



# Implementing new chemotherapy compounding workflow using sequential PDSA cycles

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## What was done?

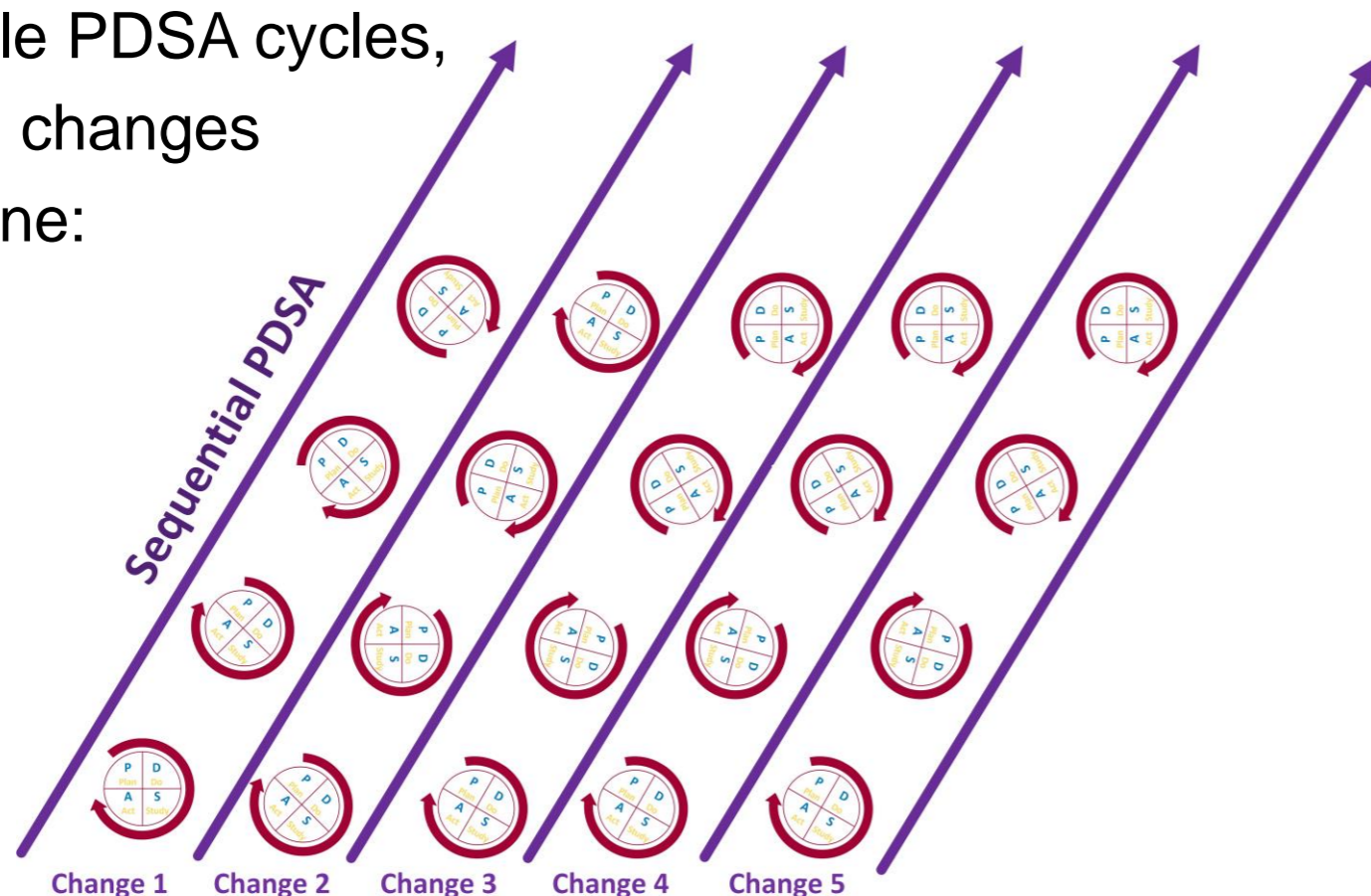
Shifting to a systematic multi-step production workflow to increase compounding capacity, minimize risk of errors, reduce processing time, and maximize utilization of integrated technological resources in the Chemotherapy Preparation Unit (CTPU).

## Why was it done?

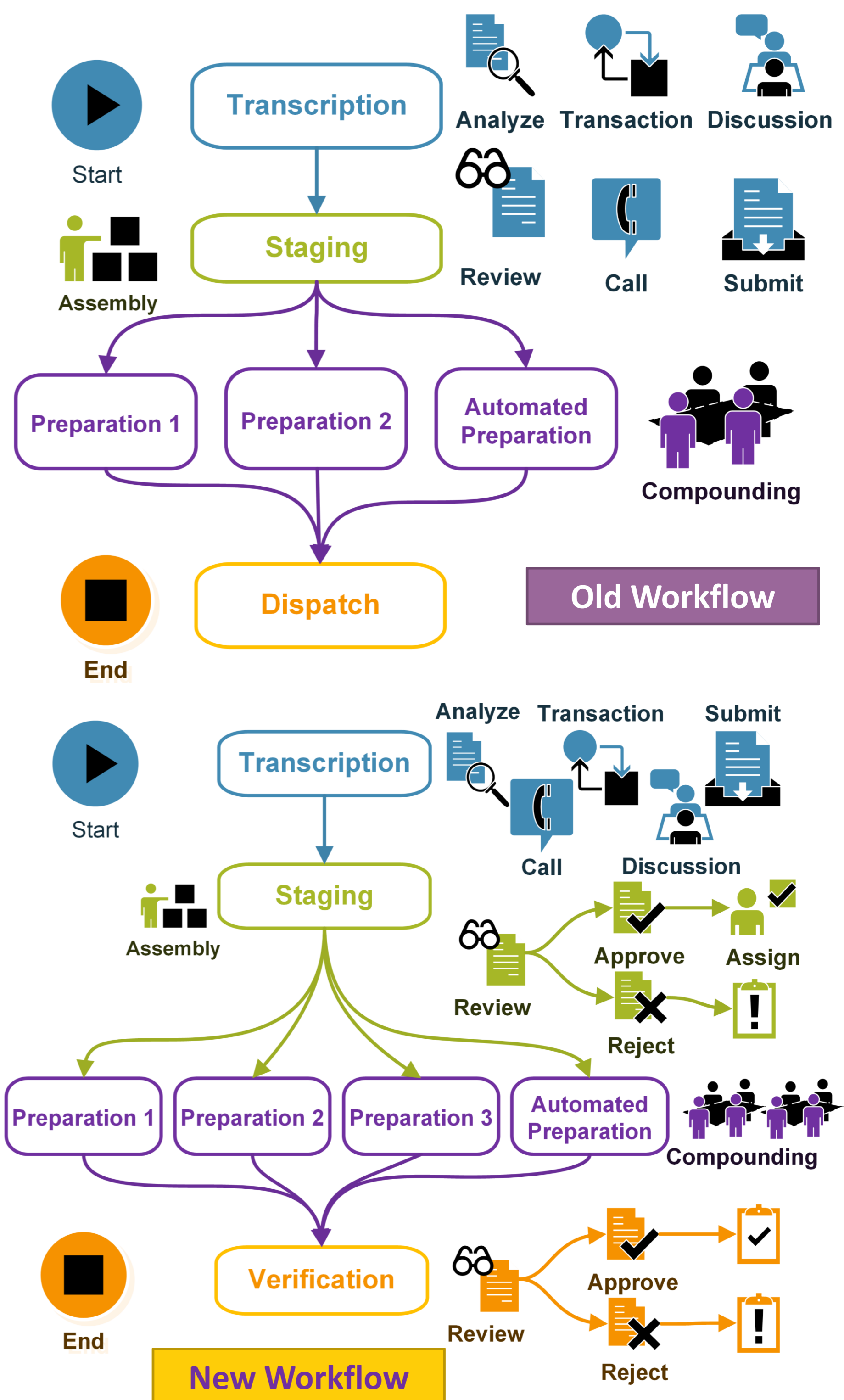
KCCC is the only oncology hospital in Kuwait. CTPU was unable to meet the increased number of orders; causing delivery delay and more patients' waiting time. Moreover; rework and more waste due to defective and faulty processes of current workflow; resulting in frequent incident reports of wrong final products dispatched.

## What was done?

Using multiple PDSA cycles, the following changes has been done:

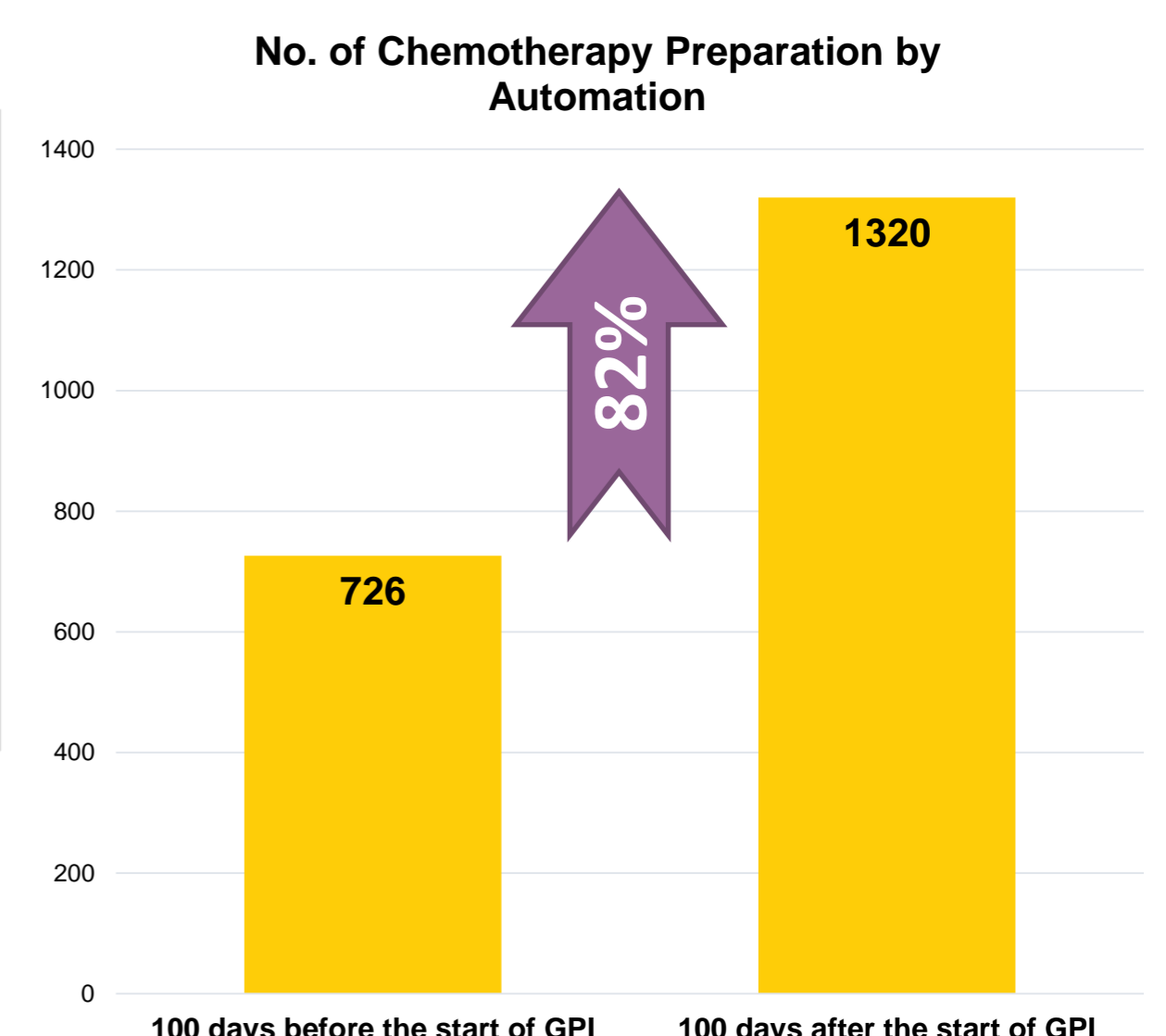
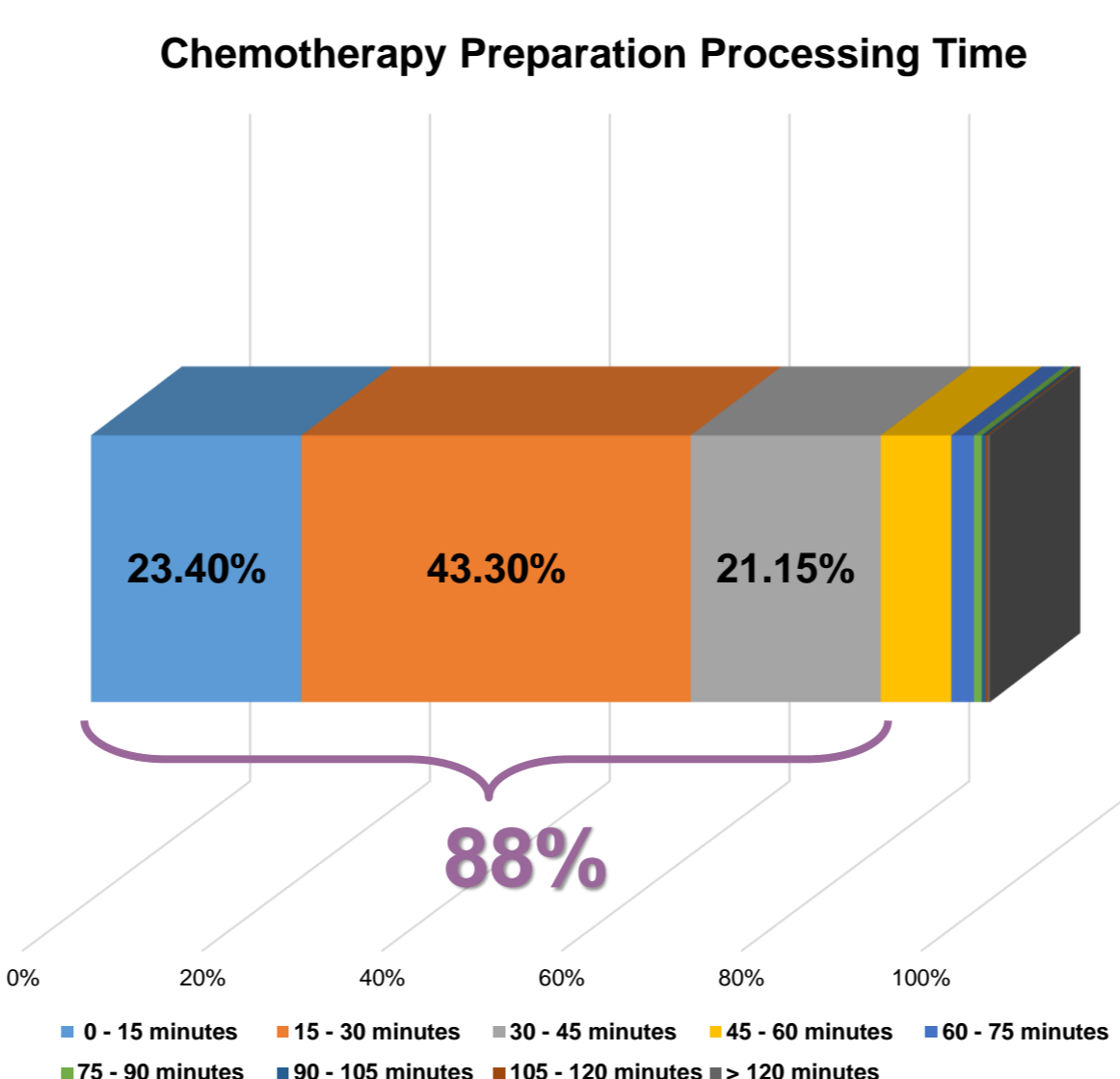
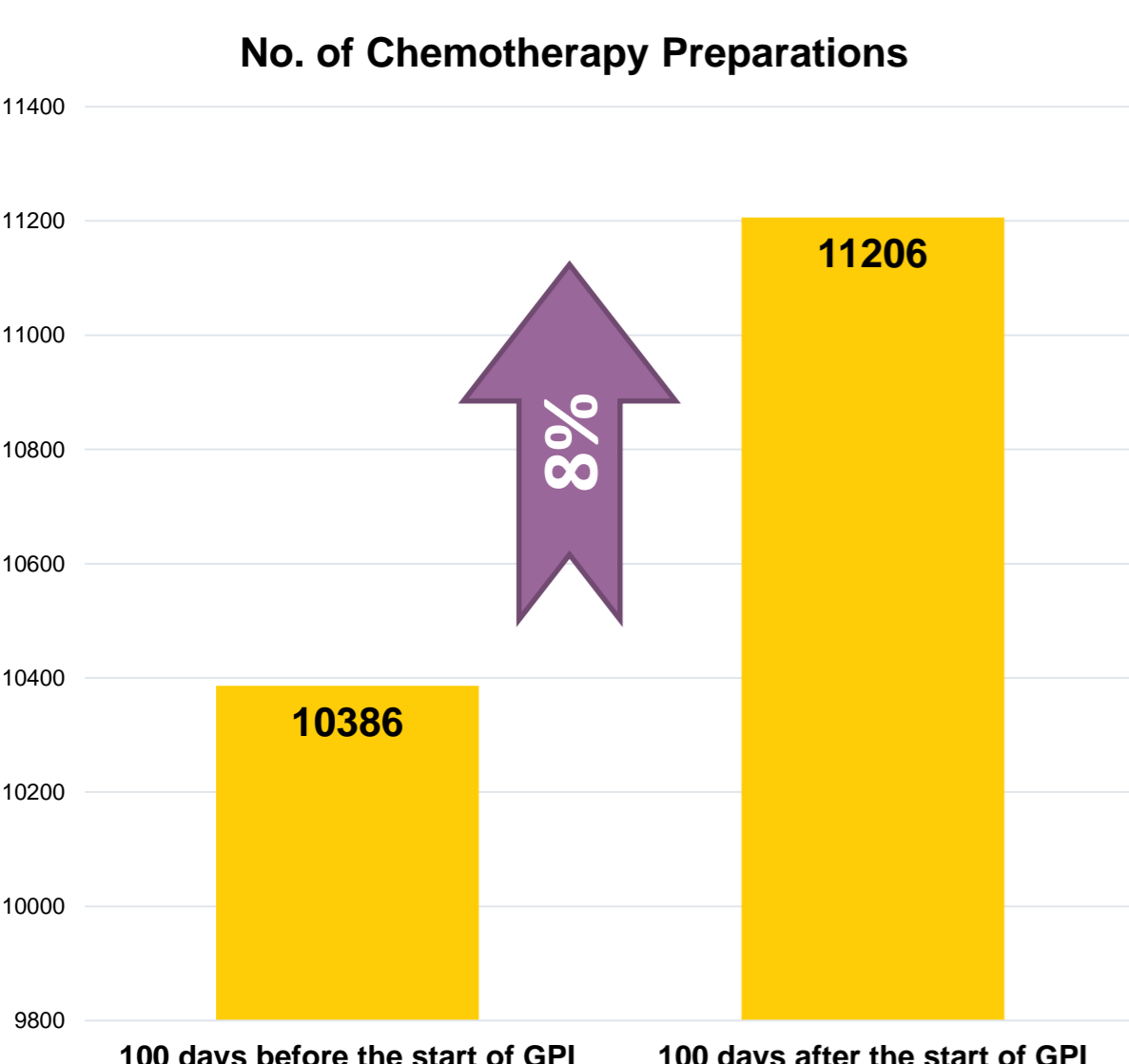


- A comprehensive educational and practical training was conducted, proceeded by staff rotation with the newly trained team. Every three weeks a new pharmacist trained and assigned to CTPU.
- Raw materials stores were rearranged for better accessibility and diminishing unnecessary staff movement.
- Carrying out of new two steps; a **staging step** as the first independent double-check before the start of compounding, and for assembly of raw materials and supplies required for compounding. In addition to a **verification step** as the second independent double-check upon compounding, using bar-code scanners, touchscreens and cross-checking with the chemotherapy order to assure the quality and integrity of the finished product.
- Production workload were restructured over three parallel line of manual stations and one automated preparation unit.
- Pharmacy Information System (PIS) screens were customized to give a first and second audio-visual alarms after 30 and 45 minutes of transcription time respectively.
- Chemotherapy sessions appointment system were established to assess the daily chemotherapy compounding needs from CTPU in advance with an incremental increase of production capacity to reach 100~120 patients/day or 180~200 preparations/day.



## What has been achieved?

- Number of preparations compounded by CTPU **was increase by 8%**, where **more than 43%** of preparations were validated to release **between 15 & 30 minutes**, and approximately **88%** of preparations were delivered **in less than 45 minutes**.
- Number of preparations by automation **was increased by 82%**, Furthermore, all production incidences has been completely eliminated after full implementation of final verification and validation step.



The new workflow **has increase the workload capacity with less production errors and zero incident reports**. Patient experience was improved by comparable preparation time to other international Pharmacy Workload Unit and average time required per patient visit.

## What next?

- Improve the "Staging Step" by PIS visual identification of products, raw materials, supplies and drugs needed for preparation.
- Full integration between Hospital Information System (HIS), PIS and Computerized physician order entry (CPOE) to facilitate the "Transcription and Preparation Step".
- Combine PIS pooled data in order to plan ahead for a "Pre-Preparation/Batch Preparation".
- Equip CTPU with new two manual preparation units to increase the production capacity especially during peak hours', hence shorter average production time.