

The use of technology and information systems in a quality improvement project developed in a Portuguese Internal Medicine Department: innovative ideas from RITUAL project

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BACKGROUND

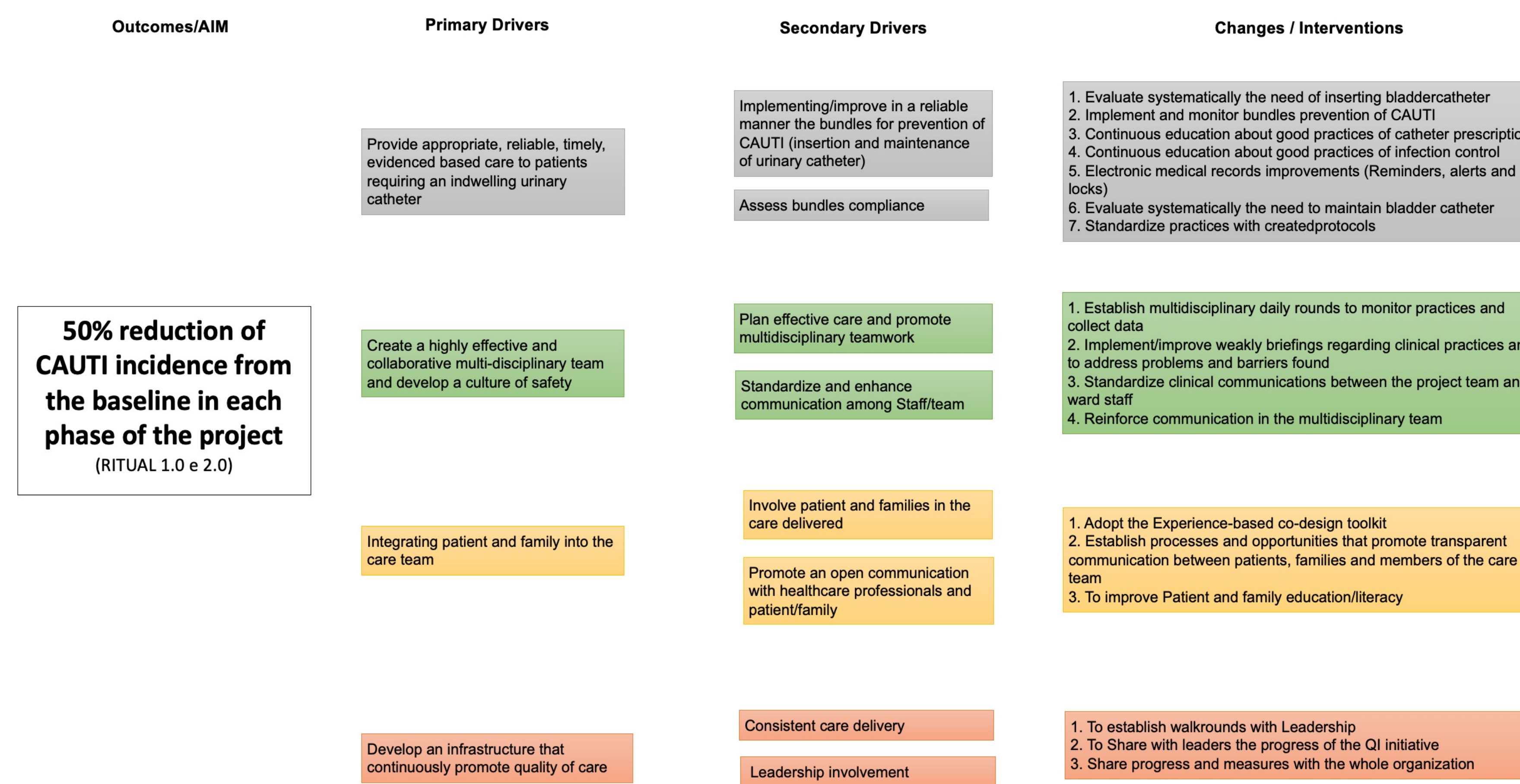
Healthcare associated infections (HAI) are an important and global health issue with great impact in morbidity, mortality^{1,2} and healthcare costs^{3,4} all over the world. Urinary tract infections (UTI) are recognized as the most common and preventable HAI outside the Intensive Care Units, as the majority of it are device use related.⁵

A cohort study performed in our Internal Medicine Ward has shown that one in four admitted patients underwent the placement of a bladder catheter, 36.5% of which in the absence of clinical criteria for that procedure. The CAUTI density rate found (14,5 infections/1000 catheter-days) was considered high.⁶ Most infections (72,1%) occurred in patients who did not meet criteria for device placement. The study results allowed us to foresee a set of problems related to good practices compliance (bladder catheter prescription, bundles of care, early device removal).

To mitigate this preventable problem, a quality improvement project (QIP), which was called RITUAL (*Redução da Infecção do Tracto Urinário associada à Algaliação*), was designed, using the improvement model of Institute for Healthcare Improvement.

Taking advantage that our hospital is a HIMMS EMRAM stage 7 certified hospital, we aimed to develop a tool that could allow us to monitor RITUAL project in real time, in order to reduce time wasted in manual data collection and to increase QIP efficiency.

ABOUT RITUAL QUALITY IMPROVEMENT PROJECT

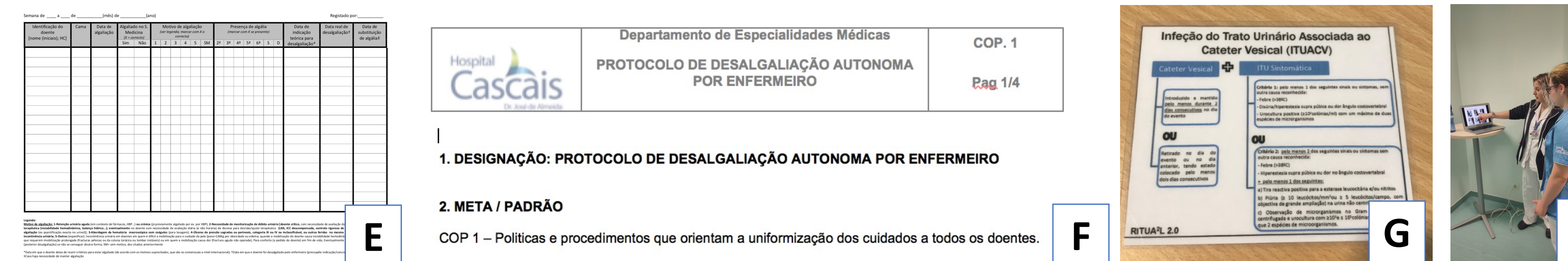


RITUAL KPI | CAUTI cumulative incidence rate (R), CAUTI density incidence (R), number of patients with bladder catheter (P), number of bladder catheter-days (P), bundles of care adhesion rate (P), number of patient/families involved in care (P), number of leadership visits (P), LOS (B), antibiotics consumption (B) and costs (B).

(CDC CAUTI case definition and metrics were used. Legend: (R): result indicator; (P): process indicator; (B) Balanced indicator



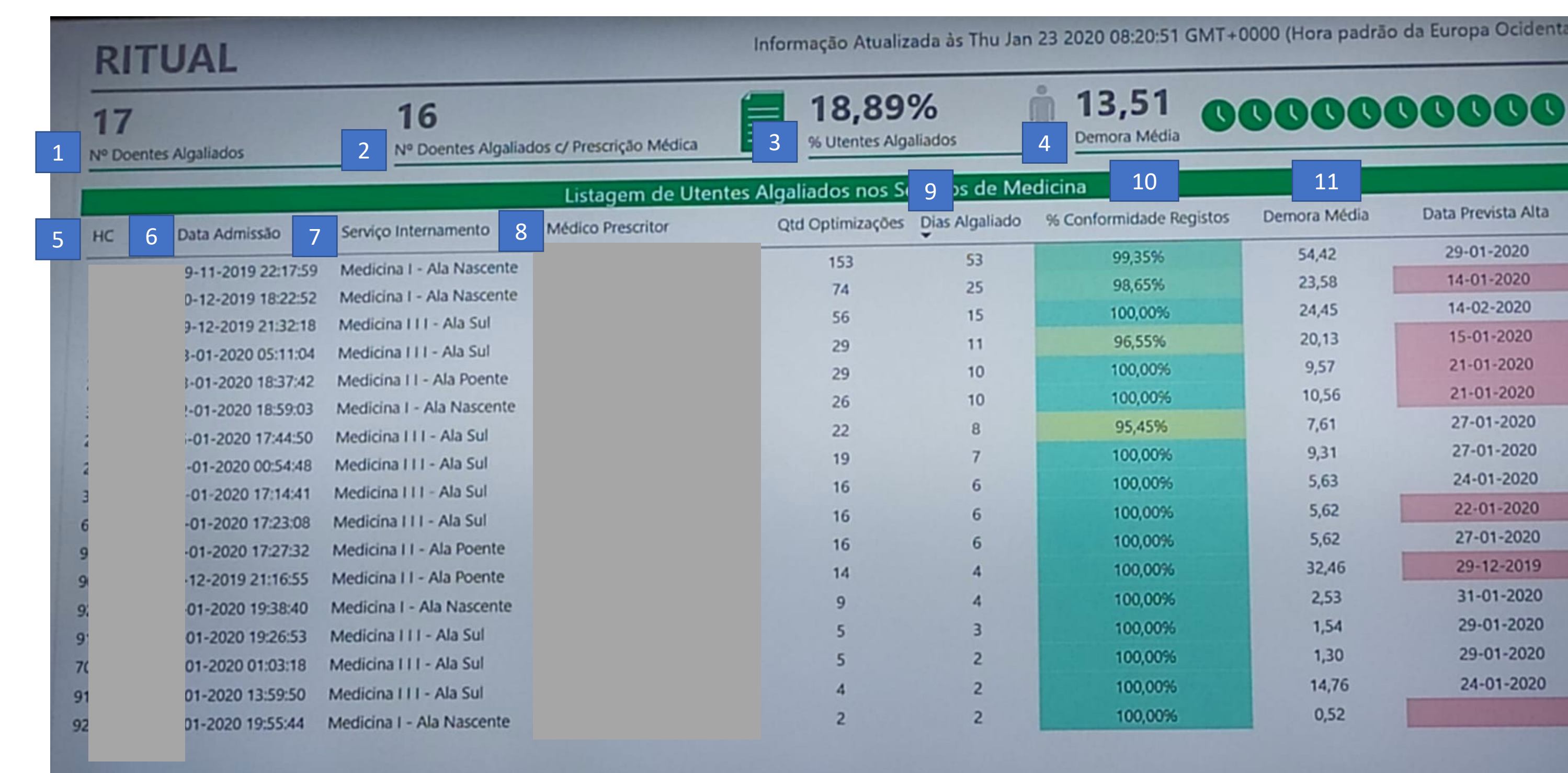
LEGEND: A. RITUAL kick-off hospital session; B. Daily rounds at the ward for data collection and practices monitoring; C. Weekly briefings with the multidisciplinary team; D. Communicating and rewarding the clinical team for the results achieved



LEGEND: E. Data collection sheet; F. Clinical protocol for bladder catheter withdrawal; G. CAUTI diagnosis criteria pocket guideline for doctors; H. Continuous education about best practices

ONE PROBLEM, ONE INNOVATIVE IDEA: RITUAL DASHBOARD

Daily Data Collection was considered a very hard and time-consuming task for the QIP team. Taking advantage of our information systems, we decided to create a real time dashboard which could help us manage the project with less manual data collection. The multidisciplinary project team defined which parameters would be important for the QIP monitorization. The IT team then developed dashboard with the information that could be retrieved from the system.

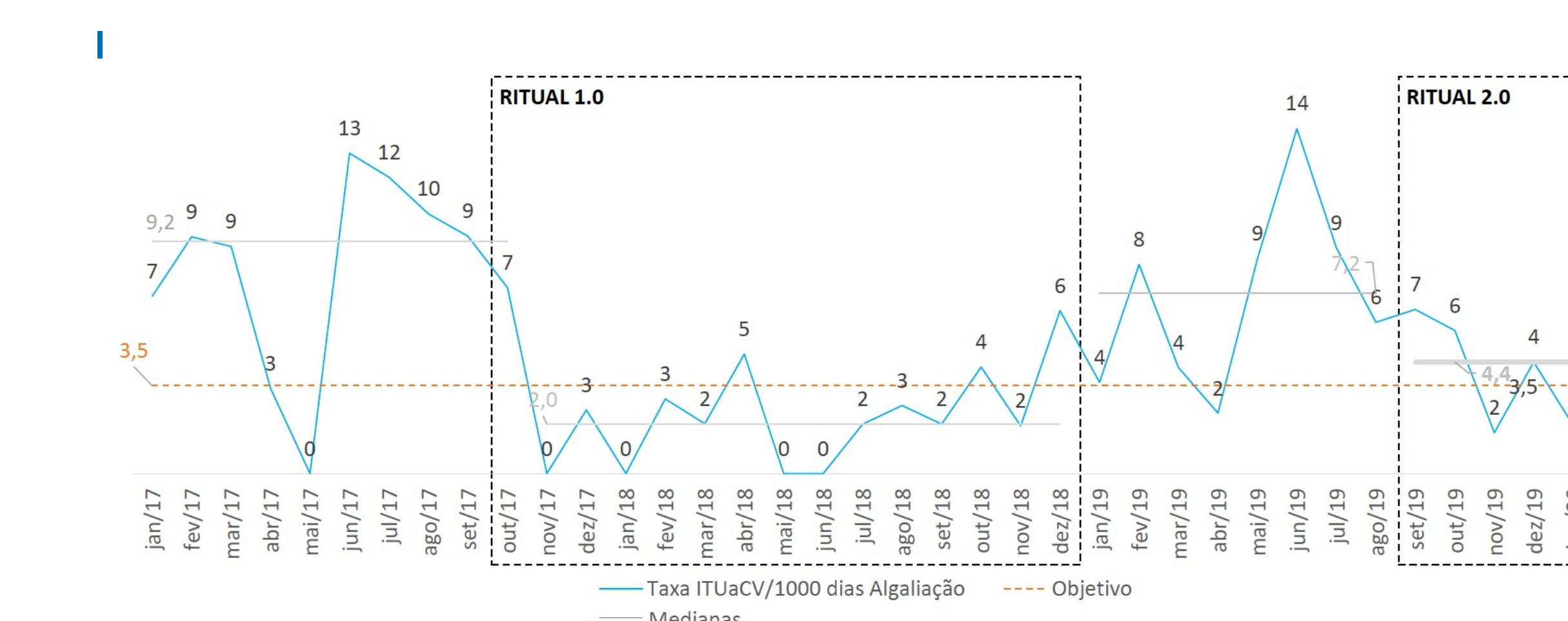


LEGEND:

IT developments of RITUAL real-time dashboard.

- Number of internal medicine inpatients with a bladder catheter
- Number of internal medicine inpatients with a bladder catheter prescription
- Percentage of internal medicine inpatient with a bladder catheter
- LOS of internal medicine patients
- Patient identifier number
- Date of admission
- Internal medicine ward of admission
- Patient's Medical doctor responsible
- Number of catheter-days
- Percentage of conformance with with maintenance bundles of care
- LOS of patients with a bladder catheter

LESSONS LEARNED



During the first phase of RITUAL (RITUAL 1.0) we have achieved 78% CAUTI density rate reduction. For multiple reasons, results were not sustained after the end of the project, which has determined a new phase (RITUAL 2.0). During a period of 5 months, CAUTI density rate decreased, again, near 39%. The results underscore the importance of this QIP.

The designed tool showed us that we can use creativity and multidisciplinary teams to co-design systems for patient safety. We believe that the real time information we could use to run the QIP is a very important contributor for its success, since it allowed QIP team to re-allocate time from manual data collection to other important projects tasks, as continuous education, for example.

We are now developing collaborative work and electronic medical records changes in order to improve the dashboard including real time CAUTI rates. COVID-19 pandemic has forced RITUAL suspension in February 2020. This QIP restarted recently.

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