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A proposed improvement of the patient experience pre and post thyroid fine needle aspiration biopsy

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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.

Signed:

Date:
Acknowledgments

I would first like to sincerely thank my project supervisor Dr. Pauline Joyce for her constant support and guidance throughout the project. Thank you for not giving up on me.

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To my family and friends thank you for putting up with my constant chat about my thesis and your unwavering support! Thank you.
Abstract

The patient experience is a crucial and at times complex journey in the medical setting. Improving this experience can have positive outcomes for both the patient and clinician. In the setting of a private hospital, the patient journey was reviewed for patients attending the radiology department for an ultrasound-guided fine needle aspiration biopsy (FNAB) of the thyroid. The form in which this project plan took place was through the implementation of a quality improvement model and associated tools. This project was planned using the Lean Six Sigma change model. Using this model allowed for a structured approach to quality improvement planning by use of the DMAIC framework. Working through the DMAIC process highlighted areas for improvement in terms of the mode in which information is given to a patient pre FNAB. This plan presents a suggested improvement to the patient experience through creating a patient information leaflet (PIL) using HSE style guidelines and delivering it to the patient before arriving in the department. While this is a quality improvement project plan, the expected results of the improvement would be an increase in patient satisfaction with the service.
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Chapter 1: Introduction

1.0 Introduction

It is part of human nature to have a fear of the unknown. When a patient enters a hospital, for either elective or non-elective reasons, there is a certain amount of fear and anxiety associated with this experience. As healthcare professionals we try to make this process as stress free and comfortable for the patient as possible. The patient experience in healthcare has been identified as one of the key targets of improvement and measurement for quality in healthcare (IOM, 2001). Developing a positive patient experience starts at the initial point of contact, beginning with the time period prior to the patients arrival to the hospital. Both medical and non-medical staff are involved in the patient experience process, therefore, careful evaluation of existing pathways is needed to continue to provide a positive patient journey.

The patient experience pre and post ultrasound-guided fine needle aspiration biopsy (FNAB) of the thyroid was the focus of evaluation for this quality improvement project plan (QIIP). Thyroid nodules are a common clinical problem, appearing as a palpable mass on the thyroid gland. Approximately 5% of women and 1% of men have a palpable thyroid nodule (Tunbridge et al., 1977). The use of ultrasound (US) imaging can detect thyroid nodules that are not palpable through a clinical exam, thus a biopsy is necessary to differentiate between a benign and a malignant nodule. Obtaining a fine needle aspirate biopsy (FNAB) sample of the nodule is the standard procedure for the diagnosis of thyroid cancer (Kwak, 2013). Thyroid nodules are either benign or malignant, making the definitive diagnosis via FNAB imperative for appropriate diagnosis and treatment. The majority of thyroid nodules
are classified as benign following FNAB (Glynn et al., 2016). Fear of receiving a diagnosis, such as malignancy, could contribute to the overall anxiety of a patient attending for a FNAB. Thus, effective communication of the possible outcomes is necessary.

The ultrasound guided FNAB is a minimally invasive diagnostic procedure; the patient arrives in the radiology department just prior to the biopsy. The patient is then discharged home shortly after the procedure is completed. The consultant radiologist performs this simple and safe procedure with the of aid ultrasound guidance. This form of biopsy involves the insertion of one small needle at a time through the skin of the neck and into the nodule. Between two to six independent needles will be used to take cell samples; these samples are then sent to the lab for cytological assessment. Local anesthetic is injected into the skin covering the nodule and no medications are given that would effect the patient's consciousness (ATA, 2016). FNAB is considered a very low risk procedure, yet still carries some risks that need to be discussed with the patient. One of the most common risks is bleeding, which can produce local pain. Patients taking anticoagulants may need to temporally stop this medication, but this should be discussed with the patient prior to the procedure. A rare risk associated with FNAB is a major hemorrhage, which can cause compression of the airway and is considered an emergency. This, however, is extremely rare and is reported in less than 1 in 1000 people (Polyzos & Anastasilakis, 2009). Following the procedure patients are observed before being discharged home. The patient is advised to avoid strenuous activity for 24 hours, as such activity can cause increased venous pressure in the neck (Goergen & Gibson, 2017) increasing the chance of bleeding.
While the FNAB is considered a low risk and time efficient procedure, the average new patient that is referred will not have prior knowledge of this procedure. Therefore it is imperative for patients to be appropriately educated and prepared for the procedure prior to their arrival to the hospital. There are various forms of patient education in existence; the minimum is verbal information given prior to the procedure during the consent process. The consent process results in a voluntary choice made by the patient to either accept or decline medical care. The patient must be given enough information and in a way that they can understand, so that they can make an informed decision about their care (Irish Medical Council, 2016). Thus, an improvement of the education given to the patient prior to the consent process is important.

1.1 Organisational Context

This Quality Improvement Project Plan (QIPP) was based in a small private hospital that is part of a larger nationwide hospital group in Ireland. The hospital is an independent, acute care facility renowned for the quality of its service provision and has received formal Quality Accreditation by Joint Commission International (USA). JCI accreditation is a voluntary process in which an independent external organisation assess the hospital to determine if it meets a set of standards designed to ensure and continuously improve quality of care (JCI, 2016).

One of the visions of the hospital group is to strive to be innovative and responsible to new developments in healthcare, while maintaining a patient friendly atmosphere. Along with a vision, the hospital group has seven core values: respect, justice, integrity, stewardship, innovation, compassion and quality. The hospital group has a
list of its own commitments to the patient, focusing on patient centered care that enhances patient comfort. It is the group’s belief that clear and concise explanations of proposed treatments or procedures and their associated risks and benefits be appropriately explained to the patient. To ensure continuous quality improvement, the hospital aims at all times to deliver excellence in quality of patient care, whilst also seeking to continually improve in line with international best practice and to sustain those improvements.

The hospital can accommodate 130 inpatients with an additional 66 beds available for day cases. A variety of specialist services are provided including 4 major and 2 minor operating theatres, an endoscopy suite and cardiac catheterisation suite. The hospital is linked with a large medical school. Additionally, there are over 120 consultants affiliated with the hospital. Access to care is limited to service users who are insured or self-payers. The focus of this QIPP was in a service provided by the radiology department. Diagnostic imaging, interventional radiology and ultrasound-guided biopsies are some of the services provided by the department. The department includes staff with a variety of skill sets that play a role in each level or care provided to and experienced by the patient. There are eight consultant radiologists and fourteen radiographers in the department. Fine needle aspiration biopsies (FNABs) of the thyroid are performed on a regular basis in the department, with the average age of patients attending for this service being 64 years of age. There are a larger proportion of females compared to males attending this service. The department is open Monday to Friday from 8am to 6:30pm.
1.2 Rationale for Quality Improvement

The goal in any healthcare setting is to keep the patient at the centre of care, thus it is imperative to consistently make improvements positively impacting the patient. The hospital for which this quality improvement plan was based strongly holds this belief. The hospital’s patient centred quality improvement goals provide an appropriate setting for a quality improvement project plan (QIPP). Often, walking in the patient’s shoes or mapping the patient journey will highlight areas of potential improvement within a system. Undertaking this project within the department is important, as there is a need to improve the patient experience with regard to information and education received before an ultrasound-guided fine needle aspiration biopsy of the thyroid. While this is considered a low risk procedure, it carries risks and may cause anxiety for the patient. Patients are not always ready to receive information the day of a procedure, as they could be nervous. Attempting to decrease levels of anxiety while increasing a patient’s knowledge around the FNAB will improve the patient experience.

1.3 Aim & Objectives

1.3.1 Aim

The aim of the project plan was to improve the patient communication experience pre and post ultrasound-guided fine needle aspiration biopsy (FNAB) of the thyroid gland.
1.3.2 Objectives

The objectives of the project were as follows:

- By August of 2017 explore how the patient experiences the FNAB procedure by following a sample of patients in the department
- By September of 2017 analyse the patient experience pre and post FNAB using a quality improvement framework and tools
- By October 2017 propose a quality improvement intervention that can be piloted in the hospital

1.4 Role of the student in the organisation and project

As a student completing a masters degree in Physician Associate Studies, a career which in itself is a product of change and quality improvement, my role was to identify a healthcare service that could benefit from an Quality Improvement Project Plan. Through self-directed learning and lectures I’ve equipped myself with the tools and knowledge necessary to design a QIPP. As part of an assigned placement in this hospital I was able to gain insight into the services provided and to make connections with staff involved in quality improvement. Through these connections I was directed to the radiology service. My role was to observe the current situation and talk to necessary staff to gain a better understanding of areas for potential improvement. With this information gained, I am able to propose a potential QIPP, as will be detailed in this dissertation.

1.5 Summary

This chapter introduced the topic to the thyroid fine needle aspiration biopsy (FNAB). It is important to have an understanding of what an FNAB is and the risks associated with this procedure as the focus of this quality improvement project plan (QIPP) will focus on improvements to the patient experience pre and post thyroid
FNAB. The rationale for improving this aspect of healthcare relates to keeping the patient at the centre of care. Through the use of quality improvement tools the student has set out objectives that are to be met in a scheduled fashion in the organisation that has been selected for this project. Overall, the student’s aim for this QIPP is to propose an improvement to an aspect of the patient experience in the radiology department of a small private hospital.
Chapter 2: Literature Review

2.0 Introduction

The purpose of this chapter was to gather and review research relevant to the quality improvement project plan undertaken by the student, as directed by the project aim. Section 2.1 will discuss the search strategy used for discovering and identifying relevant research. The results of the search strategy are then reviewed and grouped into appropriate themes under the heading 2.2. The implications from the research on the project will be discussed in section 2.3. The chapter will conclude with a summary in section 2.4.

2.1 Search Strategy

A literature search was performed which used PubMed, Google Scholar and Cinahl to evaluate literature that exists in relation to patient education for thyroid fine needle aspiration biopsies (FNAB). The initial search was too specific and yielded no results. The student then divided the search items into discrete phrases such as ‘patient education’, ‘patient education pre procedure’, ‘patient-centred care’, ‘quality improvement’ and ‘patient information leaflets’. These individual searches yielded thousands of results, thus the student combined phrases in a mesh style search. In total thirty-five articles were reviewed, but twenty-three are included in this literature review. The student initially limited the search to literature that is no older than five years old. This was amended to include ten years back. The oldest piece of literature included is 16 years old, as the student felt that it was a necessary piece of literature in the context of this project plan. The research that is older than five years old was reviewed and the student felt the work was still relevant and appropriate. The literature reviewed includes original research articles, government documents, randomised controlled trials and guidelines.
2.2 Review of Literature

After thorough review of the literature, the student compiled three themes: quality in healthcare, patient education and guidance on designing healthcare communication. It is important to understand the role of quality in healthcare so that a quality improvement plan can be proposed. A review of the current patient education in use for various procedures and its affect on the patient experience was necessary as there is no current research on patient education in relation to FNAB. Through reviewing this literature the student identified possible pitfalls in patient education and thus reviewed literature relating to how healthcare communication should be presented to patients.

2.2.1 Quality in healthcare

Quality is a word that is used everyday across a wide variety of settings to convey the standard of something as measured against other things of a similar kind. People strive for high quality, as it is a mark of excellence. In the setting of healthcare, the delivery of high quality services is of the upmost importance, as the consumers are patients. To provide quality care and improvements to maintain this quality, different frameworks have been employed. One of the most noted organisations to put forth a framework for healthcare quality is the Institute of Medicine (IOM). The IOM’s framework includes six aims for the healthcare system: safe, effective, patient-centred, timely, efficient and equitable (IOM, 2001). These aims act as measures of quality in a system and allow for appropriate improvements to be made categorically. Patient-centred care (PCC) is an important measure for quality as it aims to provide care that is tailored to individual patient preferences, needs and values. The areas of communication, shared decision-making and
education increase the effectiveness of patient-centred care (Robinson, Callister, Berry, & Dearing, 2008).

In the Irish healthcare system, the Health Information and Quality Authority (HIQA) has the legal power and responsibility for improving the quality, safety and value of health and social care. This power was granted to this independent organisation by the Irish government through The Health Act of 2007 (House of the Oireachtas, 2007). HIQA has eight core standards that contribute to quality and safety: ‘person-centred care and support’, ‘effective care and support’, ‘safe care and support’, ‘better health and wellbeing’, ‘use of information’, ‘use of resources’, ‘workforce’ and ‘leadership, governance and management’ (HIQA, 2012). The aim of these standards is to drive improvements in quality and safety in both private health facilities and HSE facilities. In regard to ‘person-centred care and support’, HIQA states ‘service users are enabled to participate in making informed decisions about their care’ (2012, p. 7). To make an informed decision about ones care, valid consent must be given by the patient. Consent is an on-going process in which a patient gives permission for a medical intervention after a process of communicating the proposed intervention, with the care provider. For consent to be deemed valid it requires that ‘the person must have received sufficient information in a comprehensible manner about the nature, purpose, benefits and risks of an intervention or service’ (HSE, 2014, p. 8). Thus, in order to keep up with the quality standards set by local Irish authorities, it is essential for patients to receive appropriate information prior to the consent process and procedures.
The latest standards and goals set in relation to healthcare by the Irish government were published in 2017 in a report entitled *Sláintecare*. The government committee outlined defined goals for improvement and promises for the allocation of funds to different healthcare areas. The committee agreed upon eight fundamental principles to underpin the discussions. The eight principles focus around engagement, nature of integrated care, and enabling environment. In relation to nature of integrated care, the committee agreed that all care planned and provided to a patient was to be done in a way that kept the patient at the centre of care and ensure appropriate care pathways (House of the Oireachtas, 2017, p. 14). Patient centred care (PCC) has been a constant in Irish and international healthcare standards, thus quality improvement projects that aim to improve the patients’ experience are vital to maintain and exceed standards.

2.2.2 Patient Education

In order to keep patients at the centre of care, appropriate forms of communication and patient education are necessary. The first national patient survey in Sweden determined that approximately two-thirds (58-66%) of patients stated they had received enough information from their healthcare provider (Kandelaki, Marrone, Lundborg, Schmidt, & Bjorkman, 2016). While this is a majority, the number of satisfied patients is quite low, especially when an informed patient is crucial to effective patient-centered care. Kandelaki et al (2016) highlighted that the strength of the survey was its incorporation of feedback from patients in four different medical settings: primary, outpatient, inpatient and emergency care units. Recently, the Health Service Executive (HSE) has gathered feedback from patients in Ireland in a similar manner. The National Patient Experience Survey, the first of its kind in
Ireland, commenced in May of 2017. Patients that had spent 24 hours or more in a public acute hospital, and had an address in the Republic of Ireland, were asked to complete the survey and comment sheet after discharge. Question number 25 on the survey asks, “How much information about your condition or treatment was given to you?” (National Patient Experience Survey, 2017). The results of this survey, which are to be published in December of 2017, could shed light on the current situation of patient communication and information disclosure in public hospitals. From this information improvements in this area could be suggested and undertaken with a quality improvement model. This information provides feedback from patients in a public hospital and thus may not accurately reflect the current situation in private healthcare. While the two surveys do not focus on specific forms of patient education and information, there have been numerous studies exploring different forms of patient information and education and the affect on patients’ knowledge of their treatment, specifically recalling risks in the setting of informed consent.

A study by Langdon et al (2002) aimed to evaluate if a written information sheet is suitable for patients and if it improves recall of the consent interview. The consent process traditionally takes place between the clinician and the patient in the form of verbal dialogue. A randomised control study was used to compare a group of patients given information on a written sheet to patients receiving an appropriate explanation of the procedure via verbal information alone. The patients met with the surgeons prior to admission and this is where the information was given to patients. A multiple-choice questionnaire was given to patients during admission that was designed to test their recall of the information given to them during their initial
consultation with the surgeon. The patient group that was given the written information scored 48% on the questionnaire while the control group scored only 38% (Langdon, Hardin, & Learmonth, 2002). From this, Langdon et al were able to conclude that written information sheets were a positive addition to the informed consent process, as they improved recall of risks. Langdon et al (2002) also noted that patients in the verbal group requested written information during their consultation. Of the 61 patients in the written group, 100% said that they would prefer written information to standard verbal information on its own.

A similar study by Chan et al (2002) examined the effect two different forms of patient education given pre parotidectomy or thyroidectomy had on patient’s recall of risks associated with the procedures (Chan et al., 2002). A control group was given a verbal checklist of risks specific to the surgery, while the intervention group was given the same information as the control group along with a pamphlet containing written information and illustrations. This was completed in the outpatient setting and thus the scheduled surgery could be a few weeks to a few months after this consultation. A result of the study by Chan et al showed a recall rate of 50.3% of the information by the intervention group compared to 29.5% by the control group. This mode at which this information was gathered differed from others explored in this literature review in that the researchers used telephone interviews within 3-7 weeks after the initial visit. The interviews specially asked patients to recall the risks of their operation.

An interesting study completed by Bennett et al (2009) explored three different forms of patient education given during the consent process for image-guided spinal
injections. They felt that informed consent forms could be difficult to understand, especially in the radiology setting as this is often the first time that the radiologist meets the patient. The study by Bennett et al used a control group that consisted of the radiologist consenting the patient using the traditional verbal consent process (Bennett, Dharia, Ferguson, & Okon, 2009). The first experimental group used what the authors called a ‘teach-the-teach’ approach for consent. This novel process had the patient repeat to the radiologist the twelve keys points of consent and homecare information that the radiologist had discussed with them, before consent could be reached. And the second experimental group consisted of information being relayed using verbal dialogue aided by printed diagram that explained the twelve key points that a patient had to read before signing. The eight radiologists in the department agreed upon the twelve points that they felt were important to include, this ensured that the information was standardised. The patients completed a survey following their procedure that tested their knowledge, recall and anxiety.

Results from the study design concluded that the control group had the lowest results for the survey score. The ‘teach-the-teach’ method resulted in the highest score, yet was the most time consuming; the average time was 8.1 minutes compared to 6.8 for the diagram group. Overall, the findings by Bennet et al (2009) suggest that the diagram method was the most successful. Another outcome was that the age of the patients played a role in this study and was noted. There was a positive correlation between the older age group and the diagram method, suggesting that for the over 70 population diagrams may be helpful for the understanding of treatments. This information sheds light on possible forms to
deliver patient information pre ultrasound guided thyroid biopsy, which could ultimately enhance the patient’s experience.

While different forms of information given to patients prior to a scheduled procedure has proven to be beneficial, Astley et al (2008) conducted a study in an acute hospital setting for emergency procedures. They sought to compare verbal, written and animated audiovisual information delivery, during consent for coronary angiography, by measuring improvement in recall and level of anxiety. Astley et al (2008) conducted a randomised study on a sample population of 99 cardiac patients. The population was randomised into three categories in order to receive one of three information delivery methods. The three forms of delivery methods tested were verbal, audiovisual and written information via a pamphlet. All methods were delivered to the patient immediately prior to the patient signing consent for the procedure (Astley, Chew, Aylward, Molloy, & De Pasquale, 2008). The outcomes of this delivery were measured by a 5-point investigator-developed questionnaire. These were used to assess recall of risk information, satisfaction with informed consent process and anxiety. The questionnaire was administered at 3 different time points: immediately following information delivery, >4 but <24 hours post-angiography and 30-days post procedure. Astley et al concluded that recall of risk information delivered prior to coronary angiography in the emergent environment is poor and anxiety from the information is high. A factor identified, as a possible contributing failure of the process was the complexity of the medical terminology and the nature of an acute medical centre.
The implementation of patient education pre procedure or surgery has been shown to reduce anxiety in patients by making the unknown familiar (Spalding, 2003). Spalding (2003) evaluated an existing patient education program pre total hip replacement in an NHS hospital in England by interviewing patient educators and patients. It is reported in the study that the patients’ experience was improved post education as they felt less anxious and the fear of the unknown was relieved. Anxiety accompanies many hospital procedures. Recent work by Wade et al (2015) sought to evaluate the impact of an already in place patient education service for men pre transrectal ultrasound-guided biopsy. This study was carried out in the UK and examined the existing information delivery method, written patient information leaflets (PILs) and verbal dialogue. In depth interviews were conducted with 85 men post biopsy to explore the men’s experience. The result of the study was that men who reported anxiety with the biopsy felt inadequately prepared for the procedure (Wade et al., 2015), suggesting improvements need to be made to the current patient information supplied. Another aspect of the patients’ experience that can be affected by the implementation of patient education is post-operative pain management. Patient education pre-care classes prior to elective spinal surgery were shown to reduce postoperative pain (Papanastassiou, Anderson, Barber, Conover, & Castellvi, 2011). The work completed by Papanastassiou et al (2011) revealed that of the patients whom attended the pre-care classes, 96% were satisfied with pain management post surgery compared to 83% of patients who did not attend the classes.

The enhanced recovery after surgery (ERAS) pathway is largely supported by the use of patient education pre-operatively. The aim of the ERAS pathway is to
alleviate anxiety associated with surgery and provide for a rapid recovery, thus reducing the patients’ length of stay in hospital (Varadhan et al., 2010). A qualitative study conducted by Poland et al (2017) set out to examine the role of preoperative education for patients undergoing colorectal surgery with regard to the ERAS pathway. This study employed three cycles of action research to identify, implement and evaluate changes through the use of mixed methods. The participants of the study varied from the majority of literature in that it used patients, carers and clinical staff (Poland et al., 2017). The participants were evaluated using questionnaires, semi-structured longitudinal interviews and focus groups. The study identified that patients wanted to be proactively involved in managing their recovery, which they felt was supported through the use of preoperative education. The education was best received through multimodal and timely education, which helped the patients actively engage in their recovery. Patient education personalised to each patient was found to be the most effective form of delivery. This study looked at the enhanced recovery of a postoperative patient, but the ideas generated can relate to a multitude of hospital procedures, as an enhanced recovery is beneficial to both patient and healthcare professionals.

Day surgeries require a patient to arrive at the hospital the day of surgery and to be discharged home later that day or within 24 hours (Verma et al., 2011). This patient pathway is therefore shorter than that of the average surgical admission, putting greater stress on the importance of delivering a positive patient care experience. Patients must recover at home, making the appropriate use of patient education vital to maintain positive surgical outcomes. A study by Rajala et al (2017) described the quality of patient education received by adult patients in day surgery. The study
design involved the use of a questionnaire, which was given to the patient upon discharge from the hospital. The questionnaire included questions relating to the quality of patient education in the areas of implementation and patient resources (Rajala, Kaakinen, Fordell, & Kääriäinen, 2017). A result of the survey was that one half of the patents felt the implementation of patient education had be done in a patient-centred and goal-orientated way. The authors conclude from the results that patient education should consider the emotional well-being and feelings of patients’. The patient education used in this study were verbal information and written information, thus the authors suggest examining the use of other patient educational materials.

2.2.3 Guidance on Designing Healthcare Communication

As highlighted by the above studies, there are many ways in which patient education can be communicated to a patient pre medical or pre surgical procedure. It is important to adhere to local guidelines and/or standards when designing information that is given to patients. In Ireland there are specific guidelines in place for designing patient information leaflets (PILs). The HSE in conjunction with National Adult Literacy Agency (NALA) created a plain language style guide for documents, specifically in the healthcare setting. This step-by-step approach outlines how to create health documents, such as PILs, that presents information in a way that allows the patient to understand and act on it after the first time reading it (HSE & NALA, 2010). A national audit conducted by the HSE and NALA highlighted that over 50% of Irish people would experience literacy difficulty in the current healthcare environment (Lynch, 2009). As part of their definition of literacy, NALA
and the HSE believe that literacy increases the opportunity for individuals to reflect on their situation and initiate change. This is particularly relevant when patients are faced with difficult decisions to make regarding their care, as risks and alternatives should always be apparent to the patient. The audit highlighted certain terms that patients surveyed found most difficult to understand in the healthcare setting, for example 1 in 5 participants were not able to correctly identify which part of the body the ‘cardiology department’ cared for (Lynch, 2009). The Health Information and Quality Authority (HIQA) published a guidance document in 2016 entitled *Supporting people’s autonomy*. This report by HIQA highlights the importance of effective communication between healthcare providers and patients. In the report HIQA states:

> Effective communication is the cornerstone of informed consent and is essential to ascertains an individual’s will and preferences with regard to care, support and treatment (HIQA, 2016, p. 21).

It is HIQA’s belief that documents that are created using plain language and are easy-to-read will help with communication.

While there is evidence that patient education materials are available for varying medical procedures, the readability of such materials can be difficult for the average patient to comprehend. A study to evaluate the readability of freely available patient education materials for thyroid nodules and their management was carried out in the United States of America, where the reading level for adults averages around the seventh to eighth grade level (Barnes & Davies, 2015). The seventh to eighth grade range is comparable to first to second year in Ireland. Barnes and Davies evaluated a total of 63 patient information materials; one of the outcomes was that the readability was ranged from eighth grade to college level. This highlights that while
information may be freely accessible online it is not written at a level for the average American to understand. Barnes and Davies suggest that there are severe shortcomings with existing thyroid information and suggest future work should focus on developing materials that are grade level appropriate (Barnes & Davies, 2015). To date, an evaluation of patient information in relation to the thyroid gland has not been carried out on Ireland.

As the research highlights, there are guidelines and systems in place in Ireland to guide medical centres in writing and developing appropriate patient information. Health literacy has been flagged as an issue and is being addressed by the HSE. While information may be freely available online for patients, it may not be at the appropriate reading level. Continued efforts to improve a balance between the patients health literacy needs is needed.

2.3 Implications for the Project

When planning a quality improvement project it is important to research existing literature around the topic of choice. For the student’s quality improvement project plan (QIPP) it was important to have an understanding of the current international and local standards in regards to quality in healthcare. The Institute of Medicine’s definition for quality in healthcare was useful in guiding the literature review as many pieces of literature and research relate back to this definition, though it is now sixteen years old. This definition provides both a framework and measurable aims. These aims are expressed locally in Ireland through HIQA and the HSE. The setting of these healthcare goals, to meet and exceed the standards, is important to allow for continuous improvements in healthcare. The student focused on the measure of
patient centred care (PCC), thus exploring different forms of patient education was imperative for this QIPP. There are many modes in which medical information is communicated to a patient before undergoing a medical or surgical procedure. Based on the literature review, written and oral communication of patient information appears to be the most popular and effective. Verbal patient education is the standard, as it is used during the consent process with the medical practitioner, however this is not always enough information given at the time prior to care. Effective patient education can have positive outcomes for the patient such as a decrease in anxiety, faster recovery time and increased knowledge regarding their care; this in turn positively impacts the patient experience pre and post procedure. For a patient having knowledge of their care means that they are actively involved in the decision and care process, which is in line with keeping the patient at the centre of care. This information is important as it provides guidance on what mode of patient education may suit the setting of this QIPP. During the literature search the student did not find literature relating specifically to patient education pre thyroid FNAB, thus using literature from similar settings was necessary.

While there are many forms of patient education available online and through medical providers, the reading level at which the education is presented is not always appropriate for the general population. It was important to explore literature and guidelines for designing patient education for this QIPP. The HSE has guidelines for designing patient information and education that could potentially be used following this QIPP by the radiology department. Overall, the literature regarding quality in healthcare will help shape this project plan as it uses a structured approach. Understanding what aspects of improvement are measureable
in healthcare is critical in order to focus on an area for improvement. Patient education has been highlighted as a way to positively improve the patient experience and thus will be explored through the use of quality improvement tools.

2.4 Summary

In this chapter the concept of a literature review was introduced along with the student’s literature search strategy. Twenty-two pieces of literature were included in the literature review and from this the student developed three themes: quality in healthcare, patient education and guidance on designing healthcare communication. While there was no literature found that directly related to the patient experience pre and post thyroid fine needle aspiration biopsy (FNAB), the themes developed from the literature cultivate an understanding of how an improvement could be implemented in this quality improvement project plan (QIPP).
Chapter 3: Methodology

3.0 Introduction

There are a multitude of quality improvement models and tools available for use in a variety of settings across healthcare and beyond. The overall aim of quality improvement in healthcare is to keep the patient the focus and at the forefront of any change initiative. This means understanding the needs of the patient and how these needs can be met and improved. A strongly organised quality improvement project plan is imperative for a solid foundation, as the success rate among projects is already low, with only one transformation in three succeeding (Aiken & Keller, 2009). Many factors contribute to identifying and addressing gaps in quality in healthcare, the use of a proper methodology helps to guide the process. Therefore, quality improvements in healthcare have to examine and understand current evidence based practice in medicine along with quality improvement tools. This chapter highlights selected approaches to quality improvement in section 3.1, the rationale for the model selected in section 3.2 and finally the model selected for this project in section 3.3. Section 3.3 goes on to expand on how each phase of the DMAIC framework was used to study and plan the proposed QIPP.

3.1 Approaches to Quality Improvement

There are several approaches to quality improvement. In the interest of this project, three approaches were considered and will be discussed here. The approaches discussed are the Lean Six Sigma, PDSA and the HSE Framework for Improving Quality.
The first of the approaches to be discussed is the Lean Six Sigma, which involves two major components. This approach could be divided into the ‘Lean’ and ‘Six Sigma’; together they form the ‘Lean Six Sigma’. Firstly, Lean seeks to improve flow in the value stream and eliminate waste (HQIP, 2016). There are various forms of waste including: overproduction, time, transportation, non-value-adding processes, inventory, motion and costs of quality (Levinson & Rerick, 2002). The Six Sigma studies variation, which can be the result of flow or other factors. It uses both qualitative and quantitative techniques to drive process improvement. The shared goal of both approaches is to provide the customer with the best possible quality, cost and outcome (Kubiak & Benbow, 2009). Identification of ‘root causes’ is what makes this approach user friendly. This can be attributed to the fact that it is a fact-based and data-driven model of improvement. A root cause is a factor that triggered nonconformance and needs to be removed through improvement (Anderson & Fagerhaug, 2006). An approach called ‘DMAIC’ is a structured framework that the lean six sigma uses for quality improvement. DMAIC stands for define, measure, analyse, improve and control, this will be elaborated on later in this chapter.

The second approach to be discussed is the use of Plan-Do-Study-Act (PDSA) cycles; this is a popular approach to quality improvement in the healthcare setting. This is a model for continuous improvement, as the flow of improvement is cyclical. The first step ‘plan’ identifies an area for improvement and then plans a change. The second step ‘do’ requires the plan to be carried out. The ‘Study’ phase is the analytical component in which tests are performed and outcomes to date are noted. ‘Act’ uses the previous knowledge gained to take action and plan new improvements, which would lead back to step one ‘plan’ (Tague, 2004).
The final approach to be discussed is the HSE Framework for Improving Quality. The Health Service Executive (HSE) in Ireland developed this approach in 2016 with the aim of influencing and guiding the thinking, planning and delivery of care in services. Through this the goals are for quality, safety and the improvement of patient experience and outcomes (HSE, 2016). The framework has 6 drivers for improving quality:

1. Leadership for Quality
2. Person and Family Engagement
3. Staff Engagement
4. Use of Improvement Methods
5. Measurement for Quality
6. Governance for Quality

The above list is represented below in figure 2. This approach to quality has a large emphasis on the individual and culture compared to the other approaches discussed and is designed specifically to work in the Irish healthcare setting. The
previous approaches mentioned can be used across a large variety of industries, as many started in manufacturing and business. This document is the first part of the Framework resource and thus was not complete for the use in the quality improvement project plan that the student undertook.

![Diagram of quality improvement model]

**Figure 2: HSE Framework for Improving Quality Model**

### 3.2 Rationale for Model Selected

After studying and exploring different approaches to quality improvement, the model selected was the combined ‘Lean Six Sigma’. This model uses a structured approach called DMAIC (define, measure, analyse, improve, control), which the student found to be the most beneficial for the quality improvement project plan (QIPP). DMAIC has many useful tools that allowed for a direct approach to quality. The institution in which this project plan takes place holds Joint Commission...
International (JCI) accreditation, this means that the hospital is held to a high international standard and thus must constantly aim for and meet standards, in order to retain accreditation. One of the standards set by the JCI states:

Patients and families must receive adequate information about the patient’s condition, proposed treatment(s) or procedure(s), and health care practitioners so that they can grant consent and make care decisions (JCI, 2017, p. 11).

With these patient centred standards in mind, the model set forth by the Lean Six Sigma was the most appropriate choice for this quality improvement project plan.

3.3 Model Overview

The Lean Six Sigma model uses a structured approach known as DMAIC that stands for define, measure, analyse, improve and change. Each component of DMAIC uses process improvement tools to advance the project through the different stages, for example the tools used for ‘define’ help one to define the problem. Once the problem is defined the process moves on to measuring by quantifying and so on. Figure 3 illustrates the DMAIC process, from a start to an endpoint; this is a one-way flow. Each step of DMAIC will be detailed in the following section, with specific reference as to how specific tools were used in this project.

![DMAIC Model](Figure 3: DMAIC Model)
3.3.1 Define

The define stage of the DMAIC is a natural starting point for identifying a process that can benefit from improvements to improve the quality of patient care and service delivery. The first improvement tool used was the creation of a process flow map. This tool used early in the project facilitated the understanding of the current situation in the radiology department. In this project the patient journey was assessed from a pre procedural, procedural and post procedural perspective. It also shows the interrelated processes at play in order for a thyroid fine needle aspiration to be carried out in this hospital. The student followed three patients from arrival in the department through the procedure to help better understand the patients perspective. The student then discussed the patient flow with staff members in the department. This tool was helpful as it gathers input from different department members, with different roles, that work together to accomplish the same outcome. This outcome is for the patient to have a safe and efficient journey from outpatient clinic/pre diagnostic stage to procedure. It is imperative to understand a current situation before trying to evaluate or implement change things. This was particularly useful in this project as the student was not directly involved in the radiology department, and thus gathered the information from an outsider’s perspective. This perspective is beneficial as it is largely unbiased. Below in figure 4 is the process map generated for this project.
Figure 4: Process Flow Map

Analysis of the process map revealed areas in the process flow map that have been flagged where there has been lack of written patient information given to the patient.
before the procedure. Verbal information regarding the procedure is given to the patient in the outpatient clinic by the referring consultant and then more detailed information is given to the patient by the radiologist the day of procedure in order to gain informed consent.

The completion of the process flow map lead to the need of a second structured tool. The second tool chosen was a stakeholder analysis. A stakeholder analysis is a process of systematically gathering and analysing qualitative information to determine whose interests should be taken into account when developing and/or implementing a policy or program (Schmeer, 1999). This is an important tool for defining key stakeholders for a project. It also helped the student build a rapport and understating with the staff, to gain many perspectives. It is important to keep stakeholders involved throughout the process. As seen in figure 5 the analysis is again a visual representation of the process. There are four categories of stakeholder: high power with low interest, high power with high interest, low power with low interest and low power with high interest.
Talking to various employees/stakeholders within the department and hospital identified their interest in different aspects of the patient’s journey. From talking with the booking and administrative staff it was of their opinion that it was necessary to have a typed document to send to patients before they arrive for their procedure, as the patient usually would have questions regarding the procedure over the phone. The booking staff are non-medical personnel, and are thus not able to verbally give medical information over the phone. The staff felt uncomfortable with not having a standardised information document to the patient and that they were not fully fulfilling their role upon making the booking appointment with the patient. Other biopsy procedures performed in the department have a specific typed leaflet that the administrative staff can send to the patient’s home at the time of booking. Talking to the department nurse, the focus and goal was to have a patient arrive in the department feeling comfortable and prepared for the procedure. Again, the nurse
did not feel comfortable giving specific information about the pre and post procedure care, as there was no formal protocol in the department as to how she should do this. Gaining informed consent from the patient is legally imperative for the radiologist performing the procedure. This means that the patient has been given all necessary information and in a time appropriate manor. Overall, the quality department manages quality in the hospital; members of this department were made aware of the project at this point and kept informed throughout. Patients are included in the stakeholder analysis as the improvement aims to improve their experience. Though they have low power, the needs of the patient need to be considered when making an improvement.

3.3.2 Measure
The second step in the DMAIC process is to use measurements to quantify the problem. As this project’s aim did not focus on a numbers based approach, as in timing etc., there were not quantifiable measures to gather. Therefore, the focus shifted to a qualitative approach. As this project did not seek or gain ethical approval a patient survey seeking information regarding the patients experience was not carried out. Ideally a patient satisfaction survey regarding the current patient journey would have been sent out to a cohort of patients and statistically analysed. Current feedback from patients post the procedure is that they would have liked to receive information regarding the procedure from the department. As the referring consultant verbally explained the procedure to them, information was not fully retained by the patient at the time of consultation. Alternative sources were used by the patients such as Google or relatives that had the previously had the procedure, this information caused an increase in anxiety amongst some patients.
3.3.3 Analyse
Step three in DMAIC involves identifying the cause of the problem. The tool selected for this stage of the approach was the Fishbone (Ishikawa) Diagram. This is a useful tool to illustrate the possible causes of a problem identified in earlier steps of the process. This works by grouping the causes by process, people, technology and organisation. There are multiple causes identified using this, suggesting contributory factors cause the lack of standardised information given to a patient pre thyroid fine needle aspiration biopsy (FNAB) in this institution’s radiology department. This is illustrated in figure 6 below.

![Fishbone Diagram](image)

In regards to ‘process’, discussions with department staff identified that there currently is no staff member assigned to producing a patient information leaflet (PIL). The concept of best practice and accreditation by JCI hold the institutions to
high standards regarding communication with patients, this needs to be addressed and improved in order to keep fulfilling accreditation goals.

The sub-section ‘people’ identified that the department nurse would ideally like to make contact with patients via a telephone conversation before arriving in the department regarding the patient’s procedure, but the nurse does not have enough time to always do this. Hiring a second nurse in the department could allow for the practice to be more regular, though it may not be the most cost effective measure. The information that the nurse can give over the phone is not standardised. Non-medical personnel have no resource to offer the patient or a direction to point them in for information. Patients are told to call the department if they have any questions; this means that administrative staff will have to consult a radiologist. Once they have an answer to the query, the message is relayed back to the patient. This could equate to time lost by the administrative staff and a delay in patient communication. As there are multiple radiologists in the department, there is potential for different preferences in regard to what information the patient receives. Communication with the eight consultants and having them agree on what patient education is presented is imperative for the success of an improvement in the department.

‘Technology’ has been identified as a cause that plays a role in lack of standardised information given to patients. There currently are no standardised patient information resources available within the department to direct patients to. In terms of online information provided by the hospital, there is not an online resource for patients who have a scheduled thyroid fine needle aspiration biopsy (FNAB) in the hospital. As discussed in the literature review, the level of detail and readability of
information found online varies. Patients conducting their own online search for information may produce information that is not relevant to the department or cause unnecessary anxiety. This scenario was expressed by one of the patients that attended the department. There are printing facilities available in the hospital, thus if a printed patient information leaflet (PIL) was created it could be easily printed and sent to patients. Utilisation of an existing resource would be cost effective.

The above sub-sections interplay with the ‘organisation’. As initially identified though the process flow map, the consultant in the outpatients department gives verbal information regarding the procedure. The booking office then schedules an appointment for the procedure over the telephone and is unable give standardised procedural information, as they are non-medical personnel. The various departments and professional roles not working in conjunction within the organisation was identified as a possible cause of there being a lack of standardised information given to the patient. The fishbone diagram was a useful tool as it categorised the causes for the lack of standardised information given to patients into sub-sections. This analysis was able to take the information obtained from the process flow map and patient feedback a step further by understanding the causes behind the current process flow map.

3.3.4 Improve

The improve step in the DMAIC approach aims to implement and verify the solution. Various tools can be used to do this, but ‘brainstorming’, ‘process flow improvement’ and ‘piloting and simulation’ were selected as the most appropriate for this project.
Brainstorming is a powerful tool that allows a group of people to quickly generate ideas that could potentially create improvements. Brainstorming allows for creative thought amongst the team. Meeting with the stakeholders and various occasions generated possible solutions to the problem of no standardised patient information given prior to ultrasound-guided thyroid fine needle aspiration biopsy (FNAB). This was the problem the student decided to focus on to improve the patient experience pre, during and post thyroid FNAB. The most popular idea generated was the use of a printed patient information leaflet (PIL) that could be given to the patient before they came in for their FNAB. Different points at which this information could be delivered to patients were also considered and will be discussed later in the chapter.

Currently, procedures such as a liver biopsy and transrectal ultrasound-guided biopsy (TRUS) are performed in the department. These procedures have an existing patient information leaflet (PIL) that is sent to the patient at the time of booking, by the booking department. The leaflet for the ultrasound-guide fine needle aspiration biopsy (FNAB) would ideally provide information regarding: what the procedure is, what to expect the day of the procedure (hospital arrival, etc.), post-procedure care, potential risks associated with the procedure, test results, recommended resources to find further information and useful telephone numbers. These recommendations were a result of brainstorming and discussion around the two ultrasound-guided biopsy PILs that are used in the department. However, there are specific guidelines that are to be used when designing a patient information leaflet. Therefore, an evaluation of the current patient information leaflets may need to be performed; this was not a part of the student’s current quality improvement project plan.
Overall, the process of brainstorming was positive and generated a possible improvement to the current information deficit. The addition of a printed patient information leaflet (PIL) was the most popular improvement generated through brainstorming. The point at which this information is introduced was the next step that needed to be planned in order to implement a change. Consulting the original process flow chart, there were a few points identified where a PIL could be introduced into current practice. The revised process flow map is seen in figure 7. There are two points for information delivery highlighted. The first is when the patient has the appointment with the referring consultant; the consultant verbally explains procedure to the patient. This point would be an appropriate time for the patient to take home a printed form of information, as patients struggle to retain what is verbally explained to them. Feedback from patients in the radiology department reflected this, specifically that they would like to be able to bring something home with them after the appointment.
Consultant (Endocrinologist, surgeon) 
Consultant in clinic refers to consultant radiologist 
Radiology bookings makes appointment, calls patient with date and time 
Patient arrives at radiology and checks in 
Patient greeted by nurse and/or care escort 
Patient id is confirmed and wrist band affixed. Nurse goes through pre-procedure checklist with patient. Patient prepared into gown. 
Patient waits in waiting room in gown 
Patient brought to procedure room. Radiologist meets patient, explains procedure and obtains consent. 
Radiologist preforms ultrasound guided FNA 
Patient brought to waiting area. Tea/coffee is offered and encouraged by nurse/care escort. Patient is asked to remain in the area for 20 minutes. Nurse checks in with patient after 20 minutes and verbally advises the patient about post procedure care and analgesia. 

Figure 7: Revised Process Flow Map
As the ultrasound-guided fine needle aspiration biopsy (FNAB) is a radiological procedure, it would be most appropriate for the radiology department to produce this leaflet and send it to consultants that regularly refer to this service. The second point at which the PIL could be delivered is when the bookings office makes the appointment; they could inform the patient that they will be receiving a PIL in the post along with their appointment date. Both of these scenarios would give the patient an adequate amount of time to read the information and formulate any questions they may have for when they meet the consultant radiologist the day of the procedure. It is yet unknown where the most appropriate time to introduce the PIL, thus a pilot introduction at either stage would be beneficial.

A pilot introduction was not carried out, but the student would recommend it for the project going forward. This would involve generating a sample patient information leaflet specific to this institution’s radiology department and given to patients at the two points highlighted. The drafting of such document would need approval by the consultant radiologists and the improvement department going forward. This pilot would then need to analyse which point of contact is more beneficial to the patient and if the patients found the PIL effective. This falls under the ‘control’ step and will be mentioned in the following section, discussed further in the following chapter.

3.3.5 Control

The control phase of DMAIC aims to monitor and review improvements made in the previous step. This is the point in the project where completion of remaining work takes place and the improved process is presented back to the institution, along with a process control plan (Montgomery, 2009). Tools used during the control step aim to sustain newly achieved improvement. As the student has created a quality
improvement project plan, the improvements have yet to be implemented and thus the plan for control phase will be discussed in the next chapter.

3.4 Summary

This chapter first provided the reader with an introduction to approaches to quality improvement models. Next, the rationale for why the Lean Six Sigma model was selected for use in this project was discussed. Finally, the chapter progressed to a detailed outline of how the framework and specific tools of DMAIC were used by the student to complete the quality improvement project plan (QIPP). The aim of improving the patient experience pre and post ultrasound-guided thyroid fine needle aspiration biopsy (FNAB) of the thyroid gland was explored through the methodology chapter and will continue into chapter four entitled ‘Evaluation’.
Chapter 4: Evaluation

4.0 Introduction

This chapter details the planned quality improvement project plan evaluation. As the project is a plan, this chapter discusses how it could be evaluated in the future and what tools the student would ideally select for this. The model of DMAIC outlined in chapter three used the framework up to and including the ‘improve’ phase. Details of how the ‘control’ stage would function will be discussed in this chapter under section 4.2 along with expected results. Section 4.3 will suggest a dissemination plan followed by a summary of the chapter in section 4.4.

4.1 Overview of QI Plan and Expected Outcomes

The use of DMAIC as a framework for the Lean Six Sigma change model guided the student through the planning of this quality improvement project plan. Specific tools were implemented along each step of the DMAIC that were deemed appropriate for use by the student for planning purposes. The aim of the project was to propose a plan for an improvement to the patient experience pre and post ultrasound-guided fine needle aspiration biopsy (FNAB) in the radiology department of a private healthcare institution in Ireland. The student began with a literature review to search for research and documents related to the project’s aim. The literature review was particularly useful in terms of shedding light on previous studies that looked to improve patient communication pre medical and surgical procedures. These studies gave the student some examples of how an appropriate source and delivery of procedural information can improve the patient’s knowledge. To keep a patient at the centre of care it is imperative that the patient is involved in their healthcare journey and decision-making. The creation of a process flow map allowed the student to see the current patient journey pre and post thyroid ultrasound-guided
FNAB in the hospital. This highlighted points along the way that the patient did not receive formal patient information. Stakeholders and patient feedback further put an emphasis on the need of a patient information source before arriving in the radiology department for their procedure. Booking staff felt like they could not give the patient specific and standardised information over the phone or through the mail, because such a document does not exist. Additionally, the booking staff are non medical personnel and are therefore are technically not qualified in the giving out of such verbal information over the telephone.

After brainstorming with stakeholders and a review relevant literature, an improvement idea was proposed. This improvement was to create a patient information leaflet (PIL) relevant to the radiology department. The leaflet should adhere to local HSE style guidelines. The student would suggest that the medical information included in the PIL would be generated by the consultant radiologists in the department, especially information that they feel is important for the patient prior to the informed consent process. This suggestion is based on work done by Bennet et al (2009), which had the consultant radiologists agree upon and generate 12 points for their information delivery process. The current research is inconclusive as to when the most effective time to give the PIL is, but for the purposes of this radiology department two areas were suggested as possible points of delivery. The first is in the outpatient clinic when the patient is told that they will be going for the procedure by the referring consultant. The second point of delivery is when the booking department makes the appointment with the patient, a PIL could be sent directly to the patient’s home through the mail. This process flow improvement can be seen in figure 7 of the previous chapter.
This proposal to implement the use of patient information leaflets (PILs) to improve the patient experience needs to be evaluated, as the student did not carry out the improvement plan as part of their project. It would be expected that the generated PIL would benefit both the patient and the staff in the department; alas this would need to be tested. The student would propose a pilot study in the department. A meeting with the stakeholders would be necessary, as a member of staff needs to take on the responsibility of the PIL production. Once a sample PIL is produced this could be sent to the patients at the time of booking, with reference to the process flow improvement, this is the second point identified for a potential improvement in communication. The student would propose a trial of the PIL in one location to begin. The expected outcome would be an increase in patient satisfaction and thus an improvement of the patient experience pre and post ultrasound-guide fine needle aspiration of the thyroid gland. This is only an expected outcome, as the proposed evaluation of this plan will be discussed in the following section in relation to DMAIC framework.

4.2 Evaluation

Evaluation is an important process that needs to be undertaken in order to see if a improvement has made an impact, be that positive or negative. The goal of any quality improvement project plan in healthcare is to have a positive impact on patient. Evaluation in relation to the DMAIC model is the final stage in the framework, known as the ‘control’ phase. Measurement is a powerful tool in evaluating a quality improvement project. Upon completion of the proposed pilot of implementing a patient information leaflet, the student would suggest a survey to measure patient satisfaction. A patient survey is a powerful tool in measuring an
improvement of patient knowledge. The student would propose simpler survey for this project. Before the pilot would commence it would be important to survey patients through a written questionnaire, to see how satisfied they are with the current patient experience and ask specific questions about anxiety before the procedure, knowledge of the procedure and if they would like to have received more information and in what format. For the majority of the patients this is their first time attending the department, leaving the department and the procedure largely unknown to them. This feedback would be essential for comparing to a post pilot survey of a new cohort of patients attending the department. Once the pilot has commenced the patient would suggest that a survey is given to the patient prior to discharge from the department that they could either fill in before they leave or send back to the department. It would be expected that there is an increase in patient satisfaction and knowledge post commencement of the pilot project. As per the institution ethical approval would be needed to survey the patients.

4.2.1 Aim of Control Phase of DMAIC

In the future, the aim of the control phase of DMAIC in relation to this project would be to maintain the solution. In this project the ‘solution’ would theoretically be the implementation of a patient information leaflet (PIL).

4.2.2 Monitoring and Review

At this stage in the process communication is vital in creating and subsequently sustaining continued success. Communication during this phase would involve scheduling of events and targets for the department. The student would suggest the utilisation of a Gantt chart, as this was a useful tool used by the student in the planning of this project. A Gantt chart is a visual representation of a schedule using
a bar chart; the student’s Gantt chart can be seen in appendix 1. The purpose of this tool would be to keep the project on task and forward momentum. Maintaining momentum for a project can be challenging, thus it is important to ‘celebrate success’. While this may seem like a simple solution, the act of receiving acknowledgment for the work done by the team can be powerful. Satisfaction can be reached by publication of the work done by the team on a poster in the department or acknowledgement in the institution’s electronic newsletter; this is known as ‘visual management’. Ensuring that there is strong communication between stakeholders and acknowledgment of success would set the cycle of improvement on the right path for future successes.

Along with appropriate communication, review of the progress made is important to maintain success. Creating measurable data would be important here so that data trends could be tracked. Analysing the results of the surveys completed by patients post procedure could generate measurable data. This highlights that the DMAIC is a continuous and evolving process. A particularly useful way of displaying this data would be as trends, for example looking at patient satisfaction levels over time. Setting specific goals with the staff in the department about levels of satisfaction could continue to drive the improvement process.

### 4.2.3 Expected Results

Implementation and utilisation of the DMAIC framework appropriately organises this proposed quality improvement project plan. It would be expected that the improvement that the student has suggested in this plan would improve the patient experience pre and post ultrasound-guided fine needle aspiration biopsy of the
thyroid gland. The results of the data collected in the control phase would produce a positive improvement on patient satisfaction, which is the ultimate goal of quality improvement in healthcare.

4.3 Dissemination Plan
The dissemination phase of the project plan would involve the student presenting the quality improvement plan to the key stakeholders identified and staff in the department. It is important to have a dissemination plan as the success of the proposed project could be explored after solid findings were presented. The student would first meet with the key stakeholders to make sure that they are happy with the plan that has been produced before presenting. A visual aid, such as a power point presentation, would be helpful. For this project plan going forward meetings would need to be scheduled with the hospital’s ethics committee to seek ethical approval in order to conduct a patient satisfaction survey.

4.4 Summary
In summary, the control phase of the DMAIC framework was explored in this chapter. As the student did not carry out the control phase for this QIPP, how the student would monitor the outcomes and the expected results were discussed. The chapter concluded with how the student would present the project to the department and the importance of a dissemination plan.
Chapter 5: Discussion & Conclusions

5.0 Introduction

The final chapter discusses the project impact in section 5.1, with regard to the stakeholders and practice. The strengths of the proposed project are then reflected upon in section 5.2 and followed by the limitations of the project in section 5.3. The chapter concludes with a final summary and conclusion.

5.1 Project Impact

The impact of the presented quality improvement project plan (QIPP) is that the proposed improvements would positively impact the patient experience pre and post thyroid fine needle aspiration biopsy (FNAB). Using the Lean Six Sigma quality model and DMAIC framework the student was able to categorically highlight areas of possible improvement. With regard to the stakeholders, the project plan could help guide them towards improvements that are in line with international and national standards. The practice of improving the patient experience is the ultimate goal of this QIPP, thus the overall anticipated impact on the patient would a positive one.

5.1.1 Stakeholders and practice

The improvement of the patient experience pre and post thyroid biopsy would positively affect the stakeholders, as this is an improvement to their service. The hospital is held to high international standards and thus is constantly striving for service improvements. Various stakeholders expressed the need for standardised written information regarding the procedure so that they could appropriately inform the patient of their scheduled procedure, prior to the arrival in hospital. Implementation of a patient information leaflet (PIL) would be in line with best
practice and appease the stakeholders. This project plan could improve the experience of the patient attending the hospital for a thyroid FNAB. The patient experience could be improved by reducing the fear of the patient with regard to the unknown and what to expect prior to the procedure. This improvement in practice could have positive outcomes post procedure, as the patient is more educated as to what to expect following discharge from the hospital.

5.2 Strengths of the project

The quality improvement project plan (QIPP) was undertaken by a student who had no experience or connections to the radiology department, thus no bias was present when evaluating the patient experience. This lack of bias and fresh eyes could be considered strengths of the project. The improvement proposed by the student in the project plan is quite simple, but the implications of it could be very successful. As it is a simple case that there is a lack of written patient education available in this department, a patient information leaflet (PIL) could be designed based on sources provided by the student. This PIL would be a cost effective improvement as printing facilities are readily available in the hospital and staff are eager to have a document to send out to patients.

5.3 Limitations of the project

Quality improvement projects are often comprised of many cycles of change, thus it is important to identify limitations so further improvements can be tested. One of the limitations of the project plan was that there were no quantifiable data obtained during the improvement plan. In DMAIC it is important to utilise measurements during the measure phase as this helps to quantify the problem. The student would have ideally approached this phase from a qualitative perspective as there student
wanted to improve the patient’s experience. The use of patient experience surveys could help lead to quantifiable measures. This variety of measurement would involve the need of ethical approval. The project did not aim to gain ethical approval; therefore this was a limitation of the project.

A second limitation identified by the student was that the improvement and control phase of DMAIC could not be completed. The expected results in chapter 4 are based on the proposed plan created by the student, completing the proposed tests set by the student in the future would be important for the full evaluation of the project.

5.4 Recommendations
Currently there is no formal patient information given prior to a patient’s arrival for a thyroid fine needle aspiration biopsy (FNAB) in the radiology department of a small private hospital. Following the completion of a quality improvement project plan, it is recommended that a patient information leaflet (PIL) is created and delivered to patients prior to their arrival in hospital for the procedure. The introduction of a PIL would necessitate:

1. The creation and production of a PIL in relation to the FNAB and the department
2. A trial period of delivering the PIL to the patients house after a booking appointment has been made
3. Evaluating the PIL by requesting patients complete a questionnaire regarding the use of the PIL and its effect on their experience
5.5 Learning and Quality Improvement

Prior to undertaking this quality improvement project plan, the student’s knowledge of quality in healthcare was lacking. Delving into the literature surrounding quality in healthcare the student was able to learn a multitude of frameworks and goals that accompany healthcare. Healthcare is not a one-dimensional entity in which the student in the future will solely deliver care as a medical provider, but one in which the student will now actively engage in to make improvements. This is a role in which the student was previously unaware of.

5.6 Summary and Conclusion

Patients often experience fear of the unknown in regard to their journey through the hospital, either for elective or non-elective reasons. The thyroid fine needle aspiration biopsy (FNAB) is a relatively low risk procedure, but one that still requires proper patient education prior to the procedure. The student felt an improvement to this patient education communication would positively impact the patient experience pre and post thyroid FNAB. Improvement through a proposed plan using an appropriately selected quality improvement (QI) model was necessary to identity and plan appropriate areas of improvement. The implementation of a patient information leaflet (PIL) is recommended by the student, thus improving the patient experience pre and post FNAB.
References


Guide to Professional Conduct and Ethics for Registered Medical Practitioners.

(2016). Retrieved from Dublin:


HQIP. (2016). Clinical audit and QI tools: A guide to HQIP resources. London:

Healthcare Quality Improvement Partnership Ltd.


# Appendix 1 – Gantt chart

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Legend:
- **Complete**
- **Planned**
- **Behind Schedule**