



Optimizing Operating Theatre (OT) Instrument Delivery: Case Cart Trial

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Lin Lianqiao¹, Ng Mei Jie², Tey Hui Ru¹, Haryana Binte Zulkifli¹, Guo Yu¹, Siti Zafirah Binte Jamil¹, Leong Wei Lin¹, Rashidah Bte Mohamad Kamali¹, Nur Hidayah Binte Abdul Aziz³, Saphietussarah Binte Rabini³, Ng Siok Peng¹

¹Operating Theatre, Sengkang General Hospital
²Innovation office, Sengkang General Hospital
³Central Sterile Service Unit, Sengkang General Hospital

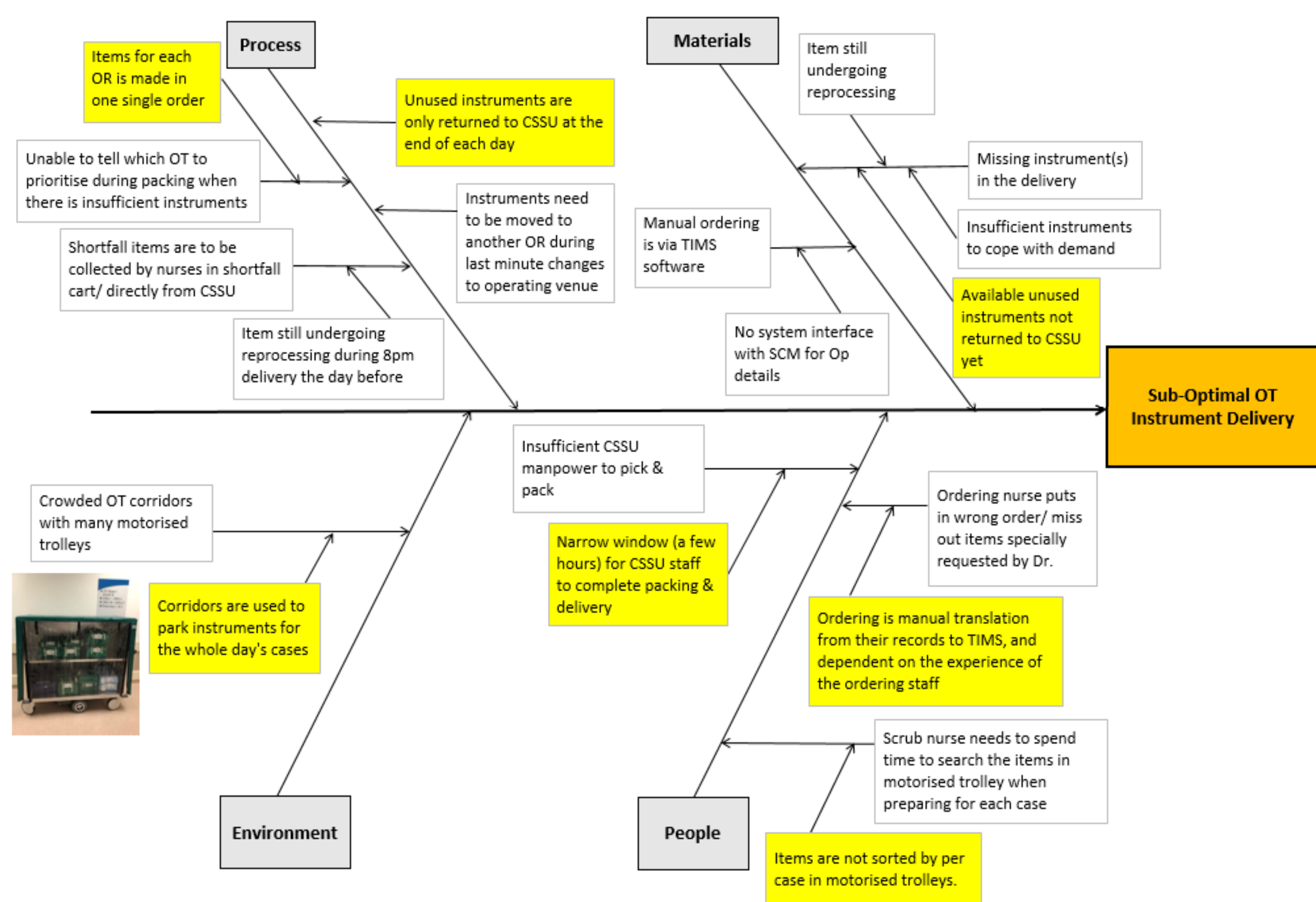
Background

In Sengkang General Hospital (SKH), Operating Theatre (OT) nurses order instrument sets required for next day surgery. The order was made for the entire operating room's list via Theatre Instruments Management System (TIMS) by 1700hrs. Central Sterile Services Unit (CSSU) team would pick and deliver to a centralized location by 2000hrs. This workflow requires a substantial instrument par level to meet the instrument sterility processing requirements with a limited window period for CSSU staff to pick the orders for next day's cases. This correspondingly results in more storage requirements in CSSU to house the instruments and increased resources at specific hours to cope with the picking orders. The project was conceptualized in 2019 to address the potential space constraints within CSSU in tandem with SKH OT ramp-up plans.

Aim

The case cart trial was initiated 1 year ahead in preparation to the planned implementation in 2023. This is to gather ground feedback on the OT nurses' case preparation process and Doctors' preference lists for CSSU inventory across various surgical disciplines.

Methodology



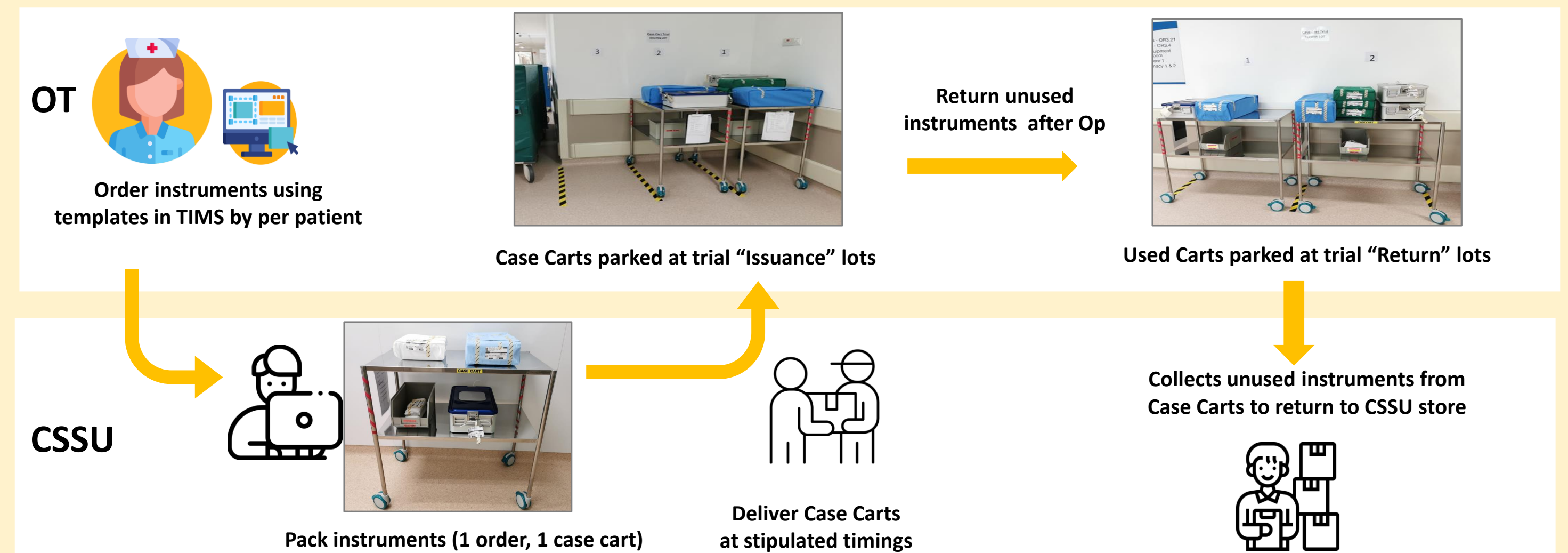
"The basic function of a case cart system is to ensure that the right instruments and supplies are available at the right time for the right procedure".

*- Making a Case for Case Carts
Herman Miller Healthcare, 2009*

No.	Root Causes	Intervention/Initiative
1	Items for each Operating Room (OR) is made in one single order	Items for each <u>patient</u> is made in one single order to ensure right procedure
2	Ordering is manual translation from nurses' records to TIMS, and dependent on the staff experience	Ordering templates based on surgeons' preference lists are uploaded into TIMS for ordering nurses to ensure right instruments
3	Narrow window (a few hours) for CSSU staff to complete packing & delivery	Pick & pack window widened in view of a revision in the case cart delivery schedule
4	Items are not sorted by per case in motorized trolleys	Non-motorized trolleys were introduced for one patient to one cart
5	Corridors are used to park instruments for the whole day's cases	For the first 2 cases of participating ORs, instruments are delivered one day before. For all subsequent cases, case carts are delivered 1hr or 1.5hr ahead of scheduled Op time to trial the right time for case preparation.
6	Available instruments are not returned to CSSU yet	Unused instruments are returned to CSSU whenever there is a case cart delivery up to the Operating Theatres.
7	Unused instruments are only returned to CSSU at the end of each day	

Methodology

Trial Workflow

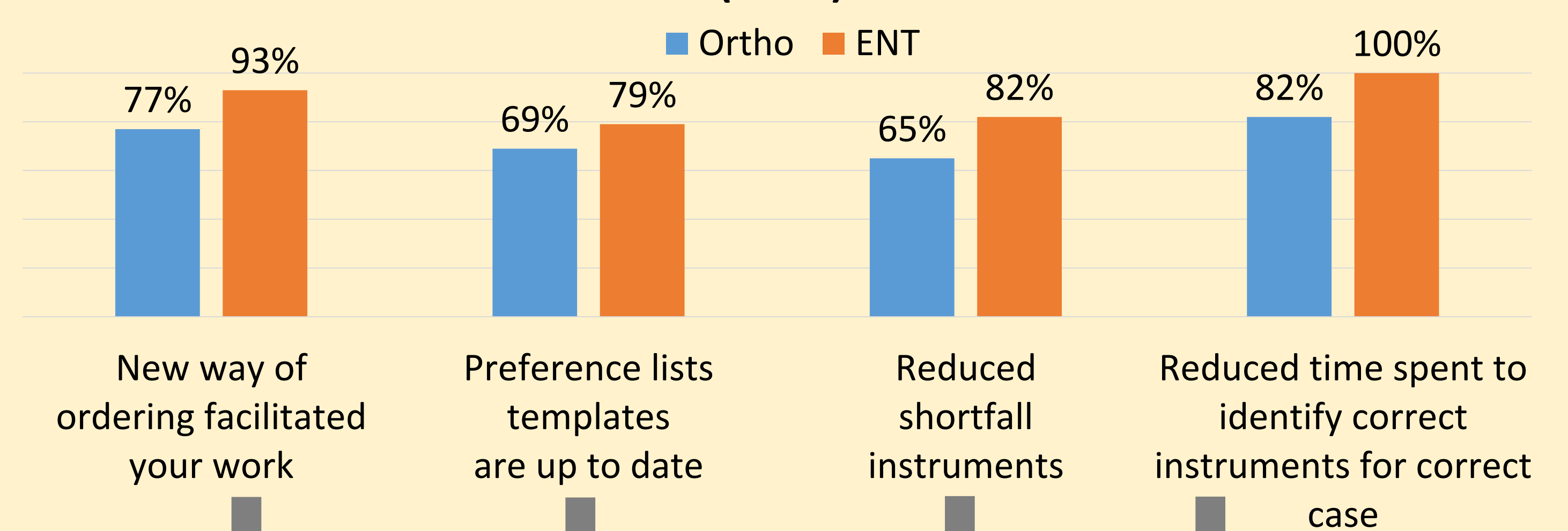


The team collected data using the following methods:

- Observations** - The team observed the activities required to prepare instruments for surgeries. Feedback and suggestions on the delivery schedule were documented.
- Time studies** - The trial process was tested across 4 Orthopaedic and 1 ENT Operating Rooms (OR) and CSSU for 2 months per specialty between February to August 2021. OT nurses ordered instruments on a single case basis, and CSSU packed each order into one case cart and delivered at a stipulated time prior to operation time. The frequency of the need to expedite cart delivery was recorded.
- Simulation** - As the trial was conducted one OR at a time with the available resources, the team simulated the case cart delivery for a "fast-turnover" OR performing Orthopaedic local anesthetic (LA) cases to determine the adequacy of case cart delivery time.
- User survey** - A post-trial survey was done to understand user experience and suggestions.

Results

User Experience from Orthopaedic & ENT Case Cart Trial (n=45)



- ✓ Right instruments
- ✓ Right patient/procedure
- ✓ Right time
- ✓ Greater efficiency

- 72% of Orthopaedic cases and 87% of ENT cases were observed to have unused instruments returned to CSSU. This high percentage of returned instruments has prompted the team to review the commonly used preference lists with Doctors, and also identify instruments which could be placed in OT store to optimize its access.
- Feedback from this trial has been incorporated into the planning for case cart implementation. The trial is closed for Orthopaedic and ENT teams, and are being worked out for other disciplines.

Conclusion

Embarking on a case cart system allows SKH OT and CSSU to achieve greater efficiency in instrument delivery and improved instrument inventory management. Nurses experienced shorter time in preparation of instruments for surgeries, and the case carts offer greater flexibility in handling changes in operation schedule.

Sustainability - The instrument ordering by case has been incorporated into the daily operations for Orthopaedic & ENT ORs, with monthly monitoring post trial. This is to upkeep the accuracy of the preference lists and change management at OT nursing to ensure smooth ordering when SKH commences the case cart implementation in late FY22/23.