

**Project Title**

Role Of Pre-Operative Physiotherapy In Reducing Chronicity In Post Lumbar Fusion Patients

**Project Lead and Members**

Project lead: Kellyn Lee

Project members: Amanda Ng Li'En, Lee Rui Chen

**Organisation(s) Involved**

Ng Teng Fong General Hospital

**Healthcare Family Group(s) Involved in this Project**

Allied Heath

**Applicable Specialty or Discipline**

Physiotherapy

**Project Period**

Start date: Apr 2021

Completed date: Mar 2023

**Aims**

Reducing the risk of chronicity to low risk (0 - 40 points) from pre operative to 1<sup>st</sup> month post-operative in patients undergoing lumbar fusion surgery in the next 1 month.

## **Background**

See poster appended/ below

## **Methods**

See poster appended/ below

## **Results**

See poster appended/ below

## **Lessons Learnt**

The pre-operative physiotherapy session and patient education materials were able to reduce the average Orebro scores at 1st month post-surgery from 45.5 points to 35.6 points (low risk: 0-40 points).

Pre-operative physiotherapy may be explored in other patient groups that may exhibit a high risk of chronicity following surgery.

## **Conclusion**

See poster appended/ below

## **Project Category**

Care & Process Redesign

Quality Improvement, Workflow Redesign, Risk Management, Adverse Outcome  
Reduction

Care Continuum

Rehabilitative Care

## **Keywords**

Post Lumbar Fusion Patients, Pre-Operative Physiotherapy, Orebro Scoring, Pre-Op  
Education

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# ROLE OF PRE-OPERATIVE PHYSIOTHERAPY IN REDUCING CHRONICITY IN POST LUMBAR FUSION PATIENTS

- SAFETY
- QUALITY
- PATIENT EXPERIENCE
- PRODUCTIVITY
- COST

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## Problem & Aim

### Problem/Opportunity for Improvement

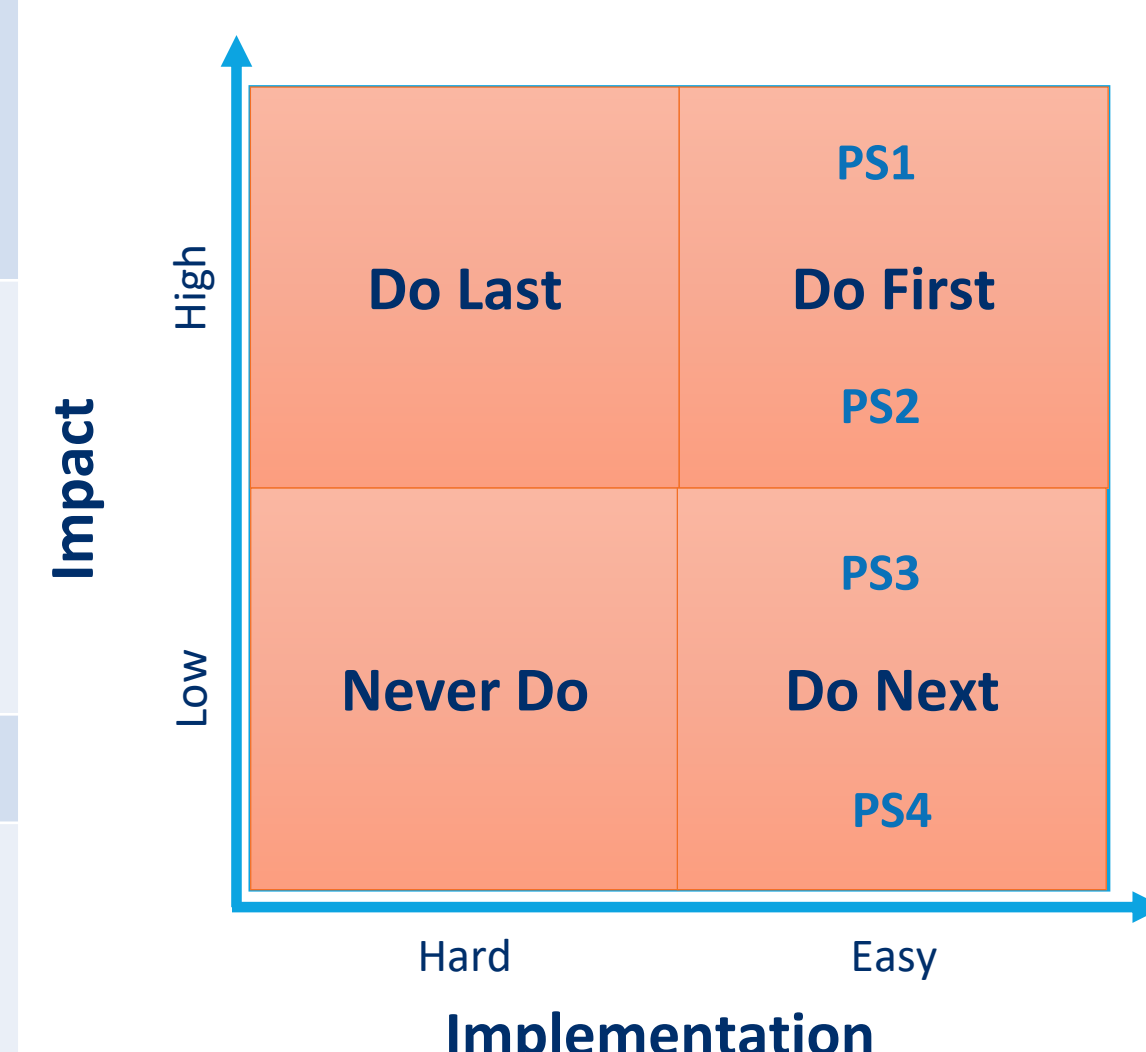
In the Outpatient Physiotherapy clinic, it was observed that the patients who did not attend pre-operative physiotherapy sessions prior to lumbar fusion surgery had an average Orebro scoring of 45.5 points (moderate risk) at 1<sup>st</sup> month post lumbar fusion surgery. An Orebro score of > 40 points puts the patients at a higher risk of chronicity which has an impact on the self-efficacy to return to daily activities and work.

### Aim

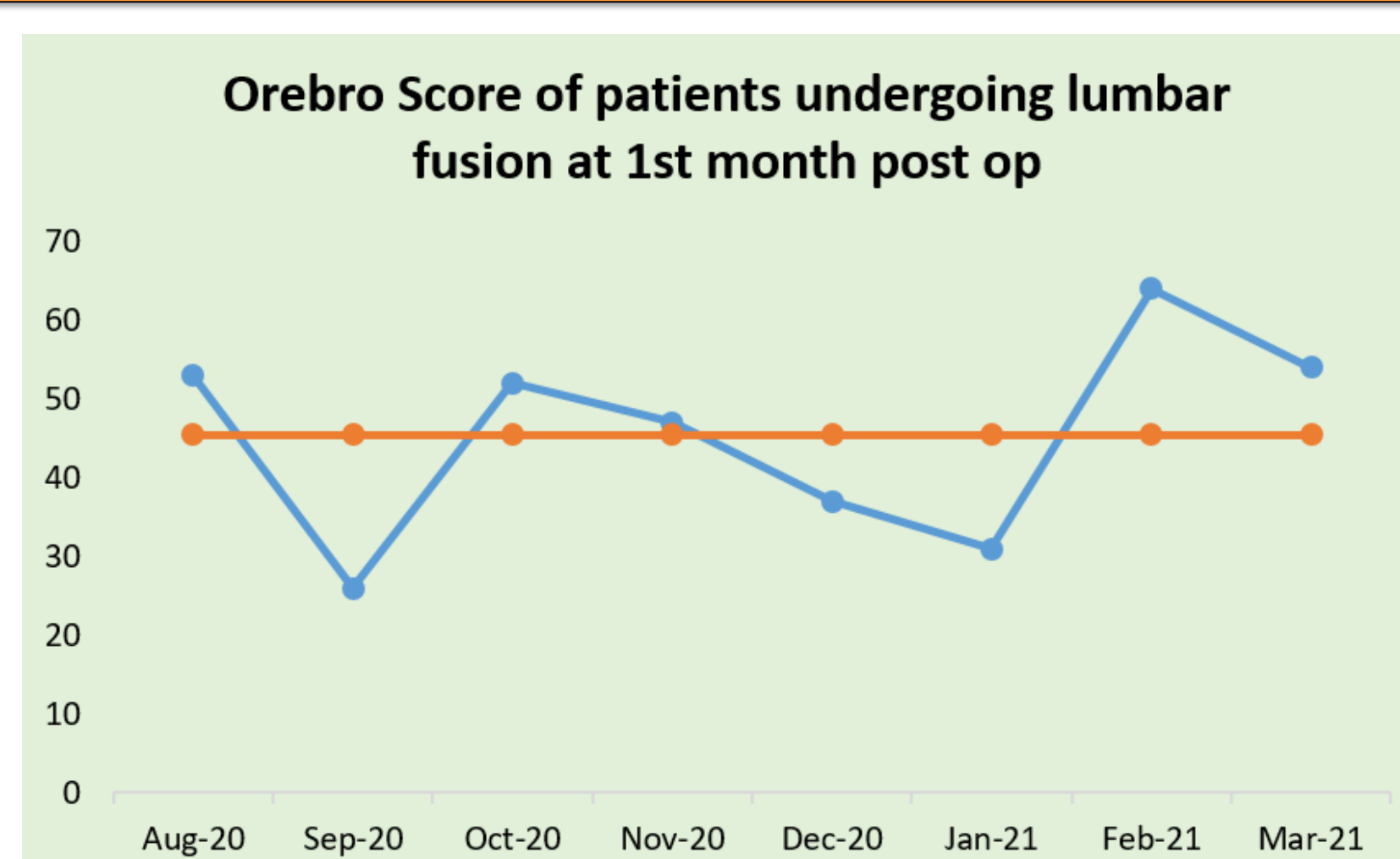
Reducing the risk of chronicity to low risk (0-40 points) from pre-operative to 1st month post-operative in patients undergoing lumbar fusion surgery in the next 1 month.

## Select Changes

| Root Cause   | Potential Solutions  |
|--|--|
| Did not attend pre-operative physiotherapy session                             | 1 Arrange for pre-operative physiotherapy session                        |
| Lack of patient education materials available to Physiotherapists and patients | 2 Develop patient education materials                                    |
| Treatment protocol was not updated   | 3 Updated clinical practice protocol                                     |
|  | 4 Included checklist for post-operative restrictions to educate patients |



## Establish Measures



Average Orebro score of 45.5 (Moderate risk of chronicity)

## Test & Implement Changes

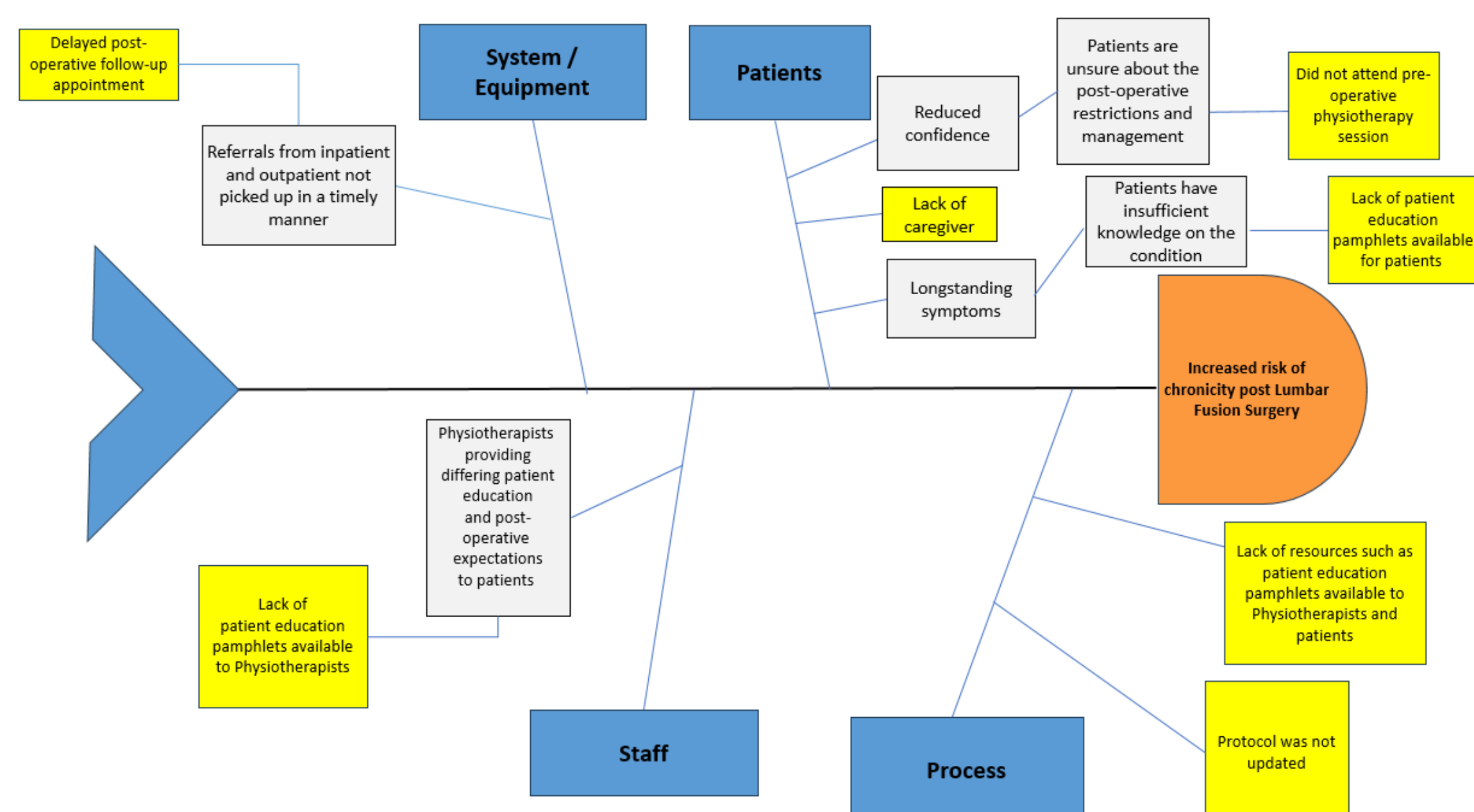
| CYCLE         | PLAN   | DO   | STUDY   | ACT  |
|---------------|--|--|---|--|
| 1 (PS1 & PS2) | March 2021<br>Start pre-operative physiotherapy for spinal fusion patients in the next 1 month | Outpatient physiotherapists 1) researched up to date evidences on spinal fusion physiotherapy management<br>2) Developed pre-op content (structure & patient education materials)<br><br>Feedback from Outpatient physiotherapists:<br>- Pilot in small group of patients (n=15) | Prior to implementation of pre-operative physiotherapy sessions, the average Orebro scores at 1 <sup>st</sup> month post-surgery was 45.5 points. | <b>ADOPT</b><br>Introduce pre-operative physiotherapy for spinal fusion patients       |
| 2             | April 2021<br>Arrange pre-operative physiotherapy session for spinal fusion patients (1.0)     | Patients are reviewed once a every 2-3 weeks prior to surgery<br><br>Feedback from Outpatient physiotherapists:<br>- Cannot remember content   | A checklist on content to be covered may be helpful   | <b>ADAPT</b><br>Introduce checklist  |
| 3 (PS4)       | May 2021<br>Roll out checklist   | Developed checklist on pre-operative physiotherapy content<br><br>Feedback from Outpatient physiotherapists:<br>• Easier to follow and educate the patients  | Pre-op content required minor editing<br>- Restrictions with consensus from doctors   | <b>ADAPT</b><br>Revise pre-op content  |
| 4             | July 2021<br>Start pre-operative physiotherapy for spinal fusion patients (1.1)                | Implement revised pre-op programme on patients   | Results in table below.   | <b>ADAPT</b><br>Implement pre-op physiotherapy to all patients going for spinal fusion |

## Analyse Problem

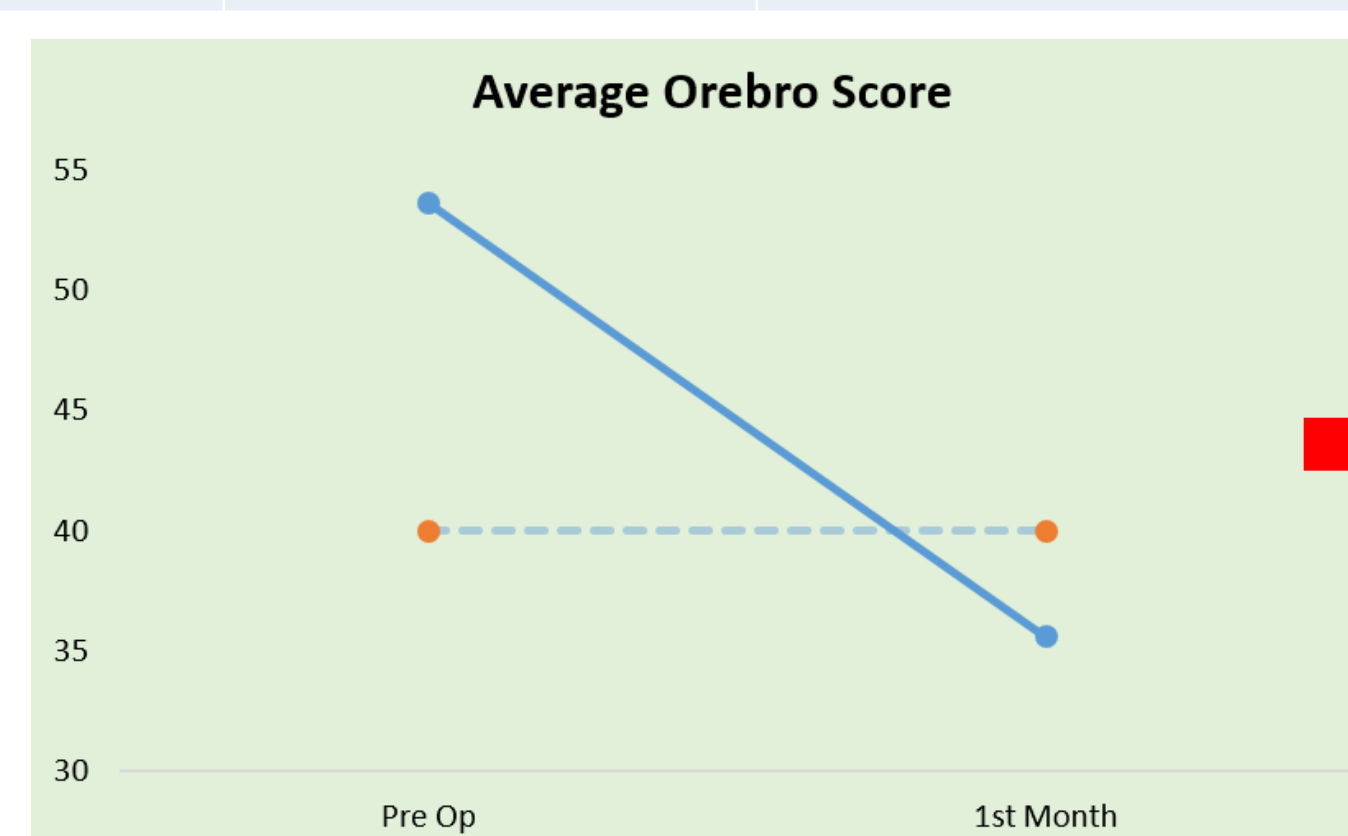
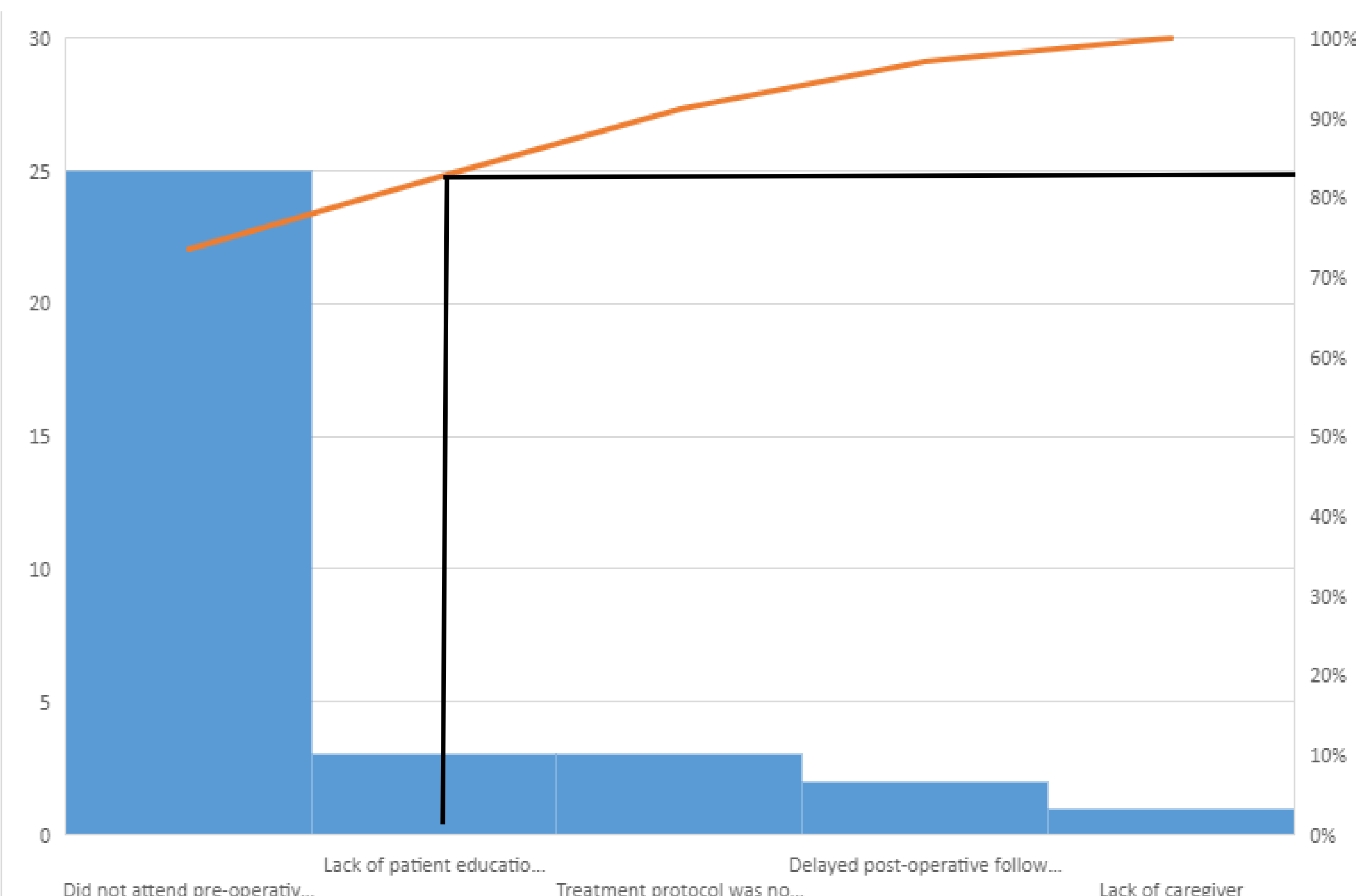
### Process before interventions



### Probable root causes



### Pareto Chart



From April 2021 to March 2023, patients who attended pre-op physiotherapy registered an average Orebro score of 35.6 (Low risk of chronicity)

### LUMBAR FUSION PRE-OP EDUCATION CHECKLIST

- Early mobilisation
  - Physiotherapist and occupational therapist session on the same day after operation
- Length of stay
  - 3 days or lesser
- Discharge planning
  - Identify caregiver (if any/required)
- Precautions after surgery (up to 3 months or more)
  - No bending forward for the first 3 months (to be as straight as possible when brushing teeth, washing hands etc. are allowed)
  - Limit spinal extension and rotation to functional movements
  - No overhead lifting, lifting at arm's length
  - No deep squatting
- Daily activities
  - Emphasis on functional activities (importance of sitting and walking with proper pacing, avoiding prolonged bed rest)
  - Light household chores is allowed as long as comfortable
  - Driving is allowed within 3 weeks after operation with a pillow/lumbar arch support
  - Duration of walks
    - 10-15 minutes for the first few days then gradually increase according to comfort (not more than 30 minutes of walking at a go)
- Work
  - Desk work can commence as long as comfortable
  - Heavy manual work should be avoided for 3-6 months
- Lifestyle
  - Smoking cessation
- Role of outpatient therapy
  - To continue outpatient rehabilitation and facilitate return to daily activities & work

### What is Prehabilitation for Lumbar Surgery?

Lumbar Surgery is recommended only when other methods such as pain relief, weight management and exercise no longer have any effect. While most patients experience improvements in pain and function after the operation, there may be still some lingering symptoms after the surgery.

This "Prehabilitation" is recommended for all patients that have been scheduled for a lumbar surgery. It refers to a structured exercise program targeted to improve an individual's functional capacity before a surgical procedure. Being stronger, healthier and more conditioned before surgery can mean fewer complications and a shorter recovery period.

**Why should I exercise when there is pain?**  
Research has shown that appropriate exercise can actually help to reduce the pain. Exercises help to maintain or improve joint movement and muscle integrity. Such exercises include those that are less impactful and put less strain on the back (i.e. walking, swimming, cycling). Pain should not be the only reason to stop you from exercising. When in doubt, ask your physiotherapist for advice. You will be taught how to observe warning signs of excessive exercise and how to modify your exercise during a flare up.

**What else do I need to do before my surgery?**  
**Identifying a potential caregiver**  
This will help you reduce your "headaches". A caregiver is someone whom can provide assistance with your daily activities once discharged, thus ensuring that you can continue to recover at home. If there is a suitable caregiver identified, we will be happy to teach your caregiver how to better take care of you even before surgery.

**Continue your exercises and stay happy**  
Try not to let this "waiting" period for your surgery go to waste. Be engaged in your exercises and get into the right shape before your procedure.

**Ensuring you are fit, healthy and happy will improve your outcomes**  
In addition, adjusting your lifestyle choices are important. You should eat healthy, sleep well, quit smoking and consumption of alcohol.

### What to expect after surgery?

Your surgery is likely to take place in the day. Once the surgery is over, your physiotherapist will visit you on the same day. He/she will:

- Get you up and walking
- Stop you from lying in bed the whole day (it's better you sit in a chair)
- Advise you on simple breathing exercises and movement-based exercises

### Important back precautions

- You are advised to avoid the following movements to facilitate recovery of your back after surgery.
- No spinal flexion (bending forward) for the first 3 months.
  - Avoid excessive spinal twisting and backward bending.
  - Avoid carrying of objects more than 10% of your bodyweight for the first 3 months.

## Spread Changes, Learning Points

### What are/were the strategies to spread change after implementation?

Physiotherapists in the outpatient clinic were strongly encouraged to follow the pre-operative materials for patients undergoing lumbar fusion surgery. Regular announcement and indication at the allocated pre-operative appointment slot on Epic was done as a reminder to the therapists.

### What are the key learnings from this project?

The pre-operative physiotherapy session and patient education materials were able to reduce the average Orebro scores at 1<sup>st</sup> month post surgery from 45.5 points to 35.6 points (low risk: 0-40 points). Pre-operative physiotherapy may be explored in other patient groups that may exhibit a high risk of chronicity following surgery.