JOAN WELLMAN & ASSOCIATES, INC.

Rapid Process Improvement Case Study:
DCP4 Bin Fill Process

June 2007

The Challenge

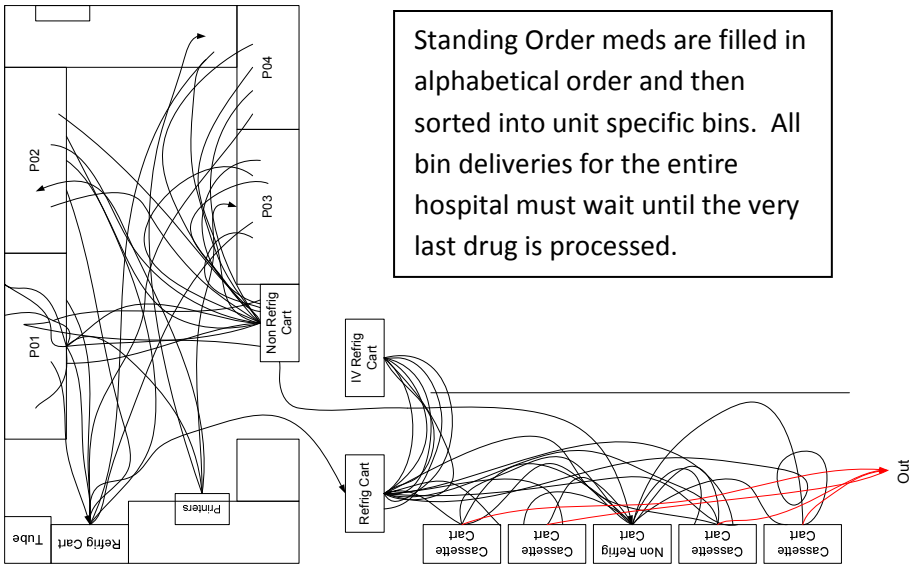
The Pharmacy Department at this large hospital had traditional processes in place resulting in many accumulating wastes such as: large batch deliveries, idle materials, inconsistent schedules, long time lags, printing problems, accuracy and error rate concerns and overall inefficiencies. To address these issues, an RPI workshop was held to focus on transitioning the Hospital's Daily Bin Fill Process to a waste free Lean environment. The Team worked on the process for all standing orders specifically from the completion of order entry to the return of delivery carts and the setup of the area for the next day's bin fill.

Targets

The Team was charged with creating a process that satisfied the demand for standing orders and maximized throughput, while using the least amount of resources possible. More specifically, the targets included:

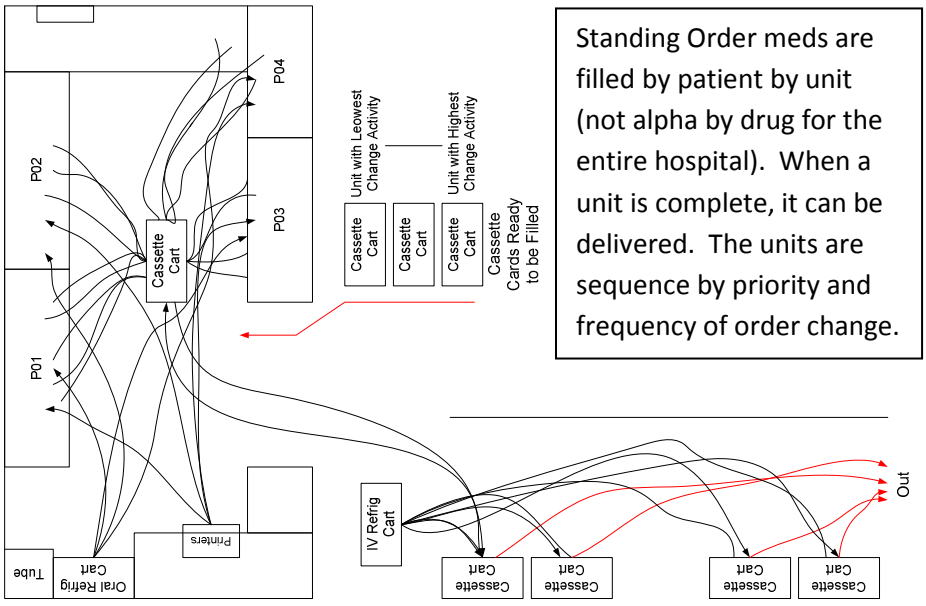
- Providing the requested medications to the units on time without rework.
- Minimizing total inventory and associated fill costs
- Reducing Work In Process inventory by filling the bins in a continuous flow single piece manner
- Implementing improvements that assured defect-free delivery
- Assigning accountability for all tasks
- Elimination of patient specific waste (meds no longer required due to the timing of scripts)

Before:



Standing Order meds are filled in alphabetical order and then sorted into unit specific bins. All bin deliveries for the entire hospital must wait until the very last drug is processed.

After:



Standing Order meds are filled by patient by unit (not alpha by drug for the entire hospital). When a unit is complete, it can be delivered. The units are sequence by priority and frequency of order change.

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Areas of Focus

The project sponsors and Management Guidance Team asked the Team to focus on the following:

- Single piece continuous flow of cassettes– minimization of all batching activities
- Pull process from order entry to cassette delivery– level loading of work, balanced activities, minimal WIP inventory
- Throughput- shortest cycle time from profile list and label print to bin loading, minimization of multiple handling and sorting, and reduced checking cycle times
- Standard Work- standardized and documented work procedures for fill and check, and accountability with clear roles and responsibilities
- Visual Controls- pacing of cassette completion, and signals for filling/moving, compounding and restocking

Workshop Actions

The Lean Consultant led the Team through this week-long RPI workshop. Most of these actions were taken during the actual workshop. Below are a few of the highlights:

- Completed pacing calculations to determine demand, dose Takt time, and unit fill Takt time (done before and after the RPI process)
- Transitioned to a 10:00AM fill start and 2:00PM delivery times which reduced labor
- Revised the verification sheet which reduced defects
- Eliminated the printing of the morning Profile List
- Implemented a log sheet to record output performance

Outcomes

This incredible Team accomplished extraordinary benefits, such as:

- Created a more balanced workload
- Increased printer speed and reliability support rapid fill and minimize frustration
- Pharmacist was more available to become involved in the clinical environment
- Eliminated sorting from beginning to end—single handling system
- Patches/DC/Discharge/Transfer complexities were eliminated
- Roles and responsibilities were clearly defined which has improved efficiency and satisfaction
- Bin checking is easier due to printing new profiles
- Improved script turnaround
- Decrease in errors due to single piece unit fill process
- New Verification Sheet has improved flow
- Increased accountability for completing the job in the time allowed

Results

Metric	Baseline	Target	Result
Cycle Time Reduction – Bin Fill	283.75 min	180 min	180 min
Cycle Time Reduction – Cassette Delivery	25.6 min	30 min	45.0 min
Cycle Time Reduction – Sorting	75 min	0 min	0 min
Cycle Time Reduction – Pharmacist Check	49.3 min	40 min	40 min
Defect Rate	9		5
Throughout Rate (Cassettes filled / hour)	3.0 Units / Hr		4.4 Units / Hr
Patient Specific Waste (Items Changed / Total Doses)	30%		<30%