

DIGITIZING ELECTROCARDIOGRAM RHYTHM STRIPS

One Year Post-Implementation Outcomes

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DESCRIPTION

In 2024, a project was initiated to digitize Electrocardiogram (ECG) rhythm strip interpretation and transmission directly to Electronic Medical Record (EMR) accounts for admitted patients on a 56 bed Intensive Care Unit (ICU) and 64 bed Cardiology Units at Humber River Health (HRH). The planning and readiness phase focused on developing digital workflows, system integration, and staff training to replace the manual process of printing, labeling and scanning ECG rhythm strips. One year post-implementation follow-up focused on evaluating the impacts of digitization on workflows.

OBJECTIVE

To evaluate the impact of implementing a fully digital ECG rhythm strip workflow on efficiency, data quality, and staff satisfaction.

ACTIONS TAKEN

- Designed and deployed a digital workflow enabling bedside capture and automatic upload of ECG rhythm data directly in the EMR.
- Integrated digital tools to support interpretation and structured documentation of ECG rhythm component.
- Provided education and on-unit support during phased roll-out to ensure adoption and consistent use. A dedicated audit Registered Nurse for six weeks validated ECG transmission and EMR documentation standards providing real-time feedback or education as required.
- Monitored documentation compliance, staff feedback, and workflow efficiency data to conduct multiple Plan-Do-Study-Act cycles and a Failure Mode and Effects Analysis.
- Established performance monitoring dashboards and feedback loops with clinical and informatics teams.

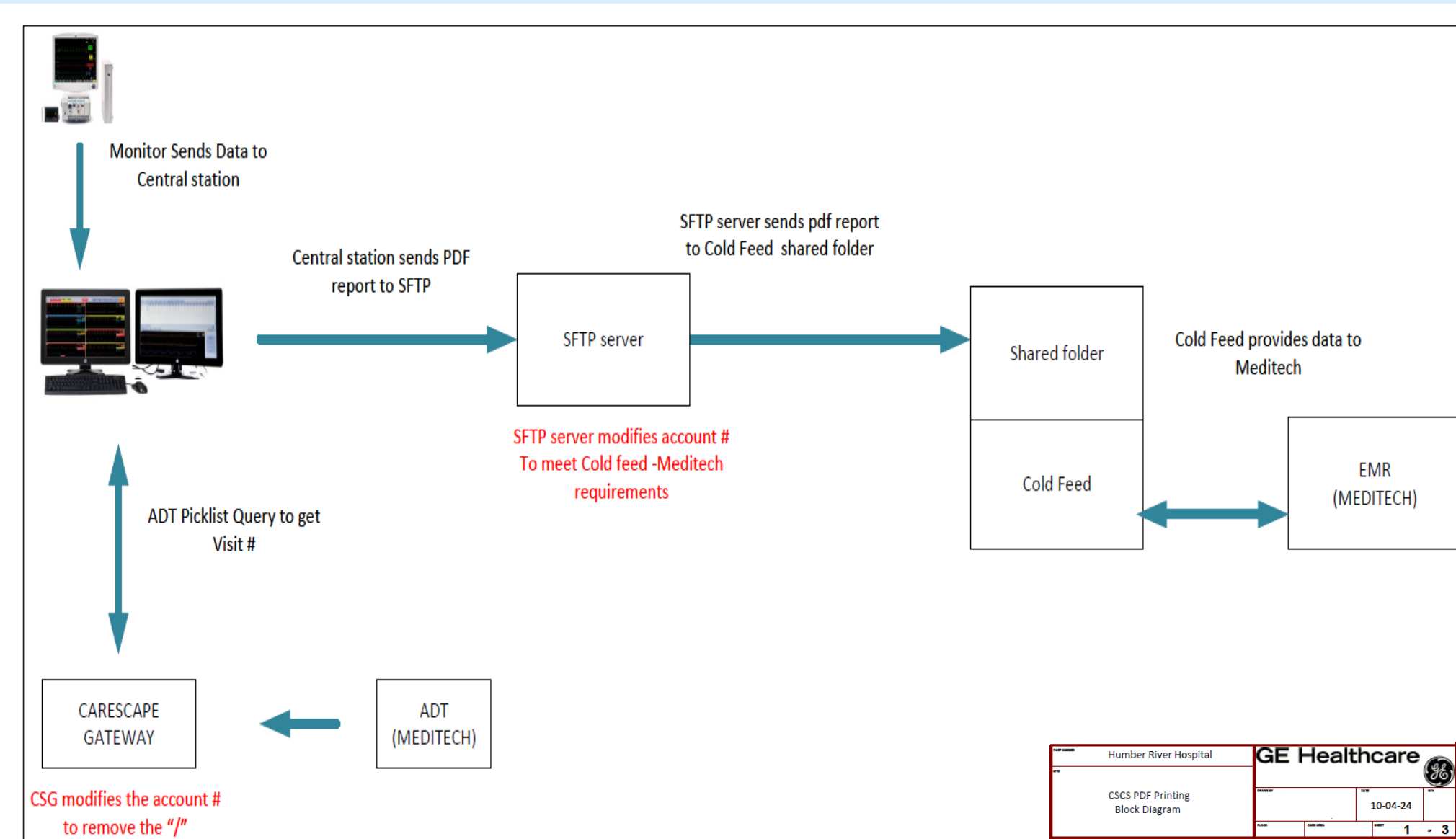


Figure 1. PDF to EMR Digital Workflow.

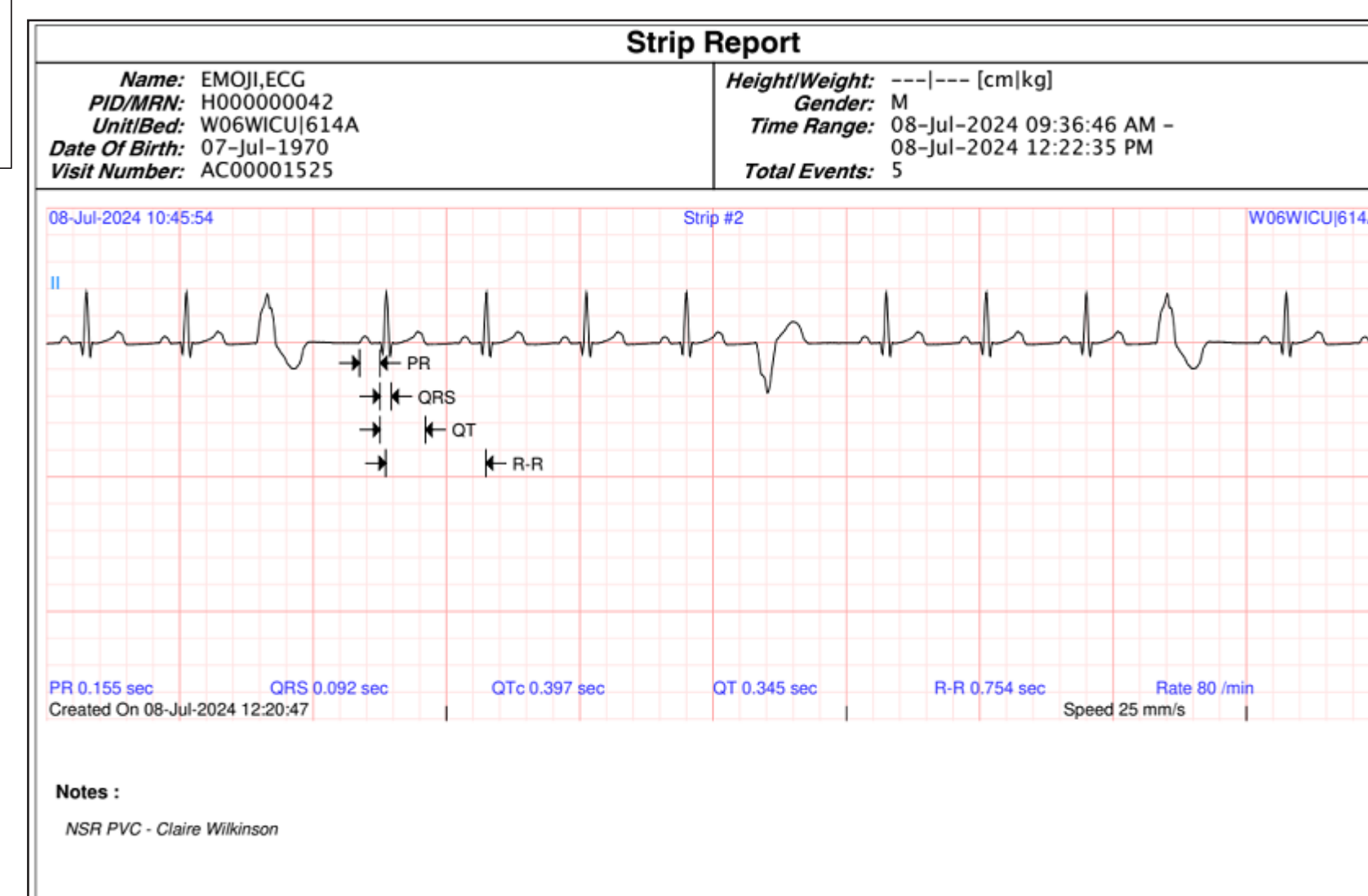


Figure 2. Example of PDF Rhythm Strip.

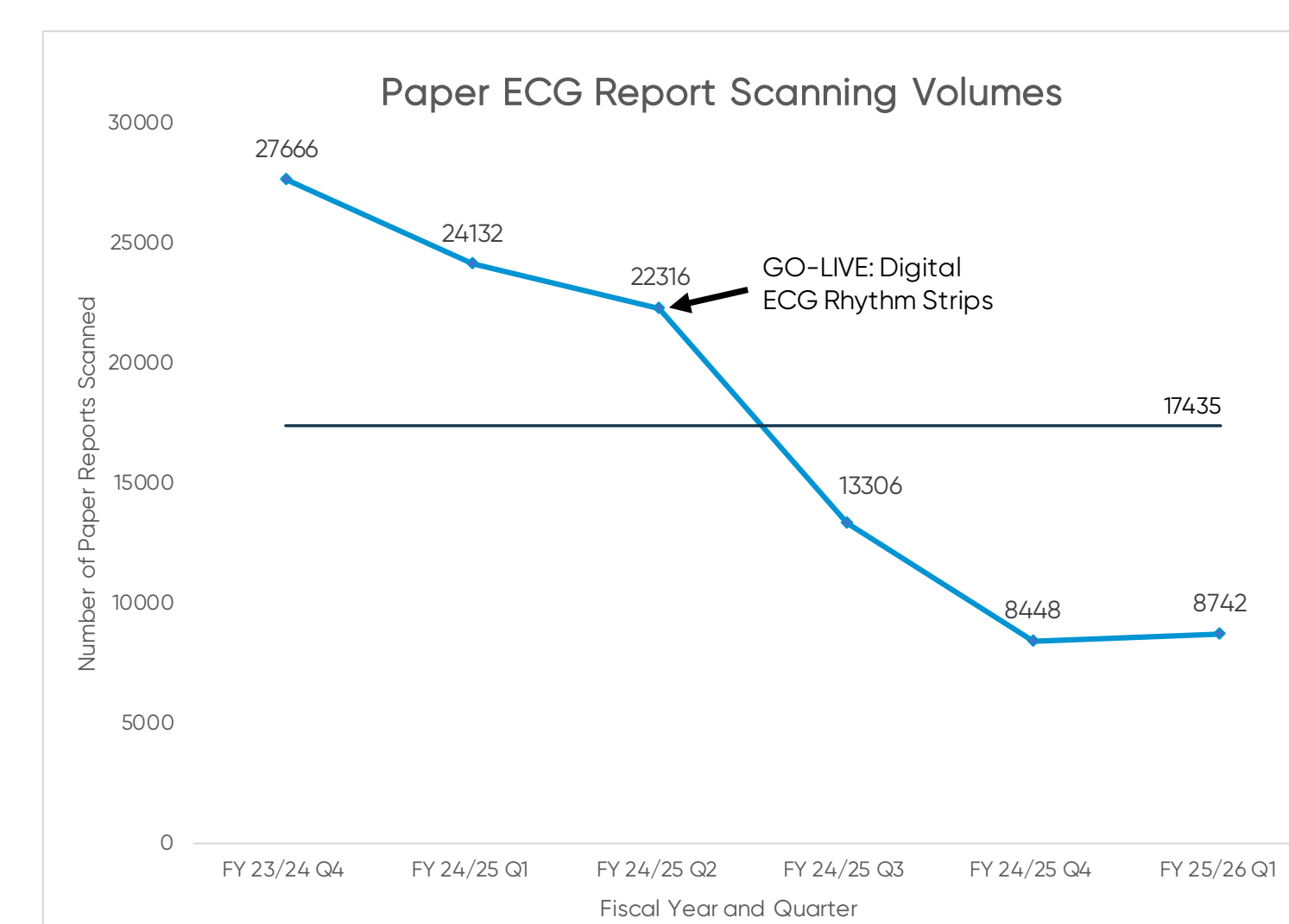


Figure 3. Paper ECG Report Scanning Volumes to EMR on patient discharge. Since implementation, post-discharge ECG scanning dropped 68.4%, improving workflow inefficiencies and reducing resource utilization.

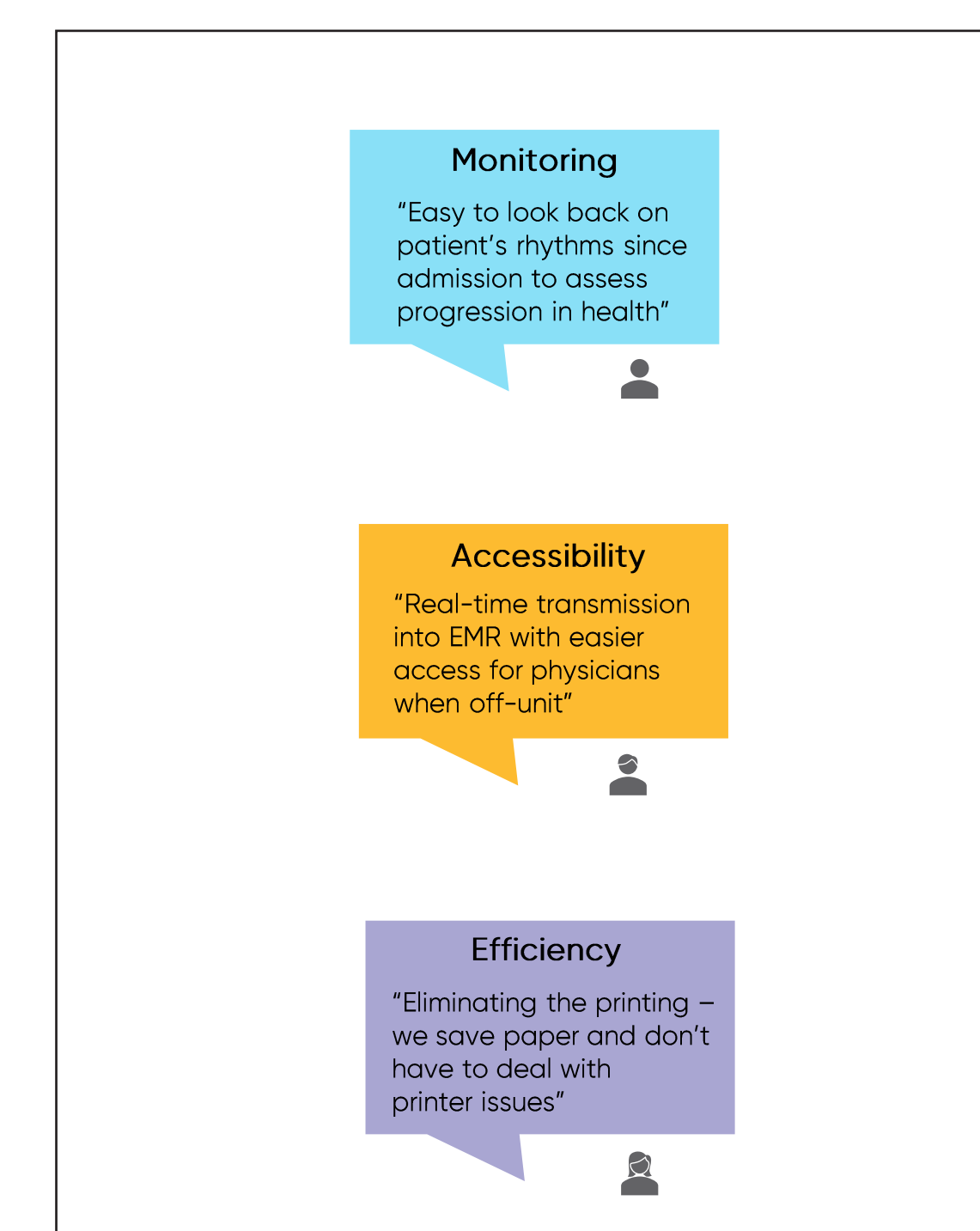


Figure 4. Staff feedback was overwhelmingly positive, selected comments highlight user experiences.

SUMMARY OF RESULTS

Since the go-live on August 20, 2024, results on various metrics were collected:

1. Documentation Compliance: Successful ECG transmissions increased from 30% to 98% during implementation, out of an estimated 420 ECG strips transmitted daily.
2. Staff Feedback and Adoption: A staff satisfaction survey was completed by 114 nurses:
 - 88% reported being satisfied with new process.
 - 82% noted a reduction in documentation.
 - 96% reported they received adequate training prior to go-live.
3. Workflow Efficiency Gains: Since implementation, post-discharge ECG scanning dropped 68.4%, cutting paper, ink, staff time, and improving workflow.

LESSONS LEARNED

Monitoring metrics ensured project's success in streamlining nursing workflow and enhancing staff satisfaction. Reducing paper waste and associated costs of resources for manual scanning into the EMR by transitioning from paper-based to fully electronic workflow aligns with HRH's digital hospital strategy.

