



Can automated hand hygiene monitoring improve compliance?

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BACKGROUND

- Hand hygiene is one of the most important tools to prevent transmission of pathogens.
- Direct observation is a common method used but limited by the Hawthorne effect and inter-observer bias.
- Sani nudge is an electronic monitoring system developed as part of a national innovation collaboration between Bispebjerg and Frederiksberg Hospitals, Aarhus University Hospital, The Technical University of Denmark and Sani nudge.
- We aimed to investigate the effect of nudging and data-driven performance feedback on the compliance levels.

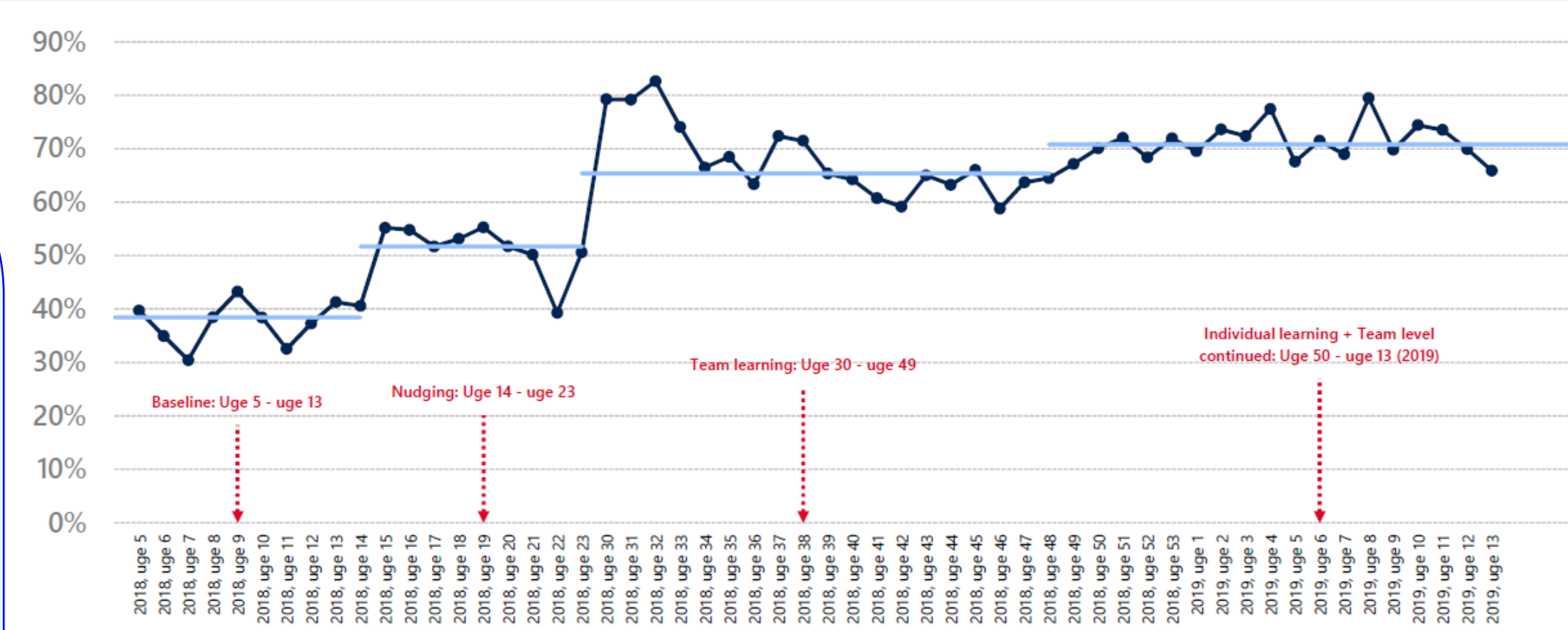


Fig. 1. Median hand hygiene compliance: All rooms (not patient rooms)

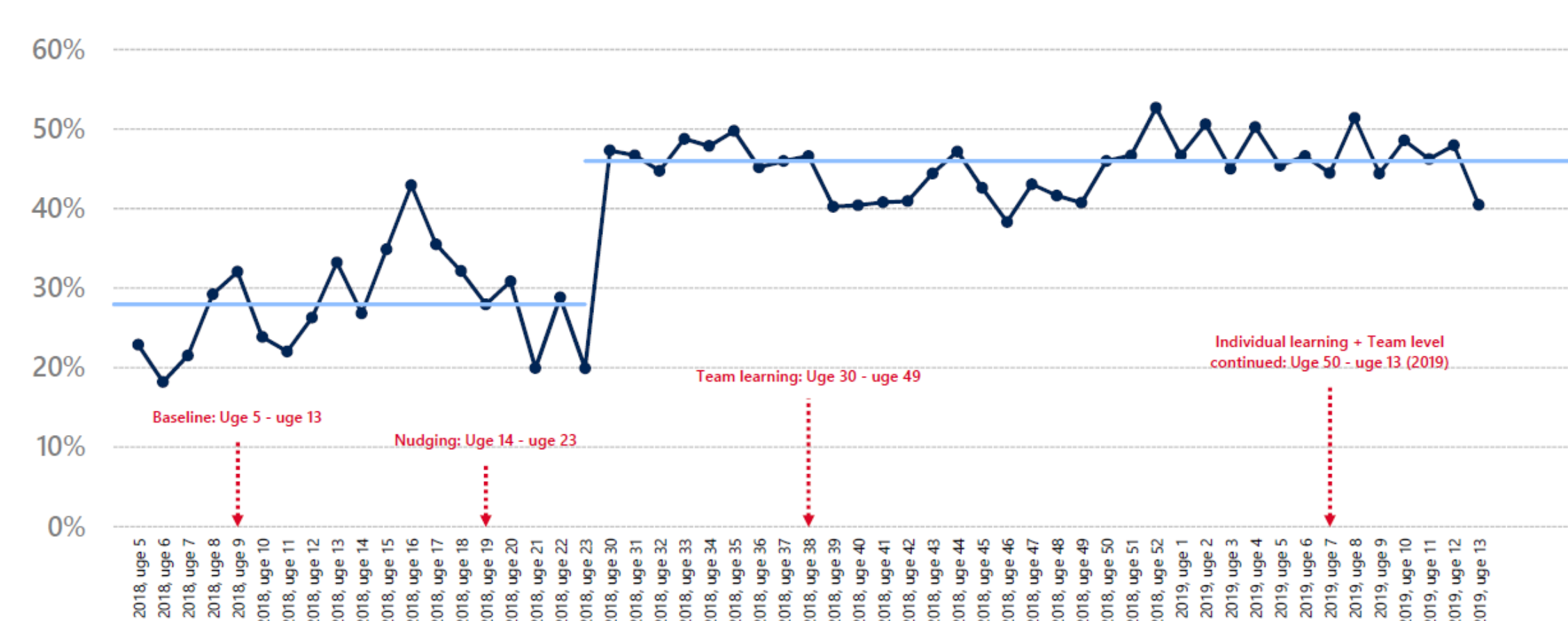
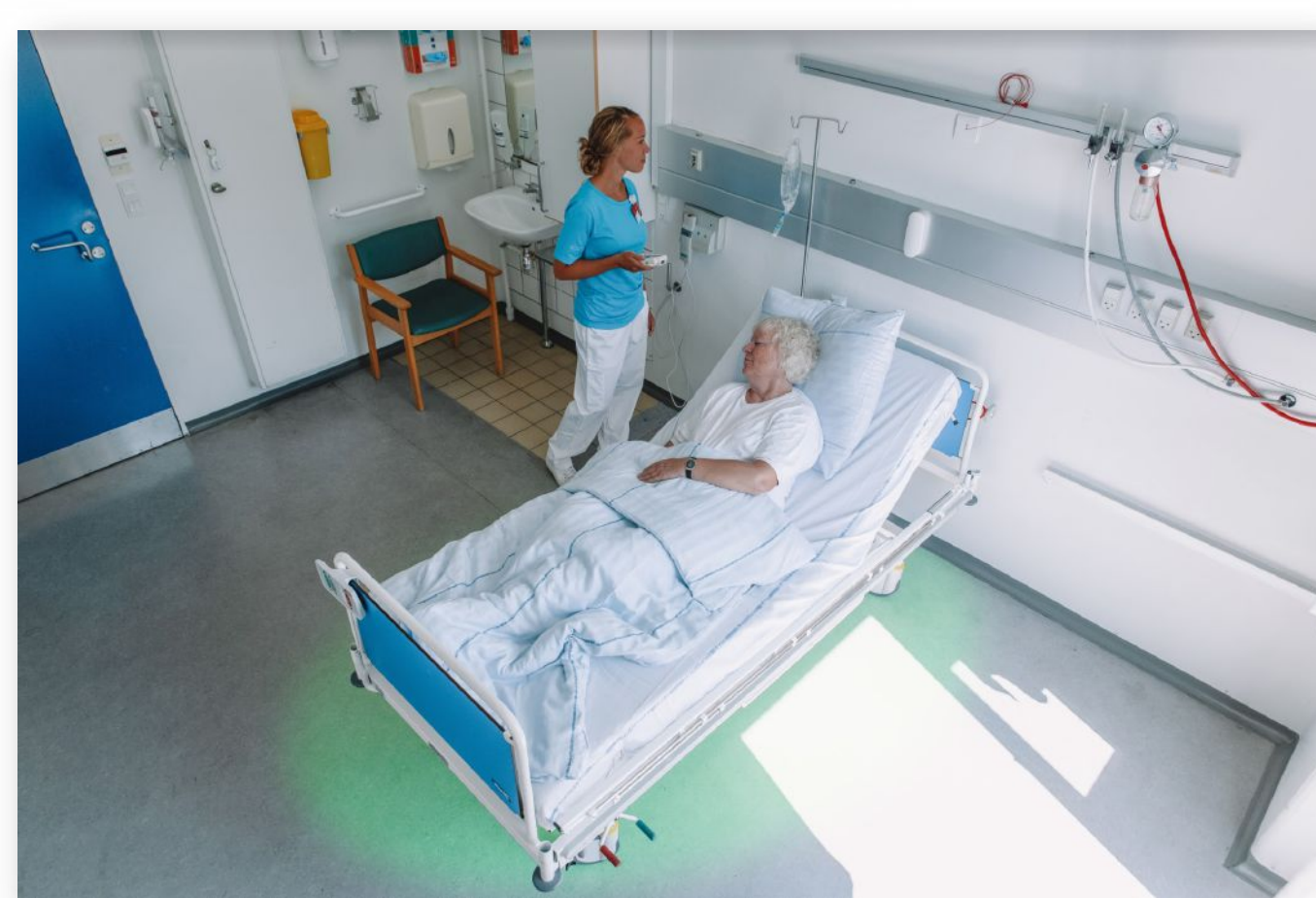


Fig. 2. Median hand hygiene compliance: Patient rooms



The sensors are placed on the existing alcohol-gel dispensers (sanitizers), staff name badges and above the patient bed.

RESULTS

- In total, 116,347 observations were registered with an average baseline compliance of 47%.
- All rooms (not patient rooms): The compliance increased from 39% to 52% (phase 2) and further to 66% (phase 3) and 71% (phase 4).
- In the patient rooms, compliance was lower but increased from 28% to 46% (median).
- When only looking at nurses receiving individual data, compliance increased from 72% to 80% (median).

METHODS

- The system monitors the hand hygiene performance continuously using sensors placed on the staff name tag, at the patient beds and on existing soap- and alcohol dispensers.
- Data was available on team level (stratified by profession), individual level and according to room type.
- The sensor algorithms are based on the WHO's "5 Moments for Hand Hygiene" but local guidelines could also be implemented.
- Data was provided by Sani nudge and the Data Unit of the hospitals.
- From the beginning of the study, it was decided that all staff was anonymized. Only those who wanted their own individual compliance level (phase 4) had data send directly to them in a secured way.

The study was divided into 4 phases:

1. Baseline period
2. Nudging (discrete visual lights appearing on sensors)
3. Nudging and weekly data presentation meetings
4. Nudging, weekly meetings and individual data (volunteers)

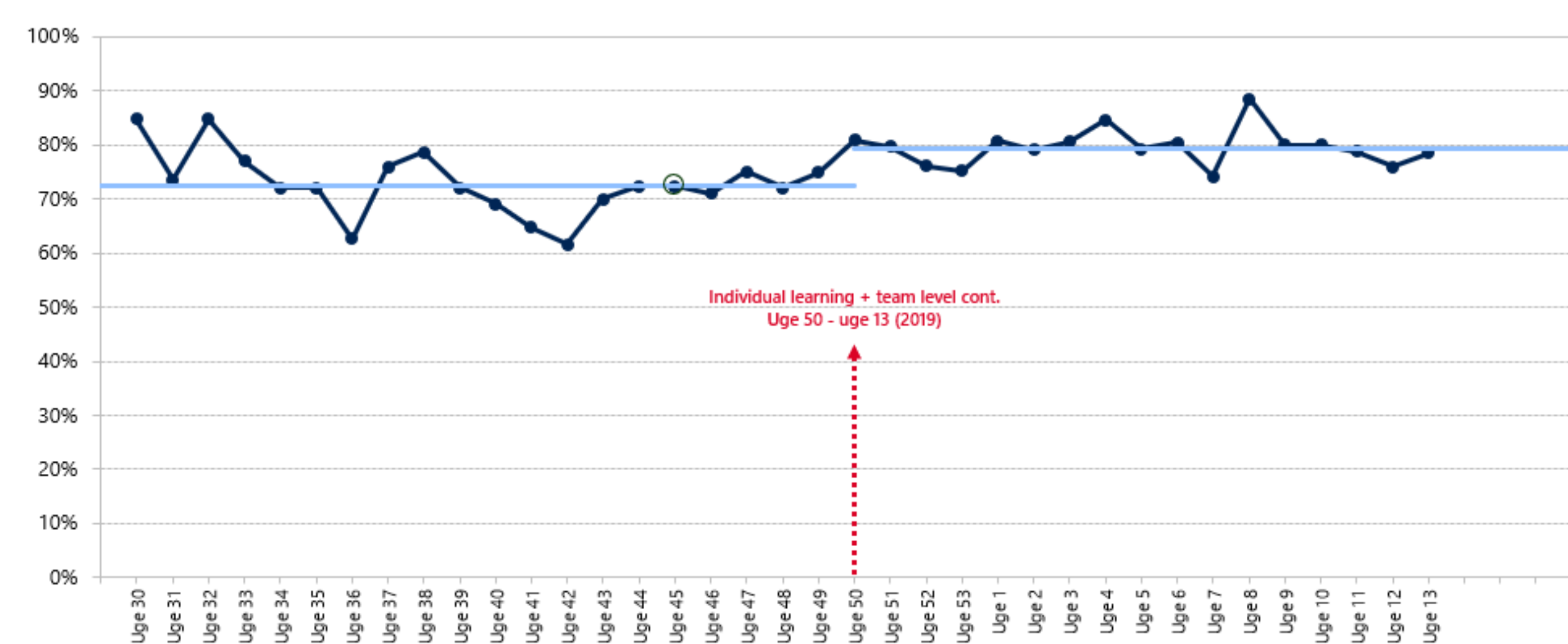


Fig.3. Nurses receiving individual data: Before vs. After presented as median hand hygiene compliance in All rooms (not patient rooms)

CONCLUSION

Hand hygiene compliance increases with nudging and data-driven performance feedback, especially when data is presented on weekly team meetings.

The staff, whom by the end of the study received individualized data, increased compliance even further.

The electronic monitoring system is a good method to increase compliance and the data-driven approach provides the hospital with non-biased, real-time data which helps the hospitals to identify critical areas with low compliance.