



Singapore Healthcare  
Management 2019

# Designing a Radiolucent Extension Board for Vascular Patients in Day Surgery Centre

<sup>1</sup>Lai, F.W., <sup>3</sup>Khor, J.S., <sup>4</sup>Hu, K., <sup>3</sup>Guo, M.C., <sup>1</sup>Chan, Y.S.,

<sup>1</sup>Leong, A., <sup>5</sup>Tan, C.L., <sup>2</sup>Leong, C.R., D., <sup>2</sup>Ooi, D.

Day Surgery Centre<sup>1</sup>, Vascular Surgery<sup>2</sup>, Diagnostic Radiology Department<sup>3</sup>,  
Operations<sup>5</sup>, Material Management Department<sup>4</sup>  
Khoo Teck Puat Hospital



## Background

- With expansion of vascular services, it is difficult to get loan unit for vascular cases
- Medical equipment such as operating table extensions are very costly

## Aim

- To design low cost and safe alternatives radiolucent board for the use of vascular patient

### As-Is:

**DSC has no alternative equipment accessories.**

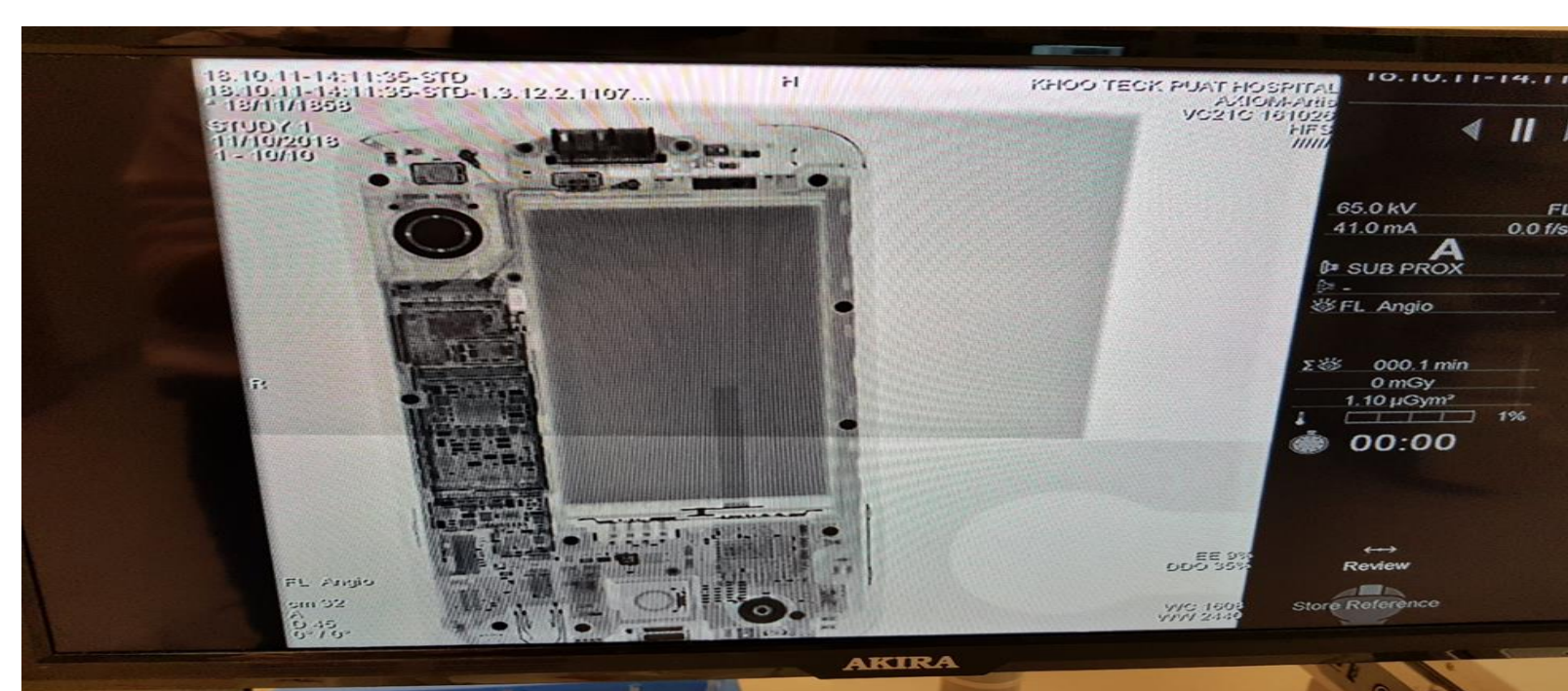
Patient has to shift to the edge of the bed for optimal image. However, there is a stainless steel rail which is radio-opaque and will restrict x-ray penetration.

## Method

### To-Be:

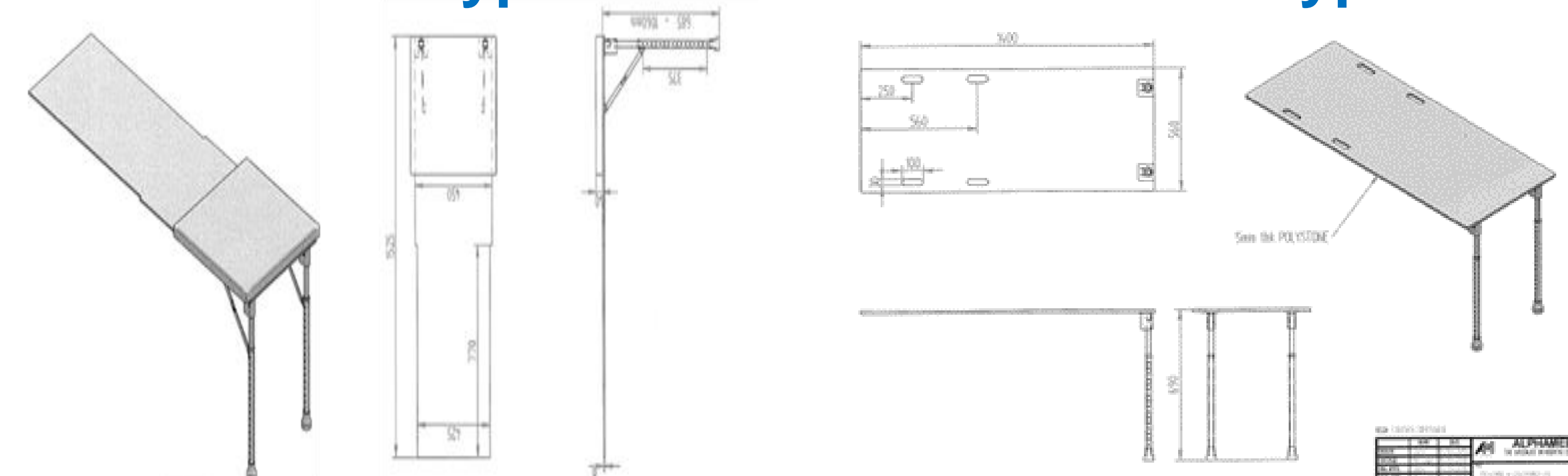
#### 1st Prototype – Use of Modern Plastic – DIY Acrylic Board

Properties: Low cost, radiolucent, scratch resistant & resistant to harsh chemicals. (Stress tests and checks were performed by team members)



1st Prototype

2nd Prototype



#### 2nd Prototype – DIY Phenolic board

Properties: Lower cost, radiolucent, scratch resistant, resistant to harsh chemicals & requires lesser radiation to capture image.

## Results

### Significant Cost and Time Savings Achieved

	Medical Classified Arm Table	DIY Board
T20	S\$ 44,000+	-
DIY acrylic arm board		S\$ 780
DIY table extension board		S\$ 535

save  
>S\$40,000

### Time and Manpower Savings

- DIY boards were made locally, obtained in 3 weeks
- Do not need to wait for 3 months of full procurement process
- Less manpower needed and staff spends less time travelling to get the accessories

	Number of staff Needed	Time needed
T20	2	30 mins
DIY boards	1	5 mins

## Project Impact



#### Cheaper & Affordable Healthcare

Cheaper alternative material for healthcare industry



#### Patient Safety Achieved

Durable board with scratch resistant feature



#### Staff Safety Achieved

Lightweight and easy to assemble. Eliminate risk of pushing heavy equipment



#### Easy Maintenance

It can be cleaned with most of the chemical solutions

## Conclusion

The team has **achieved its objective** by using economic alternatives as operating table accessory and extension in the operating room. The DIY board has the potential to breakthrough in healthcare.

## Sustainability

Further tests needs to be done to achieve the desired thickness in the end product. **It may not be impossible to customize an acrylic or phenolic operating table which is more cost-effective** compared to the purchase of traditional medical classified operating table.