist of five phases: define
the process and desired outcome (D), measure performance (M), analyse the process to identify the cause of the problem (A), improve the process by making adjustments to eliminate problems (I) and control performance to assure improvement are maintained (C)\textsuperscript{49}. The different aspects of each phase and the QI tools useful for each phase are outlined later in this chapter.

**Figure 2: DMAIC Framework**
3.3 Rationale for the Framework Selected

There are many different models to QI in healthcare, thus the model used in any given QI initiative often depends on what system or structure requires improvement\textsuperscript{47}. It is imperative that the model selected fits into the organisational framework that supports and promotes a culture of continuous quality improvement\textsuperscript{2}. The QI model selected to help guide this QI process is the DMAIC framework. This framework was chosen with the intent that such tools will help to understand the QI process, and then using the data from the process to create lasting solutions to the identified problem. While the PDSA model has been shown to be a simple and effective tool in QI, one of the drawbacks according to Reed and Card is that it cannot be used as a standalone method\textsuperscript{43}. The DMAIC framework has been successfully used in multiple QIP for example, improving the operating room recovery process\textsuperscript{50}, improving efficiency in otolaryngology clinics\textsuperscript{51} and reducing length of stay post hip replacement surgery\textsuperscript{52}. The implementation of the DMAIC framework allows the user to define the problem, measure the number of insufficiencies within the process, collect and analyse the data, make adjustments to improve the process and finally maintain the improvement after the implementation\textsuperscript{44}. The subsequent section will use the DMAIC structured framework to help guide the QI process and explain the use of the various QI tools utilised in each phase of the DMAIC framework.
3.4 DMAIC Framework Overview

3.4.1 Define

It seems logical that the first step in any QIP is to define the problem. The define stage lays the foundation for this QIP. The appropriate tools necessary to ensure the success of this QIP are taken into consideration in the define stage. The following subsection discusses the use of QI tools such as stakeholder analysis, driver diagram and the swim lane process flow map to gain deeper understanding into the lack of HD education for new healthcare staff employed in this mental health facility.

3.4.1.1 Stakeholder Analysis

It was important to identify at the initial stages of the QIP the key stakeholders and seek their input. Hence, an informal meeting was arranged with one of the key stakeholders, the clinical director of this mental health facility and also the project sponsor to discuss the QIP. The completed stakeholder analysis is illustrated below in Figure 3. The stakeholders involved in this QIP are subdivided into different categories based on their level of power, interest and influence over the project.
Patients and families are at the heart of the rationale to improve HD education for new staff, and thus their inclusion in the stakeholder analysis is primarily based on the premise that QI will potentially improve their care and experience. This explains why patients and families are included in the low power, high interest category. Additionally, the nurses and HCA’s play an integral part in this QIP, as
they are the frontline staffs that care for patients with HD on a regular basis. It makes sense that any change to improve patient care and experience should start with the frontline staff. This is in keeping with HSE that the knowledge and expertise of the frontline staff are indispensable in any change and improvement process. Although the nurses and HCA’s have high interest levels and are willing to improve care for their patient cohort, unfortunately they are limited in what they can do to influence change. The discussion with the project sponsor acted as the catalyst for this QIP. Subsequent to this, the QIP gained support and interest from other key stakeholders such as the director of nursing, head of human resources and clinical nurse manager of the HD unit. This team of highly influential stakeholders is advantageous for the implementation and sustainability of the proposed QIP. This explains why they are included in the high power, high interest category.

3.4.1.2 Driver diagram

A driver diagram is a QI tool used to visualise the steps to take that will lead to improvements in line with the overall aim. This technique was particularly helpful as it accommodated the plan and structure of the project. This tool also assisted in the understanding of the aim of the project, and to explore the potential ideas that could help in carrying out the improvement initiative. The driver diagram consists of four columns, the first column is the ‘aim statement’ that is: to improve HD education for new staff in a mental health facility by at least 80% in 12 months. The second column is the ‘primary drivers’, which
consist of the high-level drivers such as the induction process that would influence the desired outcome. The third column is the ‘secondary drivers’ which highlights specifics driver like HD training and utilisation of resources that are necessary to achieve the primary drivers. Finally the ‘change ideas’ provides the change concepts to address the secondary drivers; this is discussed in detail in the ‘improve’ stage of the framework. Therefore, the primary driver for this QIP is the staff induction process, the stakeholders have identified this as an area that will lead to the desired aim of improving HD education for new staff. The subsequent section will use the swim lane process flow map to get an in-depth understanding of the staff induction process.

Figure 4: Driver Diagram
3.4.1.3 Process Flow Map with Swim Lane diagram

The swim lane diagram provides a visual display of the existing staff induction process and enables the student to identify potential areas for improvement within the existing process\textsuperscript{58}. This QI tool provides a systematic road map of the way things are happening, the order in which things happen and the person who is responsible for making that part of the process happen\textsuperscript{56,57}. The swim lane diagram enables an in-depth understanding of the staff induction process from start to finish. This gave a birds-eye view of the process and thus revealed areas where improvement could be made to achieve the overall aim of improving HD education for new healthcare staff. The swim lane diagram is illustrated in Figure 5 below.
Figure 5: Swim Lane Process Flow Map
3.4.2 Measure

The second stage of the DMAIC framework is to determine which metrics to use to measure the underlining problem. Following discussion with the project sponsor in addition to other key stakeholders, the consensus was to first quantify the number of new healthcare staff employed within the mental health facility. The second was to measure the need for HD education through a staff survey. The head of HR provided data for the number of new healthcare staff employed within the organisation in the last 19 months from January 2017 to July 2018. There were a total of 130 new healthcare staff included in the data with a total of 13 weeks of induction, see Table 1 below. The team decided on a total of 19 months for data collection, due to the fact that there was a high volume of new staff recruited during the months of January, March and June. This is consistent with Green et al\textsuperscript{59} that mental health services have high staff turnover due to the emotional demands associated with caring for patients with mental health issues\textsuperscript{59}. Furthermore, the high volume of new staff was as a result of the opening of a new ward and the on-going expansion in the organisation. The months in which there was no induction training for new healthcare staff are highlighted in red. This was a result of the small number of new staff recruited during those months. Hence, the new healthcare staff from that month were included in the next induction month.
Table 1 - Number of new healthcare staff in the last 19 months.

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Number New Staff</th>
<th>Number Induction Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>January</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>2017</td>
<td>February</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>2017</td>
<td>March</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>2017</td>
<td>April</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>2017</td>
<td>May</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>2017</td>
<td>June</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>2017</td>
<td>July</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>2017</td>
<td>August</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2017</td>
<td>September</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>2017</td>
<td>October</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>2017</td>
<td>November</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>2017</td>
<td>December</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>January</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>February</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>2018</td>
<td>March</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>April</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>2018</td>
<td>May</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>2018</td>
<td>June</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>July</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>130</td>
<td>13</td>
</tr>
</tbody>
</table>

Furthermore, to capture the staff perspectives regarding the need for HD education, a Likert scale questionnaire was devised. A Likert scale contains a series of statements that is designed to measure individual’s attitudes, beliefs, or perceptions about a topic. The questionnaire contains 10 statements or (Likert items). The respondents are then asked to choose one option from a list of response choices that best aligns their views about the statement. Each answer choice is assigned a numeric value for the purpose of analysis. The questionnaire was devised by the QI Team (please see appendix 1), as there are
no similar studies in the literature focusing on this specific area. The questionnaire appraisal system was used in the creation of the survey. In order to determine whether the questionnaire and scale was clear, reliable and valid, it was pre-tested among five members of staff (three nurses and two HCA’s) from another ward that was not involved in the study.

The questionnaire was initially intended for staff that have completed their induction process in the last 6 months. However, it was advised by the QI team that it would be more advantageous to focus on the healthcare staff working in the specialised HD ward. The total number of respondents (n=25) participated in the survey out a possible 40, which is a 63% response rate. Table 2 below displays the results of the survey for the 25 respondents. The respondent’s opinions to the set of statements will be further analysed in the subsequent section.
Table 2- Results of each statement in percentages

<table>
<thead>
<tr>
<th>Respondents n=25</th>
<th>SD &amp; D</th>
<th>N</th>
<th>A &amp; SA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Statement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Huntington’s disease education was included in my induction training.</td>
<td>28%</td>
<td>20%</td>
<td>52%</td>
</tr>
<tr>
<td>2. Patients with Huntington’s disease have specific care needs that require specific training for healthcare staff.</td>
<td>8%</td>
<td>4%</td>
<td>88%</td>
</tr>
<tr>
<td>3. It is important to have Huntington’s disease training before caring for patients with this disease</td>
<td>9%</td>
<td>0%</td>
<td>91%</td>
</tr>
<tr>
<td>4. Huntington’s disease training will give me the competence I need to provide high standard of care for patients with this disease.</td>
<td>8%</td>
<td>0%</td>
<td>92%</td>
</tr>
<tr>
<td>5. During my induction training, I was provided with the appropriate skills I needed to care for patients with Huntington’s disease.</td>
<td>28%</td>
<td>24%</td>
<td>48%</td>
</tr>
<tr>
<td>6. Huntington’s disease was an important aspect of my induction training.</td>
<td>36%</td>
<td>28%</td>
<td>36%</td>
</tr>
<tr>
<td>7. On the whole, I think there is a need for Huntington’s disease education for healthcare staff.</td>
<td>8%</td>
<td>0%</td>
<td>92%</td>
</tr>
<tr>
<td>8. I am satisfied with my level of knowledge about Huntington’s disease.</td>
<td>12%</td>
<td>24%</td>
<td>64%</td>
</tr>
<tr>
<td>9. Huntington’s disease training should be mandatory for all new healthcare staff.</td>
<td>8%</td>
<td>4%</td>
<td>78%</td>
</tr>
<tr>
<td>10. I would be willing to attend Huntington’s disease educational training to improve my knowledge about the disease.</td>
<td>0%</td>
<td>4%</td>
<td>96%</td>
</tr>
</tbody>
</table>
3.4.3 Analyse

In the third stage of the DMAIC framework the data collected during the measure phase is analysed and the potential causes of the lack of specific HD education will be explored using the fishbone diagram. This will enable the identification of gaps between the current process and the improved process. The data outlined that; in 2017 alone there was a total of 96 new healthcare staff employed in this mental health facility. However, in 2018 the data collected from January to July revealed that there was a total of 32 new healthcare staff. This figure is expected to rise by greater than 45% with the new specialised rehabilitation programme in motion within this mental health facility. This indicates that on a monthly basis the mean average of new staff starting in the organisation is eight each month. This volume of new starting staff each month could warrant a specific HD education and training programme delivered on a monthly basis. The emerging evidence from chapter two supports the importance of education and training for healthcare professionals, as it provides staff with the skills and competence to deliver high standards of care to patients.

The result of the survey provided some insights around the perspectives of staff regarding their need for HD education; the complete tabulated results can be viewed in Appendix 2. Firstly the result of the survey revealed that 92% of respondents working in the specialised HD ward SA/A and 8% D that, there is a need for HD education for healthcare staff. However the response to the
statement that ‘HD education was included in my induction training’ 52% SA/A, 20% N and 28% D/SD. Therefore, if 92% SA/A that there is a need for HD education and 52% SA/A that HD education was included in their induction training, then perhaps there is a variation in the induction training being delivered or the current HD training does not give specific HD information. This is quite speculative and the only way to accurately understand the reasons behind the response to each statement is through interviewing the staff. This would be a laborious process and beyond the scope of this QIP. Nevertheless, the responses from the staff survey clearly warrant a need for improvement in HD education.

Furthermore, 92% of respondents SA/A that HD training will give them the competence that they need to provide high standard of care for patients with HD. Interestingly, 64% SA/A and only 12% SD/D that they are satisfied with their level of knowledge about HD. Perhaps this may be due to the difference in the number respondents who have been working in the specialised HD unit for years in contrast to newer staff. Despite this 96% of respondents SA/A that they would be willing to attend HD educational training to improve their knowledge about the disease. It is worthy to note that 92% of respondents SA/A that HD training will give them the competence that they need to provide high standard of care for patients with this disease. This is imperative as the aim of the QIP is to improve HD education for new healthcare professionals in the effort to improve patient’s experience and outcomes.
3.4.3.1 Fishbone (Ishikawa) diagram

The fishbone (ishikawa) diagram or the cause-and-effect diagram\textsuperscript{62} was the tool selected for this stage of the DMAIC framework. This is a useful tool used to gain deeper understanding into the possible factors causing lack of specific HD education for new healthcare staff during the induction process. Following discussions with the key stakeholders, a list of contributory factors causing lack of specific HD education for new healthcare staff was constructed. This was achieved by grouping the causes into four headings that are process, people, organisation and resources. The identified causes were transferred onto a fishbone diagram to give a visual representation of problem areas. This is illustrated in Figure 6 below.
The Process category refers to factors at play within the current induction process contributing to lack of specific HD education for new staff. The first factor identified is the variation of the induction process, meaning each month varies, as it is dependent on the availability of the nurse management team to facilitate a particular training group. Furthermore, HD education is briefly covered in the mental health presentation with little emphasis placed on the appropriate HD information required to enable staff to provide high standard of care for this patient cohort. Finally, there are HR induction packs given to new staff on the first day of induction, containing all the appropriate information about the hospital. However, there is no HD education pack included in induction process.
In the People category one of the key points that was highlighted was that there is no designated person to deliver HD education for new staff. Prior to this, there was a member of the nurse management team that had a specific interest in HD who delivered all HD content, however there is no one to deliver HD content at present. The shortage of staff was also recognised as a contributory factor coupled with the lack of a HD clinical nurse specialist to facilitate HD education for new healthcare staff. The Resources category identified the lack of utilisation of the existing resources available within the mental health facility. One of the areas identified is the lack of use of HD patient videos on the hospital website to educate new staff. Another area identified was the lack of use of HD leaflets and caregiver handbooks during the induction week. Organisation category explores the factors within the facility that could be a contributory factor to the problem. The area identified was the lack of continuous communication with frontline staff; and there was no mandatory HD specific training for new staff.

It is evident from the fishbone diagram that there are several contributory factors causing a lack of HD education for new staff within the induction process. At this point of the QIP, it was important to create a plan for improvement and explore the forces for and against improvement, in order to determine what will support or limit the QIP if it were implemented. The tool used to achieve this is called Force Field Analysis (please see appendix 3). The findings from this tool clearly
indicated that the forces driving the change initiative are greater than the forces against.

3.4.4 Improve

The improve stage of DMAIC framework focuses on solutions that will have an impact on the overall aim of the QIP. This stage provided an opportunity for the QI Team to use creative thinking and brainstorm ideas that will lead to an improvement. Following one-to-one discussions and brainstorming sessions, multiple ideas were discussed to improve HD education for new staff. One of the key areas of focus was the staff induction process, which was identified by the stakeholders to have the highest potential for improving HD education for new staff. The team focused on areas within the induction process where high yield interventions could be implemented to achieve the desired improvement. Each idea that was suggested was evaluated based on the simplicity to implement, minimal cost to the hospital and the overall impact to the goal of the QIP\textsuperscript{49}. In keeping with these criteria, there were three change ideas chosen that will potentially result in improvement. The proposed solutions to improve education for new staff are discussed in the subsequent section.
3.4.4.1 Project Plan

The aim of this QIP is to improve education for new healthcare staff by introducing a ‘HD education package’ to the staff induction process facilitated by a member of the medical team or nurse management team. The swim lane diagram allowed for identification points within the current process that a ‘HD education package’ could be introduced that may lead to an improvement. The proposed solutions could be introduced sequentially into the staff induction process. The first improvement idea proposed could be introduced in the pre-induction stage. The new staff members could be contacted via email with links to the hospital website where HD videos and resources are available. This is not included in the existing process. A’Campo et al.\textsuperscript{27} adopted this method in their patient education programme for HD as discussed in chapter two. This is an effective strategy that could be implemented without changing the existing process. Therefore, this proposed solution could be conveniently implemented without disrupting the process or adding to the workload.

The second improvement idea is the use of already available HD leaflets and HD caregiver handbooks at induction. This proposed solution could be implemented on the first day of the staff induction process. On the first day of induction the HR department welcomes the new staff and provides them with the HR induction pack that includes an overview of the hospital and the services available for patients within the facility. However, this pack does not include specific HD information. The proposed intervention could include a HD leaflet and HD
caregiver handbook. The HDAI\textsuperscript{12} recommends this and it could be a great source of information for new staff. The above solutions are relatively simple and effective interventions to improve HD education for new staff in the organisation. However, there could be potential drawbacks. These improvement ideas cannot be implemented as standalone solutions as it is difficult to determine if the link to hospital website was used to access the recommended resources, or if the HD leaflet and HD caregiver handbook were read by staff. Therefore, it is proposed that these change ideas are introduced sequentially into the staff induction process to maximise success.

The final improvement proposed to improve HD education for new staff is a one-hour formal HD presentation on day two of the staff induction process. In chapter two the positive results of using presentations as a method to improve education for healthcare professionals was outlined\textsuperscript{23,24}. There is a one-hour gap that could be utilised to give a HD presentation to new healthcare staff. The presentation could be named ‘10 things you need to know before working on a HD ward’ please see Appendix 4 for the complete power point presentation. This presentation was constructed by the QI Team based on the HDAI caregiver handbook, which focuses on the appropriate HD information and skills required to care for patients with HD. Furthermore, the need for HD education for the purpose of providing better quality care was highlighted in the staff survey. This one-hour HD education would include group discussions and case scenarios as these strategies have proven to be effective in retaining information\textsuperscript{26}. In addition,
it would be recommended that a member of the medical or nurse management
team to facilitate the HD education. A PA or clinical nurse specialist\textsuperscript{63,64} would be
suitable for this initiative and could be considered in the future if either were
employed by the hospital. Furthermore, the lack of a designated person to deliver
HD education was one of the contributory factors limiting HD education. For the
sustainability of this QIP, it is important that there is no reliance on certain
individuals to facilitate the HD programme. This ensures the continuity of the
proposed plan. The revised swim lane diagram can be viewed in Figure 7. The
three improvement ideas proposed are highlighted with a yellow star in the
revised swim lane diagram.
Figure 7: Revised swim lane process flow map
The team would recommend a pilot of this QIP moving forward based on the premise that if healthcare providers can understand how care unfolds in HD, they would be better equipped to address patients' needs. Following the implementation of the pilot, the improvement initiative could be evaluated to determine if the change was an improvement. If so, how can gains be sustained and incorporated as part of routine practice? This will be discussed in the Control stage in detail in the subsequent chapter.

3.5 Summary
This chapter has given a general overview of the different approaches to QI and the application of DMAIC framework to guide the QI process. The Define stage laid the foundation for this QIP. This stage allowed for a deeper understanding of the problem by using QI tools such as a stakeholder analysis, driver diagram and swim lane diagram. In the Measure stage, the problem was measured by conducting a staff survey N=25. The results of the survey were subsequently analysed in the Analyse stage. This revealed that there is a need for HD education. Finally, the Improve stage provided a stepwise approach to the solutions that could have an impact on improving HD education for new healthcare staff within this private mental health facility. The Control stage will be discussed in detailed in the next chapter entitled Evaluation.
Chapter 4.0 Evaluation

4.1 Introduction
This chapter provides an overview of the proposed improvement plan and the expected outcomes. An explanation of how the propose plan could be evaluated is shared. The Control phase of the DMAIC is outlined and the strategy to monitor and review the plan is discussed. The expected results and the dissemination plan are explored. This chapter concludes with a summary.

4.2 Overview of QI Plan and Expected Outcomes

The aim of this QIP is to improve HD education for new healthcare staff in a voluntary mental health hospital. The DMAIC framework was deemed appropriate to guide the quality improvement process. The QI journey began with a literature review to search for relevant studies pertinent to the project’s aim. The studies from the literature acted as the foundation for which improvement strategies were developed to achieve the desired aim of the project. This gave the opportunity to draw on national and international studies on how education for healthcare staff can be implemented to improve patient care and experience. Based on the emerging themes from the literature and discussions with key stakeholders, the staff induction process was identified as the key focus area to achieve the aim of the QIP. The swim lane diagram identified areas within the existing process where improvement strategies could be implemented to improve HD education. The perspective of staff was sought to investigate the need for HD education.
This was achieved by conducting a staff survey, which revealed that 92% of staff in the specialised HD ward SA/A that there is a need for HD education. The data collected helped in demonstrating the scale of the problem. The data highlighted the need for a mandatory HD education for all new healthcare professionals involved in the care of patients with HD. This is in keeping with the recommendations in the report titled ‘Lifting the veil of Huntington’s disease’ published by the HDPW. The proposed improvement plan was discussed with QI team, and it was suggested that to maximise success the QIP could be introduced sequentially at three distinct points within the staff induction process. First, the new staff could be contacted via email at the pre-induction stage, links to HD videos on the hospital website and useful resources on HD could be made available. Second, HD leaflets and the HD caregiver handbook could be introduced on the first day of induction. Finally, a formal one-hour presentation could be given on day two of the staff induction process.

4.3 Evaluation

4.3.1 Aim of Control stage of DMAIC

The Control stage is the final step in the DMAIC framework. This stage comes after the proposed improvement plan has been implemented and outlines the need to ensure maintenance of the proposed improvement. A pilot study could be introduced in order to monitor the impact of the proposed QI plan facilitated by a PDSA cycle. Upon completion of the pilot the process would be evaluated. The
aim is to evaluate the improved process and sustain its implementation over time. The Health Foundation\textsuperscript{65} suggest that it is vital to pay attention to spreading learning and mainstreaming the clinical relevance of the improvement plan\textsuperscript{65}. The QIP, if successful, could be sustained by changing policies by making the HD education package mandatory in the staff induction processes.

4.3.2 Monitoring & Review

The MHC\textsuperscript{22} propose that to improve quality in mental health services the multidisciplinary team must work collaboratively to monitor and evaluate what is working effectively and what needs to be done differently\textsuperscript{22}. To evaluate the impact of the proposed improvement, data could be collected. A pre and post evaluation of staff feedback could be completed at the end of the HD presentation. This data could be collected over a 12-month period to measure the effectiveness of the proposed improvement plan. The results of the data collected could be displayed using visual process control. This is a strategy used in business to clearly communicate results using visual signals as oppose to using text and written instructions\textsuperscript{66}. This is based on the idea that something that is visible and in plain sight can be remembered more easily\textsuperscript{66}. Following the implementation of the pilot an interview could be conducted to gain an even deeper understanding of the opinions of staff regarding the proposed improvement plan. The feedback from staff could identify areas within the process that could be refined and further improved. Gharaveis et al\textsuperscript{67} propose
that, receiving feedback on service provision is a vital component used in healthcare to achieve desired outcomes\textsuperscript{67}.

If the QIP were implemented and positively impacted staff and patients this could be spread throughout the facility and could inspire QI initiatives across the hospital, this could enable staff to celebrate success. Ross and Naylor\textsuperscript{34} propose that celebrating the achievement of a collective goal can be a powerful driver in sustaining success\textsuperscript{34}. The success of the QIP could create the momentum for developing new approaches to improve patient care and reduce waste. Though the QIP aim is to improve HD education, in the hope of improving the standard of care for patients with HD. It is also important to monitor the unintended consequences of QIP\textsuperscript{68}. This should be reviewed and monitored closely as change can have unwanted outcomes on other departments within the hospital. At this point monthly meetings with the management team could be arranged to monitor the improvement process.

4.3.3 Expected Results

The studies presented in chapter two demonstrated that educating healthcare professions could be an effective solution to improve patient’s quality of care and outcomes\textsuperscript{17,23,32}. Therefore, it is expected that if a HD education package were implemented then staff satisfaction regarding the provision of HD education could be improved. Thus, it is hoped to decrease the percentage of staff agreeing with the need for HD education during the induction process, following the implementation of this QIP. The results of the survey outlined that 92\% of staff
SA/A with the need for HD education for new staff. Only 48% of staff SA/A that during their induction training, they were provided with the appropriate skills needed to care for patients with HD. It is anticipated that following implementation of this QIP, this percentage could increase significantly. After discussion with the QI Team it was established that an increase of at least 80% could be achieved. However, it is difficult to determine an exact increase when using a survey, as results are individual to staff opinions.

4.4 Dissemination Plan

The dissemination plan involves distributing the project knowledge throughout the organisation and potentially other mental health facilities. This could be achieved initially by meeting with all stakeholders to give feedback on the project’s success to date. Alternatively, dissemination could be sought, through poster presentation of the work in the ward and publishing of the QI results on the hospitals website. This method of dissemination could reach a wider audience including patients, families and other healthcare professionals.

4.5 Summary

This chapter details how the planned QI would be evaluated and maintained over time following implementation. The control phase of DMAIC and the expected outcomes were discussed. The chapter concluded with a dissemination plan of how the QIP could be shared.
Chapter 5.0 Discussion & Conclusions

5.1 Introduction

In this final and concluding chapter, the impact of the project is discussed in relation to the implication the project could have on the hospital, its stakeholders and practice. This chapter will critique the QIP and explore the strengths and limitations of the project. The recommendations that will facilitate the success of the project and the lessons learned will be shared. Finally, this chapter concludes by summatimg the salient points of the QIP.

5.2 Project Impact

The aim of this QIP is to improve HD education for new healthcare staff caring for people with HD. This is based on the premise that HD education could improve the knowledge and skills healthcare professionals have about this disease. The literature in chapter two highlighted that education and training for staff has a positive effect on patient outcome\textsuperscript{17}. At the time of writing, there is no cure for HD, however there is hope for the future. Until then, it is important that healthcare professionals find new and creative ways of improving care for people suffering with this disease\textsuperscript{29}. This QIP proposes a strategy that could improve the goal of the treatment of HD; that is to reduce the burden of symptoms, improve function and enhance quality of life\textsuperscript{69}. Above all else patient safety and quality is at the heart of this proposed improvement plan, thus it would be anticipated that this QIP could have a positive impact on the patients of this hospital and their families.
5.2.1 Stakeholders

This mental health hospital is the only national centre in Ireland that offers a high level of specialised care for those with HD\textsuperscript{70}. Therefore, there is a need for the stakeholders to continuously strive to improve the services and up-skill the team to provide high standard of care for patients with HD\textsuperscript{71}. Improving HD education should be on the highest priority of all the stakeholders involved\textsuperscript{31}. The support of various key stakeholders was instrumental in the development of this QIP. The key stakeholder expressed the need for HD education, as a primary driver in improving quality of care for patients with HD. Therefore, the implementation of the proposed plan could have a positive impact on the stakeholders involved. The new healthcare staff could be provided with HD education and training, which could enable them to confidently and competently provide high standard of care to this patient cohort. This is in keeping up with the HDPW\textsuperscript{31} recommendations in promoting excellence in the care of those with HD. Above all else, the individuals with HD will receive person-centred care that meet their complex needs. Patients and families alike could receive appropriate care that is tailored to their specific and unique needs.

5.2.2 Practice

The proposed QIP would have significant impact on the delivery of care to patients with HD. This is based on the premise that, if healthcare staff can understand the progression of the disease, they could be better equipped to meet the complex needs of this patient cohort\textsuperscript{31}. If the HD education package
were implemented then it is hoped that new staff could feel more satisfied with their training and induction process, whereby potentially enabling them to care for these specialised patients. Additionally, the project could create a culture where healthcare staff continuously question practice in the context of evidence to support, what it is they do, why they do it and how it can be done in a more effective and efficient way\(^2\).

**5.3 Strengths of the project**

The strengths of this project are that it addresses the need for specific HD education for staff caring for people with HD in Ireland. This complements the work the HDAI\(^1\) to raise public awareness, provide support and information to those affected by HD. It is estimated that 9000 Irish families are affect by HD and family members may require specialist care\(^1\). When that time comes, there could be specifically trained healthcare staff to provide high quality care for people with HD and their families. This project is supported by studies that propose the need for education for staff caring for people with complex neurological diseases.

From the perspective of the project site, a key strength of the project is that it addressed a key problem that was relevant to the organisation. The support from various key stakeholders, lead to the propose solutions that addresses the need for HD education for staff. The data collected from the staff survey demonstrated the scale of the problem, which directed the QIP. Another key strength of the project is the use of the DMAIC framework. The QI tools used within the framework identified areas within the staff induction process that required
improvement. Consequently, the project was able to utilise the existing structures within the hospital to support the QIP rather than creating a new process. This proposed improvement plan is cost neutral, uses existing resources and does not increase staff workload. This is in keeping with QI initiatives and would be deemed as strengths of the project.

5.4 Limitations of the project

There are several limitations to this project. The aim of the QIP is to improve HD education for new healthcare staff. However, the plan was not piloted and therefore it is difficult to evaluate if the proposed plan would have the desired outcome. Additionally, there were a total of 25 respondents out of a possible 40 healthcare staff working in the specialised HD ward. The survey only had a 63% response rate. The findings from the survey may not truly reflect the opinions all the staff working on the ward. In addition, this project did not conduct an interview to gain an in depth understanding of staff opinions regarding the need for HD education, which could have supported the survey findings. Finally, the opinion of patients and families was not sought as part of this project. It may be worthwhile seeking input from patients and their families regarding their care. This could have supported survey findings. This could increase the chances of success and ensure that improvements are tailored to patients' needs and priorities.
5.5 Recommendations

Having undertaken the planning process, this section shares three recommendations that would facilitate the success of this QIP. First, this project would recommend an amendment of hospital policy to include a mandatory HD education for new healthcare staff. This could help to maintain the continuity of high standard of care for patients with HD. Second, the introduction of a ‘HD Champion’ on the specialised HD ward to provide follow-up HD sessions to new healthcare staff would be a recommendation. This would be based on one-to-one sessions and group discussions to continuously support new staff through learning about, how care is tailored for each patient with HD. Finally, the use of ‘HD Buzz’, an Internet portal that provides updates and advancement in HD research with the aim of helping the public understand the latest HD science would be recommended72. This is a useful resource which could be shared through the hospital Intranet, so staffs are kept up-to-date.

5.6 Learning about Quality Improvement

On reflection of this QI journey, I have gained broader insight on the significance of QI in healthcare. The Irish healthcare system is changing at an overwhelming pace; to keep up healthcare professionals must come up with new ways of improving services1. QI has an integral role to play. I have compiled my learning into ‘six key lessons’ that have emerged during this QIP.
1. QI takes time

It was important to focus on the journey and not the destination. Improvement does not happen overnight, it takes time\textsuperscript{34}. QI involves extensive planning, measuring and analysing data, gaining support of stakeholders, implementing and sustaining the improvement.

2. QI is not a journey to travel alone

It is important to identify key stakeholders from the onset, as it is the support and ‘buy in’ of the team that will lead to the success of the QIP\textsuperscript{34}. It is the involvement of the QI team that allowed us to identify and resolve the problem of lack of specific HD education for new staff. QI is more likely to result in the desired outcome when it is developed with, as opposed to being enforced on the team\textsuperscript{53}.

3. QI approaches are essential

The DMAIC framework helped to guide the QI process. This gave a structured framework, which has various QI tools embedded within it to help visualise the current process, identify areas for improvement and create lasting solutions.

4. Data collection is fundamental to QI

The staff survey was indispensable to this QIP as it allowed the student to demonstrate the scale of the problem. The quantitative data from the staff
survey supported the rationale for improving HD education. This was a major lesson as I underestimated the time and energy it would take to gather and analyse the data. If I were to do this QI planning again, I would allocate more time to planning the measure and analyse phases of the DMAIC framework.

5. QI is not easy

I had some challenges along the way; some approaches worked better than others, but that is part of the learning process. QI is not a straightforward process and unplanned consequences may emerge along the way, this should be treated as a learning opportunity for future progression. The lessons I learned from this QI journey will add to my knowledge and skills as a PA in the future.

6. QI is about the patient

Above all else, quality improvement puts the patient at center stage. The rationale for this QIP is in the interest of promoting and maintaining high quality care for people with HD through educating healthcare staff about this complex disease. As outlined by the HSE framework for improvement (please see Figure 9) this is based on the premise that educating and training staff on how to care for people with HD, could subsequently improve patient experience and outcomes\textsuperscript{22}.
5.7 Summary and Conclusion

In the preceding chapters, the journey of this QI project was outlined facilitated by the DMAIC framework. The literature in chapter two set the foundation for which improvement strategies were developed. The DMAIC framework was deemed appropriate to guide this QI process and the use of QI tools such as a driver diagram and swim lane diagram helped to identify the areas within the process that required improvement. The QI plan proposed to introduce three improvement strategies; Provide staff with useful resources, HD leaflet with caregiver handbook and a formal one-hour HD presentation. The presentation was adapted from the HDAI handbook, which focuses on the appropriate HD information and skill required to care for patients with HD. The result of staff
survey highlighted that 92% SA/A that there is a need for HD education for staff within the project site. The proposed plan of increasing education and training for staff caring for people with complex neurological conditions has demonstrated positive results in better patient experience and outcomes\textsuperscript{16,17,25}. Upon implementation, a set of recommendations could guide the success of this QIP. This could ensure the continuity of high standard of care for patients with HD. The QI plan utilised the existing structures and resources within the project site making it cost neutral. This is in keeping with QI strategies\textsuperscript{49} and it is considered as one of the strengths of the project. Above all else, QI puts the patient at center stage and the rationale for any QI initiative is to first and foremost seek to provide high quality care\textsuperscript{3}.

Though this QIP was undertaken as part requirement for the award of a Master of Science degree in Physician Associate Studies, it is not just an academic exercise. There is a real opportunity to make changes to practice that could have a significant impact on this highly vulnerable cohort of patients as well as their families\textsuperscript{73}. 
6.0 References


71. van Walsem MR, Howe EI, Iversen K, Frich JC, Andelic N. *Unmet needs for healthcare and social support services in patients with Huntington’s*


### 7.0 Appendices

#### Appendix 1: Staff survey

For each of the question below, circle the response that best characterise how you feel about the statement, where 1= Strongly disagree, 2= Disagree, 3=Neutral, 4= Agree and 5= Strongly agree.

<table>
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<tr>
<th>Question</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
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<td>1. Huntington’s disease education was included in my induction training.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>2. Patients with huntington’s disease have specific care needs that require specific training for healthcare staff.</td>
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<td>2</td>
<td>3</td>
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<tr>
<td>3. It is important to have huntington’s disease training before caring for patients with this disease.</td>
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<tr>
<td>4. Huntington’s disease training will give me the competence I need to provide high standard of care for patients with this disease.</td>
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<td>2</td>
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<tr>
<td>5. During my induction training, I was provided with the appropriate skills I needed to care for patients with huntington’s disease.</td>
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<td>6. Huntington’s disease was an important aspect of my induction training.</td>
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<td>7. On the whole, I think there is a need for huntington’s disease education for healthcare staff.</td>
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<td>8. I am satisfied with my level of knowledge about huntington’s disease.</td>
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<td>9. Huntington’s disease training should be mandatory for all new healthcare staff.</td>
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<td>10. I would be willing to attend huntington’s disease educational training to improve my knowledge about the disease.</td>
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### Appendix 2: Complete data collected for the staff survey

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Appendix 3: Force Field Analysis

Driving Forces

- Better quality of care for patients with HD (5)
- Increase patient and family satisfaction (5)
- Support from senior management (4)
- Staff induction process already in place (3)
- A culture that promotes change (3)

Total: 15

Restraining Forces

- Lack engagement of new staff (5)
- Fear of change (3)
- Lack of clear definition of goal (5)
- Fear of increase workload (2)

Total: 20

To Improve HD education for new staff in a mental health facility
Appendix 4: HD education for new staff (PowerPoint Presentation)

09/09/18

10 key things you need to know before working on a Hun: ngton’s disease ward

Facilitator: Medical or Nurse Management Team

Introduc: on

- The purpose of this educa: on session is in response to the staff survey completed by healthcare staff working in the HD ward.
- There were a total of 25 respondents that par: cipated in the survey out a possible 40, which is a 63% response rate.
- Please see the survey results in the hand-out provided.

Key findings from survey results

Q.1 Pa/ents with Hun: ngton’s disease have specific re- needs that require speciﬁc training for healthcare staff.

Key findings from survey results

Q.2 It is important to have Hun: ngton’s disease training before caring for pa/ents with this disease.

Key findings from survey results

Q.3 HD training will give me the competence I need to provide high standard of care for pa/ents with this disease.

Key findings from survey results

Q.4 On the whole, I think there is a need for HD education for healthcare staff.
What is Huntington’s Disease (HD)

Definition: HD is a progressive, inherited neurodegenerative disease.

Causative Gene: HTT

Prevalence: There are about 250 people with the condition in Ireland and it is estimated there are about 1500 in the UK. About 2500 family members require support, information and care (Huntington’s Disease Association Ireland 2022).

Signs & Symptoms: Typically starts between the 30th to 50th decade of life. Cognitive, motor and psychiatric symptoms.

Diagnosis: Positive Family History, Genetic Testing and onset of motor dysfunction.

Treatment: No curative treatment yet. Supportive & symptomatic management. TTKs & NACHES announced 3 new human trials of HTT.

Key things you need to know

1. Communication is Key

The movement disorder in HD affects speech in several ways. Some people have difficulty starting a conversation, staying on the topic, or switching from one topic to another. Some may get stuck on one topic and have difficulty getting off it.

When communicating with patients with HD healthcare staff should:
- Try to rephrase the main idea.
- Use short sentences.
- Ask for feedback.
- Allow plenty of time.
- Wait... for up to a few minutes... for a reply.
- Try not to repeat or rephrase a question while you’re waiting for a response.
- Never pretend to understand.
- Consider using a simple communication board.

2. Nutrition is Key

Proper nutrition can be the single greatest clinical issue in caring for a person with HD.

It is estimated that some people in advanced stages of HD require a diet of up to 5,000 calories a day just to maintain their weight.

Nutrition staff should:
- Give frequent meals and high-calorie snacks and drinks to prevent weight loss.
- Help the person with HD eat until full.
- Ensure eating is slow and deliberate.
- Help the person sit in an upright position when eating and digesting food.
- Avoid hot liquids. A decreased sensation of heat can cause burns.
- Ensure mouth is kept in a healthy condition.

3. Preventing swallowing problems is Key

Those with HD are at serious risk of choking, aspirating, and even suffocating. Preventing these problems in advanced HD is an ongoing challenge to a caregiver.

Healthcare staff should:
- Eating should be slow and deliberate.
- Be sure the patient is positioned properly.
- Choose foods of appropriate texture and temperature.
- Learn the head-tilt maneuver.
- Report any coughing or choking incident to nurse or CNM.
- Make sure patient takes small bites and sips.
- Alternate solids and liquids.
- Encourage “dry swallow” or “double swallow” between bites.
- Ensure that the patient is up after eating.

4. Preventing falls is Key

As HD progresses, the musculature support on upright neck and trunk weakens. This reduces the appearance that there are falling forward, backwards or to one side.

Healthcare staff should:
- Use stable furniture when standing so that it cannot move.
- Make sure the patient is wearing appropriate footwear.
- Use chairs with armrests and leg rests.
- Clear area of any unnecessary furniture.
- Don’t pull a person with HD from behind, causing him or her to turn quickly and lose balance.
- Don’t encourage patient with HD to walk.
- Don’t give a medication while he is standing.
- Don’t try to stop him from “hanging off the wall.”
- Schedule slow and slow periods throughout the day.
- Offer the use of a wheelchair at the time of day when the patient usually gets tired.

5. Exercise and Fitness is Key

As the disease progresses, the individual with HD will decline in health and lead a more sedentary lifestyle. A modified exercise programme can help to address these issues of decline and help patients become stronger, improve balance and posture, and feel more in control of their bodies.

Healthcare staff should:
- Promote the importance of exercise.
- Engage with physiotherapist for appropriate exercises.
- All exercise should be done slowly.
Key things you need to know
6. Personal Care is Key
As HD progresses it becomes increasingly difficult to plan and organise activities of daily living (ADLs). The cognitive disorder of HD presents more problems with these ADLs than the motor or behavioral. One and demented care increases as the disease progresses.

Healthcare staff should:
• Establish a self-care routine.
• Try to keep the shower as brief as possible by gathering everything necessary before beginning.
• Use a shower chair to prevent falls.
• When changing a patient to maintain as much independence as possible.
• Ensure daily oral care to minimize the bacteria that can be aspirated and cause infection.
• Many people with HD have hot and prefer to have the thermostat turned down or fans blowing in their rooms.

Key things you need to know
7. Understanding cognitive changes is Key
As HD progresses, you’ll find patients with HD are distracted, unfocused, uncooperative, angry, and withdrawn.

Healthcare staff should:
• Never forget that the problem is the disease
• Know that what is labeled as “inappropriate behavior” is often caused by the disease or an attempt for patients to express their needs or preferences.
• Know that patients in advanced stages of HD no longer think and process information as quickly. Allow more time (this is for patient to respond)
• Know that learning can be more difficult, it’s helpful to keep instructions and directions as specific as possible.
• Patients with HD the routine and consistency, setting schedules of daily activities and the time to do them may help organise the day.
• If someone asks for your assistance, give it to them right away or as soon as practically possible.

Key things you need to know
8. Understanding changes in mood is Key
Depression: Many people with HD experience depression at some time during the course of their disease. Depression is a treatable feature of HD.
Anger: There are many reasons for a person with HD to be angry. Having HD in one’s family, being a caregiver, and losing the ability to support oneself.

Healthcare staff should:
• Know the signs of depression and report same to the nurse or your sex.
• The patient’s anger may be directed at you.
• Give patient space, protect yourself and those nearby. Keep well clear of him. Do not attempt to reason, explain or persuade. This may further aggravate him.
• Don’t be surprised if the person apologizes to you, don’t take it personal and Accept their most sincere apology.

Key things you need to know
9. Smoking is Key
Contains a very large portion of people with HD smoke cigarettes. People with HD often view it as “one of the last pleasures I have left.” Smoking becomes symbolic of independence.

Healthcare staff should:
• Take seriously smoker’s emotional need to smoke.
• Discuss the use of nicotine patches.
• Build a reward system to encourage him to quit.
• Limit smoking to a well-protected area.
• Encourage non-smokable clothing, furniture, and floor covering.
• Use a “smoker’s role.” It holds a cigarette to prevent ashes and embers from being dropped.

Questions???

Key things you need to know
10. Caring for yourself is Key
Caring for this patient with HD is a challenge for families and healthcare professionals alike. The demands of movement, cognition, and emotion are ever-changing and progress slowly over many years.

Healthcare staff should:
• First and foremost "TAKE CARE OF YOURSELF!"
• Recharge your batteries!
• Do the things you enjoy!
• Take time off and go on holidays or whatever floats your boat!
Appendix 5: Staff responses to HD survey
## Appendix 6: Gantt Chart

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### Key

- **Completed**
- **Planned**
- **Delayed**
‘Education is the most powerful weapon which you can use to change the world’.

Nelson Mandela