

Project for shortening the preparation time for endoscopic examinations in the hepatobiliary-gastroenterology ward

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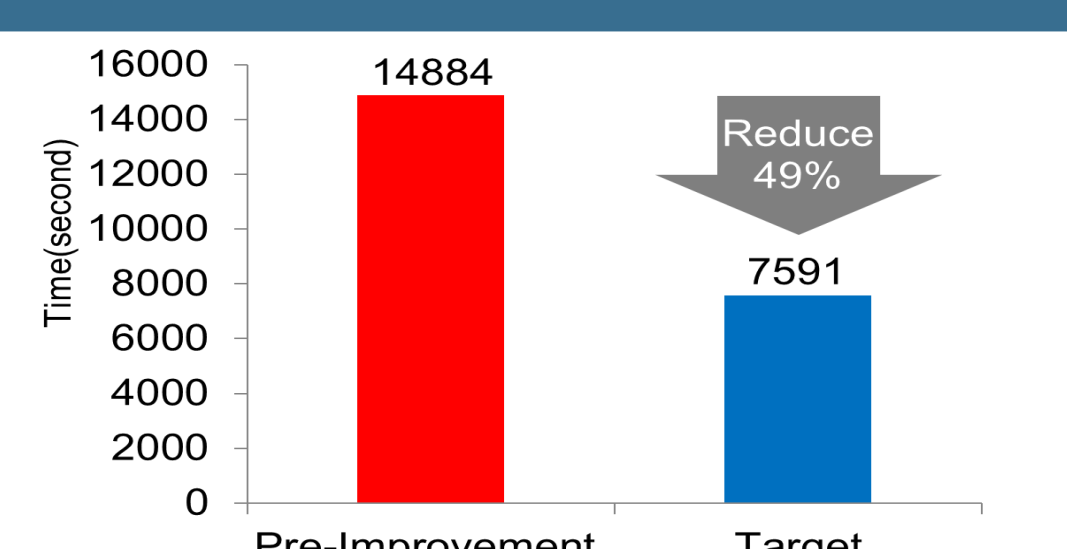


INTRODUCTION

The **hepatobiliary-gastroenterology (HBG)** ward has a **high volume of endoscopy examinations** due to specialized characteristics. According to statistics for 2021, the unit's personnel assisted in **1,087** endoscopy examinations, which averaged four cases per day. Because of the wait time for scheduling and the need to communicate by telephone between units, the **administrative process is cumbersome and adversely affects the quality and efficiency of work**. This **quality control circle** aims to **streamline the preparation process for endoscopic examinations of patients** at the ward.

AIM

The goal is to reduce workflow time by **49%** compared to the pre-improvement period, from an average of 14,884 to **7,591 seconds(sec)**.



METHOD

The process is divided into two categories, “**Scheduling Operations**” and “**Completion of Examination Delivery Operations**,” involving physicians, nurses, service staff, and the examination area. A process analysis shows a total average time of 14,884 sec.

Flow Process Chart

Scheduling Operations				Completion of Examination Delivery Operations			
Job description (current status)				Job description (current status)			
Pre-examination tasks				Day-of-examination preparations			
1. Examination staff receive orders, upload the schedule, and send confirmation	○	⇒	□	1. Examination staff notify that the patient can be sent, and the nurse receives the message	○	⇒	□
2. Nurse waits for the printer to output the confirmation	○	⇒	□	2. Nurse prepares the items and calls the transport staff	○	⇒	□
3. Nurse receives the confirmation, finalizes the schedule, and reviews the preparation items	○	⇒	□	3. Wait for transport staff to pick up the medical records at the nursing station	○	⇒	□
Issuance of medical orders				Patient transport for examination			
4. Nurse informs the physician to issue preparation orders	○	⇒	□	4. Transport staff pick up the medical records and confirm patient with nurse	○	⇒	□
5. Wait for the physician to issue orders	○	⇒	□	5. Transport staff confirm patient identity	○	⇒	□
6. Physician provides a complete medical order for preparation and a consent form	○	⇒	□	6. Leave patient room and go to elevator	○	⇒	□
Job code				Job code			
Current status				Current status			
Frequency				Frequency			
Time				Time			
○ Operation	4	2378	NA	○ Operation	5	423	54
⇒ Transportation	0	0	3706	⇒ Transportation	2	340	236
□ Inspection	0	0	502	□ Inspection	0	0	526
D Delay	2	11115	1876	D Delay	2	628	80
▽ Storage	0	0	2409	▽ Storage	0	0	194
Time (second)				Time (second)			
13493				1391			

Intervention

Several factors contribute to prolonged time consumption, including:

- (1) It takes a long time from scheduling to notifying physicians;
 - (2) Physicians take a long time to complete prescription orders;
 - (3) It takes a long time for the nurse to prepare for the examination;
 - (4) Transport staff delayed retrieving medical records from the nursing station after the call.
- To reduce unnecessary time wasted, these **four aspects** of the process are examined to identify possible areas for improvement.

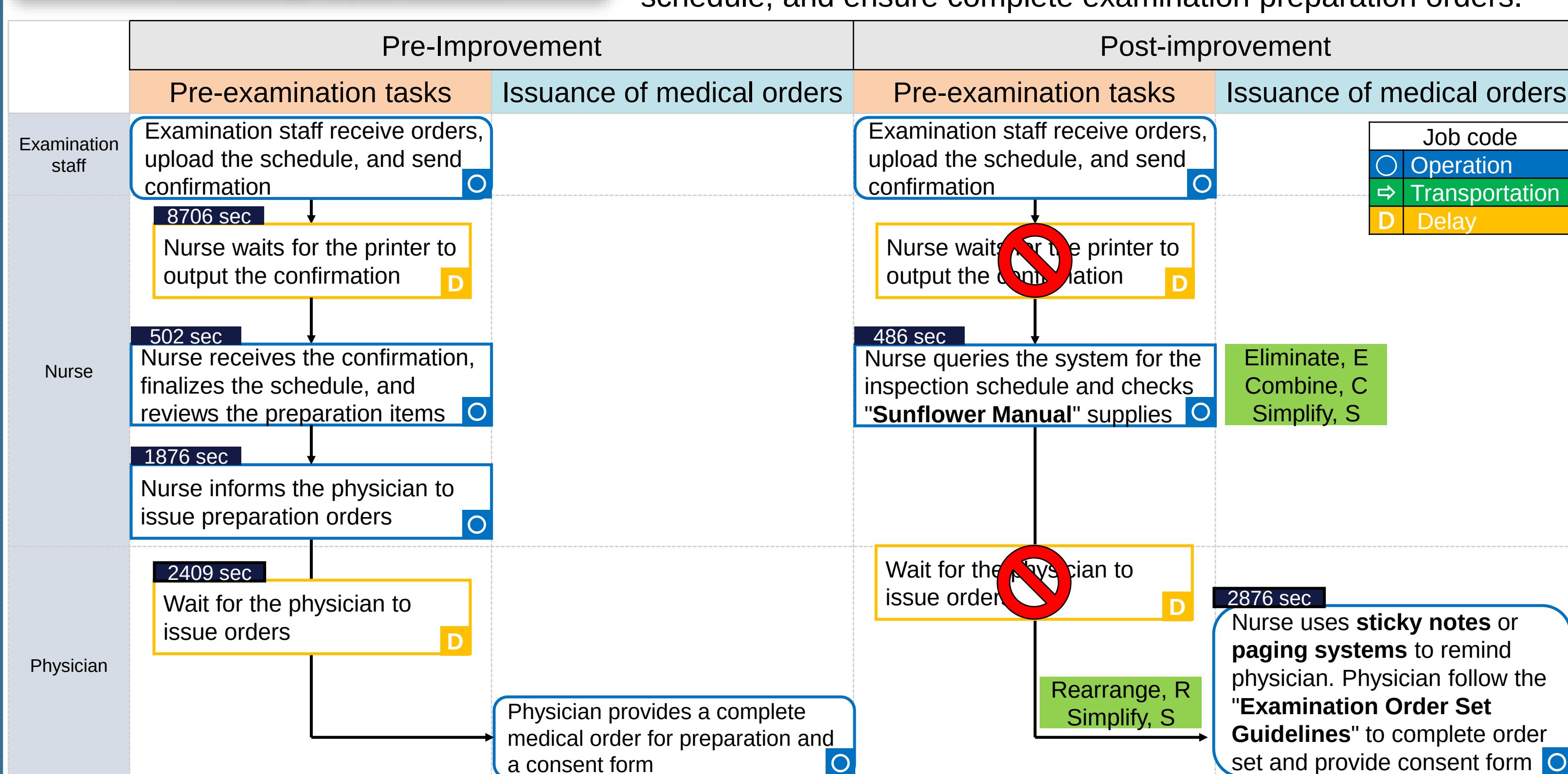
Strategy Name	Description	Figure
Working Manual	1. Create guidelines and precautions for examination preparation materials, forming a "Sunflower Manual" for reference. 2. Schedule uploads to the system immediately after scheduling an examination.	
Prescription Sets	1. Ensure consistency between the examination preparation checklist and the content of examination order sets. 2. Develop a "Examination Order Set Guidelines" for physicians.	
Memory Phrase and Note for transition	1. Incorporate examination checklist duties for all shifts into the training manual. 2. Create a " Common Examination Phrases " list for nursing handover notes. 3. Use sticky notes or paging systems to remind physicians to issue complete examination order set. 4. Use pneumatic tubes for urgent medication delivery.	
Transport Staff System	1. Night shift nurses confirm examination times in the transport staff system on the same day. 2. Endoscopy room physicians notify the preparation for the next patient when assessing that the examination for the current patient is about to conclude.	

RESULTS

Process improvement involved eliminating, combining, rearranging, and simplifying methods with team collaboration. The preparation reduced waste by **one operation** and **two delay** times. This improvement involved the implementation of **one Eliminate**, **one Combine**, **two Rearrange**, and **three Simplify**. The average time spent has been significantly reduced from 14,884 sec to **4,477 sec**(3,362 sec for scheduling operations and 1,115 sec for completion of examination delivery operations), **reaching the targeted goal**.

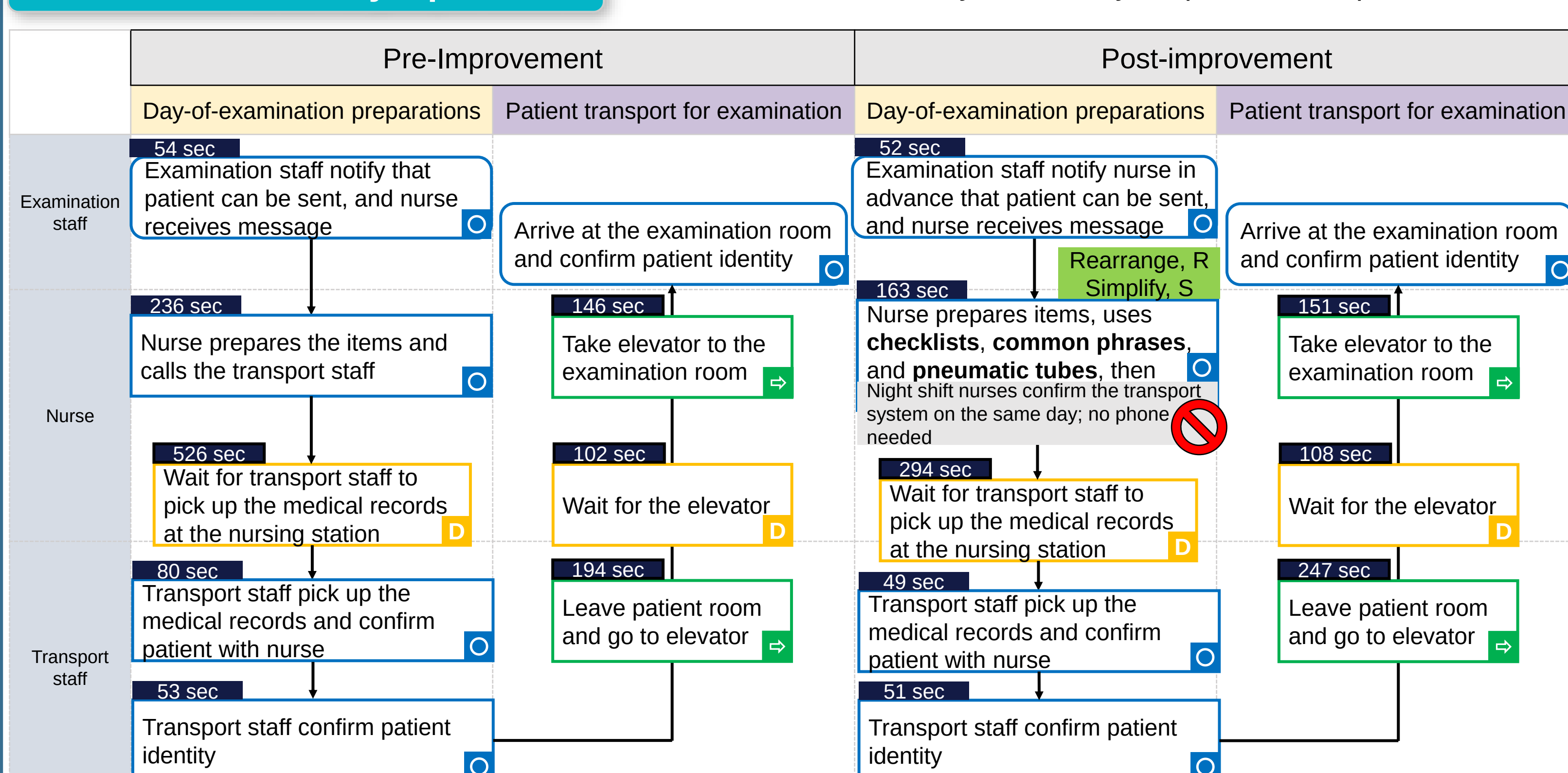
Scheduling Operations

Definition: Examination staff receive examination orders, upload the schedule, and ensure complete examination preparation orders.



Examination Delivery Operations

Definition: On exam day, staff notify for patient transport until arrival.



The **effectiveness** has been maintained from October 24, 2023, to November 6, with the average time further reduced to 3,314 sec, **consistently within the targeted range**.

Scheduling Operations							
Job code		Pre-Improvement		Post-improvement		Effectiveness	
		Freq.	Time	Freq.	Time	Freq.	Time
○ Operation		4	2378	3	3362	3	2198
⇒ Transportation		0	0	0	0	0	0
□ Inspection		0	0	0	0	0	0
D Delay		2	11115	0	0	0	0
▽ Storage		0	0	0	0	0	0
Time (second)		13493		3362		2198	
Completion of Examination Delivery Operations							
Job code		Pre-Improvement		Post-improvement		Effectiveness	
		Freq.	Time	Freq.	Time	Freq.	Time
○ Operation		5	423	5	315	5	303
⇒ Transportation		2	340	2	398	2	389
□ Inspection		0	0	0	0	0	0
D Delay		2	628	2	402	2	424
▽ Storage		0	0	0	0	0	0
Time (second)		1391		1115		1116	

CONCLUSIONS

Implemented countermeasures and improvements have optimized workflows, reducing administrative complexity, enhancing efficiency, and improving patient care quality. Using information systems for scheduling reduces paper waste and costs.

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