



**The Microsystem Festival 2020**  
 - What matters to ESTHER in Enhanced Recovery After Surgery (ERAS) Knee Arthroplasty

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PATIENTS. AT THE HEART OF ALL WE DO.®

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## Introduction

- ESTHER coaches from the physiotherapy department wanted to find out what matters to their patients
- They found that patients undergoing surgery preferred to go home as soon as possible
- A collaboration between SGH orthopaedic surgeons and the physiotherapy department came about from the shared goal
- The aim is to achieve **One-day** Total Knee Replacement (TKR)
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## Background

- Internationally
  - USA: By 2026, more than 50% total joint replacement will discharge on POD0 or 1
  - Europe: 20% TKR discharge on POD0 or 1 at some centres
- Currently in the Singapore General Hospital
  - Average length of stay 4.3 days
- Drive for value driven care
- What do patients want?

## ESTHER Interviews

- **ESTHER = Patient**
- Conducted 3- 12 days after total knee arthroplasty
  - Two patients in the hospital after outpatient physiotherapy
  - Two at ESTHER's home

## Esthers in the Hospital

*What did Esther say?*

- Would have liked to walk around more
- To build confidence in exercises and walking
- Pain was very bad on some days
- More information before surgery to know what to do and why

## Would they have preferred to go home earlier?

- Yes!
- It was not helpful being a room full of equally sick patients
- Night sleep is always disturbed by other patients coughing and calling nurses
- Always have to depend on others for assistance to move around

## Esthers at Home



- Exercises not done correctly
- Set up not optimal
- Knee extension lack



## Esthers at Home



- Patient could ambulate without walking aid and normalize gait with physiotherapy input
- Patient was able to negotiate stairs with practice and assurance

## Problems Faced at Home

*What did ESTHER say?*

- Unsure when to take pain medication as I thought it is bad for my health
  - Very pain on first few days after discharge
  - Very pain with physiotherapy exercises
- Does not dare to go out as not confident and fearful of falling
  - Not sure what walking aid to use
  - Not sure if can walk fast enough into the lift
  - Not planning to go to church the next few weeks
  - Waiting for her children to bring her out
- Uncertainty
  - Should they use heat pack for knee?
  - Not sure if walking correctly as tried to change walking aid at home
  - Unsure how to sleep and if can lie sideways
  - Not sure if doing the knee exercises correctly

## Home Physiotherapy

*What did  
ESTHER say?*

- Increase confidence
  - Individualized exercises
  - Assurance with exercises and walking out of the house
- Convenient
  - Save cost of travel, time parking and queueing etc
  - Don't need to trouble children, don't need children to take leave
  - Wanted to hire part-time physiotherapists
- Timing
  - Prefers a day or two to settle down before home physiotherapy

## Intervention

- A multidisciplinary approach was adopted
- 14 patients that meet the inclusion criteria were recruited as of 20 Oct 19
- They are more likely to ambulate on the day of surgery with adequate pre-operative counselling and adequate pain control post-operatively
- Patients are discharged one day after TKR
- A physiotherapist visited the patient at home on the third day of discharge
- Followed by a visit from the community nurse a week later
- This will be compared with regular care where patients stay in the hospital for 5-6 days with outpatient physiotherapy appoint two weeks after discharge

## Pilot Study

- Goal: 100 patients
- Outcomes being collected:
  - Pain score upon discharge
  - Ambulatory status
  - ODC scores
  - Readmission/ Reoperation rates
  - Conversion to inpatient
  - Complications

## The 10 Elements of Success

1. Orthopaedic Assessment
2. Preop Medical Optimisation
3. Preop Physiotherapy
4. Preop Education
5. Preop Analgesia
6. Periop Anaesthetic
7. Efficient Surgery
8. Wound Healing Adjuncts
9. Clinical Pathways
10. Post-Discharge

## Discharge Criteria

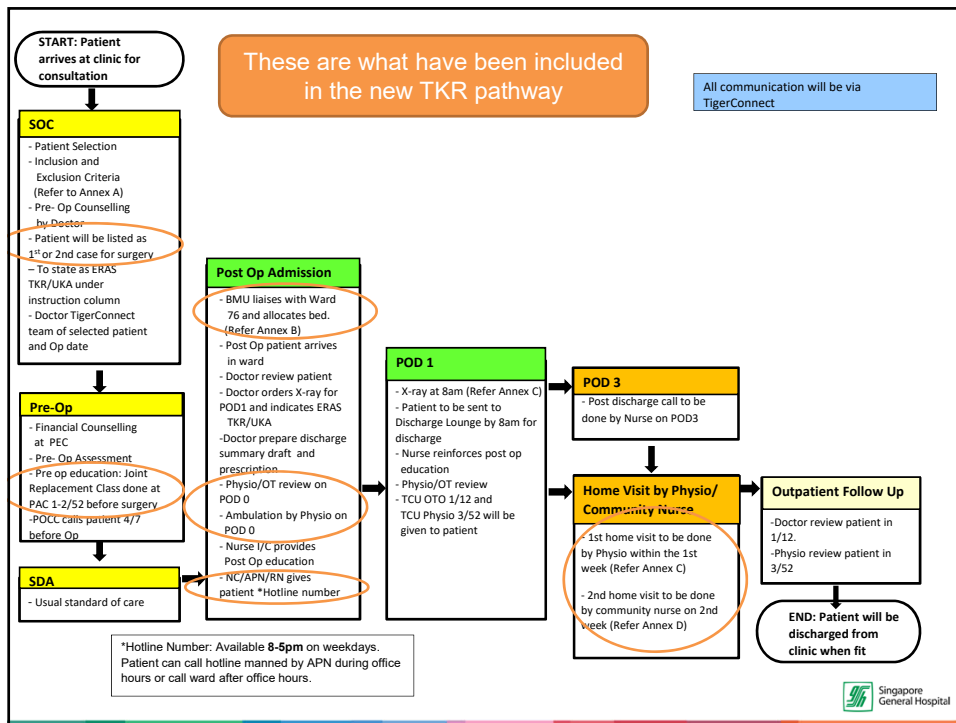
- Adequate pain relief
- Dry dressing
- No nausea/vomiting
- No cardiopulmonary symptoms
- Able to:
  - Ambulate independently with walking aid
  - Climb stairs (if house has stairs)
  - Get in and out of bed independently



## Inclusion and Exclusion Criteria

- **Inclusion criteria:** Patients scheduled for unilateral TKR and UKA
- **Exclusion criteria:**
  - Simultaneous bilateral TKA
  - TKA performed for fracture
  - Retained hardware such as previous high tibial osteotomy
  - Patients with poorly controlled (HbA1C >8.0%) diabetes mellitus
  - BMI greater than 30 kg/m<sup>2</sup>
  - Bleeding disorders
  - ASA greater than II
  - Poorly controlled cardiac or pulmonary comorbidities
  - Chronic opioid use
  - Functional neurologic impairments predisposing the patient to poor rehabilitation potential
  - Chronic or end stage renal disease
  - Reduced preoperative cognitive capacity
  - Preoperative voiding difficulties





## Pilot Study Results

- 42 patients as of 03/01/2020
- No readmissions for complications

## Bed Days & Cost Savings

1. Bed Days Saved per patient: 3
2. Cost Savings per patient
  - Usual care: S\$11,700 (80, 500 SEK)
  - ERAS pilot : S\$9,400 (64,500 SEK)  
 \*\*reduced inpatient days, addition of home physiotherapy and community nurse visits
  - Cost savings: S\$2,300 (16,000 SEK)
3. Other measures: family members' time saved from taking leave etc



## Include Patient Centric Outcomes

How confident are you performing the exercises on your own?	How confident are you with moving around the house on your own?	Have you gone out after the surgery?
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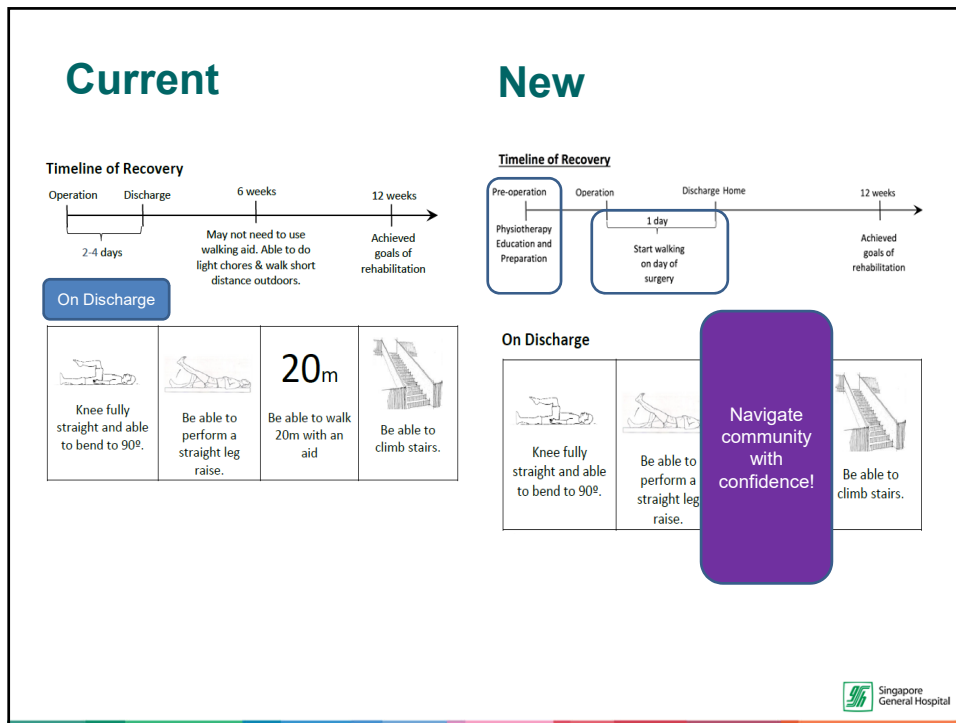
For those who have gone out

How confident are you of walking out of your house without being accompanied?	Can you walk at least 400m (one bus stop) with/without a walking aid?	If you have not gone out, what stopped you from leaving your house?
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How fearful are you of falling after surgery?	(With visits) Do you think home physiotherapy would increase your confidence level?	(No visits) Do you feel more confident after the home physiotherapy visit?
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## Phase Two – Transdisciplinary Approach for Sustainability

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