Using A3 systematic problem solving in quality improvement

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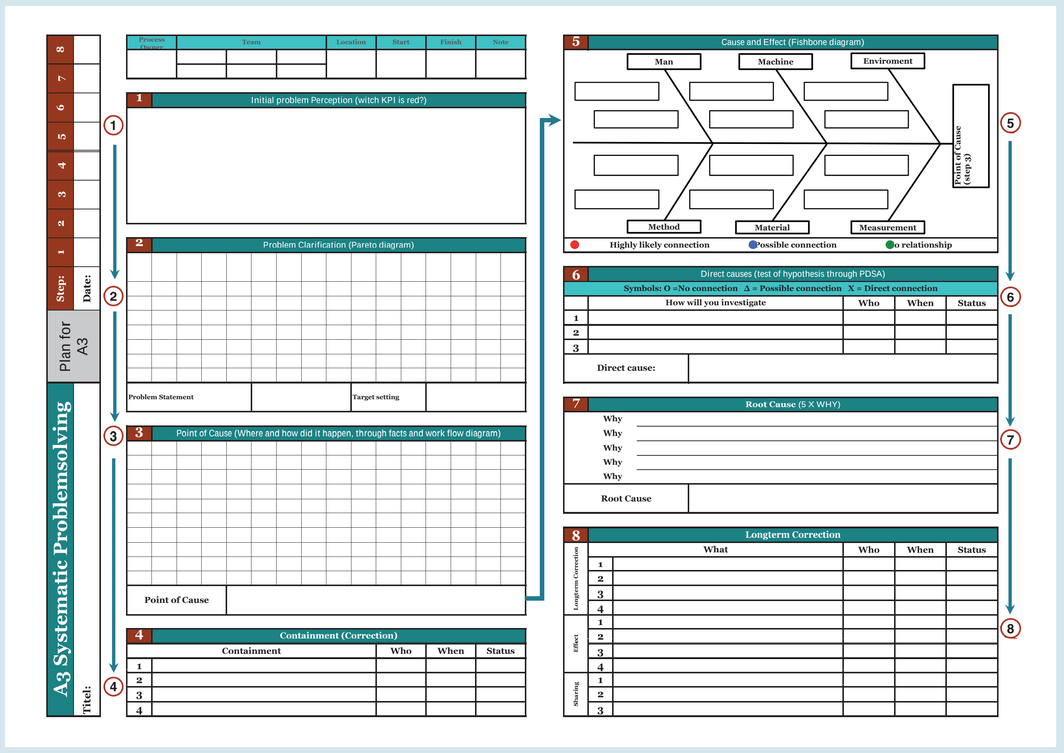
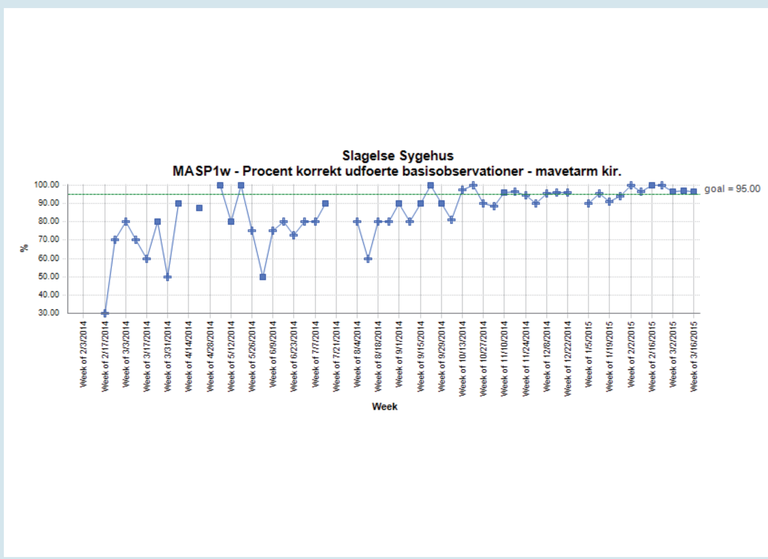
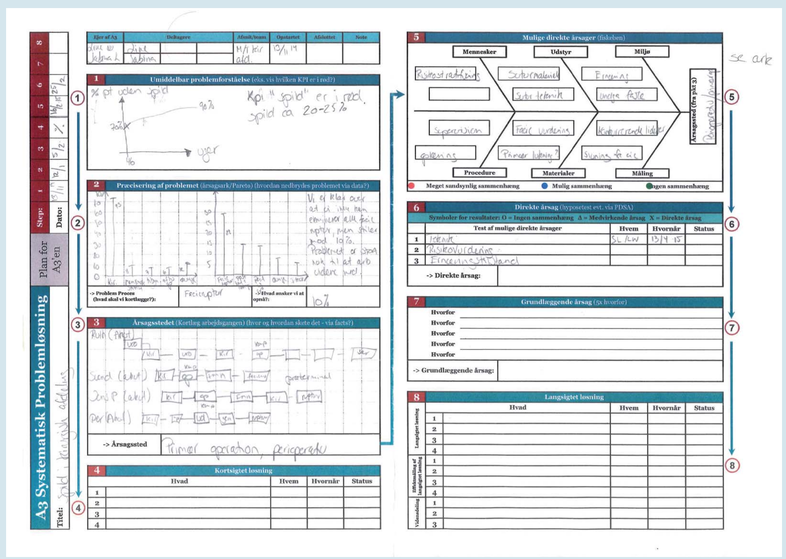
Intro:
With introduction of lean management and Key Preformance Indicators (KPI's) we experienced lack of direct problem solving at our weekly board gatherings and failure to achieve goals. We were then introduced to the A3 problem solving model (fig. 1) and since then we have experienced a more direct approach to problem solving, more structured and often revealing causes we did not see before.

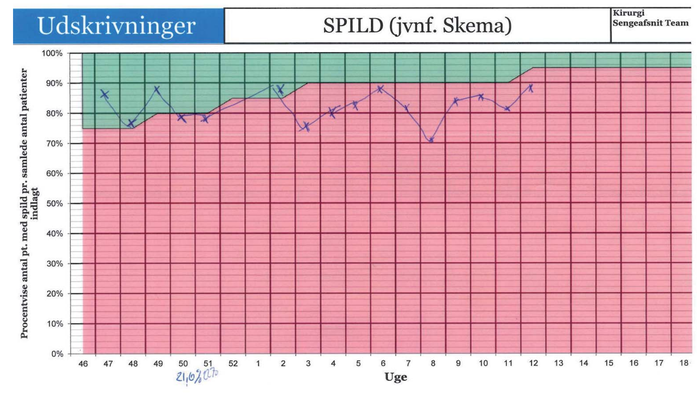
Model:
The A3 model comes in many different shapes and forms. We use this one (fig. 1). The initial problem perception forces us to think deeply about the issue at hand and the problem clarification leads to an examination of the data and formation of a Pareto diagram. By breaking it down using Pareto we quickly identify the major contributor and by breaking this further down it becomes clear what the cause of the problem is. Often the cause is unexpected. Using workflow helps us identify the actual step where the problem arises. If there is a containment measure (quick-fix, putting a cork in it) this is then done and if it's sufficient and solves the problem the A3 ends there. If not, the process moves on towards a long term in depth analysis of underlying causes and contributors to the problem. This is done via fish bone brainstorm and the PDSA cycle by indentifying the 3 most important causes and their solutions. The direct causes are then subjected to the 5 X Why model and the root cause will then be clear. Based of these findings long term corrections will be implemented.



Own experiences:
Since implementing and training in this model (9 months ago) we have successfully dealt with KPI's on Early Warning Score (EWS) and nutrition while we are currently working with waste (the right patient in the right bed). EWS was implemented app. 4-5 years ago and in autumn 2013 it became a KPI on our LEAN board. As seen from fig. 2, the process was unstable and through weekly meetings we tried several different measures to correct the KPI. Unsuccessful partly due to the way data was collected. The EWS was the first A3 we preformed from step 1-4 since we found the correction to be enough to solve the problem. With implementation of a different way of data-collection it turned out EWS was measured correctly and observations lead to action. Nutrition was a similar story.
Waste in a surgical ward is a complex problem. We often wait for other services (radiology, endoscopy, theatre, assessment etc.) As seen in step 2 (fig. 3) surgical complications turned out to be the major contributor to waste. Further breakdown revealed wound complications to be app. half of these. The fishbone diagram led to identification of 3 causes of this: surgical technique, risk stratifying pre-operatively and nutritional status. We are now working with surgical technique as the first direct cause. Fig. 4 shows continued high percentage of waste witch can be due to the A3 not being completed yet. Continued measure of waste might reveal other important causes (post-op. ileus, anastomotic leaks ect.)







Future use of the model:
In a very busy clinical day to day routine the drive of improvement work can be challenged. Using the A3 model forces due dates and delivers results. With a tight schedule and reserved (dedicated) time allotted to the project we are able to deliver the expected results. When implemented it seems easy to use and provides a good structured way of solving problems. We are expecting to use this with every failing KPI and other processes (IHI bundles) within our department.

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