

$$E[e^{-sX_{+,i,u}} | A(X_{-,i,u}) = k] = \text{Prob}\{A(X_{-,i,u}) = k\}^{-1} \sum_{i=1}^k \left[\frac{1}{2L i!} \frac{d^i}{dz^i} \Big|_{z=0} \left(\frac{G_p^*(-\lambda, \lambda G)}{\lambda G} \right) + \frac{1}{2L(k-i)!} \frac{d^{k-i}}{dz^{k-i}} \Big|_{z=0} \left(\frac{G_p^*(-\lambda, \lambda G)}{\lambda G} \right) \right]$$

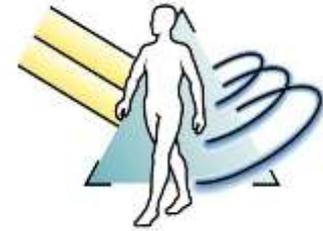




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Medisch Spectrum Δ Twente





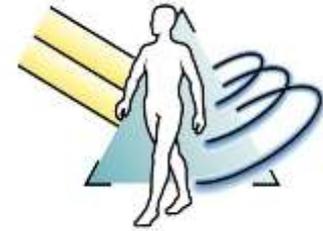
Introduction

- One of the largest topclinical hospitals in The Netherlands
- Centre for:
 - Basic care
 - Trauma care
 - Teaching hospital
 - Transmural care
- 4000+ employees, 250+ medical specialists
- Budget €300,000,000



Project 1: Inducement centralisation syringepumps

- Feeling of shortage of syringe pumps
- Nurses spend too much time on searching of pumps elsewhere
- Maintenance was poorly secured
- Pressure on investment budget
- Good experience with centralisation of pressure-reducing mattresses and Vacuum Assisted Closure pumps (VAC-therapy) by the Logistics Department

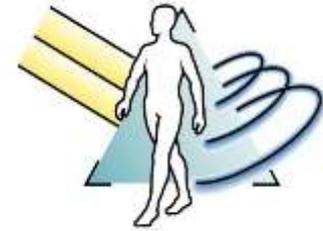


Key Element

- *Can I have a syringepomp please?*
 - ...and make it fast!

The alternatives:





Pilot centralisation infusionpumps

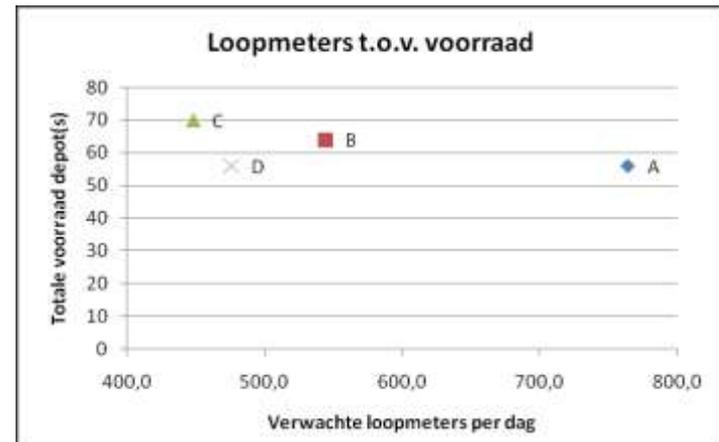
- 4 wards participated in a pilot starting in December 2010
- Performance indicator was taken from the pharmacy system
- All existing pumps are marked
- Registration is required when a pump is collected
- Registration is required when a pump is reduced

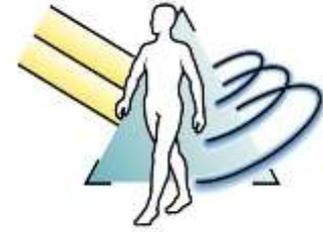
The screenshot displays the 'mijn MST' (Medisch Spectrum Twente) web application. The page is titled 'mijn MST Medisch Spectrum Twente is mijn ziekenhuis'. The main content area shows details for a pump, including a 'Selectie' section with fields for 'Ondrager' (value: M002101) and 'Hulpmiddelcode' (value: 1000), and a 'Hulpmiddel' section with fields for 'CI nummer' (value: 10229), 'Naam' (value: CompactBraut), 'Lidstaf uitgeleend op' (value: 06-04-2013 16:15), 'Omsetwaard op' (value: 10-04-2013 15:38), and 'Locatie' (value: Dept AP). A large green button labeled 'BESCHIKBAAR' is visible, with the text 'locatie: Dept AP' below it. The 'Registreren' section at the bottom has a 'Registreren' button. The left sidebar contains a navigation menu with categories like 'Mijn MST', 'Onderhoud & klagen', 'Familieren', 'Dienstenzoek', and 'Dienstenzoek instructie'. The bottom right corner of the page shows 'Medisch Spectrum Twente'.



Results pilot

- Availability of pumps for the 4 wards of 99.6%
- Performance indicator from the pharmacy system proved to be reliable
- simulation with data from other wards shows that no additional investments are needed
- maintenance can be properly planned and executed
- multiple (4) repositories for all syringe pumps are fully operational
- Other materials are added to the repositories after datastudy
 - Volumetric pumps
 - Suction sets
- Currently studying on:
 - vacuum- and oxygen clocks
 - Blood pressure meters
 - Bladder scans

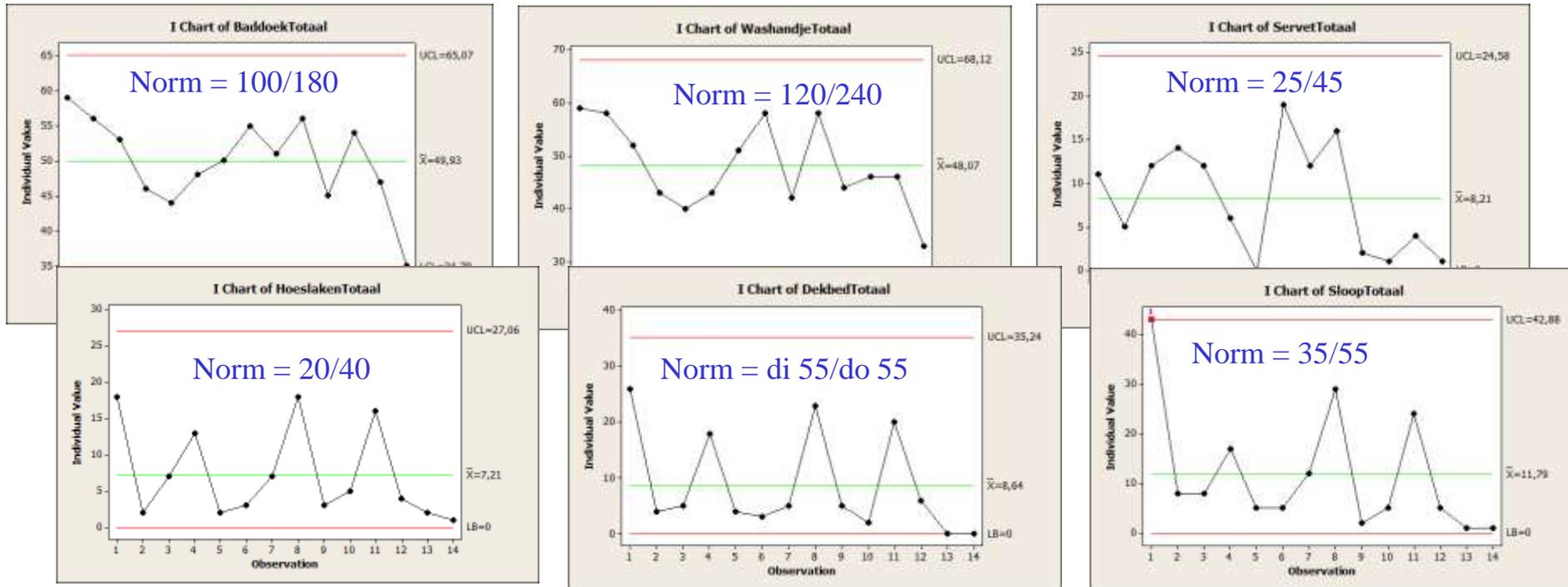




Project 2: Less sheeting, no shortage

- High variation on delivery of sheets
- High stock, both on the ward aswell as in the patient room
- Manual labour required for counting, transportation and relocating
- Start-up with 3S, MST's LEAN programme

How much is being used every day?



- Uit meting 'gebruik' blijkt dat de norm hoger ligt dan daadwerkelijk gebruik
- Het gelijke ritme bij beddengoed is te verklaren door de vaste verschoondagen



Results

- Pilot on 4 wards: availability of sheeting remained well
- Data from our supplier proved to be usable
- Simulation with data from other wards shows that it was worth it
- Reduce costs by 10%
- Manual labour for counting and relocating is eliminated
- All wards are currently working with the new system



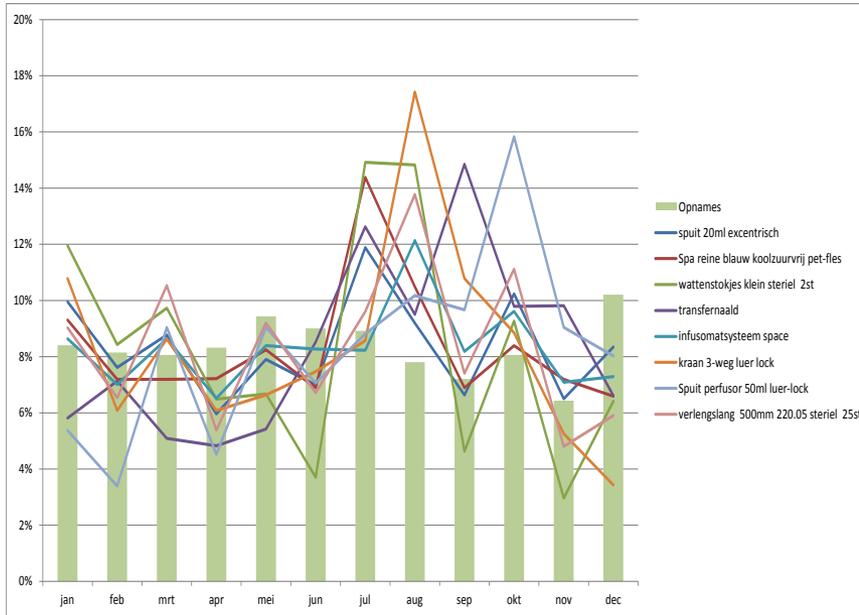


Project 3: Reducing supplies at the ward

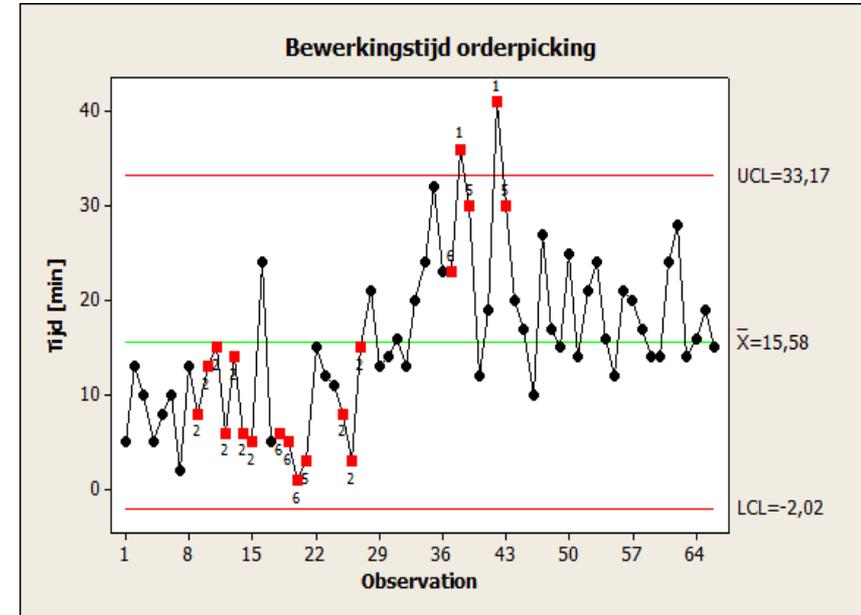
- High stock for supplies in the ward
- Topping-up system makes counting the stock labour-intensive
- Necessity for reducing the stock due to less space in our new hospital



Project 3: Reducing supplies at the ward



Relation between occupation on the ward and usage of materials



Leadtimes orderpicking



Results

- Pilot on 1 ward: SIPOC and value stream mapping template
- Data from our ERP system is very usefull
- Simulation with data show reduce of stock of approximately 50% (!!)
- Topping up will be replaced by Two-Bin (KANBAN)
- Set-up for stocking cabinets will be changed by nursing staff (Productive Ward)



Questions???

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