

## Improving UMHS Surgical Instrument Reprocessing and Delivery

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### Introduction



- In FY '13, UMHS performed over 49,000 surgical cases involving more than 15 surgical departments.
- Each case can require hundreds of surgical instruments and other items.
- Effectively reprocessing these surgical items between uses is essential to patient care in the operation room (OR).

#### Central Sterile Processing and Distribution (CSPD):

- CSPD is responsible for **reprocessing** surgical instruments at UMHS' University Hospital (UH). This includes cleaning, maintaining and sterilizing all items between cases.
- Instruments move through this process not as separate items, but in **sets** predefined by each surgical department.

#### Project Background:

- Our team of CHEPS students and faculty partnered with staff from CSPD and the UH OR to investigate problems with surgical instrument reprocessing and to make changes to improve process outcomes.
- We chose to focus on **Neurosurgery** as a pilot department to demonstrate changes.



### Problem Statement

Staff in the OR reported frequent problems related to the reprocessing and delivery of reusable surgical instruments.

- **Unavailable items**
  - ex) no drills sterilized on shelf when needed
- **Improperly cleaned items (with bioburden/debris)**
  - ex) blood residue remaining in scissor hinge
  - ex) bone fragments lodged in drill components
- **Poorly functioning items (requiring maintenance)**
  - ex) scissors too dull to cut properly

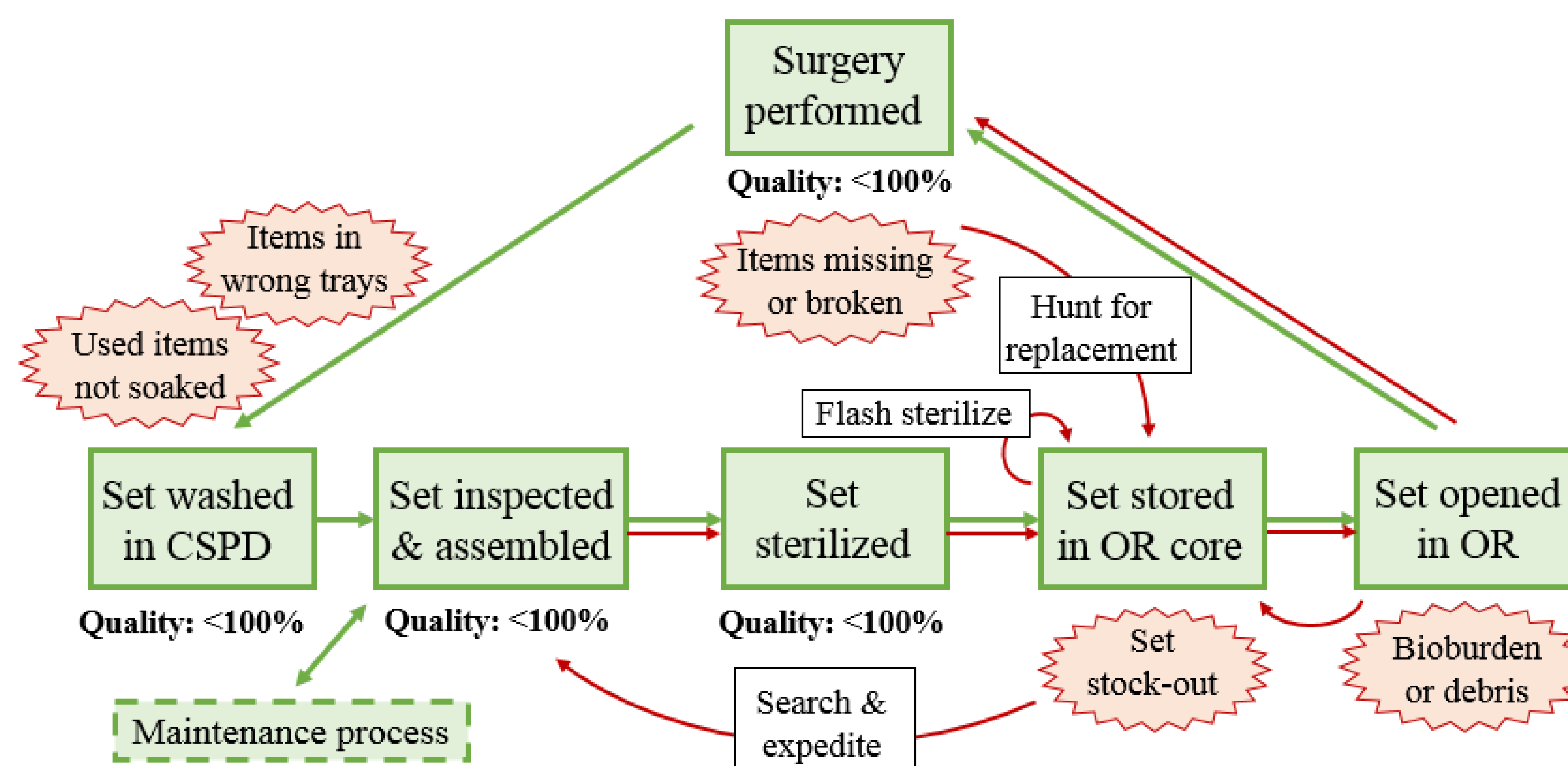
**GOAL:** To have all surgical items required for the proper care of the patient:

- 1) available at the time of surgery,
  - 2) properly cleaned and sterilized
  - 3) and in working condition,
- while ensuring the efficient use of resources.

### Understanding Surgical Instrument Flow

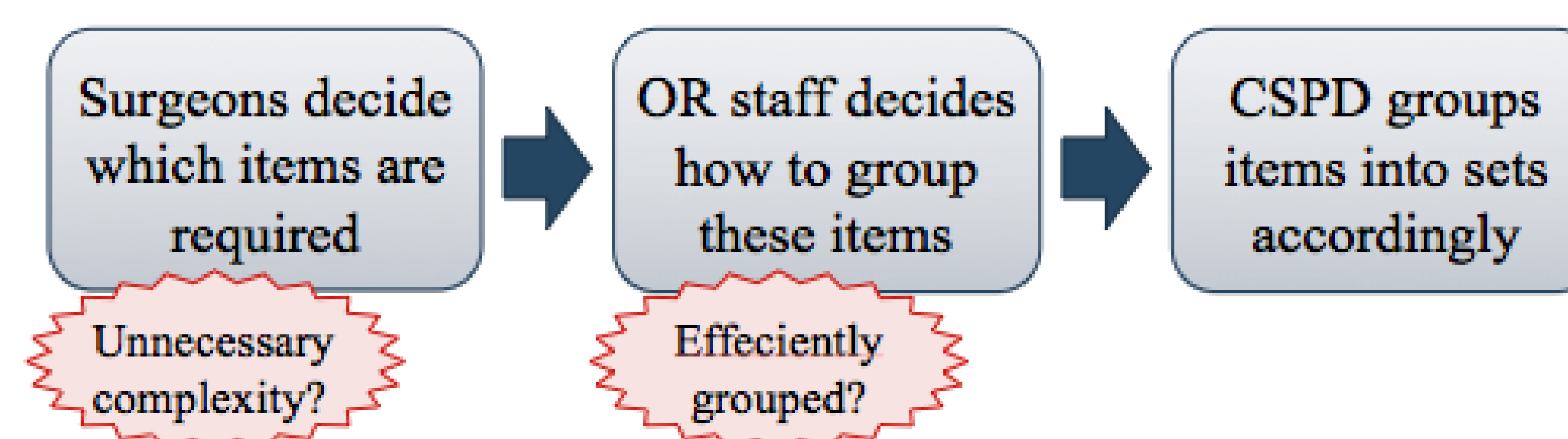
#### CSPD Operation:

- Through observations and regular meetings with front-line staff, we developed a detailed process map of the CSPD operation. We highlight below the difference between:
  - 1) the intended process (shown in green)
  - 2) the process resulting from common process problems (shown in red)



#### Neurosurgery Instrument Set Definitions:

- CSPD's operation is directly impacted by the set definitions from each surgical department.



- We analyzed the current set definitions for Neurosurgery to understand how they impact the broader operation in CSPD
  - There are **3,835 unique items** among 234 defined Neurosurgery sets
  - The "Minor Neuro" set is complex, large and frequently used making it a strategic starting-point for piloting proposed changes.

#### "Minor Neuro" Set

- 69 distinct items
- 123 items total
- 18 in inventory
- used in **75%** of cases

### Specific Areas for Improvement

#### Item "Cleanability":

- Certain design features such as tubes, grooves or teeth make items more susceptible to **bioburden** – biological material left over from previous cases.
- Our approach
  - Identifying bioburden-prone items in "Minor Neuro"
  - Designing a standard process for identifying and responding to these instrument "cleanability" issues

#### Item Nomenclature:

- items have lengthy formal names and, therefore, are frequently referred to by a variety of short-hand names.

| Formal Item Name (as seen on count sheet)  | Short Name    |
|--|---------------|
| RONGEUR, DOUBLE ACTION STILLE BEYER 1/8 IN | Stille        |
| FORCEP, CRILE ARTERY CURVED 5 1/2 IN       | Skin Hemostat |

- Our approach
  - Documenting various names for "Minor Neuro" items
  - Proposing system for managing informal names

#### Functionally Equivalent Items:

- While complexity is inevitable, the current set definitions may include **functionally equivalent items** based only on different preferences among surgeons.
- Consolidating these items wherever possible would decrease the workload and complexity for CSPD.
- Our approach
  - Working with surgeons to explore functional equivalence in "Minor Neuro" and ways to consolidate.
  - Proposing ways to facilitate communication about the operational impact of surgeons' instrument requests

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