Dose individualization of Beta-lactam and fluoroquinolone antibiotics in ICU patients: to TDM or not to TDM and the effects on Outcome

No registrations found.

Ethical review	Positive opinion
Status	Pending
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON21680

Source
Nationaal Trial Register

Brief title
DIABOLO

Health condition

Intensive care, Antibiotics, Pharmacodynamics, Pharmacokinetics

Sponsors and support

Primary sponsor: Erasmus MC
Source(s) of monetary or material Support: Erasmus MC

Intervention

Outcome measures

Primary outcome

Pharmacodynamic target attainment:

- Beta-lactam: %ƒT>MIC(ECOFF) (including % of patients with 100%ƒT>MIC(ECOFF) in both groups).
- Fluoroquinolone: ƒAUC/MIC(ECOFF) (including % of patients with ƒAUC/MIC(ECOFF)≥100 in both groups)

Secondary outcome

To determent if active TDM results in improved clinical outcome, increased cost-effectiveness, better quality of life and less post-ICU syndrome.

- Clinical outcomes are 28-day mortality, SOFA (sequential organ failure assessment score, use of other antibiotics, readmittance and procalcitonin decrease.

- Cost-effectiveness will be determined directly (costs of stay at ICU, including treatment costs) and using appropriate health – economic analysis.

Study description

Background summary

Traditional antibiotic dosing is not designed for ICU patients. An 'one-dose-fits-all' approach is therefore likely to be inadequate, because the extreme pharmacokinetic behaviour of drugs in critically ill threatens the achievement of optimal antibiotic treatment. Moreover, ICU patients are at risk of developing infections with resistant micro-organisms, due to density of vulnerable patients and complexity of care. The aim of this trial is to evaluate a new early dosage adjustment strategy (TDM) of beta-lactam and fluoroquinolones in adult ICU patients to achieve the adequate pharmacodynamic targets (PDT), compared to the usual treatment strategy. Secondary aims are clinical outcome, the impact on antimicrobial resistance, and cost-effectiveness analyses between the TDM and non-TDM group.

Study design

- For each patient 2 separate blood samples are collected within 12-24 hours after first dose, to evaluate this new early dosage adjustment strategy. The first sample is taken at 50% of the dosing interval and the second (trough) 5-10 min prior to the next dose. Follow-up levels will be collected on day 2 (T=36-48h) after the initial first dose (after at least 2-4 subsequent doses of the newly adapted dosing regimen in the intervention group), and thereafter on day 5.

- Time Frame clinical data collection: 30d after inclusion

Intervention

Assigned interventions in the active TDM group: dosage of beta-lactam and fluoroquinolone

antibiotics will be adjusted according to serum concentrations. In the non-TDM (control) group samples of serum concentrations of beta-lactam and fluoroquinolone will be collected for comparison.

Contacts

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Eligibility criteria

Inclusion criteria

- ≥18 years of age

- Receiving intravenous antibiotic therapy of the target drugs

- Treatment should be aimed for at least 2 days.

Exclusion criteria

- Pregnancy

- Patient already enrolled in this trial

- Antibiotic cessation before sampling

- Medium care and burn wound patients admitted to the ICU

- Patients receiving cefotaxime as prophylaxis only within the context of Selective Digestive tract Decontamination (SDD)

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Open (masking not used)
Control:	Active

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-09-2018
Enrollment:	250
Type:	Anticipated

Ethics review

Positive opinion

Date:	18-05-2018
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
NTR-new	NL7018
NTR-old	NTR7216
Other	: MEC-2017-568

Study results