Prevention of nosocomial infections in Intensive Care

No registrations found.

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

Summary

ID

NL-OMON27737

Source
Nationaal Trial Register

Brief title
PONI

Health condition

nosocomial infections
Intensive Care
antimicrobial prophylaxis
probiotic prophylaxis
cross-over clinical trial

Sponsors and support

Primary sponsor: Maastricht University Medical Centre (MUMC)
Source(s) of monetary or material Support: ZonMw (The Netherlands organisation for health research and development)

Intervention

Outcome measures

Primary outcome

The incidence of all infections occurring > 48 hours after admission at the ICU during the intervention and follow up period.

Secondary outcome

- ICU and in-hospital mortality rate;

- prevalence of antibiotic resistant microorganisms

- additional and total antibiotic use.

Study description

Background summary

In intensive care units (ICU's), hospital acquired infections are an important complication of the treatment. Such infections occur in around 45% of all ICU patients and are associated with increased mortality, a longer stay in the ICU and increased health care costs. Most of these infections are thought to be preceded by oropharyngeal and intestinal colonisation with potentially pathogenic micro-organisms. A method to prevent ICU acquired infections is the use of selective decontamination of the digestive tract (SDD). The purpose of SDD is to eliminate these potentially pathogenic micro-organisms from the digestive tract by using locally and systemically applied antibiotics without harming the anaerobic flora, ultimately resulting in less infections. The disadvantage of SDD is the selection of antibiotic resistant micro-organisms. Infections with these organisms in ICU patients usually are disastrous. At population level, selection of resistant micro-organisms ultimately leads to increased morbidity and mortality rates.
Thus, a method with the beneficial effects of SDD without the risk of selection of antibiotic resistant micro-organisms would be ideal. Use of live lactobacilli plus fibre decreased hospital acquired infections in patients with abdominal surgery, liver transplantation and necrotic pancreatitis, but has not been applied in both medical and surgical ICU patients. This non-antibiotic method does not have the risk of selection of antibiotic resistance.

In this study, we propose to compare the use of SDD with live lactobacilli plus fibre in a cross-over of units, randomized clinical trial, performed at the ICU of an university hospital. Patients will be randomized to receive either SDD or lactobacilli plus fibre until discharge from the ICU. Demographic data, indicators of severity of disease and follow up data will be collected in a standardised way. Surveillance cultures of sputum, throat swabs and rectal swabs will be taken on a regular basis. The primary endpoint is incidence of ICU acquired infections. Secondary endpoints are ICU and in-hospital mortality rates, selection of antibiotic resistant micro-organisms and additional use of antibiotics. Follow-up for selection of antibiotic resistant micro-organisms will be until death or 2 weeks after discharge from the ICU, for mortality until discharge from the hospital. Power analysis indicates that 250 patients per group must be included to prove equivalence in infection prevention of both regimes.

Results of the study will be internationally conveyed to researchers and physicians by papers in international medical journals and presentations at conferences. Nationally, results will be made known, after a survey of use of SDD among ICU physicians, by sending results of the proposed study along with results of the survey to these same physicians.

Study objective

Assuming that the use of SDD would result in an estimated infection prevalence of 25%, a difference larger than 10% was to be excluded, hypothesizing an equivalent efficacy of L. plantarum 299/299V plus fibre compared to that of SDD in preventing infections (non-inferiority).

Study design

month 1-3 preparation of the study

month 4-18 inclusion an follow up of the patients

month 18-24 follow up and washout period

month 24-38 inclusion and follow up of the patients

months 38-40 follow up of patients, performing survey among ICU physicians

month 40-48 analysis of the data, writing the report and sending results to ICU physicians.

Intervention

Participating patients in the SDD units will be treated with 0.5 gram of an oral paste containing 2% polymyxin E, 2% gentamicin and 2% amphotericin B four times daily applied to the buccal cavity as well as 100 mg polymyxin E, 80 mg gentamicin and 500 mg amphotericin B administered by gastric/enteral tubes. Cefotaxime 1000 mg will be administered four times daily during the first 4 days. Patients with a tracheostomy will additionally be treated on the skin arround the tracheostomy four times dialy with the polymyxin E, gentamicin and amfotericin B paste.

Patients in the lactobacilli unit will be treated with 10e9 live Lactobacilli plantarum 299V with 10 gram oat fibre twice daily via a gastric/enteral tube. Treatment with either SDD or lactobacilli will be continued untill discharge from the ICU. SDD preparations will be manufactured by the pharmacy department of the AZM. L.plantarum 299V with fibre will be produced by manufacturer (AB Probi, Lund, Sweden).

Surveillance cultures of tracheal aspirates and oral swabs will be taken on admission to the ICU and twice weekly during ICU stay until two weeks after discharge from the ICU. The surveillance cultures will be quantitatively analysed for the presence of (antibiotic resistant) facultatively aerobic Gram negative rods and yeasts. Selective and antibiotic neutralising

media will be used. The use of antibiotic neutralising media will overcome the antibiotic activity of the locally applied antibiotics and thus reduce the chance to obtain false negative results. For the identification of the micro-organisms standard microbiological methods will be used including the Phoenix system (BD). The antibiotic susceptibility of the isolated bacteria will be determined with the same system. The susceptibility of the yeasts to different antimcyotics will be determined using commercial available microtiter plates (MCS, diagnostics, Swalmen, the Netherlands). All isolated micro-organisms will be stored at -70ºC for future analysis if required (for instance determination of clonal relationship).
Culture and quantification of L. plantarum 299V will be performed once a week described previously (19).
Additionally, cultures (e.g. broncheoalveolar lavage (BAL), blood, urine etc.) will be taken if infection is clinically suspected.

Contacts

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Eligibility criteria

Inclusion criteria

All consecutive patients admitted to the ICU who are older than 18 years and have an expected duration of mechanical ventilation of at least 48 hours, expected length of stay at the ICU of at least 72 hours or both.

Exclusion criteria

previous admission to the ICU within 3 months, known hypersensitivity to the study medication, pregnancy, contra-indication for enteral feeding, perceived imminent death, and participation in another investigational study.

Study design

Design

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

Recruitment

NL

Recruitment status:	Suspended
Start date (anticipated):	01-06-2005
Enrollment:	370
Type:	Anticipated

Ethics review

Positive opinion

Date:	19-08-2008
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	NL1351
NTR-old	NTR1411
Other	04-176 : 6100.0007
ISRCTN	ISRCTN wordt niet meer aangevraagd

Study results