BARIATRIC PATIENT JOURNEY

Obstacles and risks in patient handling safety in a large rural Australian hospital

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Abbreviations

BMI	Body Mass Index
GSAHS	Greater Southern Area Health Service, NSW Health
ICU	Intensive Care Unit
IIMS	Incident Information Management System
MLHD	Murrumbidgee Local Health District, NSW Health
MSD	Musculoskeletal Disorder
NSW	New South Wales
ORA	Operating Room Assistant
PJM	Patient Journey Modelling
RFA	Recommended for Admission form
SWL	Safe Working Load

Definitions

Gzunda	Brand of electric bed mover

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ABSTRACT

Background

Patients presenting to hospital frequently need assistance to move between departments, to and from equipment, change posture for tests or procedures and everyday care or hygiene activities. With obese and bariatric patients this poses specific challenges. At present staff members experience with bariatric patients are identified within their own departments and work roles. The commonality of issues and needs related to patient handling and transfers are not readily identified across the hospital.

Study design and methods

The study compares rural Australian experience in a single facility with the five generic risk categories in bariatric patient pathways identified in the British study by Hignett et al (2007)[(1)]. This qualitative study used an action research methodology with staff interviews, patient journey modelling and interviewer-administered patient feedback questionnaires. Essomenic Patient Journey Modelling software for health care settings by Curry (2007)[(2)] was used to analyse processes, with focus group input for proposed changes and an improved model of service delivery.

Results

Content analysis of six key staff interview transcripts and the patient journey modelling of four inpatient pathways identified obstacles across the five generic risk categories of equipment, patient factors, building and design, communication and organisational factors. Ishikawa diagrams present two issues identified through second level analysis of staff interviews and demonstrate the interactions of risk categories and consequences. Pattern matching was used to compare the five generic risk categories with the obstacles identified for both staff interviews and patient journey modelling. A diagrammatic synthesis of all obstacles is presented. A report of 12 key recommendations in action plan format and a proposed bariatric patient model was provided to the health facility.

Discussion

There were confounding effects identified where obstacles were present across multiple risk categories. The diagrammatic Essomenic Patient Journey Modelling provides a tool for clear presentation and communication of obstacles to safety as they occurred in patient pathways and to present an improved model of care. The research demonstrates obstacles to safety with bariatric patients who are normally independently mobile.

Conclusion

The five generic risk categories in bariatric patient pathways identified in the British study by Hignett et al (2007)[(1)], concerning equipment, patient factors, building and design, communication and organisational factors were clearly present in a large rural Australian hospital. It is beneficial for health facilities to identify their own specific obstacles to manual handling safety with bariatric patients to see what currently happens and facilitate appropriate targeted intervention strategies.

Recommendations include improving communication through advance notice and patient alerts and the provision of patient mobility assessment information. A culture of safety should be fostered by reporting bariatric patient issues and incidents; review resources needed to support implementing the facility's procedure for management of bariatric patients and training in consistent safe patient handling techniques, with wardsperson and nursing staff sharing tasks. A range of improvements in equipment were identified including the need for visible SWL, additional bariatric equipment, equipment trials and prioritisation for funding, better access to equipment and need for preventative maintenance.

Keywords

Patient journey modelling, bariatric, manual handling, patient pathways, rural

EXECUTIVE SUMMARY

Introduction

Six key staff members were interviewed to determine how staff saw obstacles to safety and issues with manual handling of bariatric patients. The study then collected data on what happens in practice for four inpatient pathways. The mapped physical journey for the sample of bariatric patients in a large rural hospital during an admission was analysed and presented to provide a composite diagrammatical model of the current state of the bariatric patient journey and identify obstacles to safety. Through working with key staff stakeholders and using a focus group approach, a diagrammatic model of the proposed (improved) state was generated. An improvement report to the facility Executive was the final product of this research.

Findings

The local procedure for management of the bariatric patient had not been implemented across departments. An electric bed was not always allocated to a bariatric patient. Non-clinical issues concerning bariatric patient management were not logged on IIMS. There was a lack of notification of bariatric patients to Emergency Department, Theatres and between Wards and Imaging. Only 50% of Recommended for Admission forms contained patient height and weight. There was a culture of nursing "standing back" and relying on Wardspersons to do many patient handing tasks and unclear information and documentation on patient mobility status. There was a lack of key equipment with bariatric capacity in Maternity and Emergency, such as wheelchairs and patient bedside chairs. There was a limited supply of slide sheets with limited use by staff. Safe Working Load of equipment is not clearly marked. Staff members are unclear on best and safest techniques for patient handing.

Action Plan recommendations were provided to the facility against a summary of the evidence informing each. The 12 recommendations are summarised below.

Organisational

- Implement the facility's management of the bariatric patient procedure using flowcharts for departments, supported by education.
- Foster a culture of safe patient handling techniques and competencies amongst nursing and wardspersons, towards sharing patient handling tasks.
- Ensure resources are in place to support competency-based training and assessment for staff.
- Incidents related to patient handling safety should be logged on IIMS for management.

Communication

- Ensure advance notification of bariatric patient to other departments including height, weight and BMI; and activate relevant alerts.
- Implement a safe patient handling and mobility assessment form across the hospital to communicate patient mobility status, safe techniques and equipment to be used.

Equipment

- Reinforce standard procedure of allocating an electric bed (with adequate SWL) to bariatric patients.
- Undertake bariatric equipment trials and prioritise equipment for funding.
- Increase supply of slide sheets across the hospital.
- All patient handling equipment should be clearly marked with SWL so staff can clearly distinguish between suitable and unsuitable equipment for the patient weight.
- Determine a system for preventative maintenance on bariatric equipment
- Review Gzunda bed movers and develop a replacement plan; increase their number and determine central access and storage points.

Discussion

Similarities and differences in reported versus observed obstacles

Pattern matching compared the reported issues with those identified through patient journey modelling and with the five generic risk categories of the British study. All categories were present in both data sets with fewer communication issues identified by staff than found in practice. Patient pathways clearly demonstrated examples of obstacles to safety related to equipment.

Compounding effects of obstacles in multiple risk categories

Secondary analysis of staff interview data showed the difficulties when multiple risks across the categories occurred. This was presented in Ishikawa diagrams from staff interviews with other examples evident in patient journey modelling graphics. These examples included a tendency for avoidance of bariatric patients due to difficulties of providing their care which could lead to increased length of patient stay; increased risk of musculoskeletal disorder for staff in maternity when needed to urgently move a bariatric birthing mother to delivery on the floor above; lack of advance notification and alerts of bariatric patients to theatres requires quick re-evaluation of equipment and handling methods and can require change in theatre.

Obstacles to safety were present with usually independently mobile bariatric patients

It is not just caring for the most obese or most dependent bariatric patients which pose all the obstacles to safety. This research showed examples of planned admissions of usually ambulant bariatric patients with BMI from 42 to 52.5, aged in their 20s, 30s and 50s with limited co-morbidities who posed challenges over their one and a half to five day stays.

Organisational and Work Culture issues

Although staff members were aware of safety issues as reported in interviews and in the specific incidents along the patient's journey, there was no safety culture of reporting and addressing these incidents on IIMS. Wardspersons were largely used to undertake patient handling and movement around the hospital. There is a culture of nursing staff tending to stand back and leave such tasks to wardspersons and unclear information provided from nursing on patient mobility status.

Recommendations are mainly made across Organisational, Communication and Equipment categories

The two generic risk categories of Patient Factors and Building, Space, Design are the least amenable to process change. The 12 recommendations have been made across the categories of Organisational and Staff Issues; Communication; and Equipment. The acute hospital redevelopment is currently in advanced stages of planning and consideration of bariatric patients is integral to the process and should address the many space and design issues.

Patient journey mapping and Essomenic Patient Journey Modelling in combination provided a snapshot of what happens across the hospital environments. This approach has relevance to other health facilities and demonstrates a viable alternative when using patient journey pathways in clinical redesign.

Conclusions

1. The five generic risks categories in bariatric patient pathways identified in the British study by Hignett et al (2007)[(1)], concerning equipment, patient factors, building and design, communication and organisational factors were clearly present in a large rural Australian hospital.
2. The recommendations in the Action Plan should be addressed within the health service risk management framework.
3. Implementation of the Action Plan would support complying with NSW Health Guidelines and the organisation's Management of the Bariatric Patient procedure and the proposed bariatric patient journey model.
4. Essomenic Patient Journey Modelling is a powerful visual tool and could be further used post-implementation, for an internal service delivery audit of safety in the bariatric patient journey.

1 INTRODUCTION and BACKGROUND

A number of previous studies have looked at patient pathways or journeys for bariatric patients and used case scenarios as useful techniques to identify manual handling injury risks [1, 3]. No studies have applied the results of this prior research to a single health facility.

In a large hospital the patient moves from one department to another, depending on their health care needs. Patients presenting to hospital are frequently assisted to move between departments, to and from equipment, change posture for tests or procedures and everyday care or hygiene activities. The number and type of transfers which occur, vary, especially for the more dependent patient. This information, while known in particular departments, is not known to the organisation overall and there is no data on the range of transfers across all environments for a patient. The commonality of issues and needs and the subsequent opportunity to learn from the bariatric patient physical journey is not available.

This research is primarily concerned with identifying the specific obstacles to safety in manual handling with bariatric (severe to morbidly obese) patients in the hospital and how to improve safety. It compares staff member views of the issues with what is found in practice when we look at specific patient journeys. It generates recommendations to address identified obstacles and a proposed bariatric patient journey model. The research is conducted in a large regional hospital of 260 beds in rural NSW, with over 1,000 staff. The facility bed review in 2012 showed that only 62% of beds were electric. New electric beds purchased since 2008 have a capacity of 300kgs. There is only one bariatric bed (wide and 300kg capacity) in the hospital. Further bariatric beds and other bariatric equipment can be obtained quickly from a nearby supplier which has a contract for hire with the local health district.

Aims

- Compare rural Australian experience in a single facility with five generic risk categories identified in a previous study in the United Kingdom across a range of health service districts [1]
    - Patient factors
    - Physical building/ vehicle space and design
    - Equipment
    - Communication
    - Organisational and staff issues
- Map the bariatric patient journey for a sample of patients to provide data across a range of environments in a large rural hospital about obstacles to safety in patient mobility and handling.
- Visually present and analyse data using Essomenic Patient Journey Modelling software[2]
- Compare issues identified in key staff interviews with what is found in practice
- Make specific recommendations to address identified obstacles and improve the model of care.
- Contribute to the evidence base in Australia concerning the manual handling risks associated with the care, treatment and mobility of bariatric patients.

2 LITERATURE REVIEW

The literature review sought to identify research specifically concerned with patient handling safety with bariatric patients, and then narrowed in to works which used patient journey modelling approaches. Databases used included Medline, AMED, Nursing@Ovid, PEDro and Allied Health Evidence. The following search terms were used in varying combinations: bariatric, obesity, severe obesity, morbid obesity, safe patient handling, moving and lifting patients, lean thinking, and patient journey. Publications and online resources were reviewed at Safe Work Australia, US Veterans and World Health Organisation websites.

The World Health Organisation gives an international classification of obesity based on Body Mass Index (BMI) with three classes of obesity, as displayed in table 1 below. This research is concerned with obese class III, where the BMI is ≥40.00.

Table 1: Extract from the International Classification of adult underweight, overweight and obesity according to BMI [4]

Classification	BMI(kg/m^2)	
	Principal cut-off points	Additional cut-off points
Obese	≥30.00	≥30.00
Obese class I	30.00-34.99	30.00 - 32.49
		32.50 – 34.99
Obese class II	35.00 – 39.99	35.00 – 37.49
		37.50 – 39.00
Obese class III	≥40.00	≥40.00

Source: Adapted from WHO, 1995, WHO, 2000 and WHO 2004.

Recent worldwide obesity key facts as reported by WHO [5] state that

- obesity has more than doubled since 2008 and that
- 65% of the world's population live in countries where overweight and obesity kills more people than underweight.
- in 2010 it was also noted that overweight and obesity are on the rise in low- and middle-income countries, particularly in urban areas.

The WHO figures for Australia for 2007 to 2008, indicate 25.6% of males and 24% of females were classified as obese (Body Mass Index > 30.0 kg/m2). Overall WHO figures for Australia also show a tendency for higher rates of obesity in rural areas [4]. This trend is demonstrated in the 2009 NSW Health Survey Report released in May 2010 [6], where GSAHS was shown to have a statistically higher proportion of overweight or obese adults compared to NSW overall (GSAHS 58% compared to NSW 53%). This survey also indicated that in 2009 nearly a quarter of the adult population in GSAHS were classified as obese (BMI of 30.0 or above), compared to around 14% in 1997 (BMI).

These figures do not distinguish data for class III obesity but are indicative of increasing adult weight trends in NSW and specifically the then, GSAHS population. General trend information for obesity and severe obesity is of value, since information systems and forms in NSW Health have not included patient weight and height as standard practice for some time, except through individual service types where these records are essential to the health issues they address, for example maternity, diabetes and renal dialysis services. This was ascertained through enquiries with the hospital and confirmed by the MLHD performance analyst.

The risk of major diseases is associated with the increase in obesity rates. Main diseases include cardiovascular diseases (mainly heart disease and stroke), which were the leading cause of death in 2008; diabetes; musculoskeletal disorders (especially osteoarthritis - a highly disabling degenerative disease of the joints); some cancers (endometrial, breast, and colon) [5] and cause increased demand on health services and a morbidly obese patient may present with multiple chronic diseases [7]. The term *baros* is from the Greek, meaning weight. A bariatric patient in this study is of class III obesity (severe to morbid, based on BMI). Broader definitions of bariatric also refer to body size or shape, waist circumference, not fitting standard hospital equipment or standard ambulance transport or exceeding a certain weight [1, 7-10].

Manual handling and bariatric patient safety

La Trobe University, Centre for Ergonomics and Human Factors undertook research for the Australian Safety and Compensation Council into work-related musculoskeletal disorders, with an extensive literature review published in 2006 [11]. This informed changes to the management of manual handling and led to the new Australian National Code of Practice for the Prevention of Musculoskeletal Disorders from Performing Manual Tasks at Work in 2007 [12]. The terminology of *manual handling* was itself identified as a barrier as it constrained people's thinking and did not link to causes of Musculoskeletal Disorder (MSD). The term *hazardous manual task* was incorporated into the new code of practice, as were improved hazard identification and risk management methods. The report [11] highlights deficits in

the process of hazard identification, determining the level of risk and implementing viable controls as well as a failure to adopt a systems approach to risk management and too great a reliance on training in safe lifting techniques.

The Code of Practice [12] identifies characteristics of hazardous manual tasks as repetitive or sustained movement, repetitive or sustained awkward posture, and application of force (especially high force) and exposure to vibration. Further refinement occurred in the 2011 revised Code of Practice [13] where the previously termed contributing factors (to the hazard) are now described as causes making the link between hazard, cause and control clearer in the risk management process.

Safe patient handling best practice approaches to reduce workplace musculoskeletal disorders have evolved over the past decade to become a multifactorial risk management approach requiring a combination of:

- clear policy and procedures in line with standards, codes of practice and guidelines,
- minimal and no lift approaches,
- patient mobility and handling risk assessment,
- provision and access to equipment of appropriate design and safe working load,
- safe work practices for using equipment for patient transfers,
- competency based training and assessment for staff,
- appropriate design of space and facilities,
- identification and risk management of high risk manual tasks in each work environment,
- assessment of hazardous manual tasks for individual patient needs or difficult situations.

In addition America uses Algorithms and has also developed these for safety in bariatric patient handling [7, 14].

In NSW the Health Department released a guideline in 2005 for the management of health and safety issues associated with management of bariatric or severely obese patients [9]. It requires health facilities to develop and implement their own facility based bariatric patient management plan which details strategies and procedures to manage foreseeable risks associated with bariatric patients. Such a plan ideally would incorporate the above approaches. The guideline, while timely and necessary was prior to the Australian review of musculoskeletal disorders. While it provides guidance to employers to identify foreseeable workplace hazards in relation to bariatric patients it did not have the benefit of the identified barriers to the prevention of work related MSD. It is unknown whether any evaluation has occurred of compliance and the effectiveness of implementation of the guideline across NSW Health facilities. Identification by facilities of the frequency or percentage of bariatric patients admitted or treated is called for in the guideline, however the NSW health databases do not record patient weight and height and hospitals cannot easily track bariatric patient presentations. There are examples of system approaches implemented in Australia that are effectively addressing the range of issues such as those by Woods at Manning Hospital [15], Nowicki at Prince Charles Hospital Health Service District in Queensland [16] and Cowley (2009) [17] outlines the approach used in the hospital case study.

Patient journey approaches

The literature increasingly reflects concern with safe patient handling for bariatric patients [7, 18, 19] with several studies using patient journey approaches to identify risks [1, 3, 20]. The extensive UK study by Hignett et al (2007) [1] from Loughborough University is pivotal to this study. It looked at increasing rates of obesity in the UK and examined risk assessment and process planning for bariatric patient handling pathways. The manual handling risks and planning required for bariatric patient care were explored and the five themes of generic risks, previously presented, were identified. It also found that 40% to 70% of Trusts (health services) did not have the necessary bariatric policy to lead to the risk management of bariatric patient care.

A major Australian study commissioned by Australian Safety and Compensation Council (ASCC) published in 2009 was conducted by Cowley [10], of the University of Ballarat. This bariatric patient journey study covered ambulance, mortuary, hospital and fire services. The literature review concluded

that there is little literature originating in Australia and also little information that contributes to the evidence base.

A recent paper based on the same study [21] comments that a standard definition of "bariatric" hampers risk controls as do the gaps in information flow during the bariatric patient journey. The article concludes that there is very little sharing of knowledge and that improvement in manual handling risk control for carers requires greater collaboration.

Lean Thinking in Health Care

The Lean Thinking patient journey mapping approach has been used across the developed world. The application of Lean Thinking approaches in clinical services redesign in NSW Health facilities was piloted in 2002 and extended to 10 top hospitals in 2004 and led into a state-wide three year program which included 75 separate redesign projects in 60 hospitals [22]. The authors hail its success, where the use of patient journey mapping and making the journey visible, is a key tool in driving the redesign process.

While it is seen to be successfully applied in health settings, its emphasis on efficiency and reducing waste did not complement values of safety in patient handling. Time reduction was not a viable measure since less time taken in patient handling tasks often equates with quickest and less safe techniques and increased risk for staff and patients. In addition critiques of the literature related to Lean Thinking in healthcare have identified a range of limitations.

More recent international papers raise a range of issues with applications of Lean in health care. Mazzocato et al (2010) [23] reviewed 33 articles (which met their inclusion criteria) from the literature on applications of Lean Thinking in healthcare across a variety of settings with all reporting successful applications. Reports about time saving did not include how the time was redistributed. They conclude that while Lean emphasises a holistic view most cases reviewed were about "narrower technical applications with limited organisational reach" (op cit.p6). Other authors have raised concerns about limitations to Lean. Joosten et al (2009) [24] from Netherlands looked at its applicability in health care. They found suggestions of publication bias where the literature tends to report on mainly favourable results, as well as few before-after studies and other study design issues and inconsistencies. Most papers reported operational improvements and less frequently, better outcomes. They raise an overall concern with Lean applications failure to take into account the interaction between social and technical aspects and call for more rigorous and balanced research.

Waring and Bishop (2010) [25] conducted an ethnographic study of Lean implementation in a United Kingdom National Health Service hospital theatre using field journals over a 12 month period. They found the socio-cultural aspects of Lean in health care were ignored. Whereas they identified themes of *resistance* as experienced in existing lines of power, arising from the *rhetoric* (theme) of the interpreted and articulated Lean as it interacts with the *ritual* (theme) of what is enacted in social practice in the setting. They concluded there is a paucity of socio-cultural research that explores Leans implementation and existing clinical practices. Young (2009) [26] in a review of Lean in health care questions metrics and how well they align and the possibility of conflicting or even disconnected metrics as well as emphasising the need for evidence through analysis and trials of Leans application in clinical communities.

Essomenic Patient Journey Modelling

This study has a used a "multi-layered patient flow" communication tool by Curry (2006) [27] which was developed for quality improvement in healthcare redesign. The system has software which is run in Microsoft Visio and its approach was designed as an alternative to Lean Thinking. The word *Essomenic* refers to how things will be done in the future and the modelling tool was developed in Australia, specifically to be used in health care settings to study processes and develop improved models of service delivery. It has the ability to include staff roles and relevant policies and guidelines. Through discussions in facilitated meeting environments involving all stakeholders affected in the patient journey, diagrammatic visual representation is produced to readily enable stakeholders to identify

issues in the patient journey. The final result is the visual depiction of a proposed patient journey model. It has been applied in a range of healthcare settings including Midwifery at Ryde Hospital and referral processes at Royal Newcastle Hospital, NSW; remote Indigenous maternity services in Northern Territory, chronic kidney disease, mental health, and medical oncology. This approach also aims to overcome the socio-cultural aspect discussed as an issue in the Lean Thinking section above.

Conclusion

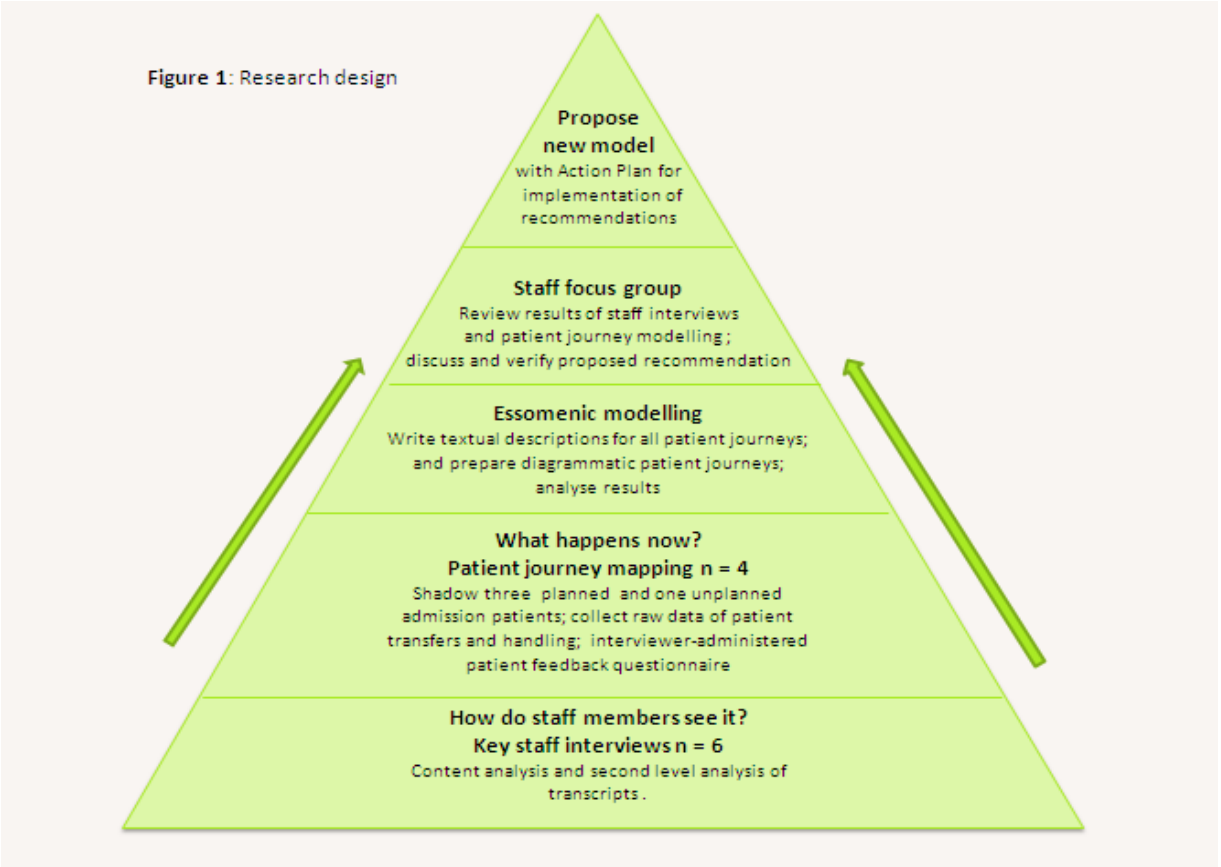
The ongoing and increasing need for health services to accommodate bariatric patients presents a range of obstacles to safety in patient handling. While excellent examples exist and guidance material is provided to address these safety issues, it is unclear how well they are applied in hospital environments. The need for further research into risk control of hazardous manual tasks involved in the bariatric patient journey in Australia is established. Given the constraints of Lean Thinking approaches in health care the Essomenic patient journey modelling process is used and tested as an alternative option for process redesign and improved outcomes.

3 DESIGN AND METHODOLOGY

Study Design

This qualitative study arises from a post-positivist and critical realism framework and used action research. It meets most characteristics of action research according to Dahlberg, [28] by being problem driven and aimed to change practice. It is insider research and involved participation of others across the workplace. It also included reflection on the results to enable development of proposed actions and to generate a proposed patient journey model. It was not truly democratic however. Figure 1 following gives an overview of the research design. The technique of pattern matching as presented by Trochim [29], is used to establish construct validity through comparing reported and observed results with each other and with the five themes of generic risk categories of Patient factors; Physical building/ vehicle space and design; Equipment; Communication; Organisational and staff issues [1].

Figure 1: Research design



Setting and Participants

Staff Interviews

Six key staff members were selected using purposive sampling. A few key individuals were sent a letter of invitation while key departments were sent a general invitation for a staff member to participate to include representatives from emergency, medical, orthopaedic, allied health and wardsperson. While it was planned to interview up to eight staff, only six were recruited. A staff participant information sheet was provided to all staff members recruited for semi-structured interviews. When staff accepted, they completed a signed consent form. An interview guide sheet was used by the researcher; see Appendix A and all interviews were recorded. An initial trial interview assisted with trouble shooting and two recording devices were used for all interviews which were conducted in a neutral, pleasant location on the hospital grounds, in negotiated work time to suit the individual. Recording of interviews varied in length, from 20 to 50 minutes depending on how much the individual wanted to say and how quickly they spoke. Recording was discussed with each participant prior to commencing. One interview recording was unsuccessful due to a last minute room change, recording equipment not located centrally and background air conditioner noise. Interviewer notes taken during the interview were relied upon for a summary of the issues raised.

Patient Journey Mapping

Purposive sampling was used to identify patients for the study. Potential planned admission participants were identified from audits of theatre booking forms over several weeks where the patient weight and height were reviewed and BMI calculated to ensure the potential patient met a primary inclusion criterion of BMI ≥40. The other criteria related to mobility and required the patient to be dependent or semi-dependent for assistance with their mobility and transfers while in hospital. A patient was excluded when their BMI was below 40 or they were independent in walking and moving or the patient had dementia. See Appendix B for complete inclusion and exclusion criteria.

Signed informed consent was obtained from patients prior to their participation in the project. A brief information sheet was handed to the patient by nursing staff, which asked the patient to indicate their interest in participating in the project. The researcher then followed up interested patients, read through the participant information sheet and then asked if the patient wished to consent to be in the study. Once consent was obtained each patient was entered into a table and allocated a code. All further data collection used the code as an identifier. A number of education sessions were conducted with Emergency department staff outlining the study and explaining that a book had been set up for staff to enter details for a potential bariatric patient participant. The researcher checked the book regularly. Eventually, the researcher started checking with the Medical Ward for any recent admissions from the Emergency Department and eventually it was the ward that notified the researcher of the potential participant.

Patient Journey Mapping in this study is used to refer to the raw data collection of patient handling and transfers in the patient pathway whereas Patient Journey Modelling refers to the graphical presentation and analysis of the raw data using the Essomenic software package which runs in Microsoft Visio.

A patient journey mapping sheet, see Appendix C, was developed to collect raw data for each patient transfer. It covered patient factors, reason or task, equipment used, type of transfer and technique used, staff roles and issues, physical environment, communication and organisational issues as well as patient code, BMI, department, date, day of journey. The researcher shadowed the patient as they moved through the hospital and collected the raw data from the staff members involved in the patient handling tasks by asking questions on how the transfer was conducted, what worked, what was difficult and recorded on a patient journey mapping sheet. Only one patient journey was mapped at a time. The data was not collected from direct observation of any patient handling task, since this was considered to be intrusive and may cause unwanted consequences of staff feeling they were being assessed, or impinge on patient privacy and dignity. Any staff member providing journey information was first read and given a staff information sheet about the research and shown the data collection sheet.

A brief patient feedback interview was offered to be conducted prior to discharge for each participant, to ask about their experiences concerning mobility and handling during their stay see, Appendix D.

Essomenic Modelling

Interviews had transcripts typed by the researcher and they underwent content analysis against the generic risk categories, as indicated in the hypothesis. A copy was given to interviewees and they were asked to review the written transcript and let the interviewer know if there was anything they wanted changed. The data from interviews were then compiled under their matching generic risk headings. The results of a question about staff attitudes were also compiled and data summarised, as shown in Figure 3 in the results section. Secondary analysis was also conducted and presented using Ishikawa diagrams.

Raw data was entered into the patient journey modelling software graphics program to present diagrammatic data for each journey. Figure 2 shows the coloured symbols used for staff and workflow cues in the software. Table 2 gives the layer names and their descriptions. Equipment requirements were a new component added for this research because it was integral to the study. This is the framework into which the people and flows are entered. A full journey is presented in Figure 6 in results and further journeys in Appendix E.

Figure 2: Essomenic Architecture [30]

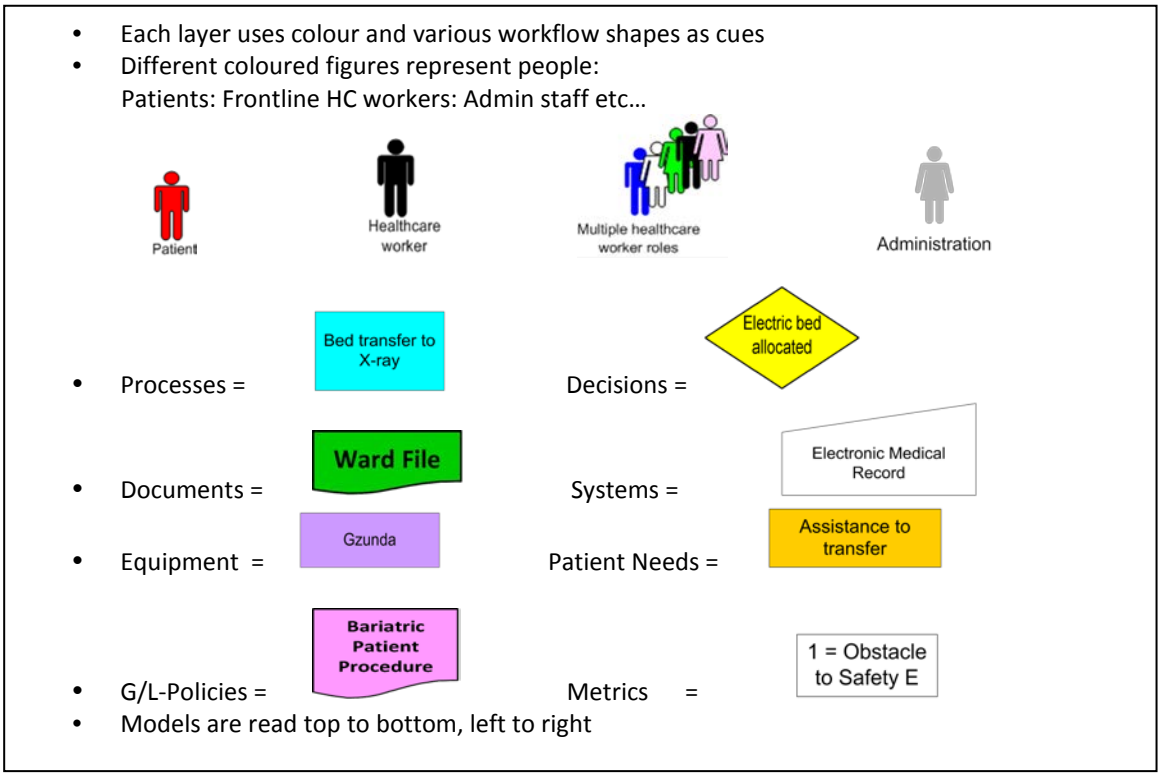


Table 2: Essomenic patient journey modelling layer name and descriptor for the study, after Curry [27]

Layer Name	Content Description
Patient Movement	Shows when, where and how many times a patient is transferred or assisted with mobility as part of their journey
Staff Roles	Shows what role a staff member plays and when and how that role is involved in the patient journey.
Processes	Names and relates the manual handling processes involved in the patient journey.
Communication/ Information Creation	Shows the creation and flow of paperwork and information to systems that is required by the processes or notes
Equipment	Shows the equipment used in the process or notes non-use of equipment
Policies/ legislation/ strategic objectives	Names the policies/ legislation/ strategic objectives that must be adhered to during the enactment of the processes.
Metrics	Details the measurements that are used to determine the effectiveness of the patient journey. This study used the number of obstacles identified in the generic risk categories

Focus Group

The focus group aimed for staff to visually review the results of the research, consider key recommendations and confirm components of the proposed bariatric patient journey.

Outline of the session

- Presentation of patient journeys from mapping data, using the visual graphics format of the Essomenic Patient Journey Modelling system.
- Presentation of the obstacles identified in the generic risk categories and other core themes from the patient mapping data and staff semi-structured interviews.
- Facilitated discussion to identify improvements – what needs to change and how.
- The Focus Group generates the components to form the improved Bariatric Patient Journey Model
- Clarifications and summary of recommendations.
- Thank you and participants' certificates and gifts.

Summary results from staff interviews and patient journey modelling were displayed on A3 sized paper around the walls, as were the graphical depictions of patient journeys in long page template and summaries of the textual descriptions. After an overview of the research the focus group toured the room studying the results, especially the actual patient journeys. The summaries of obstacles from staff interviews and patient journeys were reviewed. Discussions followed with confirmation of the results, proposed actions and key components of the proposed journey.

Proposed model and recommendations report

A recommendations report was prepared in action plan format for the hospital Executive. The proposed patient journey model was then developed and included in the report to the hospital.

Ethical Approval

Ethics approval was given by the GSAHS HREC for this study in July 2011 (reference number HREC/10/GSAHS/45) with Site Specific Assessment approval given in August 2011 (reference number LNRSSA/11/GSAHS/48).

Conflict of Interest

The researcher is an employee of the Local Health District and works in a Work Health and Safety role, in a health facility in that district.

4 RESULTS

4.1 Key Staff Interviews

Key staff interviews were used to examine staff perceptions of obstacles to safety during patient handling tasks with bariatric patients. The questions used for the semi-structured interviews are given in Appendix A. It was important to ask staff how they saw the constraints to safety from their experience. Four nursing staff interviewed worked in specific departments being medical, orthopaedic, maternity and emergency, whereas the Wardsperson and Allied health staff worked across the hospital.

The interview transcripts underwent content analysis against the five generic risk categories. Responses to a question concerning staff attitudes to bariatric patients were also analysed and a summary of issues and obstacles are presented in Figure 2 below.

Figure 3 Content Analysis Summary from staff interview transcripts

Patient factors

People are bigger
Pain, panic, reduced weight bearing
"When patients get to hospital they seem to lose their legs"
Positioning for delivery
Patient feels they are a burden
Patient comfort and dignity
Lack of privacy for assessments
Increased risk of complications in delivery

Building /Vehicle space and design

Old buildings
Small rooms
No bariatric patient room
Delivery is on floor above maternity
Awkward to manoeuvre equipment /poor circulation space
Clutter in rooms / no storage space
Having to move things all the time

Equipment

Concerning beds, suitability and access:
Beds are old, unsafe, and not suitable for patients
Need to purchase more electric beds
Need better equipment
Wheelchairs too narrow/ unsuitable
Too far away to access easily
Needs to be located in the Department

Communication

No pre-warning for bariatric patients
Unclear information on patient mobility
Confusion about bed weight capacity

Organisational and Staffing

Unsafe practices when using old beds
No extra staff to assist with patient
Staff confused about how to move and what is safest
Unclear about Nursing Education on patient transfers – high risk
Staff perception they may choose whether or not to use equipment

Staff Attitudes

Judgemental – some staff are negative
Should be taken the same as anyone else
Labouring woman wants the same things - a good birth experience
Not positive for the patient
Avoidance of the patient
- everything takes longer
- complexity of care/ more difficult
View of each other's attitudes
- see negatives in each other and some positives

Second level analysis which was also conducted on the transcripts, identified the consequences of combined multiple risks in two specific environments. Figures 4 and 5 below use Ishikawa diagrams to demonstrate issues arising for orthopaedic and maternity wards.

The first, on an orthopaedic ward shows the combined impact of risk factors leading to secondary causes, reported to be - difficulty to mobilise and provide care for the patient, everything takes longer with no extra staff, leading to avoidance of the bariatric patient which contributes to increased length of stay.

The second, on a maternity ward shows the interaction of factors related to building design and lack of appropriate equipment and urgency to move the bariatric birthing mother in bed, to delivery on the floor above with inadequate staff numbers, which contributes to high risk of MSD for staff from application of high force over longer distance, with change in direction.

Figure 4: Orthopaedic Ward: effect of combined multiple risks identified from second level analysis

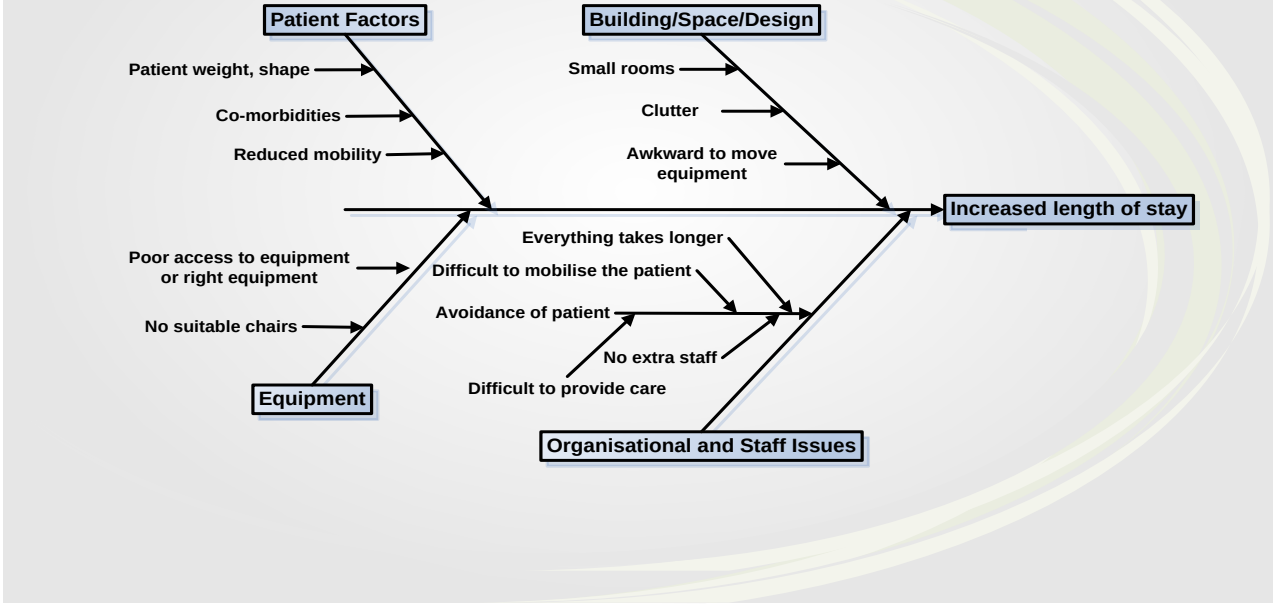
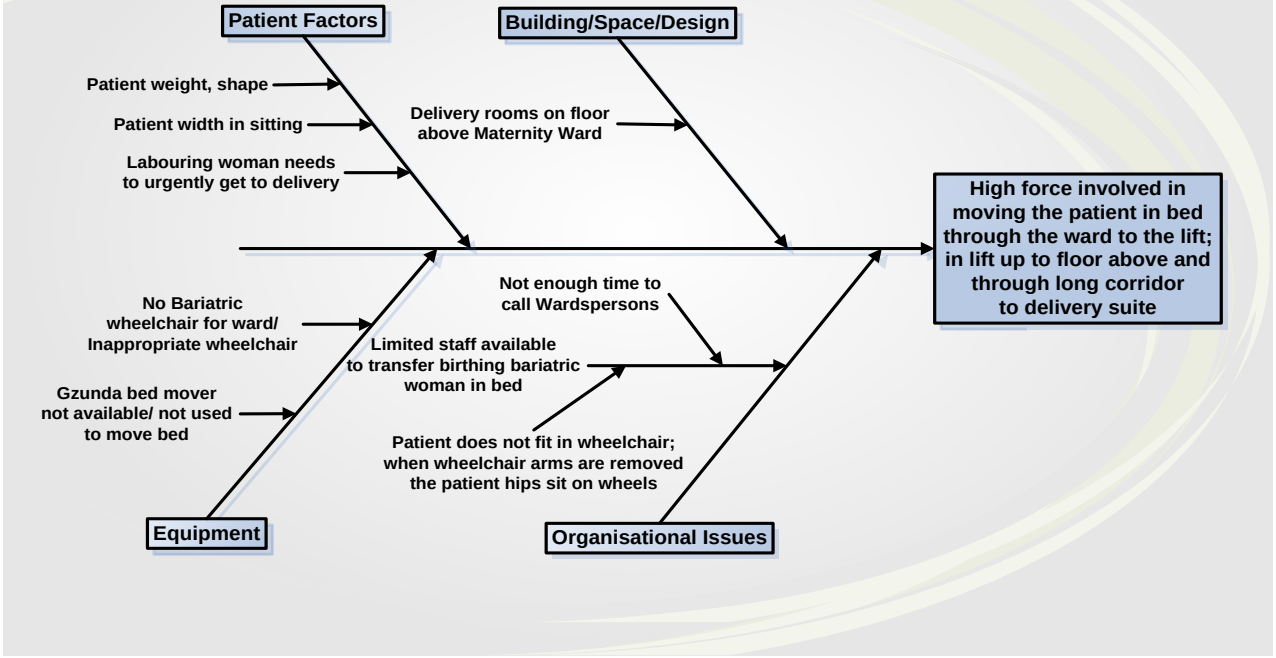


Figure 5: Maternity Ward: effect of combined multiple risks identified from second level analysis



4.2 Patient Journey Mapping and Modelling

The patient characteristics for the four pathways are presented below. All had a BMI in the morbidly obese range (obesity class III). While all patients had diabetes, the three planned admission patients had much less co-morbidities, whereas the unplanned admission had over 10 co-morbidities. The four mapped journeys were for short stay surgery, orthopaedics, maternity and emergency pathways respectively.

The full textual description and patient journey modelling graphics are presented for Pathway one. Summaries of textual descriptions for pathways two, three and four are also presented. Other journey modelling graphics are included in Appendix E, with the full textual descriptions attached in Appendix F.

Table 3: Summary of pathway patient characteristics

Pt. Code	**Age** yrs.	**Sex**	**Height** cm (feet, inches)	**Weight** Kg (lbs.)	**BMI**	**Co-morbidities**	**Reason for Admission**	**Length of stay** (days)	**No. transfers mapped**
P1	22	F	182cm (6'2")	173kg (380.6)	51	Diabetes	Gallstone pancreatitis (surgery within 30 days) – procedure laparoscopic cholecystectomy	1.5	5
P2	56	F	155 (5'1")	100 (220)	42	Diabetes Right shoulder rotator cuff injury	Right knee replacement	5	14
P3	33	F	161 (5'3")	140 (308)	51.5	Diabetes Kidney reflux – ureter implants	Caesarean delivery	3	4
P4	56	M	185 (6'1") estimate	164 (363) estimate	49	Diabetes; Epilepsy Hypertension; Depression High cholesterol; Hepatitis B ; Hepatitis C Sleep apnoea; Cellulitis in leg; Deep crack L foot Laminectomy; Chronic pain; Multiple medications	Fall at home due to black out; Knee haematoma; Falls risk	5	20

Pathway 1 (Patient Code P1): Surgical short stay planned admission (relates to figure 6)

Key Environments/Activities: Ward - Theatre – Operating room – Recovery - Ward – Bathroom
Patient: Female 22 years, 182cm (6'2") 173kgs (380.6lbs) BMI=51 **Mobility:** Usually independent
Condition: Gallstone pancreatitis (surgery within 30 days) – procedure laparoscopic cholecystectomy.
Co-morbidities: Diabetes mellitus. **Length of stay:** 1.5 days

Full Textual Description:
The admitting Ward allocated a manual bed, without a monkey bar and without functioning height adjustment. Patient transferred in bed from Ward to theatre with Gzunda. A discontinuity of care was identified between admission and theatre because theatres did not have clear notification that the patient was bariatric. The Theatre list said "alert kgs". The ORA (operating room assistant) asked what it meant and was told the patient's weight was 173 kilograms. There was discussion that theatre did not put the patient weight in the alert because it was a breach of privacy. The RFA (Recommendation for Admission) form did give patient weight and height details. Another part of the system did know the patient was bariatric and had scheduled the patient for surgery first in the list for the morning. This was known by ward staff to be the usual practice for a bariatric patient.

Issues in theatres – the allocated operating room was then unsuitable and another theatre was required with operating table with a suitable SWL for the patient while flat and on tilt; X-ray equipment was also required. The table had a 330kg flat SWL and 170kg tilt SWL. The change of operating room was

achievable first thing in the morning but would have been more difficult later and could have led to increased length of stay in hospital if the surgery was rescheduled.

Theatre staff also needed to determine the suitable transfer method for post-surgery and have this set up before they could proceed. The Hovermat on trial in Theatres was utilised. The surgeon agreed it could be used, which required it to remain in place under the patient throughout surgery. It was covered with drawsheets and blueys. The patient transferred herself onto operating table. The Hovermat transfer occurred post-op with four staff. The ORA reported it gave a very smooth transition from table to bed without jolting, which was good for the patient. No IIMS was logged concerning lack of notification and the subsequent impact.

Later in the day, following recovery and patient transfer to the ward, the patient was manually assisted with mobilisation to go to the bathroom. Concerns were related to lack of documentation on methods to assist the patient; not having an electric bed to assist with positioning and transferring from lying to sitting and sit to stand. The manual bed was in poor repair (height not adjustable) and the patient could not use the monkey bar to pull into sitting. The two student nurses used previous experience to problem-solve how to manually assist the patient into standing and to go to the bathroom. There was no written information and no guidance or instruction from the staff.

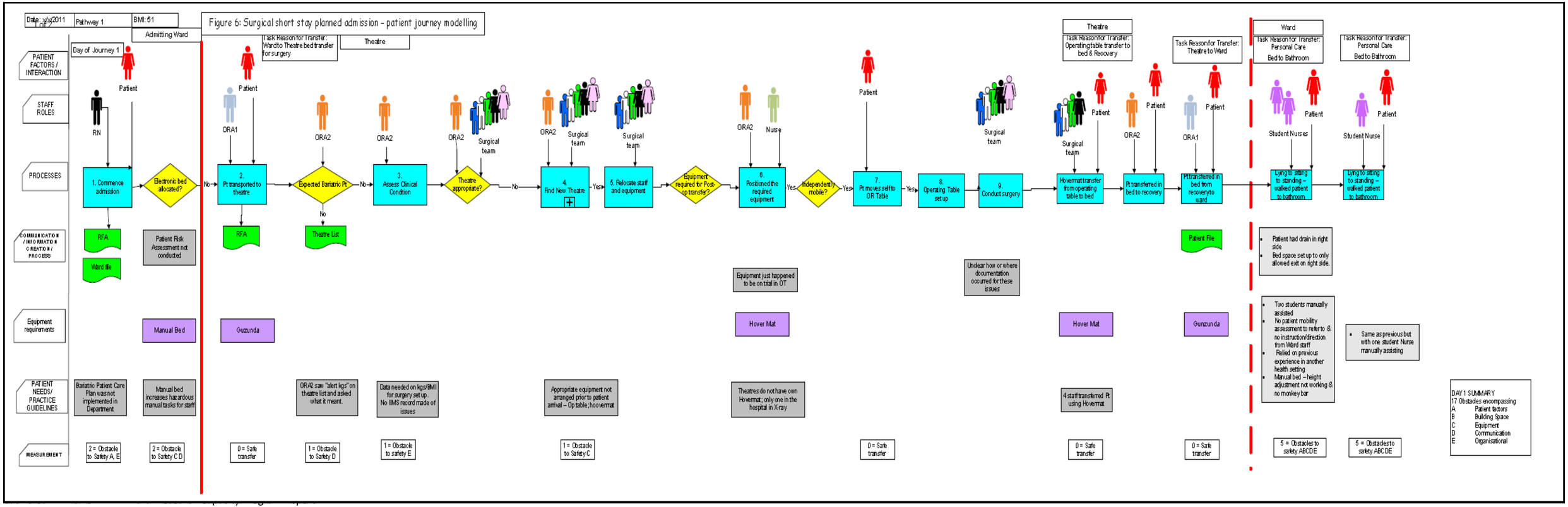
Summary:
Mapping of the patient journey occurred on day one since the patient was independent by day two. Four key transfers were mapped. There were a total of 17 obstacles identified across all categories of patient factors, building design/space, equipment, and communication and organisational, across four hospital environments. Obstacles were mainly evenly spread between building /space/design, equipment and communication.

Pathway 1 Patient Journey Modelling

Figure 6 depicts the journey for Pathway 1 as given in the above textual description. It should be read from the left hand side, downwards along the layers and across to follow those involved, the processes of patient handling and moving which occurred and changes in environments. Notes on what happened or did not happen are given in grey boxes.

The measurement used, which is shown in the bottom layer, is for the number and type of obstacles present in the vertical slice above (based on Hignett's generic risk categories). In the first vertical slice the presenting patient characteristics of height, weight and BMI, are an obstacle in category A: patient factors. The practice guideline for bariatric patients was not referred to or implemented and this is an obstacle in category E: organisational issues. The box in measurement layer then shows two obstacles and their category for this first vertical slice of the diagram.

Follow the journey across for depiction of what happened over the day of the patient pathway. There is a summary box of the categories and measures on the lower far right hand side of the journey which shows 17 obstacles across all categories, as described above in the textual description.


Date: x/x/2011
Pathway 1
BMI: 51
Admitting Ward
Figure 6: Surgical short stay planned admission - patient journey modelling
Day of Journey 1
PATIENT FACTORS / INTERACTION
STAFF ROLES
PROCESSES
COMMUNICATION / INFORMATION CREATION / PROCESS
Equipment requirements
PATIENT NEEDS/ PRACTICE GUIDELINES
MEASUREMENT
Patient
RN
1. Commence admission
Electronic bed allocated?
No
Yes
RFA
Ward file
Patient Risk Assessment not conducted
Manual Bed
Bariatric Patient Care Plan was not implemented in Department
Manual bed increases hazardous manual tasks for staff
2 = Obstacle to Safety A, E
2 = Obstacle to Safety C D
Task Reason for Transfer: Ward to Theatre bed transfer for surgery
Theatre
ORA1
2. Pt transported to theatre
RFA
Guzunda
0 = Safe transfer
ORA2
Expected Bariatric Pt
No
Theatre List
ORA2 saw "alert kgs" on theatre list and asked what it meant.
1 = Obstacle to Safety D
3. Assess Clinical Condition
Data needed on kgs/BMI for surgery set up. No IIMS record made of issues
1 = Obstacle to safety E
Surgical team
Theatre appropriate?
4. Find New Theatre
Appropriate equipment not arranged prior to patient arrival – Op table; hoovermat
1 = Obstacle to Safety C
5. Relocate staff and equipment
Equipment required for Post-op transfer?
Nurse
6. Positioned the required equipment
Equipment just happened to be on trial in OT
Hover Mat
Theatres do not have own Hovermat; only one in the hospital in X-ray
Independently mobile?
7. Pt moves self to OR Table
0 = Safe transfer
8. Operating Table set up
9. Conduct surgery
Unclear how or where documentation occurred for these issues
Theatre
Task Reason for Transfer: Operating table transfer to bed & Recovery
Hovermatt transfer from operating table to bed
Hover Mat
4 staff transferred Pt using Hovermat
0 = Safe transfer
Pt transferred in bed to recovery
Task Reason for Transfer: Theatre to Ward
Pt transferred in bed from recovery to ward
Patient File
Gunzunda
0 = Safe transfer
Ward
Task Reason for Transfer: Personal Care
Bed to Bathroom
Student Nurses
Lying to sitting to standing – walked patient to bathroom
Patient had drain in right side
Bed space set up to only allowed exit on right side.
Two students manually assisted
No patient mobility assessment to refer to & no instruction/direction from Ward staff
Relied on previous experience in another health setting
Manual bed – height adjustment not working & no monkey bar
5 = Obstacles to safety ABCDE
Task Reason for Transfer: Personal Care
Bed to Bathroom
Student Nurse
Lying to sitting to standing – walked patient to bathroom
Same as previous but with one student Nurse manually assisting
5 = Obstacles to safety ABCDE
DAY 1 SUMMARY
17 Obstacles encompassing
A Patient factors
B Building Space
C Equipment
D Communication
E Organisational

Pathway 2 (Patient Code P2) ~ Orthopaedic Planned Admission ~ Summary of Obstacles

Key Environments/Activities: Ward - Theatre -Operating room- Recovery- Ward - X-Ray - Bathroom - Physiotherapy

Mapping of the patient journey occurred over five days. Mapping with the Ward staff ceased on day four, by which time the patient was independent in their mobility using equipment to and from the bathroom. Day five mapping covered Physiotherapy training using crutches. Data was collected for a total of 14 transfers. There were a total of six obstacles identified across the categories of patient factors, equipment, and communication and organisational issues, across four hospital environments. Most obstacles were related to communication.

A Patient Factors

- Short, weight 100kg
- Reduced mobility post-surgery

B Building/Space/Design

- While it was not the case for this patient, it was identified that bed B patient bed is not easily removed from the room
- If it is know the patient needs to go for a test then it is better to place them in bed A. To remove bed B, bed A and other obstacles in the room need to be moved.

C Equipment

- Gzunda bed-mover was not used for bed transfers to/from X-ray

D Communication

- Patient Mobility Assessment not conducted
- No alert on Theatre list
- X-ray did not receive prior notice of patient being bariatric

E Organisational Issues

- ***Management of the Bariatric Patient*** a local procedure, was not implemented

Pathway 3 (Code P3) ~ Maternity Planned Admission ~ Summary of Obstacles

Key Environments/Activities: Maternity ward- theatre - recovery - maternity ward-bathroom.

Mapping of the patient journey ceased on day two by which time the patient was independent in mobilising to the bathroom to attend to personal care. This was not a first child and mother was also independent with feeding and discharged herself later on day two. She was then readmitted on day three due to wound de-hissing. No further mapping was undertaking because of patient independence with mobility. Data was collected for four transfers and a total of nine obstacles were identified across two environments covering all the categories of patient factors, building/space/design, equipment, communication and organisational issues. Most obstacles were in the communication category.

A Patient Factors

- Weight 140kgs, caesarean

B Building/Space/Design

- Gzunda cannot be used with patient in bed/bed transfers into the patient room due to space constraints. It is unlatched from the bed in the corridor and manually placed in the room by two staff

C Equipment

- No Hovermat in Theatres only in ICU and X-ray

D Communication

- Patient Mobility Assessment not conducted
- Theatres not clearly informed of bariatric patient and weight by the Ward
- No alert on theatre list
- Unclear who is responsible to enter alert on list

E Organisational Issues

- ***Management of the Bariatric Patient*** a local procedure, was not implemented
- IIMS not logged for any of these issues concerning bariatric patient

Pathway 4 (Patient Code P4) ~ Emergency Unplanned Admission ~ Summary of Obstacles

Key Environments/Activities: Ambulance to Emergency – X-ray – Emergency – Medical Ward – bathroom - X-ray – Surgical Ward - Theatre – Operating Room - Recovery – Surgical Ward – bathroom - discharge.

Mapping of the patient's journey occurred over the five days with data collected for 20 transfers and a total of 27 obstacles were identified across the all categories of patient factors, building/space/design, equipment, communication and organisational issues. The majority of issues were concerning equipment and communication.

A Patient Factors

- Tall and wide, weight 165kg
- Multiple co-morbidities
- Patient comfort in bed
- Unclear mobility status

B Building/Space/Design

- Gzunda does not fit in lift with bariatric bed
- Only space large enough to do a bed to bed transfer on ward is the T intersection of corridors. This blocks all traffic through the ward.

C Equipment

- No slide sheets used in stretcher to trolley bed transfer in ED
- Hovermat from X-ray not sourced and used (next door)
- Gzunda not used for patient bariatric bed transfer between ward and X-ray
- RN unsure of SWL of bed ED
- ED trialling a 180kg wheelchair at the time otherwise would need to source a bariatric wheelchair from another Department
- Bariatric bed on medical ward – height adjustment not working properly
- Patient platform weigh scale was not working
- Patient allocated a manual pump up bed on surgical ward
- ORA sourced an electric bed & transferred patient at the time they when went to collect patient for theatre
- Patient declined to sit in bariatric commode chair when showering used plastic ward shower chair with unclear SWL– unlikely to be 150kgs

D Communication

- Staff unsure how capable patient was with mobility and advised Wardspersons
- Physiotherapy assessment in the notes advised hoist transfer then Physiotherapist observed patient up and walking independently with walking stick
- Staff unaware of checking SWL on equipment
- ORA not informed that patient was bariatric when went to collect for theatre
- No alert on theatre list
- No information about patient mobility for theatre

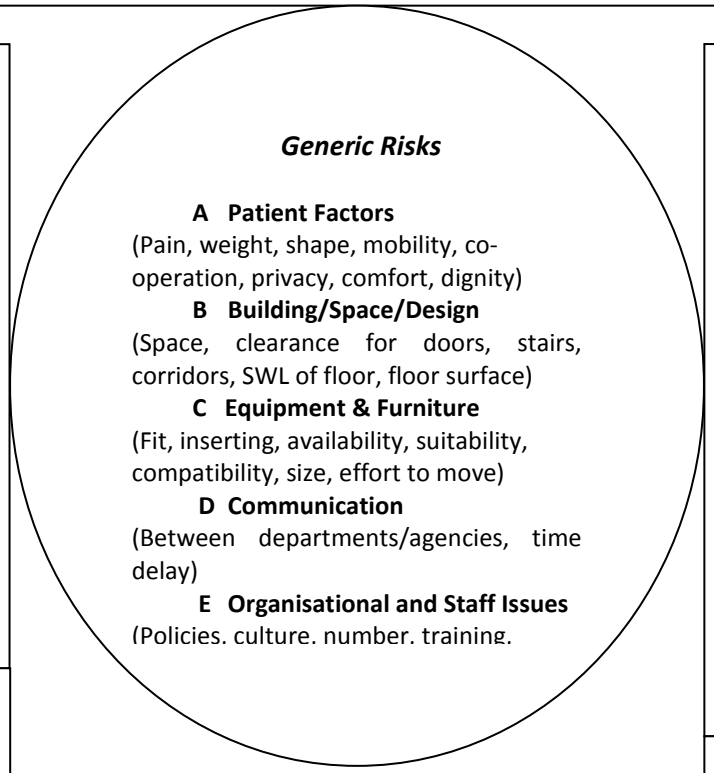
E Organisational Issues

- ***Management of the Bariatric Patient*** a local procedure, was not implemented
- IIMS not logged for any of these issues concerning bariatric patient

Patient Feedback Interviews

Three of the four patients elected to have the optional, brief feedback interview conducted by interviewer administered questionnaire. The questionnaire was concerning their usual mobility and assistance with their mobility while in hospital, see Appendix D. Two interviews were conducted prior to discharge and one was conducted by phone the day following discharge. Of note is that all three responded highest, "always" for the statement of "I felt my dignity was respected". Especially in view of staff comments about the attitude question given in Figure 2, where it was expressed that some staff may be judgemental. Only one patient responded "some of the time" to the statement "I felt safe" and "most of the time" for "I felt comfortable". This less positive feedback was from the unplanned admission patient.

Figure 7: Synthesis of manual handling risks in the bariatric patient journey



A Patient Factors

- People are getting bigger
- Patient weight, height, BMI
- Co-morbidities
- Pain, panic, reduced weight-bearing
- "*When patients get to hospital they seem to lose their legs"*
- Reduced mobility due to surgery or illness
- Patient comfort in equipment and dignity
- Patient feels they are a burden
- Patient needs to feel safe during moving and handling
- Patient asks staff to lift or help move
- Lack of privacy for assessments in maternity
- Positioning for delivery
- Increased risk of complications in delivery

B Building Space Design

- Old building, small rooms
- Clutter in rooms, no storage
- No bariatric patient room
- Theatre on separate floor to Maternity for caesareans
- Delivery is on the floor above maternity
- Awkward to manoeuvre equipment in spaces
- Gzunda does not fit in lift with bariatric bed
- Gzunda needs to be unlatched outside room and patient in bed manually placed in room – lack of space
- Bed to bed patient transfer can only occur, at T intersection of Ward corridor
- Only certain theatres can accommodate bariatric patient for surgery – depending on type of surgery; & if table tilt or X-ray required
- Bedside table location to bed ~ should consider patient mobility needs

C Equipment & Furniture

- Electric beds not always allocated
- Manual beds do not function when used with bariatric patients; need more electric beds
- Gzundas not used for all bariatric patients movements
- Slidesheets not used with PAT slide
- Hovermat not used in X-ray, ED
- Theatres do not have a Hovermat
- SWL not clearly labelled on all bariatric equipment.
- Maternity & ED do not have bariatric wheelchairs
- Equipment to far away to access easily

D Communication

- No pre-warning of bariatric patient arrival via Ambulance to Emergency
- Staff on Wards unclear on patient mobility
- No bariatric patient alerts in theatre
- No advance notification to other departments of patient mobility status
- No/little patient mobility information for Wardsperson, radiology or theatres
- Students did not have patient mobility information
- Staff unclear / do not check SWL of beds, commodes, shower chairs

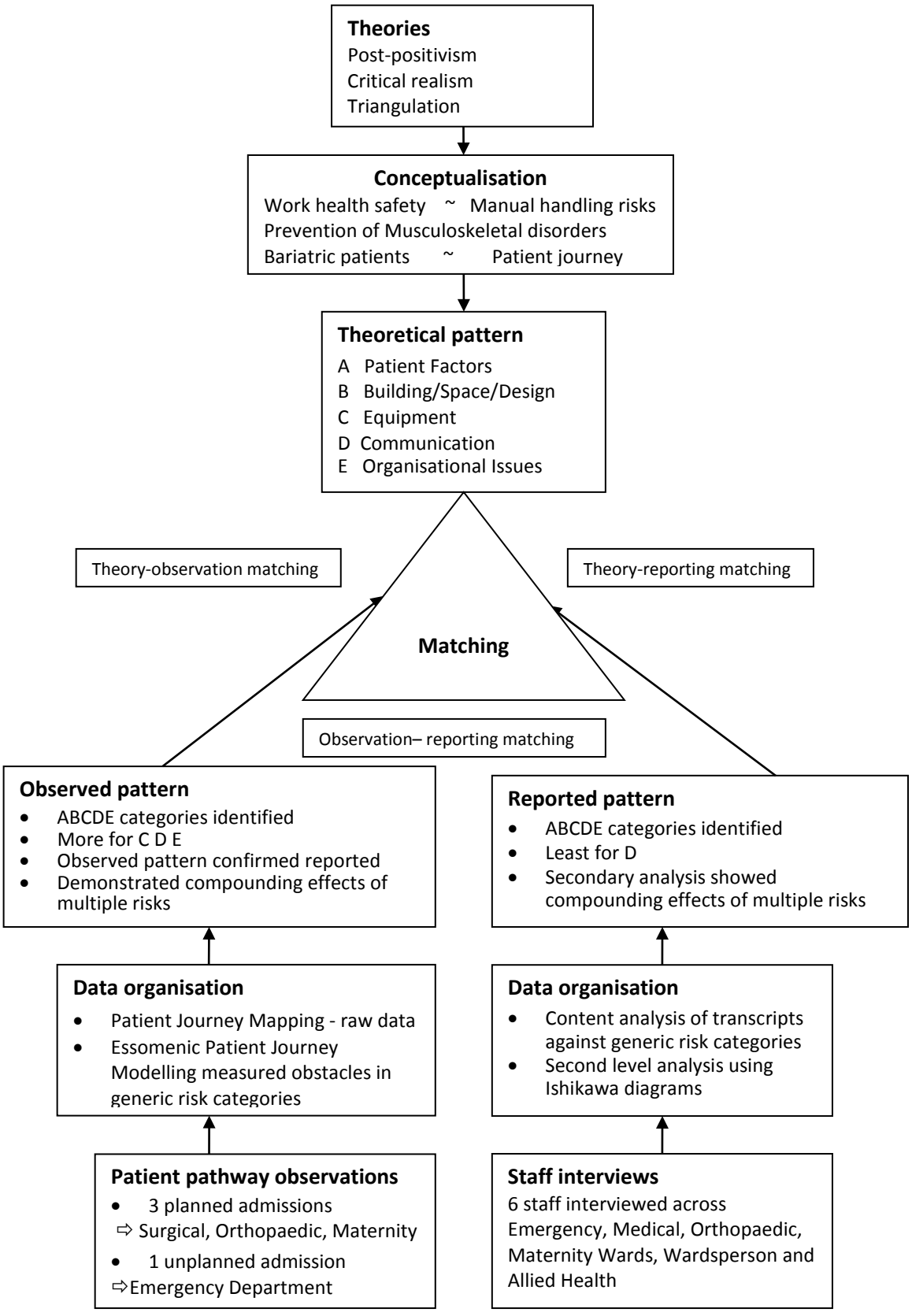
E Organisational and Staff Issues

- Bariatric Patient Management Plan not implemented in Departments
- Staff unsure about safest patient handling methods
- Lack of staff education on patient transfers
- Staff unsure about SWL of equipment
- No consequences provided for unsafe procedures
- Bariatric patient incidents are not logged on IIMS
- A culture of nursing staff standing back and relying on Wardspersons to do a large amount of patient handling tasks
- No extra staff to assist with patient care

4.3 Synthesis of manual handling risks in the bariatric patient journey

Figure 7 shows a combination of all obstacles identified across the generic risk categories, from staff interviews (as in Figure 2) and from analysis of all the patient pathways. This synthesis allowed a summary to be presented in the focus group and from which to generate recommendations to the facility.

Figure 8: Pattern matching of generic risk categories with reported and observed patterns



4.4 Pattern Matching

This visual presentation in Figure 8 above allows pattern matching of reported and observed results with the generic risk categories proposed by Hignett et al (2007) [(1)] which are shown as the theoretical pattern. All categories were present in reported and observed data. A comparison of the differences between reported and observed patterns is also made. There were many communication issues identified in the observed data of patient journey modelling whereas communication was the risk category which had the least issues identified by staff (see figure 2). The observed data also provided many concrete examples of the issues reported by staff, particularly related to equipment. Obstacles in organisational issues were more evident in patient journey modelling than were identified through staff interviews.

4.5 Focus Group

One focus group of five staff participants was conducted to enable member checking of results and proposed recommendations. The members comprised three of the key staff participants in the semi-structured interviews, and two additional staff participants, including allied health and a new graduate nurse who had participated in the unplanned admission patient journey data collection. A suitable time and day was agreed with key staff to maximise attendance. The meeting was held in the hospital executive meeting room. Data presented and reviewed included:

- Summary of results of staff interviews as per Figure 2.
- Proposed improvements from staff interviews
- Summary of textual descriptions and their corresponding patient journey modelling graphs
- Summary of obstacles identified by specific department
- The synthesis diagram as shown in Figure 7.

A summary of proposed recommendations formualted by the researched, based on analysis of results, was presented. Discussion followed, which highlighted some additional aspects to include.Written discussion notes were taken during the focus group and written up in full straight afterwards by the researcher. Focus group attendees all agreed to have their names included in the report, which was circulated to the focus group, for review. Staff participants of the study through either interviews or the focus group or both, were given a token thank you gift. A certificate of participation in the action research is being arranged for staff participants following approval obtained from MLHD.

4.6 Report Recommendations to the Facility

The recommendations to the hospital are based on the synthesis of manual handling risks as presented in the Figure 7. The report was prepared in action plan format and is included in Appendix G. The proposed patient journey model was then developed and included in the report to the hospital, see Appendix H.

There are 12 recommendations given in the report to the facility against a summary of the evidence informing each, see Appendix H. The recommendations are summarised below.

Organisational

- Implement the facility's management of the bariatric patient procedure using flowcharts for departments, supported by education.
- Foster a culture of safe patient handling techniques and competencies amongst nursing and wardspersons, towards sharing patient handling tasks.
- Ensure resources are in place to support competency-based training and assessment for staff.
- Incidents related to patient handling safety should be logged on IIMS for management.

Communication

- Ensure advance notification of bariatric patient to other departments including height, weight and BMI; and activate relevant alerts.
- Implement a safe patient handling and mobility assessment form across the hospital to communicate patient mobility status, safe techniques and equipment to be used.

Equipment

- Reinforce standard procedure of allocating an electric bed (with adequate SWL) to bariatric patients.
- Undertake bariatric equipment trials and prioritise equipment for funding.
- Increase supply of slide sheets across the hospital.
- All patient handling equipment should be clearly marked with SWL so staff can clearly distinguish between suitable and unsuitable equipment for the patient weight.
- Determine a system for preventative maintenance on bariatric equipment
- Review Gzunda bed movers and develop a replacement plan; increase their number and determine central access and storage points.

5 DISCUSSION

5.1 Common Themes

Compounding effects of obstacles in multiple risk categories

Second level analyses of interview transcripts showed the compounding effect on safety in the hospital when obstacles were evident across multiple risk categories as presented in Figure 4 Orthopaedic and Figure 5 Maternity environments. The patient journey modelling also demonstrates compounding effects of multiple obstacles as evident in Pathway one. Notifications of bariatric patient and weight were not on the theatre list which necessitated reassessment and change of theatre because the operating table did not have a suitable SWL in tilt for the patient's procedure. The allocation of a manual bed reduced options for safe lateral transfer post-operatively but was compensated by the availability of a Hovermat on trial in theatres. Back on the ward the manual bed allocation combined with the absence of patient mobility status information to reduce safety for nursing students allocated to the patient, who relied on their past experience to determine how to assist the patient with lying to sitting to standing.

Obstacles to safety were present with usually independently mobile bariatric patients

It is not just caring for the most obese or most dependent bariatric patients which pose all the obstacles to safety. This research showed examples of planned admissions of usually ambulant bariatric patients with BMI from 42 to 52.5, aged in their 20s, 30s and 50s with limited co-morbidities who posed challenges over their one and a half to five day stays. Certainly the unplanned admission with multiple co-morbidities over five days, revealed the most obstacles to safety, even though the patient was ambulant with a walking stick. Increasingly hospital services may be challenged when providing services to normally ambulant bariatric patients.

Organisational and Work Culture issues

Although a procedure for the management of the bariatric patient, based on the NSW guidelines was introduced in the hospital six months before the research was approved and commenced, the obstacles identified across departments do not demonstrate that it was yet to be effectively implemented. Although staff members were aware of safety issues as reported in interviews and in the specific incidents along the patient's journey, there was no safety culture of reporting and addressing these incidents on IIMS. Wardspersons were largely used to undertake patient handling and movement around the hospital. Wardspersons perceive that nursing staff tend to stand back and leave such tasks to them with unclear information provided from nursing on patient mobility status. A better partnership in patient handling is required between nursing and wardspersons.

Recommendations are mainly made across Organisational, Communication and Equipment categories

The two generic risk categories of Patient Factors and Building, Space, Design are the least amenable to process change. The 12 recommendations have been made across the categories of Organisational and Staff Issues; Communication; and Equipment. The acute hospital redevelopment is currently in advanced stages of planning and consideration of bariatric patients is integral to the process and should address the many space and design issues.

5.2 Limitations and Strengths

The study originally proposed patient journey mapping be conducted as an audit of internal service delivery, and not require patient consent. The Human Research Ethics Committee determined that the study would need patient participant consent. This required revision of many documents and delayed commencement of the study. The study therefore could not include more dependent bariatric patients since informed consent could not be obtained from acutely ill patients.

There were constraints to capturing three unplanned admissions through the Emergency Department. The unplanned admission patient journey through Emergency Department was the most difficult to obtain since staff were busy and presenting bariatric patients may not all be admitted or may have been independently mobile and not meet the inclusion criterion. A potential unplanned admission patient was deemed unsuitable because ward staff advised the patient was non-compliant. The researcher stopped after one unplanned admission pathway, which did demonstrate a wide range of obstacles. It was beyond the scope of this report to present the entire patient journey modelling graphics in the body of the report and discuss each in depth.

Strengths of this research include the shadowing technique for collecting patient journey raw data compared to focus group generated scenarios of patient journeys and the visual graphics of the Essomenic patient journey modelling which allows analysis of the journey and generation of an improved model. Triangulation was demonstrated in pattern matching of reported and observed data with the generic risk categories. This research adds to the evidence base in Australia concerning the manual handling risks associated with the care, treatment and mobility of bariatric patients.

6 CONCLUSIONS

The five generic risks categories in bariatric patient pathways identified in the British study by Hignett et al (2007)[(1)] , concerning equipment, patient factors, building and design, communication and organisational factors were clearly present in a large rural Australian hospital. The Patient Journey Modelling tool was integral to conducting and communicating meaningful diagrammatical analysis of obstacles to patient handling safety in patient journeys and presenting an improved model of care. Shadowing the patient during the journey to collect raw data was a useful technique and departed from other approaches to bariatric patient journeys which relied on focus groups to generate patient journey scenarios. It is beneficial for health facilities to identify their own specific obstacles to manual handling safety with bariatric patients to see what currently happens and facilitate appropriate targeted intervention strategies.

Recommendations include improved communication through advance notification and alerts of bariatric patients and provision of patient mobility assessment information. The organisation needs to foster a culture of safety in bariatric patient management through incident reporting and management as well as resources to support implementing the facility bariatric patient procedure and training in consistent safe patient handling techniques, with a sharing of handing tasks between wardsperson and nursing staff. Improved supply of equipment for bariatric patients is required including slide sheets, wheelchairs across departments, bedside chairs and additional bed movers. Related equipment issues include the need for clearly visible SWL on all equipment, bariatric equipment trials with prioritisation for funding, location and access to equipment and a system of preventative maintenance.

The recommendations in the Action Plan to ensure safety in the management of bariatric patients should be addressed within the health service risk management framework. Implementation of the Action Plan would support complying with NSW Guidelines and the organisation's Management of the Bariatric Patient procedure and the proposed bariatric patient journey model. Patient Journey Modelling could be further used post-implementation, for an internal service delivery audit of safety in the bariatric patient journey.

7 REFERENCES

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APPENDIX A

STAFF SEMI-STRUCTURED INTERVIEW GUIDE

THE BARIATRIC PATIENT JOURNEY IN A MAJOR RURAL HOSPITAL

Obstacles to reducing manual handling risks in the care of severely obese patients.

The study is being conducted by

Cathie Cummins
Occupational Therapist
Occupational Health & Safety / Manual Handling Coordinator.
Quality Safety and Risk Unit
Ext: 6545 or by mobile on 04029 38026.

Participants

Participants would be recruited as key staff informants. They would be from the following occupational groups or key departments: - Wardspersons, Allied Health, Nursing, Nurse Unit Manager, Intensive Care, Theatres, Maternity and Radiology. A total of six to eight participants are envisaged.

Researcher Role

The researcher role in the semi-structured interviews is to promote staff member responses to key questions about manual handling safety when caring for severely obese patients. Introductory information for participants should stress: -

- there are no right or wrong answers
- their perceptions from their experience are valued
- their responses are being recorded and then a written transcript will be made
- the transcript will be given a code and not have any personally identifying information on it
- offer the opportunity to ask any questions

Key definitions should be clarified at the outset to ensure both the researcher and participant is on the same page. A sheet of key questions and definitions could be given to the participant at commencement of the interview.

Interview

Interviews will be held in a quiet room arranged for the purpose with a valued atmosphere and not be in the midst of the daily hurley burly of hospital activities, e.g. in the Rural Clinical School which is on site.

The researcher should arrange times to be mutually suitable with staff. Each participant should be met in a common location and then taken to the interview. This would avoid any hesitations some staff may have of going into the Rural Clinical School, which may be an unfamiliar environment.

Questions

Questions will be open-ended and the researcher use further generic prompt questions to gain additional information or to expand a response.

1. What are the main ***problems you experience*** in manual handling tasks with severely obese patients in the hospital?
2. What do you feel are ***staff attitudes*** toward transferring severely obese patients?
3. What do you see as ***some of the greatest obstacles*** to safely managing patient transfers in the hospital?
4. In your view, ***what could we do to improve safety*** in manual handling tasks or transfers?

APPENDIX B

BARIATRIC PATIENT JOURNEY

Patient Inclusion and Exclusion Criteria

PATIENT INCLUSION CRITERIA

Number:

Six inpatients will have their physical journey mapped in the study which includes recording the movements of the patient between Departments and the details of the patient handling transfers undertaken in each Department.

Entry Point:

- Three patients will be selected from planned admissions, i.e. booked in for surgery or procedure.
- Three patients will be selected from unplanned admissions, through the Emergency Department.

Time Period:

Admissions need to be in the data collection period (over an estimated three months) between June and August 2011 (acknowledging possible delays and a need for some adjustments).

Obesity:

Body Mass Index (BMI) will be equal to or over 40 i.e. in the severely to morbidly obese weight range.

Mobility Status:

The patient would be dependent or semi-dependent for assistance with transfers while in hospital, for example

- The patient may walk independently on admission but not be independent post-surgery.
- The patient who may usually walk independently, but when presenting to the Emergency Department is acutely ill and is unable to transfer themselves without assistance.
- Where a patient has limited walking tolerance and already has difficulty with mobility in everyday living tasks.

Consent

All patient participants will need to give consent as per the recruitment process (included on this sheet)

Mapping Period:

The researcher will map one patient journey at a time. A new patient admission, while meeting all other criteria, cannot be included in the study if a current journey is still being mapped.

Patient Identification in Emergency Department

- Identification of a potential patient through the Emergency Department will be by direct contact between the researcher and senior Department staff.

- The researcher will regularly visit the Emergency Department and speak with senior staff when a patient is needed to be identified for selection.

- The project will be promoted to the NUM and Medical Director and staff prior to commencement with talks at strategic times suitable to staff, such as handover or education sessions.

- Preliminary liaison with the Emergency may assist to determine the average number of severely obese patient admissions per week.

- The following selection criteria will be given to senior staff and be covered in education sessions with staff:
    - Severely obese patient
    - BMI equal to or over 40
    - Not independent in walking and/or
    - Not independent in moving in bed and/or
    - Not independent in moving from bed to chair or chair to bed (includes shower/commode chair or wheelchair)
    - Admitted to hospital

Patient Identification through planned admission:

- The study project will be promoted to the Manager of Client Services and the admissions and pre-admissions clinic staff prior to commencement of recruitment.

- Researcher will work with the admissions staff, to identify patients with an admission planned in the data collection period, who meets all other criteria.

- It may be useful to identify all planned admission patients meeting the selection criteria for the data collection period, since planned admissions may be delayed due to patient factors or the rescheduling of surgery.

- The timing for inclusion of a planned admission patient will also be dependent on the completion of mapping for an existing patient journey.

Patient Recruitment:

- Patient participants are recruited one at a time because only one patient journey is mapped at a time, with a total of six recruited.
- Department Managers/Nurse Unit Managers will be provided with this Patient Inclusion and Exclusion Criteria.
- When the researcher is ready to recruit a patient for the journey mapping the Department Manager/Nurse Unit Manager or their delegate, will be asked to give a "Letter of introduction to the research project" to a patient identified as a potential participant.
- The letter provides basic information about the research and asks the patient to tick if he /she would like the researcher to come and talk about it further.
- Ward/ Department staff then let the researcher know to collect the letter of introduction.
- The researcher follows up patients who have expressed interest with a visit; provides the Patient Participant Information Sheet and Consent Form; goes through the information with the patient and asks if they want further time to consider or whether they wish to consent to be a participant.

Data Saturation:

- The mapping of patient transfers in their physical journey may reach saturation during their admission i.e. where a patient mobility status has not changed and the patient handling transfer methods and equipment have reminded the same over several transfers or days.
- If it is decided by the researcher that the data collection for patient transfers has reached saturation for a particular patient, then mapping of patient handling transfers may cease. In this case, the physical movement of the patient throughout Departments in the hospital will continue until discharge, so the overall journey is still physically mapped.
- If a patient has a long stay for example four weeks, data collection may cease to ensure further journeys can be mapped. In this case, the physical movement of the patient throughout Departments in the hospital will continue until discharge, so the overall journey is still physically mapped.

PATIENT EXCLUSION CRITERIA

Patient will be excluded where:

- The patient with severe obesity is independent in walking and all other aspects of moving during their admission.
- The patient with severe obesity also has dementia, since this would compound patient handling issues.
- The patient has a BMI below 40 (not severely /morbidly obese).

APPENDIX C

BARIATRIC PATIENT JOURNEY

Proposal attachment A

PATIENT PHYSICAL JOURNEY MAPPING (Data collection tool)

Use a new sheet for each transfer undertaken with the patient – see transfer type and technique below for explanation of transfer.

MAPPING	
	Patient Code (de-identified) **BMI**
	Ward/ Dept **Staff code** (source of information)
	Patient Mobility Risk Assessment form completed ☐ Yes ☐ No
	Date **Day of Journey**
	Time of transfer **Time taken**
	Patient Factors *eg. Mobility status; no. co-morbidities; body shape; pressure areas; cognitive status; co-operation*
	Reason / task *eg. reposition; move up bed; ADL task; transport to a test; transfer between Departments;*
	Equipment used – type, SWL other details *eg. Lifter/hoist; standing hoist/lifter; sling type; spreader bar or coat hanger; slide sheet; commode chair; wheelchair; FASF; pat slide; hovermat*
	Transfer type & technique used *eg. manual transfer; number of staff; ON BED: roll over; move up the bed; OFF BED: bed to chair; bed to x-ray table; chair to chair; bed to chair; chair to bed; chair to chair;*
	Staff roles & issues *eg. Number of staff; Wardspersons; staff skill mix / experience; transfer team leader; insufficient staff numbers; any other factors; do staff report any symptoms or discomfort from the transfer?*
	Physical Environment *eg. Space issues for equipment & no. of staff; negotiating turns & lift; variations in levels of floor/ slopes; assisting patient in toilet or shower; where was equipment stored for future use for this patient?*
	Communication *eg. Staff informed; leader coordinates transfer; any other issues*
	Organisational *eg. Lack of education; was Bariatric Management Plan followed? Non-compliance with existing procedures; procedures not in place; breech of Facility, NSW Health, State or other Policy/Procedures/regulation.*

KEY BMI: body mass index SWL: safe working load in kgs FASF: forearm support frame

F:\July Revisions\Attachment A Patient Physical Journey Mapping Tool.doc 3 May 2011 Version 4

APPENDIX D Patient Feedback Interview Form

PATIENT INTERVIEW

THE PHYSICAL JOURNEY FOR THE HEAVIER ADULT PATIENT

Looking at the manual handling care of patients and their mobility whilst in a major rural hospital - to improve safety for patients and staff.

You have previously given consent for participation in the above-named study and I thank you for agreeing to participate in this short interview to obtain feedback related to your mobility over your hospital admission.

1. Do you usually use any equipment to assist with mobility e.g. a four wheeled walker?

   € Yes What type? _____ € No

2. What distance are you usually able to walk independently, with or without equipment?

   € around the house € house and yard € around the shopping centre

   € around my neighbourhood € everywhere

Please answer the following questions using a scale of one to five, where

1	2	3	4	5
never	*rarely*	*some of the time*	*most of the time*	*always*

During staff assisted movement on the bed or off the bed e.g. using a hoist/lifter and sling to move from the bed into a wheelchair or commode chair

3. I felt safe.

1	2	3	4	5
never	*rarely*	*some of the time*	*most of the time*	*always*

4. I felt my dignity was respected.

1	2	3	4	5
never	*rarely*	*some of the time*	*most of the time*	*always*

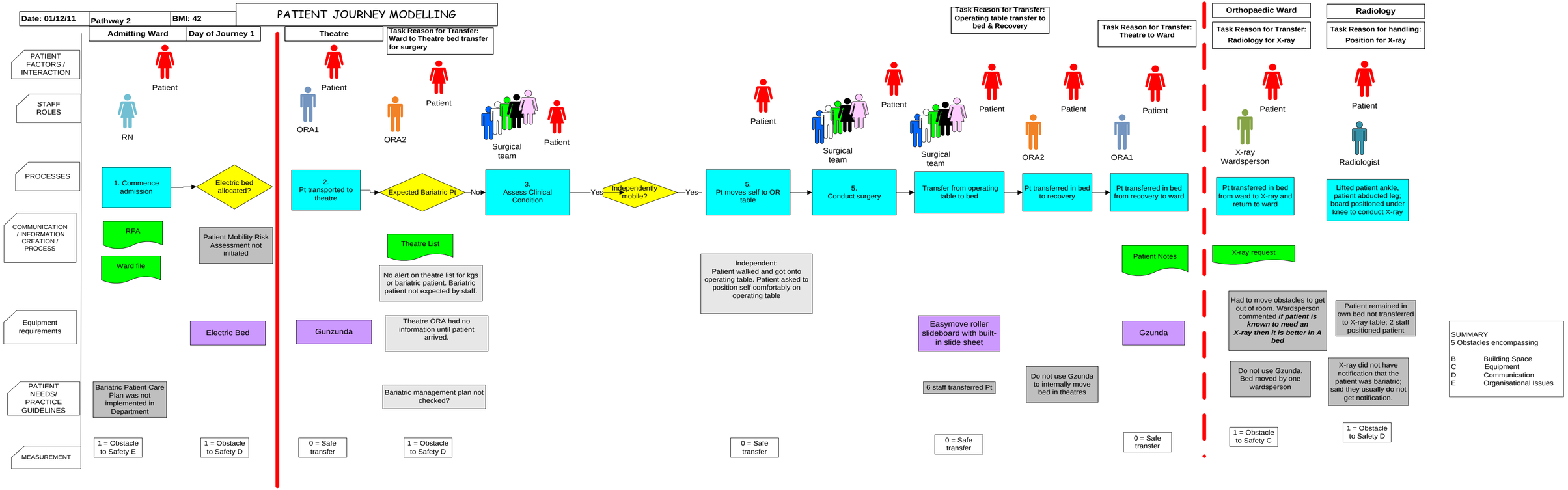
5. I felt comfortable.

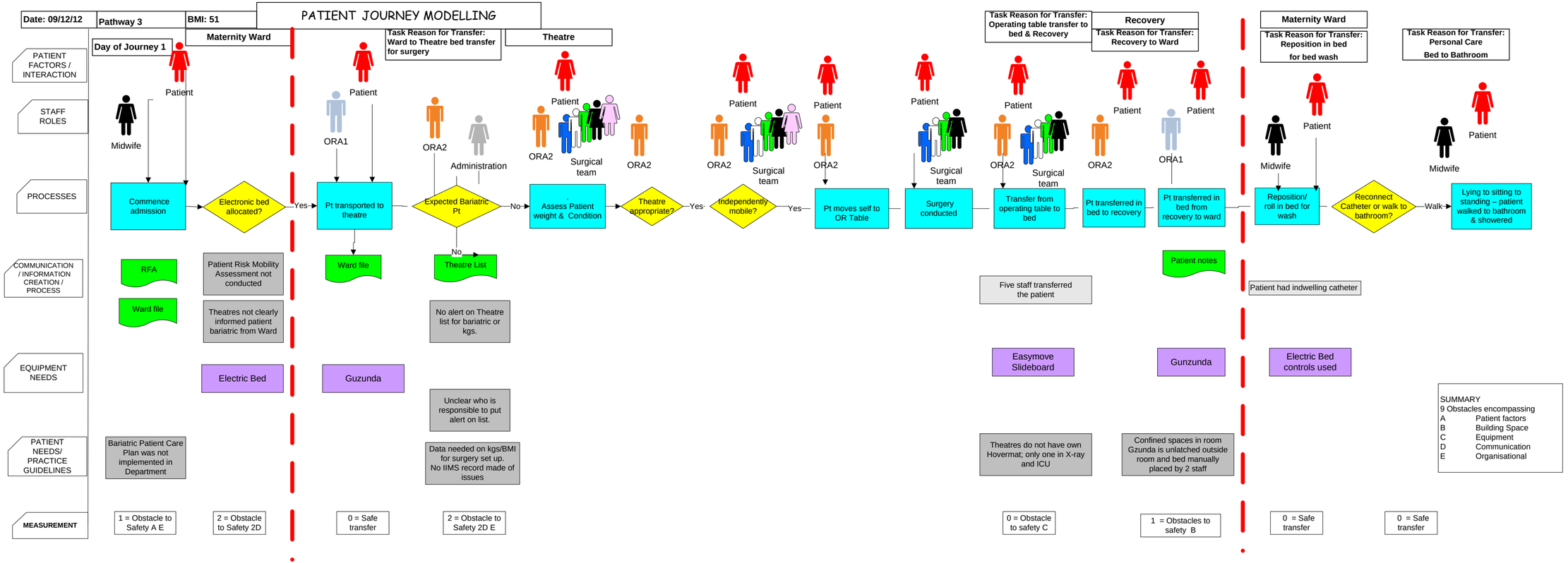
1	2	3	4	5
never	*rarely*	*some of the time*	*most of the time*	*always*

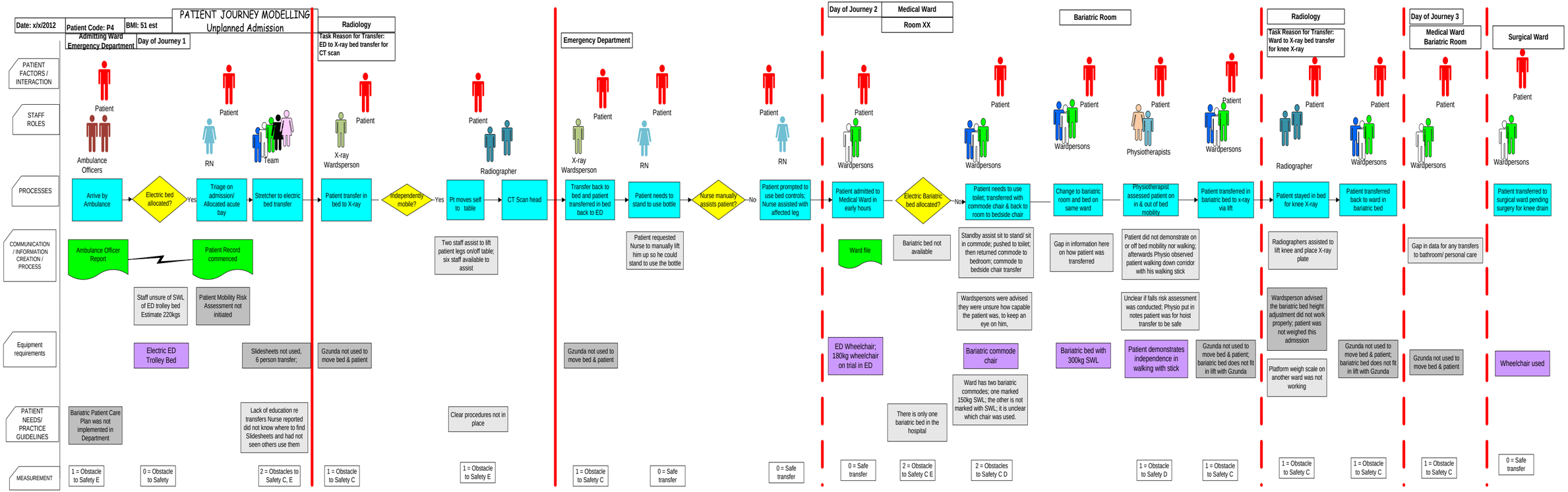
6. Is there any other experience related to your mobility you would like to share?

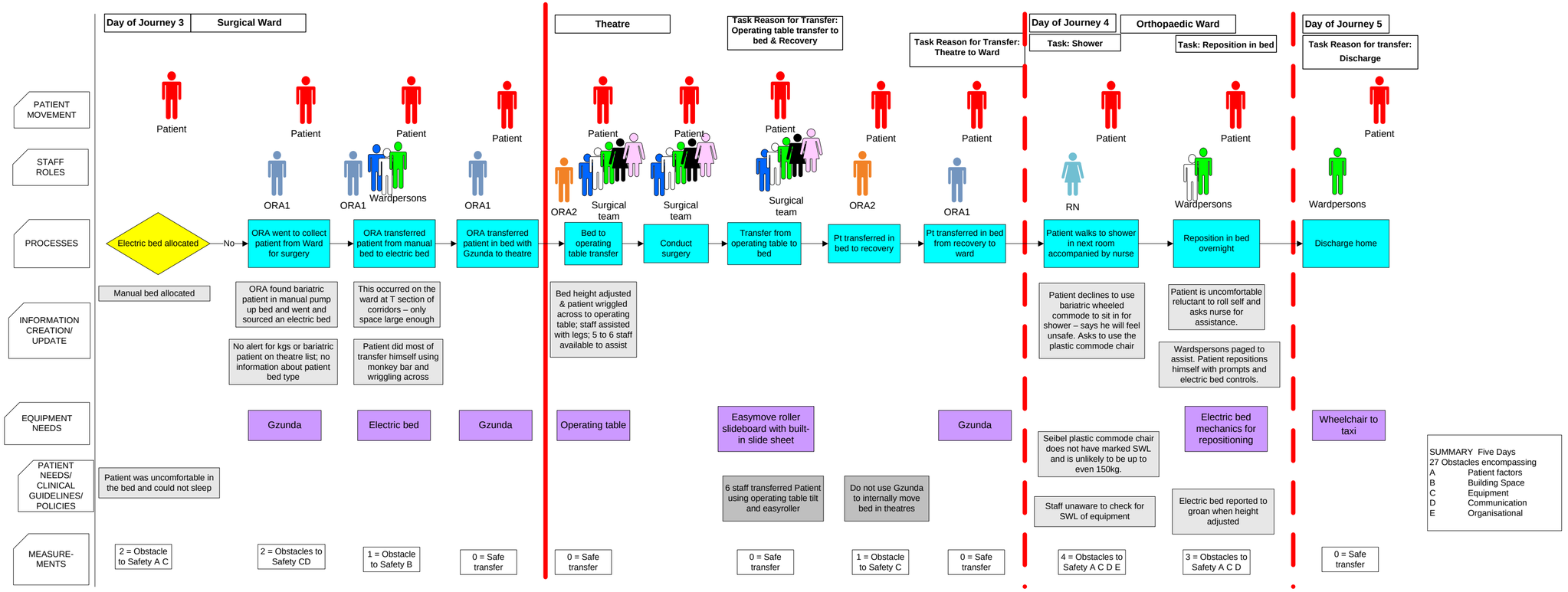
_____
_____
_____
_____

Thank patient for participation. Review how to supply a summary of research key findings if patient selected this.


PATIENT JOURNEY MODELLING
Date: 01/12/11
Pathway 2
BMI: 42
Admitting Ward
Day of Journey 1
Theatre
Task Reason for Transfer: Ward to Theatre bed transfer for surgery
Task Reason for Transfer: Operating table transfer to bed & Recovery
Task Reason for Transfer: Theatre to Ward
Orthopaedic Ward
Task Reason for Transfer: Radiology for X-ray
Radiology
Task Reason for handling: Position for X-ray
PATIENT FACTORS / INTERACTION
STAFF ROLES
PROCESSES
COMMUNICATION / INFORMATION CREATION / PROCESS
Equipment requirements
PATIENT NEEDS/ PRACTICE GUIDELINES
MEASUREMENT
Patient
RN
ORA1
ORA2
Surgical team
X-ray Wardsperson
Radiologist
1. Commence admission
Electric bed allocated?
2. Pt transported to theatre
Expected Bariatric Pt
No
3. Assess Clinical Condition
Yes
Independently mobile?
Yes
5. Pt moves self to OR table
5. Conduct surgery
Transfer from operating table to bed
Pt transferred in bed to recovery
Pt transferred in bed from recovery to ward
Pt transferred in bed from ward to X-ray and return to ward
Lifted patient ankle, patient abducted leg; board positioned under knee to conduct X-ray
RFA
Ward file
Patient Mobility Risk Assessment not initiated
Theatre List
No alert on theatre list for kgs or bariatric patient. Bariatric patient not expected by staff.
Independent: Patient walked and got onto operating table. Patient asked to position self comfortably on operating table
Patient Notes
X-ray request
Electric Bed
Gunzunda
Theatre ORA had no information until patient arrived.
Easymove roller slideboard with built-in slide sheet
Gzunda
Had to move obstacles to get out of room. Wardsperson commented if patient is known to need an X-ray then it is better in A bed
Patient remained in own bed not transferred to X-ray table; 2 staff positioned patient
Bariatric Patient Care Plan was not implemented in Department
Bariatric management plan not checked?
6 staff transferred Pt
Do not use Gzunda to internally move bed in theatres
Do not use Gzunda. Bed moved by one wardsperson
X-ray did not have notification that the patient was bariatric; said they usually do not get notification.
1 = Obstacle to Safety E
1 = Obstacle to Safety D
0 = Safe transfer
1 = Obstacle to Safety D
0 = Safe transfer
0 = Safe transfer
0 = Safe transfer
1 = Obstacle to Safety C
1 = Obstacle to Safety D
SUMMARY
5 Obstacles encompassing
B Building Space
C Equipment
D Communication
E Organisational Issues


PATIENT JOURNEY MODELLING
Date: 09/12/12
Pathway 3
BMI: 51
Day of Journey 1
Maternity Ward
Task Reason for Transfer: Ward to Theatre bed transfer for surgery
Theatre
Task Reason for Transfer: Operating table transfer to bed & Recovery
Recovery
Task Reason for Transfer: Recovery to Ward
Maternity Ward
Task Reason for Transfer: Reposition in bed for bed wash
Task Reason for Transfer: Personal Care Bed to Bathroom
PATIENT FACTORS / INTERACTION
STAFF ROLES
PROCESSES
COMMUNICATION / INFORMATION CREATION / PROCESS
EQUIPMENT NEEDS
PATIENT NEEDS/ PRACTICE GUIDELINES
MEASUREMENT
Patient
Midwife
ORA1
ORA2
Administration
Surgical team
Commence admission
Electronic bed allocated?
Yes
No
Pt transported to theatre
Expected Bariatric Pt
Assess Patient weight & Condition
Theatre appropriate?
Independently mobile?
Pt moves self to OR Table
Surgery conducted
Transfer from operating table to bed
Pt transferred in bed to recovery
Pt transferred in bed from recovery to ward
Reposition/ roll in bed for wash
Reconnect Catheter or walk to bathroom?
Walk
Lying to sitting to standing – patient walked to bathroom & showered
RFA
Ward file
Patient Risk Mobility Assessment not conducted
Theatres not clearly informed patient bariatric from Ward
Ward file
Theatre List
No alert on Theatre list for bariatric or kgs.
Five staff transferred the patient
Patient notes
Patient had indwelling catheter
Electric Bed
Guzunda
Unclear who is responsible to put alert on list.
Easymove Slideboard
Gunzunda
Electric Bed controls used
Bariatric Patient Care Plan was not implemented in Department
Data needed on kgs/BMI for surgery set up. No IIMS record made of issues
Theatres do not have own Hovermat; only one in X-ray and ICU
Confined spaces in room Gzunda is unlatched outside room and bed manually placed by 2 staff
SUMMARY
9 Obstacles encompassing
A Patient factors
B Building Space
C Equipment
D Communication
E Organisational
1 = Obstacle to Safety A E
2 = Obstacle to Safety 2D
0 = Safe transfer
2 = Obstacle to Safety 2D E
0 = Obstacle to safety C
1 = Obstacles to safety B
0 = Safe transfer
0 = Safe transfer


PATIENT JOURNEY MODELLING
Unplanned Admission
Date: x/x/2012
Patient Code: P4
BMI: 51 est
Admitting Ward
Emergency Department
Day of Journey 1
Radiology
Task Reason for Transfer: ED to X-ray bed transfer for CT scan
Emergency Department
Day of Journey 2
Medical Ward
Room XX
Bariatric Room
Radiology
Task Reason for Transfer: Ward to X-ray bed transfer for knee X-ray
Day of Journey 3
Medical Ward Bariatric Room
Surgical Ward
PATIENT FACTORS / INTERACTION
STAFF ROLES
PROCESSES
COMMUNICATION / INFORMATION CREATION / PROCESS
Equipment requirements
PATIENT NEEDS/ PRACTICE GUIDELINES
MEASUREMENT
Patient
Ambulance Officers
RN
Team
X-ray Wardsperson
Radiographer
Wardspersons
Physiotherapists
Arrive by Ambulance
Electric bed allocated?
Yes
Triage on admission/ Allocated acute bay
Stretcher to electric bed transfer
Patient transfer in bed to X-ray
Independently mobile?
Yes
Pt moves self to table
CT Scan head
Transfer back to bed and patient transferred in bed back to ED
Patient needs to stand to use bottle
Nurse manually assists patient?
No
Patient prompted to use bed controls; Nurse assisted with affected leg
Patient admitted to Medical Ward in early hours
Electric Bariatric bed allocated?
No
Patient needs to use toilet; transferred with commode chair & back to room to bedside chair
Change to bariatric room and bed on same ward
Physiotherapist assessed patient on in & out of bed mobility
Patient transferred in bariatric bed to x-ray via lift
Patient stayed in bed for knee X-ray
Patient transferred back to ward in bariatric bed
Patient transferred to surgical ward pending surgery for knee drain
Ambulance Officer Report
Patient Record commenced
Two staff assist to lift patient legs on/off table; six staff available to assist
Patient requested Nurse to manually lift him up so he could stand to use the bottle
Ward file
Bariatric bed not available
Standby assist sit to stand/ sit in commode; pushed to toilet; then returned commode to bedroom; commode to bedside chair transfer
Gap in information here on how patient was transferred
Patient did not demonstrate on or off bed mobility nor walking; afterwards Physio observed patient walking down corridor with his walking stick
Radiographers assisted to lift knee and place X-ray plate
Gap in data for any transfers to bathroom/ personal care
Staff unsure of SWL of ED trolley bed Estimate 220kgs
Patient Mobility Risk Assessment not initiated
Wardspersons were advised they were unsure how capable the patient was, to keep an eye on him,
Unclear if falls risk assessment was conducted; Physio put in notes patient was for hoist transfer to be safe
Wardsperson advised the bariatric bed height adjustment did not work properly; patient was not weighed this admission
Platform weigh scale on another ward was not working
Electric ED Trolley Bed
Slidesheets not used, 6 person transfer;
Gzunda not used to move bed & patient
Gzunda not used to move bed & patient
ED Wheelchair; 180kg wheelchair on trial in ED
Bariatric commode chair
Ward has two bariatric commodes; one marked 150kg SWL; the other is not marked with SWL; it is unclear which chair was used.
There is only one bariatric bed in the hospital
Bariatric bed with 300kg SWL
Patient demonstrates independence in walking with stick
Gzunda not used to move bed & patient; bariatric bed does not fit in lift with Gzunda
Gzunda not used to move bed & patient; bariatric bed does not fit in lift with Gzunda
Gzunda not used to move bed & patient
Wheelchair used
Bariatric Patient Care Plan was not implemented in Department
Lack of education re transfers Nurse reported did not know where to find Slidesheets and had not seen others use them
Clear procedures not in place
1 = Obstacle to Safety E
0 = Obstacle to Safety
2 = Obstacles to Safety C, E
1 = Obstacle to Safety C
1 = Obstacle to Safety E
1 = Obstacle to Safety C
0 = Safe transfer
0 = Safe transfer
2 = Obstacle to Safety C E
2 = Obstacles to Safety C D
1 = Obstacle to Safety D
1 = Obstacle to Safety C
1 = Obstacle to Safety C
1 = Obstacle to Safety C
1 = Obstacle to Safety C
0 = Safe transfer


Day of Journey 3
Surgical Ward
Theatre
Task Reason for Transfer: Operating table transfer to bed & Recovery
Task Reason for Transfer: Theatre to Ward
Day of Journey 4
Task: Shower
Orthopaedic Ward
Task: Reposition in bed
Day of Journey 5
Task Reason for transfer: Discharge
PATIENT MOVEMENT
STAFF ROLES
PROCESSES
INFORMATION CREATION/ UPDATE
EQUIPMENT NEEDS
PATIENT NEEDS/ CLINICAL GUIDELINES/ POLICIES
MEASURE-MENTS
Patient
ORA1
Wardpersons
ORA2
Surgical team
RN
Electric bed allocated
No
ORA went to collect patient from Ward for surgery
ORA transferred patient from manual bed to electric bed
ORA transferred patient in bed with Gzunda to theatre
Bed to operating table transfer
Conduct surgery
Transfer from operating table to bed
Pt transferred in bed to recovery
Pt transferred in bed from recovery to ward
Patient walks to shower in next room accompanied by nurse
Reposition in bed overnight
Discharge home
Manual bed allocated
ORA found bariatric patient in manual pump up bed and went and sourced an electric bed
No alert for kgs or bariatric patient on theatre list; no information about patient bed type
This occurred on the ward at T section of corridors – only space large enough
Patient did most of transfer himself using monkey bar and wriggling across
Bed height adjusted & patient wriggled across to operating table; staff assisted with legs; 5 to 6 staff available to assist
Patient declines to use bariatric wheeled commode to sit in for shower – says he will feel unsafe. Asks to use the plastic commode chair
Patient is uncomfortable reluctant to roll self and asks nurse for assistance.
Wardspersons paged to assist. Patient repositions himself with prompts and electric bed controls.
Gzunda
Electric bed
Gzunda
Operating table
Easymove roller slideboard with built-in slide sheet
Gzunda
Seibel plastic commode chair does not have marked SWL and is unlikely to be up to even 150kg.
Staff unaware to check for SWL of equipment
Electric bed mechanics for repositioning
Electric bed reported to groan when height adjusted
Wheelchair to taxi
Patient was uncomfortable in the bed and could not sleep
6 staff transferred Patient using operating table tilt and easyroller
Do not use Gzunda to internally move bed in theatres
2 = Obstacle to Safety A C
2 = Obstacles to Safety CD
1 = Obstacle to Safety B
0 = Safe transfer
0 = Safe transfer
0 = Safe transfer
1 = Obstacle to Safety C
0 = Safe transfer
4 = Obstacles to Safety A C D E
3 = Obstacles to Safety A C D
0 = Safe transfer
SUMMARY Five Days
27 Obstacles encompassing
A Patient factors
B Building Space
C Equipment
D Communication
E Organisational

APPENDIX F Full Textual descriptions of Patient Pathways

Pathway 2: Orthopaedic Planned Admission

Key Environments/Activities: Ward - Theatre – Operating room – Recovery – Ward - X-Ray - Bathroom - Physiotherapy
Patient: Female 56 years, 155cm (5'1") 100kgs (220 lbs) BMI=42
Condition: Right knee replacement
Co-morbidities: Diabetes; R shoulder rotator cuff injury
Length of stay: 5 days
Mobility: Independent with walking stick; tolerance around shopping centre

Textual Description:

The admitting Ward allocated an electric bed, which is usual for orthopaedic cases. Patient transferred in bed from Ward to theatre with Gzunda. A discontinuity of care was identified between admission and theatre because theatres did not have clear notification that the patient was bariatric. There was no alert on the Theatre list for kgs or bariatric patient; bariatric patient not expected by staff. Theatre staff reviewed patient – theatre table had capacity; patient was independently mobile so transferred self onto the theatre table. Patient was then asked to position self and make comfortable. Gel pads used for positioning and pressure points. The Hovermat was no longer available in Theatres so Easymove transfer slideboard, with built in tubular slidesheet was used. Six to eight staff transferred patient post-surgery from table to bed. Bed was moved manually from Theatre to recovery (a short distance and the Gzunda, bed mover is not used). Patient transferred in bed from Recovery back to Ward with Gzunda.

Staff reported patient was able to mobilise herself well in the bed. Transfer in electric bed to radiology by one Wardsman without a Gzunda, which was reported to be usual practice. Patient was in bed A. When the patient is in bed B (on the far side of the room) it is harder to get the bed out. Bed A and furniture needs to be moved to get the bed past and to the door. If it is know a patient will need a transfer to X-ray or other test it is better to have them placed in bed A. Patient was left on bed in X-ray, two staff assisted to lift patient ankle and position board under knee. X-ray staff reported they did not get notification that the patient was bariatric and this was usually the case.

First mobilisation from bed was on day two, using pick up frame to go to and from the bathroom (across the hall) and back into bed. Nurse reported using a combination of prompting the patient for positioning, movement and to use equipment. Nurse reported manually assisting by lifting patient's affected leg on and off the bed, using a semi squat. This was repeated again in day two and day three.
Two Physiotherapists assisted patient with weight-bearing with pain, to transfer from bed to chair using pick up frame on day two. Physiotherapist then worked with the patient to increase mobility tolerance and range of motion on day three and progressed to use of crutches on day four and crutches on steps on day five.

Summary:

Mapping of the patient journey occurred over five days. Mapping with the Ward staff ceased on day four, by which time the patient was independent in their mobility using equipment to and from the bathroom. Day five mapping covered Physiotherapy training using crutches. Data was collected for a total of 14 transfers. There were a total of six obstacles identified across the categories of patient factors, equipment, and communication and organisational issues, across four hospital environments. Most obstacles were related to communication.

Pathway 3: Maternity Planned Admission

Key Environments/Activities: Maternity ward- theatre – recovery – maternity ward- bathroom
Patient: Female 33 years, 161cm (5'3") 140kgs (308 lbs) BMI= 51.5
Condition: Caesarean delivery with epidural **Co-morbidities:** Asthma; kidney reflux -ureter implants
Length of stay: 3 days **Mobility:** Independent
Textual Description:

Maternity allocated an electric bed, which is the usual practice for a woman having a caesarean and or / who is bariatric. It can be difficult to obtain an electric bed at times because about half the hospital beds are electric and wards do not keep a fixed number – they tend to move around the hospital depending on patient needs.

The Gzunda bed mover was used for transferring the patient to and from theatre. Patient transferred and positioned self on operating table. Epidural anaesthetic was used. In the post-surgery a lateral transfer from table to bed occurred using the Easymove slideboard with five staff – three on the far side for push, two on pull side and one at the feet. Staff reported the transfer was well coordinated. There was no alert to theatre regarding BMI or kgs in the theatre list; however BMI was on the RFA (recommendation for admission) form.

Upon return from recovery the Gzunda bed mover was unlatched outside of the patient room on the Maternity Ward and two staff members were required to get the bed into position due to small spaces, even though it is a four bed room.

Patient was independent in repositioning self in bed with some prompting to use electric bed controls and the monkey bar. During a bed wash the patient was independent in rolling and positioning self. Early on day two staff assisted the patient with prompts and stand by assistance and the patient managed lying to sitting; sit to stand and walk to bathroom with no hands-on assistance by staff.

Summary:
Mapping of the patient journey ceased on day two by which time the patient was independent in mobilising to the bathroom to attend to personal care. This was not a first child and mother was also independent with feeding and discharged herself later on day two. She was then readmitted on day three due to wound de-hissing. No further mapping was undertaking because of patient independence with mobility. Data was collected for four transfers and a total of nine obstacles were identified across two environments covering all the categories of patient factors, building/space/design, equipment, communication and organisational issues. Most obstacles were in the communication category.

Pathway 4: Emergency Unplanned Admission

Key Environments/Activities: Ambulance to Emergency – X-ray – Emergency – Medical Ward – bathroom - X-ray – Surgical Ward - Theatre – Operating Room - Recovery – Surgical Ward – discharge.

Patient: Male; 56 years, 185cm (6'1") 165kgs (363 lbs) BMI= 49
Condition: Fall at home blacked out; multiple bruising and lacerations and discolouration to lower legs/feet; Knee haematoma; (previous admission in last few weeks with fractured humerus).
Co-morbidities: Diabetes; Epilepsy; Hypertension; High cholesterol; Depression; Hep B; Hep C; Sleep apnoea; Deep crack L foot; Laminectomy; chronic pain; cellulitis in leg areas; multiple medications noted.
Length of stay: 5 days
Mobility: Independent with walking stick; tolerance around Shopping Centre

Textual Description:
Patient presented by ambulance to Emergency Department following a fall at home where he reported blacking out and finding himself on the floor. He did not know how long he had been there, was drowsy and could not get up by himself. A friend found him and called for the ambulance. Ambulance service report in notes was accessed but no information was collected directly from Ambulance staff.

Lateral transfer on admission to Emergency Department from Ambulance stretcher to electric trolley/bed with estimated 220kg capacity. Assigned nurse was unsure of exact bed SWL (safe working load). Five staff assisted in the transfer – two Ambulance officers, Registered nurse, Doctor and Security officer, using a PAT slide, but no slidesheets. Nurse reported she did not know where slidesheets were located and had not seen others using them.

Transferred in bed from Emergency to X-ray for CT head scan (X-ray is next door to Emergency); patient was weight-bearing in standing and transferred self from bed to sitting on table. Two staff assisted with patient legs. Six staff members were available to assist. Hovermat not used. Patient requested nurse to lift him up because he needed to stand to use the bottle. Nurse prompted patient do by himself using bed

controls and assisted with one leg. Patient was encouraged to reposition himself two hourly but did so reluctantly with prompts.

Patient transferred to Medical Ward in early hours by wheelchair. Emergency Department had been trialling a 180kg wheelchair. On the ward two Wardsperson assisted with transfers of bed to commode chair, to toilet, commode to bedside chair and on a later to assist with chair to bed. They reported the patient did most of the work himself. The ward has two bariatric commode chairs. One is marked 150kg SWL and the other, wider commode does not indicate SWL. It is unclear which commode chair was used. Wardspersons reported that staff advised they were unsure how capable the patient was and to keep an eye on him. Later same day patient was transferred to bariatric room which has a bariatric bed and was previously not available. Physiotherapy conducted an initial mobility assessment on Medical Ward but patient did not demonstrate bed mobility or ability to get out of bed and walk. Patient notes indicated recommendation for a hoist transfer. Before the physiotherapists left the ward the patient was observed walking independently with his walking stick in the corridor.

Transfer from Ward in bariatric bed for knee X-ray. Gzunda was not used to move bed because it does not fit in the lift with the bed. The Gzunda would have to be unlatched from the bed once it was in the lift and transported separately. The patient was left in the bed for the knee X-ray. Wardsperson reported the bed height adjustment did not work properly and patient actual weight was not checked this admission. The platform weigh scale on another ward was not working. Patient was transferred from medical to surgical ward because a knee drain was required in theatre. The bariatric bed only fits in the one room on medical ward and is rarely placed on other wards because the doorways are too narrow. Patient transfer was reported to have been during the night by bariatric wheelchair.

On Surgical Ward the patient was allocated a manual pump up bed. When the ORA (Operating Room Assistant) went to collect the patient for theatre and saw the manual bed he sourced an electric bed and transferred the patient. To do a bed to bed transfer on a ward there is little space. Both beds have to be placed at the T- intersection of the corridors. Theatres received no prior information on the patient weight or the bed type. In theatre the bed height was adjusted to the table height and the patient wriggled across to sit on operating table. Staff assisted with the legs with five to six staff in attendance to assist. Post-surgery the operating table tilt was used with the Easymove slideboard to enable gravity assisted transfer back to bed. Gzunda was used to transfer patient back to ward from recovery.

Patient walked short distance to bathroom for shower. He was offered the bariatric commode chair for showering but declined and said he preferred to use the plastic shower chair (also in bathroom) similar to the one he used at home. Nurse stayed and assisted in showering with legs and back. The plastic shower chair was checked for SWL which was not obvious. Online check was also unsuccessful to determine chair age and SWL for the brand; believed chair would be less than 150kg capacity. Patient nurse advised of issue and asked to remove the plastic commode when patient went to shower again.

Patient called staff repeatedly for assistance to reposition in bed. Still on 300kg capacity 960mm width, electric bed. It is not a bariatric width bed and too narrow. Patient reported difficulty sleeping and staff reported some patient confusion. Wardspersons assist with rolling and repositioning. While the patient is reluctant to roll himself he can do it when prompted by Wardspersons. Nurse prompted patient to use bed mechanics to reposition and stand to use bottle. Patient declined to shower in the morning; could mobilise with walking stick. Patient discharged home in the afternoon and conveyed to taxi by bariatric wheelchair. Patient had agreed to pre-discharge feedback interview but this did not occur. Researcher phoned the patient the next day and he was happy to conduct the brief feedback interview by phone. The patient disclosed that he had another fall that day which he described as a trip fall and had already been back to Emergency Department. He had made enquires about a vital call, but felt they could be costly.

Summary:
Mapping of the patient's journey occurred over the five days with data collected for 10 transfers and a total of 22 obstacles were identified across the all categories of patient factors, building/space/design, equipment, communication and organisational issues. The majority of issues were concerning equipment and communication.

APPENDIX G

RESEARCH PROJECT RECOMMENDATIONS

BARIATRIC PATIENT JOURNEY IN A MAJOR RURAL HOSPITAL

Identifying obstacles to reducing manual handling risks

OBJECTIVE: The Health Service effectively implements, monitors and maintains strategies to ensure safety in bariatric patient management and handling within the facility's risk management framework, as part of its Work Health Safety and Injury Management System, in compliance with NSW DOH Policy and NSW WorkCover legislative requirements.

LINK TO DOH STRATEGIC DIRECTIONS, POLICY and GUIDELINES

Strategic Direction 5 - Make smart choices about the costs and benefits of health services

- *Review and evaluate WHS program and processes to increase effectiveness and efficiency*
- *Participate in Patient First Initiatives PFI pursuing process redesign towards increasing effectiveness and efficiency*

Strategic Direction 6 - Build a sustainable health workforce

- *Facilitate continuous knowledge & training of health professionals in implementing risk management*
- *Provides a healthy workforce by implementing preventative risk management strategies to minimize workplace incidents and incidence of injuries*

Strategic Direction 7 - Be ready for new risks and opportunities

- *Implement a MSD prevention / manual handling program focused on a risk management framework and which translates evidence-based best practices into everyday safety for staff and patient care.*

Management of the Bariatric Patient Procedure
GSAHS Manual Handling Minimal Lift Policy
WHS Legislation and Regulation 2011

KEY PERFORMANCE INDICATORS:

Lead indicators

To be determined in accordance with actions

Lag Indicators

REPORTS: IIMS monthly Accident & WHS; PSH reports; IIMS Staff injury type trend analysis; Annual trend analysis Workers Compensation statistics; quarterly progress reports on Action plans; six monthly IIMS trend analysis; bariatric equipment register.

KEY:
SWL – Safe Working Load
IIMS – Incident Information Management System
EMR - Electronic Medical Record
iPM - Patient information Management
SWP – Safe Work Practice
BMI - Body Mass Index
RFI – Recommendation for Admission

No.	Evidence Informing Recommendation	Key Strategies	Tasks and Actions	Timeframe	Responsible
1	WWHS Management of the Bariatric Patient Procedure 2011 is not implemented in wards/departments.	Implement the procedure using bariatric patient management flowcharts in all departments supported by education in • Minimal Lift Policy • Bariatric patients & procedures • SWL of equipment • SWP for using equipment • Safe patient handling competencies	1.1 1.2		
2	There is a culture of nursing standing back and relying on Wardspersons to do a large amount of patient handing tasks.	Foster a culture of consistent Safe Patient Handling techniques and competencies for Nursing and Wardspersons, towards sharing of patient handling tasks. Nurse educators should have a role in supporting safe patient handling and safe use of equipment in their wards. Champions of Safe Patient Handling need to be rostered for non-clinical days – one or two per month.	2.1		
3	Incidents related to the lack of patient handling safety with bariatric patients are not logged on IIMS.	Incidents related to patient handling safety with bariatric patients should be logged on IIMS for management. All such incidents require investigation of causes eg. ***Lack of*** communication, documentation, appropriate equipment, staff competencies.	3.1		
4	Lack of notification of bariatric patients to the Emergency Department, Theatres and between Wards and other departments. Only 50% of RFAs audited gave height and weight/ BMI.	Ensure notification of bariatric patient to other departments and weight / height and BMI in documentation commencing with RFI, pre-admission clinics, in relevant EMR and iPM fields, Theatre list and all other relevant documentation. Alerts should be used where they exist.	4.1		

5	Lack of clear information on the patient's mobility status & the corresponding safe patient handling technique /equipment required for mobility tasks – on Wards, in Radiology, Theatres.	Implement Safe Patient Handling & Mobility form across the hospital to record & communicate patient mobility status, safe techniques and equipment to be used.	5.1		
6	Electric beds are not consistently allocated to bariatric patients resulting in a chain of unsafe events. Old manual beds do not work properly when used by bariatric patients – i.e. height adjustment; and pose significant risks for staff e.g. adjusting backrests.	Reinforce standard practice as indicated in bariatric patient flowcharts for the allocation of an electric bed for all bariatric patients. IIMS incidents where manual beds are not allocated to bariatric patients and reallocate an electric bed.	6.1		
7	There is a lack of sufficient basic bariatric equipment in key areas – Emergency (ED), Maternity, Theatres and Wards. Lack of suitable equipment also causes a chain of unsafe events	Propose trials and purchase of basic bariatric equipment where still lacking – • Wheelchairs – ED & Maternity • Patient bedside chairs Identify purchasing priorities and funding source. Identify mechanisms for updating central Register of Bariatric Equipment.	7.1		
8	There is a limited supply of slide sheets in the hospital and limited use by staff.	Increase the supply of slide sheets across Wards / Departments and reinforce with competency training and consequences for non-compliance with safe practices.	8.1		
9	SWL is not clearly marked on a range of equipment – commode chairs, wheelchairs, beds.	All patient handling equipment should be clearly marked with SWL so staff can distinguish between suitable/ unsuitable equipment for the weight of the patient.	9.1		

10	Lack of maintenance on bariatric equipment presents risks when equipment does not work properly.	Determine system to ensure patient handling equipment has monthly checks and regular preventative maintenance.	10.1		
11	Staff members are unsure of safest patient handling methods and use of equipment.	Ensure resources in place to support Competency-based training and assessment for staff. The employer has the responsibility to provide the training and equipment for staff to work safely.	11.1		
12	Gzunda bed mover is not used to transport bariatric patients in bed to and from radiology, and between wards due to inadequate supply of bed movers, poor access to charged Gzundas and lack of staff training.	Review Gzundas to develop a replacement plan; increase in number in hospital and determine accessible location/recharging points. Train & assess Wardspersons and other relevant staff.	12.1		

Participants in Focus Group: xxxxxx After Hours CNS; xxxxx, New Nurse Graduate; xxxxx, Physiotherapist; xxxxx, Wardsperson; xxxxx, NUM Medical Ward.

Primary Researcher Cathie Cummins Signature Date

Tabled, at Executive Committee Meeting / / 2012

APPENDIX H PROPOSED BARIATRIC PATIENT JOURNEY