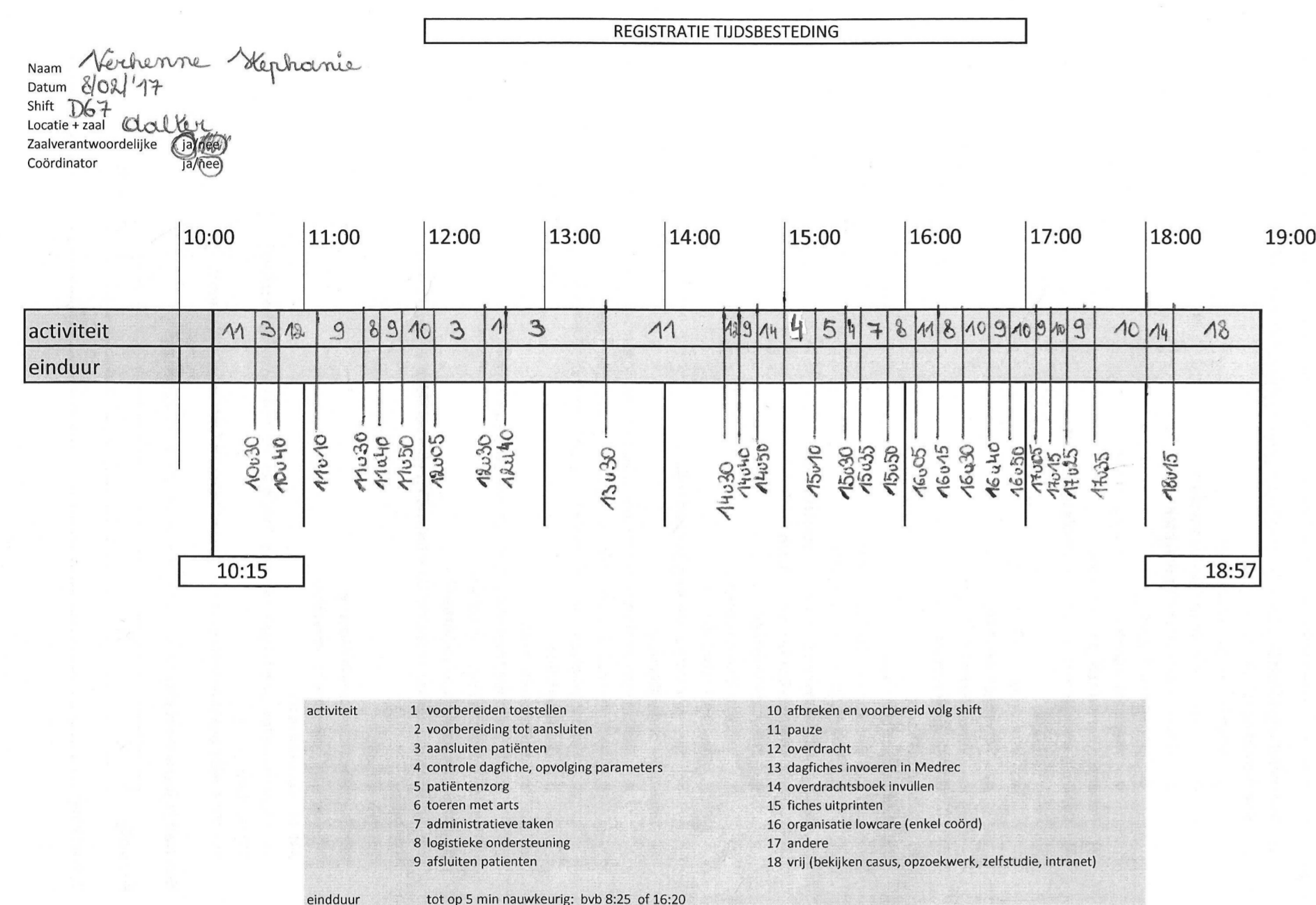
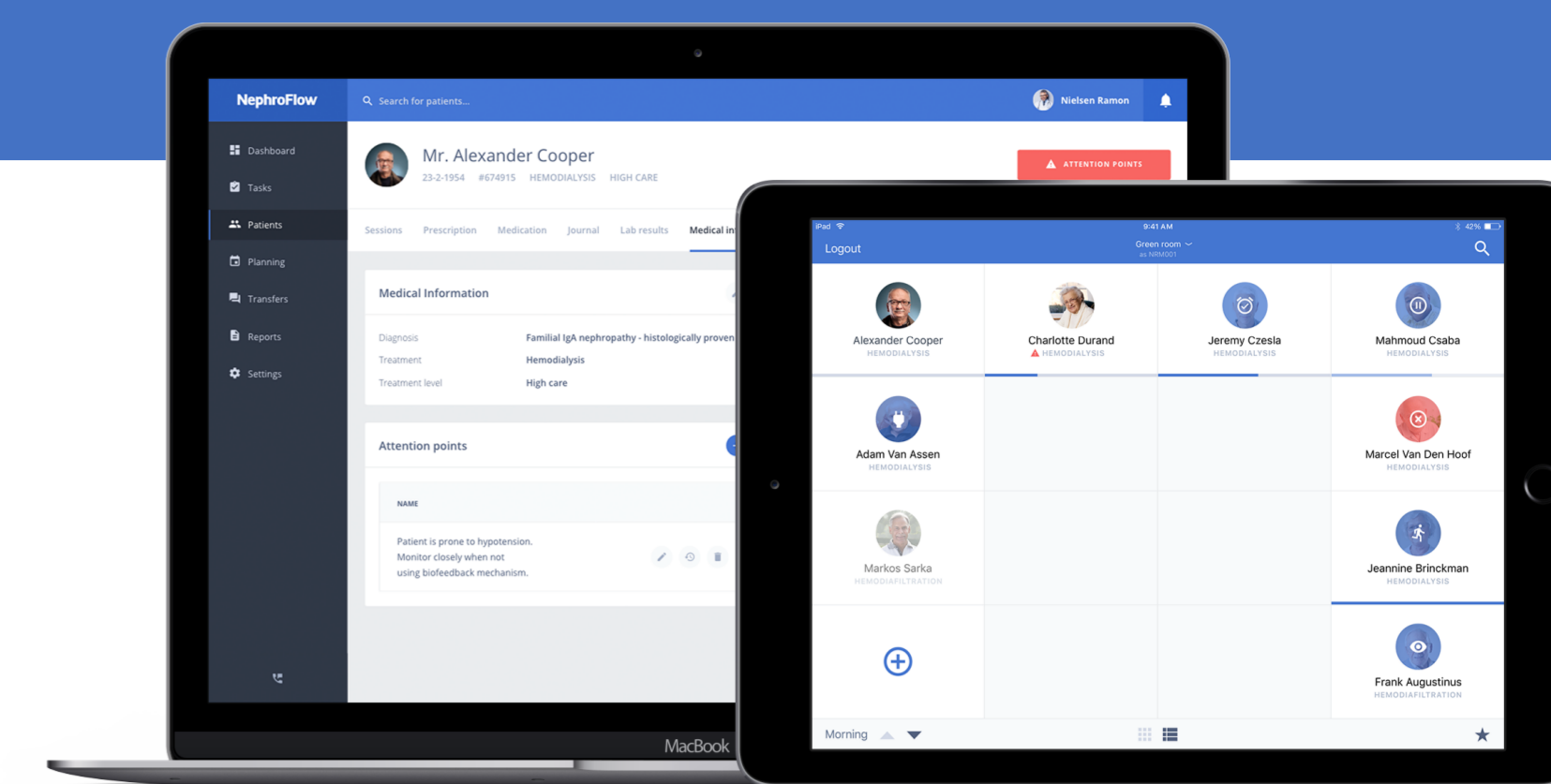


INTRODUCTION AND AIM

The aim of the study was to evaluate the benefits and both direct and indirect consequences of introducing a process oriented software platform in the daily follow-up of dialysis treatment. We focused on 3 areas; workflow efficiency, safety according to international standards and perceived quality of care.



METHODS AND MATERIALS

Prior to introducing the platform, 2 analysis were made in a dialysis ward with 45 nurses and 400 dialysis sessions per week.

1. An objective time registration of all nurse activities, divided in 16 different categories, was made during 2 weeks. Real-time registration during work reduced bias by delayed registration.
2. All health workers in charge of the dialysis patients were surveyed on their perception of workflow efficiency, safety and quality of care.

6 months after introduction of the platform a comparative analysis was performed.

RESULTS

Analysis of the time registrations revealed a mean time spent of 60,5 min per shift in performing following activities:

- manual check and registration of dialysis parameters (35 min)
- input of patient treatment information in the main medical files during and after treatment (11min)
- maintenance of written patient briefing for colleagues (11min)
- printing and organizing paper files for use during dialysis treatment (3 min)

The platform's intent was to eliminate these activities after introduction by providing direct bedside registration and direct integration of dialysis parameters.

The questionnaires compared the perceived efficiency, safety and quality of care by health workers before and after introduction of the platform.

Satisfaction with distribution of administrative tasks during treatment shifted from 24% dissatisfaction and 46 % satisfaction to 0% and 76 % respectively. The percentage of, nurses who regularly or occasionally needed help from a colleague to complete all their tasks was reduced from 78 to only 54%.

Digitalizing all treatment parameters and information led to perceptions of easier access to relevant patient data, with 96 % claiming to find data easily to very easily whereas this was only 67 % before.

Safety regarding correct registration of administered medication has improved with 36% (54% to 90%). Digital registration also indirectly fulfilled requirements imposed by international accreditation bodies.

Overall perceived patient safety augmented from 94 to 98 %, which is attributed to the reduced risk of errors typically related to copying parameters and manual calculations.

Finally, there was a reduction from 70% to 18% in nurses' perception of administrative tasks getting in the way of patient care. The latter implies an augmentation of the quality of care for the patient, in accordance to the finding in former research that time spent for patients was one of the important criteria for quality of care perceived by patients themselves.

DISCUSSION

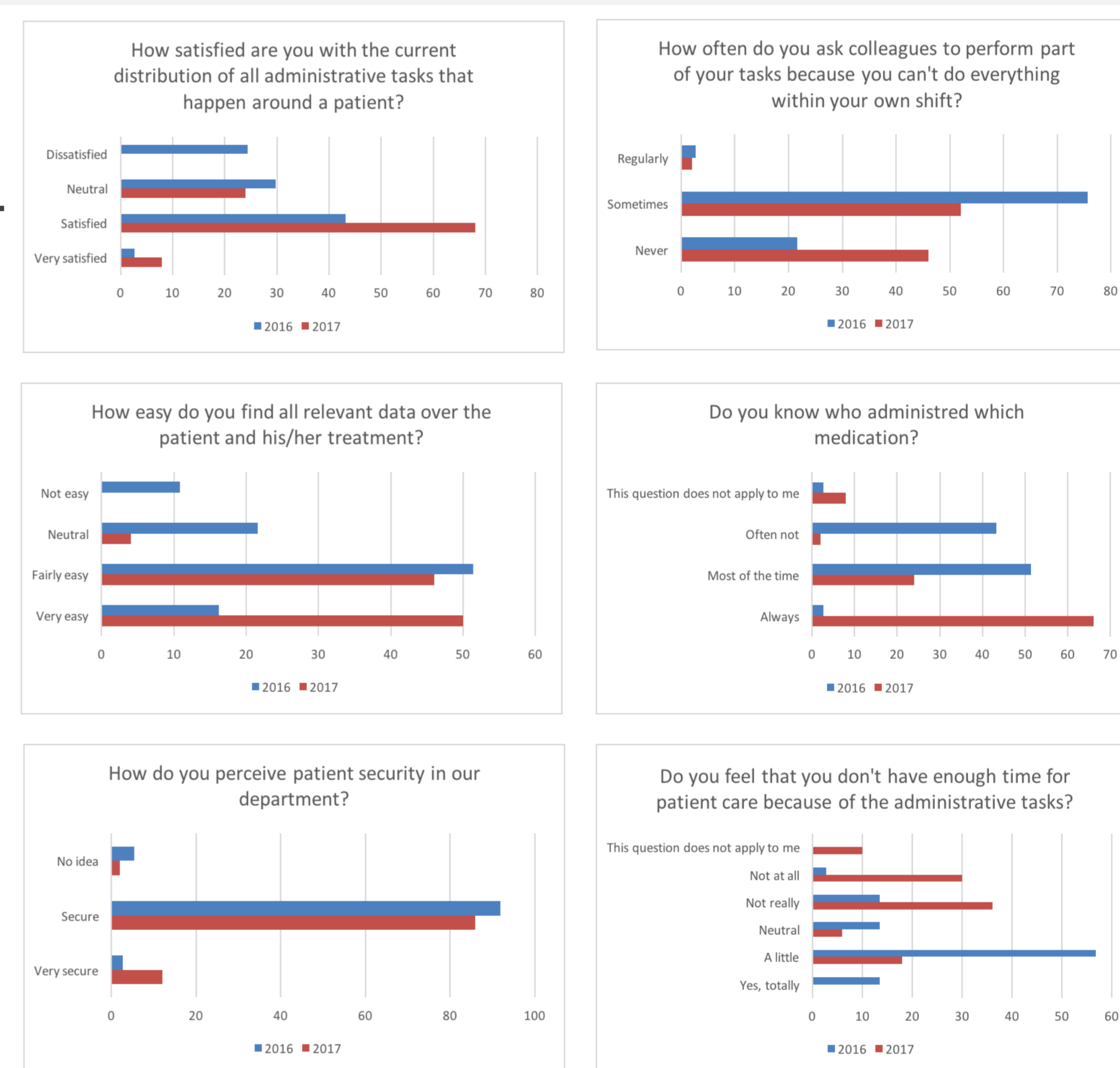
Preliminary results of the comparative analysis after introduction of the platform showed:

- A somewhat surprisingly persistence of the 'manual check and registration of dialysis parameters' activity in the time registrations after the introduction of the new platform.

This result can be nuanced and can easily be attributed to the fact nurses are still asked to check on the patients in order to avoid blind data acceptance.

Prior to the introduction this activity contained both checking AND the registration of data. After introduction this activity has solely clinical content.

- Proven total elimination of 25 min of administration.



CONCLUSION

Introduction of a dialysis platform which digitalizes the entire care process resulted in an administrative time reduction per nurse per shift of 25 min, due to the elimination of certain activities, and another estimated 15 min, due to the elimination of administrative tasks in other activities. This is combined with more centralized documented information of dialysis treatment.

This improved efficiency was clearly experienced by nurses expressing a greater satisfaction in distribution of administrative tasks and less need for help from colleagues to complete their daily tasks.

The elimination of manual process steps and written files also improved the overall patient safety, especially in relation to medication administration which resulted in fulfilling the requirements for guidelines and accreditations in dialysis treatment.

Finally, creating more time for the patient and easier access to relevant and structured patient treatment data can improve the quality of care.

