Reversing a trend towards overtesting in a Department of Internal Medicine in Denmark – results from a Quality Improvement Project.

Tobias Ramm Eberlein[1], Judith Knudsen[1], Louise Lylloff[2], Mette Storgaard Markussen[2], Pernille Nielsen[1], Frank Holden Mose[1]

1) Department of Medicine, Gødstrup Hospital, Herning, Denmark 2) Department of Clinical Biochemistry, Gødstrup Hospital, Herning, Denmark

Background

At Gødstrup Hospital, the former West Jutland Regional Hospital, a Danish secondary and tertiary center with at the time 2 principal hospital sites in Herning and Holstebro, the Department of Medicine had wards in both locations with 108 beds combined in 2018. 72 of these beds where in wards at the Holstebro site, where the yearly number of admittances rose from 6751 to 7655 (+13 %) between 2015 and 2018, while the average length of hospital stay decreased from 4,2 days to 3,7 days. Meanwhile, the number of biochemistry tests ordered increased in the same timespan by 18% (figure 1).

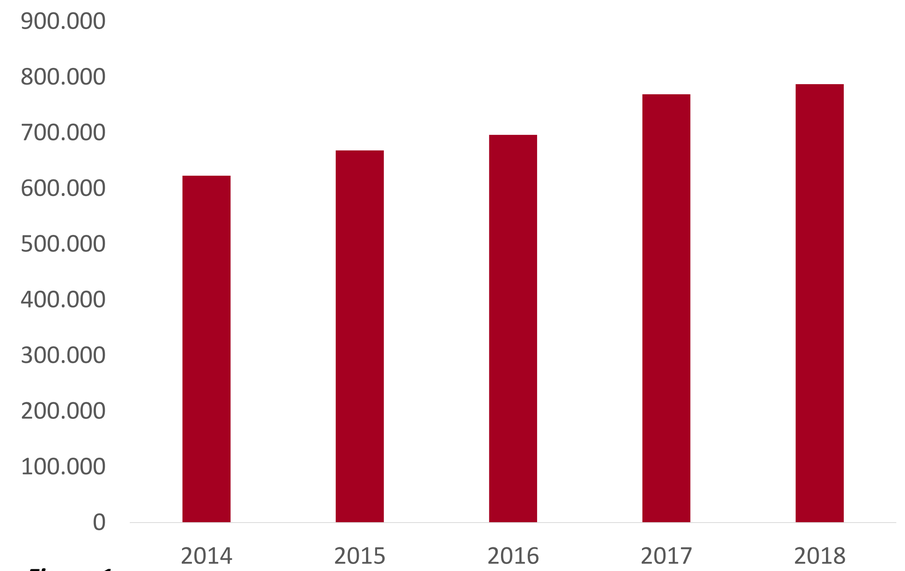

Figure 1

Annual number of test results from the Department of Clinical Biochemistry to the Holstebro Site from 2014-2018. The number includes all the tests performed or facilitated from the Department of Clinical Biochemistry and includes blood, urine and other bodyfluid samples analyzed in the laboratory, point of care tests (POCT), blood gas analyzes performed locally and electrocardiograms.

Purpose

Reduce the number of biochemistry tests ordered on inpatients at the Holstebro site, excluding point-of-care-testing (POCT, e.g. blood glucose, urine dipstick, blood gas analysis) as well as microbiology tests, by 5% by the end of the year 2019.

Methods

The Department of Clinical Biochemistry initiated in January 2019 to form an interdisciplinary group with participation from both the Department of Clinical Biochemistry and The Department of Medicine to address the issue within the framework of the hospital's improvement program, which is based on the "Model for Improvement" as developed by the Associates in Process Improvement (API).

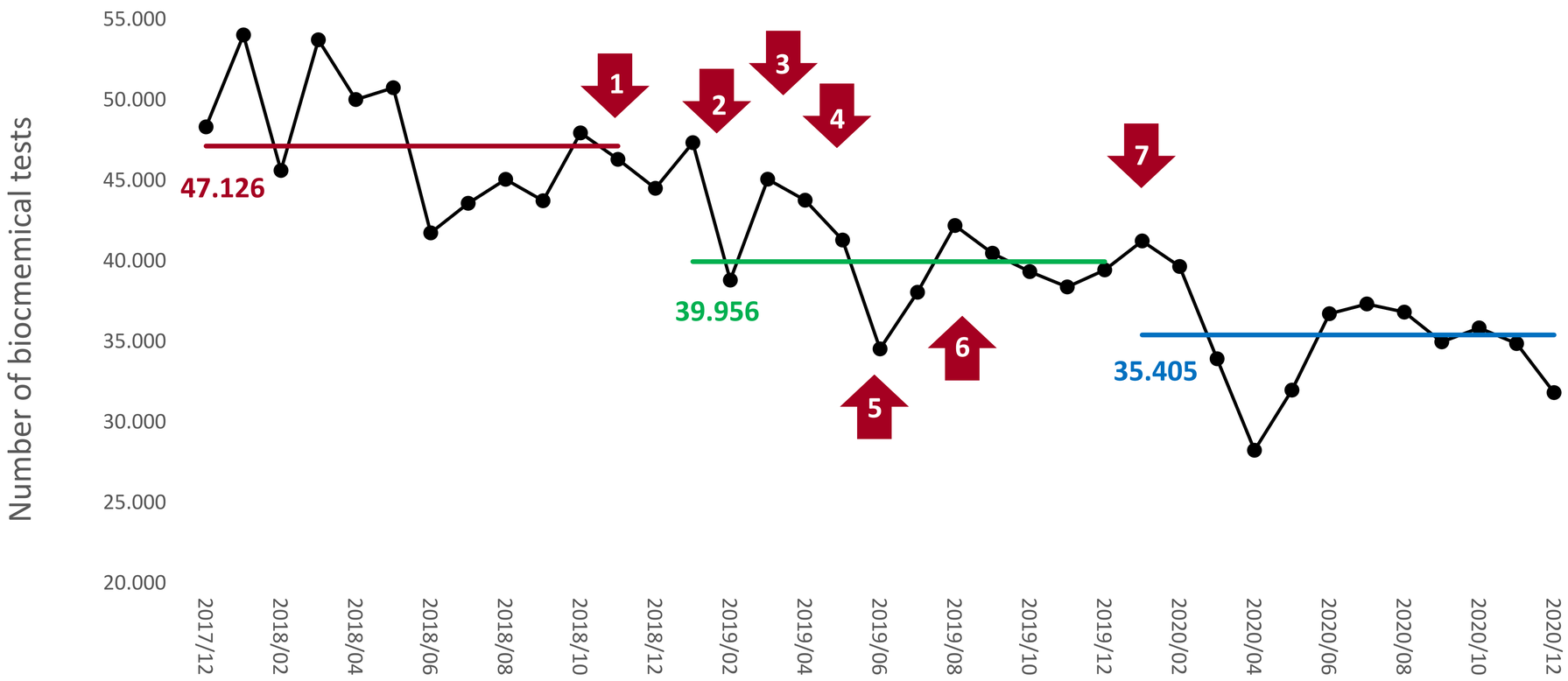

Figure 2

Timeline showing number of biochemical tests before, during and after the quality improvement project (QIP).

1. Project startup - interdisciplinary group formed,
2. Electronic Medical Records lab sheet setting adjusted,
3. Questionnaire about workflow and communication,
4. Plan-Do-Study-Act (PDSA): Physicians entering requests for biochemistry testing,
5. New biochemistry profiles implemented incl. posters and pocket cards,
6. Checklist implemented,
7. Educational sessions on rational use on biochemistry analyses established.

Horizontal lines indicate median number of biochemical tests before (red), during (green) and after cessation (blue) of the QIP. The only intervention at the Herning site was that new biochemistry profiles were implemented.

Outcome

Figure 3A

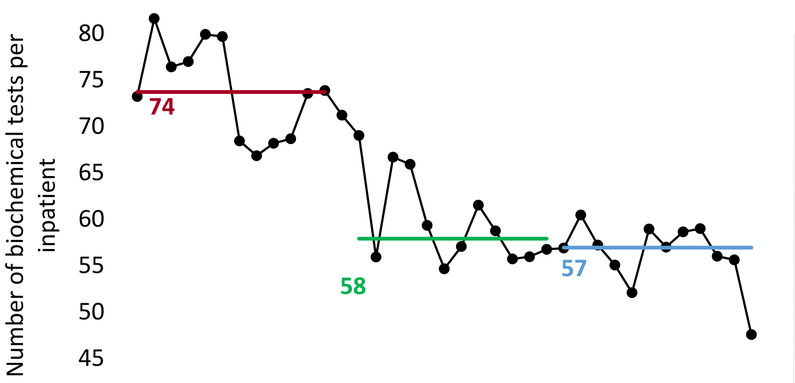

Figure 4A

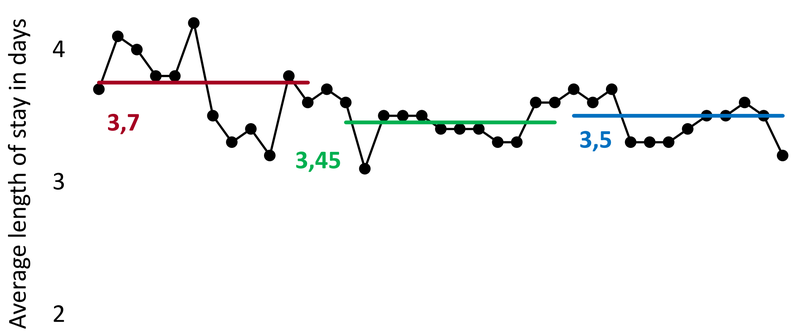

Figure 4B

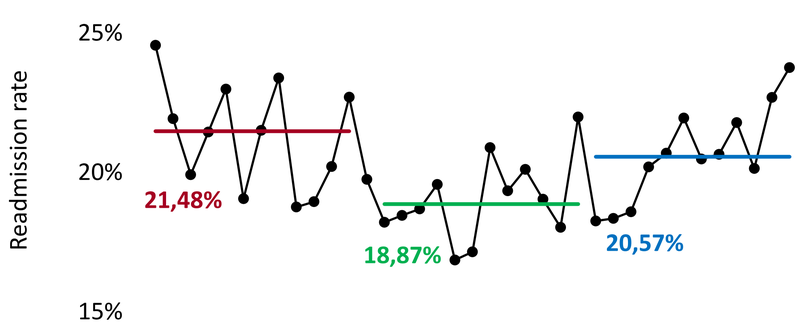

Figure 3B

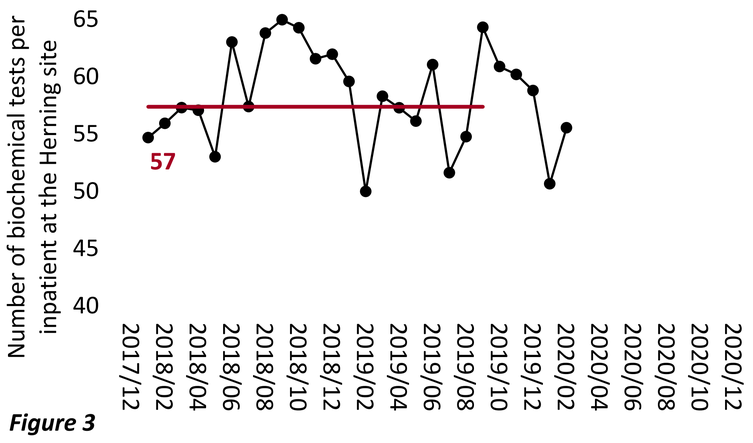

Figure 3

Number of biochemical test per inpatient at the intervention site in Holstebro (A) and the control site Herning (B). Horizontal lines indicate median number of biochemical tests per inpatient before (red), during (green) and after cessation (blue) of the QIP. At the Herning site no QIP was performed and therefore only a red line is presented. From April 2020 and forward data from the Herning site are highly influenced by the COVID-19 pandemic and data collection from this site stopped in March 2020.

Figure 4C

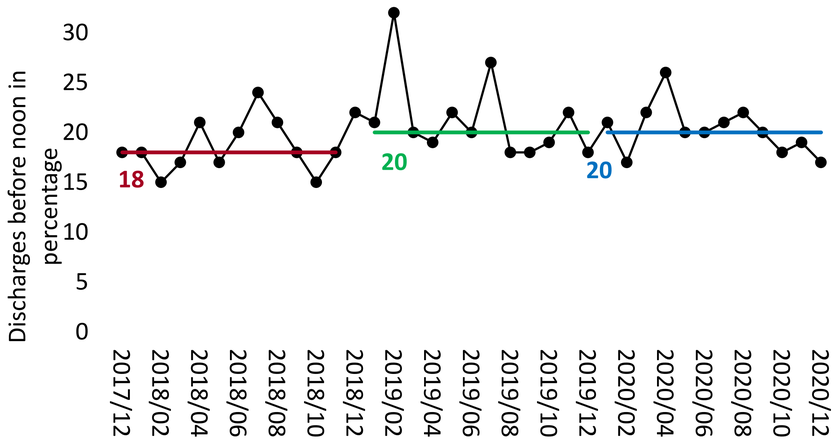

Figure 4D

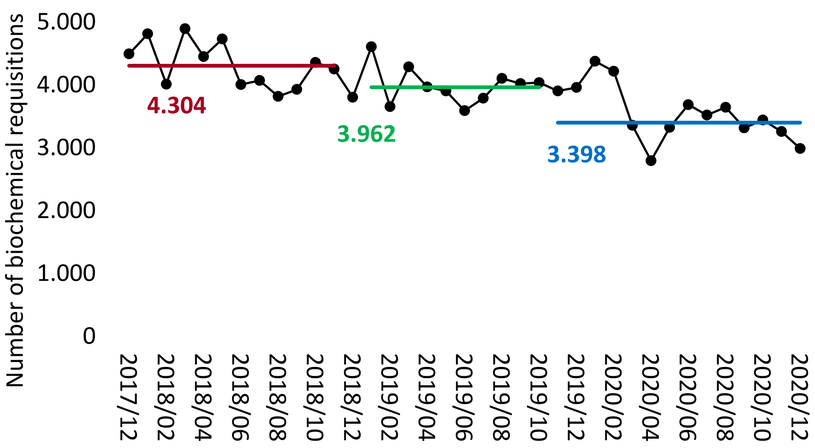

Figure 4

Possible adverse effects of the quality improvement project: Figure shows average length of stay in days (A), readmission rate (B), discharges before noon in percentage (C) and number of biochemical requisitions (D).
Horizontal lines indicate median number of biochemical tests before (red), during (green) and after cessation (blue) of the QIP.