

A Value Driven Care framework to improve patient outcomes through data-driven change to clinical practice for Total Knee Replacement Surgery

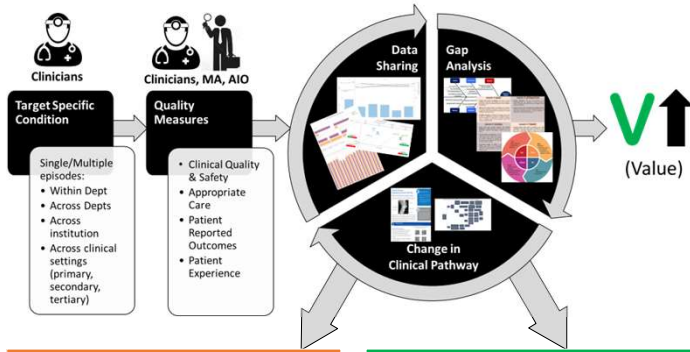
TEO Le Shang², LOH Bo Jie Sean², Shikha KUMARI¹, Erna SANTOSO¹ and Diarmuid MURPHY¹
¹ National University Health System, Singapore; ² NUS Yong Loo Lin School of Medicine

Background

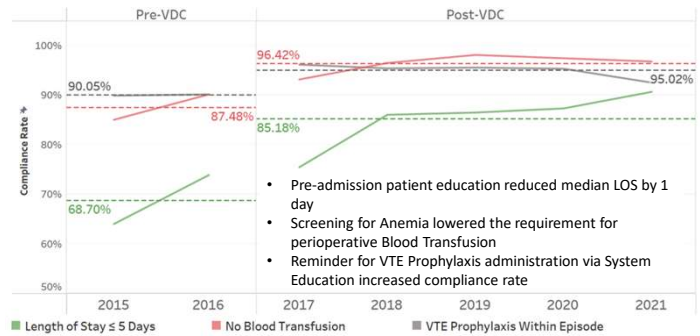
In 2019,
365 millions
people live with Knee Osteoarthritis

- Ageing populations combined with increasing rates of obesity increase the prevalence of osteoarthritis (OA).¹
- Surgical treatment of Knee OA - Total Knee Replacement (TKR) - places a significant cost burden on the patient and healthcare system.² In Singapore, the number of TKR surgeries increased by 2.7x from 1999 to 2019.³
- Hence, there is an urgent need to provide quality care at a sustainable cost

Methodology



Result



Patient Management

- Blood Management**
 - Pre-Admission Anaemia testing
 - Increase usage of Tranexamic Acid
- Early Rehabilitation**
 - Early physiotherapy and ambulation

Education

- Staff Education**
 - Requirement for VTE Prophylaxis
 - Appropriate data entry
- Knee School**
 - Pre-Admission education on TKR

Quality Outcomes

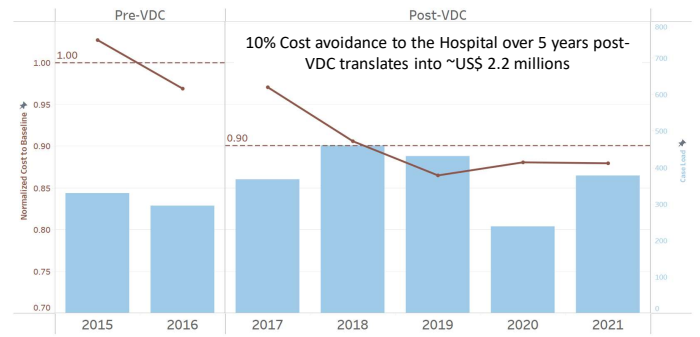
- Clinical Indicators**
 - No Emergency Readmission within 30 Days of discharge
 - No Unplanned return to Operating Theatre within Episode
 - Length of Stay (LOS) ≤ 5 days
 - Venous thromboembolism (VTE) Prophylaxis within Episode
 - No Blood Transfusion
 - No Inpatient Mortality
 - No Postoperative Complications within 30 Days of discharge
- Patient Reported Outcome Measure**
 - Knee Society Score
 - 36-Item Short Form Survey
- Patient Experience Score**

Cost of Care

- Room Charges
- Daily Treatment Fee
- Surgical Fee
- Treatment Services
- Consumables
- Implant
- Consultation Fee
- Investigations
- Medications

- PROMs data showed improvement in the number of patients with score differences higher than the Minimal Clinically Important Difference (MCID) following surgery.
- Response rate for PES is significantly higher post-VDC with no significant difference in mean score.

Category	Pre-VDC	Post-VDC	p-value
PROMs - Knee Society Score			
Response (n (%))	532 (85)	1555 (83)	0.210
Function Section (n (%))	403 (75)	1370 (88)	<0.001*
PROMs - 36-Item Short Form Survey			
Response (n (%))	532 (85)	1555 (83)	0.210
Physical Function (n (%))	446 (84)	1388 (89)	0.001*
Bodily Pain (n (%))	69 (13)	287 (19)	0.003*
Patient Experience Score (PES)			
Response (n (%))	14 (2.2)	190 (10.2)	<0.001*
Score (mean (SD))	8.43 (1.16)	8.73 (1.58)	0.482



Conclusion

- Utilisation of VDC framework significantly increases Quality Outcomes while effectively reducing the cost of care.
- Self reported data from patients showed significant improvement in Physical Function and Bodily Pain.
- VDC framework is an essential tool in the value based healthcare armamentarium as healthcare institutions strive to provide sustainable care.



References

1. WHO. (2023, July 14). Osteoarthritis. <https://www.who.int/news-room/fact-sheets/detail/osteoarthritis>
2. Xie, F., Thumboo, J., Fong, K.Y., Lo, N.N., Yeo, S.J., Yang, K.Y., & Li, S.C. (2007). Direct and indirect costs of osteoarthritis in Singapore: a comparative study among multiethnic Asian patients with osteoarthritis. *J. Rheumatol.* 34(1):165-171.
3. Ng, L.L. (2020, November 02). Managing Healthcare Cost Increases. Ministry of Health. <https://www.moh.gov.sg/news-highlights/details/managing-healthcare-cost-increases>.