Evaluation of microbiological shelf life of preparations of cytotoxic agents in infusion bags combined with medical devices

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Background

The handling of cytotoxic agents prepared aseptically requires attention to the production process, the final container, stability data and the working enviroment for staff at the hospital pharmacy and in the clinic in order to deliver a product of high quality according to the need of the final user.
The hospital pharmacy had adapted a national guideline regarding the shelf life of sterile products, which limited the shelf life to 24 hours for preparations combined with medical devices.
The purpose was to find data for an increased microbiological shelf life of preparations of cytotoxic agents in infusion bags combined with different types of medical devices. A longer shelf life would enable us to meet the need from the oncology ward for home-based cancer treatment with the same level of protection for staff and patients as on the ward.

How was it done?

A team from production and quality assurance departments worked together on collection of evidence to provide the rationale for the change of shelf life.

Supplier qualification

All suppliers of medical devices are qualified according to a Standard Operating Procedure.
A risc score (high, medium or low) is given to the supplier based on use of the device at the hospital pharmacy, data for the supplier complexity and supplier/manufacturer compliance to regulations and agreements.
The two suppliers involved scored low risc.

Aseptic process simulation (APS)

All processes involved in the prepration of cytotoxic products are requalifed by an APS twice per year.
All persons gualified to manufacture cytotoxic products were requalified by performing an APS once per year. In addition, a simple APS (one bag) is performed by each person weekly. Data for the processes involving the medical device were collected.

Results from the person and process requalification showed no growth after incubation for 14 days (a total of 39 units).
Results from the weekly APS showed no growth after incubation for 14 days (a total of 1701 units).

Process validation

When implementing the Proset Cyto-Set Mix® range in 2021 a process validation was performed on 2 x 30 units and the validation was approved.
Validation results for the Take Set Swan- Lock® were received from the Hospital Pharmacy Central Denmark Region. The validation was compared to our process and found suitable.

What has been achieved?

Based on the evaluation of the data above the new microbiological shelf life for preparations in infusion bags combined with medical devices is 7 days.

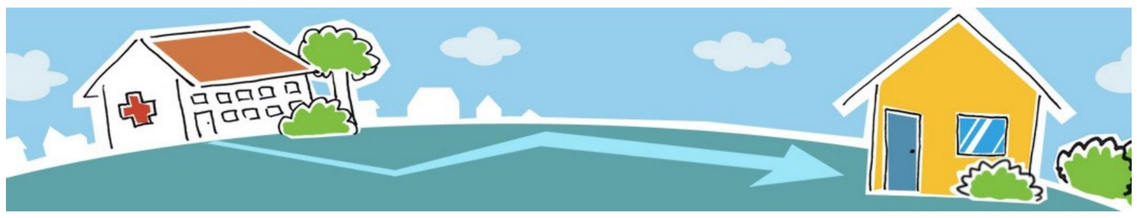
24 hours → **7 days**

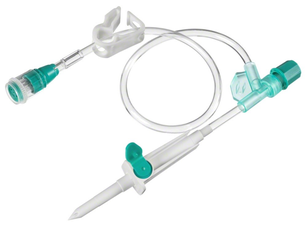
First product is Blincyto® in infusion bag with Take Set Swan-Lock® with shelf life increased to 4 days. Patients now visit the oncology clinic twice a week instead of daily.
Benefits are:

- Patients saving time and transportation.
- The hospital pharmacy can manufacture the preparations with lesser ressources.
  - ✓ Waste due to partly used vials is minimised,
  - ✓ Use of utilities is reduced
  - ✓ Staff time is reduced
- The wards now has the option for more home-based cancer treatment.

What´s next?

New product implementation is quick, because the only subjects to evaluate are the stability of the substance and the compatibility of the substance with materials in contact with it.





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