

Self-administered home parenteral antibiotic treatment using elastomeric infusion pumps in orthopaedic patients

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Background

- Orthopaedic patients with infections in bones and joints
- Long term IV antibiotic treatment at hospital
- Difficult to maintain the patient's social and physical skills

Purpose

- To study if elastomeric infusion pumps reduce hospitalization of orthopaedic patients with osteomyelitis and septic arthritis
- To evaluate if patients prefer home therapy over hospitalization

Materials and methods

- Drug stability of dicloxacillin and piperacillin/tazobactam was studied to ensure sufficient expiry dates
- The hospital pharmacy delivered dicloxacillin and piperacillin/tazobactam dispensed in portable elastomeric pumps from Baxter®
- 12 patients were included due to osteomyelitis (n=9), septic arthritis (n=2) or both osteomyelitis and septic arthritis (n=1)
- Patients or parents were trained to self-administer while waiting for the cultivation report
- Patients were discharged with a central venous catheter, portable pumps and a written instruction
- Patients returned to hospital for new pumps depending on expiry date of drug



Results

Drug stability studies

Drug and dose	Diluent	Volume	Elastomeric pump	Stability 2-8°C	Stability 32°C
Dicloxacillin 2 g three times a day	NS	200 ml	Intermate 250ml/hour	7 days	+1 hour
Piperacillin/tazobactam 12 g contin/24 hours	NS	240 ml	Infusor 10ml/hour	7 days	+1 day

Reduction of in-hospital stay

IV antibiotic treatment total	193 days
IV antibiotic treatment at home	133 days
Reduction of in-hospital stay	69%

Patients who succeeded treatment at home

11 of 12 patients succeeded treatment at home. One patient developed allergic erythema. The patients and parents felt secure and satisfied with self-administration and preferred treatment at home over hospitalization.

Conclusion

- Sufficient drug stability of portable elastomeric pumps increases the patient's possibility to self-administer at home
- Self-administration of parenteral antibiotics at home reduced in-hospital stay by 69 % for this group of patients
- The patients and parents preferred home therapy over hospitalization