

# Ensuring faster patient treatment by reducing turn-around-time for laboratory results

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## Introduction

In Denmark, the hospital sector is being reorganised into more specialized trauma units. Patients treatment is being optimized which includes the need for faster results from blood samples. This could in some way to be accomplished using point-of-care test instruments in emergency rooms but the repertoire and quality of the analyses in POCT-instruments are still somewhat reduced compared to regular lab instruments. We therefore developed, in collaboration with TIMEDICO A/S, the transport system TEMPUS600 for blood samples using pressurized tubes. Using this system, sending samples using the system takes less than a minute and samples can be transported to the laboratory in 30-40 seconds. Employing the system ensures faster transportation to the lab and makes it possible to employ a biotechnician for blood drawing for sampling without having to return to the lab.

## Methods

In order to analyze the impact of the TEMPUS600 transportation system on turn-around-time for blood samples, we compared samples from the morning round from the emergency department of Vejle Hospital in May 2013 before installation of tempus500 with samples of May 2014 after the installation. Biotechnicians are instructed to only transport samples to the lab using Tempus600.

## Effect of tempus600 system on Turn-Around-Time

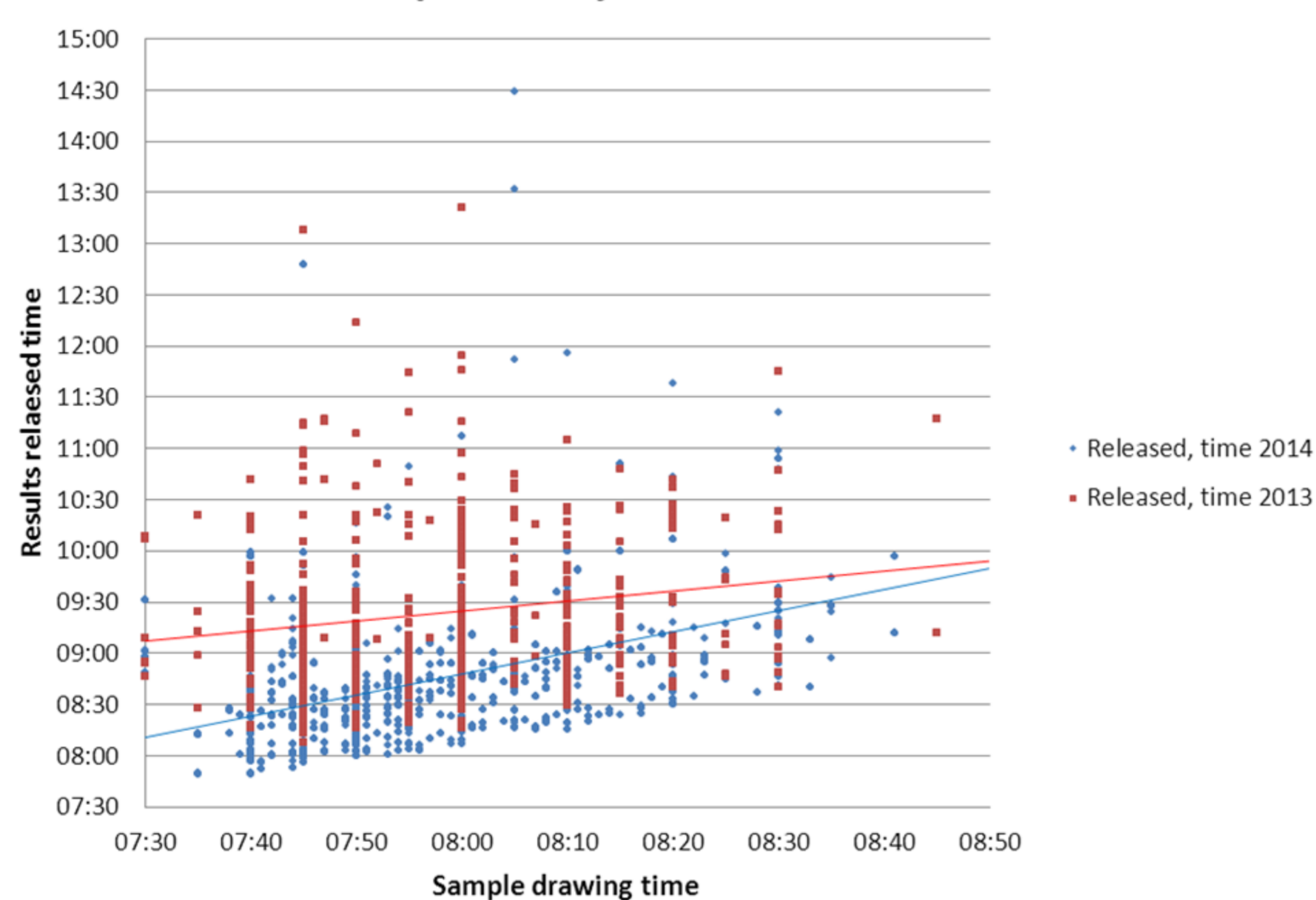


Fig 2: Turn-around-time for samples on the morning round at the Emergency Department in Vejle Hospital. Included are cellular, coagulation and biochemical analytes.



Fig 3: Sending unit of the Tempus600 system.

## Take-home message

Dedicated blood sample transportation system reduces turn-around time from sampling to ready results from an average of 85 to 48 minutes.

## Effect of tempus600 system on Turn-Around-Time

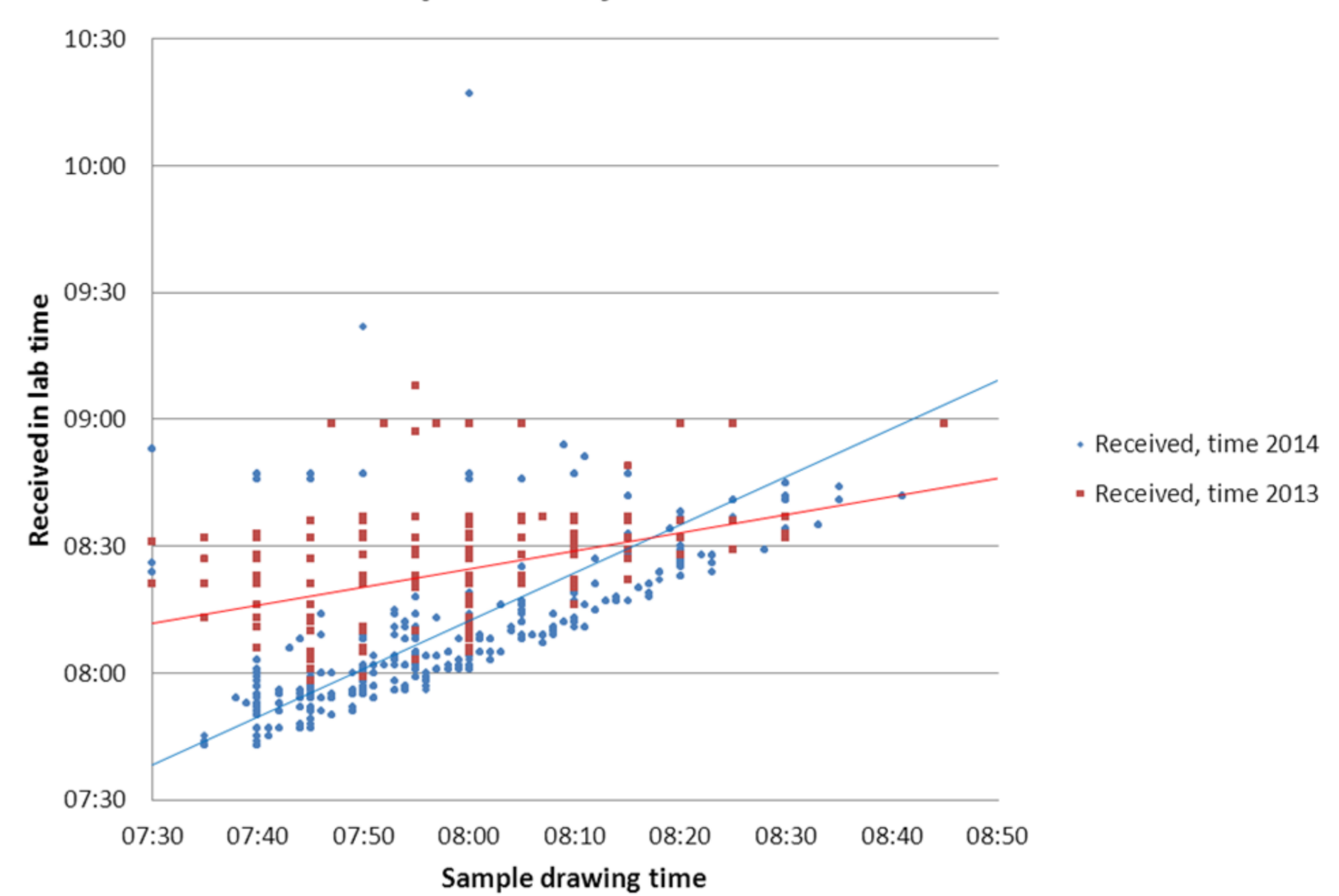


Fig 1: Time from sampling to received in the laboratory for samples on the morning round at the Emergency Department in Vejle Hospital. Included are cellular, coagulation and biochemical analytes.

## Results

The time from blood sampling to received blood sample in the lab in May 2013 versus May 2014 is shown in Fig 1 showing a clear reduction in transportation time. This is especially pronounced for the first part of the morning round. It is however clear that not all samples of May 2014 were transported using the system.

As shown in Fig 2 the reduction in time from sampling to result released from the lab is reduced in the entire round. This change is most evident in the beginning of the sampling round where the clinicians have prioritized a few patients for rapid sampling therefore maximizing the effect of a fast transportation system. The average difference in time from sampling to results was reduced from 85 minutes to 48 minutes.

## Conclusion

Together with TIMEDICO A/S we have developed a blood sample air-transport system, which makes it possible to send samples to the hospital laboratory in 30-40 seconds across distances of up to 600 meters.

Analysing the time from blood sampling to finished result in an Emergency Department in daily usage we found a reduction in time from an average of 85 to 48 minutes but most pronounced for samples which require quick results.

We believe that the TEMPUS600 transport system reduces turn-around-time without instigating any errors in the analytes levels compared to the routine manual transportation.

A total of more than 60 installations of TEMPUS600 has been setup in 29 hospitals in northern Europe and Southeast Asia.

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