A Quality Based Approach for Error Reduction in Surgical Sets Assembly

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Lady Davis Carmel Medical Center

460 beds

11 operation theatres
CSSD department

20 workers
Seven days a week
Working hours: 7:00-23:00
Large surgical sets per day = 100
Medium and small size sets = 250
Single items = 200
Instruments Sets

Assembly requires knowledge and skills

Training > 6 months

Count sheets are used
Assembly & Warping

Count & assemble

Quality control

Insert count sheet

Warp

Label
Instruments in surgical sets

Are counted and inspected three times:
during reprocessing route

Disassembly phase
Assembly phase
Quality control stage
Errors

Disrupt normal course of surgery

Cause dispute between CS and OR
Causes for Human Errors

- Lack of experience
- Slowness
- Lack of standardization
- Surprise
- (Intentional (sabotage)
- Misunderstanding
- Wrong identification
- Ignoring rules

Forgetfulness
Sloppiness

Correlated with defects in production
Purpose

To reduce number of errors
Data Collection

Reports from OR

Number of sets assembled per month

Error type

Error rate

Workers
Results

January-March 1999

Error rate = 1.33%
Errors Type Distribution

- missing/extra instrument: 57%
- faulty instrument: 18%
- non suitable instrument: 13%
- unclean instrument: 6%
- wrong label: 6%
Evening shift technitians made more mistakes
Quality Assurance Program

Create a blame free environment

Focus on system problems

Use errors data to drive change

Identify training opportunities
Quality Assurance Program

Weekly workers quality meeting

Week’s errors reviewed

Brainstorming process: discussion about error reports
Brainstorming Process

Workers participation

Team working
Root Cause Analysis

Workers suggested factors that played a role in the errors

Suggestions produced a cause-effect diagram
Label printer is not located on assembly table

Label is not taken to assembly table at the beginning of process

Distracting noises: workers, telephone, etc.

Inspection does not include label verification

Wrong label
Example

Operation theatre nurses placed it in a different set

Lost in operation theatre

Assembler did not follow instructions

Assembler did not notice

Missing instrument

Missing instrument was not detected in decontamination area
Corrective Actions

Modifications in content sheets layout
Changes in working standards: detailed flowcharts of tasks
Education program
Changes is sets are posted and signed by workers
Error Rate
Before and after QA program

1999-before QA program
1999-after QA program
Error Rate 1999-2002

- 1999-before QA program
- 1999-after QA program
- 2000
- 2001
- 2002
2003-A New (additional) Program

Workers performance
Method

Each worker was monthly assessed in every working station.

Assessment parameters included 43 qualitative and quantitative measures.
Workers were notified about the assessment prior to onset of program

But were not aware when the actual measurements took place
Assessment topics

Cleaning and disinfection activities
Sets assembly
Safety issues
Sterilization validation activities
Set Assembly - Examples

Observation: Does worker follow instructions on content sheet?

Observation: Does assembler check instruments?

The surveyor unpacked five instrument sets and performed a quality check.
Workers received an evaluation of their monthly score

Average score \( 81.3 \pm 7 \) (maximum=100)
Do Workers Follow Instruction on Content Sheet?

- Yes: 82%
- No: 18%
Perfect vs. Erroneous Sets

- Perfect sets: 98.4%
- Erroneous sets: 1.6%
Correlation between error rate and age 0.79
p=0.001

Average workers age 50 (median 51)
Error Rate 2002-2004
Conclusions

Quality assurance is a never ending task

Workers participation is essential

Multiple mechanisms contribute to error reduction
Thank You