

Can we reduce or avoid changes* of cytostatics, by increasing the buffer stock at the hospital pharmacies?

*unplanned changes of supplier, strength or vial-size due to supply shortages/backorders



Objective

(DD-002, L01 Cytostatics)

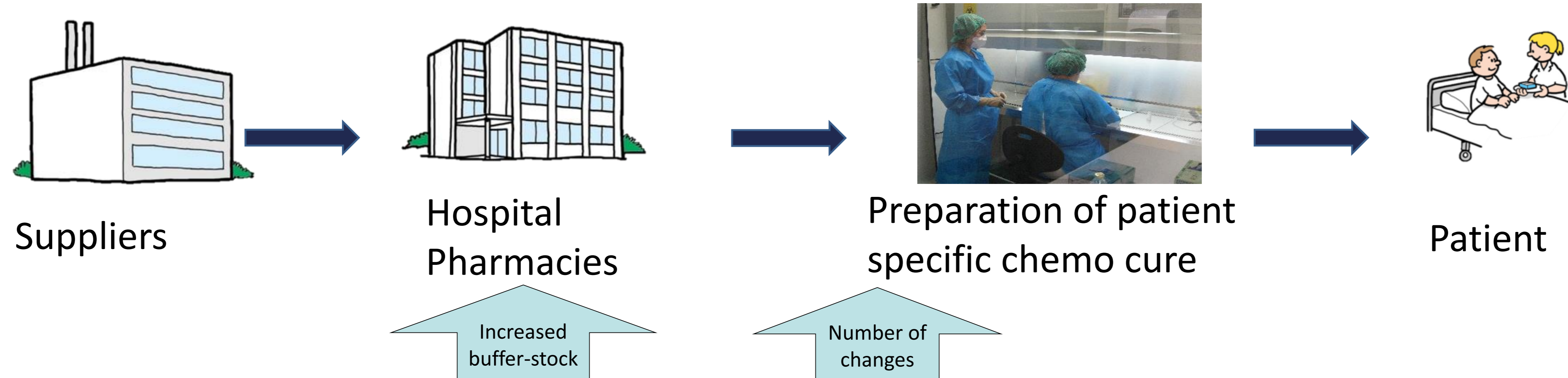
Drug supply is a global challenge creating local problems, such as unplanned changes of supplier, strength or vial-size. Compared to other drugs, changes in the patient specific preparation-process for chemotherapy cures, create significantly more challenges: including extra paperwork, extra quality control, extra quality assurance, extra workflow and requires updates of the production documentation.

The objective is to evaluate the effect of an increased buffer stock of selected cytostatic drugs, at the Danish hospital pharmacies.

Methods

In order to decrease the number of unplanned changes, an increase of the buffer stocks of 23 cytostatic drugs for chemotherapy, was implemented at all hospital pharmacies in Denmark during 2014. (scope: 60 item numbers, all generic drugs with relative low purchase price)

The buffer-stock was increased from 2 weeks expected consumption, to a buffer-stock corresponding to 2 months expected consumption

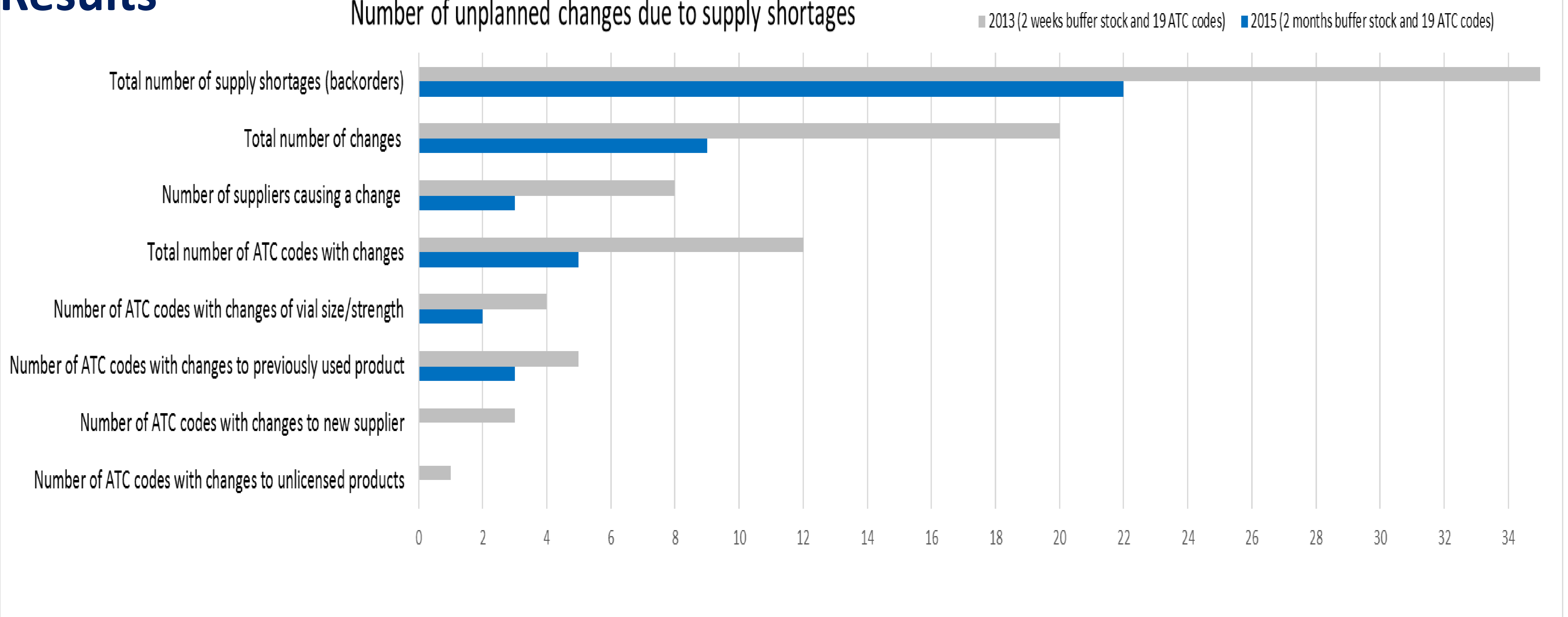


Quantitative method: The number of supply shortages was recorded as well as the number and type of changes, before and after the buffer-stock increase.

Qualitative method: A questionnaire was sent to all hospital pharmacies (n=8) elucidating investments and level of challenges related to unplanned changes.

Results

Number of unplanned changes due to supply shortages



Feedback from the hospital pharmacies: (from a questionnaire)

- ✓ A significant drop in the amount of changes has been observed.
- ✓ A 2 month buffer stock is evaluated to be appropriate.
- ✓ Some hospital pharmacies suggest increasing buffer stocks of antibiotics and other critical drugs.
- ✓ The total investment in additional "cold storage capacity" for cytostatic drugs at the hospital pharmacies reached 7.333 € (1.250 € per 1 million citizens)
- ! Each unplanned change is still a hassle, and the increased buffer stock is not considered being a mean to provide more time to plan and execute each change.

Discussion

- ✓ With a 2 weeks buffer stock 57% of the backorders resulted in unplanned changes. With a 2 months buffer stock 41% of the backorders resulted in unplanned changes, and there was no changes to new suppliers or unlicensed products. Therefore we can say that increasing the buffer stock is an effective tool to reduce the number and the complexity of unplanned changes, even it can not eliminate all changes. After review of these results an increase of buffer stock has also been applied to selected antibiotics, anesthesia and cardiac stimulants at the hospital pharmacies.
- ✓ The investments in additional "cold storage capacity" (cost of the cytostatic products excluded) equals the costs of executing one unplanned change
- ✓ With a 2 months buffer stock, most suppliers are not causing changes, while a few "unstable" suppliers caused all unplanned changes (3 out of 12 suppliers caused all changes in 2015). Therefore we suggest having a closer dialog and cooperation with these few "unstable" suppliers to improve their supply.
- ! The increased buffer stock was expected to give more time to plan and execute the needed changes. But due to possible fluctuations in demand and uncertainty on the expected delivery times of each backorder, reality shows, that the decision point for initiating a change is being postponed until almost all buffer stock has been consumed, so each unplanned change is still creating a hassle.

Conclusion

Positive effects from increasing the buffer stock of cytostatic drugs from 2 weeks to 2 months:

- ✓ It has shown to be effective in order to reduce the needed number of changes, and it reduces the complexity of the changes
- ✓ It will reduce the number of suppliers having supply limitations resulting in a change.
- ✓ It does not require big investments in extra storage capacity.

Little or no effects, from increased buffer stock of cytostatic drugs from 2 weeks to 2 months:

- ! It can reduce, but not eliminate unplanned changes.
- ! It does not remove the stress and extra work for each single change, when a change is necessary.