Change Project Dissertation: Introduction of Patient Reported Outcomes Measures on a Multi Disciplinary Team Outpatient Clinic

Ciara Campbell

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MSc In Healthcare Management 2012-2015

Change Project Dissertation: Introduction of Patient Reported Outcome Measures on a Multi Disciplinary Team Outpatient Clinic

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Introduction of Patient Reported Outcome Measures on a Multi Disciplinary Team Outpatient Clinic

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Abstract

This organisational development project involved the introduction of Patient Reported Outcome Measures (PROM) to a Multi-Disciplinary Team (MDT). It provides interdisciplinary assessment; diagnosis, treatment planning and follow-up care for patients undergoing orthognathic treatment.

Current literature highlights the worldwide drive for quality improvements in healthcare, especially in the use of patient experience as a metric. Simultaneously healthcare budgets are under severe pressures. This has resulted in orthognathic service being targeted by some commissioning groups in the UK as a ‘low treatment need’ service due to the lack of high quality evidence of its benefits. This has lead to the development of a National Orthognathic Outcome Database including the use of PROM tools to assess the impact of this treatment on patients’ quality of life. This encompasses patient experience, which is a key metric of quality. Therefore, this change project is in line with government policy on quality improvement and evidence based medicine.

The HSE Change model was used to plan the introduction of and ensure compliance with the new national database. This included the introduction of PROM tools to the MDT to determine treatment effect as evidenced by changes in patients’ quality of life. The project was evaluated using the CIPP model, which indicated the aims and objectives were achieved. Results from the first three months of PROMs introduction indicated a high completion rate for the questionnaires and compliance with database completion. There was a statistically significant difference between pre and post treatment quality of life scores for orthognathic patients (P<0.05).

The PROMs data collected is extremely valuable both to inform commissioning groups of treatment benefits and justify service funding, while also providing patient experience data as a quality improvement metric.
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1 Chapter 1 Introduction

1.1 Introduction

This Organisational Development (OD) project involved the introduction of PROM (Patient Reported Outcome Measures) tools to a MDT (Multi Disciplinary Team) clinic with the aim of improving the quality of the service as an application of PROM tools as measured by patient experience, collecting data of treatment benefits to assist commissioning bodies when allocating funding for services and facilitating benchmarking against other hospitals teams to improve the service provided for our patients. Quality has become a key performance indicator within the NHS (National Health Service) and patient experience, a metric for quality, has become highly influential particularly in the aftermath of numerous healthcare failings. In response to previous NHS service failings, many professional bodies have developed speciality specific, nationally agreed, clinical outcome measure data collection proforma, with an aim to drive forward quality in their area.

The MDT service identified for the introduction of PROMs was the joint orthodontic and orthognathic surgery service. This highly specialised care pathway involves multi disciplinary treatment, which is provided routinely to patients for correction of dento-facial deformity and is funded by both the NHS and the HSE (Health Service Executive). Dento-facial deformity is a spectrum of disease, with patients presenting with conditions such as cleft lip and palate, hemi-facial microsomia, condylar hyperplasia and hypoplasia, post-traumatic jaw deformities and patients with significant jaw discrepancies and deformities. Although these conditions are relatively uncommon, they have a significant functional, psychological and psychosocial impact on patients (Esperao et al., 2010). Patients with these
conditions cannot be managed with surgery or orthodontics alone and therefore, there is a complex multidisciplinary high value care pathway for these patients.

The treatment of dento-facial deformity has recognised clinical outcome measures although literature on the process within the NHS is limited (Parbatani et al., 2010). Unfortunately, the psychological and psychosocial impact of the condition and its treatment are not always measured or reported. As health is defined by WHO (World Health Organisation) as ‘a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity’, it is important outcome measures, when assessing quality of care provided, also include softer metrics such as an assessment of patients’ quality of life (QoL) rather than being solely based on hard clinical metrics.

1.2 Rationale for change

A recent commissioning decision by some regions in England to suspend provision of orthognathic surgery has identified a dearth of high quality UK based evidence on the indications, benefits and quality of orthognathic surgery. This resulted in The Royal College of Surgeons of England (RCS Eng) inviting a joint response from the BAOMS (British Association of Oral and Maxillofacial Surgeons) and the BOS (British Orthodontic Society) producing research in the area. In conjunction with the commissioners, patient and lay representatives a commission guide was developed including Quality of Life (QoL) tools to collect data on patients undergoing orthognathic surgery with an aim to develop a National Orthognathic outcome database (RCS Eng, 2013). As charitable organisations have a significant influence on health services, often funding particular aspect of care which are
more patient centred, both BOS and BAOMS liaised with the ‘Saving Faces’ charity developing an orthognathic Quality of life questionnaire to be completed pre and post treatment. (www.jaw-op.co.uk).

Following the Francis report (2013) on Mid Staffordshire NHS Foundation Trust, the NHS defined high quality care as encompassing three equally important dimensions:

- Clinically effective care – assessed by both clinicians and patients
- Safe care
- Care that provides a positive experience for the patient

Improving quality is a primary goal of NHS England and the Clinical Commissioning Groups (CCG), which are the commissioners of Hospital services including Orthognathic Surgery. As patient experience and satisfaction are to become key indicators of quality within the NHS, and may be linked to payment streams, it is critical our service embraces PROMs and embeds them within our processes. The benefit will be two fold: firstly they should aid identification of areas for improvement hence increasing the quality of the service we provide, while in tandem providing evidence to inform CCGs of the service they are required to fund, in line with NHS and WHO policy on health.

The current financial constraints within all healthcare systems including the NHS must be acknowledged, and it is correct that commissioners strive to purchase higher quality care with better value for money for the taxpayer. This has sometimes resulted in commissioners erroneously limiting the types of treatments they perceive as having a low treatment need or having poor outcomes. One of the areas CCGs have targeted is orthognathic treatment, and
justified this decision on a lack of evidence on outcomes and patient benefits. Therefore, justification and evaluation of orthognathic treatment is required to maintain this funding stream in a highly strained and competitive arena.

This challenge from some CCGs ignited both professional bodies of the BOS and the BAOMS to evaluate their contribution to the evidence base for orthognathic surgery (BAOMS 2001). Unfortunately, they too identified a lack of high quality published data on outcome measures for orthognathic treatment, either in the clinical or psychological fields. In fact, there was an absence of research on the impact of dento-facial deformity on patients QoL and the benefits of corrective treatment. Of the research available, it was highly weighted in the clinical outcomes and surgical techniques areas. However, this initiative is voluntary and as not all CCGs are questioning the validity of funding orthognathic services therefore, this may have an impact on the uptake of MDTs becoming involved in the data collection.

1.3 Organisational Context

The organisation (NHS Hospital) is situated in a socially deprived area of the UK and provides multi speciality, secondary and tertiary healthcare to a population of approximately 300,000 people. The Trust's vision statement is ‘To provide high quality patient and client-focused Health and Social Care services through well trained staff with high moral’ (www.westerntrust.ni.net) and is supported by six core values including enabling staff, and employing resources effectively and efficiently. Therefore, the Trust has a commitment to
ensure access to effective treatment for the correction of facial deformity, which should be provided by appropriately trained and experienced clinicians in specialist units.

The change was implemented in a multi-disciplinary setting with input from Maxillofacial surgeons, Orthodontists, Specialist Nurses, Dental Technicians, Doctors in Training as well as administrative staff and, when required, Psychologists. The MDT meetings were held weekly in a polyclinic setting with access to private side-surgeries when appropriate. There are usually 10-15 patients attending each MDT and patients are often at different stages of the orthognathic process. There is continuity of senior staff, Lead Nurse and Consultants care however, junior doctors and nursing staff in attendance is variable. There is a lack of standardisation of the process as each case is unique and decisions are based on the triad of best evidence, clinical expertise and patient choice.

1.4 Aims and Objectives

The initial phase of the OD project will involve the implementation of the use of PROM tools, embedding their use into the culture of the MDT clinic while being compliant with nationally agreed data collection. The primary outcomes will be process evaluation. These will include compliance with national data collection and accurate recording of baseline data, particularly quality as assessed by patient experience and QoL. The second phase of the OD project will be outcome evaluation based with analysis of the changes in patients’ QoL as a result of the treatment provided by the MDT. This data is more valuable when assessing quality of the service, as it will be patient and treatment specific, therefore, providing more
accurate information for commissioners on the impact and benefits of this type of treatment as well as the quality of the service benchmarked against other UK providers.

The primary aim of this project is to adopt the new minimum data set (MDS) collection as outlined by the BOS and BAOMS and introduce the two validated PROMs (Patient Reported Outcome Measure) tools for patients undergoing orthognathic treatment within the department. The new MDS includes:

- Original BAOMS MDS collection sheet (Appendix 1)
- New BAOMS MDS sheet (Appendix 2)
- Two patient completion questionnaires (Appendix 3 and 4)

The first questionnaire (Appendix 3) assesses patient experience of the service and is completed on one occasion at the end of the treatment process. The second questionnaire, sponsored by the ‘Saving Faces’ charity is a QoL questionnaire (Appendix 4) and is completed pre and post treatment with a score comparison used to assess the impact of the treatment on the patient’s quality of life.

**Planned Outcomes:**

Orthodontic outcome data will also be collected. The clinical metrics are:

- PAR (Peer Assessment Rating) which is an outcome evaluation
  - This is a validated metric using pre and post treatment cast models of patients occlusion by a calibrated assessor using a weighted scoring system
• Post operative/surgical complications: recorded as part of the new MDS collection sheet (Appendix 2). The completion of the data sheet is a process evaluation, however, analysis of the contained data will contribute to outcome evaluation.

The short-term objectives are mainly process evaluation:

1. 100% of staff will be aware of all data to be collected at each stage of the orthognathic treatment pathway

2. 100% of staff will have received training in the implementation of the questionnaire and will be confident how to collect the required data and understand where and how the data should be logged

3. The questionnaires (Appendix 3 and 4) will be piloted in December 2014 on 10 orthognathic patients
   a. With a gold standard of 80% satisfied or very satisfied with the treatment process in (Appendix 3) and able to understand and complete (Appendix 4) without assistance
   b. Q2 (pre and post treatment data collection) will be available in paper and electronic format

4. 80% of patients undergoing orthognathic treatment between January 2015 and March 2015 will have completed both questionnaires (Appendix 3 and 4)
5. 100% of patients who have completed orthognathic treatment between January 2015 and March 2015 will be PAR scored in accordance with National Guidelines and 100% of new patients attending the joint MDT appointment between January 2015 and March 2015 will complete both questionnaires (Appendix 3 and 4)

6. 100% of patients who have completed orthognathic treatment between January 2015 and March 2015 will have completed the MDS sheet

The long-term objectives are mainly outcome evaluation:

7. Data collected will be published at local and national levels (British Orthodontic Conference/ Orthodontic Society of Ireland) in the form of oral and poster presentation

8. The use of PROM tools will be embedded in the organisational culture

1.5 Role of the Student in the Organisational Project

As a newly appointed Consultant, I have adopted a leadership role in the identification and introduction of PROM tools to improve the quality of care provided to our patients and to improve the evidence base for commissioning of orthognathic services in our area. Although we have yet been required to provide such data, it is crucial to pre-empt such requests due to the time frame involved in the treatment process and hence data collection. Also it is important to recognise the challenges in introducing change in an organisation irrespective of the urgency or the power of the drivers. As a new member of staff it was vital to attempt to
adapt to the multifaceted challenges while providing responsive, dynamic and transformational leadership during this project.

1.6 Summary

The main aim of this organisational development project was the introduction and implementation of clinical outcome and PROMs tools to improve the quality of orthognathic treatment provided and to add to the evidence base to secure funding of this service. These tools can be used to measure quality, to evaluate the service provided and to help inform and educate the CCGs to the value of this patient process and pathway and the impact it has on our patients quality of life.

Chapter two will systematically review the relevant literature in the areas of patient experience and the newer term PROMs in Dentistry and Orthognathic Surgery to add to the justification of the rationale of this change project. Chapter three will describe the implementation of the change process using the HSE Change model (2008) as a guide to analyse and evaluate the process. The following chapter will summarise the evaluation, findings and the impact of the organisational change, with the final chapter will outline the limitations of the project while drawing conclusions and recommendations for further developments and improvements.
Chapter 2 Literature Review

2.1 Introduction

Health commissioners are increasingly demanding evidence of the benefits of publicly funded services, and clinicians are required to justify the viability of these treatments to secure continued financial support. This evidence is used to provide a more cost effective assessment of priorities within a finite healthcare budget. Equally patients are more discerning and are demanding high quality care in a more patient friendly environment. The NHS has placed patients at its centre in the Health and Social Care Act 2012, with a drive for quality assurance at its heart. There is a greater emphasis on all aspects of quality rather than only clinical outcome measures. As a result PROMs, which assess quality from the patients’ perspective, are becoming valuable tools in demonstrating and documenting the effectiveness of treatments. They are particularly useful in the areas of QoL and are seen as markers of both successful outcomes and as an aid to securement of future funding for the service.

Clinical outcome measures for orthognathic surgery have been developed and published for many years with systematic reviews and hierarchy of surgical techniques commonplace in professional journals (Proffitt et al., 2007). However, this literature review has highlighted a lack of evidence of patients’ opinions or satisfaction using validated QoL questionnaires or PROMs tools in the area of orthognathic surgery (RCS Eng 2013). In fact, there was a lack of inclusion of, or an emphasis on patient experience as an outcome measure for quality in this specialty. Therefore, the driving force behind this change process was to begin to measure both the impact orthognathic treatment has on patients’ experience and QoL, and identify and introduce a PROM tool for orthognathic surgery within the service.
This chapter will give a brief overview of quality in healthcare, in particular the aspect of patient experience as a metric. I will review existing patient satisfaction and patient experience tools used to assess outcomes and the impact they have on healthcare. I will analyse the reasons for the introduction of PROMs tools in healthcare including the increasing importance of patient satisfaction within the NHS and specifically the use of these tools in orthodontics and orthognathic surgery. This will lead on to factors that influence patient experience, the measurement of quality within healthcare and the role PROMs have in the assessment of quality. In summary I will outline the challenges and benefits of introducing PROMs in a service.

### 2.2 Search methodology for identification of studies

A detailed search strategy was developed and revised appropriately for the following electronic databases: PubMed, Google Scholar, Health Business Elite, Emerald, Medline and Embase via Ovid for the time period 2004 – 2014, using English only text from peer-reviewed journals. Due to the lack of academic articles in the areas of orthognathic surgery and PROMs or patient experience, a wider search strategy was undertaken using more general terms such as ‘patient experience’ and ‘quality’ to identify studies for inclusion in this review. This was then reduced based on duplications, year (2009-2015), language, setting, quality (peer-reviewed) and relevance. The search strategy combinations of key MESH terms and inclusion and exclusion criteria are stated in Appendix 5. I also reviewed academic books, organisational publications and grey literature. A summary table and critique of the 54 reviewed articles identified by the MESH terms is included as Appendix 6. All sourced articles are included in this summary table.
2.3 Patient satisfaction and quality

The healthcare environment is dynamic and rapidly changing, and there is an increased emphasis on patient-centred care and patient satisfaction as a metric for quality. But what is quality and how is it defined? The NHS definition of quality gives patient experience equal importance to clinical effectiveness and patient safety (Darzi, 2008). Patient experience is now a top priority for hospitals and there have been a wide variety of approaches to measuring patient experience (Fellows 2015). Quality in healthcare is traditionally measured with structure, process and outcomes (Donabedian, 1966). Patient satisfaction and experience is part of the outcome dimension. This interest in patient experience has previously been assessed as patient satisfaction in many studies (Wilson, 2009).

Many patient satisfaction surveys use a Likert-type scale with 5 ‘excellent’ and 1 indicating ‘poor’ with equal intermittent intervals. Most managers assume a score of 3 ‘good’ or 4 ‘very good’ would be acceptable and may target information on low scoring patients with an aim to use this data to improve the overall hospital score. However, further investigating reasons for patients scoring ‘3’ or ‘4’ would be more beneficial. Research by Otani (2009) surveying 14,432 patients, reported a score of 5 ‘excellent’ is required to achieve patient loyalty as patients who are merely satisfied with the care they received are likely to go elsewhere in future (Carr, 1995). Otani (2009) also demonstrates healthcare is a competitive markets and as patients become more educated and Information Technology (IT) literate they expect a higher level of service and quality from hospitals.

Gans (2015) found the relationship between satisfaction and quality weak. He suggested
more detailed data analysis was required rather than auctioning based on the final satisfaction score. Some studies (Sakowski et al., 2004) suggest patient satisfaction is a uni-dimensional variable, while others (Lee, 2005) argue patients’ reaction to their care influences their willingness to recommend, their willingness to return and their overall experience. Studies have shown that there are many factors, which influence patient experience, and these will now be discussed in more detail.

2.4 Factors Influencing Outcomes

While patient satisfaction is a key aim in health care, the definition of satisfaction can be difficult. It involves a number of factors including physical, psychological and psychosocial aspects, as well as realistic or unrealistic expectations, external or hidden drivers, amount and type of information provided, and communication between the patient and the team (Otani et al., 2009). A number of studies have researched the factors influencing patient experience and analysed the likelihood of receiving an ‘excellent’ score. Otani (2010) concluded that not all attributes considered by patients when assessing their patient experience were equal, and any quality improvement initiative should identify and target the most influential factors to maximise improvement in outcome scores. Factors that have been analysed include patient factors, organisational factors as well as the influence of staff on overall satisfaction.

2.4.1 Staff factors

Using logistic regression analysis, Otani et al., (2009), in a hospital setting concluded overall care provided by staff and the nursing care was the most influential factors rather than physician care and the admission process. These in turn were more influential than the
standard of the room or the food on the patient reported satisfaction scores. In later research, Otani et al., (2012) investigated the quality and willingness of patients to recommend a particular hospital using patient satisfaction questionnaires, and found that patient health was the most influential on the overall score rather than the previously reported factors. Also, if the patient had a more serious illness, the hierarchy of influence of patient satisfaction score changed; with physician care and food having a greater impact than staff care or nursing care. This is in agreement with Jones et al., (2013), who found health status and availability of private health insurance correlated with patient experience and service rating, however, there was some sampling bias in this study.

A number of studies, particularly those based in the UK, placed nursing care as the most or one of the most important factors in patient experience Wilson (2009), Kinnair (2010), Otani et al., (2010), Lin et al., (2012) and Turney (2013). This may be due to the value patients place on creation of a trusting interaction with healthcare staff and the empowerment of the patient as shown by Nygardh et al., (2011) in an interview based disease specific study. Behar-Horenstein et al., (2012) in a Dental Hospital setting used focus groups and email surveys to identify the importance of the human side of change and provided a very useful acronym for TEAM (Together Everyone Achieves More) for improving patient experience scores. This was further evidenced by Bowles (2012); who also assessed the value of teamwork and reported it as having a positive impact on improving outcome ratings.

2.4.2 Patient Factors

Often, studies reporting patient satisfaction did not give any details of the demographics of
the patients sampled which leads to difficulties in assessing patient factors and their influence on patient experience scores. Possibly due to the large numbers of patients or the anonymous nature of the research studies it was not practicable to record this information. However, this would be beneficial as the limited data does suggest patient factors are highly influential for example Bleustein et al., (2014), in a study weakened with response bias, found older patients generally gave higher satisfaction scores than younger patients. Later in 2012, Otani again using patient satisfaction questionnaires to assess influences on patient experience and concluded that health status and the severity of a patient’s illness were highly correlated with patient experience scores, and physician care was more important than general staff care.

Another patient factor effecting patient experience outcomes was patients expectations based on previous experiences. Although previous experiences were ‘satisfactory’ it was found that this was not an indictor of loyalty or likelihood to recommend the hospital or service. Factors most likely to prompt high scores were personalisation of treatment and consideration of the opinion of the patients’ family (Needham, 2012). In a systematic review of sixty papers by Waljee et al., (2014), they concluded that patient expectations inconsistently correlated with post treatment PROMs and there was no accurate method to assess pre-treatment expectations.

Alanko et al., (2010) in an excellent methodological systematic review highlighted two important facts; firstly, the importance of patient motivation for seeking treatment and its effect when assessing outcomes of care and secondly, the need to collect patient self reported benefits as these were not found using current satisfaction tools. It is interesting that patients’ self reported benefits of treatment were not identified by any of the metrics used yet patient
Minority groups were not always represented in patient experience data and Betancourt (2014), discussed the disparity of care based on race, socioeconomic status and education. He also reviewed the influence of the culture of the patients and the provider with regard to their communication, interaction and values as well as the impact of patient’s mistrust and their lack of follow-up of care on patient experience.

2.4.3 Organisational Factors

Healthcare organisations are driven to improve quality for many reasons. The majority of stakeholders are committed to providing patients with high quality care and are beginning to use patient experience scores as an indicator of success. As patient choice and ‘money following the patient’ incentives become factors in NHS funding streams, providers require patients to be both satisfied and loyal, as satisfied patients tend to comply with the treatments prescribed and therefore are more likely to get well, and are less likely to seek medical treatment elsewhere (Zandbelt et al., 2007).

Liu et al., (2010), carried out extensive telephone questionnaires using two new validated and analysed experience tools. They illustrated the need to assess both patient and family desires when targeting improvements in patient experience outcomes. This corresponds with Needham’s (2012), findings on the lack of correlation of patient satisfaction with loyalty. Patients wanted empathy (Free, 2014), and patient-centred participation (Thorarinsdottir et al., 2013), if satisfaction scores were to improve.
Liu et al., (2010), found care responsiveness, communication and empowerment were as important as clinical reputation and efficiency of the hospital. In a smaller well-designed speciality specific focus group based study, patients reported the value of staff identifying their individual needs while supporting them during their care; this had a great impact on their perception of the quality of the service they received (Hancock et al., 2011). Kennedy et al., (2011), reporting on the development of a patient experience improvement model reinforced the importance of service values, accountability of staff as well as the necessity of using multiple data sources, which need on-going monitoring and control if you are to achieve improvements. They also introduced evidence of the need for recognition and reward for staff implementing any quality improvement model.

Stichler (2012) took it a step further and investigated the impact of provider experience on patient experience. He concluded that ‘patient-centred’ care was undefined and reported the importance of vision, leadership, culture engagement and commitment of the providers, before improvement in patient experience would be evidenced. Bitton et al., (2014), provided a commentary of PROMs and in particular the benefits of integrating PROMs into the electronic patient records and the value of accurate PROMs prediction models. This will provide easily accessible long-term data, which would be extremely beneficial to the quality improvement team.

Bleustein et al., (2014) looked at the impact of waiting times on patient satisfaction scores. Predictably, wait times heavily affected patient satisfaction scores. Surprisingly, increased wait times also influenced patients’ perceptions on information given and explanation of instructions as well as overall care from physicians and other healthcare professionals.


2.4.4 Financial Considerations

Potash (2011), discussed the value of collaboration between the financial staff and clinicians and illustrated the importance of integrated clinical data to drive improvements. They demonstrated the benefits of bringing physicians on board and the role senior managers play in this change process. In addition, Lipley (2011), produced evidence, using data from a UK Hospital that higher patient experience scores resulted in an overall lower cost of care. In a study by Tompkins et al., (2009), they proposed quality should focus on outcomes and introduced the concept of Value Based Purchasing (VBP). Further, they suggested VBP could provoke transformational changes in patient care.

2.4.5 Other Factors

There are many stakeholders in healthcare and the consequence of National Policy is highly dominant, Frampton (2012). Health promotion strategies have also been shown to be influential (Bitton et al., 2014) as well as Regulations (Gillam et al., 2014). Community services are stakeholders who greatly influence patient experience outcomes. Community orientation has been shown to improve process measures and patient experience outcomes in a study based on data from a US national survey, (Kang 2013). Again using national data from the US, Ollier Weber (2013), showed the importance of data analysis and the importance of analysing trends rather than individual numbers when trying to improve the patient experience aspect of quality.

Team working has a positive impact on patient experience scores (Molpus, 2014). Training of staff is crucial for an effective introduction of PROMs. A review article in Healthleaders (2014), illustrated the importance of staff training and the necessity of identifying the best
team members to train others. They also reported the need for a national introduction of these tools, with a strategic plan incorporating training and IT support to improve compliance and achieve nationally set targets. In a weak case series describing the introduction of patient experience tools, Consolvers et al., (2014), discussed the benefits of accuracy and consistency when using the tools and of the learning available if staff interactions during the staff training are also recorded.

2.5 Tools PROMs

In 2015 the reality of PROMs lags behind the rhetoric. This may be due to the different philosophies, perspectives and range of approaches, which has resulted in confusion among healthcare professionals, or it may be a result of the challenge of the change, an actual cultural shift and a lack of will to do things differently. Boyce et al., (2013), in a systematic review of PROMs in primary and secondary care discussed both the lack of research on PROMs as a tool for performance and the high cost of implementing PROMs tools. Furthermore, they concluded the results gained from PROMs were often related to the function of the PROM tool itself. This lead to Robinson (2010), in an opinion piece expressing concern about the validity of questionnaires and highlighted the importance of using standardized national questionnaires with consistent scoring mechanisms if comparisons were to be made.

Westerby (2012), used a combination of interviews, questionnaire and existing PROMs tool to develop a definition of effectiveness of care. He concluded if PROMs were to be useful to commissioners such as CCG in the UK, they needed to be straightforward, simple to use,
neither too long nor too complex. They should be developed with patients and rigorously tested to ensure consistency and sensitivity. He also stressed the value of IT support and provided some evidence that nurses are best to administer PROMs. As previously reported, it is crucial to analyse all data not just the overall score to gain the most information.

Significantly, data collected from patients is only effective if it leads to an improvement or change. Unfortunately, the impact of patient feedback is minimal if clinical practice is not improved. Coulter and colleagues argued recently in the British Medical Journal: ‘It is unethical to ask patients to comment on their experiences if these comments are going to be ignored’ (Coulter et al., 2014, p348).

Van der Wees et al., (2014,) presented international expert opinions in the areas of PROMs and their usefulness for patient-centred care, comparative effectiveness and practice improvements. They also predicted the usefulness of PROMs for performance assessment of Healthcare staff and Organisations as well as it use as a metric for value-based payments. They acknowledged that the feasibility of wide spread use had not yet been assessed however, there was wide spread support from stakeholders for their introduction. They identified barriers to the introduction of PROMs such as the complexity of establishing routine data collection as well as the possible tension among stakeholders about different uses of PROMs data collected. They conceded PROM use was underdeveloped and not at all integrated into healthcare and to do so, would require tailoring of PROMs to each healthcare system.
2.6 Orthognathic Surgery

The impact of facial deformity has been measured in some international studies with the impact of treatment assessed throughout the orthognathic process. Espera et al., (2010), in a study with bias in patient selection, recorded the negative affects of facial deformity and the improvement in QoL scores both during and post treatment. Validated QoL questionnaires have been used in some small studies showing a statistically significant difference in before and after QoL scores (Choi et al., 2010). In a high quality systematic review by Alanko et al., (2010), motivation for treatment in a orthognathic patient group included self-confidence, appearance and oral function though these drivers were not identified with the assessment tools used, rather they were self reported by the patients, highlighting the deficiency of currently used PROM tools.

Olan et al., (2011), used validated questionnaires in an assessment of pre and post-treatment profiles as a tool to measure satisfaction with orthognathic treatment. While the study demonstrated that the majority of patients, males more than females, were satisfied with the treatment, the assessment tool chosen was not able to measure this patient satisfaction. An extensive systematic review by Kanatas et al., (2010), also identified the difficulty in selecting the most appropriate questionnaire for research and suggested guidelines for standardisation in future research.

2.7 Conclusions

The NHS impetus for quality, rationalisation of services and patient centred care has driven professional bodies to provide an evidence base and quality assurance of their services.
However, there is a lack of standardised, validated PROMs tools, which can accurately capture patient experience. It is incumbent upon each speciality to liaise with the quality improvement teams and National bodies to develop with patients PROMs tool, which will capture the evidence needed to measure the quality of the service provided from a patient experience perspective. Satisfying patients is a first step to ensuring continued commissioning in this highly competitive healthcare environment.

This literature review has highlighted the growing importance of quality in healthcare particularly quality defined by patient experience. This is a common finding across all healthcare providers irrespective of funding, private or public, and is independent of setting or type of treatment. It has identified the importance service providers are placing on patients’ opinion rather than clinician preference. The literature review has shown the publics perception of healthcare is changing and how the role of the patient is becoming more powerful. As money comes with the patient within the private sector and there is a drive for funding to follow the patient in the public sector; assessment of patient experience and evaluation of the quality of the service provided will be critical in the future to secure financial security. This research has also identified the multifaceted nature of quality as assessed by patients and has identified areas healthcare workers may previously not deem to be important. Therefore, it was incumbent to identify a questionnaire that would be relevant in this changing patient experience environment.

The literature identified and informed my choice of questionnaire and alerted me to the importance of having colleagues on board prior to its introduction; and the value of staff training in the use of PROM tools and the key role nursing staff will play in its
implementation. The areas discussed in the literature review will inform my planning and introduction of the change project and will provide discussion points throughout the change process. I will use these findings to inform my reflections during the project and I will use it to inform my discussions and final recommendations of this dissertation.
3 Chapter 3 The Change Model

3.1 Introduction

This chapter will describe the organisational change project undertaken, using a structured Organisational Change Model, which guided the change initiative. The Health Services Industry is a post-industrial, networked organisation, which is ever evolving and should strive constantly for improvement (Francis, 2013), subsequently; they are in a constant state of flux. Attempting to carry out any change in an organisation is challenging in a stable environment, which does not describe the Healthcare Industry. Kotter (1995) noted that change must be carefully managed or it will fail, and further reported that 50% of organisations fail in the early stages of the change process (Kotter, 2008). Balogun and Hailey, (2004), reported that 70% of healthcare change initiatives fail, however, Leeman, Baernholdt, & Sandelowski, (2007), noted the use of a change model increases the likelihood of successful change while in addition Werkman, (2009), found successful implementation of change was dependant upon engagement, participation and commitment of all levels of staff. Therefore, careful analysis and consideration was needed to select the most appropriate change model for this project.

There are a plethora of change models; each with its own strengths and weakness unfortunately, there is no universally accepted change model, which is suitable for all healthcare settings (Todnem By, 2005). This chapter will review some commonly used change models, discuss how organisational culture and leadership impacts change and discuss why the HSE Change Model (2008), was chosen. In conclusion, a detailed description of the change project will be discussed using the HSE Change model as an outline structure.
3.2 Culture

McAuliffe & Van Vaerenbergh, (2006, p68), define culture as ‘the way we do things here’, however, the NHS has identified a consistent discrepancy between the views of NHS executives and front line staff on the current culture within the organisation (West et al., 2004). Executives tend to be much more positive about the working environment and culture than other staff, particularly nurses. This lack of consensus is cause for concern when embarking upon a change imitative within a struggling NHS department (Kings Fund, 2014). Another challenge of cultural change is subcultures within an organisation (Davies et al, 2000). It is imperative to appreciate that each group or department identifies with their own strong culture as it reinforces ‘the way they do things’ and consequently can inhibit creativity, reduce flexibility and become a barrier to change (Gill, 2011).

As a newly appointed member of staff embarking upon the project it became evident that this change project would involve a change in departmental culture. These changes would include a change in the structure of the MDT outpatient clinics, additional roles for nursing and auxiliary staff and evaluation of all consultants’ treatment outcomes, objectively with clinical measures and subjectively from patients’ perspectives. While this is in line with other UK NHS Hospitals, it was a significant cultural change within the organisation as well as the department, and was viewed with scepticisms and fear by some, particularly as a new member of the team was promoting its introduction. It was important to consider, as Oakland & Tanner, (2007), highlighted, effective change must be aligned with the culture of the organisation, and that culture has a power influence on any change project and any attempt to change culture is difficult (Brazil et al., 2010).
This change project impacts a number of specialties, teams and subcultures as well as evaluating their outcomes. While this change is in line with both a drive for improvements in quality assessment, organisational vision and professional bodies accreditation, it still requires a change in the culture of care delivered. The writer needed to appreciate that not all change methodology is transportable across national and cultural boundaries (Senior and Swailes 2010), when planning and implementing the change project.

3.3 Leadership

Organisational culture is acutely related to the type of leadership that is supported and promoted within an organisation. Leadership can be described as ‘the art of motivating staff towards a common goal’ (Roberts, 2005, p124). Over the last few decades, the NHS has become increasingly team and MDT lead which has resulted in knowledge, influence and leadership for change moving not only from top-down to bottom-up, but also laterally (Day et al., 2006). Rapid changes in the NHS due to economic and technological necessitates require transformational leadership. A leader who communicates ‘why’ they are implementing change as well as ‘what’ and ‘how’ has a greater impact than a leader who merely states ‘what’ and ‘how’. It is important to consider the impact the changes either tasks, or role related, have on staff performance and also to consider the emotional context (Zoller and Fairhurst, 2007). This requires acknowledgement of conscious and unconscious dimensions of interactions and power relationships including anxiety, envy, anger and emotional ties between people as this change project comprises staff of different sex, roles, grades and disciplines (Ford, 2008).
An inspirational or transformational leader is someone who can develop a vision, which is attractive but achievable; effectively communicate this, while still being able to relate emotionally to the team. This leader can then lead a team or organisation toward change. Lack of transformational leadership has been cited as a critical factor in the failure of numerous organisational development initiatives. Smollan, 2010, illustrated the importance of trust and emotions on organisational change. He emphasises the impact the employees’ ability to trust the change agent has on the likelihood of successful and the author spent time building trust within the MDT and cultivated these relationships.

However, the NHS has reported key leaders require a second dimension, described as distributed or supportive leadership. This is the sharing of leadership between several leaders, whom together, generate commitment and guidance (Grint, 2005). The combination of these two leadership models has been shown to be successful within the NHS (Alimo-Metcalfe et al., 2007). This may be a result of empowerment of front line staff, inclusion of all team members and devolved decision-making, which is in-line with the emerging organisational cultural change. Therefore, a transformational/engaging and distributed leadership was adopted in an attempt to improve the likelihood of success (Alimo-Metcalfe et al., 2007).

3.4 Change Models

There are a variety of approaches to change; step and organisational, linear and circular, prescriptive and consultancy orientated, with planned, emergent, contingency and choice change the most dominant approaches (Burnes, 2004a). The situation should dictate which
approach is most appropriate as change in actuality is neither completely planned nor emergent (Senior and Fleming, 2006). The use of change models has been shown to increase the likelihood of success (Leeman et al., 2007), and when implemented correctly achieve the desired goals (Shanley, 2007), however, as already alluded to there is no one “best’ model.

Lewin’s model, proposed in 1958, is based on force field analysis where the assumption is that change will occur when the drivers for change are greater than the resistance to the change, enabling a permanent change (Morley et al., 2004). This is quite simplistic and describes the change process in three phases, ‘unfreeze, change and refreeze’. The unfreezing phase includes the use of strategies to reduce resistors, which may include communication and education of the need for change. The middle phase is change implementation through structural and process change driven by a change agent. This model assumes the attitudes and values are changed also at this time with the final phase, ‘freezing’, stabilising the new situation. While this model is an excellent framework (Todnem By, 2005), it lacks detail and offers no practical guidance (Eldrod and Tippett, 2002); therefore, many adaptations have evolved. However, for small incremental changes it has been shown to be extremely effective (Burnes, 2004).

This linear approach is not suited to complex organisations undergoing constant change. In fact one of the most common criticisms of change models is the assumption that organisations are stable and can easily move from one state to another. They ignore the chaotic reality of change, the shifting goals, evolving goals, unplanned events and unexpected implications of change (Cummings and Worley, 2008). They also assume all stakeholders
are motivated to change and any conflicts can be easily identified and managed (Burnes, 1996).

Kotter’s 8 stage change model (Kotter, 1995), developed after analysis of multiple and varied organisations, identified the major errors leading to failure of change initiatives (Mento et al., 2002). It leads the process step by step emphasising the importance of creating a strong leader who empowers and communicates a the vision and the sense of urgency, drives through the change achieving short term wins and consolidates the change (Gill, 2011). This model has been extremely successful, however; some of its weaknesses include rigidity, lack of people-centeredness, achieving change through control and compliance rather than engagement while a lack of ability to deal with problems encountered during the process (Appelbaum, 2012).

While both these models have been successful in organisations with a stable environment, and the Kotter model (2005), being an extremely useful starting point, they were not chosen in this situation as healthcare is continuously subjected to the complexities of financial uncertainty, conflict and politics (Shanley, 2007). While Kotter’s model itself may not be suitable for this change project some of its strengths such as the importance of a transformational leader, as previously discussed is still critical to achieve effective and long lasting change.

Another simplistic change model is the PDSA (Plan, Do, Study, Act) first introduced by W.A Shewhart in 1939 (Best and Neuhauser, 2006). It was adapted and promoted by Deming and
is more commonly known as the Deming cycle. It allows assessment of the process to identify the difference in achieved and planned outcomes (Senapati, 2004). Like Lewin’s model, it lacks detail however its strength lies in its cyclical nature allowing continual analysis and improvement throughout the change process. This was used in combination with the HSE change model.

Senior and Swailes (2010), is an action research based model. Its strengths include acknowledgment of the cyclical nature of change, the importance of an accurate diagnosis of the current state, the key role of the change agent and the on-going process of change. Bell, (2006), recommended this model when ‘a new approach is to be grafted on to an existing system’, though it was not specifically designed for healthcare.

The HSE change model is a healthcare model, based on published change management and best practice literature, including the NHS Change model, and was specifically modified for the Irish Healthcare system, which has many similarities with the NHS. This model recognises the cyclical nature of change, the key role of leadership and the importance of participation of the team in the process. It has regular evaluation and feedback loops, which monitor each stage of the process, and provides informative feedback and highlights areas requiring address. The lack of observable results is a major weakness in many change models and although this change project will deliver the most valuable data in 2 to 3 years, the HSE model also allowed the inclusion of short-term evaluation stages. It acknowledges the difficulties of instigating change and allows time for process, structural and cultural change.
Healthcare is a complex organisation undergoing constant evolution. It is constantly under divergent influence from internal and external drivers including budgetary constraints, an increasing and aging population as well as changing needs and expectations (HSE, 2008). Both the HSE and the NHS are currently undergoing unprecedented changes and this model emphasises the necessity of involving people in the change process, and as they are not linear in nature, allow for redress of resistance encountered during the process reducing delays and loss of impetus.

While a number of different change models were considered for this project, the HSE model was found to be the most appropriate for this change project. This change model incorporates many of the strengths of the other models including, assessment of the current situation, involvement of stakeholders, constant analysis, awareness of culture while being flexible and cyclical. The writer found the role of change agent difficult; although leadership was emphasised in this model, its exact role was not clearly outlined, therefore reference to other
leadership styles previously discussed was adopted. Also, the transition between stages was challenging as it required completion of the previous stage before progressing onwards however, the cyclic nature of the tool was beneficial.

3.5 The Change Process

3.5.1 Initiation

This is the developmental and preparation stage of the process, which lays the foundations for the change process. Change is often triggered by organisational crisis and is therefore reactive (Nelson, 2003), however without change, organisations would ultimately fail (Johnson and Luecke, 2005). Change allows organisational growth, development and adaptation to environmental needs. One of the keys to successful organisational change begins with planning and learning from those involved in successful implementation of change or those who study the process.

Another key to a successful change is a transformational supportive leader (Gilmartin and D’Aunno, 2007) who has identified the need for change and effectively communicates this to key stakeholders, while creating a sense of urgency and readiness within the organisation. An authentic leader targets key stakeholders and drivers as well as identifying resistors during the initial assessment (Avolio et al., 2009). It is important the leader is self-aware and embraces resistance publically (Ford et al., 2008). It is also imperative the change agent’s actions do not contribute to the occurrence of resistance and they remember resistance encountered can be a resource for change (Ford et al., 2008). The change agent should assess the impact of the change and facilitate the development of aims, objectives and outcome
measures while securing the resources needed. This stage is crucial and provides evidence and support for the change process.

This stage began when the author was appointed in a leadership role in a new NHS hospital. The author recognised the critical nature of leadership style, particularly in the healthcare environment (NHS, 2011), and a supportive transformational leadership style was adopted to maximise effectiveness (Papworth et al., 2009). The author was aware of the current literature supporting leadership, which assists employees reaching their own potential, and this was adopted as a key objective within the change project. This change was driven by external factors, including the political landscape, which is often the case in public sector organisations (Gill, 2011), however, as a change agent it was incumbent to stimulate the team, challenge the status quo, communicate the vision and urgency of action.

Fleming & Spicer, (2014), explored the impact of power on organisational change and its fundamental and inescapable nature; without it, organisations would not be able to function. The external power of the commissioners over the speciality was one of the key triggers for this change project. Power has been described as having four faces, coercion, manipulation, domination and subjectification. Power also occurs in multiple locations. Power often has negative connotations but it is required to facilities change (Clegg et al., 2006). The author identified the usefulness of power in this particular change project and used it to produce desirable behaviour changes.
There were a number of tools used by the writer when preparing to lead the change project. Initially the current situation was evaluated using a SWOT analysis (Appendix 7: Table 2). This strategic planning tool helped determine the change details, identified leverage points, and explored the strengths and opportunities facing the team while acknowledging the weakness and threats it faced. This helped focus the project emphasising the need and value of the change proposed while allowing the change agent to target energy to reduce weakness while capitalising on strengths. The strengths of the change project were the support of both professional bodies and the drive from commissioners in the UK for evidence for orthognathic services. The awareness of some of the senior team members of the new commissioning structure in the UK and the strong core of the team helped cascade the vision for the change to the team while building momentum. The opportunities included establishing the hospital as a regional leader in the implementation of national PROM tools and influencing the power dynamics for the unit and Hospital regionally.

An environmental assessment of drivers for change involved a PESTLE analysis (Appendix 8: Table 3), informed by the Force Field Analysis (Appendix 9: Table 4) to inform the strategic plan. This allowed identification of key stakeholders, drivers and resistors prior to both formally and informally engaging with the different groups (Humphrey and Aime, 2014). This was particularly useful as the author was a new member of the team. The author had never worked in this region before and the culture and political landscape were very different. The author also had no knowledge of the relationship or dynamics within the department and this allowed time to familiarise themselves with the new environment.
Despite the challenges of being an unknown quantity to the team the author proceeded with clarification of the vision and its promotion through clear and regular communication. Increased and improved engagement between doctors and nurses has been shown to improve patient safety (Laschinger and Leiter, 2006). Dixon-Woods (2012), recommended the use of hard data to secure emotional engagement during change. The author discussed the actions of commissioners in some UK regions suspending orthognathic services due to their lack of data to evidence the services benefits. The author is also aware of the phenomena of ‘change fatigue’ and recognised the importance of acknowledging the backdrop on which this change project is occurring. As this change was in line with organisational developmental plans, staff were less likely to feel pulled in many directions (Dixon-Woods, 2012).

3.5.2 Planning

This stage of the HSE Change model involves engagement of key stakeholders to build a shared vision while continuously communicating the process of change to the key stakeholders (Table 5). It is an opportunity to outline the details of the change process and generate support for this change. However, the power and legitimacy associated with each group, as assessed by the change agent, may influence the priority given to that group by the change agent (Boesso and Kumar, 2009). The use of SMART (Doran, 1981), is a useful tool to communicate the objectives of the project. It is also crucial to cultivate an environment receptive to the change and in line with the organisational culture and subcultures. The change agent introduced the change project to the team at monthly clinical governance meeting using a power-point presentation. This included an anonymised questionnaire assessing staff awareness of the patient experience data, PROM tools, CQUINs (Commissioning for Quality and Innovation) and QoL data. UK hospitals are routinely
collecting this data as an assessment of quality of the services they provide and for negotiating with commissioners for service funding. This was discussed and explained during the presentation and linked to the current funding of the service. The presentation was followed up a week later with small focus groups of consultants, nursing and NCHD staff to identify any areas of concern and encourage engagement with the change.

The process of engagement began with email contact with the Northern Ireland Lead for Hospital Dentistry and direct contact with the Departmental Clinical Lead. It was important to liaise with key stakeholders who were also experts in this area, who had led change a local and national levels before and who could provide expertise and guidance for the project. They both recognised the importance and value of the project, which is in line with upcoming commissioning changes as well as its value for strategic planning and as a quality metric. The proposal was further discussed at a regional consultant orthodontic meeting that meet quarterly. This raised awareness of PROM tools amongst the regional MDT leads and alerted them to the impending changes in funding structures in the UK for this particular service.

The literature review had already highlighted the current emphasis on quality within healthcare and the importance commissioner’s place on patient experience, and in particular PROM. It recognised commissioners as a very powerful group and identified their influence in the UK and the probability of their influence in this regional in the future. It had also helped identify nationally agreed validated QoL questionnaires as well as establishing links with a key charity, ‘Saving Faces’.
The purpose of this project was to implement PROM tools as a quality measure to inform local commissioners of services, while also engaging with patients to assess the impact of the treatment on their QoL, improve quality of the service at a local level by identifying areas for improvement, in addition to providing valuable evidence for the General Medical Council (GMC) and General Dental Council (GDC) appraisal process for consultant staff. The revalidation and appraisal processes are relatively new though more senior staff were aware of their personal requirement to provide evidence of quality and patient feedback through the new GMC/GDC appraisal process, which was another powerful external driver for engagement in the change process.

Although there is currently no statutory requirement for nursing or NCHD staff to engage in the appraisal process it is an organisational requirement and therefore valuable at a personal level. It was important to communicate this benefit when introducing the change process and this was done during the initial presentation to enthuse staff about the process and to highlight a personal benefit to the change. The presentation also recognised the excellent work of the team but identified the lack of acknowledgement of the service due to the lack of collected or published data to evidence this: and acts as more of an intrinsic motivator (Dixon-Woods, 2012).

The nursing staffs play a key organisational role during the MDT outpatient clinics and the introducing of addition duties including clerical work is a modification of the current data collection process and hence increases their workload. It was important the change leader embodied a strong supportive leadership style and accepted there would be some resistance to this change. This was addressed by educational workshops informing staff of the benefits of
this data collection and the impact it could have on the service if it was not undertaken. The author used inclusion, explanation and gentle persuasion to effect the change. An observation study of the current MDT outpatient clinic process was undertaken for one month in addition to a retrospective audit of current data collection. This provided local data, including patient number, compliance with local minimum data sheet collection, which could be compared to current published evidence from other UK MDT orthognathic services: it also analysed previous audits of the MDT clinics. This helped validate the proposed introduction of PROM tools, illustrated the gap in information compared to national guidelines and explained the value and use of collecting this information.

As the number of key stakeholders was small, the author was able to meet them informally after the workshop to address any issues arising, which facilitated feedback, this may not have been forthcoming in a larger forum such as the governance meetings. One of these meetings led to the development of patient information tools and patient folders for use at the MDT clinics. An information leaflet and poster displayed on the outpatient waiting room noticeboard were used to inform patients of the new questionnaires they were invited to complete, and also acted as a prompt for staff to distribute the relevant folders during these busy clinics. A colour coded pre and post treatment folder was prepared in advance of each MDT clinic, with responsibility for administration delegated to the senior nurse. The patients to be invited to complete the PROM tools were identified prior to the clinic and a coded reminder was marked on the clinic list. A pre clinic meeting was agreed with consultant or senior registrar representation to review the clinic list and confirm the patients appropriate for PROM tools. These meetings clarified roles, and confirmed practice building confidence while supporting staff. As this was only a small increase in workload for those on the clinic the author felt the change was likely to succeed (Sirkin et al., 2005).
Fortunately, the clinical lead attends the MDT clinic regularly and was highly motivated to support the change project. Full authority for the development of the clinic and the introduction of PROM tools was delegated to the author, which improved the author’s authority and influence within the team. It also allowed the author to identify skills within the team and empower others to take on key roles within the project. A number of the Non Consultant Hospital Doctors (NCHD) were keen to involve themselves in the project as a means to present audit data and learn management skills as part of their personal development plan, CV and career progression. This improved engagement has been shown to improve patient safety, which is a component of quality as defined by the NHS (Laschinger and Leiter, 2006).

3.5.3 Implementation

This stage involves supporting staff through the change initiative, assessing the impact of the change and inviting feedback from stakeholders, identifying difficulties and taking actions to remedy any problems. Monitoring of the process allows for early identification of barriers and offers opportunities to build momentum while addressing issues identified by others. It is crucial to maintain momentum, enthusiasm and commitment at this stage to continue to drive the change process.

The author was responsible for leading the pre clinic meeting, confirming patients identified for inclusion in the change project, ensuring collection of questionnaires and monitoring of completed data. While the roles had been delegated to nursing and NCHD staff the author maintained close supervision of the process for the first three months before resuming an
observation role for one month to assess the change in practice and audit the compliance.
The patient information tools and pre-prepared colour coded patient folders greatly simplified
the process, however data input analysis proved more time consuming and challenging.

As part of the stakeholder analysis, priority was not given to IT support and this was a failing
of the change agent. A lack of engagement with IT during the planning phase of the change
has lead to delay of data analysis and an increase in workload as a result of data input.
Ultimately, electronic tablets for patient questionnaire would reduce the impact the
implementation of the change on clinic times and would also usefully occupy patients while
they waiting for specific tests or clinician interaction, beneficially utilising their time and
improving patient experience of their visit to the MDT clinic. Unfortunately, due to the lack
of engagement with IT this matter was not resolved prior to the write up of the project.
However, a better relationship has been developed by the change agent with IT, and a
business case completed with IT input has been submitted for both the tablets and the IT
service to streamline data entry and analysis.

A surprising resistance developed during the implementation phase from one of the
consultant surgeons who questioned the value of the data collected and the case mix of
patients attending the clinic during a monthly governance meeting. He suspected the case
mix was not appropriately severe enough and whether the funding for this service should be
continued. Although this concern was muted by UK commissioners it was surprising as this
consultant had been aware of the national drive for PROMs as evidenced by the initial
questionnaires at presentation of the proposal. It transpired this particular staff member was
keen to change his job plan with management and had realised the data collected may not be
beneficial for his proposal hence his resistance. The change agent directly challenged the colleague on the evidence for his conclusions and agreed to allocate a research project to a NCHD to retrospectively analyse the previous 50 completed case radiographs using a validated severity scale to clarify the severity of patients. This is an on-going project and while it did not prevent the implementation of the PROMs, it influenced the atmosphere on clinic on which he was attending.

3.5.4 Mainstreaming

Mainstreaming occurs when the change in practice becomes routine, normal and no longer an extra step in the process for all stakeholders. This stage requires further supports for integration of the process into normal practice, as well as an acknowledgment of the successes already achieved. The author used the monthly clinical governance meetings, which all staff attended, as an opportunity to report data collection figures and address any issues previously muted. This raised awareness, refreshed staff to the proforma for data collection and embedded the project in the MDT clinical structure. This facilitated regular feedback as well as recognition of the changes already achieved. The author also included a summary of the patient feedback, which was extremely positive in the majority and prospective data on severity of patient type referred to the clinic. This addressed the resistance of the consultant surgeon and reinforced the benefits of the data collection to other staff members.

Continuation of evaluation of the process allows learning while also facilitating review of the structures and reinforcement of new responsibilities. It was not possible for the author to
continue sole responsibility for this change indefinitely. It was agreed the senior nurse would take responsibility to ensure continuity and delegate to her nursing staff as necessary. Humphries and Aime, (2014), in their study of the micro-dynamics of teams identified the importance of roles within teams and the appreciation of different roles and the contributions of team members. They highlighted that nurse-to-nurse communication was superior than nurse to doctor and this was utilised in our decision to empower the senior nurse to delegate tasks. The author, in their accessory role as department audit lead could ensure quarterly audit of proforma completion and data analysis through delegating to NCHDs while the author themselves complied annual data for inclusion in national reporting.

### 3.6 Conclusion

The writer utilised the HSE Change model to structure the change process as it provided a simple step-by-step approach during the dynamic change process, while affording the ability to review the progress of the change at each stage of the project. This project highlighted numerous challenges and weakness of the planned project, which has provided excellent learning for the author however, the project, was successful once it was effectively communicated and supported by the team. The difficulty the writer had with the model was during the evaluation stage of the process, which is a weakness of the HSE model and as a result of the longitudinal nature of the change.
4 Chapter 4 Evaluation

4.1 Introduction

This chapter will discuss the significance of evaluation in healthcare, and apply it to the OD project using the selected evaluation model, in this instance the CIPP (Context, Inputs, Process, Product). The findings of this project are described under each of the headings of the CIPP models. It is critical to use evaluation models to identify improvements that work well prior to their wide spread replication (Parry et al., 2013). However, it must be remembered improvement initiatives and the evaluation of these changes are complex and context sensitive, and any weakness at the evaluation stage may limit the applicability of the results. Unfortunately, the gold standard for evidence based medicine, meta-analysis of excellent multi-centred randomised trails, are not suited for evaluation of improvement initiatives (Parry et al., 2013). Patient experience, evaluated in this project, is positively correlated with patient safety and clinical effectiveness, the other metrics of NHS quality definition (Doyle et al., 2015). It is also positively associated with self-rated and objective outcome measurements, which will be utilised in this evaluation phase (Doyle et al., 2015).

Improvements require change however, not all change results in improvement. It is critical to identify beneficial change and this can be achieved by measurement and evaluation of relevant data (Benneyan et al., 2003). The WHO defines evaluation as ‘the systematic examination and assessment of the features of an initiative and its efforts, in order to produce information that can be used by those who have an interest in its improvement or effectiveness;’ (WHO, 1998, p3). This is similar to the HSE definition which is ‘the systematic and structured process of reviewing an experience, determining its worth or value
and deciding what needs to be changed or further developed’ (HSE, 2008 p.67). However, these definitions do not highlight how important it is to measure the correct data, in the most appropriate manner, at the right time, to be confident the best decisions are being made based on this analysis. It is often difficult to measure and understand the impact of change due to poor alignment of the aims with evaluation design. It is critical to establish formal evaluation methods to prevent an apparent diminishing effect when the change is implemented more widely, a phenomenon described as Iron Law of Evaluation (Rossi, 1987).

Service evaluation has huge political power, and is an important driver for allocation of funding and resources as well as a tool for ensuring accountability. This project was guided by the HSE change model (2008), which included the use of SMART objectives to aid the evaluation stage of the change project. These objectives included both quantitative and qualitative measurements. While neither method has been shown to be superior, (Carr 1994), the emphasis was placed on quantitative data so evidence could be gathered to illustrate the patient and staff benefits of the change introduced. The true qualitative evaluation results will be long-term, and were not available at this early stage of the project due to the long-term nature of the care pathway. This chapter will discuss a number of evaluation models, justify the choice of the CIPP model and describe the evaluation processes undertaken to evidence achievement of the stated aims and objectives as outlined in Chapter one.

4.2 Evaluation Models

Evaluation is a key component of healthcare, where accountability and quality are key outcome measures (Polit and Tatano-Beck, p238). The NHS has placed quality at its heart,
and patient experience in the form of PROM is a key component in evaluating this quality. Green and South (2006) listed six key reasons for evaluation, which are particularly pertinent to this change project as they address many of the drivers for this change. Green and South (2006), stated evaluation is necessary:

- To establish whether or not interventions have worked
- To improve health programme implementation
- To improve accountability to funders
- To increase support for sustaining or expanding an intervention
- To contribute to the scientific base for interventions
- To impact policy decisions

There were a number of evaluation models and frameworks reviewed for this change project, however, choosing the most appropriate model is not straightforward. The models may be goal-based, decision-orientated, and summative or outcome based. The assessment can be considered as structure, process and outcome. However, this is challenging for many healthcare systems as historically, measurements had been process rather than outcome based (De la Harpe et al., 2008). This can be advantageous as outcome measures are valid and consistent in advancing healthcare, and are more tangible to patients, who are influential in the political environment. They also can be used throughout healthcare encompassing many different processes.

Lazenbatt (2002), introduced an effective tool for assessing change using the four E’s, efficiency, effectiveness, economy and equity. They are used to assess if the aims and objectives were achieved, if all the objectives have led to the desired outcomes, and if
everyone has had an opportunity to achieve these desired outcomes. This can be summarised in Lazenbatt’s description of evaluation as a measure of the extent to which an intervention has achieved its stated objectives. It should be remembered evaluation is a cyclical process and feedback should inform future developments and inquiries (Hughes, 2005).

As PROM introduction was the main initiative, patient experience was considered the most important evaluation metric, though it was also incumbent to assess the impact the increased workload had on team members. Therefore, another model considered was the CIPP model originally developed by Stufflebeam in 1983. The advantages of the CIPP model include the ability to modify it throughout the process rather than being a linear or final outcome focused model. It allows evaluation of the study’s effectiveness, feasibility and decisions made, as well as evaluation of the final outcomes. Unique to the CIPP model is that it is guided by ethical and professional principles as established by the Joint Committee on Standards for Educational Evaluation. In this change project, the influence of the political climate and team members’ personalities are considered. As CIPP acknowledges the impact of the whole context surrounding the change project it was chosen for this project however, it was a time consuming model.

CIPP is an acronym for the four components considered critical for evaluation: context, input, process and product (Zhang et al., 2011). The context evaluates the goals and priorities while also considering the opportunities and difficulties. The input analyses alternative processes to assess if the most appropriate process has been utilised. The implementation of the process is evaluated with respect to how it works in the specific situation and the final evaluation is of the impact, effectiveness and outcomes of the project (Frye and Hemmer, 2012).
4.3 CIPP Model

The CIPP model is chosen, as it is ethical based, theory driven, formative and a systems rather than liner model allowing assessment of context in which the OD project was undertaken, allowing evaluation of the inputs, process and outcomes. The model will be used to evaluate the 4 elements of the change with a particular emphasis on input and process as well as repeat measure to quantify the progress of the change implementation. An evaluation of context was not considered in this project however, preliminary product data will be presented, with continued collection of the more robust longitudinal product data to be presented at a later date.
The purpose of the evaluation was two fold, formative and summative. The formative role resulted in evaluation over time with repeated measures of compliance with data collection, recording of impact on PROMs on clinic and appointment time and recording of QoL. The progress of this was feedback at monthly governance meetings. The summative role involved analysis of implementation of the process and the outcomes recorded.

4.3.1 Context

While context itself will not be evaluated, it is important a baseline study is carried out to provide baseline data for any change project as this aids evaluation of later outcomes (Frye and Hemmer, 2012). Chapters 1 and 3 describe in detail the rationale and methodology for this change project. In summary, NHS commissioners have a duty to plan and deliver high quality services with better health outcomes and patient experience across the whole of the UK. Unfortunately, these national standards have not been applied consistently across regions with patients subjected to gross inequalities in terms of access to orthognathic services. The RCS England, BOS and BAOMS having developed guidelines in conjunction with commissioners, had this guidance accredited with NICE (National Institute for Health and Care Excellence) and advised National implementation by hospitals providing orthognathic services. Therefore, the main driver for this change project was external, NHS commissioners, and the desire to provide the evidence necessary to maintain a service that is provided to other patients across the UK to eliminate a ‘post code lottery’ of care for this particular region.
4.3.2 Inputs

The work that is carried out to improve any health care process is itself a process. The input is a work process needing improving, while the output is the new improved work process. This can be described a seven step process improvement model (Table 7, Appendix 13). Input evaluation assesses the feasibility of the project, explores alternative approaches and aims to identify any additional resources which may be required to facilitate the process (Frye & Hemmer, 2012). This should involve an extensive literature review to identify key research, which may assist the project. This was discussed in Chapter 2 and identified the validated National Questionnaires, which were used to assess PROMs and add to the evidence base for the orthognathic surgery service. Standardisation of PROMs tools allows more robust comparisons when benchmarking, assessing quality and assessing benefits and complications of services. The HSE change model (2008) was used to plan and implement this project and this was described in Chapter 3.

4.3.3 Process

This stage is an assessment of the implementation of the change with measurement of the practical changes achieved (Frye and Hemmer 2012). It demonstrates the achievement of aims and objectives and assesses the outcomes, intended or otherwise (Zhang et al., 2011). This is supported by the HSE Change model (2008), which emphasises the value of continual evaluation throughout the change process.
4.3.3.1 Evaluation Tools

Research into evaluation has failed to identify the best approach for a particular situation with each approach having strengths and drawbacks. Often, the use of two or more approaches adds weight to the evaluation evidence produced (Kahan, 2008). Solberg et al., (1997) described the three faces of performance measurements, improvement, accountability and research. The processes used in this OD project were specific to the process being improved, covered short periods of time and were easily repeated (Solberg et al., 1997). They included audit of compliance with nationally agreed data, quantitative data on the impact of PROMs on appointment and clinic times and qualitative data on patient experience and QoL. NICE (2002) defined clinical audit as ‘a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change’ (Scally and Donaldson 1998, p61). It has been shown to improve patient care and service delivery (Johnson et al., 2000). Gold standards were agreed locally for the pilot stage of the change process, with 100% compliance with National standards, the gold standard on full implementation of the PROM tools.

The change agent carried out the evaluation therefore, it was necessary to develop trust within the team and establish credibility with key stakeholders, as this has been shown to improve the value and acceptability of results (Ovretveit, 1998). This facilitated staff cooperation and reduced bias with full agreement on public reporting of findings adding to the aim of fostering an evaluation-friendly culture. Defining roles further reinforced the integration of evaluation into the departmental culture and responsibilities of staff members as described and evidenced in Chapter 3.
Questionnaires are an objective means of data collection. The anonymised nature of their application reduces the risk of bias however; it is not always possible to identify validated questionnaires for every situation. Using a validated and published questionnaire allows valuable comparisons to previous research (Boynton and Greenhalgh, 2008). In an attempt to improve the quality of the information received from the staff questionnaire, every effort was made to simplify the layout and language used, while standardising its administration.

4.3.3.2 Objectives

The objectives 1 and 2, outlined in chapter 1 pertain to the current status of staff knowledge of PROM tools, the training required to facilitate the introduction of PROM tools and the knowledge necessary to ensure correct, consistent and effective use of these measures. Figure 3 illustrates percentage of staff awareness of the new guidelines for data collection for patients having MDT orthognathic surgery.

![Figure 3: Percentages of Staff Awareness of New National Guidelines on Commissioning Prior to Change Project](image)
These two objectives were assessed using a number of tools. Initially, the change agent undertook a one-month observation period of the MDT outpatient clinics. An audit of patient charts, both new and completed, was used to assess current data collection for patients attending these clinics. Current use involved the single page BOS/BAOMS MDS Proforma for Surgical-Orthodontic Patients (Appendix 1) and was present in 100% of charts. Clinical measurements were recorded to some extent in all cases however; only 64% were completed to date. No patient had completed pre or post treatment patient’s satisfaction, patient experience, or QoL questionnaires. On further investigation, a previous audit of patient satisfaction, using non-validated questionnaires, had been carried out on a small group of patients for audit purposes but this audit was retrospective and was highly biased.

A total of 5 meetings, initially in small groups, and then as a team, allowed comprehensive introduction and training in the use of the new PROM tools and the methods of data input and storage. The initial questionnaire was reissued to determine the knowledge of the new PROMs and all groups gave 100% positive responses to awareness, 94% confidence in use and 94% knowledge of data input and storage.

Objective 3 involved piloting of the questionnaire on 10 patients with an aim of 80% of patients not requiring additional help to complete the questionnaire. It also stated an aim of availability of both paper and electronic formats and an assessment of its impact on clinic timings. Figure 4 displays the findings on patient satisfaction of the paper format of the QoL questionnaires, with 89% of patients satisfied with the process and 11% of patients requiring additional help or explanations. However, the questionnaires were not available in electronic format as IT services were not able to provide this support during the OD project. A business
plan was required for the software department to provide technical support for the initiative (Appendix 12) but this is currently awaiting consideration by the finance team.

Table 7 illustrates the average increase in appointment length for every new patient to the MDT clinic and post treatment review patient, as a result of completing the QoL questionnaires. The average increase in appointment time was almost 8 minutes for new patients and over 9 minutes for post treatment patients. There was large variation in times ranging from 4 minutes 22 seconds to 22 minutes 13 seconds for new patients and 5 minutes 20 seconds to 26 minutes 24 seconds for post-op patients. Data entry ranged from 14 minutes 3 seconds to 21 minutes 45 seconds, while completion of the MDS ranged from 6 minutes 4 seconds to 32 minutes.

Figure 4: Patient Satisfaction of Completion of QoL Questionnaires
Table 7: Data Completion Times

<table>
<thead>
<tr>
<th>Time to Complete (Minutes)</th>
<th>Questionnaires (Pre-op Patients)</th>
<th>Questionnaires (Post-Op Patients)</th>
<th>Orthognathic MDS (NCHD)</th>
<th>Data Entry (Nurses)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average</strong></td>
<td>7 mins 51 sec</td>
<td>9 mins 12 secs</td>
<td>12 mins 32 secs</td>
<td>16 mins 12 secs</td>
</tr>
<tr>
<td><strong>Shortest</strong></td>
<td>4 mins 22 secs</td>
<td>5 mins 20 secs</td>
<td>6 mins 4 secs</td>
<td>14 mins 3 seconds</td>
</tr>
<tr>
<td><strong>Longest</strong></td>
<td>22 mins 13 secs</td>
<td>26 mins 24 secs</td>
<td>32 mins</td>
<td>21 mins 45 secs</td>
</tr>
</tbody>
</table>

The impact of the introduced changes on appointment length, as well as clinical start and finish times is dependent upon of the number of each patient type on the MDT clinic. A retrospective electronic review of clinic starts and finish times determined only one of the 10 clinics, over the three-month implementation period, over-ran. This clinic finished 24 minutes late, however, the length of each patient wait or patient appointment duration was not recorded. Due to complex structure of MDT clinic appointments it was not possible to assess any detail of appointment structure retrospectively.

Figure 5 illustrates an audit of patient notes from MDT clinics on the compliance with the new data collection guidelines and implemented changes. This displayed 100% compliance with questionnaire completion for new patient and post op patients, 84% completion of the
MDS and 0% completion of the PAR assessment. This was due to long-term staff illness with the only calibrated staff member off for a prolonged period. This highlighted the necessity for staff training however, as this will have financial implications, it was necessity to demonstrate the need for this expenditure.

**Figure 5: Audit of MDT clinic notes from January to March 2015**

Figure 6 is a sub-analysis of Figure 5 reviewing the individual components of the MDS proforma. Completed to date. This helps identify areas requiring further support and demonstrates the need for additional staff up skilling.
The long-term objectives 7 and 8, are still outstanding as these evaluations focus on long-range results and improvements in patients’ health status as measured by changes in QoL. These are more expensive summative metrics, which are valuable in strategic planning and negotiating with commissioners for allocation of resources and security of services. This finding is similar to many quality improvement projects, where evidence is mainly available for discrete projects rather than large-scale programmes. In an attempt to assess the general trend of the change in QoL as a result of this treatment, average pre and post treatment QoL data was collected and are shown below in Figures 7 and 8. Figure 7 exhibits the average pre and post treatment results for the different domains of the questionnaire. This illustrates the changes in:

Domain 1: Self-esteem (High score linked with negative impact)
Domain 2: Confidence
Domain 3: Function
Domain 4: Psychosocial
QoL questionnaires are used to investigate many different aspects and domains of QoL. Each questionnaire has a selection of questions strategically placed throughout the questionnaire; posed to assess the impact the facial deformity or malocclusion has on the patient’s everyday activities. It also asks the patient to rate the impact of this effect. Each domain is examined in multiple ways with both positive and negative style questioning to provide a more accurate response. Statistical analysis of the answers allows a more accurate representation of the strength and influence the deformity or malocclusion has on the different domains of QoL. In the selected QoL questionnaires the domains evaluated were more specific to orthognathic treatment are were self-esteem, confidence, function and psychosocial impact.

![Figure 7: Pre and Post Treatment QoL Scores](image_url)
Figure 8 displays the average pre operative and post operative QoL values. Using a student-t test, there is a statistically significant difference in the QoL scores ($p< 0.01$), with post treatment patients reporting higher positive scores for QoL and lower negative scores as a result of improvements in appearance, function and self esteem. Confidence and the concept of appearance are assessed in the self–esteem domain. The audit data for the introduction and use of PROM tools has been presented as an oral presentation by a NCHD at the Northern Ireland Hospitals Audit Day (April 2015, South West Acute Hospital, Enniskillen Co. Fermanagh). The writer presented to the regional orthodontic and maxillofacial consultant group, regarding the experience of the introduction of these PROM tools, with the aim to introduce them throughout the other services in Northern Ireland (Antrim Hospital, May 2015). The dissemination of the evaluation results in oral and print format to key stakeholders will increase the likelihood of satisfaction with the change project proposed for introduction in their service. Further distribution of these results, using additional modes of
presentation would improve usefulness, satisfaction and the likelihood of further dissemination of the results (Mueller et al., 2008).

4.3.4 Product

This stage of evaluation is an assessment of the outcomes of the change. As this was in part a quality improvement project, it is applicable to compare findings with those already published in the field. Unfortunately, as this is a new national initiative it has not been possible to compare and benchmark findings to date. Also the data collected are average scores and not patient specific limiting their value however, the data is helpful for staff engagement, informing commissioners and in securing funding for IT support and implementation.

4.4 Conclusions

This chapter outlined the process of evaluation for this change project using the CIPP model to structure the assessment. The audits, focus groups and patient and staff feedback illustrate the success of this change project to date. However, the extremely valuable data on individual patient response to treatment, as assessed by the change in the pre and post treatment QoL scores will not be available for a number of years, due to the long care pathway of this treatment. This is in line with average national orthognathic treatment times of 2-3 years, as reported by Luther, 2003.
5 Chapter 5 Discussion

5.1 Introduction

This chapter will critically discuss the writer’s experience of leading this OD change project as described in chapter 3 and evaluated in chapter 4, and will reference the findings and influence of the literature review in chapter 2. The aim of this OD project was implementation of PROM tools on a MDT clinic with the aim of improving the quality of the orthognathic service, aiding collection of valuable data on patient experience, using validated QoL questionnaires to inform commissioners, and to comply with national guidelines on MDS for orthognathic patients. The objectives included; staff awareness of and familiarity with the new nationally agreed MDS, patient satisfaction with the QoL questionnaires, provision of questionnaires in paper and electronic format, recording and analysis of changes in patient experience and QoL pre and post treatment, using both clinical and QoL metrics. The impact of the change will be discussed with regard to its strengths and limitations, its organisational impact, recommendations and will include discussion on the experience of leading and implementing the OD change initiative.

5.2 Leading the Organisational Development

This was the writer’s first experience of leading change and provided an opportunity to implement the learning for the previous year of the Masters programme. Despite the extensive planning and engagement with key stakeholders undertaken by the writer during the initiation phase, the dynamic nature of the change was challenging. The choice of change project, being current and generally widely beneficial to the hospital, staff and patients enhanced the positive response from key stakeholders. The literature review heavily
supported this change and identification of nationally agreed QoL questionnaires and national, all be it UK standards simplified the choice of PROM tools to use. The choice of the HSE change model (HSE, 2008) also added structure and guided the inexperienced change agent. The use of change tools (Appendix 7,8,9,10 and 11) helped the writer identify the drivers, resistors and internal and external influences in the project.

The literature review revealed the intensive efforts being made nationally and internationally to improve the quality of healthcare and improve value for money for publicly funded services. It also illustrated the lack of research in this area within the dental field particularly orthognathic services (Table 1 Appendix 6). It also emphasised the importance of the choice of method of evaluation (Parry et al., 2012) and to identify improvement methodology for the future.

5.3 Project Strengths

One of the main strengths of this OD project was its alignment with the worldwide impetus for the use of quality improvement tools in healthcare (Black and Jenkinson, 2009). Patient experience is recognised as a pillar of quality and is closely correlated with clinical safety and effectiveness (Doyle et al., 2015). The focused introduction of nationally agreed and validated PROM tools not only contributed to patient experience assessment of the orthognathic service, but also simultaneously increased the likelihood of improvement in the other two domains of quality. The data collected was beneficial at both a local level for staff, service users and commissioners; it also contributed to a national database of QoL data of
orthognathic treatment outcomes. Long-term, the data will allow benchmarking of this service against best practice to further improve quality.

A second strength of this OD project was the understanding and influencing of the culture within the MDT by the writer. This was evidenced during the initiation and mainstreaming phases of the project. The literature on team micro-dynamics (Humphrey et al., 2014), aided the writer in understanding and guiding team behaviours particularly when delegating ongoing management of PROMs. The author analysed the inter-relationships of the MDT and cultivated its positive aspects of identity and commitment while emphasising stability and departmental success (Kearns, 2005). The process of constant communication throughout the process reduced resistance despite the project being driven by a new team member (Ford et al., 2008). This may be due to the writer adopting a transformational leadership style with enthusiastic, truthful, accurate and timely feedback on the progress of the project. The commitment of the clinical lead and MDT staff significantly contributed to the successful implementation of PROM tools and the overall cultural change evident to date.

Thirdly the introduction and implementation were thorough and comprehensive however the evaluation was weak. The writer had a good understanding of evaluation and recognised that the OD project was still at the testing phase, prior to up scaling or spread. This allows improvements or context alignments to be made prior to regional spread. The formative, theory-driven evaluation preferred by Parry et al., (2013) informed the writer to apply a cyclic evaluation approach to the project, with regular feedback to improve the process of PROM introduction.
5.4 Project Limitations

There were several limitations of the project. Initially the writer failed to identify the impact and influence of the IT services both during the planning and stakeholder analysis phases. This resulted in a failure to meet the objective of QoL questionnaires being available in electronic format. This greatly impacted on the time required for data input, which may become a source of resistance in the future if it is not addressed in a timely manner.

Secondly, PAR scoring of patients was not achieved due to long-term staff illness. This highlighted the necessity to increase the number of trained and calibrated staff to undertake this clinical outcome assessment. This requires additional funding for the training courses as well as negotiating with the nursing manager to release staff for the required training period. Currently funding for education is not deemed a priority by management, therefore it will be incumbent on the change leader to champion this and utilise other funding sources to achieve this. An evening lecture series for local dental professionals has been arranged with the proceeds being used for the MDT educational fund. This reinforces to staff the commitment of the team leaders for both the OD project and the MDT staff implementing the changes.

Thirdly the timeframe of the change project was quite limited and severely impacted upon the availability of valuable qualitative data on patient specific changes in QoL pre and post treatment. This is due to the 2-3 year treatment time for orthognathic surgery. This is true locally and nationally as evidenced by the literature review (Luther, 2003). While data has been imputed to the national database the patient numbers are small and the local outcomes will not be available for at least two more years. Therefore, it is critical the momentum of
this change is not lost due to the long-term nature of the service. It will require continued transformational leadership and excellent communication with the writer securing the funding for both IT services and PAR training.

5.5 Organisational Impact

A key impact on the organisation is compliance with national MDS collection, which is mandatory in some regions of the UK. This data allows comparisons and benchmarking of an organisation’s orthognathic service against best UK practice hence improving quality and educating patients. This helps build the department and the organisation’s reputation and acknowledges the excellent treatment carried out by staff, also improving staff satisfaction and team morale. This should reinforce the behavioural changes of staff with regard to data collection of quality metrics.

The impact on the organisation has otherwise been limited as the orthognathic speciality is small and the results have only been disseminated to other orthognathic MDTs. The department operations manager, who has budgetary control attended the April governance meeting where monthly data was presented on patient experience and MDT compliance with MDS guidelines. This provoked a valuable discussion with management on funding for the proposed IT services as well as the initiative to fund staff training to facilitate the data collection. This networking has lead to a more receptive manager who wishes to introduce PROM tools to other aspects of the service. However, the change agent highlighted the importance of identifying the most appropriate tool for the areas and planning the
introduction with other key stakeholders to prevent a repeat of the problems associated with this project – staff training and IT services.

The change leader has been invited to speak to other speciality leads and managers about the experience of leading this change, with a goal to standardise the process of patient experience evaluation throughout the surgical division with IT support and recognition of the value of service evaluation within the job-plan of team leaders.

5.6 Recommendations

After reflection throughout this OD project and an extensive literature review in the area of quality improvement and PROM tools the writer makes the following recommendations:

Department Level

- Submission of a business plan for a research assistant or incorporate research sessions into a NCHD job-plan to promote evaluation and service development
  - This would formalise the process and establish ownership and lines of responsibility for reporting of findings
- Engage with local charities to promote the orthognathic service and elevate its status with key stakeholders particularly patients and primary healthcare providers
  - This will provide further drivers for quality improvement as assessed by PROMs
• Formalise staff training for calibrated clinical outcome measures to prevent future delays in data collection
  o This could be incorporated into job plans and mandatory training formalising and standardising training to reinforce the culture of outcome measurement
• Continue to build a strong working relationship with IT services to facilitate any future updating of the MDS
• Display monthly patient experience data in department waiting areas
  o This will reinforce MDT commitment to data collection and educate patients to the benefits and impact of their feedback
• Consider development of treatment specific QoL questionnaires, as the evaluation findings currently being collected will be a reflection of the quality and validity of the questionnaires and may not truly reflect treatment quality or benefit
  o This is aspirational and may not be realised due to current financial constraints

**Organisation level**

• Develop an organisational policy on the use of PROM tools to formalise process and acts as internal driver for quality improvement
• Introduce speciality specific PROM tools, where available, throughout the surgical division and incorporate this with clinical governance
• Ensure education for all staff on the use and benefits of PROM tools as part of mandatory training supported by the education and learning team
• Introduce quarterly divisional reporting of quality measures
• Incorporate routine use of PROM tools in the quality managers portfolio
National level

- Continue to submit to national data base
- Present local results at national and international conferences

5.7 Conclusions

Introduction of PROM tools is very current in healthcare and is aligned with NHS quality improvement initiatives as supported by the literature. While national PROM tools are available and identified by the literature review, the findings will not be widely disseminated for a number of years. As these QoL questionnaires were selected due to political pressures from funding agencies, rather than being specifically developed for assessment of the impact of orthognathic treatment, there is a risk that the findings may not demonstrate fully the impact of orthognathic treatment. While the trigger for this change was mainly to secure service funding prompted by commissioning bodies the added quality benefits should not be ignored.

The successful implementation of PROM tools to the MDT orthognathic clinic was due to increasing staff awareness of the political and financial climate in which the service operated, legitimatising of the change by the clinical leads and directors of the hospital and excellent communication by the change agent of the vision, process of the change and the short term wins achieved by the team.
6 References


Boyce, M. and Browne, J. (2013). Does providing feedback on patient-reported outcomes to healthcare professionals result in better outcomes for patients? A systematic review. *Quality of Life Research, 22*(9), pp.2265-2278.


Royal College of Surgeons of England Commissioning guide: Orthognathic Procedures. 2013


framework to guide the planning, implementation, and assessment of service-learning programs. *Journal of Higher Education Outreach and Engagement*, 15(4), 57-84.

### Appendices

#### 7.1 Appendix 1 Original Minimum Dataset Form

**BOS/BAOMS Minimum Dataset Proforma for Surgical-Orthodontic Patients**

| Patient name: ………………………………… | Surgeon’s initials: …………………….. |
| Hospital number: ……………………… | Orthodontist’s initials: ………………… |

#### Key Dates

| Date of 1st combined clinic appt. | Date of osteotomy |
| Date of start of orthodontics | Date of orthodontic debond |
| Date of 3rd molars removal | Date of any 2nd surgery |

**PLEASE ADD DATE AND INITIALS IN EACH BOX AS APPROPRIATE** (see notes overleaf)

#### Radiographs

<table>
<thead>
<tr>
<th>90° Lateral Cephalogram</th>
<th>OPT</th>
<th>Study models</th>
<th>I/O &amp; E/O Photographs</th>
<th>Clinical Measurements (details in notes)</th>
<th>Altered sensation? (delete one)</th>
<th>BOS Patient questionnaire completed?</th>
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<td>Pre-treatment</td>
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<td></td>
<td></td>
<td>Yes / No</td>
<td>Left / Right</td>
<td>PCO: Y / N</td>
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<tr>
<td>End of pre-surgical orthodontics (i.e. surgical planning)</td>
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<td></td>
<td></td>
<td>Yes / No</td>
<td>Left / Right</td>
<td>PCO: Y / N</td>
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<tr>
<td>“Immediately” post-surgery</td>
<td></td>
<td></td>
<td></td>
<td>Yes / No</td>
<td>Left / Right</td>
<td>PCO: Y / N</td>
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<tr>
<td>1-3 weeks postsurgery (after wafer or IMF removal)</td>
<td></td>
<td></td>
<td></td>
<td>Yes / No</td>
<td>Left / Right</td>
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<tr>
<td>Pre-debond or “circa” debond</td>
<td></td>
<td></td>
<td></td>
<td>Yes / No</td>
<td>Left / Right</td>
<td>PCO: Y / N</td>
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(If >6/12 ortho)
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<thead>
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<th>2 years postorthodontic debond</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Case Summary (circle as appropriate)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-P</td>
<td>Skeletal I</td>
<td>Skeletal II</td>
<td>Skeletal III</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-M Angle</td>
<td>Normal</td>
<td>Reduced</td>
<td>Increased</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgical operation</td>
<td>Mandible only</td>
<td>Maxilla only</td>
<td>Bimaxillary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments: (include any further details e.g. AOB, surgical expansion, genioplasty, return to theatre, etc.)</td>
<td></td>
<td></td>
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<td></td>
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</table>
### Orthognathic Minimum Dataset Form

#### Demographics

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<th>Unit:</th>
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<tbody>
<tr>
<td></td>
<td>NHS Number:</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>DOB:</th>
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<tr>
<td>/ / /</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>Female</td>
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</table>

#### Presenting complaint (tick all that apply):

- Aesthetics
- Occlusion
- Sleep disorder

Other (please specify):

- Cleft Palate: Yes
- No

- Orthodontist: 
- Surgeon: 

#### Pre-Op Data

A-P Class:

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<th>Skeletal Pattern:</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Frankfort Mandibular Angle (FMA):

- Vertical: Increased
- Reduced
- Average
<table>
<thead>
<tr>
<th>Transverse:</th>
<th>Asymmetry:</th>
<th>Yes □</th>
<th>No □</th>
</tr>
</thead>
<tbody>
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<td>Class:</td>
<td>I □</td>
<td>II₁ □</td>
</tr>
<tr>
<td>Overjet:</td>
<td>mm</td>
<td>Overbite:</td>
<td>mm</td>
</tr>
<tr>
<td>Increased OB</td>
<td>□</td>
<td>Average OB</td>
<td>□</td>
</tr>
<tr>
<td>Anterior Open Bite (AOB):</td>
<td>Yes □</td>
<td>No □</td>
<td></td>
</tr>
<tr>
<td>Centre Line:</td>
<td>Upper:</td>
<td>............mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Left □</td>
<td>Centre □</td>
<td>Right □</td>
</tr>
<tr>
<td></td>
<td>Lower:</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Left □</td>
<td>Centre □</td>
<td>Right □</td>
</tr>
</tbody>
</table>

**Index of Orthodontic Treatment Need (IOTN):**

**Pre-treatment Peer Assessment Rating (PAR):**
<table>
<thead>
<tr>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre surgical orthodontic treatment:  Yes [ ] No [ ]</td>
</tr>
<tr>
<td>Treatment start date: / / (dd/mm/yyyy)</td>
</tr>
<tr>
<td>Surgical Procedures:</td>
</tr>
<tr>
<td>Immediate Movement [ ] Distraction Osteogenesis [ ] Rhinoplasty [ ] Inverted L [ ]</td>
</tr>
<tr>
<td>Sagittal split [ ] Le fort I [ ]</td>
</tr>
<tr>
<td>Sub sigmoid [ ] Le fort II [ ]</td>
</tr>
<tr>
<td>Zygomatic widening [ ] Le fort III [ ]</td>
</tr>
<tr>
<td>Bone graft iliac [ ] Bone graft rib [ ]</td>
</tr>
<tr>
<td>Other (please specify):</td>
</tr>
<tr>
<td>Bone substitute [ ] Please specify name:</td>
</tr>
<tr>
<td>Zygomatic implant [ ] Please specify name:</td>
</tr>
<tr>
<td>Mental implant [ ] Please specify name:</td>
</tr>
<tr>
<td>Movements</td>
</tr>
<tr>
<td>Maxilla</td>
</tr>
<tr>
<td>Back [ ] Forwards [ ] Up [ ] Down [ ] Rotation [ ] Left [ ] Right [ ]</td>
</tr>
<tr>
<td>Distance [ ] m [ ] mm [ ] mm [ ] mm [ ] mm [ ]</td>
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<tr>
<td>Mandible</td>
</tr>
<tr>
<td>Back [ ] Forwards [ ] Up [ ] Down [ ] Rotation [ ] Left [ ] Right [ ]</td>
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<tr>
<td>Distance [ ] m [ ] mm [ ] mm [ ] mm [ ] mm [ ]</td>
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<tr>
<td>Chin</td>
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<tr>
<td>Back [ ] Forwards [ ] Up [ ] Down [ ] Rotation [ ] Left [ ] Right [ ]</td>
</tr>
<tr>
<td>Distance [ ] m [ ] mm [ ] mm [ ] mm [ ] mm [ ]</td>
</tr>
<tr>
<td>Operation date: / / (dd/mm/yyyy)</td>
</tr>
<tr>
<td>Additional Procedures:</td>
</tr>
</tbody>
</table>

86
### Operative Details

<table>
<thead>
<tr>
<th>Fixation:</th>
<th>Plates</th>
<th>Screws</th>
<th>Resorbables</th>
<th>Intermaxillary Fixation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inferior Alveolar Nerve:</strong></td>
<td>Intact</td>
<td>Traumatised</td>
<td>Transected</td>
<td>Repaired</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Re-operation within 30 days?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

Reason:

<table>
<thead>
<tr>
<th>Re-admission?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

Reason:

Complications not listed above:

---

### Debond Outcomes

Date of Debond: 

Date format: (dd/mm/yyyy)

<table>
<thead>
<tr>
<th>Overjet:</th>
<th>mm</th>
</tr>
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<tbody>
<tr>
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<table>
<thead>
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<th>mm</th>
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<tbody>
<tr>
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</tbody>
</table>

Post-treatment Peer Assessment Rating (PAR):

Center Line:

**Upper:** ............mm

- Left
- Centre
- Right

**Lower:** ............mm

- Left
- Centre
- Right

Neurosensory Deficit:

**Inferior Alveolar Nerve:** None  Paraesthesia  Anaesthesia

**Lingual Nerve:** None  Paraesthesia  Anaesthesia

**Infraorbital Nerve:** None  Paraesthesia  Anaesthesia
# 2 Year Post Debond Outcomes

**Date of Review:**

(DD/MM/YYYY)

<table>
<thead>
<tr>
<th>Overjet:</th>
<th>mm</th>
<th>Overbite:</th>
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<tbody>
<tr>
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</table>

**Centre Line:**

<table>
<thead>
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<th>Upper:</th>
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<td>Left</td>
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<td>Centre</td>
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<td>Right</td>
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</tbody>
</table>

<table>
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<tr>
<th>Lower:</th>
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<tr>
<td>Left</td>
<td></td>
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<tr>
<td>Centre</td>
<td></td>
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<tr>
<td>Right</td>
<td></td>
</tr>
</tbody>
</table>

**Neurosensory Deficit:**

- **Inferior Alveolar Nerve:**
  - None [☐]
  - Paraesthesia [☐]
  - Anaesthesia [☐]

- **Lingual Nerve:**
  - None [☐]
  - Paraesthesia [☐]
  - Anaesthesia [☐]

- **Infraorbital Nerve:**
  - None [☐]
  - Paraesthesia [☐]
  - Anaesthesia [☐]
## 5 Year Post Debond Outcomes

**Date of Review:**

(dd/mm/yyyy)

<table>
<thead>
<tr>
<th>Overjet:</th>
<th>mm</th>
<th>Overbite:</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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</tbody>
</table>

### Upper:

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Left</td>
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<tr>
<td>Centre</td>
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<tr>
<td>Right</td>
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</tr>
</tbody>
</table>

### Lower:

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Left</td>
<td></td>
</tr>
<tr>
<td>Centre</td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td></td>
</tr>
</tbody>
</table>

### Neurosensory Deficit:

- **Inferior Alveolar Nerve:**
  - None ☐
  - Paraesthesia ☐
  - Anaesthesia ☐

- **Lingual Nerve:**
  - None ☐
  - Paraesthesia ☐
  - Anaesthesia ☐

- **Infraorbital Nerve:**
  - None ☐
  - Paraesthesia ☐
  - Anaesthesia ☐
This simple questionnaire asks how you feel after your corrective jaw surgery. Your responses will enable us to identify areas where we could make improvements and help other patients like you in the future.

We sincerely hope you'll help us to continue delivering best quality care by participating in the survey.

Many thanks.

<table>
<thead>
<tr>
<th>Q1. Where did you have your treatment?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital: ____________________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q2. How old were you when you had your treatment?</th>
</tr>
</thead>
<tbody>
<tr>
<td>......................  Years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q3. How old are you now?</th>
</tr>
</thead>
<tbody>
<tr>
<td>......................  Years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q4. Are you male or female?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male ☐  Female ☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q5. Did you experience any of the following before your surgery? Tick all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Unhappy with how your face looks ☐  b) Unhappy with how your teeth look ☐</td>
</tr>
<tr>
<td>c) Eating problems ☐  d) Low self-esteem ☐</td>
</tr>
<tr>
<td>e) Problems with speech ☐  f) Lack of energy ☐</td>
</tr>
<tr>
<td>g) Lack of self confidence ☐  h) Restless or fitful sleep ☐</td>
</tr>
<tr>
<td>i) Frequent loud snoring ☐  j) Daytime sleepiness ☐</td>
</tr>
<tr>
<td>k) Avoiding meeting new people ☐  l) Problems with personal relationships ☐</td>
</tr>
<tr>
<td>m) Underachievement at work or school ☐  n) Anxiety or depression ☐</td>
</tr>
<tr>
<td>o) Other (please specify): ____________________________________________________</td>
</tr>
</tbody>
</table>

Q6. Which item in Q5 was most important in your decision to have surgery? Please draw a circle around one listed
### Outcomes of your treatment

**Q7. How satisfied are you with how your face looks now you have finished your treatment?**

- Very satisfied [ ]
- Satisfied [ ]
- Dissatisfied [ ]
- Very Dissatisfied [ ]
- Does not apply to me [ ]

**Q8. How satisfied are you with how your teeth look now you have finished your treatment?**

- Very Satisfied [ ]
- Satisfied [ ]
- Dissatisfied [ ]
- Very Dissatisfied [ ]
- Does not apply to me [ ]

**Q9. How has your treatment improved the main problem you circled in Questions 5 and 6?**

- A lot [ ]
- A little [ ]
- Not very much [ ]
- Not at all [ ]

**Q10. Do you have any numbness or tingling in your mouth or face now you have finished your treatment?**

- Yes [ ] Go to Q11
- No [ ] Go to Q12

**Q11. Where is the numbness or tingling?**

- Left Upper Lip [ ]
- Right Upper Lip [ ]
- Left Lower Lip [ ]
- Right Lower Lip [ ]
- Left Side of Tongue [ ]
- Right Side of Tongue [ ]
- Chin [ ]
- Roof of Mouth [ ]
- Other (please specify): [ ]

**Q12. If you have any numbness or tingling in your mouth or face, how much does it concern you?**

- A lot [ ]
- A little [ ]
- Not very much [ ]
- Not at all [ ]

**Q13. To what extent do you agree with the following statements?**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Does not apply to me</th>
</tr>
</thead>
<tbody>
<tr>
<td>Since my surgery I have more self confidence</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Since my surgery eating has become more difficult</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Since my surgery I have less energy for important activities e.g. work, school, childcare, housework</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Since my surgery I am doing better at school/college/work e.g. better grades in exams or a promotion at work</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Since my surgery I feel less comfortable at social events</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Since my surgery I enjoy myself more when eating in public</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Since my surgery my quality of sleep is better</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Since my surgery my friends/colleagues say I look more attractive</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Since my surgery I enjoy my food more</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Since my surgery I have lower self-esteem</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Since my surgery my personal relationships are better</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Since my surgery I am less drowsy or sleepy during the day</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Since my surgery I find it harder to make new friends</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Since my surgery I have been to school/college/work more often</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Since my surgery I am more anxious or depressed</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

Q14. Would you recommend your surgery to another patient?

Yes  □  No  □

Q15. Do you have any further comments or suggestions for improvements to our service?
If you have any queries about this form which your surgeon or orthodontist can't answer please contact Saving Faces / The National Facial and Oral Research Centre at: NOA@savingfaces.co.uk or 0203 465 5759.
7.4 Appendix 4 Quality of Life Questionnaire (Pre and Post Treatment)

Please read the following statements carefully and circle N/A or 1, 2, 3, 4 where:-

N/A means the issue covered by the statement either does not apply to you
or it does not bother you at all

1 means the issue covered in the statement bothers you a little

4 means the issue covered in the statement bothers you a lot

2 + 3 lie in between a little and a lot

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Bothers you a little</td>
<td>Bothers you a lot</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. I try to cover my mouth when I meet people for the first time  
   N/A  1 2 3 4

2. I worry about meeting people for the first time  
   N/A  1 2 3 4

3. I worry that people will make hurtful comments about my appearance  
   N/A  1 2 3 4

4. I lack confidence when I am out socially  
   N/A  1 2 3 4

5. I do not like smiling when I meet people  
   N/A  1 2 3 4

6. I sometimes get depressed about my appearance  
   N/A  1 2 3 4
7. I sometimes think that people are staring at me
   N/A  1  2  3  4

8. Comments about my appearance really upset me, even when I know people are only joking
   N/A  1  2  3  4

9. I am self-conscious about the appearance of my teeth
   N/A  1  2  3  4

10. I don’t like seeing a side view of my face (profile)
    N/A  1  2  3  4

11. I dislike having my photograph taken
    N/A  1  2  3  4

12. I dislike being seen on video
    N/A  1  2  3  4

13. I self-conscious about my facial appearance
    N/A  1  2  3  4

14. I have problems biting
    N/A  1  2  3  4

15. I have problems chewing
    N/A  1  2  3  4

16. There are some foods I avoid eating because the way my teeth meet makes it difficult
    N/A  1  2  3  4

17. I don’t like eating in public places
    N/A  1  2  3  4

18. I get pains in my face or jaw
    N/A  1  2  3  4

19. I spend a lot of time studying my face in the mirror
    N/A  1  2  3  4

20. I spend a lot of time studying my teeth in the mirror
    N/A  1  2  3  4
<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>21. I often stare at other people's teeth</td>
<td>N/A</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>22. I often stare at other people's faces</td>
<td>N/A</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
THIS IS A DIFFERENT SCALE WHICH IS COMPLETED IN A DIFFERENT WAY

To what extent to you agree with the following statements.

<table>
<thead>
<tr>
<th>Please tick one box for each statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Does not apply to me</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am unhappy with my appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am confident when I am with others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My family are happy with my appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find it easy to make new friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am performing and achieving poorly at work/college</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>My friends are happy with my appearance</td>
<td></td>
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<td></td>
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<tr>
<td>I have good self-esteem</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>I look forward to attending social events</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>The quality of my sleep is good</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>I have energy for important activities e.g. work, school, childcare, housework</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My self-consciousness has an adverse effect on my work/college performance</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I feel cheerful and content</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel alert during the day</td>
<td></td>
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</tr>
</tbody>
</table>
This is a different scale which is completed in a different way

**Brief Fear of Negative Evaluation Scale**

Read each of the following statements carefully and indicate how characteristic it is of you by circling the number that is most appropriate according to the following scale:

1 = Not at all characteristic of me  
2 = Slightly characteristic of me  
3 = Moderately characteristic of me  
4 = Very characteristic of me  
5 = Extremely characteristic of me

1. I worry about what other people will think of me even  

2. I am unconcerned even if I know people are forming

People complain about my snoring

I find it easy to fit in at school/college/work

I feel anxious or depressed
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>I am frequently afraid of other people noticing my</td>
</tr>
<tr>
<td></td>
<td>behaviors.</td>
</tr>
<tr>
<td>4</td>
<td>I rarely worry about what kind of impression I am</td>
</tr>
<tr>
<td></td>
<td>making.</td>
</tr>
<tr>
<td>5</td>
<td>I am afraid others will not approve of me.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I am afraid that people will find fault with me.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Other people's opinions of me do not bother me.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>When I am talking to someone, I worry about what</td>
</tr>
<tr>
<td></td>
<td>saying.</td>
</tr>
<tr>
<td>9</td>
<td>I am usually worried about what kind of impression</td>
</tr>
<tr>
<td></td>
<td>I am making.</td>
</tr>
<tr>
<td>10</td>
<td>If I know someone is judging me, it has little effect.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Sometimes I think I am too concerned with what</td>
</tr>
<tr>
<td></td>
<td>saying or doing.</td>
</tr>
<tr>
<td>12</td>
<td>I often worry that I will say or do the wrong things.</td>
</tr>
</tbody>
</table>
7.5 Appendix 5 Literature review search methods

Refining details

- English text
- Peer reviewed
- 2009-2015
- Full text availability

MEDLINE/PUBMED/Google Scholar/Emerald/Embase

Key search MESH terms

- PROMS AND Dentistry – 1 (included)
- Orthognathic AND Surgery AND PROM
  - 2 (included)
- PROMs AND ORTHODONTICS = 186
- Full text =11
- 3 relevant (included)

Due to lack of articles wider search terms introduced

- Px experience = 17453
  - AND Orthognathic surgery = 4 (not relevant)
- Px experience AND Quality = 13844
  - AND Hospital = 7384
  - AND Dentistry = 142
• PROMs AND Quality =1587
  o Full text 48 (included)

• PROMs AND ‘Systematic Review’ = 227
  o Full text 6 (included)

• PROMS AND NHS
  o Full text = 11 (included)

**Inclusion Criteria**

• Participants over the age of 16 years

• Healthcare Setting

• Patient Reported Outcome Measured

• Patient Satisfaction Measurements

**Exclusion Criteria**

• Diagnosis of Mental Health Conditions

**Dealing with missing data**

• Not all articles were available and these were not included in the literature review leading to bias in the findings.

When non-relevant articles and duplicates removed, total articles reviewed in Chapter 2 was 54
### Appendix 6 Literature Review Summary (Table 1)

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Setting/Speciality</th>
<th>Type of investigation</th>
<th>Themes/Conclusions</th>
<th>Critique of paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tompkins et al</td>
<td>(2009)</td>
<td>Hospital (US)</td>
<td>Defining value Quality should focus on outcomes Compare hospitals</td>
<td>VBP (Value based purchasing) can provoke transformational changes in px care</td>
<td>Description of VBP Tool &amp; factors improving its success</td>
</tr>
<tr>
<td>Wilson</td>
<td>(2009)</td>
<td>Hospital &amp; Primary Care (NHS UK)</td>
<td>110 self selecting participants - interviews</td>
<td>Communication &amp; information services given by front line staff critical – verbal &amp; written</td>
<td>Case report</td>
</tr>
<tr>
<td>Alanko et al</td>
<td>(2010)</td>
<td>Hospital (Finland)</td>
<td>Systematic review (2001 – 2009)</td>
<td>Motivation for treatment – Self confidence • Appearance • Oral function Self reported benefits even when not found with current assessment tools</td>
<td>High level evidence – CLP excluded Good methodology but English only articles</td>
</tr>
<tr>
<td>Choi et al</td>
<td>(2010)</td>
<td>Hospital (Hong Kong)</td>
<td>Changes of QoL using validated questionnaires throughout process</td>
<td>Treatment had a significant reduction (P&lt;0.001)</td>
<td>Small sample</td>
</tr>
<tr>
<td>Duffin</td>
<td>(2010)</td>
<td>Hospital (UK)</td>
<td>Introduction of 8 high impact actions to reduce falls</td>
<td>Publication of ideas from nurses Need IT support</td>
<td>Weak opinion piece</td>
</tr>
<tr>
<td>Espera et al</td>
<td>(2010)</td>
<td>Hospital (Brazil)</td>
<td>Impact of facial deformity on QoL (117) validated questionnaire</td>
<td>More negative QoL pre &amp; mid tx versus post treatment</td>
<td>All px in treatment (bias) All stages assessed</td>
</tr>
<tr>
<td>Authors</td>
<td>Setting</td>
<td>Study Type</td>
<td>Conclusion</td>
<td>Quality</td>
<td></td>
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<tr>
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</tr>
<tr>
<td>Kanatas et al (2010)</td>
<td>Hospital (NHS UK)</td>
<td>Systematic review (56)</td>
<td>Difficult to select most appropriate questionnaire – provides guide for future research</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Kinnair (2010)</td>
<td>Hospital (NHS UK)</td>
<td>N/A</td>
<td>Nursing plays key role in improving delivery of care</td>
<td>Opinion following National election</td>
<td></td>
</tr>
<tr>
<td>Liu et al (2010)</td>
<td>Hospital (US)</td>
<td>Introduction and testing of 2 new tools to aid visualisation of px desirable experience Telephone interviews (1800)</td>
<td>Need for effective mapping of px/family desires Critical quality attributes Care responsiveness/clinical reputation/communication &amp; empowerment/compassion &amp; respect/efficiency</td>
<td>Statistical analysis to validate tool</td>
<td></td>
</tr>
<tr>
<td>Otani (2010)</td>
<td>Hospital (US)</td>
<td>Analysis of existing px satisfaction data (14432) re willingness to recommend and return</td>
<td>All attributes not equal. Staff care most influential followed by nurse care – should be first area of improvement Px risk adverse and are disproportionately influenced by a weak attribute score – focus on areas of low scores</td>
<td>Good level evidence</td>
<td></td>
</tr>
<tr>
<td>Perez-Arechaederra et al (2010)</td>
<td>Hospital (Brazil)</td>
<td>Px report of hospital tx (64 questionnaire Fairness assessment rather than satisfaction</td>
<td>Quality versus fairness</td>
<td>Bias Young healthy group</td>
<td></td>
</tr>
<tr>
<td>Preisser et al (2010)</td>
<td>Hospital (US)</td>
<td>Clinical assessment post OGN (Orthognathic surgery) using ordinal data (184)</td>
<td>Proportional and partial proportional odds are applicable to cross-sectional &amp; longitudinal ordinal data</td>
<td>Non parametric testing weaker than parametric statistics</td>
<td></td>
</tr>
<tr>
<td>Robinson (2010)</td>
<td>Primary care (GMP NHS UK)</td>
<td>N/A</td>
<td>Questioned reliability of current PROMs due to non standardisation of tool</td>
<td>Opinion - weak</td>
<td></td>
</tr>
<tr>
<td>Carr et al (2011)</td>
<td>Hospital (NHS UK)</td>
<td>Connections &amp; contributions of EBM and px experience design foe health services</td>
<td>Importance of integrating EBM with experienced base design (continuation of TQI &amp; OD)</td>
<td>Good overall review</td>
<td></td>
</tr>
<tr>
<td>Authors</td>
<td>Location</td>
<td>Research Methodology</td>
<td>Findings/Implications</td>
<td>Quality of Evidence</td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>Hancock et al (2011)</td>
<td>Hospital Dietetic clinics – consultation (UK)</td>
<td>Communication skills assessed Focus groups (9)</td>
<td>Information &amp; resources Healthcare system Support/communication • Need to identify individual needs of patients</td>
<td>Good methodology</td>
<td></td>
</tr>
<tr>
<td>Kennedy et al (2011)</td>
<td>Hospital – multiple departments (US)</td>
<td>Development of improvement model 50 item telephone survey/focus groups/direct observation/unsolicited feedback 24 months</td>
<td>Multiple data sources Accountability for service quality Service consultation &amp; improvement tools Service values and behaviours Education &amp; training On-going monitoring &amp; control Recognition &amp; reward</td>
<td>Good evidence</td>
<td></td>
</tr>
<tr>
<td>Lipley (2011)</td>
<td>Hospital (UK NHS)</td>
<td>N/A</td>
<td>Higher px experience scores result in lower cost of care</td>
<td>Opinion only - weak</td>
<td></td>
</tr>
<tr>
<td>Nygardh et al (2011)</td>
<td>Hospital (Sweden)</td>
<td>Interviews (20) re empowerment Disease specific (renal)</td>
<td>Necessity to create trust, understand empowerment from px perspective</td>
<td>Selection bias Disease specific Good</td>
<td></td>
</tr>
<tr>
<td>Olan et al (2011)</td>
<td>Hospital (Denmark)</td>
<td>Assessment of pre &amp; post treatment profiles with satisfaction post tx (66) with validated questionnaires</td>
<td>Pre op profile had no influence on satisfaction Male more motivated than females Majority of px satisfied</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Olan et al (2011)</td>
<td>Hospital (Denmark)</td>
<td>Controlled study (118) Pre &amp; post tx assessment Validated satisfaction questionnaires</td>
<td>Motivations: Oral function &amp; appearance Motivations fulfilled Pre treatment motivations influenced post treatment scores. If appearance motivated tx more satisfied than oral function motivations</td>
<td>Good level evidence</td>
<td></td>
</tr>
<tr>
<td>Reference</td>
<td>Setting</td>
<td>Methods</td>
<td>Outcomes</td>
<td>Article Type</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
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</tr>
<tr>
<td>Sprinks (2011)</td>
<td>Hospital (UK NHS)</td>
<td>Px feed back questions Focus groups – real time</td>
<td>• Net promoter score</td>
<td>Opinion piece</td>
<td></td>
</tr>
<tr>
<td>Potash (2011)</td>
<td>Hospital (US)</td>
<td>Integration of finance and clinicians</td>
<td>• Importance of integrated clinical data to drive change</td>
<td>Low evidence opinion piece</td>
<td></td>
</tr>
<tr>
<td>Behar-Horenstein et al (2012)</td>
<td>Dental School (US) Change in teaching</td>
<td>Focus groups of students Email surveys</td>
<td>Importance of human side of change TEAM (Together everyone achieves more)</td>
<td>Good level Good methodology</td>
<td></td>
</tr>
<tr>
<td>Bowles (2012)</td>
<td>Hospital (NHS UK)</td>
<td>Development of px experience tool for quality Postal questionnaire</td>
<td>Value of other teams members important in outcome scores</td>
<td>Good response rate Findings partly speciality specific</td>
<td></td>
</tr>
<tr>
<td>Lin et al (2012)</td>
<td>Hospital (Taiwan)</td>
<td>Ethical considerations Interviews on Consent (17)</td>
<td>• Nurses as advocates • Clinicians lead direct &amp; guide/influence decision</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td>Needham (2012)</td>
<td>Hospital US)</td>
<td>N/A</td>
<td>Px expectations are limited by previous experiences Satisfaction is not key to loyalty Likelihood to recommend is key predictor Personalise tx/partner px/empower staff</td>
<td>Essay – opinion of student</td>
<td></td>
</tr>
<tr>
<td>Author</td>
<td>Setting</td>
<td>Methods</td>
<td>Findings</td>
<td>Evidence Quality</td>
<td></td>
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<td>---------------------------------------------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>Otani (2012)</td>
<td>Hospital (US)</td>
<td>Px satisfaction questionnaires (overall quality &amp; willingness to recommend) correlated with health status and severity</td>
<td>Px health conditions influence Px experience assessment. Serious illness – physician care and food more important than staff care. Not all attributes equal: Admin/physicians/staff/food/room</td>
<td>Good level evidence</td>
<td></td>
</tr>
<tr>
<td>Westerby (2012)</td>
<td>Primary care (NHS UK) for medical conditions</td>
<td>Interviews/questionnaires/existing PROMS Barriers to PROMs Types - General health - Disease specific - Functional status</td>
<td>Definition of effectiveness of care PROMs required by PCT (Primary Care Trusts) Collected at multiple time points Should be: straightforward/easy to use/not too long/not complex/IT supported/developed with pxs/rigorously tested/consistent/sensitive/ Some evidence nurses are best to administer PROMs Need to analysis all data not just score</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>White (2012)</td>
<td>Hospital (US)</td>
<td>Interviews</td>
<td>• Recruitment for Px advisory board</td>
<td>Case study - weak</td>
<td></td>
</tr>
<tr>
<td>Author(s)</td>
<td>Setting</td>
<td>Methodology</td>
<td>Findings</td>
<td>Quality/Effectiveness</td>
<td></td>
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<tr>
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<td>--------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Boyle et al (2013)</td>
<td>Primary &amp; secondary care</td>
<td>Systematic r/v, Lack of research on PROMs as a tool for performance, Cost of PROMs high</td>
<td>Impact of PROMs feedback on HCP - No intervention effect (only 1 study) - Px effect – limited improvements - Results of PROM related to function of PROM tool</td>
<td>Good but only 1 high quality study re HCP</td>
<td></td>
</tr>
<tr>
<td>Fellows (2013)</td>
<td>Hospital (US)</td>
<td>Interviews &amp; questionnaires</td>
<td>Px experience is now the top priority, Wide variety of approaches to px experience</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td>Gans (2013)</td>
<td>Primary care setting</td>
<td>Analysis of data, Compared to National levels</td>
<td>Detailed data more actionable, Relationship between satisfaction and quality weak</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td>Jones et al (2013)</td>
<td>Dental centres US</td>
<td>Px interviews (4562)</td>
<td>Health status correlated with service rating, Private health insurance correlated with higher service feedback</td>
<td>Good but sampling bias Effectiveness</td>
<td></td>
</tr>
<tr>
<td>Kang (2013)</td>
<td>Hospital (US)</td>
<td>Process measures, Px experience using national survey data</td>
<td>Community orientation improved process measures and px experience outcomes</td>
<td>Moderate evidence</td>
<td></td>
</tr>
<tr>
<td>Kaplan (2013)</td>
<td>Hospital (US)</td>
<td>Introduction of Toyota Production System into Healthcare</td>
<td>Power of leadership &amp; culture</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td>Ollier Weber (2013)</td>
<td>Hospital (US)</td>
<td>N/A general review of previous National data</td>
<td>Importance of the recommendation number, Importance of trend rather than single number</td>
<td>Opinion moderate</td>
<td></td>
</tr>
<tr>
<td>Rose (2013)</td>
<td>Private Healthcare</td>
<td>Improving revenue cycle</td>
<td>Collaboration &amp; communication, Transparency</td>
<td>Low evidence – opinion piece</td>
<td></td>
</tr>
<tr>
<td>Schafheutle et al (2013)</td>
<td>Community Pharmacy (UK)</td>
<td>Survey of staff (1496) view on delegation &amp; unsupervised support staff</td>
<td>More consultation needed but areas for discussion now identified</td>
<td>Good response rate – speciality specific</td>
<td></td>
</tr>
<tr>
<td>Authors</td>
<td>Setting</td>
<td>Methodology</td>
<td>Findings</td>
<td>Quality</td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>Turney (2013)</td>
<td>Not stated</td>
<td>N/A</td>
<td>Important role of support staff in px experience scores</td>
<td>Weak opinion</td>
<td></td>
</tr>
<tr>
<td>Waljee et al (2013)</td>
<td>Hospital (US)</td>
<td>Systematic review (60 articles)</td>
<td>Px expectations inconsistently correlate with post op PROMs No method to assess pre op expectations</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Zulehner et al (2013)</td>
<td>Hospital (Austria) Ophthalmology</td>
<td>In px and out px experiences – interviews (40)</td>
<td>Out px&gt; in-px Trust and empowerment important</td>
<td>Not generalizable</td>
<td></td>
</tr>
<tr>
<td>Betancourt (2014)</td>
<td>Hospital (US)</td>
<td>Review of data Disparity based on race/socioeconomic status/education level Barriers: provider - communication/values Patient (mistrust/lack of follow up)</td>
<td>Key factors to improvement - Secure leadership - Staff buy-in - Strategic plan - Collect data &amp; make it useful - Educate providers &amp; staff - Incorporate cultural competence Minority groups not always represented in Px experience data or be influenced by culture</td>
<td>Good review article</td>
<td></td>
</tr>
<tr>
<td>Bitton et al (2014)</td>
<td>General Healthcare</td>
<td>N/A</td>
<td>Personalised healthcare Health promotion Integration of PROMs into electronic Px records PROMs accurate prediction models</td>
<td>Commentary</td>
<td></td>
</tr>
<tr>
<td>Bleustein et al (2014)</td>
<td>Hospital (US)</td>
<td>Impact of waiting time on px satisfaction scores Questionnaire</td>
<td>Wait times heavily affected px satisfaction scores Increased wait times also influenced perceptions on information/instructions/overall care from physicians &amp; other HCP Older px scored higher</td>
<td>Response bias</td>
<td></td>
</tr>
<tr>
<td>Author(s)</td>
<td>Hospital (Country)</td>
<td>Introduction (Initiative)</td>
<td>Benefits (Insight, Accuracy, Consistency) of Recording Interactions for Staff Training</td>
<td>Case studies - Methodology</td>
<td></td>
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</tr>
<tr>
<td>Consolver et al (2014)</td>
<td>Hospital (US)</td>
<td>Introduction of px experience initiative</td>
<td>Benefits (insight, accuracy, consistency) of recording interactions for staff training</td>
<td>Case studies - weak</td>
<td></td>
</tr>
<tr>
<td>Free (2014)</td>
<td>Primary &amp; Secondary Care</td>
<td>N/A</td>
<td>Pxs want empathy Doctor advocate tx they would not be prepared to undergo themselves</td>
<td>View point - weak</td>
<td></td>
</tr>
<tr>
<td>Health leaders (2014)</td>
<td>Hospital (US)</td>
<td>Review article Need agreement on px experience – nationally</td>
<td>Data: to target improvements Identify best team workers to train others Planning/surveying/training/technology/strategy</td>
<td>Low evidence</td>
<td></td>
</tr>
<tr>
<td>Molpus (2014)</td>
<td>Hospital (US)</td>
<td>Tested a Evidence based tool kit at 30 practices</td>
<td>Team based approach to address px experience</td>
<td>Report of case studies</td>
<td></td>
</tr>
<tr>
<td>Thorarinsdottir et al (2014)</td>
<td>Hospital (Iceland)</td>
<td>Review of qualitative research (60 studies) Analysis using a framework</td>
<td>Px participation (established relationship/HCP sharing power/sharing information &amp; knowledge/mutual engagement in mental &amp; physical activities) is key Human connection is in px –centred participation</td>
<td>Good methodology – justified</td>
<td></td>
</tr>
<tr>
<td>Reference</td>
<td>Location</td>
<td>Methodology</td>
<td>Prominent Use Cases</td>
<td>Expert Opinions</td>
<td>Summary</td>
</tr>
<tr>
<td>--------------------</td>
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<td>--------------------------------------------------------------------------------------</td>
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</tr>
</tbody>
</table>
| Van der Wees et al (2014) | US, UK & Netherlands | Qualitative interviews with experts & leaders (58) | PROMs useful for px centred care & comparative effectiveness & practice improvements & performance assessment of HCP & organisations & as a metric for value-based payments  
Feasibility of wide spread use not assessed yet  
Wide spread support from stakeholders  
Barriers: complexity of establishing routine data collection  
Tension among stakeholder about different uses of PRO data  
PROM use underdeveloped & not integrated. Need to be tailored to healthcare system | 3 expert opinions | Good |

Highlighted articles are based in the dental field.
### Appendix 7 SWOT Analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weakness</th>
</tr>
</thead>
<tbody>
<tr>
<td>• In line with current National Quality Improvement Initiatives</td>
<td>• Limited numbers of staff</td>
</tr>
<tr>
<td>• Current drive for evidence from commissioners</td>
<td>• Reluctance to change</td>
</tr>
<tr>
<td>• Supported by Professional Bodies</td>
<td>• Lack of knowledge / skills</td>
</tr>
<tr>
<td>• Area of author expertise</td>
<td>• Time constraint due to submission of thesis</td>
</tr>
<tr>
<td>• Dynamic department with motivated staff</td>
<td>• No scope for assessment of improved patient satisfaction</td>
</tr>
<tr>
<td>• Keen interest from members of MDT</td>
<td></td>
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<tr>
<td>• Project support by Clinical Lead (RMM)</td>
<td></td>
</tr>
<tr>
<td>• Project supported by Regional Lead for Hospital, Community and Public Health Dentistry</td>
<td></td>
</tr>
<tr>
<td>• Availability of National Guidelines and Nationally Agreed Assessment Tools</td>
<td></td>
</tr>
<tr>
<td>• Consultant–led Hospital Dental Services still in draft form</td>
<td></td>
</tr>
<tr>
<td>• Ethical approval</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Threats</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reputation of department</td>
<td>• Reputation of department</td>
</tr>
<tr>
<td>• Lack of training in research</td>
<td>• Centre of excellence</td>
</tr>
<tr>
<td>• Cost implications</td>
<td>• Learning experience for all the team</td>
</tr>
<tr>
<td>• Reluctance to change</td>
<td>• Improved patient experience</td>
</tr>
<tr>
<td></td>
<td>• Publication of improvements at National and International Conferences</td>
</tr>
<tr>
<td></td>
<td>• Adoption of PROMs tool by other Institutions</td>
</tr>
<tr>
<td></td>
<td>• Enhanced teaching and learning</td>
</tr>
</tbody>
</table>

Table 2: SWOT Analysis (Gill, 2011)
### Appendix 8 PESTLE Analysis

**Table 3: PESTLE Analysis**

<table>
<thead>
<tr>
<th>Category</th>
<th>Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Political</strong></td>
<td>• Evidence needed for commissioners to allocate funding</td>
</tr>
<tr>
<td></td>
<td>• Introduction of new treatment need index (IOFTN)</td>
</tr>
<tr>
<td></td>
<td>• BOS</td>
</tr>
<tr>
<td></td>
<td>• BAOMS</td>
</tr>
<tr>
<td></td>
<td>• Patient experience as a metric of quality within the NHS</td>
</tr>
<tr>
<td><strong>Economic</strong></td>
<td>• Justification of services for commissioning groups</td>
</tr>
<tr>
<td></td>
<td>• Evidence of quality</td>
</tr>
<tr>
<td></td>
<td>• Increased staff workload</td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td>• Patient awareness of quality of life</td>
</tr>
<tr>
<td><strong>Technological</strong></td>
<td>• Additional IT support</td>
</tr>
<tr>
<td><strong>Legal</strong></td>
<td>• In line with Professional body recommendations</td>
</tr>
<tr>
<td></td>
<td>• Tool for GMC/GDC appraisal process</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td>• Evidence for new clinical area design</td>
</tr>
</tbody>
</table>
### Appendix 9 Force Field Analysis

**Table 4: Force Field Analysis (Lewin, 1951)**

<table>
<thead>
<tr>
<th>DRIVERS</th>
<th>RESISTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• National financial constraints</td>
<td>• Reluctance to change</td>
</tr>
<tr>
<td>• Drive to improve quality in the NHS</td>
<td>• Lack of experience in research</td>
</tr>
<tr>
<td>• National reporting of outcomes</td>
<td>• Lack of knowledge of project</td>
</tr>
<tr>
<td>• National reporting of patient satisfaction</td>
<td>• Increased work load</td>
</tr>
<tr>
<td>• Assessment using “friends and family test”</td>
<td>• Increased clinical time</td>
</tr>
<tr>
<td>• Motivated and dedicated staff</td>
<td>• Cost for meeting room</td>
</tr>
<tr>
<td>• Encouragement and support for change from management and clinical colleagues</td>
<td>• Additional admin support</td>
</tr>
<tr>
<td>• Guidelines from Professional Bodies</td>
<td>• Postage cost</td>
</tr>
<tr>
<td>• External – draft of new</td>
<td>• Increased need for IT support</td>
</tr>
<tr>
<td>• Consultant-Led Hospital Services</td>
<td>• Loss of control</td>
</tr>
<tr>
<td></td>
<td>• Established custom and practice</td>
</tr>
<tr>
<td></td>
<td>• Staff turnover: trainees on MDT clinic</td>
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</table>
7.10 Appendix 10 Stakeholder Analysis

Table 5: Stakeholder Analysis

<table>
<thead>
<tr>
<th>High Importance/Low Influence</th>
<th>High Importance/High Influence</th>
</tr>
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<tbody>
<tr>
<td>• Regional Lead for Hospital Dentistry</td>
<td>• Commissioning Bodies</td>
</tr>
<tr>
<td>• Clinical Director</td>
<td>• Medical Director</td>
</tr>
<tr>
<td>• NCHD’s</td>
<td>• Consultants</td>
</tr>
<tr>
<td>• Patients</td>
<td>• Nursing staff</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Low Importance/Low Influence</th>
<th>Low Importance/High Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Support services</td>
<td>• MDT of other Regional Hospitals</td>
</tr>
<tr>
<td></td>
<td>• Other Consultants from other Regional Hospitals</td>
</tr>
</tbody>
</table>
## 7.11 Appendix 11 Input Evaluation

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>ACHIEVED</th>
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</thead>
<tbody>
<tr>
<td>Literature Review</td>
<td>Yes</td>
</tr>
<tr>
<td>GANNT Chart</td>
<td>Yes</td>
</tr>
<tr>
<td>SWOT Analysis</td>
<td>Yes</td>
</tr>
<tr>
<td>Stakeholder Analysis</td>
<td>Yes</td>
</tr>
<tr>
<td>Force Field Analysis</td>
<td>Yes</td>
</tr>
<tr>
<td>PESTLE Analysis</td>
<td>Yes</td>
</tr>
<tr>
<td>Implementation Plan</td>
<td>Yes</td>
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</table>

### Table 6: Input Evaluations
7.12 Appendix 12 Business Case for tablet devices for Orthodontic/OMFS Service users

Proposed Development

To integrate the use of electronic data collection tools and Tablet devices into the Orthodontic/OMFS surgical orthodontic service to

- Improve delivery and quality of service
- Assess quality using PROM tools
- Comply with National Data Collection Standards
- To assess patient experience as assessed by validated Nationally agreed Quality of Life Questionnaires

This will aid the Orthodontic/OMFS department to:

1. Contribute to National PROMS data, and manage data collected locally, to assess quality of outcomes and shape the service

2. Introduce the use of patient e-education with chair-side tablet applications to improve consent process and replace current patient education BOS jaw surgery DVD with e-education tablet applications to improve quality of patient education

Strategic fit:

In accordance with the recommendations of Transforming Your Care, the Orthodontic/OMFS departments, feel the proposal will enable the service to:

1. Use outcomes and quality evidence to shape services

2. Provide an indicator of department performance

3. Realise value for money of the service

4. Maximise the use of technology
Background

Part 1- Reformatting of Word based validated questionnaires to electronic format

The British Orthodontic Society has, in partnership with the British Association of Oral and Maxillofacial Surgeons, agreed minimum outcome data collection tools for surgical orthodontic treatment. These include Post treatment PROMS data collection tool and an Orthognathic Quality of Life questionnaire to be completed at the beginning and end of treatment. It is essential that the department collect this data to evaluate service locally, and benchmark to national reported orthognathic outcomes. This data is also recommended as a perquisite by NICE commissioning guidelines.

Currently data collection, which commenced on 1st December 2014, is by paper-based questionnaires. Data collected is then manually transferred to excel database. There is a large volume of outcome data that the BOS/BAOMS have deemed fundamental to providing a valid outcome measure, and currently analysis of data is labour intensive and time consuming for clinicians. It is also susceptible to errors inputting data and delays in extracting data.

Part 2-Introduction of use of chair side tablet devices for patient education and consent process

Currently the consent process for surgical orthodontics is augmented with:

1. Loan of the BOS Jaw Surgery DVD
2. Patient information leaflets
3. Clinical photographs which are out-dated and of poor quality

Results of recent departmental audit have revealed that patients undergoing surgical orthodontic treatment failed to meet the Northern Ireland target for “feeling involved in their decision making process”, with only 91% reporting they felt very involved/involved. The NI average was 94%. More worrying was the fact that up to 65% of respondents felt the need to seek additional information following their consent consultation (Table 1.), with over half of service users looking on the Internet.
Another problem with the current arrangement is that more frequently patients are reporting they do not own a DVD player so fail to benefit from the information contained. Research has also advised that there is dissatisfaction with the BOS DVD, as they find it hard to relate as the patients stories are from older patients, whereas the demographic we treat are largely between 18-25 yrs.to the older patients (Flett 2014).

Expected Outcomes/ benefits of investment/ Need for expenditure

Part 1- Reformatting of Word based validated questionnaires to electronic format

1. Improved efficiency and more accurate PROMS from patients who have had surgical orthodontic treatment allowing immediate improvements to be made to service delivery.

2. Data allowing quality assurance and benchmarking of service to national outcome standards. The ultimate measure by which to judge the quality of a medical effort is whether it helps patients (and their families) as they see it. Anything done in health care that does not help a patient or family is, by definition, waste, whether or not the professions and their associations traditionally hallow it. (Berwick 1997)

Part 2- Introduction of use of chair side tablet devices for patient education and consent process

1. Improved patient information and education allowing better consent and patient feeling more involved in their decision-making.

Risks/deficiencies in current service provision

Time constraints in management of paper based PROMS questionnaires and manual data entries are resulting in delay in producing outcome standards and therefore failure to contribute nationally.

Patients are dissatisfied with the content, quality of and medium in which the information is currently delivered.

- Critical success factors and how will they be monitored
To maintain current level of service, however being able to relate department throughput to quality measure and improve patient experience.

- **Who will manage the implementation?**

Implementation will be managed with the Acute service directorate by the Surgical orthodontic team (consultants from Orthodontics and OMFS)

- **Who will lead the post project evaluation?**

Responsibility for monitoring and evaluating the project will lie with the Surgical orthodontic team, which will include the Clinical Lead and Orthodontic and OMFS consultants.

**Options appraisal**

**Option 1 – Do nothing**

**Options 2- Reformatting of Word based validated questionnaires to electronic format**

**Option 3- Reformatting of Word based validated questionnaires to electronic format and purchase of equipment to allow Introduction of use of chair side tablet devices for patient education and consent process.**
Appendix 13 The Seven-Step Process Improvement Model

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Identify the problem</td>
</tr>
<tr>
<td>2</td>
<td>Collect data to understand your current process</td>
</tr>
<tr>
<td>3</td>
<td>Analyse the data to understand root cause</td>
</tr>
<tr>
<td>4</td>
<td>Choose an approach</td>
</tr>
<tr>
<td>5</td>
<td>Develop the process(es)</td>
</tr>
<tr>
<td>6</td>
<td>Implement</td>
</tr>
<tr>
<td>7</td>
<td>Evaluate and improve in an iterative cycle through these steps</td>
</tr>
</tbody>
</table>

Table 8
Introduction of PROMs on a MDT Clinic

Currently, there is a worldwide drive to improve the quality of healthcare delivery. Patient experience is one of the 3 pillars of quality as defined by the NHS: Patient experience is closely correlated with clinical effectiveness and patient safety. NHS clinical commissioning groups (CCGs) are responsible to only fund appropriately evidenced treatments. Multi-disciplinary teams (MDT) providing orthopaedic treatment (OGN), have failed to provide evidence of the benefits and quality of this service to date, jeopardising future OGN funding. The specialties involved in providing OGN have approved a national standardised Patient reported outcome measure (PROM) tool and minimum dataset (MDS) to improve the quality of the service and inform CCGs.

Aims & Objectives

The aim of this project was to introduce PROM tools to a MDT clinic to improve quality using patient experience determined by Quality of Life (QoL) questionnaires.

The objectives were:

- All pre- and post- treatment patients attending the MDT will be invited to complete QoL questionnaires to determine the impact of OGN on their QoL.
- Compliance with nationally agreed MDS for patients undergoing this treatment.

Methodology

The HSE Change model was used to guide the organisational developmental (CD) project.

1. Initiation: Literature review, Stakeholder analysis, SWOT, meeting with Regional Lead for Hospital Dentistry, Regional Consultants and Clinical Lead, assessment of staff knowledge of PROMs.

2. Planning: Departmental meeting to share vision and explain urgency of change, focus groups for all staff groups to address concerns, PESTLE, SWOT, Stakeholder and Force Field Analysis.

3. Implementing: Piloting of new QoL questionnaires, assessing impact on clinic times, patient appointment lengths and meeting with staff to trouble shoot problems, manage resisters and streamline process.


Evaluation

The CIPP model was used to evaluate the process metrics. Figure 2 shows the average change in QoL as determined by the pre and post treatment PROM tools. There was a statistically significant difference (P<0.05).

Organisational Impact

Introduced the benefits of PROMs to staff, patients and CCGs as a quality improvement metric and evidence of the impact of OGN on patients QoL.

Linked current provision of OGN services to a national database of MDS to allow benchmarking.

Conclusion

This OD project introduced PROMs to an MDT, in alignment with a national quality initiative for OGN, to improve the quality of the OGN services as assessed by patients’ QoL, and provide evidence of its benefit for CCGs.
# Organisation Permission & Sponsorship Form

<table>
<thead>
<tr>
<th>Name (Employee/ Student):</th>
<th>Ciara Campbell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Number:</td>
<td>10106839</td>
</tr>
<tr>
<td>Organisation:</td>
<td>Western Health and Social Care Trust</td>
</tr>
<tr>
<td>Project Sponsor:</td>
<td>Ms R. McMullan, Consultant/Clinical Lead</td>
</tr>
<tr>
<td>Telephone Contact:</td>
<td>004407808293989</td>
</tr>
<tr>
<td>Email Contact:</td>
<td><a href="mailto:Roz.McMullan@westerntrust.hscni.net">Roz.McMullan@westerntrust.hscni.net</a></td>
</tr>
<tr>
<td>Project Start Date:</td>
<td>04/12/14</td>
</tr>
<tr>
<td>Proposed Date of Completion:</td>
<td>02/04/15</td>
</tr>
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**Title of Project**

Introduction of PROM Tools and Quality Assurance Tools on a MDT Outpatient Clinic

---

**Declaration**

I give permission for this project to be undertaken in this organisation/department and I agree to act as organisational project sponsor. I also agree to being contacted by the RCSI to verify this project if required.

Name: Miss R. McMullan

Signature: [Signature]

Date: 21/04/15
## Organisation Final Confirmation Form

<table>
<thead>
<tr>
<th>Name (Employee/ Student):</th>
<th>Ciara Campbell</th>
</tr>
</thead>
<tbody>
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### Title of Project

Introduction of PROM Tools and Quality Assurance Tools on a MDT Outpatient Clinic

### Declaration

I confirm that the project named above was undertaken in this organisation/department and that the student named above was responsible in its implementation.

Name: Miss R. McMullan

Signature: 

Date: 2/4/15