

## **Project Title**

Implementing Value-Based Care for St. Andrew's Community Hospital

## **Project Lead and Members**

Project members:

Dr. Edward Goh (Medical Services)

Law Yen Hoon (Healthcare Performance & Innovation Office)

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Chan Soo Sin (Healthcare Performance & Innovation Office)

Edwin Huong (Group IT)

Diana Lin (Finance)

Bert Lee (Business Office)

Dr. Angel Lee (Medical Services)

## **Organisation(s) Involved**

St. Andrew's Community Hospital (SACH)

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

Medical Services, Healthcare Administration

## **Applicable Specialty or Discipline**

Surgery, Orthopaedics, Rehabilitation Therapy, Sub-Acute Care, Healthcare Administrators

## **Project Period**

Start date: 2021 (Expansion of HPO Scope)

Completed date: Dec 2023

## **Aims**

1. To adopt and implement the NUHS Value-Driven Outcome (VDO) framework with data visualization and PDSA improvement cycle within SACH.
2. To improve Clinical Quality Indicators (CQI) for Hip Fracture and Stroke patients by at least 20% by the end of 2023.

## **Background**

St. Andrew's Community Hospital (SACH) provides intermediate medical care for rehabilitation and sub-acute care to children, adults, and the elderly, including those with dementia or needing palliative care. The concept of value-driven care (VDC) was introduced by the Ministry of Health in 2017 to improve healthcare quality through cross-institution collaboration. Since 2018, SACH has collaborated with Changi General Hospital (CGH) to streamline workflows and reduce length of stay (LOS) for Total Knee Replacement (TKR) and Stroke patients. However, due to a lack of a guided framework, resources, and knowledge, there was no significant breakthrough in value-driven outcomes internally within SACH. In 2021, SACH Senior Management decided to reorganize the Healthcare Performance Office (HPO) to support value-based work.

## **Methods**

- Adopt the NUHS Value-Driven Outcome (VDO) framework
- Use data visualization and PDSA improvement cycle
- Combine various data sources for data visualization
- Address missing or incomplete patient-level data in CQI calculation
- Estimate costs using bill size due to the complex cost structure

## Results

- Clinical Quality Indicator for Hip Fracture care improved by 26.1% in 2023 compared to 2021
- Clinical Quality Indicator for Stroke care improved by 23.8% in 2023 compared to 2021
- Shortened length of stay (LOS) and wait time to admission despite increased complexity of case mix (subacute cases increased by 10% in 2022 compared to 2018)
- Achieved a total of \$553K cost avoidance per year, contributed by saving 5.8 beds/day

## Lessons Learnt

1. Combining data sources and addressing incomplete data are crucial for accurate CQI calculation.
2. The use of a guided framework like NUHS VDO is essential for driving improvements in healthcare quality.
3. Effective collaboration and communication among various departments and stakeholders are key to successful implementation.

## Additional Information

National Healthcare Innovation & Productivity (NHIP) 2024 – Best Adopter

## Conclusion

The implementation of the value-based care framework at SACH has led to significant improvements in clinical quality indicators and cost avoidance. The continuous focus on data-driven improvement work and stakeholder engagement is crucial for sustaining these outcomes.

### **Project Category**

Care & Process Redesign

Value Based Care, Productivity, Cost Saving, Patient Reported Outcome Measures,  
Patient Reported Experience Measures, Access to Care, Transfer Out Rate

Technology

Digital Health, Data Management, Data Analytics, Data Visualisation

### **Keywords**

Value-Based Care, Clinical Quality Indicator, Hip Fracture, Stroke, Data Visualization,  
PDSA Cycle

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# ST. ANDREW'S COMMUNITY HOSPITAL

## Implementing Value-Based Care for St. Andrew's Community Hospital

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1: Medical Services; 2: Healthcare Performance & Innovation Office; 3: Group IT; 4: Finance; 5: Business Office

### 1. Problem Statement

- St. Andrew's Community Hospital (SACH) is a service under the St. Andrew's Mission Hospital group. SACH was set up to provide intermediate medical care for rehabilitation and sub-acute care to children, adults, and the elderly; including those with dementia or needing palliative care.
- Since 2017 when the **concept of value-driven care (VDC) was mooted** by the Ministry of Health, clinicians in Singapore have been hard at work improving the quality of healthcare provision – and cross-institution collaboration has been a crucial success factor.
- In 2018, Changi General Hospital (CGH) and St. Andrew's Community Hospital (SACH) collaborated and started the **fast-track referrals for Total Knee Replacement (TKR) and Stroke patients** from CGH to SACH under the joint-value-driven care initiatives to streamline workflow and to reduce LOS at CGH.
- Due to the **lack of guided framework, resources and knowledge in driving improvement work**, there was **no breakthrough in value-driven related outcomes** internally within SACH. In 2021, SACH Senior Management decided to reorganize the Healthcare Performance Office (HPO) and to expand its scope to support value-based related work.

### 2. Project Aim

- To achieve the following objectives **by the end of 2023**:
  - To adopt and implement **NUHS VDO framework** with data visualization and PDSA improvement cycle within SACH.
  - To improve **Clinical Quality Indicator<sup>1</sup>** for Hip Fracture and Stroke patients by at least **20%**.

<sup>1</sup> The number of patients who met all quality indicators (i.e. received "perfect care") as determined by the clinicians, divided by the total number of patients.

### 3. Risk & Complexity

- Technical aspects:
  - Combining **various data sources into one dataset** for data visualization requires strong IT support and good data structure.
  - Missing or incomplete patient level data** (e.g. PROMS, complication data, patient experience score, etc.) has to be considered in the calculation of CQI.
  - Due to **complex cost structure and lack of time-based activity costing**, bill size has been used as an estimate.
- Resources:
  - Experience and skillsets** required: lean and clinical QI, design thinking, productivity and costing.

### 4. Potential Solutions

- SACH adopted the award-winning NUHS' **Value-Driven Outcome (VDO) concept and framework**. The framework highlights the importance of **using data** to drive more value in our healthcare system. Refer to Figure 1.

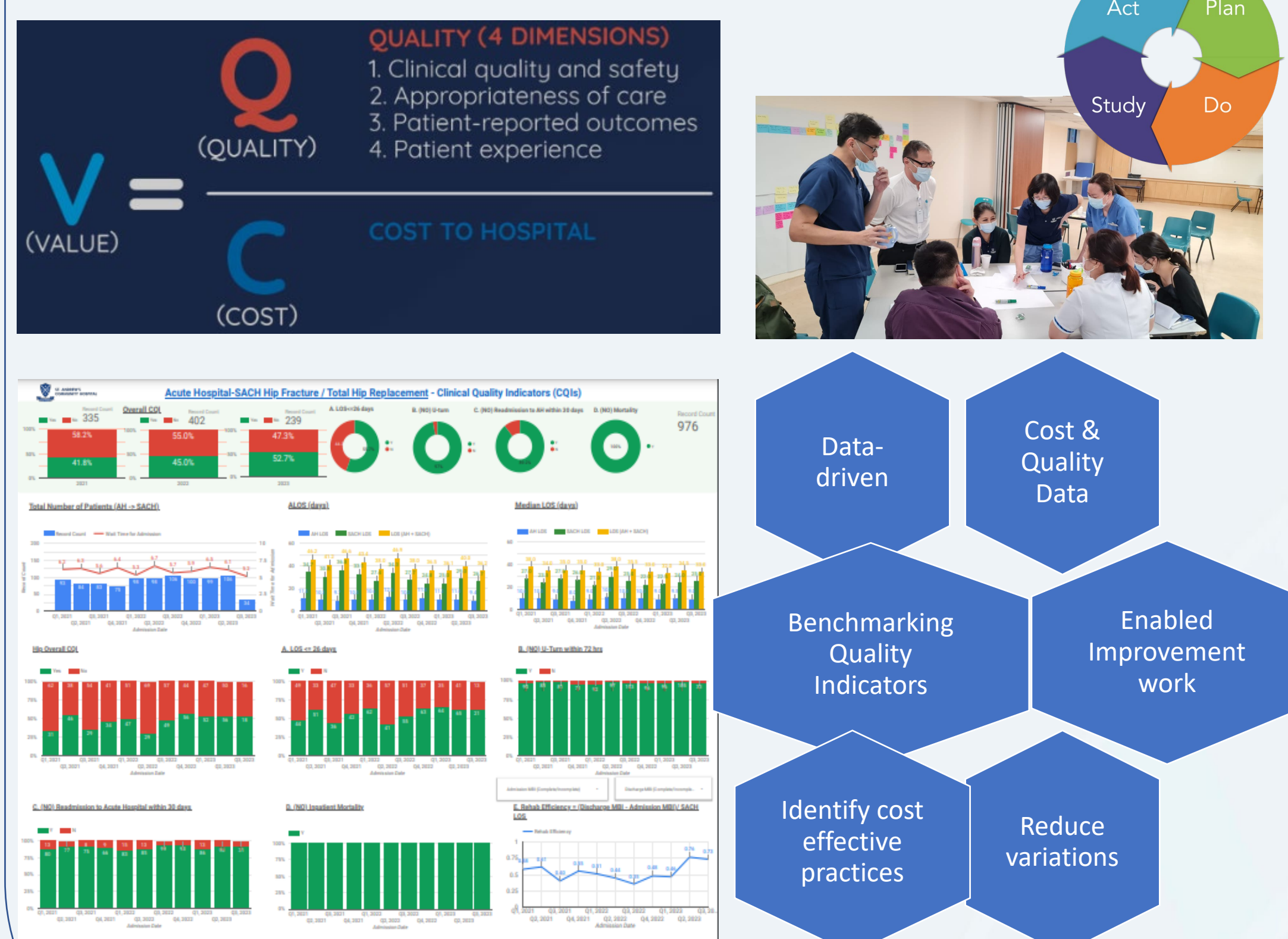


Figure 1. Application of NUHS VDO framework with data visualization and PDSA improvement cycle in SACH

### 5. Outcome & Impact

- Clinical Quality Indicator** for Hip Fracture and Stroke care **improved by 26.1% and 23.8%** respectively in 2023 as compared to 2021 (Figure 2)

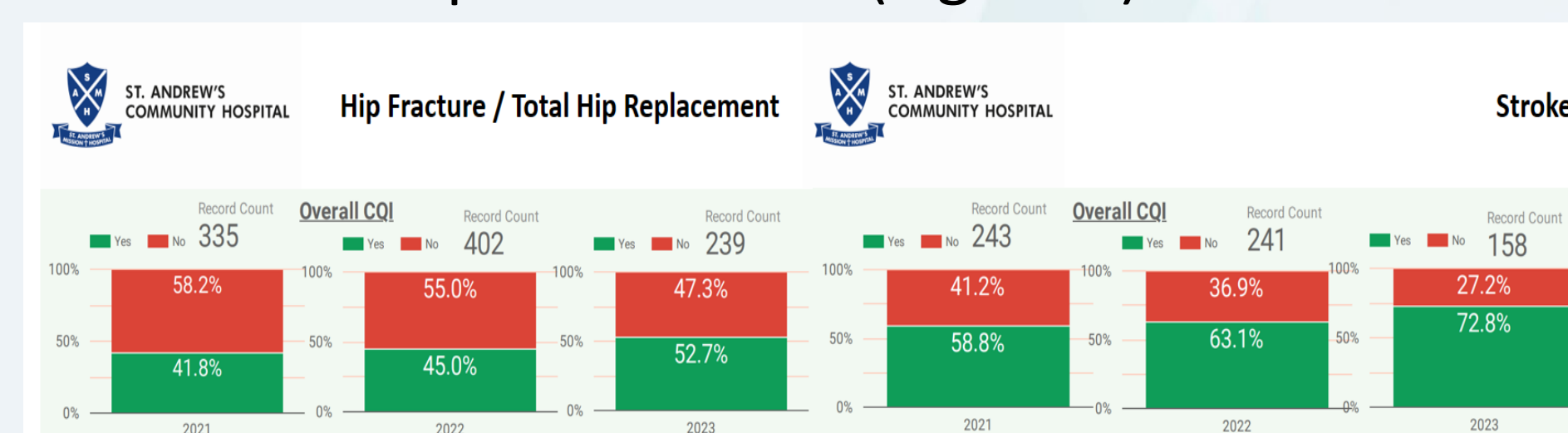


Figure 2. Clinical Quality Indicators for Hip Fracture and Stroke

- Through attention to various clinical care path streams, there has been **progressive shortening of length of stay**, with resultant **shortened wait time to admission** (Figure 3). This is despite increased complexity of case mix as evidenced by an increase in subacute cases by 10%<sup>2</sup> in 2022 compared to 2018.



Figure 3. Wait time (days) from referral to admission

- Achieved a total of **\$553K cost avoidance per year** contributed by **5.8 beds saved/day**.

<sup>2</sup> MOH Data shared at 12th MOH-CH Roundtable on 13th Feb 2024