

The Danish Blood Donor Study and transfusion transmitted diseases

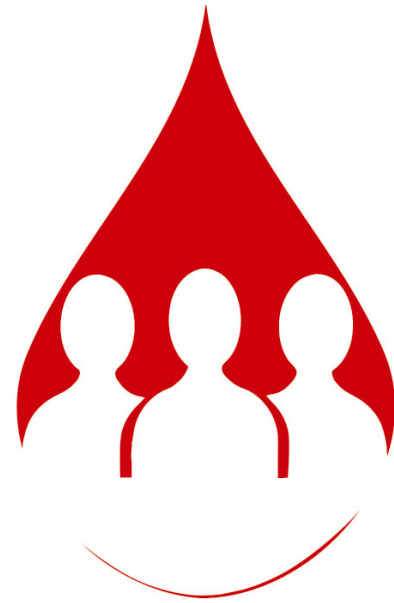
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Introduction - The Danish Blood Donor Study

Initiated in 2010

National multicenter public health study and biobank
(plasma and DNA)

Questionnaires collected at inclusion

Permission to collect data from public registers
National Patient Register

ICD-10 codes from all contacts with hospitals

National Prescription Register

ATX codes from all filled prescriptions

Socioeconomic data

Permission to contact donor again

Access to recipient data through SCANDAT
and national registers





Status

97,000 blood donors have been included

Current work dataset, merged and uploaded to Statistics Denmark:

81,898 participants

256,097 person-years of follow-up by Dec 31 2014

All baseline samples transferred to automated sample management system

>500,000 plasma archive samples from every donation available for research

New electronic, flexible questionnaire is being introduced



Research questions related to infection

- No DBDS substudy has yet addressed transfusion transmitted diseases
- Examples of substudies on donors and infection risk
- Demonstration of the statistical power when using diagnosis codes vs. filled prescriptions as the end point



Obesity and risk of infection

Obesity is associated with the metabolic syndrome, cardiovascular diseases, type 2 diabetes

Obesity is associated with surgical-site infections.

No studies on obesity related risk of all-cause infection among otherwise healthy individuals

Aim - To examine the association between obesity and risk of infection

Methods: 37,808 donors; 106,609 person-years



Results

1,233 participants had hospital contact due to for infection during
106,609 person-years of observation; adjusted for age, sex, smoking

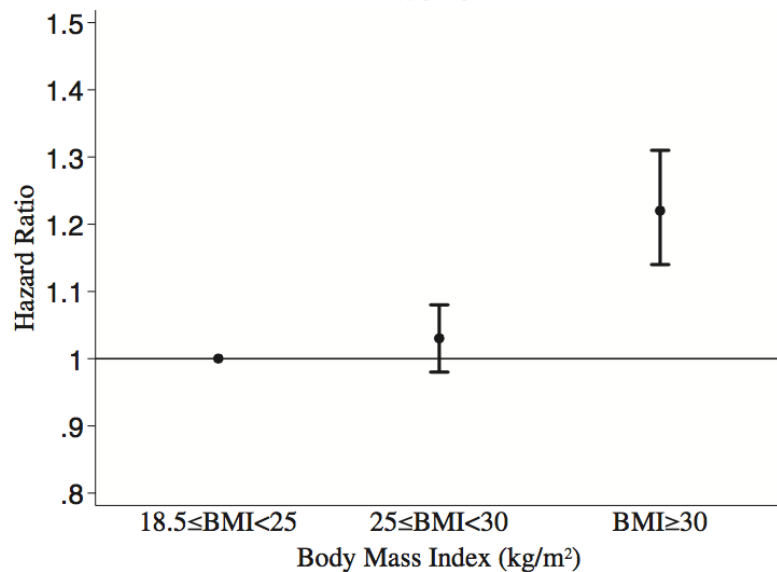
Site of infection	Women			Men		
	N	HR (95% CI)	P	N	HR (95% CI)	P
Infections overall	575	1.44 (1.13-1.84)	0.003	658	1.53 (1.23-1.91)	<0.0001
Abscesses	105	2.28 (1.40-3.70)	0.001	139	2.33 (1.54-3.54)	<0.0001
Infections of the skin and subcutaneous tissue	87	0.85 (0.39-1.85)	0.69	201	2.24 (1.57-3.18)	<0.0001
Respiratory tract infections	144	1.60 (1.00-2.55)	0.05	143	1.27 (0.78-2.09)	0.34

15,856 participants filled a prescription of antimicrobials during 58,834
person-years of observation



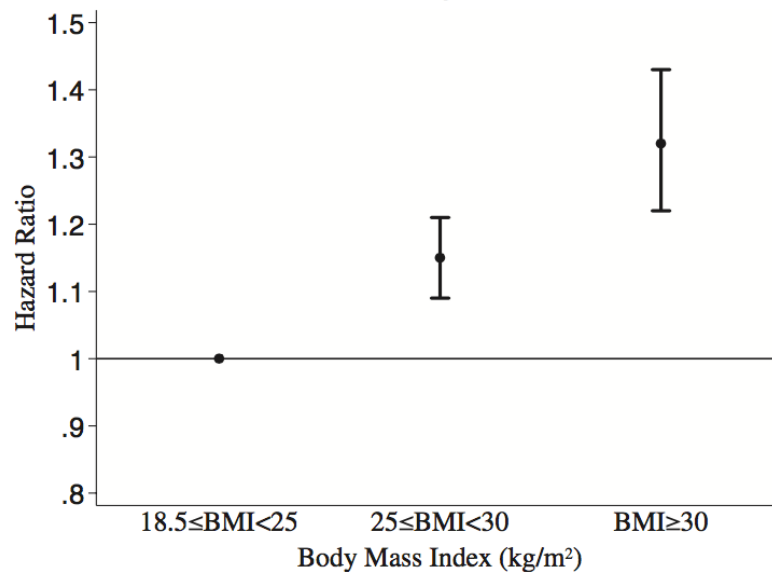
Filled prescriptions of antimicrobials overall

Women



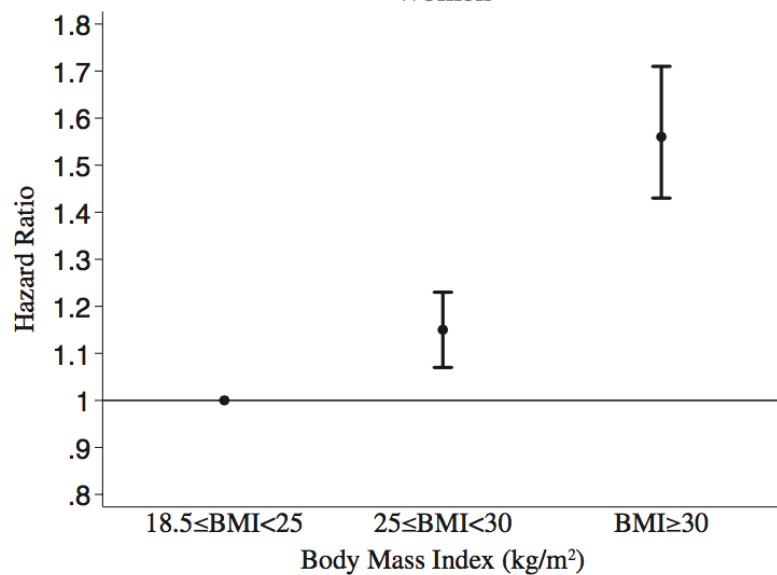
Filled prescriptions of antimicrobials overall

Men



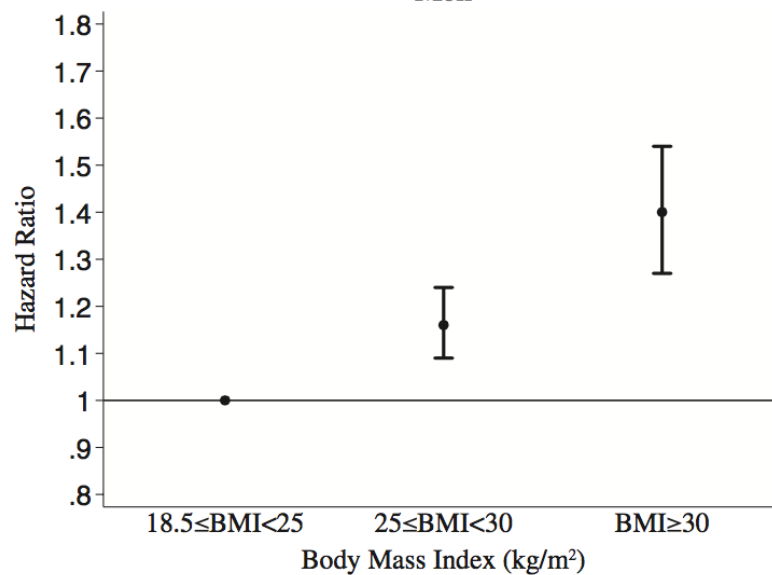
Phenoxymethylpenicillin

Women



Phenoxymethylpenicillin

Men





Obesity – increased risk of infection

Obesity was associated with both hospitalization for infection and use of antimicrobials overall. Specifically:

- Abscesses (both sexes)
- Respiratory tract infections (women)
- Dicloxacillin/flucloxacillin (both sexes)
- Penicillin V (both sexes)

Could prescriptions serve as a feasible proxy for infectious donors?

Epidemiology
July 2015

Obesity and Risk of Infection *Results from the Danish Blood Donor Study*

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Klaus Rostgaard,^c Bjarne Kuno Møller,^a Cecilie Juul-Sørensen,^a Sebastian Kotzé,^a Khoa Manh Dinh,^a
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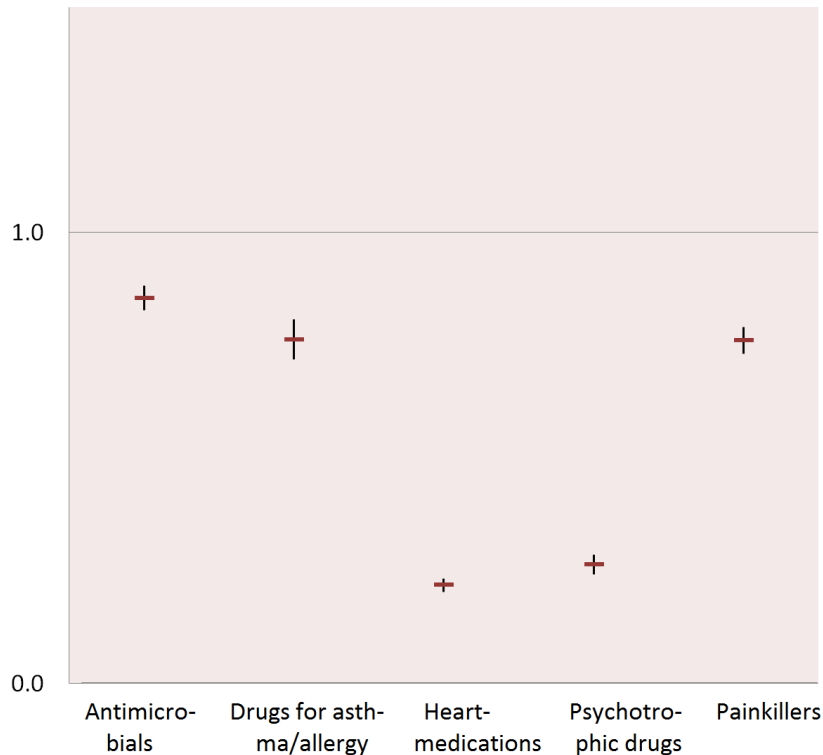


Infections and the healthy donor effect

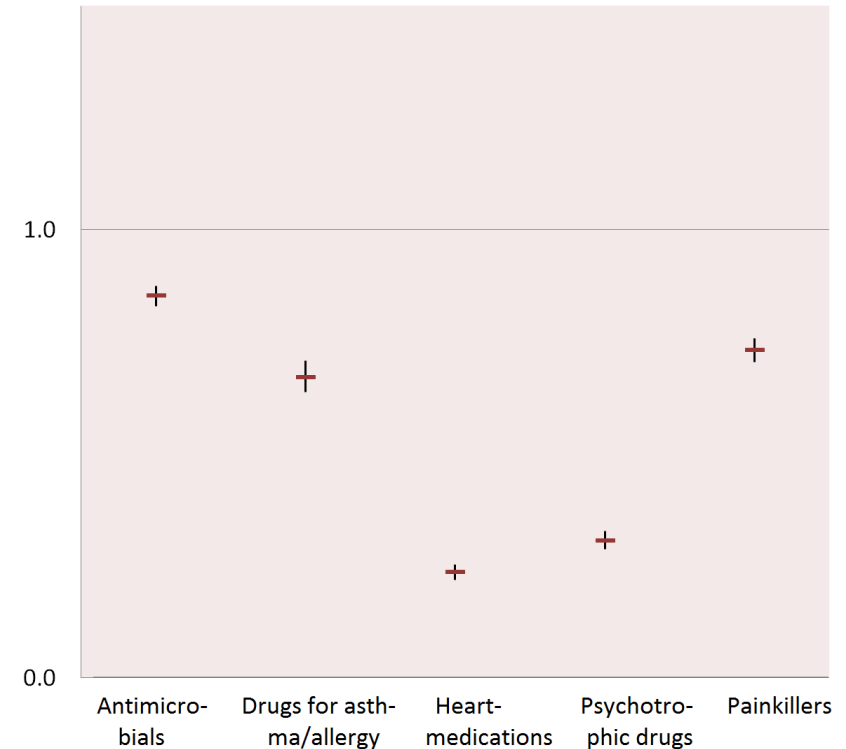
37,808 participants and 44,917 randomly chosen controls from the general population matched for age, sex, and region of Denmark.

22,198 donors received at least one prescription during 48,492 person-years

Hazard ratio for men



Hazard ratio for women





Conclusion

- Incidence rate of at least one prescription among donors:
Any prescription: 0.46 prescriptions/year
Antimicrobials: 0.27 prescriptions/year
- Incidence of antimicrobial prescriptions only 15% lower among blood donors than non-donors
- Antimicrobial prescriptions within 2 weeks of donation => 1/88 donations
- New study: association between post-donation prescription and recipient risk of infection



DBDS and transfusion transmitted diseases

Imagine if an association had been found between neurodegenerative diseases in donors and recipients:

- Identification of agent in patients with disease
- Identification of donors with subsequent disease
- Locate and test sequential donor samples

Among 81,898 donors: 10 donors with ALS, 3 with PD, 1 with AD during 256,097 person-years



Donor microbiome and recipient outcome

- A nasal swab has been obtained from 2,050 donors; aim 10,000
- Primary aim: to study the associations of *S. aureus* colonisation with morbidity (infections, metabolic disorders, autoimmune diseases)
- Secondary aims:
Nasal microbiome and donor morbidity
S. aureus/nasal microbiome and recipient outcome
- First finding: *S. aureus* colonisation more prevalent than previous studies: 50%
- Fecal microbiome:
Demand for donors for fecal transplantation





Blood donor study – research infrastructure



Research questions:

Blood donor health questions

Transfusion medicine questions

Generic health research questions

Infrastructure:

Donor and recipient database

National health registers

Questionnaire database

Biobank



Give blood, save lives, create knowledge

The Danish Blood Donor Study:
now part of the strategy for the Danish Blood Donor
Organisation to use in the recruitment and adherence
of donors



The Danish Blood Donor Study

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