

IMPROVING ANTIBIOTIC STEWARDSHIP AT A HOME HOSPITAL UNIT BY IMPLEMENTING THE PRODUCTION OF ELASTOMERIC PUMPS CONTAINING BENZYL PENICILLIN

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WHAT WAS DONE

- Elastomeric pumps containing benzylpenicillin were prepared at HUS Pharmacy and delivered to Helsinki city home hospital unit for the treatment of outpatients suffering from erysipelas.
- A pilot study (n=8) was conducted in November 2018 before further implementation of the elastomeric pumps.

WHY WAS IT DONE

- Erysipelas was the most commonly treated infectious disease at the home hospital unit in 2015.
- Previously the standard treatment was broad-spectrum antibiotic cefuroxime three times daily.
- The aim of the project was to improve antibiotic stewardship by shifting from cefuroxime to a continuous infusion of narrow spectrum benzylpenicillin.
- The objective of the initiative was also to improve patient care and reduce the number of treatment visits and thus the overall treatment costs.

HOW WAS IT DONE

- A benzylpenicillin 10 million IU infusion solution was prepared and transferred to elastomeric pumps (Folfusor LV10, Baxter) at HUS Pharmacy.
- The production method was developed by pharmacists at the hospital pharmacy in cooperation with Baxter, who provided information about the stability of the formulation.
- The pilot study was planned and executed in cooperation with Helsinki city home hospital unit.
- Seven elastomeric pumps were produced and delivered once a week for the overall pilot period of 5 weeks.
- The opinions of nurses and patients about the use of elastomeric pumps were examined using a questionnaire.
- The impact on treatment costs was also evaluated.

WHAT WAS ACHIEVED

- Antibiotic stewardship was improved.
- All treated patients (n=8) responded well to the continuous intravenous infusion of benzylpenicillin (Table 1).
- Cost savings were achieved at Helsinki home hospital unit due to a reduction of acquired daily nurse visits (Figure 1).
- Both patients and nurses were pleased with the amount of nurse visits (only once daily) and the ease of use of the elastomeric pumps (Table 2).

WHAT IS NEXT

- Production and delivery of elastomeric pumps containing benzylpenicillin is continuously expanding to other home hospital units.
- The implementation of elastomeric pumps containing other active ingredients is under development.

Table 1. Information about patients treated with continuous benzylpenicillin infusion during the pilot study.

Patient (gender, years of age)	Location of erysipelas	Fever (°C)	CRP (day 1 / control, day 2 – 4)	Duration of infusion (days)	Duration of further treatment (days, oral administration)
Male, 19	Left arm	37,9	30 / 30	3	6
Male, 31	Left leg	38,5	92 / 29	4	10
Male, 52	Left foot	37,5	52 / 42	6	9
Male, 72	Face	38,0	206 / 56	5	9
Female, 95	Left arm	37,8	56 / 28	3	8
Male, 48	Left leg	39,0	219 / 86	5	7
Female, 57	Right leg and foot	38,5	192 / 47	3	14
Male, 63	Left leg	no	Over 130 / 72	6	14

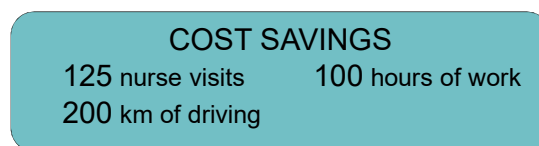


Figure 1. Cost savings achieved during the five weeks pilot study.

Table 2. Feedback from patients and nurses on the use of elastomeric infusion pumps containing benzylpenicillin.

Feedback from patients (citation)
Life was easier when you did not have to stay at home all day.
A workable solution that gave more free time and mobility.
Having a shower and dressing was somewhat adversely affected.
Satisfied that nurse visits were once a day.
Generally good. The infusion line, as well as the belt strap of the waist bag, should have been longer.
A very good pump. A big relief that the nurse did not have to visit four times a day. Worth taking into standard use.
The infusion pump was a full ten points. Saves both nurses and patient.
Feedback from nurses (citation)
The method saved time.
The patient was interested in the function of the pump and told if any problems occurred.
The patient was happy to start using the infusion pump.
The infusion pump was user-friendly.
Carrying the infusion pump was challenging because the belt strap of the waist bag did not fit around the waist.
The starting visit acquired more guidance.
First impression of the product was good.

