



**Singapore Healthcare Management 2016**

# Improve safety and efficiency in setting up of Thomas' Splint traction for patient with femoral shaft fractures

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## Introduction

One of the most common injuries from trauma are those of the lower limbs, such as femoral shaft fractures. Thomas' Splint traction is used to limit the movement of the injured limb which can help to relieve pain due to muscle spasm and maintain alignment of the fractured bones. The Thomas' Splint traction (TST) trolley has all the requisites which allows for the efficient set-up of the TST, while maintaining the necessary mobility for rapid deployment approximately 4 times per month.

## Problem Analysis

Based on users' feedbacks, there are concerns about poor ergonomics, difficulty in pushing the trolley and safety over the current TST trolley. The team reviewed the trolley design using an issue tree as illustrated below.

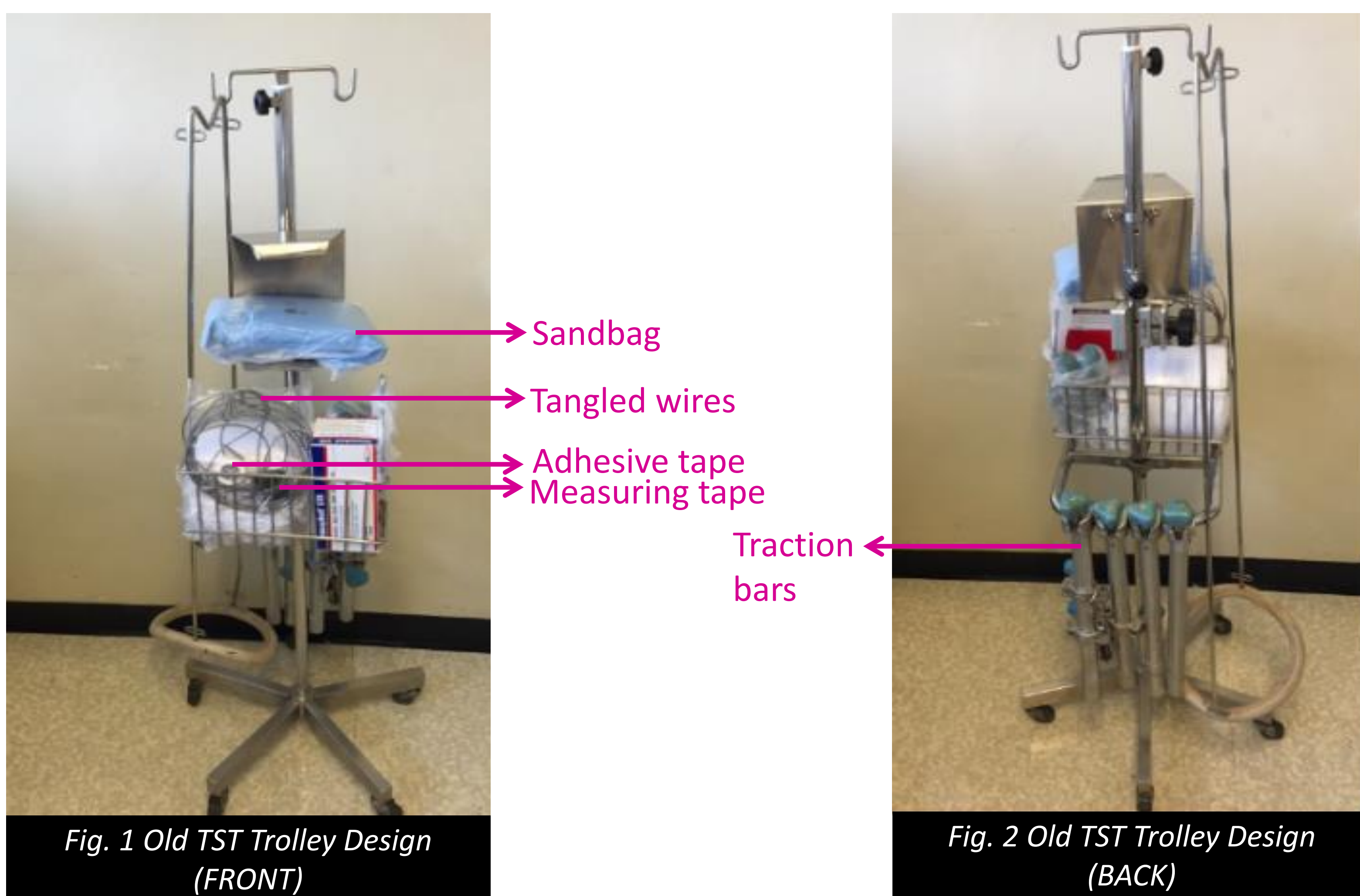
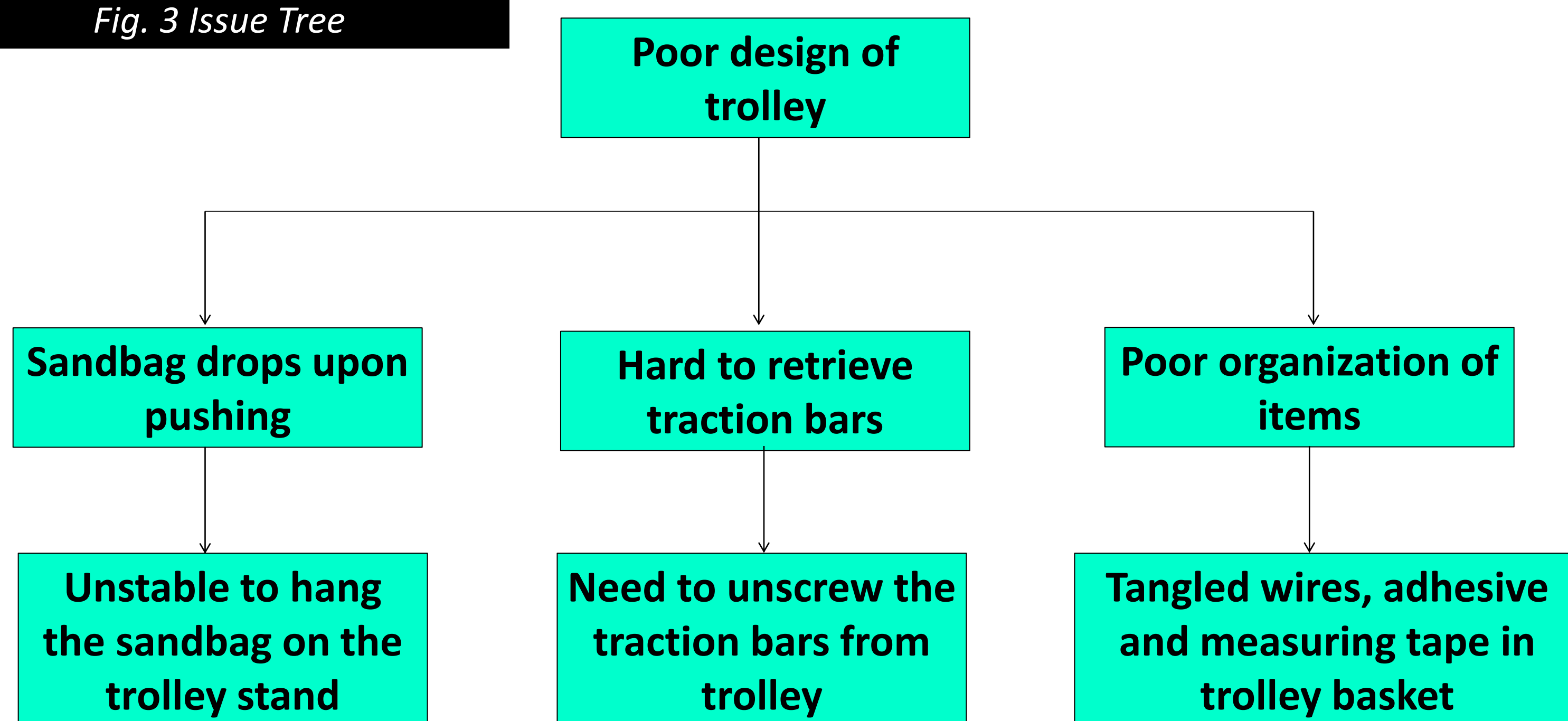


Fig. 3 Issue Tree



### Problems encountered:

- 1) The sandbag weighing 5 pounds may fall off the moving trolley which could potentially injure healthcare workers.
- 2) Time consuming task of disassembling the traction bars from the trolley.
- 3) Supplementary material like wires, adhesive and measuring tape are tangled and mixed up in the basket, making them tedious to untangle for use.

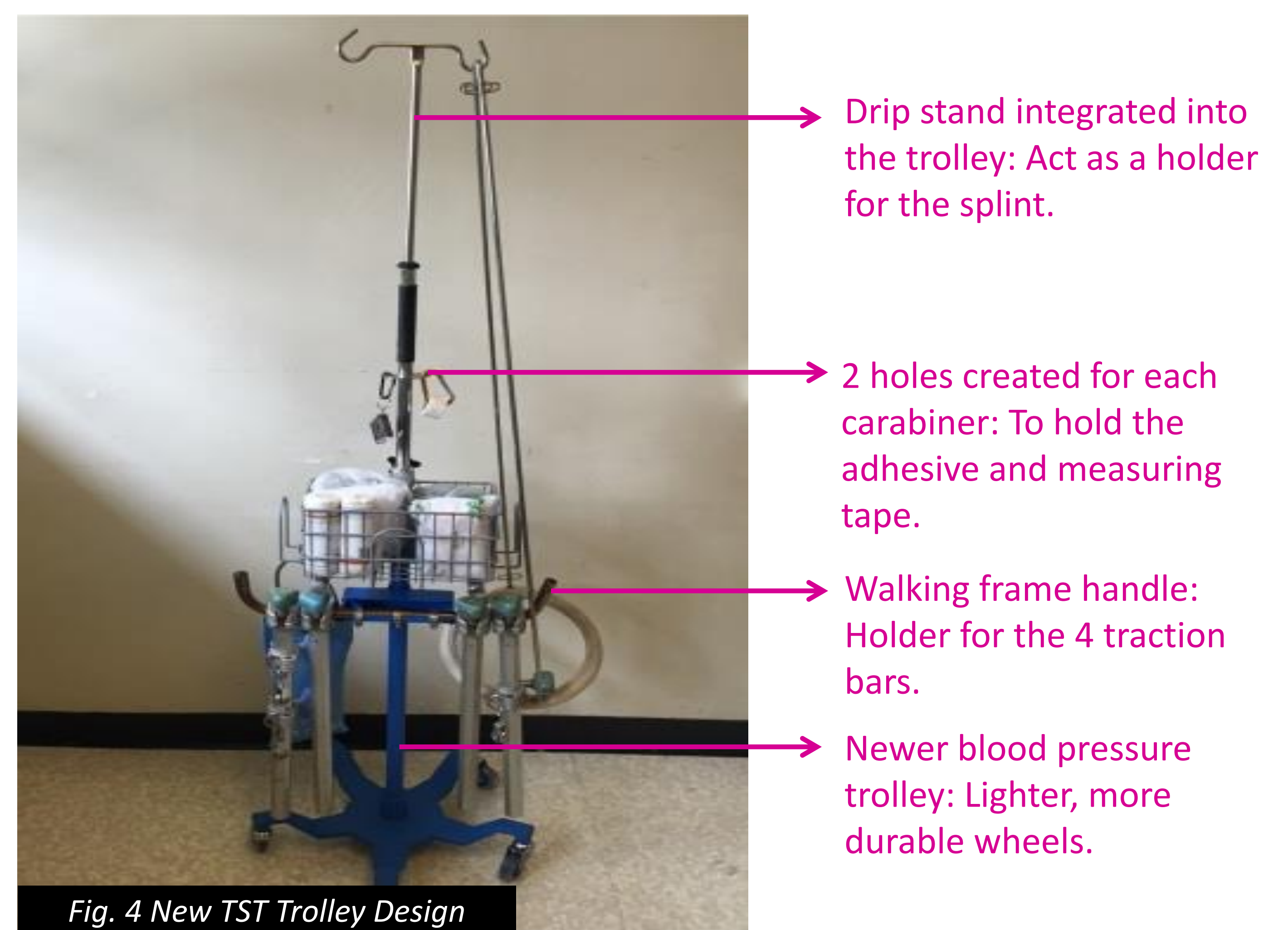
## Goals/Target

To redesign the Thomas' Splint traction trolley in order to improve safety and efficiency.

## Methodology

The team involved Facilities Management and Engineering (FME) to target the issues identified and determine design changes required.

We sourced for condemned items such as walking frame and newer blood pressure trolley. These items were cost free. With the help of the FME staff, multiple iterations of the trolley design were planned and tested. The finalized design is as shown below:



Checklists implemented as shown below for nurse to check requisites once every shift so as to ensure sustainability.

Day		Monday			Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday		
Date		AM	PM	ND	AM	PM	ND	AM	PM	ND	AM	PM	ND	AM	PM	ND	AM	PM	ND	AM	PM	ND
Requisites:	Norm:																					
Thomas' Splint	1																					
Stockinette Roll	1																					
Bandage (4 Inches)	2																					
Green Pillow	2																					
Straight Leg Traction Kit	1																					
Metal Wire Cords	2																					
Micropore Tape (3 Inches)	1																					
5 Pounds Weight	1																					
Orthoban	1																					
Weight Holder	1																					
Traction Bars (Medium)	4																					
Traction Pulleys	3																					

Signature Of Members To Project Weekly Check:

Fig. 5 Checklist for New TST Trolley Items

## Results

Use of new TST trolley is 4 times per month.  
 Traction set-up time was reduced from 40 minutes to 30 minutes.

**Time saved for traction assembly: 10 mins**  
**Total time saved per month: 40 mins**  
**Total time saved per year: 8 hours**

## Conclusion

With the new design of TST trolley, the setting-up of Thomas' Splint traction is now less time consuming. It has increased staff confidence in handling the trolley with its improved safety.

## Future Improvement

The 2 green pillows used to act as a support for patient's fractured limb do not allow for easy cleaning. Thus, the team is now sourcing for alternative materials for the pillows.