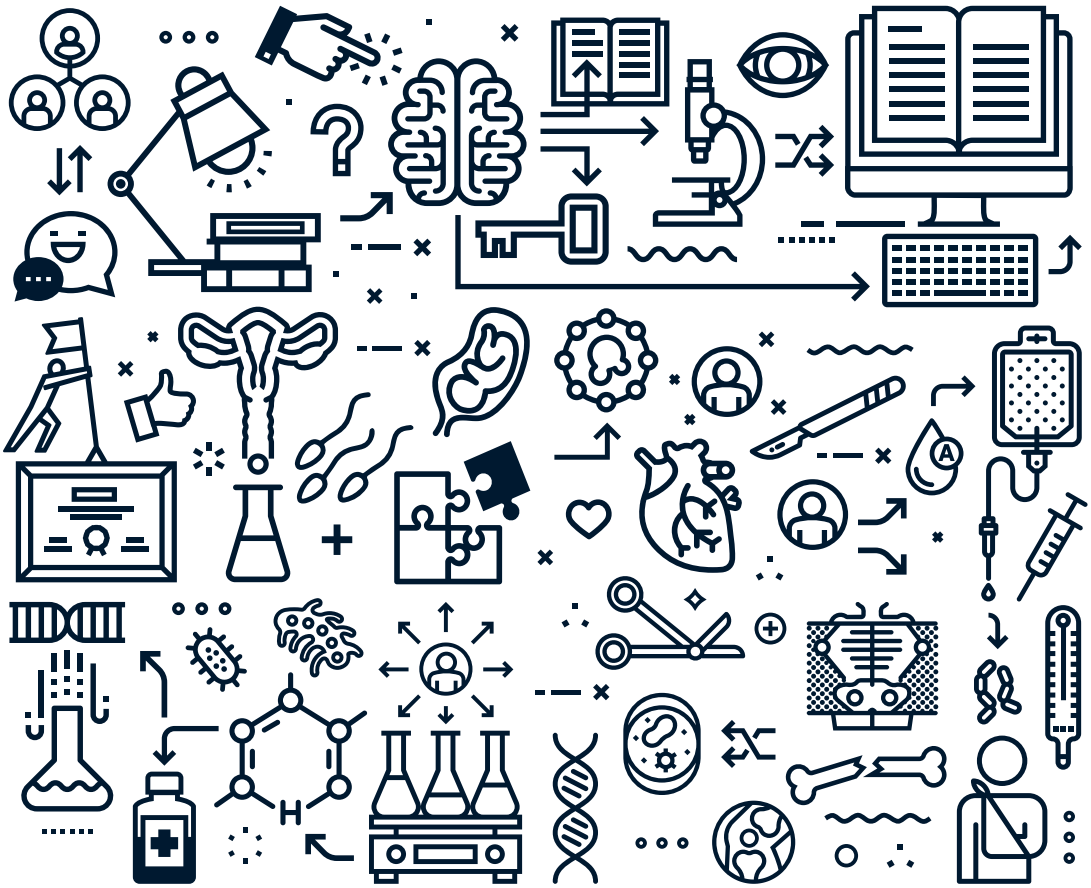


ABSTRACTBOG

Forskningssymposium

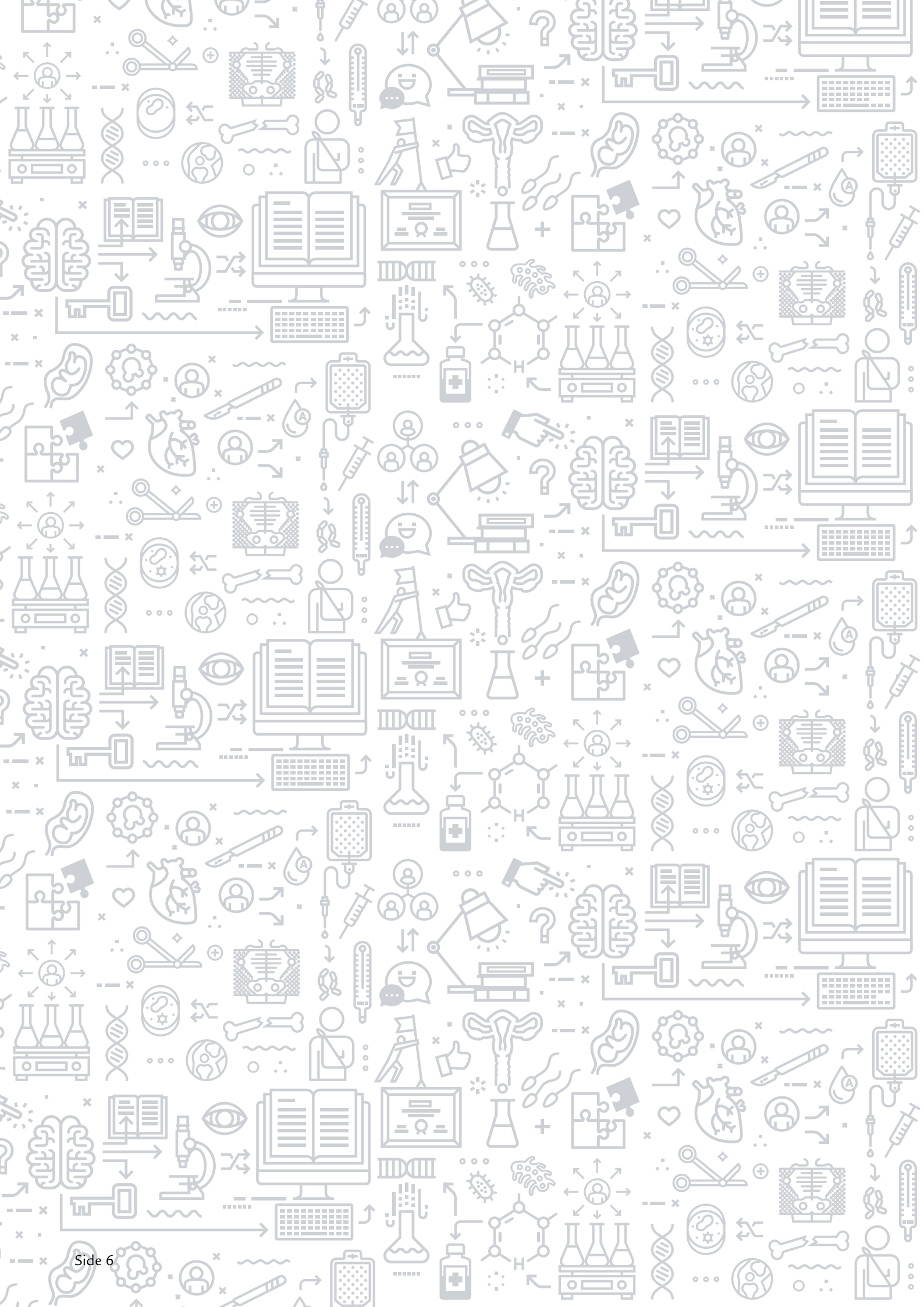
En portefølje af sundhedsfaglig forskning og udvikling ved Regionshospital Nordjylland

3. november 2022

CKF CENTER FOR KLINISK FORSKNING Regionshospital Nordjylland
AALBORG UNIVERSITET
REGIONSHOSPITAL NORDJYLLAND – i gode hænder

Indholdfortegnelse


patienternes oplevelse
Laparoscopic Inguinal Herniotomy
Anemia after hip fracture



Forord

På vegne af Center for Klinisk Forskning (CKF) er det mig en stor glæde og fornøjelse at byde velkommen til afholdelse af det årlige Forskningssymposium på Regionshospital Nordjylland (RHN).

Det er nu sjette gang, at symposiet løber af stablen, siden det så lyset for første gang 2016.

Det første år var der tilmeldt 14 abstracts. I år er der tilmeldt intet mindre end 66 abstracts, som på bedste vis afspejler en spændende udvikling på regionshospitalet manifesterende sig med en fin bredde i de kliniske forsknings- og udviklingsaktiviteter, der udfolder sig på tværs af de forskellige sundhedsfaglige grupper og de enkelte specialer.

Ingen tvivl om at for flere deltagere er symposiet en anledning til for første gang at prøve kræfter med videnskabelig formidling, samt interaktion med andre forskere og forskningsinteresserede i øvrigt. Således er en stor del af de abstracts, der præsenteres på symposiet, tilmeldt af deltagerne på RHNs forskningskursus 2022, "Fra ide til projekt". Samtidig bør det også bemærkes, at der i stigende omfang tilmeldes abstracts fra medicinstuderende på bachelor- eller kandidatdelen i forbindelse med deres forskningsprojekter udført på RHN.

Der skal gå en stor tak til Charlotte Rahbek og Jytte Enevoldsen ved CKF for at varetage de mange planlægnings- og koordinationsopgaver, der gør det muligt at afholde symposiet på så fornem vis. Tilsvarende en stor tak til Mette Henriksen, grafisk medarbejder i Kommunikation, som har været behjælpelig med opsætning af symposiets abstractbog.

Peter Leutscher, Professor
Center for Klinisk Forskning, Regionshospital Nordjylland &
Klinisk Institut, Aalborg Universitet

Program
Regionshospital Nordjyllands Forskningssymposium 2022

Torsdag den 3. november 2022 – Skou Auditoriet

12.00-12.45 **Posterpræsentation**
Symposiet starter i Glasgangen, hvor det er muligt at studere postere og tale med forskerne

12.45-13.00 **Pause**
Alle deltagere bevæger sig over i Skou Auditoriet

13.00-13.10 **Velkomst v/professor, overlæge Peter Derek Christian Leutscher**
Center for Klinisk Forskning, RHN

13.10-13.25 **Velkomst v/professor, institutleder Sten Rasmussen**
Klinisk Institut, Aalborg Universitet

13.25-13.55 **Orale præsentationer del 1, moderator Peter Skrejborg**
The effect of red clover isoflavones on the urinary microbiota and bladder symptoms in postmenopausal women with and without overactive bladder
v/Annemarie Brusen Villadsen, Center for Klinisk Forskning, RHN

The association between sexually transmitted infections and the severity of cervical lesions in women with female genital schistosomiasis
v/Karoline Jøker, Center for Klinisk Forskning, RHN

Treatment of neonatal hyperbilirubinemia - what is most efficient: BiliCocoon or conventional phototherapy - a randomized controlled multicenter trial
v/Mette Line Donneborg Roed, Børne- og Ungefdelingen, RHN

13.55-14.15 **Pause**

14.15-14.45 **Orale præsentationer del 2, moderator Peter Skrejborg**
Aspects of health literacy and cognitive function in adults with diabetic foot ulcers: a cross-sectional study
v/Morten Bilde Simonsen, Institut for Materialer og Produktion, Aalborg Universitet

Long-term risk for heart failure amongst Danish diabetic patients after coronary artery bypass graft surgery
v/lægestuderende Benedicte Bay Oxholm, Jeppe Hauch og Sidsel le Fevre Karlsen

Clinical decision support system for stratification of patients within 24 hours of admission for risk of hospital-acquired urinary tract infection using explainable Bayesian Network models
v/Rune Sejer Jakobsen, Center for Klinisk Forskning, RHN

14.45-15.00 **Pause**

15.00-15.35 **Virtuel posterpræsentation, moderator Mona Kyndi Pedersen**

The use of and knowledge about dietary and herbal supplements among gynecological patients
v/lægestuderende Janni Kristensen, Chi Tuyet Nguyen, Emma Elisabeth Skovby Petersen og Ida Sofie Skovby Petersen

Collaboration of Research in Intensive Care (CRIC), North Denmark Regional Hospital Hjoerring
v/Malgorzata B Pawlowicz-Dworzanska, Anæstesi- og Intensivafdelingen, RHN

Involvement of relatives – an observational study in a hospital context
v/Sofie Ladekarl Christiansen, Center for Klinisk Forskning, RHN

Quality of cardiac rehabilitation in Regionshospital Nordjylland following acute coronary syndrome
v/lægestuderende David Vadsholt og Ahmad Agam

A Bibliometric Analysis of Publications from 2021 from the North Denmark Regional Hospital
v/Maria Pertou Østergaard, Medicinsk Bibliotek

Use of biomarkers for screening as predictors of cardiovascular disease in patients with type 2 diabetes – a cohort study
v/lægestuderende Casper Kvist Carlsen og Lisa Buhl

Prolapsoperationer i lokalanæstesi – kan ambulante patientforløb optimeres ved at undgå rus som bedøvelsesmetode?
v/Kanutte Norderud, Afdeling for Kvindesygdomme, Graviditet og Fødsel, RHN

15.35-16.00 **Uddeling af priser og afslutning**
Herunder uddeling af Kvalitetsprisen

15.55-16.00 **Afslutning**

Akut Medicin og Anæstesiologi

1

Patient-reported outcome measures in the emergency department: a scoping review protocol

Ninna Rysholt Poulsen[1,2,3], Liv Marit Valen Schougaard[4], Morten Breinholt Søvsø[5], Peter Derek Christian Leutscher[1,3], Mona Kyndi Pedersen[1,3]

1. Centre for Clinical Research, North Denmark Regional Hospital, Denmark
2. Emergency Department, North Denmark Regional Hospital, Denmark
3. Department of Clinical Medicine, Aalborg University, Denmark
4. Unit for Patient-reported Outcomes, AmbuFlex, Regional Hospital West Jutland, Denmark
5. Centre for Prehospital and Emergency Research, Denmark

Background
In recent years, the workload in emergency departments has increased, and a fast pace characterises patient management. The accelerated approach may lead to unintentional negligence by health care professionals of patient-reported signs and symptoms in the emergency department. Thus, using patient-reported outcome measures (PROM) in the emergency department may improve health care professionals' attention to patients' needs and health status. The objective of this scoping review is to identify and characterise validated patient-reported outcome measures used to assess adult patients' health status in the emergency department to support clinical decision-making and to develop individual care and treatment plans.

Methods
The scoping review will be undertaken by the methodology for scoping reviews developed by the Joanna Briggs Institute. A systematic literature search will be performed primarily in MEDLINE, Embase, CINAHL, and PsycINFO databases. Both published and unpublished sources of information will be considered. Studies published from 2000 onwards will be included. Two reviewers will independently perform the study selection and data extraction. Any reviewer disagreement will be resolved through discussion or by involving a third reviewer.

Results
In total, 22,503 articles have been identified. Screening the articles with the defined inclusion and exclusion criteria is currently in progress. The data extraction will be presented in a tabular form together with a narrative summary.

Conclusion
Prospectively, a scoping review of existing PROMs could help identify measures that may be adapted in the development of a clinically substantiated PROM in the ED.

THE PATIENT FIRST

- A SCOPING REVIEW ON PATIENT-REPORTED OUTCOME MEASURES IN THE EMERGENCY DEPARTMENT

Ninna Rysholt Poulsen[1,2,3] • Liv Marit Valen Schougaard[4] • Morten Breinholt Søvsø[5] • Peter Derek Christian Leutscher[1,3] • Mona Kyndi Pedersen [1,3]

[1]Centre for Clinical Research, North Denmark Regional Hospital, Hjoerring, Denmark. [2]Emergency Department, North Denmark Regional Hospital, Hjoerring, Denmark. [3]Department of Clinical Medicine, Aalborg University, Denmark. [4]Unit for Patient-reported Outcomes, AmbuFlex, Regional Hospital West Jutland, Gødstrup, Denmark. [5]Centre for Prehospital and Emergency Research.

BACKGROUND

In recent years, the workload in emergency departments has increased, and a fast pace characterises patient management. The accelerated approach may lead to unintentional negligence by health care professionals of patient-reported signs and symptoms in the emergency department. Thus, using patient-reported outcome measures (PROM) in the emergency department may improve health care professionals' attention to patients' needs and health status.

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METHODS

A systematic literature search will be performed primarily in MEDLINE, Embase, CINAHL, and PsycINFO databases. Both published and unpublished sources of information will be considered. Studies published from 2000 onwards will be included. Two reviewers will independently perform the study selection and data extraction.

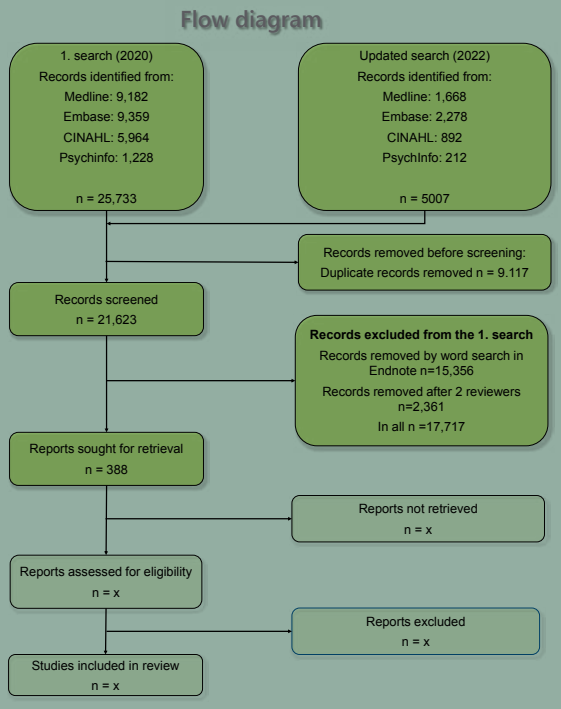
RESULTS

In total, 21,623 articles have been identified. The screening process with defined inclusion and exclusion criteria is currently in progress. The process is shown in the flow diagram.

PERSPECTIVE

Prospectively, a scoping review of existing PROMs could help identify measures that may be adapted in the development of a clinically substantiated PROM in the Emergency Department.

Flow diagram



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NORTH DENMARK REGIONAL HOSPITAL

2

Anæstesien puster liv i fagligheden – et udviklingsprojekt om tværfaglig kompetenceudvikling og samarbejde i hverdagen

Betinna Markfoged*[1], Bente Skov*[1], Birgit Jensen[1], Mikka Borup[1], Mary Kruse[1], Mona Kyndi Pedersen[2]

1. Afdeling for Anæstesi og Intensiv, Regionshospital Nordjylland, Danmark
2. Center for Klinisk Forskning, Regionshospital Nordjylland, Danmark

**Deltager i Forskningskursus 2022 ved Regionshospital Nordjylland*

Baggrund

Som anæstesipersonale håndterer vi patienter fra mange forskellige specialer, hvilket kræver brede faglige kompetencer. Det daglige arbejde kræver ofte stor selvstændighed for både anæstesilæger og sygeplejersker. For at sikre fortsat ekspertise, kvalitet og sikkerhed i vores arbejde, ser vi et behov for at vedligeholde allerede erhvervede erfaringer og for at holde os fagligt ajour. Formålet med projektet er, at få indblik i personalets præferencer og behov for undervisning og tværfagligt samarbejde. Vi ønsker, at udvikle en model for kompetenceudvikling, hvor læringsrum og læringskultur er i fokus, for derved at opretholde og tilføre teoretiske og praktiske kompetencer i afdelingen.

Metoder

Projektet udarbejdes med baggrund i Forandringsteoriens syv trin. Information om personalets behov og præferencer vil blive indsamlet i form at et spørgeskema. Resultaterne fra spørgeskemaundersøgelsen vil blive diskuteret på en temadag forbeholdt hele personalegruppen. Formålet med temadagen er at udforske personalets ønsker til undervisning, læringssituationer og samarbejde. De overordnede ideer og fund fra temadagen gennemarbejdes af arbejdsgruppen, og vil danne baggrund for udarbejdelse af afdelingens strategi og fremtidige model for kompetenceudvikling. I udarbejdelse af modellen for kompetenceudvikling anvendes begreber om læring, kompetenceudvikling og kompetenceniveauer.

Resultater

Foreløbige resultater vil blive fremlagt på forskningssymposiet.

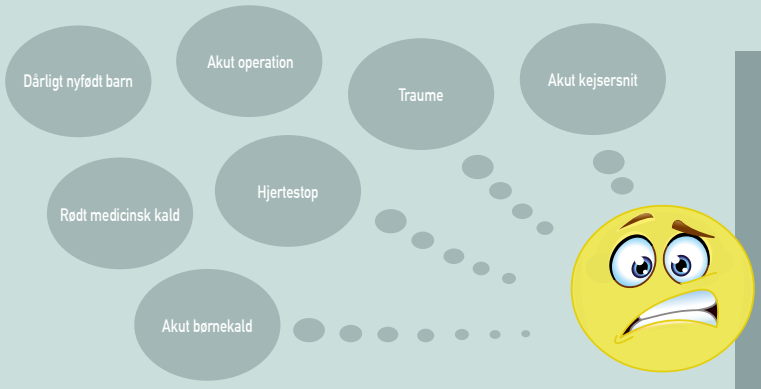
Konklusion

Vi forventer, at projektet vil skabe grobund for en kultur, hvor det er en selvfølgelighed, at man samarbejder og deler viden med hinanden, på tværs af faggrupper. Personalet bliver derved bedre rustet, til at møde faglige udfordringer med større fortrolighed. Vi tror på, at forandringerne vil fremme arbejdsglæden, give faglig stolthed og gensidig respekt i personalegruppen, samt understøtte den faglige kvalitet i afdelingen.

Anæstesien puster liv i fagligheden

Et udviklingsprojekt om tværfaglig kompetenceudvikling og samarbejde i hverdagen

Betinna Markfoged[1] • Bente Skov[1] • Birgit Jensen[1] • Mikka Borup[1] • Mary Kruse[1] • Mona Kyndi Pedersen[2]
1. Afdeling for Anæstesi og Intensiv, Regionshospitalet Nordjylland, Hjørring, Danmark
2. Center for Klinisk Forskning, Regionshospital Nordjylland, Hjørring, Danmark



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Som anæstesipersonale håndterer vi patienter fra mange forskellige specialer. For at sikre fortsat ekspertise, kvalitet og sikkerhed i vores arbejde, ser vi et behov for at holde os fagligt ajour.

Formålet med projektet er at udvikle en model for kompetenceudvikling, hvor læringsrum og læringskultur er i fokus, for derved at opretholde og tilføre teoretiske og praktiske kompetencer i afdelingen.

Metode

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Information om personalets behov og præferencer vil blive indsamlet i form at et spørgeskema, og resultaterne vil efterfølgende blive diskuteret på en temadag. Formålet med temadagen er at udforske personalets ønsker til undervisning, læringssituationer og samarbejde. De overordnede ideer og fund fra temadagen vil danne baggrund for udarbejdelse af afdelingens strategi og fremtidige model for kompetenceudvikling.

Forandringsteoriens trin

1. Beskriv udfordringen
2. Beskriv forventede effekter
3. Lav aktivitetsplan
4. Beskriv de virkningsfulde mekanismer
5. Oplist de kontekstuelle betingelser
6. Sæt i gang
7. Evaluer indsatsen

Konklusion

Vi forventer, at projektet vil skabe grobund for en kultur, hvor det er en selvfølgelighed, at man samarbejder og deler viden med hinanden, på tværs af faggrupper. Personalet bliver derved bedre rustet, til at møde faglige udfordringer med større fortrolighed.

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Regionshospital Nordjylland

3

Study of emergency department visits among patients referred to the palliative homecare team in North Denmark Regional Hospital

Pernille Overgaard Lassen[1], Malene Engesgaard[2], Dorte Melgaard[3,4]

1. Department of Clinical Medicine, Palliative Unit, North Denmark Regional Hospital, Denmark
2. Department of Health Science and Technology, Aalborg University, Denmark
3. Department of Gynaecology and Obstetrics, North Denmark Regional Hospital, Denmark
4. Department of Clinical Medicine, Aalborg University, Denmark

Background
The palliative home-care team (P-team) attends, treats and supports terminally ill patients at home, at the nursing home or at the hospital. A majority of patients wish to stay at home for as long as possible. Frequent emergency department (ED) visits disrupts palliative homecare treatment and the patients determination to stay at home towards the end of life. The aim of the study was to study how often patients from the P-team, visits the ED and what the most common causes are.

Methods
This retrospective study included 390 patients referred to p-team in North Denmark Regional Hospital from January 2021 to end December 2021. Data was collected from the patients' medical records. Data was analysed by descriptive statistics.

Results
A total of 164(42%) patients had ED contact; 82(50%) male and 82(50%) female, and 88(54%) were married versus 76(47%) living alone. Seventy percent were referred from the hospital and 30% by their GP. Most, 110, had 1 ED contact, 37 had 2 ED contacts, 11 had 3 ED contacts, 4 had 4 ED contacts, 2 had 5 ED contacts. 42(26%) patients had contact to the ED within the last week of their lives. The most frequent diagnoses were: 20(12%) breathlessness,18(11%) pneumonia, and 14(9%) pain.

Conclusion
Four out of ten patients referred to the p-team contacted the ED. Some very close to end of life. This despite close contact with the p-team. Interviews of the next of kin could help to clarify the factors that make patients contact the ED.

STUDY OF EMERGENCY DEPARTMENT VISITS AMONG PATIENTS REFERRED TO THE PALLIATIVE HOMECARE TEAM IN NORTH DENMARK REGIONAL HOSPITAL

Pernille O. Lassen[1] • Malene E. Christensen[2] • Dorte Melgaard[2,3]

[1]Department of Clinical Medicine, Palliative Unit, North Denmark Regional Hospital, Hjoerring, Denmark
[2]North Denmark Regional Hospital, Hjoerring, Denmark
[3]Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

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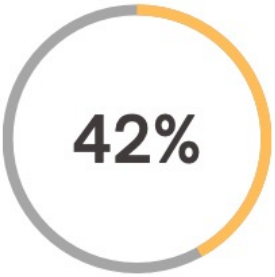

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4

Collaboration of Research in Intensive Care (CRIC), North Denmark Regional Hospital Hjoerring

Malgorzata B. Pawlowicz-Dworzanska[1], Mary Kruse[1], Andrei Ciubotariu[1], Kjeld Damgaard[1], Lillian Skov Søndergaard Lundberg[*1,2]

1. Department of Anesthesia and Intensive Care, North Denmark Regional Hospital, Denmark
2. Centre for Clinical Research, North Denmark Regional Hospital, Denmark

**Deltager i Forskningskursus 2022 ved Regionshospital Nordjylland*

Background
"CRIC" is doing high quality clinical research. CRIC was established in 2020 based upon the structure of the previous Centre for Research in Intensive Care. The ICU, North Denmark Regional Hospital Hjoerring, has participated in the studies: 6S, TRISS, SUP-ICU, HOT-ICU, AID-ICU and GODIF. The ICU joined the CRIC collaboration to improve treatment, care and outcomes of critically ill patients through high-quality clinical research.

Methods
The CRIC research answer clinical questions. The core is high-quality randomized clinical trials. Each randomized trial will often include build-up studies to optimize trial design and studies assessing the impact of the trial results.

Results
6S trial shows a statistically significant difference suggesting that using hydroxyethyl starch increases risk of death and renal replacement therapy. TRISS trial shows no significant difference in mortality and rates of ischaemic events in patients with septic shock assigned to blood transfusion using higher vs. lower threshold. SUP-ICU shows no significant differences between pantoprazole and placebo in 90-day mortality or in a composite outcome of four clinically important events. HOT-ICU trial did not result in a lower 90-days mortality targeting a lower oxygenation level compared to a higher oxygenation level. AID-ICU trial investigated agents intervening against delirium. Recruitment completed, no results yet. GODIF trial investigating goal directed fluid removal with furosemide. The trial is ongoing.

Conclusion
The CRIC collaboration gathers the intensive care units in Denmark and Europe making results that changes treatments of ICU patients worldwide.

Collaboration of research

in intensive care (cric), North Denmark Regional Hospital Hjoerring

Malgorzata B Pawlowicz-Dworzanska[1] • Mary Kruse[1] • Andrei Ciubotariu[1] • Kjeld Damgaard[1] • Lillian Skov Søndergaard Lundberg[1,2]

[1]Department of Anesthesia and Intensive Care, North Denmark Regional Hospital • [2]Centre for Clinical Research, North Denmark Regional Hospital

Background

"CRIC" is doing high quality clinical research. CRIC was established in 2020 based upon the structure of the previous Centre for Research in Intensive Care.
The ICU, North Denmark Regional Hospital Hjoerring, has participated in 6 studies, and joined the CRIC collaboration to improve treatment, care and outcomes of critically ill patients through high-quality clinical research.

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TRISS trial shows no significant difference in mortality and rates of ischaemic events in patients with septic shock assigned to blood transfusion using higher vs. lower threshold.

SUP-ICU shows no significant differences between pantoprazole and placebo in 90-day mortality or in a composite outcome of four clinically important events.

HOT-ICU trial did not result in a lower 90-days mortality targeting a lower oxygenation level compared to a higher oxygenation level.

AID-ICU trial investigated agents intervening against delirium. Recruitment completed, no results yet.

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Conclusion

The CRIC collaboration gathers the intensive care units in Denmark and Europe making results that changes treatments of ICU patients worldwide.

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NORTH DENMARK REGIONAL HOSPITAL

5

Mobilt Akut Team – Hvordan er funktionen integreret på Regionshospital Nordjylland?

Lillian Skov Søndergaard Lundberg*[1,2], Mona Kyndi Pedersen[2]

1. Intensiv- og anæstesiafdeling, Regionshospital Nordjylland, Danmark
2. Center for Klinisk Forskning, Regionshospital Nordjylland, Danmark

**Deltager i Forskningskursus 2022 ved Regionshospital Nordjylland*

Baggrund
Mobilt Akut Team (MAT) er implementeret på Regionshospital Nordjylland i 2011 som et led i "Operation Life" kampagnen. Formålet med at indføre MAT er at øge patientsikkerhed og redde menneskeliv. MAT funktionen er kendetegnet ved at være tværfaglig og består af fire elementer: Afferent (modtager), Efferent (udgående), Evaluerende og Administrativ.
På baggrund af få registrerede MAT kald i 2018-2021 ønsker intensivafdeling at belyste dette. Formålet med projektet er at evaluere MAT funktionen og at afdække mulige indsatsområder, som kan bidrage til optimering af MAT funktionen.

Metoder
Projektet er et kvalitetsudviklingsprojekt, hvor der bliver fokuseret på, hvordan MAT funktionen er beskrevet samt hvilke oplevelser med og holdninger til MAT funktionen læger og sygeplejersker på intensivafdeling har.Der anvendes analyse af centrale dokumenter for MAT funktionen samt spørgeskemaundersøgelse blandt læger og sygeplejersker på intensivafdeling. Datamaterialet vil blive bearbejdet med fokus på elementerne i MAT funktionen.

Resultater
De foreløbige resultater af tekstanalysen viser, at der i dokumenter omhandlende MAT funktionen på hospitalet, primært har været fokus på den modtagende del af MAT funktionen. Resultaterne fra spørgeskemaundersøgelsen afdækker relevante indsatsområder og viser, at der er en positiv holdning til MAT blandt læger og sygeplejerske på Intensiv.

Konklusion
Der er et behov for at sætte fokus på MAT funktionen både på afdelingsniveau og hospitalsniveau. Projektet tyder på, at en tydelig beskrivelse af organiseringen samt en veldefineret funktionsbeskrivelse for de fire elementer i MAT funktionen, vil kunne optimere Mobilt Akut Team.
Dette vil bidrage til at udnytte funktionens potentiale til gavn for patienter og personale.

MOBILT AKUT TEAM – GODT OR NOT?

Hvordan er Mobilt Akut Team integreret på Regionshospital Nordjylland?

Lillian Lundberg[1,2] Mona Kyndi Pedersen[2]
[1]Intensiv- og anæstesiafdeling og [2]Center for Klinisk Forskning, Regionshospital Nordjylland, Hjørring, Danmark

BAGGRUND

Mobilt Akut Team er implementeret på Regionshospital Nordjylland i 2011 som en del af "Operation Life" Kampagnen.

Mobilt Akut Team skal være med til at sikre tidlig opsporing og vurdering/behandling af kritisk sygdom.

Formålet med Mobilt Akut Team er at øge patientsikkerhed og redde menneskeliv.

Mobilt Akut Team består af 4 elementer – Afferent (modtager), Efferent (udgående), Administration og Evaluering.

Intensiv afdeling har registreret op til 35 MAT kald årligt i 2018-2021, hvilket er lavere end forventet.

METODE

A. Dokumentanalyse

- PRI dokument "Tilkald af mobilt akutteam (MAT)".
- "Vejledningen for MAT - Operation Life".

B. Spørgeskema

- Holdninger til og erfaringer med MAT funktionen blandt læger og sygeplejersker på intensiv afdeling, RHN

C. Fokusgruppeinterview

RESULTATER (FORELØBIGE)

PRI dokumentet "Tilkald af mobilt akutteam (MAT)" fokuserer ikke på alle 4 elementer i MAT funktionen.

Organiseringen af MAT funktionen er ikke tydeligt beskrevet.

De 4 elementer i MAT funktionen er helt eller delvis mangelfuldt beskrevet.

Samspillet mellem de 4 elementer er ikke tydeligt beskrevet.

Der er en positiv holdning til MAT funktionen og patientsikkerhed blandt læger og sygeplejersker på intensiv afdeling.

Læger og sygeplejersker på intensiv angiver at de ser MAT funktionen som en naturlig del deres arbejde på intensiv afdeling.

Undersøgelsen afdækker mulige indsatsområder i forhold til den afferente del og efferente del samt administration og evaluering af MAT funktionen, som bør undersøges nærmere.

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REGIONSHOSPITAL NORDJYLLAND – i gode hænder

6

Can a blood test predict upper GI bleeding, risk of rebleeding and mortality within 30 days - a retrospective study

Hassan Mafrag[*1,2], Peter Derek Christian Leutscher[3,4]

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2. Department of Gastroenterology and Hepatology. Aalborg University Hospital, Denmark
3. Department of Clinical Medicine, Aalborg University, Denmark
4. Centre for Clinical Research, North Denmark Regional Hospital, Denmark

**Participant in the North Denmark Regional Hospital Research Course 2022*

Background
Upper gastro-intestinal bleeding is a common condition worldwide with an annual incidence of 50-150 cases per 100,000 population. In prior studies, it has been observed that upper GI bleeding is associated with increased Blood Urea Nitrogen to Creatinine ratio either due to decrease in blood flow to the kidney, secondary to loosing blood volume due to bleeding, or due to digestion of blood in the digestive system and metabolization of proteins. The aim of this study is to measure the specificity and sensitivity of BUN/creatinine ratio to predict UGIB, re-bleeding and mortality within 30 days among patients with non-variceal upper GI bleeding.

Methods
This study will be conducted retrospectively by reviewing medical files, blood tests and operations (Gastroscopy) notes of the patients that were admitted between 01.01.2021 to 01.01.2022 to the emergency surgical department in North Denmark Regional Hospital, Hjoerring with the diagnosis upper gastro-intestinal bleeding. Data will be collected by using REDCap data management system.
The following information will be retrieved from the patients' medical files: Age, sex, past medical history, blood tests result specifically BUN & Creatinine, gastroscopy notes, and new admission notes due to bleeding within 30 days.
Data will be analyzed using SPSS software to measure the specificity and sensitivity of BUN/creatinine ratio in predicting bleeding, rebleeding and mortality.

Results
The results are pending.

Conclusion
If the result will show a high specificity and sensitivity, then we should consider include a high ratio in the indications criteria for acute gastroscopy when there is suspicion of upper GI bleeding to reduce treatment delay.

Can a Blood test predict upper GI bleeding, risk of rebleeding and mortality within 30 days - a retrospective study.

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1.Department of general surgery, North Denmark Regional Hospital, Hjoerring, Denmark.

2.Department of Gastroenterology and Hepatology. Aalborg University Hospital, Denmark.

3.Department of Clinical Medicine, Aalborg University, Denmark

4.Centre for Clinical Research, North Denmark Regional Hospital, Hjoerring, Denmark

INTRODUCTION

Upper gastro-intestinal bleeding is a common condition worldwide with an annual incidence of 50-150 cases per 100,000 population.
In prior studies, it has been observed that upper GI bleeding is associated with increased Blood Urea Nitrogen to Creatinine ratio due to many causes.
The aim of this study is to measure the specificity and sensitivity of BUN/creatinine ratio to predict UGIB, re-bleeding and mortality within 30 days among patients with non-variceal upper GI bleeding.

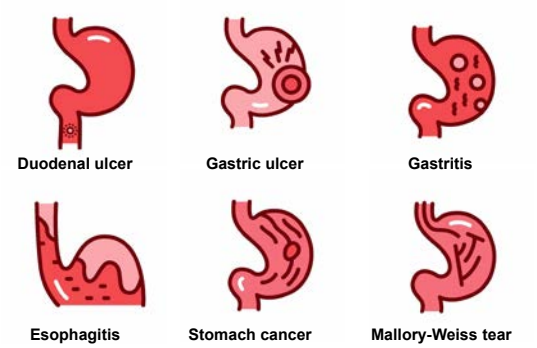


Figure 1. possible causes of upper GI bleeding

METHODS

This study will be conducted retrospectively by reviewing medical files, blood tests and operations (Gastroscopy) notes of the patients that were admitted between 01.01.2021 to 01.01.2022 to the emergency surgical department in North Denmark Regional Hospital, Hjoerring with the diagnosis upper gastro-intestinal bleeding.

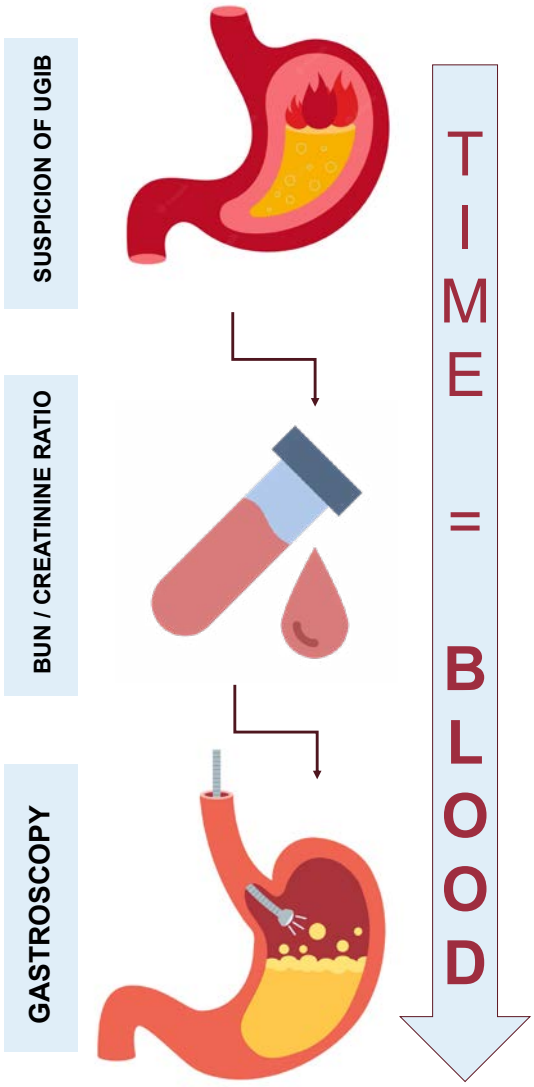
The following information will be retrieved from the patients' medical files
Age, sex, past medical history, blood tests result specifically BUN & Creatinine, gastroscopy notes, and new admission notes due to bleeding within 30 days.
Data will be analyzed to measure the specificity and sensitivity of BUN/creatinine ratio in predicting bleeding, rebleeding and mortality.

RESULTS

The results are pending.

CONCLUSION

If the result will show a high specificity and sensitivity, then we should consider including a high ratio in the indications criteria for acute gastroscopy when there is suspicion of upper GI bleeding to reduce treatment delay.



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Bevægeapparatet

7

The effect of fall assessment on number of prescribed fall-risk increasing drugs among older adults: a Danish register-based study

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1. Department of Acute Medicine, Gødstrup hospital, Denmark
2. Unit of Clinical Biostatistics and Epidemiology, Aalborg University Hospital, Denmark
3. Department of Cardiology, Aalborg University Hospital, Denmark
4. Department of Gynaecology and Obstetrics, North Denmark Regional Hospital, Denmark
5. Department of Clinical Medicine, Aalborg University, Denmark
6. Department of Geriatric Medicine, North Denmark Regional Hospital, Denmark
7. Department of Geriatric Medicine, Aalborg University, Denmark

Background
Several drugs are associated with increased risk of falls among older adults. It is recommended to perform a medication review to older adults with a fall to identify and deprescribe the use of fall-risk increasing drugs (FRIDs). We investigated the effect of a fall assessment in Danish geriatric fall clinics on the number of prescribed FRIDs.

Methods
This register-based study included all older patients 65+ years from Danish geriatric outpatient fall clinics from 2008 to 2018. We excluded patients who were not alive or emigrated one year after fall assessment. The use of FRIDs was defined by dispensation of one or more prescriptions in the year prior to the first outpatient contact, and 0-6 months or 6-12 months after the final outpatient contact. We compared the difference in the number of prescribed FRIDs one year before, 0-6 months and 6-12 months after final outpatient contact.

Results
The number of patients aged 65+ years receiving a geriatric fall assessment from 2008 to 2018 was 25,237. In total, 21,294 patients completed fall assessment and were alive one year after. The median number of prescribed FRIDs was lower after the patients had completed the fall assessment than before (1 vs 2, $p < 0.01$). The deprescriptions persisted after 6 months with no significant difference in the number of FRIDs 0-6 months and 6-12-months following end of fall assessment.

Conclusion
Comprehensive geriatric fall assessment in falls clinics is associated with a long-term reduction in the number of prescribed FRIDs to older adults.

Fall assessment and the number of prescribed Fall-Risk Increasing Drugs among older adults

Silas Z. Clemmensen[1], Johannes Riis[1,2], Kristian H. Kragholm[1,3,4], Lene T. Hansen[5], Dorte Melgaard[1,6]

1: Center for Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark, 2: Department of Geriatric Medicine, Aalborg University Hospital, Aalborg, Denmark, 3: Unit of Clinical Biostatistics and Epidemiology, Aalborg University Hospital, Aalborg, Denmark, 4: Department of Cardiology, Aalborg University Hospital, Aalborg Denmark 5: Department of Geriatric Medicine, North Denmark Regional Hospital, Hjørring, Denmark, 6: Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

Some drugs are associated with increased risk of falls among older adults. It is recommended to perform a medication review to older adults with a fall to identify and deprescribe the use of fall-risk increasing drugs (FRIDs). We investigated the effect of fall assessment in Danish geriatric fall clinics on the number of prescribed FRIDs.

Methods

All patients 65+ years from Danish geriatric outpatient clinics from 2008 to 2018 using Danish registries were included. We excluded patients who were not alive or emigrated one year after fall assessment. We defined the use of FRIDs by dispensation of ≥1 prescriptions in the year prior to the first outpatient contact, 0-6 months and 6-12 months after the final outpatient contact. We compared the number of prescribed FRIDs one year before with 0-6 months and 6-12 months after final outpatient contact.

Results

In total, 21,294 patients completed fall assessment and were alive one year after. The median number of prescribed FRIDs was lower after the patients had completed the fall assessment than before (1 vs 2, p < 0.01). The deprescriptions persisted after 6 months with no significant difference in the number of FRIDs 0-6 months and 6-12-months after fall assessment.

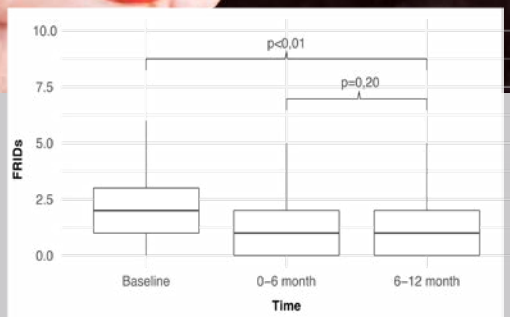

Figure 1. The median (IQR) number of FRIDs before and after fall assessment.

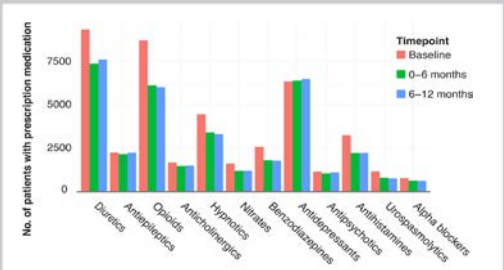

Figure 2. Number of patients with prescribed FRIDs

Conclusion

Geriatric fall assessment in fall clinics is associated with a long-term reduction in the number of prescribed FRIDs to older adults.

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8

Kan inddragelse af bone mineral density (BMD) i ikke vægtbærende led øge den diagnostiske kvalitet af osteoporose ved DXA-scanninger?

Hanne Thomsen*[1], Marianne Ruth[1], Anne Kristine Eiersted[1], Hans Henrik Salmonsen[1], Dorthe Brønnum[2]

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**Deltager i Forskningskursus 2022 ved Regionshospital Nordjylland*

Baggrund
DXA-scanning af lænderyg og hofte er standard til diagnostik af osteoporose samt måling af behandlingseffekt. Fysiologiske forandringer i det scannede område kan give anledning til usikkert resultat. Metal i lænderyg og/eller hofte er kontraindikation for scanning af området. Formålet med dette projekt er at undersøge relevansen af at inddrage yderligere målesteder som supplement til nuværende praksis.

Metoder
Projektet gennemføres i to dele.
Del 1: Bestemmelse af andel af ikke/delvist udførte DXA-scanninger.
Ved hjælp af Sundhedsvæsenets Klassifikationssystem identificeres patienter, som har fået en delvis udført DXA-scanning på Billeddiagnostisk afsnit Frederikshavn i perioden januar-marts 2021.
Del 2: Kvalitativ gennemgang af delvist udførte DXA-scanninger.
Journalaudit med identifikation af årsager til delvist udførte DXA-scanninger og kategorisering af mulige fejlkilder.

Resultater
1247 patienter fik udført en DXA-scanning, hvoraf 39 var delvist udførte - heraf 23 undersøgelser af lænderyg (gennemsnitsalder 78 år) og 16 undersøgelser af hofte (gennemsnitsalder 71 år). Årsag til delvist udførte DXA-scanninger skyldes metal i scanningsområdet. 18 af 23 patienter med DXA-scanning af lænderyg har tidligere billeddiagnostiske undersøgelser af lænderyg, hvoraf de 16 beskrives med spondylartrose, diskusdegeneration, skoliose eller kompressionsfraktur. 9 af 16 patienter med DXA-scanning af hofte har tidligere billeddiagnostiske undersøgelser af hofte hvoraf 6 beskrives med degenerative forandringer.

Konklusion
I projektet ses, at 3% af patienterne har en delvis udført DXA-scanning, og der findes mulige fejlkilder, som kan få betydning for vurdering af knogletæthed. Projektet giver anledning til at indtænke BMD af distale radius som supplement til delvis udført DXA-scanning. Projektet kan suppleres med data for hele 2021.

Kan inddragelse af **Bone Mineral Density (BMD)** i ikke vægtbærende led øge den diagnostiske kvalitet af osteoporose ved **DXA-scanninger?**

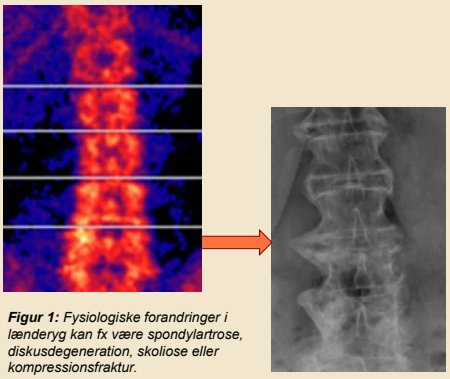
Hanne Thomsen[1] • Marianne Ruth[1] • Anne Kristine Eiersted[1] • Hans Henrik Salmonsen[1] • Dorthe Brønnum[2]

[1]Billeddiagnostisk Afsnit Frederikshavn, Regionshospital Nordjylland, Danmark • [2]Center for Klinisk Forskning, Regionshospital Nordjylland

INTRODUKTION

DXA-scanning af lænderyg og hofte er standard til diagnostik af osteoporose samt måling af behandlingseffekt. Fysiologiske forandringer i det scannede område kan give anledning til usikkert resultat. Metal i lænderyg og/eller hofte er kontraindikation for scanning af området.

Formålet med dette projekt er at undersøge relevansen af at inddrage yderligere målesteder som supplement til nuværende praksis.



Figur 1: *Fysiologiske forandringer i lænderyg kan fx være spondylartrose, diskusdegeneration, skoliose eller kompressionsfraktur.*

METODE

Projektet gennemføres i to dele.

Del 1

Ved hjælp af Sundhedsvæsenets Klassifikationssystem identificeres patienter, som har fået en komplet eller delvis udført DXA-scanning på Billeddiagnostisk Afsnit Frederikshavn i perioden januar-marts 2021.

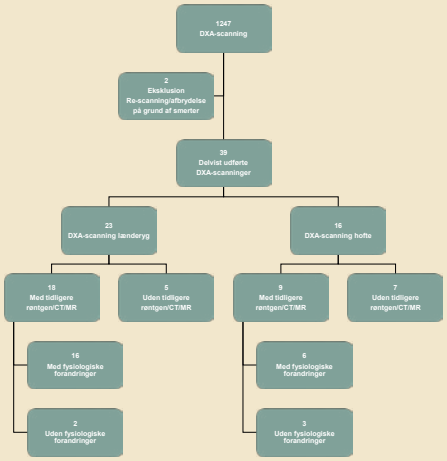
Del 2

Kvalitativ gennemgang af delvist udførte DXA-scanninger med afklaring af årsager og kategorisering af mulige fejlkilder.

RESULTATER

I dataopsamlingsperioden fik 1247 patienter udført en DXA-scanning, hvoraf 39 var delvist udførte - heraf 23 undersøgelser af lænderyg (gennemsnitsalder 78 år) og 16 undersøgelser af hofte (gennemsnitsalder 71 år).

Årsag til delvist udførte DXA-scanninger skyldes metal i scanningsområdet.



Figur 2*: Antal udførte og delvis udførte DXA-scanninger og andel af fysiologiske forandringer.*

KONKLUSION

Projektet viser, at 3% af patienterne har en delvis udført DXA-scanning.

Der findes mulige fejlkilder, som kan påvirke resultatet af DXA-scanningen.

Projektet giver anledning til at indtænke BMD af distale radius som supplement til delvis udført DXA-scanning.

Projektet kan med fordel suppleres med data for hele 2021.

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REGIONSHOSPITAL NORDJYLLAND – i gode hænder

9

Achilles tendon rupture: Patient outcomes following different types of rehabilitation programs

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2. Department of Physio – and Occupational Therapy, Aalborg University Hospital, Denmark
3. Department of Physio- and Occupational Therapy, Copenhagen University Hospital, Hvidovre Hospital, Denmark
4. Arthroscopic Center, Hvidovre Hospital, Denmark
5. Centre for Clinical Research, North Denmark Regional Hospital, Denmark
6. Department of Clinical Medicine, Aalborg University, Denmark

**Participant in the North Denmark Regional Hospital Research Course 2022*

Background
Patients with an acute achilles tendon rupture (ATR) have reduced physical function 2 -7 years irrespectively after primary rupture no matter of treatment, either operative or non-operative. Consensus of treatment for patients with ATR is not consistent in Denmark. The aim of this study is to compare patient physical related function after ATR based on a specific rehabilitation set-up, either as specialized physiotherapy (SP), municipal physiotherapy (MP) or self-training (ST) respectively.

Methods
Among approximately 3000 patients with ATR from The Danish Achilles tendon Database (DADB) originating from 11 Hospitals in Denmark treating patients with ATR. 2008 patients were eligible for inclusion in the study. Endpoints were Achilles Tendon Rupture Score (ATRS) conducted at 2 weeks, 6, 12 and 24 months, respectively in addition to Achilles Tendon Resting Angle (ATRA) at 6 and 12 months respectively. Moreover one legged heelrise at 6 and 12 months respectively and patients self-reported outcome 12 months after ATR episode were other patient outcomes also included in the study.

Results
Final results are pending.

Conclusion
Preliminary results indicate that patients who received SP or MP training achieve a higher ATRS score after 6 and 12 months than patients recieving ST. Although the results are not significantly different, they however indicates beneficial outcomes of physiotherapy training in patients with ATR.

ACHILLES TENDON RUPTURE: PATIENT RELATED OUTCOMES IN DIFFERENT TYPES OF REHABILITATION PROGRAMS

Kathrine Skov Andersen[1,2], Maria Swennergren Hansen[3], Kristoffer Weisskirchner Barfod[4], Peter Leutscher[5,6] Marianne Christensen[1,2]

1. Department of Orthopedics, Aalborg University Hospital
2. Department of Physio - and Occupational Therapy, Aalborg University Hospital
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4. Arthroscopic center, Hvidovre Hospital
5. Center of Clinical Research, North Denmark Regional Hospital
6. Department of Clinical Medicine, Aalborg University

Kontaktoplysninger: Kathrine Skov Andersen. Mailadresse: kaska@rn.dk

Background

The aim is to compare patient physical function after acute achilles tendon rupture (ATR) based on a specific rehabilitation set-up. Either specialized physiotherapy (SP), municipal physiotherapy (MP)or self training (ST)

Methods

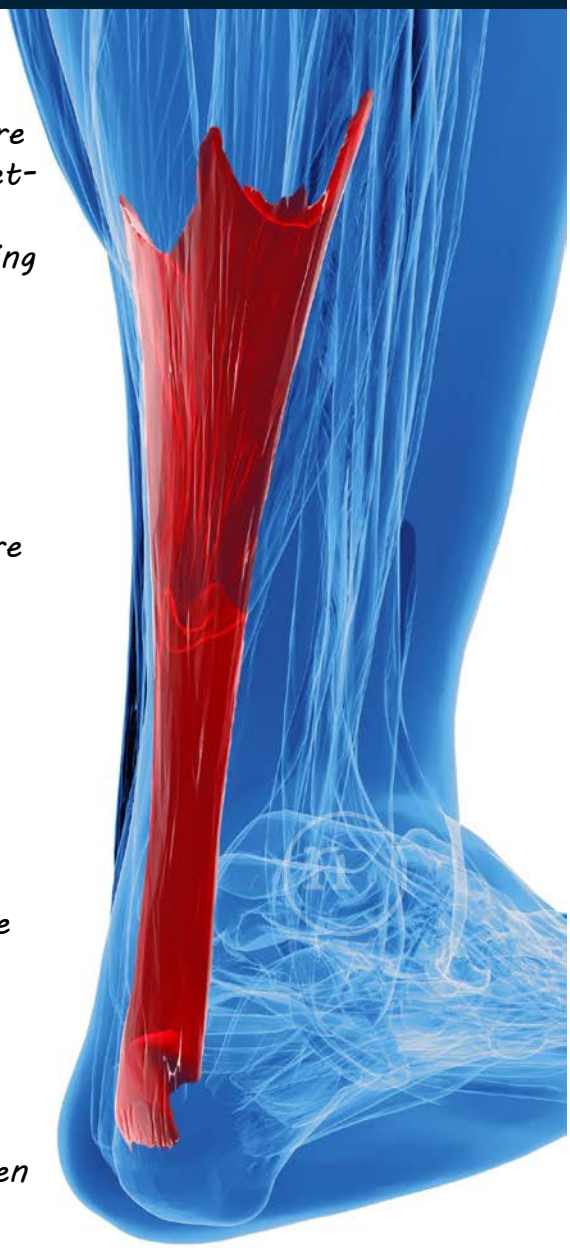
Among 3000 patients from Danish Achilles tendon Database (DADB) 2008 were eligible for inclusion. Endpoints are Achilles TendonRupture Score (ATRS), Achilles Tendon Resting Angle (ATRA),one legged heelrise and patients selfreported outcome

Results

Preliminary results indicate that patients who received SP or MP training achieve a higher ATRS score after 6 and 12 months than patients recieving ST. The results are not significantly different.

Conclusion

Results indicates beneficial outcomes of physiotherapy training in patients with ATR. Perspectively results are relevant when planning rehabilitation programs in the future for patients with ATR.



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REGIONSHOSPITAL NORDJYLLAND – i gode hænder

10

When the wrist is fractured but the shoulder hurts. Randomized control study on patient-centered management strategy after distal forearm fracture

Lukasz Maciej Winiarski[*1], Peter Larsen[1,2], Hanne Mette Levisen Dalsgaard[2], Michael Skovdal Rathleff[1,3], Thorvaldur Skuli Palsson[1,3]

1. Physiotherapy and Occupational Therapy Department, Aalborg University Hospital, Denmark
2. Department of Orthopaedic Surgery, Aalborg University Hospital, Denmark
3. Department of Health Science and Technology, Faculty of Medicine, Aalborg University, Denmark

**Participant in the North Denmark Regional Hospital Research Course 2022*

Background
Distal forearm fracture (DFF) is one of the most common adult orthopedic injuries in the trauma department, worldwide. Recently, our group demonstrated that almost half of DFF patients suffer from concurrent pain and/or impaired function in upper limb and neck following their injury. Currently, no standard routine exists for how to assess and potentially manage associated symptoms in patients after DFF. Expanding the focus to the whole upper limb and neck in the early management of these patients, may have a positive additive effect on the recovery.

Methods
We propose a randomized control study to investigate the effectiveness of a novel patient-centered add-on management strategy with focus on the whole upper-limb compared to the usual care for patients with DFF. One hundred patients with DFF will be included (N=50 in each arm). We expect to start the inclusion in the first quarter of 2023. All primary and secondary outcomes on both functional and psychological aspects will be collected at inclusion, three, six, and 12-months after inclusion. Disabilities of the Arm, Shoulder and Hand Questionnaire at three months will be the primary outcome.

Results
The results are pending.

Perspectives
If the results will indicate a favorable effect of the patient-centered add-on management strategy, the results have the potential to directly influence standard clinical practice in Denmark and internationally.

When the wrist is fractured but the shoulder hurts

A Randomized Control Study on patient-centered management strategy after distal forearm fracture

Lukasz Maciej Winiarski[1] • Peter Larsen[1,2] • Hanne Mette Levisen Dalsgaard[2] • Michael Skovdal Rathleff[1,3] & Thorvaldur Skuli Palsson[1,3]

[1]*Physiotherapy and Occupational Therapy Department, Aalborg University Hospital, Aalborg, Denmark*
[2]*Department of Orthopaedic Surgery, Aalborg University Hospital, Aalborg, Denmark*
[3]*Department of Health Science and Technology, Faculty of Medicine, Aalborg University, Aalborg, Denmark*

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Methods

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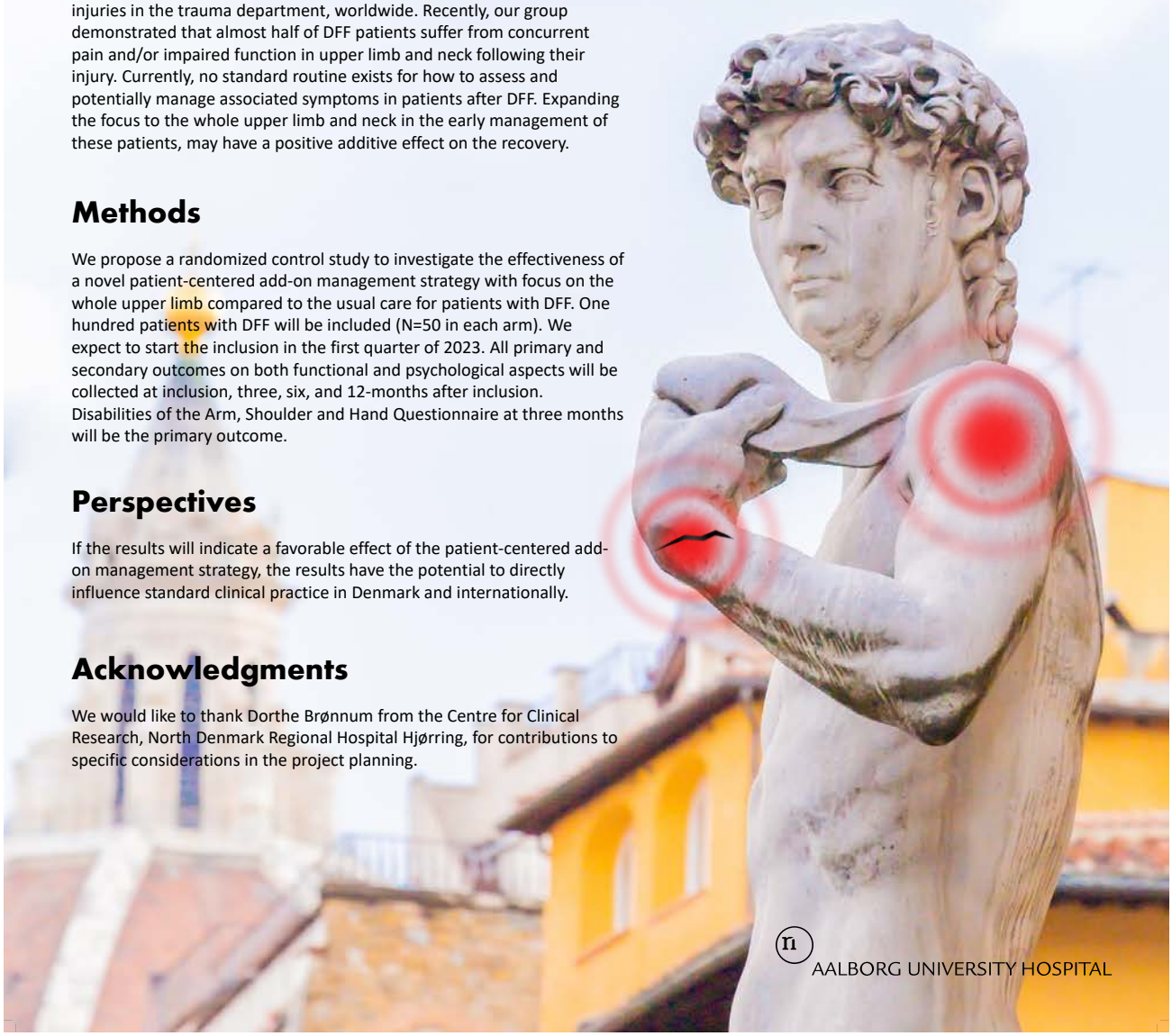
Acknowledgments

We would like to thank Dorthe Brønnum from the Centre for Clinical Research, North Denmark Regional Hospital Hjørring, for contributions to specific considerations in the project planning.



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11

RELEARN – a clinical research project

Morten Kirkegaard[1], Sten Rasmussen[2,3], Peter Derek Christian Leutscher[2,4]

1. REDO - Neurosystems, Aalborg, Denmark
2. Department of Clinical Medicine, Aalborg University, Denmark
3. Department of Orthopedic Surgery, Sport and Arthroscopy, Aalborg University Hospital, Denmark
4. Centre for Clinical Research, North Denmark Regional Hospital, Denmark

Background

Researchers have shown an established connection between high levels of alpha-activity and a "sleeping" nervous system. Therefore, we often see a reduced alpha-activity with people suffering from chronic pain, because their nervous system is often in "alarm mode". RELEARN therefore seek to help patients suffering from chronic pain, by using encephalography (EEG) neurofeedback. The intervention will consist of EEG neurofeedback of cerebral movement evoked signatures of pain, where the participants will be instructed in attempting to manipulate theses signatures to reduce their pain.

Methods

The clinical investigation will be performed as a randomized controlled trial, enrolling 36 participants suffering from severe osteoarthritis pain. They will primarily come from the orthopedic ward at the Northern Regional Hospital, Hjørring. In addition, if needed, they can also be recruited from other places like e.g., patient organizations and physiotherapist.
The enrolled participants will randomly be allocated into two groups: Intervention and control. Both groups will attend 8 sessions, where the intervention group will have eight sessions of RELEARN neurofeedback and the control group eight sessions without any intervention. The control group serves as standard-treatment controls. For both the intervention and control groups there will be three follow-up sessions: one month, three months, and five months post intervention.

Perspectives

With the use of RELEARN neurofeedback we hope to be able to reduce the patients anticipated pain by 30%. Furthermore, the reduction in pain may also increase the quality of life while decreasing the consumption of analgesics.

WORKING TOWARDS A
PAIN-FREE FUTURE!

REDO NEUROSYSTEMS

RELEARN
- A Clinical Research Project

Morten Kirkegaard[1] • Sten Rasmussen[2,3] • Peter Christian Leutscher[4]

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[3] *Department of Orthopedic Surgery, Sport and Arthroscopy, Aalborg University Hospital, Aalborg, Denmark*
[4] *Centre for Clinical Research, North Denmark Regional Hospital, Hjoerring, Denmark*

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The intervention will consist of EEG neurofeedback of cerebral movement evoked signatures of pain, where the participants will be instructed in attempting to manipulate theses signatures to reduce their pain.

Methods

The clinical investigation will be a randomized controlled trial, enrolling 36 participants suffering from severe osteoarthritis pain in the knees. The enrolled participants will randomly be allocated into two groups: Intervention and control, with 18 in each group. Both groups will attend 8 sessions, where the intervention group will receive RELEARN neurofeedback and the control group without any intervention.

The control group serves as standard-treatment controls. For both the intervention and control groups there will be three follow-up sessions: one month, three months, and five months post intervention.

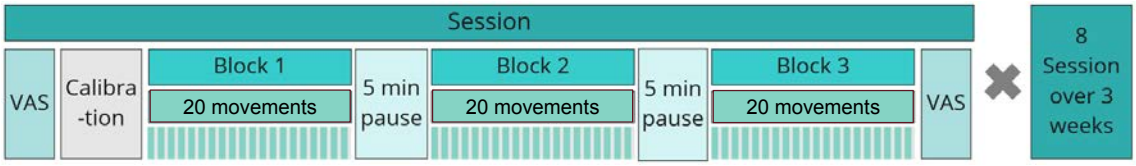

Figure 1: The figure shows a schematical overview of how the RELEARN intervention sessions are build, with the pre-VAS, calibration, movements with feedback, and post-VAS.

Pre-

Figure 2: The figure shows the setup for the RELEARN neurofeedback

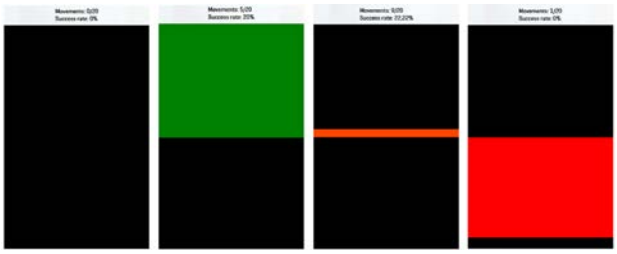

Figure 3: Shows the four different feedback that the RELEARN feedback can give to the participant. "Start skærm" represents how it looks when the session starts, "Stigning i Alpha" shows the feedback for when movement is performed and a succesfull lowering of the alpha activity is reached. "i Alpha" shows when a smal decrease in alpha is reached but not significant enough to reach the green bar, whereas the last "Fald i Alpha" shows the feedback when the alpha activity was increased during the movement.

Perspectives

With the use of RELEARN neurofeedback we hope to be able to reduce the patients anticipated pain by 30%. Furthermore, the reduction in pain may also increase the quality of life while decreasing the consumption of analgesics.

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Cannabis

12

Safety and effectiveness of cannabis-based medicine to danish patients with treatment refractory chronic pain – a retrospective observational real-world study

Tina Horsted[1], Karoline Lichon Hesthaven[2], Peter Derek Christian Leutscher[2,3]

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2. Centre for Clinic Research, North Denmark Regional Hospital, Denmark
3. Department of Clinical Medicine, Aalborg University, Denmark

Background
Cannabis-based medicine (CBM) is considered a potential supplementary therapeutic option to patients suffering from treatment refractory chronic pain (TRCP) insufficiently relieved by conventional analgesics or experiencing intolerable adverse events (AEs) from these. This study aimed to explore safety and effectiveness of CBM among patients with TRCP.

Methods
A retrospective study was conducted among Danish patients with TRCP prescribed CBM during a one-year period. Data on AEs and changes in pain intensity by numeric rating scale (NRS) before and after initiation of CBM were analyzed.

Results
Among 826 eligible patients, 529 (64%) were included for data analysis at first follow-up (F/U1) (median 56 days from baseline) and 214 (26%) for second follow-up (F/U2) (median 126 days from F/U1). Mean age was 60±15.9 years and 70% were females. AEs were in general reported mild to moderate by 42% of patients at F/U1 and 34% at F/U2. AEs were mainly related to gastrointestinal (F/U1: 17% and F/U2: 13%) and nervous system disorders (F/U1: 14% and F/U2: 11%). Reduction in NRS was significantly different at both follow-up consultations compared with baseline (<.0001). Clinically relevant pain reduction (NRS ≥30%) was reported by 32% at F/U1 and 45% at F/U2 in *per-protocol* analysis whereas the figures were 17% and 10%, respectively, in *intention-to-treat* analysis.

Conclusion
Treatment with CBM was observed to be safe and effective in a subgroup of patients with TRCP. However, randomized controlled trials with focus on comparable pain characteristics in diagnostical homogenous patient subgroups are needed for improving the evidence level for relief of chronic pain using CBM.

Safety and Effectiveness of Cannabis-based Medicine to Danish Patients with Treatment Refractory Chronic Pain

– A Retrospective Observational Real-world Study

Tina Horsted[1], Karoline Lichon Hesthaven[2], Peter Derek Christian Leutscher[2,3]

[1]*The Pain Clinic in Copenhagen, Horsted Institute, Copenhagen, Denmark*
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[3]*Department of Clinical Medicine, Aalborg University, Denmark*

Background

Cannabis-based medicine is considered a potential supplementary therapeutic option to patients suffering from treatment refractory chronic pain insufficiently relieved by conventional analgesics or experiencing intolerable adverse events from these.

Aim

This study aimed to explore safety and effectiveness of cannabis-based medicine among patients with treatment refractory chronic pain.

Methods

A retrospective study was conducted among Danish patients with treatment refractory pain prescribed cannabis-based medicine during a one-year period. Data on adverse events and changes in pain intensity by numeric rating scale before and after initiation of cannabis-based medicine were analyzed.

Cannabis-based medicine is safe to use among patients with treatment refractory chronic pain

Cannabis-based medicine could be effective to relieve pain in patients with treatment refractory chronic pain

A total of 826 patients were eligible (*intention-to-treat*) and 529 (64%) were included for data analysis (*per-protocol*) at first follow-up (median 56 days from baseline) and 214 (26%) for second follow-up (median 126 days from F/U1).

Mean age was 60±15.9 years.

More females (70%) than males (30%) had prescription for cannabis-based medicine.

Adverse event

Adverse events at first follow-up

42% of patients experienced one or more adverse event

Most common adverse events
Gastrointestinal disorders (17%)
Nervous system disorders (14%)
General disorders (14%)

Adverse events at second follow-up

34% of patients experienced one or more adverse event

Most common adverse events
Gastrointestinal disorders (13%)
Nervous system disorders (11%)
General disorders (9%)

Effectiveness

Change in pain intensity at first follow-up

Mean change in numeric rating scale (NRS)		
Mean NRS at baseline	**Mean NRS at follow-up**	**P-value**
7.0 ±1.7	5.6 ±2.4	<.0001

Percentage change in mean numeric rating scale (NRS)		
	Per-protocol **N=529**	***Intention-to-treat*** **N=826**
Increase (NRS<0%)	73 (17%)	73 (9%)
No change (NRS=0%)	73 (17%)	73 (9%)
Reduction (NRS>0% - <30%)	145 (34%)	145 (18%)
Reduction (NRS≥30%)	140 (32%)	140 (17%)
Missing, n	98	-

Change in pain intensity at second follow-up

Mean change in numeric rating scale (NRS)		
Mean NRS at baseline	**Mean NRS at follow-up**	**P-value**
7.0 ±1.8	5.1 ±2.5	<.0001

Percentage change in mean numeric rating scale (NRS)		
	Per-protocol **N=214**	***Intention-to-treat*** **N=826**
Increase (NRS<0%)	27 (15%)	27 (3%)
No change (NRS=0%)	21 (12%)	21 (3%)
Reduction (NRS>0% - <30%)	48 (27%)	48 (6%)
Reduction (NRS≥30%)	79 (45%)	79 (10%)
Missing, n	39	-

Funding: Bionorica; Oda and Hans Svenningsens Research Grant

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Cannabidiol for pain relief in patients with treatment refractory prostate cancer – randomized, placebo-controlled, double-blind trial (ProCan)

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Background
Patients with cancer show increased interest in cannabis medicine and have reported positive effects on pain as well as on several other parameters. Clinical trials are needed in order to establish sufficient documentation and evidence for a clinical use of cannabis medicine. We aim to assess the efficacy and safety of cannabinoid monotherapy to alleviate pain refractory to conventional opioid-based regiment in patients with bone metastatic castration-resistant prostate cancer (mCRPC), who are no longer responding adequately to available anti-cancer treatment.

Methods
A randomized, *placebo-controlled, double-blind* trial will be conducted with inclusion of 126 patients with mCRPC (aged 50-75 years) suffering from recurrence of pain initially relieved by oral oxycodone 10mg BID treatment. Participants will be treated with cannabidiol (CBD) orally (capsule 100mg BID) for 4 weeks in the active arm. Primary outcome is pain intensity measured by VAS. Other pain related parameters, including health-related quality of life, fatigue, sleeping pattern, mental state and physical activity, in addition plasma CBD metabolites and inflammatory biomarkers.

Results
Final results from the trial are anticipated by 2025.

Conclusion
The ProCan trial is expected to provide important information about efficacy and safety of CBD as adjuvant pain-relieving therapy to patients with mCRPC, and probably also patients suffering from other end-stage cancer diseases.

Efficacy and safety of Cannabidiol

Adjuvant to morphine in treatment of malignant pain

Karoline Lichon Hesthaven[1], Fredrik Lund[1], Dorthe Brønnum[1], Torben Breindahl[2], Peter Hindersson[2], Niels Kristian Langkilde[3], Knud Fabrin[3], Michael Borre[4,5], Peter Leutscher[1,6]

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BACKGROUND AND AIM

Patients with cancer show increased interest in cannabis medicine and have reported positive effects on pain as well as on several other cancer-related symptoms. Clinical trials are needed in order to establish sufficient documentation and evidence for a clinical use of cannabis medicine. We aim to assess the **efficacy and safety of cannabinoid monotherapy to alleviate pain refractory to conventional opioid-based regiment in patients with bone metastatic castration-resistant prostate cancer (mCRPC)**, who are not responding adequately to available anti-cancer treatment.

PERSPECTIVES

The ProCan trial is expected to provide important information about efficacy and safety of CBD as adjuvant pain-relieving therapy to patients with mCRPC, and probably also patients suffering from other end-stage cancer diseases.

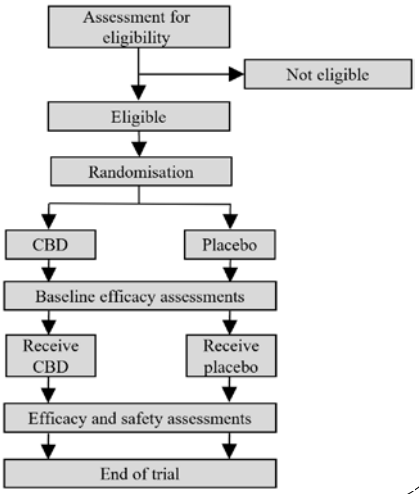
Final results are anticipated in 2025.

FUNDING

The ProCan trial is supported by the Danish Cancer Society.

METHODS

A randomized, placebo-controlled, double-blind trial will be conducted with inclusion of **126 patients** with mCRPC (aged 50-75 years) suffering from recurrence of pain initially relieved by oral oxycodone 10mg BID treatment. Participants in the active arm will be treated with **cannabidiol (CBD) orally** (oil, 150mg BID) for **4 weeks** in the active arm. Primary outcome is pain intensity measured by VAS. Other pain related parameters, include health-related quality of life, fatigue, sleeping pattern, mental state and physical activity, in addition to plasma CBD metabolites and inflammatory biomarkers.



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14

Attitudes and experiences towards therapeutic cannabis among patients with prostate cancer – a questionnaire study

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Background
Patients diagnosed with prostate cancer (PC) can experience pain why some patients seek to relieve cancer-related symptoms through the use of cannabis. However, therapeutic cannabis (TC) is subject to different perceptions among patients. The aim of this survey was to investigate knowledge, experiences and attitudes towards TC amongst patients diagnosed with PC.

Methods
The participants in this survey were divided into three different questionnaire arms based on their TC history as either experienced (current or former) users or naïve persons. Participants were recruited through the Danish prostate cancer patient association (PROPA), outpatient clinics and social media from December 2021 to March 2022.

Results
A total of 195 respondents with a mean age of 71.5±7.5 years were included, where 10% were experienced TC users and 90% were naïve. A significantly lower quality of life (QoL) was found in experienced users compared to naïve persons (p=0.027). More than half of all participants (53%) reported that they believed TC to have a relieving effect on PC-related symptoms. Of all participants, 10% had consulted healthcare providers regarding TC. All experienced participants (100%) acquired TC without prescription. Two-thirds (67%) of all participants would participate in a clinical TC trial if invited.

Conclusion
The findings in the survey concludes that participants who were experienced with TC had an overall QoL lower than the naïve participants. Furthermore, we found a lack of communication with healthcare providers regarding TC. In general, the perception of TC was positive among the participants, although only 10% had used it.

ATTITUDES AND EXPERIENCES TOWARDS THERAPEUTIC CANNABIS AMONG PATIENTS WITH PROSTATE CANCER - A QUESTIONNAIRE STUDY

Spanger-Ries, A.M. (1,2), Rimestad, P.H.E. (1,2), Meyer, N.H. (1,2), Hansen, A.M. (1,2), Hesthaven, K.L. (2), Larsen, H.B. (3), Steffensen, K. (4), Brokjær, A. (4), Leutscher, P. (2,5)

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Introduction

Patients diagnosed with prostate cancer (PC) can experience pain why some patients seek to relieve cancer-related symptoms through the use of cannabis. However, therapeutic cannabis (TC) is subject to different perceptions among patients.The aim of this survey was to investigate knowledge, experiences and attitudes towards TC amongst patients diagnosed with PC.

Methods

- Cross-sectional questionnaire study among patients diagnosed with PC
- Questionnaire regarding patient characteristics, quality of life (QoL), and experiences and attitudes towards TC
- The questionaire varie based on the history of TC use among participants as either experienced or naïve
- Distributed in various relevant associations and outpatient clinics

Results

A total of 195 respondents with a mean age of 71.5±7.5 years were included, where 20 (10%) were experienced TC users and 175 (90%) were naïve. All experienced participants (100%) acquired TC without prescription. Two-thirds (67%) of all participants would consent to participate in a clinical TC trial if they were invited.

Reported quality of life (QoL) score among the experienced versus naïve participants

	Experienced n=20	Naïve n=175	p-value
EORTC QLQ-C30[i]			
Functional scores, mean (SD)			
Physical	77 (±19)	83 (±20)	NS[ii]
Role	64 (±27)	82 (±26)	0.004
Emotional	73 (±27)	85 (±18)	0.011
Cognitive	71 (±25)	85 (±18)	0.001
Social	70 (±31)	86 (±22)	0.003
Quality of life	58 (±25)	71 (±22)	0.027
Symptomatic scores, mean (SD)			
Fatigue	44 (±28)	26 (±25)	0.014
Nausea and vomiting	19 (±18)	8 (±12)	0.019
Pain	35 (±26)	21 (±22)	0.025
Dyspnea	13 (±25)	14 (±25)	NS
Insomnia	32 (±28)	20 (±27)	NS
Appetite loss	8 (±15)	7 (±19)	NS
Constipation	7 (±14)	7 (±18)	NS
Diarrhea	17 (±23)	8 (±17)	0.025
Financial difficulties	23 (±33)	3 (±12)	0.000
EORTC QLQ-PR25[iii]			
Functional scores, mean (SD)			
Sexual activity	23 (±30)	16 (±24)	NS
Sexual functioning	55 (±26)	64 (±24)	NS
Symptomatic scores, mean (SD)			
Urinary	28 (±20)	23 (±18)	NS
Incontinence aid	11 (±17)	15 (±27)	NS
Bowel	11 (±14)	7 (±10)	NS
Hormonal treatment related	19 (±14)	19 (±16)	NS

[i] European Organization for Research and Treatment Cancer Quality of Life Questionnaire C30
[ii] Not significant
[iii] European Organization for Research and Treatment Cancer Quality of Life Questionnaire PR25

Reported considerations among naïve participants in favor of using therapeutic cannabis in accordance with quality of life (QoL) score.

	Total N=175	QoL score ≤50 n=43	QoL score >50 n=132
	N(%)	n(%)	n(%)
Yes	40(23)	15(35)	25(19)
No	121(69)	22(51)	99(75)
Do not know	14(8)	6(14)	8(6)

Reported levels of agreement by the participants to statements regarding effects of therapeutic cannabis

	Total N=195	Experienced n=20	Naïve n=175	p-value
	N(%)	n(%)	n(%)	
Cannabis can cure cancer				
Strongly/partly disagree	64(34)	6(30)	58(34)	
Strongly/partly agree	36(18)	9(45)	27(15)	≤0.0001
Do not know	95(49)	5(25)	90(52)	
Cannabis can control cancer				
Strongly/partly disagree	58(30)	4(20)	54(31)	
Strongly/partly agree	35(18)	9(45)	27(15)	≤0.0001
Do not know	102(52)	7(35)	95(54)	
Cannabis can relieve symptoms of cancer				
Strongly/partly disagree	12(6)	2(10)	10(5)	
Strongly/partly agree	103(53)	13(65)	90(52)	≤0.0001
Do not know	89(41)	5(25)	75(43)	

Discussion

- Interaction with survey assistants heightens the risk of social desirability bias
- Unintentional exclusion of patients with at lower QoL due to a severe impact of the disease
- Highly relevant study among patients with PC due to the level of chronic pain seen in this patient group

Conclusion

The findings in the study concludes that participants who were experienced with TC had an overall QoL lower than the naïve participants. Additionally, TC was a viable option for a larger portion of the naïve participants with a QoL score ≤50 than those with a QoL score >50. In general, the perception of TC was positive among the participants, although only 10% had used it.

Acknowledgments
Special thanks to the patients who participated in the current studyas well as Prostate Cancer Association (PROPA) and FC Prostata, Aalborg.

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Gastroenterologi og Ernæring

15

No gender differences in EoE disease presentation, treatment, and complications in the Danish DanEoE cohort – a population-based study

Isabella Kozon[1], Line Tegtmeier Frandsen[2], Bensu Izgi[1], Michael Sloth Trabjerg[1], Line Elise Møller Hansen[3], Dorte Melgaard[3,4], Anne Lund Krarup[1,3,4]

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3. Centre of Clinical Research, North Denmark Regional Hospital, Denmark
4. Department of Clinical Medicine, Aalborg University, Denmark

Background
It is well known that there is a gender difference in the incidence eosinophilic oesophagitis (EoE) with more men affected. However, there is a lack of knowledge of gender difference in most other aspects of the disease. To measure on a population-based adult EoE group if gender differences exist in 1) the clinical phenotype, 2) the treatment response, and 3) complications.

Methods
This is a retrospective, registry-based, DanEoE cohort study of 236 adult EoE patients, (178 adult men and 58 adult women) diagnosed in 2007-2017 in the North Denmark Region. Medical registries were searched for patient files and pathology reports.

Results
There were no statistical or clinical significant differences in the phenotype regarding symptoms reported, macroscopic or histological findings at the diagnose (all $p>0.3$). However, a trend was observed towards 14% more men reporting allergy or asthma compared to women (61% men versus 47% women, $p=0.06$). A comparable number of men and women were followed up symptomatically and histologically (all $p>0.3$). More men reported "no symptoms" on PPI (men 56% versus 39% women, $p=0.04$) although the histological response was not different between genders ($p=0.4$). The proportion of food bolus obstructions and dilations were comparable (all $p>0.4$).

Conclusion
In this study very few gender differences were found. Results suggests that men and women with EoE can be managed equally clinically. We did not find the expected gender differences as described in other gastrointestinal diseases.

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NO GENDER DIFFERENCES IN EOE DISEASE PRESENTATION, TREATMENT, AND COMPLICATIONS IN THE DANISH DANEOE COHORT – A POPULATION-BASED STUDY OF 236 PATIENTS

I. Kozon[1] , L.T. Frandsen[3] , B. Izgi[1] , M.S. Trabjerg[1] , L.E.M. Hansen[4] , D. Melgaard[4,5] , A.L. Krarup[1,2,5]
1 Department of Emergency Medicine and Trauma Center, Aalborg University Hospital, Aalborg, Denmark, 2 Department of Gastroenterology and Hepatology, Aalborg University Hospital, Aalborg, Denmark, 3 Department of Gastroenterology, North Denmark Regional Hospital, Hjørring, Denmark,
4 Center of Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark, 5 Institute of Clinical Medicine, Aalborg University

Conclusion

In this study very few gender differences were found. Results suggests that men and women with EoE can be managed equally clinically. We did not find the expected gender differences as described in other gastrointestinal diseases.

Introduction

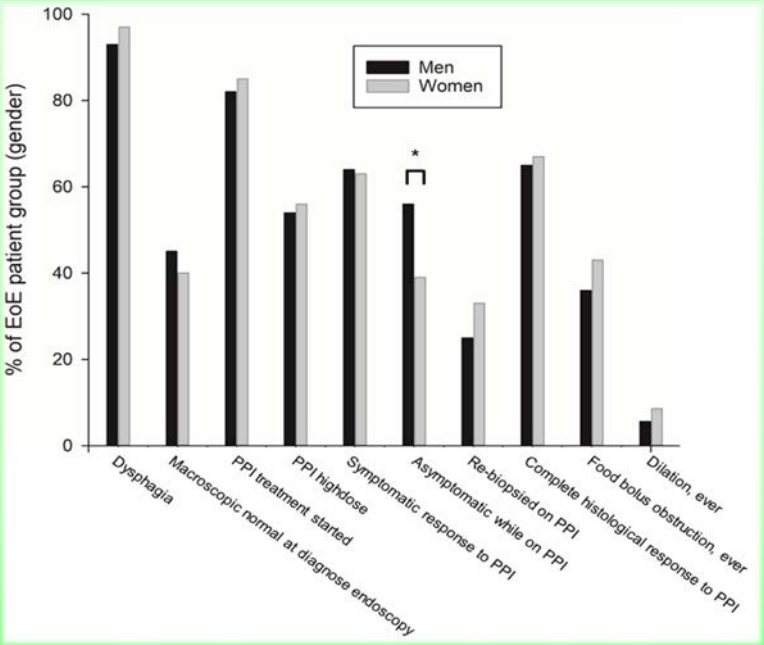
It is well known that there is a gender difference in the incidence eosinophilic oesophagitis (EoE) with more men affected. However, there is a lack of knowledge of gender difference in most other aspects of the disease.

Aims & Methods

To estimate the differences in phenotype, treatment, and complication rate between gender in 236 adult EoE patients, (178 adult men and 58 adult women) diagnosed in 2007 to 2017 in the North Denmark Region.

Results

There were no statistical or clinically significant differences in the phenotype regarding symptoms reported, macroscopic or histological findings at the diagnose (all p >0.3). However, a trend was observed towards 14% more men reporting allergy or asthma compared to women (61% men versus 47% women, p =0.06). A comparable number of men and women were followed up symptomatically and histologically
(all p >0.3). More men reported “no symptoms” on PPI (men 56% versus 39% women,p =0.04) although the histological response was not different between genders (p =0.4). The proportion of food bolus obstructions and dilations were comparable (all p >0.4).



The study was supported in part by an unrestricted grant by Marie Pedersen and Jensine Heiberg’s Foundation (grant number: 00026).

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The description of the EoE Copenhagen cohort of patients with eosinophilic oesophagitis referred to a tertiary facility in Denmark compared to the population based DanEoE cohort

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Background
The population-based DanEoE cohort in the North Denmark Region is well-described. Little is known about differences in EoE complications in the general population compared to patients at academic centres. Aim: The aims of the study were to compare clinical features and complications of EoE patients in the population based DanEoE and the new, adult, academic hospital EOE Copenhagen Cohort.

Methods
The EoE Copenhagen Cohort included 238 consecutive adult EoE patients in 2013-2020. Medical files, and histology reports were reviewed, and data systematically collected. From September 2017 details of data collection followed in the standard of the DanEoE cohort database.

Results
The Copenhagen Cohort were younger at symptom debut (means -5,4 years, p=0.001) and lower eosinophile counts (median -9,1 eos/hpf (p<0,04) compared to the population-based cohort. The rate of food bowel obstruction was higher in the population-based cohort (16% vs 1%, p<0.001). The rate of strictures in need of dilation was low and similar in the cohorts were similar (2,2% higher in the population-based cohort, NS).

Conclusion
This study indicates EoE patients referred to a Danish academic centre differs in symptom debut, disease presentation, age and delay of diagnosis and disease severity compared to patients in the Danish population-based DanEoE cohort. Differences in disease severity and complications may have implications for interpreting studies based on academic centre cohorts alone.

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The description of the EoE Copenhagen cohort of patients with eosinophilic oesophagitis referred to a tertiary facility in Denmark compared to the population based DanEoE cohort

Christian O. Mortensen [1], Inger B. Andersen [1], Dorte Melgaard [2], Line T Frandsen [3], Anne Lund Krarup [4]

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Conclusion

The results indicated that patients referred to the Danish academic center had earlier symptom debut, were diagnosed earlier, had more fibrotic disease, and less comorbid GORD. This indicate that studies based on patients from Academic centers may not be comparable to studies based on the general population.

Background

The population-based DanEoE cohort in the North Denmark Region is well described. Little is known of difference in EoE complications in the general population compared to patients at tertiary centers.

Objective

The aims of the study were to describe the EoE patient phenotypes and complications in a new cohort of adult EoE at an academic Hospital in the capital of Denmark. Secondly, to compare them to the population-based DanEoE cohort.

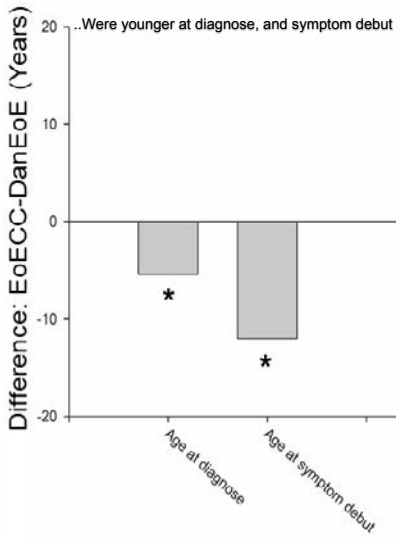
Methods

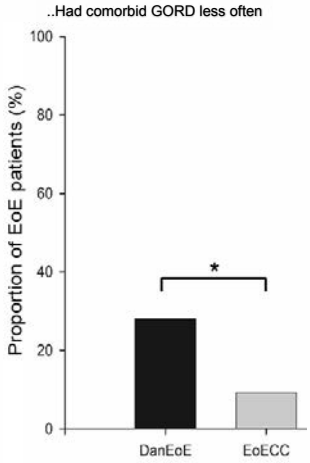
The EoE Copenhagen cohort included dysphagia patients with eosinophilia starting May 1st, 2013. Exclusion criteria were other causes of eosinophilia in oesophagus than EoE. From May 2013 to 20th of October 2017, strictly clinical data limited to the direct handling were recorded: Allergic disease, histological responses to treatment, pH and manometry results and complications. From 20th of October 2017 to 31st of December 2020 detailed information were entered in the same database as the population-based DanEoE cohort. Two experienced astroenterologists and EoE experts (IBA, CM) evaluated and entered all data. The index endoscopy was defined as the first end oscopy with biopsies showing oesophageal eosinophilia. In both cohorts the EoE diagnose followed the AGREE consensus

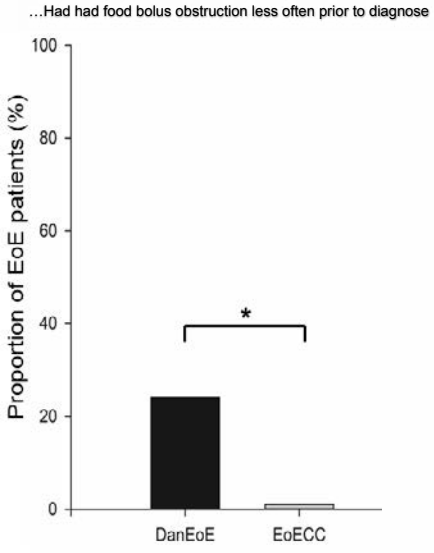
Results

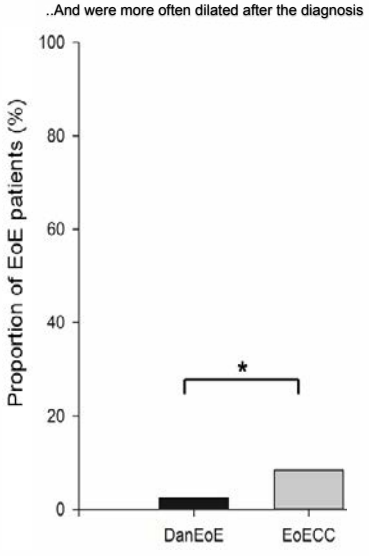
The 245 EoE patients in the Copenhagen cohort were 1) less likely to have comorbid GORD, 2) be of male gender, 3 younger both at symptom debut, and at the EoE diagnose (all p<0.05). At the index endoscopy less end oscopists had suspected EoE as a diagnose (EoE Copenhagen: 11 % versus DanEoE: 78 %, p<0.001). The findings at the endoscopy were very similar expect for edema being described more often in the EoE Copenhagen cohort (p=0.01). Dilations were rarely necessary in both cohorts. However, dilations after the diagnose was more frequently done in patients from the Copenhagen cohort (EoE Copenhagen cohort 9.5 % versus DanEoE cohort 7.1 %, p=0.5).

Compared to the population based cohort, EoE Patients in the tertiary centre EoE Copenhagen Cohort:









17

The phenotype of patients with complicated eosinophilic oesophagitis – a population based study of the DanEoE cohort

Stine Dam Henriksen[1], Stine Kjærsgård Hansen[2], Isabella Kozon[3], Martin Eriksen[3], Christoffer Harboe Nielsen[3], Mia Heinesen[3], Dorthe Melgaard[4,5], Anne Lund Krarup[2,3,5]

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2. Department of Gastroenterology and Hepatology, Aalborg University Hospital, Denmark
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4. Centre of Clinical Research, North Denmark Regional Hospital, Denmark
5. Department of Clinical Medicine, Aalborg University, Denmark

Background
The DanEoE is a previously described population- and register-based cohort of 236 adult patients with eosinophilic oesophagitis (EoE) in a well-defined Danish region. Aims: To compare the phenotype and treatment response between EoE patients with complications to patients without complications at diagnosis.

Methods
This is a retrospective cross sectional study of the DanEoE cohort's 236 adult EoE patients diagnosed in 2007-2017 in the North Denmark Region. Patients were divided into a group who had had complications before or at the diagnose, and a group without.

Results
At the diagnostic endoscopy 61 % had never had a complication, and 39 % had had either FBO (n 77) or been dilated (n 15). The Complicated group had the same mean age at symptom debut (37(16) versus 37(17) years, p = 1.0), but were diagnosed significantly later (age: 49(15) versus 45(15) years, p = 0.04) with a resulting longer diagnostic delay (13(13) versus 7.9(11) years, p = 0.01). The complicated group were more often on a proton pump inhibitor at the time of diagnosis, complained more often of dysphagia, had rings or stenosis more frequent, but less often erosive oesophagitis (all p<0.05). Almost half of all patients were never treated to symptomatic remission (uncomplicated 40 %, complicated 49 %). The histological remission were not secured in the majority (uncomplicated 68 %, complicated 70 %).

Conclusion
Results indicated that the complicated EoE phenotype at time of diagnosis was a patient with a five year longer diagnostic delay, and rings or stenosis already present.

THE PHENOTYPE OF PATIENTS WITH COMPLICATED EOSINOPHILIC OESOPHAGITIS – A POPULATION BASED STUDY OF THE DANEOE COHORT

S.D. Henriksen 1, D. Melgaard 2, A.L. Krarup 3, 4
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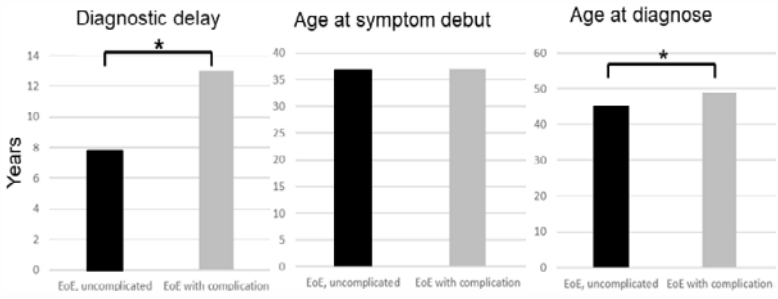
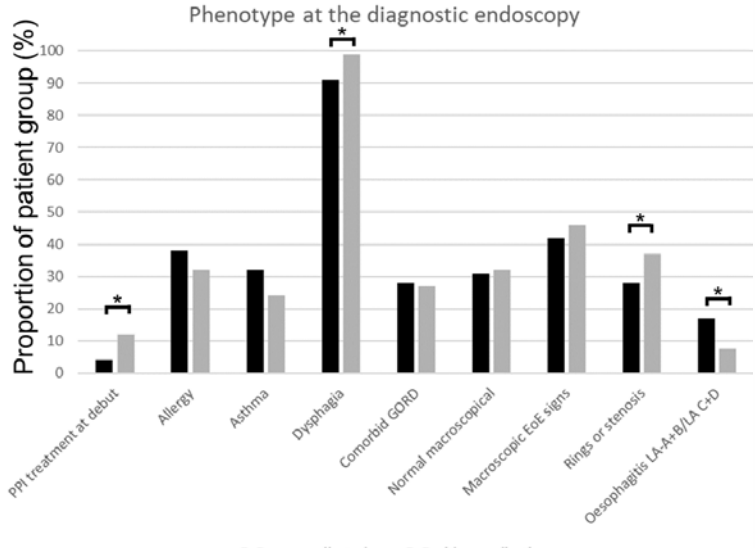
Conclusion
Results indicated that the complicated EoE phenotype at time of diagnosis was a patient with a five year longer diagnostic delay, and rings or stenosis already present. In the current study complication status did not determine treatment responses

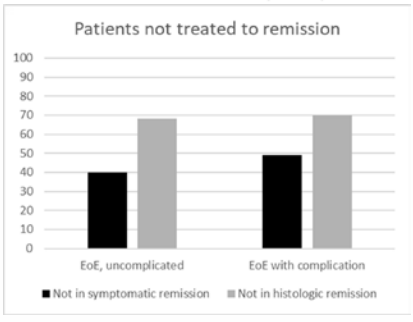
Introduction
The DanEoE is a previously described population- and register-based cohort of 236 adult patients with eosinophilic oesophagitis (EoE) diagnosed in 2007-2017 in a well-defined Danish region with a population of 580.000 and free medical treatment.

Aims
To compare the phenotype and treatment response between EoE patients with complications to patients without complications at diagnosis.

Results
At the diagnostic endoscopy 61 % had never had a complication, and 39 % had had either FBO (n 77) or been dilated (n 15). The Complicated group had the same mean age at symptom debut, p = 1.0), but were diagnosed significantly (p = 0.04) with a resulting longer diagnostic delay (p= 0.01). The complicated group were more often on a proton pump inhibitor at the time of diagnosis, complained more often of dysphagia, had rings or stenosis more frequent, but less often erosive oesophagitis (all p<0.05). Almost half of all patients were never treated to symptomatic remission (uncomplicated 40 %, complicated 49 %). The histological remission were not secured in the majority (uncomplicated 68 %, complicated 70 %). Despite this, less than 15 % of patients with previous FBO experienced this after the diagnosis.







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Psychiatric comorbidity in patients with eosinophilic oesophagitis in Denmark – a registry study of all of Denmark

Martin Hollænder[1], Jacob Holmen Terkelsen[1], Kasper Bredal[1], Dorte Melgaard[2,3], Anne Lund Krarup[3,4,5]

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2. Center for Clinical Research, North Denmark Regional Hospital, Denmark
3. Department of Clinical Medicine, Aalborg University, Denmark
4. Department of Emergency Medicine and Trauma Center, Aalborg University Hospital, Denmark
5. Department of Gastroenterology, Aalborg University Hospital, Denmark

Background
Previous studies have hinted that psychiatric comorbidity may be more prevalent among patients with eosinophilic oesophagitis (EoE). It has been shown in EoE patients treated with diet but is expected to be present in other sub types too.

Methods
This was retrospective, register-based study of patients with EoE in all of Denmark. Patients were identified using a previously validated EoE registry case definition. Using the Prescription Database and the Danish Patient Registry, cases with comorbid psychiatric disease were found. EoE patients were compared to matched controlled from Statistics Denmark.

Results
3367 EoE patients fulfilled the inclusion criteria and were matched with 16835 comparators generating the background population. The median follow-up time was 4,68 years. After 5 years 14% of EoE patients had at least one or more psychotropic drug prescriptions compared to 7% of the background population. Antidepressants was the most frequent prescribed PD type in both groups after 5 years (9.2% in EoE patients compared to 4.8% for the background population). 2,8% of EoE patients had had contact to any psychiatric department compared to 1,8% of the background population.

Conclusion
Patients with EoE in Denmark had a higher prevalence of psychiatric comorbidity compared to the background population. New studies are needed to explore if this is a consequence of the 10 year diagnostic delay, the disease burden, or other reasons.

Psychiatric comorbidity in patients with eosinophilic oesophagitis in Denmark

– a registry study of all of Denmark

Martin Hollænder[1] • Jacob Holmen Terkelsen[1] • Kasper Bredal[1] • Dorte Melgaard[2,3] • Anne Lund Krarup[4,5,6]

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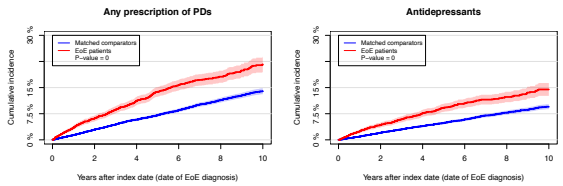

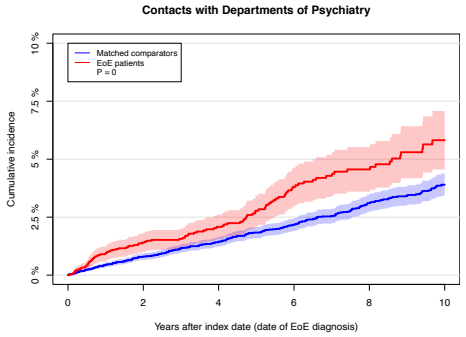

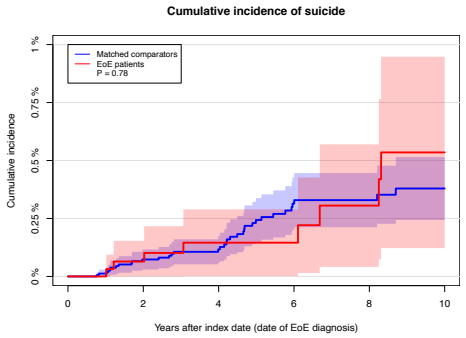

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Results

3367 EoE patients fulfilled the inclusion criteria and were matched with 16835 comparators generating the background population. The median follow-up time was 4,68 years. After 5 years 14% of EoE patients had at least one or more psychotropic drug prescriptions compared to 7% of the background population. Antidepressants was the most frequent prescribed PD type in both groups after 5 years (9.2% in EoE patients compared to 4.8% for the background population). 2,8% of EoE patients had had contact to any psychiatric department compared to 1,8% of the background population.

Conclusions

Patients with EoE in Denmark had a higher prevalence of psychiatric comorbidity compared to the background population.

New studies are needed to explore if this is a consequence of the 10 year diagnostic delay, the disease burden, or other reasons.

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AALBORG UNIVERSITY HOSPITAL

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Determination of carbon emission and food waste from a Danish hospital kitchen – a baseline measurement to determine standards for carbon emission reductions

Camilla Christine Bundgaard Anker[*1], Anne Kathrine Larsen[*1], Kresten Thomsen[1], Dorthe Brønnum[2], Marie Nerup Mortensen[1]

1. Kulinarium, Department of Mealtimes and Nutrition, Aalborg University Hospital, Denmark
2. Centre for Clinical Research, North Denmark Regional Hospital, Denmark

**Participant in the North Denmark Regional Hospital Research Course 2022*

Background
The world is facing major climate changes, and the global agriculture system is responsible for almost 30% of the world's green gas emissions. In Denmark, 800.000 meals are produced by public institutional kitchens daily. We aimed to quantify CO2e emission from foods in food production and from food waste at Aalborg University Hospital (Aalborg UH) to enable monitoring of CO2e emission and to set specific CO2e reduction goals.

Methods
The total CO2e emission (January-April 2022) from food products was quantified using "The Big Climate Database" from CONCITO. Food waste from production and serving trolley was collected at four departments for two weeks. Kitchen scales were used to quantify the amount of waste. The results were calculated as average per week per department.
The CO2e emission from food waste will be calculated after implementation of a new food system that will be able to perform such calculations.

Results
The weekly average CO2e emission from purchased food products was approximately 26 tons CO2e, of which 58% is attributed to meat and meat products. Averagely, 35% of ordered food and meals was discarded weekly in an average department.
The CO2e emission from food waste is expected to be calculated from October 2022 to March 2023.

Conclusion
Food products contribute with approximately 26 tons CO2e per week at Aalborg UH. Based on these results, we will be able to develop an action plan in order to monitor and reduce the CO2e emission from food products.

Determination of Carbon Emission and Food Waste from a Danish Hospital – a Baseline Measurement to Determine Standards for Carbon Emission Reductions

Camilla Christine Bundgaard Anker[1], Anne Kathrine Larsen[1], Kresten Thomsen[1], Marie Nerup Mortensen[1], Dorte Brønnum[2]

[1]Kulinarium, Department of Mealtimes and Nutrition, Aalborg University Hospital, Denmark

[2]Centre for Clinical Research, North Denmark Regional Hospital, Hjoerring, Denmark

BACKGROUND

The world is facing major climate changes. The global agriculture system is responsible for almost 30% of the world's green gas emissions but farmers still need to produce adequate amounts of food as the population is estimated to increase to about 10 billion people by 2050. In Denmark, 800,000 meals are produced by public institutional kitchens daily.

We aimed to quantify CO_2e emission from food products used in our food production at Aalborg University Hospital (Aalborg UH) and from food waste as production waste and food serving trolley waste in order to enable monitoring of CO_2e emission and to set specific CO_2e reduction goals.

METHODS

The total CO_2e emission (January-April 2022) from food products was quantified using "The Big Climate Database" from CONCITO, containing generic CO_2e emission factors for several foods.
Food waste from production and serving trolley was collected at four departments for two weeks during Spring 2022. Kitchen scales were used to quantify the amount of waste. The results were calculated as average per week per department.

The CO_2e emission from food waste will be calculated after implementation of a new food system that will be able to perform such calculations.

RESULTS

The weekly average CO_2e emission from food products used in food production was approximately 26 tons CO_2e. 58% of the total CO_2e emission is attributed to meat and meat products.
The weekly average amount of food waste was 38 kg, and the weekly average amount of food and meal orders was 110 kg. Hence, the average waste percent per week was 35%.
The CO_2e emission from food waste is expected to be calculated from October 2022 to March 2023.

CONCLUSION

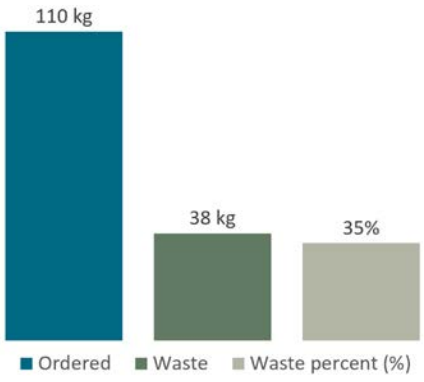
Food products contribute with approximately 26 tons CO_2e per week at Aalborg UH. Based on these results, we will be able to develop an action plan to monitor and reduce the CO_2e emission from food products in food production.

Furthermore, we want to design an action plan to introduce and implement a 'greener' hospital diet with the purpose of reducing the CO_2e emissions from food products at Aalborg UH.

More2Eat -goes green

26 tons CO_2e per week

58% from meat and meat products



AALBORG UNIVERSITETSHOSPITAL
– i gode hænder

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Effect of chin tuck against resistance exercise in citizens with oropharyngeal dysphagia – a randomized controlled study

Diana Jensen[1], Bettina Burgdorff Bendsen[2], Signe Westmark[3], Johannes Riis[4,6], Anne Lund Krarup[5,6] Dorte Melgaard[3,6]

1. Center of Rehabilitation, Municipality of Toender, Denmark
2. Department of Physiotherapy and Occupational Therapy, Municipality of Hjoerring, Denmark
3. Centre for Clinical Research, North Denmark Regional Hospital, Denmark
4. Department of Geriatric Medicine, Aalborg University Hospital, Denmark
5. Department of Acute Medicine and Trauma Care, Aalborg University Hospital, Denmark
6. Department of Clinical Medicine, Aalborg University, Denmark

Introduction
Oropharyngeal dysphagia (OD) may impact safety and efficacy of swallowing function. Tongue pressure and the suprahyoid muscle plays an important role for swallowing. The aim was to uncover what effect chin tuck against resistance (CTAR) exercise compared to standard care had in relation to the swallowing function in citizens with OD.

Methods
Ninety citizens (46% male, median age 78 years (IQR 71, 84)) and with OD confirmed by the Volume-Viscosity Swallow Test and Minimal Eating Observation Form version II were randomized to usual-care or standard care with addition of CTAR daily in six weeks. The participants were included from seven Danish municipalities from March 2019 to October 2020.

Results
A clear trend towards positive effect on signs of dysphagia of CTAR and standard care versus standard care was documented, although it did not reach statistical significance in intention to treat analysis (OR 0.32, 95% CI 0.07 to 1.17, P = 0.08). A significant effect compared to baseline was observed in all participants (p = 0.03) after 12 weeks. Participants in both groups had a significant reduction in problems to manipulate food in the mouth (p=0.007), swallow (p= 0.03), chew (p=0.02), as well as how they reported their appetite (p=0.009). There was an effect according to protein intake in both groups, whereas the effect to BMI was limited. The reported QoL scored with DHI-DK was significant improved in both groups.

Conclusion
Both CTAR combined with standard care and standard care has a significant effect of the swallowing function in citizens with OD. There is a trend towards best effect of CTAR combined with standard care. Standard care e.g. combined with CTAR should be offered to citizens with dysphagia.

Effect of chin tuck against resistance exercise in citizens with oropharyngeal dysphagia

- a randomized controlled study

Jensen, Diana, BSc[1] • Bendsen, Bettina Burgdorff, BSc[2] • Westmark, Signe, MSc[3] • Riis, Johannes, MD[3,4,6] • Krarup, Anne Lund, PhD[3,5,6] • Melgaard, Dorte, PhD[3,6*]

[1]Center of Rehabilitation, Municipality of Toender, Toender, Denmark • [2]Department of Physiotherapy and Occupational Therapy, Municipality of Hjoerring, Hjoerring, Denmark • [3]Center for Clinical Research, North Denmark Regional Hospital, Hjoerring, Denmark • [4]Department of Geriatric Medicine, Aalborg University Hospital, Aalborg, Denmark • [5]Department of Acute Medicine and Trauma Care, Aalborg University Hospital, Aalborg, Denmark • Faculty of Clinical Medicine, Aalborg University, Aalborg, Denmark

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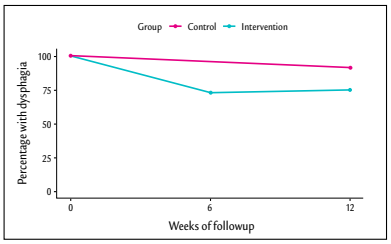
Conclusions

Both CTAR combined with standard care and standard care has a significant effect of the swallowing function in citizens with OD. There is a trend towards best effect of CTAR combined with standard care. Standard care e.g. combined with CTAR should be offered to citizens with dysphagia.

Table: Descriptive information on outcome data.

	Baseline		6 weeks	12 weeks	
	CTAR + standard care N=48	Standard care N=42	CTAR + Standard care N=45	CTAR + Standard care N=40	Standard care N=35
Volume-Viscosity swallow test	45 (93.8%)	41 (97.6%)	24 (53.3%)	26 (65.0%)	28 (80.0%)
Impaired safety	40 (83.3%)	28 (66.6%)	18 (40.0%)	19 (47.5%)	22 (62.9%)
Impaired efficacy	29 (60.4%)	26 (61.9%)	17 (37.8%)	26 (65.0%)	21 (60.0%)
Minimal Eating Observation Form-II	42 (91.3%)	31 (77.5%)	25 (55.6%)	17 (42.5%)	14 (40.0%)
Ingestion					
Sitting position	8 (17.4%)	9 (22.0%)	8 (17.8%)	8 (20.0%)	6 (17.1%)
Manipulation of food on the plate	15 (32.6%)	13 (31.7%)	10 (22.2%)	9 (22.5%)	11 (31.4%)
Transport of food to the mouth	9 (19.6%)	13 (31.7%)	8 (17.8%)	7 (17.5%)	5 (14.3%)
Deglutition					
Manipulation of food in the mouth	24 (52.2%)	16 (39.0%)	13 (28.9%)	10 (25.0%)	10 (28.6%)
Swallowing	32 (78.3%)	21 (51.2%)	14 (31.1%)	13 (32.5%)	14 (40.0%)
Problems chewing (often/very often)	10 (21.7%)	5 (12.2%)	3 (6.7%)	2 (5.0%)	1 (2.9%)
Energy					
Energy to eat	14 (30.4%)	7 (17.1%)	6 (13.3%)	6 (15.0%)	4 (11.4%)
Appetite (low/ very low)	19 (41.3%)	17 (41.5%)	13 (28.9%)	10 (25.0%)	9 (26.5%)
	Missing = 2	*Missing = 2*	*Missing = 0*	*Missing = 0*	Missing = 0 (appetite = 1)
Energy intake (kilojoule)	6635 (5425, 7532)	6663 (5222, 7705)	-	7216 (6057, 7947)	6700 (5992, 8250)
	Missing = 10	*Missing = 6*		*Missing = 18*	*Missing =13*
Protein intake (g/day)	54.4 (45.8, 70.2)	48.6 (41.5, 72.1)	-	63.0 (51.5, 75.0)	68.8 (47.5, 86.9)
	Missing = 11	*Missing = 6*		*Missing = 19*	*Missing =13*
BMI	24.5 (20.5, 29.28)	25.6 (21.3, 29.2)	25.4 (20.0, 30.1)	25.2 (21.2, 29.3)	27.0 (22.5, 29.0)
	Missing = 1	*Missing = 2*	*Missing = 10*	*Missing = 1*	*Missing = 3*
DHI					
Total score	32 (22, 43)	24 (16, 32)	24 (12, 40)	19 (12, 37)	18 (8,34)
Physical score	14 (10, 18)	12 (8, 14)	10 (6, 16)	9 (8, 13)	8 (6, 16)
Emotional score	6 (2, 14)	4 (0, 8)	4 (0, 10)	4 (0, 10)	2 (0, 8)
Functional score	10 (6, 16)	8 (4, 10)	10 (2, 14)	6 (0, 13)	6 (2, 12)
	Missing = 1	*Missing = 1*	*Missing = 0*	*Missing = 0*	*Missing = 0*
Barthel index	85 (50, 93)	80 (80, 95)	85 (55, 95)	90 (55, 95)	90 (75, 100)
	Missing = 1	*Missing = 1*	*Missing = 0*	*Missing = 1*	*Missing = 1*

Figure: Percentage with dysphagia over the study among complete cases



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Population-based incidence and prevalence of eosinophilic oesophagitis in Denmark: a nationwide study 2008-2018

Kristine Højgaard Allin[1,2], Gry Poulsen[1], Dorte Melgaard[3,4], Line Tegtmeier Frandsen[2], Tine Jess[1,2], Anne Lund Krarup[2,4,5]

1. Center for Molecular Prediction of Inflammatory Bowel Disease (PREDICT), Department of Clinical Medicine, Aalborg University, Copenhagen, Denmark
2. Department of Gastroenterology and Hepatology, Aalborg University Hospital, Denmark
3. Department of Gynecology and Obstetrics, North Denmark Regional Hospital, Denmark
4. Department of Clinical Medicine, Aalborg University, Denmark
5. Department of Emergency Medicine and Trauma Care, Aalborg University Hospital, Denmark

Background
Eosinophilic oesophagitis (EoE) is a chronic immunemediated or antigen-mediated oesophageal disease characterized by symptoms related to oesophageal dysfunction and eosinophilpredominant inflammation. Objective: We aimed to estimate the incidence and prevalence of EoE in Denmark during the period 2008-2018.

Methods
Based on data from nationwide registers we identified cases of EoE using two definitions: a broad definition based solely on oesophageal biopsies registered in the Danish Pathology Register and a narrow definition also including symptoms of oesophageal dysfunction registered in the Danish National Patient Registry. The annual incidence and prevalence were standardized by sex and age in 5-year intervals to the 2013 study population.

Results
From 2008 to 2011, the standardized incidence of EoE was stable, from 2011 to 2018 it increased from 3.9 (95% CI 3.3-4.4) to 11.7 (95% CI 10.8-12.6) per 100,000 person-years. Similar temporal trends were observed when using the narrow EoE definition. The increase in incidence was most pronounced in men and in individuals above 40 years of age. In children, the EoE incidence was a fourth of the incidence in adults aged 40-64 years: 4.4 (95% CI 3.2-5.6) vs 17.6 (95% CI 15.7-19.5) per 100,000 person-years. Overall, the biopsy rate and the proportion of oesophageal biopsies with detected eosinophilia increased during the study period.

Conclusion
This study of the entire population of Denmark during the https://mc.manuscriptcentral.com/UEGJ United European Gastroenterology Journal For Peer Review period 2008 to 2018 shows that the incidence and prevalence of EoE is not yet plateauing and that EoE could be severely underdiagnosed in children.

Population-based incidence and prevalence of eosinophilic oesophagitis in Denmark

A nationwide study 2008-2018

Kristine Højgaard Allin[1,2] • Gry Poulsen[1] • Dorte Melgaard[3,4] • Line Tegtmeier Frandsen[2] • Tine Jess[1,2] • Anne Lund Krarup[2,4,5]

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[3]Center of Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark
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The annual incidence and prevalence were standardized by sex and age in 5-year intervals to the 2013 study population.

Results

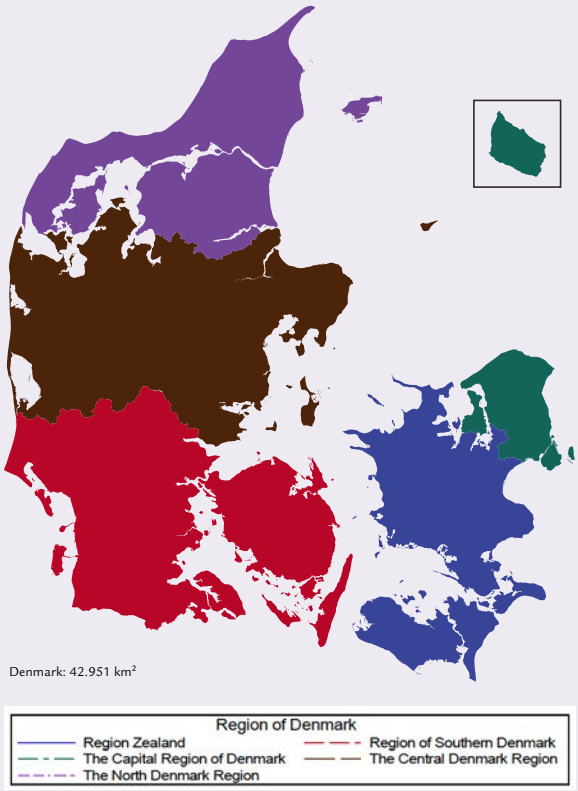
From 2008 to 2011, the standardized incidence of EoE was stable, but from 2011 to 2018 it increased from 3.9 (95% CI 3.3-4.4) to 11.7 (95% CI 10.8-12.6) per 100,000 person-years. Similar temporal trends were observed when using the narrow EoE definition. The increase in incidence was most pronounced in men and in individuals above 40 years of age. In children, the EoE incidence was a fourth of the incidence in adults aged 40-64 years: 4.4 (95% CI 3.2-5.6) vs 17.6 (95% CI 15.7-19.5) per 100,000 person-years.

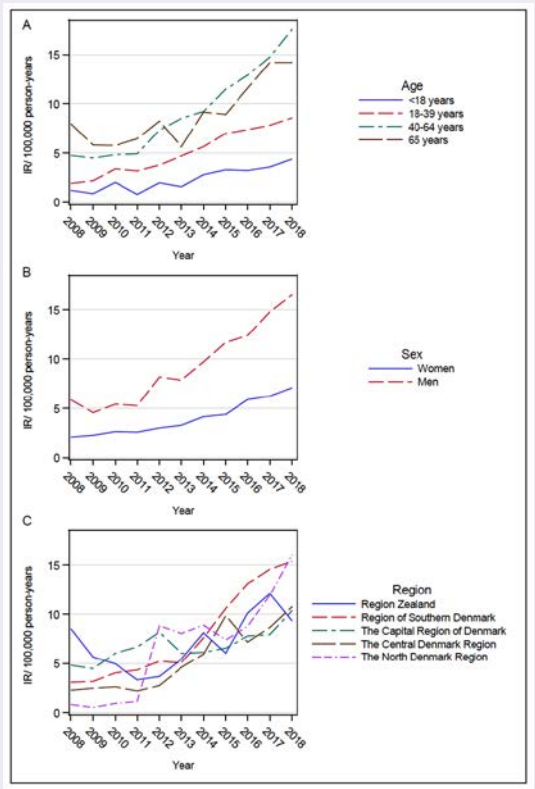
Overall, the biopsy rate as well as the proportion of oesophageal biopsies with detected eosinophilia increased during the study period.

Conclusion

This study of the entire population of Denmark during the period 2008 to 2018 shows that the incidence and prevalence of EoE is not yet plateauing and that EoE could be severely underdiagnosed in children.

Kristine Højgaard Allin, Gry Poulsen, Dorte Melgaard, Line Tegtmeier Frandsen, Tine Jess, Anne Lund Krarup: *Eosinophilic oesophagitis in Denmark: Population-based incidence and prevalence in a nationwide study from 2008 to 2018.* United European Gastroenterology Journal. 2022





Grant support
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The Danish definition of dysphagia – a Danish multi-professional Delphi study

Anne Højager Nielsen[1,2], Signe Janum Eskildsen[3], Janne Danielsen[4], Peter Haastrup[5], Anne Bek Jellinghof[6], Johannes Riis[7], Anne Lund Krarup[8], Hanna Rahbek Mortensen[9], Bahareh Bakhshaie Philipsen[10], Nathalie Rommel[11,12], Dorte Melgaard[13 ,14]

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14. Department of Gynaecology and Obstetrics, North Denmark Regional Hospital, Denmark

Background
Dysphagia is a symptom in many patients and elderly as well and has several consequences. Despite this, there is no clear definition of dysphagia. The purpose with the present study was to generate a Danish definition of dysphagia to enhance collaboration across sectors and professions.

Methods
A Delphi methodology was used to achieve consensus among experts from different professions and contexts. The Delphi process was initiated and performed by a multi-professional group of experienced researchers and board members of the Danish Society for Dysphagia. The process consisted of a literature search leading to the draft of different definitions. Afterwards, two Delphi rounds between professionals and a stakeholder round among patients were conducted.

Results
Round one consisted of seven definitions rated by 194 participants. The second round contained the four highest ranking definitions from round one. In round two there were 279 responders. Both rounds had a wide representation of sectors and geography and most of the participants had more than four years of experience working with dysphagia. After the two Delphi rounds, one definition was clearly preferred: *Dysphagia is broadly understood as functional impairments that either prevent or limit the intake of food and fluids, and which make swallowing unsafe, inefficient, uncomfortable or affect quality of life.*

Conclusion
This Delphi study resulted in a generic Danish definition of dysphagia, which was broadly accepted by different healthcare professionals, across sectors and among patients. The shared definition may enable better collaboration on patient care, but more clearly delineated subtypes may be necessary to support research purposes.

A Danish definition of dysphagia

- a multi-professional Delphi study

Anne Højager Nielsen[1] • Signe Janum Eskildsen[2] • Janne Danielsen[3] • Peter Haastrup[4] • Anne Bek Jellinghof[5] • Johannes Riis[6] • Anne Lund Krarup7 • Hanna Rahbek Mortensen[8] • Bahareh Bakhshaie Philipsen[9] • Nathalie Rommel[10] • Dorte Melgaard[11]

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Introduction

Dysphagia is a symptom in many patients and elderly as well and has several consequences and aim for cross-sectional diagnosing and treatment. Despite this, there is no clear definition of dysphagia. The purpose with the present study was to generate a Danish definition of dysphagia to enhance collaboration across sectors and professions.

Methods

A Delphi methodology was used to achieve consensus among experts from different professions and contexts. The Delphi process was initiated and performed by a multi-professional group of experienced researchers and board members of the Danish Society for Dysphagia. The process consisted of a literature search leading to the draft of different definitions. Afterwards, two Delphi rounds between professionals and a stakeholder round among patients were conducted.

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Round one consisted of seven definitions rated by 194 participants. The second round contained the four highest ranking definitions from round one. In round two there were 279 responders. Both rounds had a wide representation of sectors and geography and most of the participants had more than four years of experience working with dysphagia. After the two Delphi rounds, one definition was clearly preferred: ***Dysphagia is broadly understood as functional impairments that either prevent or limit the intake of food and fluids, and which make swallowing unsafe, inefficient, uncomfortable or affect quality of life.***

Conclusions

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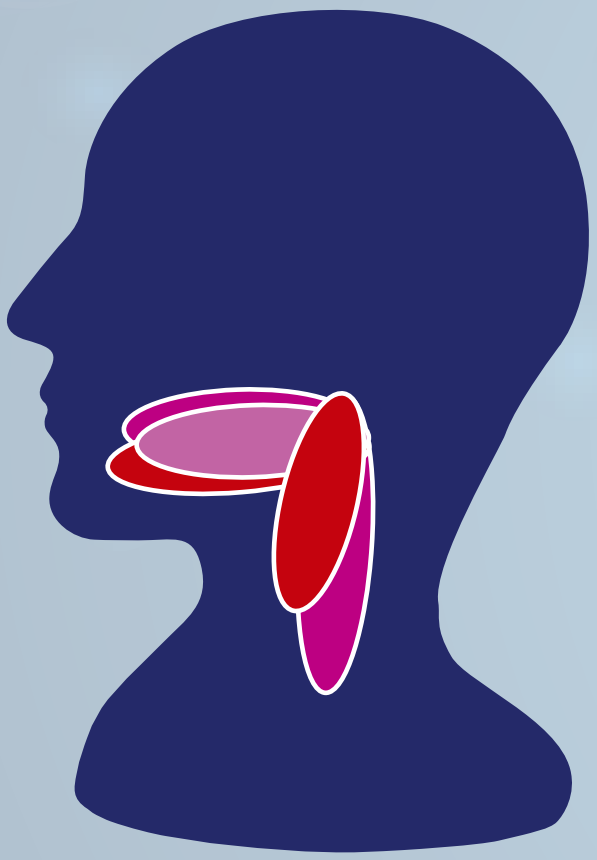

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23

The diagnosis of aspiration pneumonia in older persons: a systematic review

Yuki Yoshimatsu[1,2], Dorte Melgaard[3,4], Albert Westergren[5], Conni Skrubbeltrang[6], David Smithard[1,2]

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Background
Community acquired pneumonia (CAP) is highly common across the world. It is reported that over 90% of CAP in older adults may be due to aspiration. However, the diagnostic criteria for AP has not been widely agreed. Is there a consensus on how to diagnose AP? What are the clinical features of patients being diagnosed with AP? We conducted a systematic review to answer these questions.

Methods
We performed a literature search in MEDLINE®, EMBASE, CINHAL, and Cochrane to review the steps taken towards diagnosing AP. Search terms for "aspiration pneumonia" and "aged" were used. Inclusion criteria were: original research, community acquired AP, age ≥75 years-old, acute hospital admission.

Results
A total of 10,716 reports were found. Following removal of duplicates, 7601 were screened, 95 underwent full-text review, and 9 reports were included in the final analysis. Pneumonia was diagnosed using a combination of symptoms, inflammatory markers, and chest imaging findings in most studies. AP was defined as a pneumonia with some relation to aspiration or dysphagia. Aspiration was inferred if there was witnessed or prior presumed aspiration, episodes of coughing on food or liquids, relevant underlying conditions, abnormalities on videofluoroscopy or water swallow test, and gravity-dependent distribution of shadows on chest imaging. Patients with AP were older, more frail, and had more comorbidities than in non-AP.

Conclusion
There is a broad consensus on the clinical criteria to diagnose AP. It is a presumptive diagnosis with regards to patients' general frailty rather than in relation to swallowing function itself.

Diagnosis of Aspiration Pneumonia in the Elderly: a Systematic Review

Yuki Yoshimatsu[1,2], Dorte Melgaard[3], Albert Westergren[4], Conni Skrubbeltrang[5], David G Smithard[1,2]

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Introduction

Community acquired pneumonia (CAP):

- 6 times more common in ≥75 yo than <60 yo[1]
- >90% may have aspiration as an underlying cause[2]

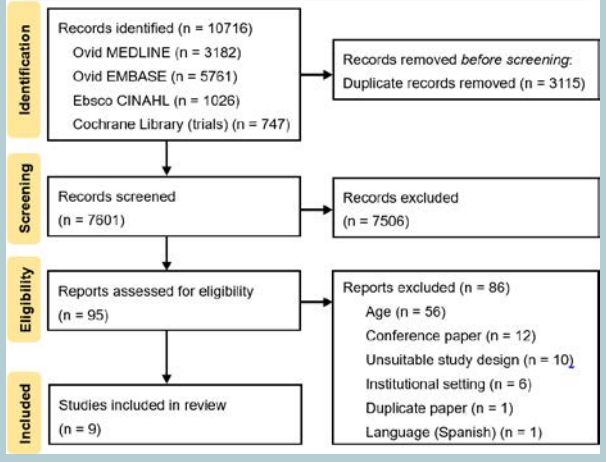
Aspiration pneumonia (AP):

- no unified diagnostic criteria despite high prevalence
- inferred based on clinical suspicion / presumed aspiration
- actual prevalence is unclear because the diagnosis varies
- consequently, management also varies

Methods

Aim: to investigate how AP is diagnosed in older adults
Database: MEDLINE®, EMBASE, CINHAL, Cochrane
Terms: aspiration/ inhalation/ Mendelsohn/ deglutition/pneumonia, dysphagia/ deglutition/ swallow
Languages: English, Swedish, Danish, Norwegian, Japanese
Inclusion criteria: original research, community acquired AP, age ≥75, acute admission

Results



Author	Design	Objectives	Subjects	N	Diagnosis of pneumonia	Diagnosis of aspiration / dysphagia	Conclusion
Katsura[3] Japan, 1998	Retrospective	Outcomes in recurrent AP	Elderly admitted for recurrent AP	38	Symptoms (fever, cough, sputum), inflammatory markers	Witnessed aspiration during eating and requiring intervention such as suction	1. Recurrence occurs with CVD, dementia, ADL deterioration; 2. Prognosis is poor; 3. PEG improves survival but not recurrence
Tokuyasu[4] Japan, 2009	Prospective cohort	1. Causative organism, 2. Efficacy of Meropenem	≥75 yo, hospitalized for AP	62	Symptoms (fever, cough, purulent sputum), blood tests, lung infiltration	1:aspirated content detected in respiratory tract, 2:coughing or choking before/during/or after swallowing, and 3:dysphaagia on videofluoroscopy	1. Anaerobic bacteria coverage may be necessary for potentially fatal AP; 2.Meropenem is effective and tolerable
Takenaka[5] Japan, 2011	Prospective cohort	Risks of recurrent AP in dysphagic elderly	Admissions for AP (times during 2y 3 m)	≥ twice: 15 once: 53	Symptoms of respiratory infection, inflammatory markers, X-ray	Symptoms suggesting aspiration prior to admission	Relapse risk factors: coming from institution/hospital, brain dysfunction
Bosch[6] Spain, 2012	Prospective cohort	Prognostic factors in elderly w/ dementia, admitted for AP	≥75 yo with dementia, admitted for AP	120	Chest infiltration + 1 major criteria (cough, sputum, BT ≥ 37.8°) or 2 minor criteria (dyspnoea, pleuritic pain, delirium, RR >20, WBC >12000/μL, consolidation)	Risk factors for oropharyngeal aspiration and a history of witness or suspected aspiration	Mortality: in-hospital 33%, 6-month 51%. Factors for mortality: multilobar involvement, low lymphocyte, age, dependence, malnutrition
Komiya[7] Japan, 2013	Retrospective	CT features of AP	Admissions for pneumonia with dysphagia (VFSS)	53	Not mentioned	On VF: disability to move food or liquid from the mouth through the pharynx and esophagus into the stomach safely and efficiently	Patterns: bronchopneumonia, bronchiolitis. Distribution: gravity dependence.
Pinargote[8] Spain, 2015	Prospective cohort	Features/outcomes of AP/non-AP	≥80 yo admitted with AP	AP: 46 non-AP: 30	Radiographic evidence of pulmonary infiltration and acute symptoms of lower respiratory tract infection	Infiltration in upper lobes (posterior) or lower lobes (apical/basal) and vomiting or witnessed aspiration, or risks (dementia, CVD, NMD, pharyngolaryngeal/ esophageal dysfunction, obstruction, tube feeding, gastroesophageal reflux, known dysphagia)	AP: higher sodium, lower eGFR, higher pneumonia severity, higher mortality
Palacios-Cena[9] Spain, 2017	Retrospective	1. AP demographics, 2. Time trends, 3. Factors of mortality	≥75 yo admitted for AP (national database)	111,319	Not mentioned	AP event codes according to the ICD-9-CM: 507.x (pneumonitis or pneumonia caused by inhalation of vomitus or food)	AP: older, male, more comorbidities. Over time, length of stay and in-hospital mortality decreased in both sexes, but readmissions increased in females.
Nakashima[10] Japan, 2018	Prospective cohort	Silent aspiration and mortality in AP	≥65 yo admitted for AP	170	New gravity-dependent shadow + 2 or more: purulent sputum, BT ≥ 37.5 °C, high CRP, WBC ≥ 9000/μL	Positive WST or risks (neurological disorder, bedridden, severe cognitive impairment or reflux)	Silent aspiration detected on cough latency test can predict 1-month mortality
Manabe[11] Japan, 2020	Retrospective	Distinguishing AP/ CAP in primary care	AP in primary care database	AP: 130 CAP: 58	Not mentioned	Overall clinical assessment, risk factors for aspiration, and/or chest radiograph abnormalities	Factors for diagnosing AP in primary care: nursing home, cerebral infarction, dementia, HT

Discussion

AP: defined as **pneumonia with a factor related to aspiration or dysphagia.**

- **Aspiration / dysphagia** was inferred when:
  - witnessed or history of prior aspiration
  - episodes of coughing on food or liquids
  - relevant underlying conditions
  - VFSS, WST, gravity-dependent chest shadows
- AP patients: **older, frail, more comorbidities** than non-AP
- There is a broad consensus on clinical criteria to diagnose AP, but there is **no consensus on how to confirm if the pneumonia is secondary to the aspiration or incidental**.

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[Conflicts of Interest] none.

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A plant-based diet as an anti-inflammatory supplementary treatment for Crohn's disease

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4. Department of Chemistry and Bioscience, Aalborg University, Denmark

**Participant in the North Denmark Regional Hospital Research Course 2022*

Background
Crohn's disease is an inflammatory bowel disease with a recurrent pattern, and symptoms include abdominal pain, diarrhea, bleeding, fatigue, and malnutrition. No definite dietary evidence exists, but a plant-based diet could aid in the prevention of disease activity by contributing with anti-inflammatory phytonutrients.
To investigate the feasibility of a twelve week plant-based dietary intervention in patients with Crohn's disease, and to explore the effect of such a diet on disease activity, quality of life, inflammatory markers and the gut microbiome.

Methods
In this feasibility study, patients with Crohn's disease will be guided in a plant-based diet with individualized nutritional adequacy. It is expected to include between 20-40 patients. Participants will receive telephone guidance once a week, delivery of evening meals, recipes and grocery shopping lists. The primary outcome is feasibility measured by: Ease of recruitment, compliance, acceptability and safety/adverse effects. In addition, patient reported outcome measures, body composition, inflammatory biomarkers, and gut microbiota composition and functionality will be analyzed to evaluate the effect of the dietary intervention.

Results
The results are expected in 2024 and will provide important knowledge regarding the role of a plant-based diet as supplementary treatment of Crohn's disease.

Conclusion
Both practical considerations regarding a dietary change, but also the effect of a plant-based diet on inflammation and gut microbiome is expected to bring us a considerable step closer to fulfilling the wishes for specific dietary recommendations targeting Crohn's disease with the ultimate goal of improving treatment for this chronic inflammatory bowel condition.

A Plant-based Diet as an Anti-inflammatory Supplementary Treatment for Crohn's Disease

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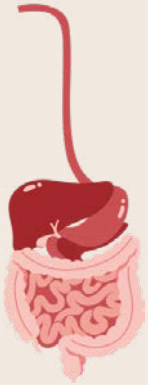
BACKGROUND

Crohn's disease is an inflammatory bowel disease with a recurrent pattern, where symptoms include abdominal pain, diarrhea, rectal bleeding, fatigue, and malnutrition.

No definite dietary evidence exists, but a plant-based diet could aid in the prevention of disease activity by contributing with anti-inflammatory phytonutrients.



AIM

To investigate the feasibility of a plant-based dietary intervention for 12 weeks, and to explore the effect of such a diet on disease activity, quality of life, the gut microbiome, and inflammatory markers.

METHODS

The project is a feasibility study with an expected 20-40 patients with Crohn's disease.

The primary outcome is feasibility measured by: Ease of recruitment, compliance, acceptability of the diet and safety/adverse effects.
In addition, patient reported outcome measures, body composition, inflammatory biomarkers, and gut microbiota composition and functionality will be analysed.

The intervention consists of:

- Individualised plant-based meal plans,
- Recipes and grocery shopping lists,
- Telephone guidance once a week,
- Delivery of pre-prepared evening meals.

Results are expected in 2024.

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Fit2Fight – early patient-driven nutrition intervention in general practice in case of suspected cancer

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2. Department of Clinical Medicine, Aalborg University, Denmark
3. Centre for General Medicine, Department of Health Sciences, Aalborg University, Denmark

**Deltager i Forskningskursus 2022 ved Regionshospital Nordjylland*

Background
Malnutrition is associated with adverse outcomes in cancer patients and worsens by degree and weight loss. The primary aim of this study is to test the feasibility of an early complex intervention towards improving patient competencies to maintain and improve nutritional status and physical activity at the time of referral to the "cancer package" from general practice.

Methods
The aim is to include 50 patients. The patients are recruited when they visit general practice with unintended weight loss and suspect cancer. Patients included will receive information about the importance of keeping the weight stable and preventing decrease in muscle mass and function. Furthermore, the patients will receive an APP and written guidance material for use and collaboration with health professionals throughout the study. Follow up is done after 1, 3, 6 and 12 months with quantitative measurements regarding feasibility, food intake and body composition and qualitative interviews.

Results
It is expected that this realistic and complex early intervention is feasible and will empower patients to improve nutrition intake and physical performance. It will give patients and relatives the opportunity to take active responsibility in improving the chances of recovering and living better lives.

Conclusion
After completing the study, the purpose is that the setup can be adjusted so that it is ready for dissemination and implementation in general practice and treatment settings across the country. The APP and other project material will be made publicly available and free to use for patients and healthcare professionals after this project.

FIT2FIGHT

Early Patient-driven Nutrition Intervention in General Practice in case of Suspected Cancer

Sabina Lund Mikkelsen1, Henrik Højgaard Rasmussen1,2, Janus Laust Thomsen3, Mette Holst1,2

1.Department of Gastroenterology, Aalborg University Hospital, Denmark
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RESULTS

It is expected that this realistic and complex early intervention is feasible and will empower patients to improve nutrition intake and physical performance. It will give patients and relatives the opportunity to take active responsibility in improving the chances of recovering and living better lives.

METHODS

The aim is to include 70 patients. The patients are recruited when they visit general practice with unintended weight loss and suspect cancer. Patients included will receive information about the importance of keeping the weight stable and preventing decrease in muscle mass and function. Furthermore, the patients will receive an app and written guidance material for use and collaboration with health professionals throughout the study. Follow up is done after 1, 3, 6 and 12 months with quantitative measurements regarding feasibility, food intake and body composition and qualitative interviews.

PERSPECTIVE

After completing the study, the purpose is that the setup can be adjusted so that it is ready for dissemination and implementation in general practice and treatment settings across the country. The app and other project material will be made publicly available and free to use for patients and healthcare professionals after this project.

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Difference between new English guideline and current clinical practice for EoE treatment in children in the North Denmark Region

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6. Department of Gastroenterology, Aalborg University Hospital, Denmark

Background
In the North Denmark Region (NDR), a low incidence, a long diagnostic delay and treatments not following guidelines were reported among children with eosinophilic esophagitis (EoE) between 2007-2017. This study aimed to compare the daily routines for treatment of EoE children in the NDR in 2007-2021 with the new UK guidelines to explore the fit.

Methods
This retrospective, register-based DanEoE cohort study includes 31 children diagnosed with EoE between 2007–2021 in NDR. Medical files were reviewed with attention to symptoms, reason for referral, disease progress, treatment, symptomatic and histological remission as well as diagnostic delay.

Results
The median incidence pr. year from 2018-2021 was 2,9/100.000 which is a 3,5-fold increase from 2007-2017. The diagnostic delay in 2018-2021 was one year and 11 months which is two and a half years less than the one measured from 2007-2017. No noticeable differences were found regarding treatment and follow-up between the two time periods. 58% were either not treated according to guidelines, or never started an initial treatment. 87% never received a second gastroscopy as guidelines prescribe, and 39% were never offered a second treatment despite no response on initial treatment.

Conclusion
With a higher incidence and a lower diagnostic delay, the diagnostic of children with EoE in the NDR (2018-2021) is much better than previous results (2007-2017. However, a large adjustment of clinical routine is needed to adjust to the new guidelines.

EoE treatment in children in the North Denmark Region

- difference between new English guideline and current clinical practice

Kasper Bredal[1,2] • Jacob Holmen Terkelsen[1,2] • Martin Hollænder[1] • Dorte Melgaard[3,4] • Anne Lund Krarup[4,5,6]

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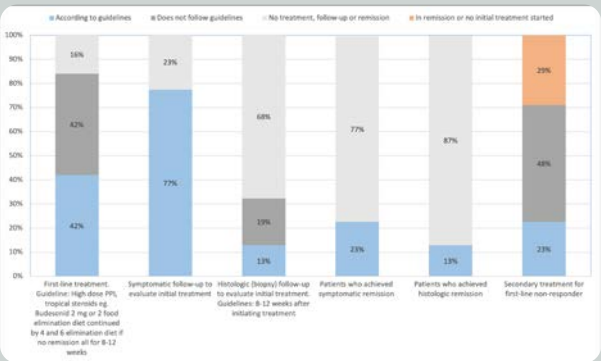

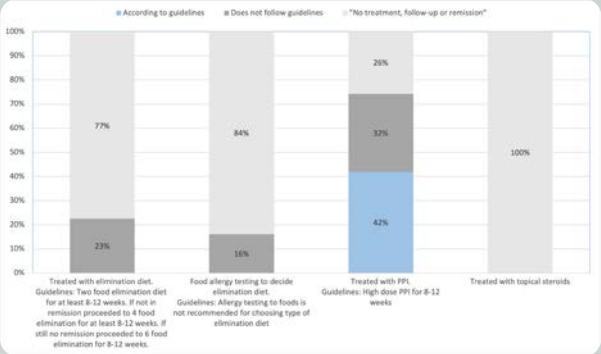

Conclusions

With a higher incidence and a lower diagnostic delay, the diagnostic of children with EoE in the NDR (2018-2021) is much better than previous results (2007-2017. However, a large adjustment of clinical routine is needed to adjust to the new guidelines.

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Infektionsmedicin og Reumatologi

27

Anaerobic bacteria in the blood – and so what?: a population-based study from the North Denmark Region

Kasper Kjersgaard Mortensen[*1], Hans Linde Nielsen[1,2], Peter Derek Christian Leutscher[3,4], Kirstine Kobberøe Søgaard[1,2]

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**Participant in the North Denmark Regional Hospital Research Course 2022*

Background
Bacteremia is a severe infection associated with a high mortality rate. The clinical epidemiology specifically for anaerobic bacteremia is lacking in the literature. Our aim was to describe the distribution of bacteria species in patients with anaerobic bacteremia, and characterize primary source of infection and risk factors in a population-based setting in the North Denmark Region.

Methods
We identified all cases of anaerobic bacteremia between 1992 and 2019 in the North Denmark Bacteremia Research Database, which contains microbial and clinical data on every episode of bacteremia.

Results
A total of 1827 episodes of anaerobic bacteremia was identified in 1774 patients among whom 947 (53%) were males. The median age was 71 years (interquartile range 59-80 years), and 51% of the episodes were community-acquired. The proportion of patients with cancer, diabetes mellitus and COPD were 32.3%, 9.9% and 6.3%, respectively. Two-thirds (68.3%) of the episodes were polymicrobial. The most frequent anaerobic bacteria isolated were *Bacteroides* spp. (46.4%), *Clostridium* spp. (21%) and *Fusobacterium* spp. (5.7%). The most frequent primary site of infection leading to bacteremia was the abdomen (41.2%), followed by the liver and gallbladder (10.8%), whereas it was unknown in 30.2% of the episodes.

Conclusion
Anaerobic bacteremia affects mainly the older population, and 1/3 of patients had cancer. Only half of the episodes were community-acquired. Most frequent primary infection was the abdomen. Next step will be to link information on mortality to examine prognosis according to pathogen, primary source of infection, and underlying risk factors.

Anaerobic bacteria in the blood – and so what?

A population-based study from the North Denmark Region

Kasper K Mortensen[1], Hans Linde Nielsen[1,2], Peter C Leutscher[2,3] and Kirstine K Søgaard[1,2]

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2. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark
3. Centre for Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark

Background

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Methods

We identified all cases of anaerobic bacteremia between 1992 and 2019 in the North Denmark Bacteremia Research Database, which contains microbial and clinical data on every episode of bacteremia.

Results

A total of 1827 episodes of anaerobic bacteremia was identified in 1774 patients. Patient characteristics are shown in table 1. 51% of the episodes were community-acquired. Two-thirds (68.3%) of the episodes were polymicrobial. The occurrence of the most frequent anaerobic bacteria isolated are shown in table 1. Aerobic bacteria were isolated in 561 (30.7%) episodes. The most frequent primary site of infection leading to bacteremia is shown in figure 1.

Tables

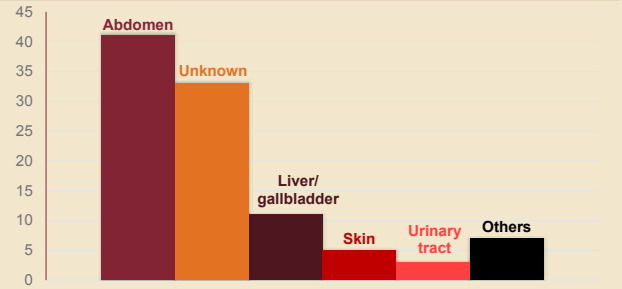
Table 1.
Patient characteristics

Patients, n	1774
Age, median years	71
Female, %	47%
Comorbidities, %	
- Cancer	32.3%
- Diabetes mellitus type II	9.9%
- COPD	6.3%
- Kidney failure	3.9%

Table 2.

Bacteria species	n (%)
Bacteroides spp.	998 (44.9%)
- B. fragilis	638 (28.7%)
- B. thetaiotaomicron	138 (6.2%)
- B. ovatus	23 (1.0%)
Clostridium spp.	521 (23.4%)
- C. perfringens	248 (11.1%)
- C. septicum	83 (3.7%)
Fusobacterium spp.	118 (5.3%)
- F. necrophorum	52 (2.3%)
- F. nucleatum	38 (1.7%)
Prevotella spp.	24 (1.1%)
Others	433 (19.5%)
No identification	153 (6.9%)
Total	2223 (100%)

Figure 1. Primary site of infection (%)



Conclusion and perspectives

Anaerobic bacteremia affects mainly the older population and 1/3 of patients had cancer. Only half of the episodes were community-acquired. Most frequent primary infection was the abdomen. Next step will be to link information on mortality with our data to examine prognosis according to pathogen, primary source of infection, and underlying risk factors.

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Can pharmacogenetics predict tolerance to methotrexate therapy in patients with rheumatic diseases? A pilot study

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1. Department of Rheumatology, North Denmark Regional Hospital
2. Department of Clinical Medicine, Aalborg University

Background
Methotrexate (MTX) is the drug of choice when initiating treatment for Rheumatoid Arthritis (RA) and Psoriatic Arthritis (PsA). About thirty percent of all patients must stop MTX treatment due to side effects, especially gastrointestinal (GI) complaints. This necessitates change of treatment and delays time to remission for several weeks, where irreversible joint damage can happen. Pharmacogenetics (PGx) is the study of genetic variations and the influence on drug efficacy and toxicity. PGx regarding MTX has been investigated and more PGx variations have been associated with side effects. However, the data for now requires further validation before it can be used to predict tolerance to MTX. We aim to validate the most promising evidence-based PGx variations in patients with rheumatic disease – not only linked to MTX but also to concomitant medication.

Methods
A retrospective case-control study will be performed. Fifteen patients with RA or PsA withdrawing from MTX due to GI side effect (cases) will be matched on age, gender, and diagnosis to fifteen patients who tolerates MTX (Controls) without side effects.
PGx profiles (consisting of multiple single nucleotide polymorphisms in genes related to MTX metabolism) will be obtained through blood sample analysis and compared.

Conclusion
PGx analyzes have not yet been performed, but we expect to determine specific PGx variations linked to the development of GI side effects during MTX therapy. In future, these can be tested prior to MTX treatment to avoid prescription of MTX to non-tolerant patients, thereby reducing side effects and securing rapid remission.

Can Pharmacogenetics Predict Tolerance to Methotrexate Therapy in Patients with Rheumatic Diseases? A Pilot Study

Mads Kjeldbjerg Hilligsøe[1] • Asta Linauskas[1,2]

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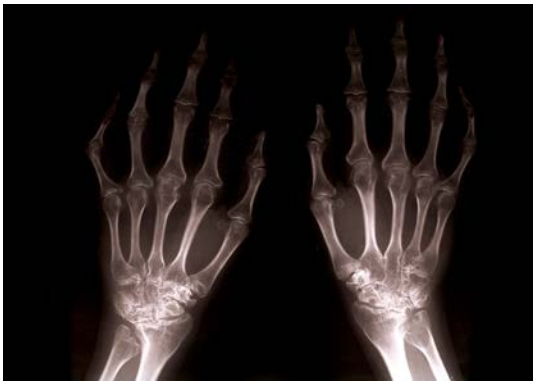
[2] Department of Clinical Medicine, Aalborg University

BACKGROUND

For Rheumatoid Arthritis (RA) and Psoriatic Arthritis (PsA) methotrexate (MTX) is the first-line drug. Unfortunately, one-third of patients must stop MTX due to side effects, especially gastrointestinal (GI) complaints. This delays time to remission for several weeks, where irreversible joint damage can happen.

Pharmacogenetics (PGx) is the study of genetic variations and the influence on drug efficacy and toxicity. PGx regarding MTX has been investigated and more PGx variations have been associated with side effects. However, the data for now requires further validation before it can be used to predict tolerance to MTX.

We aim to validate the most promising evidence-based PGx variations in patients with rheumatic disease – not only linked to MTX but also to concomitant medication.



METHODS

A retrospective case-control study will be performed. Fifteen patients with RA or PsA withdrawing from MTX due to GI side effect (cases) will be matched on age, gender, and diagnosis to fifteen patients who tolerates MTX (Controls) without side effects.

PGx profiles (consisting of multiple single nucleotide polymorphisms in genes related to MTX metabolism) will be obtained through blood sample analysis and compared between the two groups. PGx variations linked to concomitant medication will be included in sub-analyzes.

PERSPECTIVES

PGx analyzes have not yet been performed, but we expect to determine specific PGx variations linked to the development of GI side effects during MTX therapy.

In future, these can be tested prior to MTX treatment to avoid prescription of MTX to non-tolerant patients, thereby reducing side effects and securing rapid remission.

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Clinical decision support system for stratification of patients within 24 hours of admission for risk of hospital-acquired urinary tract infection using explainable Bayesian network models

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5. Department of Clinical Microbiology, Aalborg University Hospital, Denmark

Background
Early identification of patients at risk of hospital-acquired urinary tract infections (HA-UTI) enables the initiation of timely targeted preventive and therapeutic control strategies. Machine learning (ML) models have shown promising potential for this purpose. However, existing ML models have demonstrated poor ability to support explainability, which challenges the interpretation of the result in clinical practice, limiting the adaption of the ML models into a daily clinical routine.

Methods
In this study, we combined clinical expert-based knowledge and ML in deciding on relevant risk factors for HA-UTI, resulting in a full- and reduced feature space. We developed Bayesian Network (BN) models to enable explainable assessment within 24h of admission for risk of HA-UTI. We compared the performance and explainability of BN models developed from 1. expert-based knowledge, 2. naïve, 3. score-based Tree-augmented-naïve (TAN)-, and 4. prototypical constraint-based Peter-and-Clark (PC) algorithm over the full- and reduced feature space, respectively.

Results
Of the 138,250 hospital admissions included in this study, 1,889 (1.37 %) admissions include at least one registered episode of HA-UTI. The BN models developed from the reduced feature space generally labeled more patients at risk. The naïve- and TAN BN models showed the highest performance using respectively the full- and reduced feature spaces (area under the curve = 0.735). BN models were associated with conveying transparency, hence promoting explainability, by allowing inspection of the evidence, the graph, and the reasoning behind the obtained results. In addition, the BN models over the reduced feature space promote simplicity by fewer nodes and edges. Expert-based knowledge was best suited for capturing the correct conditional dependencies, whereto the PC algorithm was the best data-driven approach for such purpose.

Conclusion
This study demonstrates a trade-off between performance and explainability between different approaches of constructing a BN model for risk stratification of patients within 24h of hospital admission for HA-UTI.

Clinical decision support system for stratification of patients within 24 hours of admission for risk of hospital-acquired urinary tract infection using explainable Bayesian Network models

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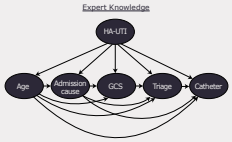
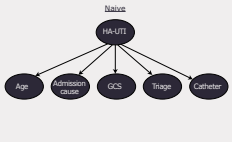
4. Department of Clinical Medicine, Aalborg University, Denmark
5. Department of Clinical Microbiology, Aalborg University Hospital, Denmark

1 Introduction

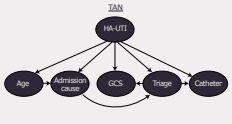
Early identification of patients at risk of hospital-acquired urinary tract infections (HA-UTI) enables the initiation of timely targeted preventive and therapeutic strategies. Machine learning (ML) models have shown great potential for this purpose. However, existing ML models in infection control have demonstrated poor ability to support explainability, which challenges the interpretation of the result in clinical practice, limiting the adaption of the ML models into a daily clinical routine.

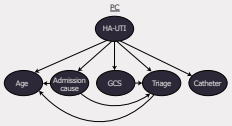




2 Methods

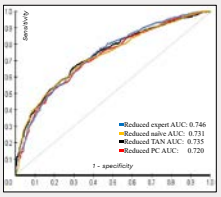
In this study, we developed Bayesian Network (BN) models to enable explainable assessment within 24h of admission for risk of HA-UTI. Our dataset contained 138,250 unique hospital admissions. We included data on admission details, demographics, lifestyle factors, comorbidities, vital parameters, laboratory results, and urinary bladder catheter.

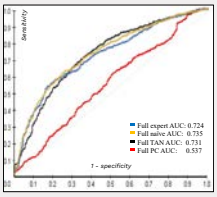




3 Results

Models developed from a reduced set of five features were characterized by simplicity and transparency compared to models developed from a full set of 56 features. The expert-based clinical BN model over the reduced feature space showed the highest performance (area under the curve = 0.746) compared to the naïve-, tree-augmented-naïve- and PC BN models. Moreover, models developed from expert-based knowledge were characterized by enhanced explainability.





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30

Evaluation of antibiotic use among patients admitted to a tertiary surgical emergency department with acute abdomen

Cihan Ozen[1], Ali Yalcinkaya[2, 3], Peter Hindersson[4], Peter Derek Christian Leutscher[5, 6]

1. Department of General Surgery, Aalborg University Hospital, Denmark
2. Interdisciplinary Orthopaedics, Aalborg University Hospital, Denmark
3. Center for General Practice, Aalborg University, Denmark
4. Department of Clinical Biochemistry, North Denmark Regional Hospital, Denmark
5. Centre for Clinical Research, North Denmark Regional Hospital, Denmark
6. Department of Clinical Medicine, Aalborg University Hospital, Denmark

Background
Intraabdominal infections (IAIs) are among the most common causes of sepsis, and overall mortality due to abdominal-origin sepsis has been reported to be 8-11%. Although broadly similar to international guidelines, the Danish guideline(s) demonstrate some variations due to region-specific necessities. Furthermore, deviations from the Danish protocol can still be observed for various reasons, indicating the need for further real-world data from which evidence-based conclusions can be drawn and used to improve antibiotic utilization.

Methods
This retrospective quality assurance audit was conducted at the North Denmark Regional Hospital, Hjørring, Denmark in order to evaluate our common practice regarding antibiotic administration for IAIs in the surgical emergency department and included 331 patients with acute abdomen, who were admitted between May 2018 to August 2018.

Results
Slightly more than half of the patients (52.6%) were given antibiotic treatment and 87% of these patients were given at least two antibiotics. The most prescribed antibiotic regimen (49.7%) was the combination of cefuroxime +/- metronidazole +/- gentamicin in comparison to Metronidazole +/- Benzyl-Penicillin (+/- Gentamicin) (26.9%) regimen and Piperacillin & Tazobactam +/- Metronidazole +/- Gentamicin (11,9%) regimen.

Conclusion
The common utilisation of cephalosporin-containing regimens in this study population raises concern due to the risk of extended-spectrum beta-lactamase resistance and Clostridium difficile infection.

Evaluation of Antibiotic Use in Acute Abdomen Patients Admitted to the Danish Regional Hospital Surgical Emergency Department

Cihan Ozen[1] • Ali Yalcinkaya[2, 3] • Peter Hindersson[4] • Peter Christian Leutscher[5, 6]

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Conclusions

The common utilisation of cephalosporin-containing regimens in this study population raises concern due to the risk of extended-spectrum beta-lactamase resistance and Clostridium difficile infection.

Deviations from guideline recommendations and increasing utilization of cephalosporin-containing regimens raise concern due to the risk of extended-spectrum beta-lactamase resistance and Clostridium difficile infection.

We spotted the points where deviations from international and national guidelines specifying the rational use of antibiotics occur in order to raise awareness on this issue among HCPs.

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TREAT-essential: Introducing personal clinical decision support for antimicrobial therapy

Mads Lause Mogensen[1], Logan Morgan Ward[1], Marc Ludwig[2], Mona Kyndi Pedersen[3], Peter Derek Christian Leutscher[3,4]

1. Treat Systems, Aalborg, Denmark
2. Emergency Department, North Denmark Regional Hospital, Denmark
3. Centre for Clinical Research, North Denmark Regional Hospital, Denmark
4. Department of Clinical Medicine, Aalborg University, Denmark

Background
Clinical decision support systems (CDSS) have previously shown to be able to enhance antimicrobial stewardship initiatives and reduce unnecessary antimicrobial usage without compromising coverage, thereby improving the quality of empiric therapy and reducing costs. Despite purported benefits, CDSS are faced with barriers to successful implementation. The purpose of the ongoing project is to investigate whether the TREAT-Essential CDSS can overcome these barriers and contribute to ensure quality of antibiotic treatment of acutely hospitalized patients.

Methods
We recently developed an updated version of TREAT, TREAT-Essential. This involved a series of workshops concerning functionality, user-friendliness, IT architecture and calibration/clinical relevance. Relevant stakeholders were involved including specialists in infectious diseases, clinical microbiology, and IT management.

Results
TREAT-Essential includes a redesigned interface and decision engine. The system takes the physician's diagnosis as an input rather than determining this from entered signs and symptoms. The data entry burden was reduced to 2-5 clicks with a minimized loss of physician autonomy. Patient information is automatically collected, and the recommended therapy presentation is simplified. Probabilities for causative pathogens and expected coverage for treatments still ensures explainable decision support. TREAT-Essential also includes a trigger functionality making it easier to integrate into the clinical workflow.

Conclusion
Involving key stakeholders uncovered additional opportunities for improving the design that may have been missed with separate workshops. TREAT-Essential has improved integration into workflow and IT infrastructure and requires less user input. Whether this will improve clinical acceptance will be validated in the upcoming clinical trial at the acute ward.

TREAT-Essential: Introducing Personal Clinical Decision Support for Antimicrobial Therapy

Mads Lause Mogensen[1] • **Logan Morgan Ward**[1] • **Marc Ludvig**[2] •
Mona Kyndi Pedersen[3] • **Peter Christian Leutcher**[3,4]

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[2]Emergency Department, North Denmark Regional Hospital, Denmark
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[4]Department of Clinical Medicine, Aalborg University, Denmark

INTRODUCTION

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METHODS

We recently developed an updated version of TREAT, TREAT-Essential. This involved a series of workshops concerning functionality, user-friendliness, IT architecture and calibration/clinical relevance. Relevant stakeholders were involved including specialists in infectious diseases, clinical microbiology, and IT management.

TREAT-Essential is activated directly in the electronic health record based on automatic triggers

1. (Optional) Inspect of add background information

2. Select diagnosis

2a. Depending on diagnosis, severity, answer questions to confirm indication for antimicrobial therapy

3. View recommendation, select treatment (or no treatment), approve

4. (optional) Inspect decision support output

5. User returns to the prescription module where the selected treatment is pre-filled. Audit trail includes the recommendation and tits basis for quality assurance

RESULTS

TREAT-Essential includes a redesigned interface and decision engine. The system takes the physician's diagnosis as an input rather than determining this from entered signs and symptoms. The data entry burden was reduced to 2-5 clicks with a minimized loss of physician autonomy.
Patient information is automatically collected and the recommended therapy presentation is simplified. Probabilities for causative pathogens and expected coverage for treatments still ensures explainable decision support. TREAT-Essential also includes a trigger functionality making it easier to integrate into the clinical workflow.

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TREAT SYSTEMS

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The association between sexually transmitted infections and the severity of cervical lesions in women with female genital schistosomiasis

Karoline Jøker[1], Louise Thomsen Schmidt Arenholt[1,2,3], Suzette Sørensen[1,2], Caspar Bundgaard-Nielsen[1], Ann-Maria Jensen[1], Dorthe Brønnum[1], Jørgen Jensen[4], Inge Søkilde[2,5], Mads Lumholt[6], Peter Derek Christian Leutscher[1,2]

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Background
Female genital schistosomiasis (FGS) is caused by *Schistosoma haematobium*, infecting humans when in contact with fresh water. Women with FGS experience gynecological symptoms, which may be hard to differentiate from symptoms of sexually transmitted infections (STIs). Likewise, STIs may present cervico-vaginal lesions similar to characteristic lesions found in women with FGS, such as homogeneous and grainy sandy patches, rubbery papules, and neovascularization. This study aimed to investigate the association between STIs and the severity of cervical lesions in women from Madagascar diagnosed with FGS.

Methods
Study participants were tested for human papilloma virus (HPV), herpes simplex virus (HSV), *Nesseria gonnorhoeae, Chlamydia trachomatis, Trichomonas vaginalis*, and *Mycoplasma genitalium*. The presence of STIs were compared to the severity of the women's cervical lesions, which were scored as mild (1-15%), moderate (16-30%), or severe (>30%), respectively, based on a cervical lesion proportion measured using a digital gridded imaging technique.

Results
Out of 114 women diagnosed with FGS, 52 (46%) were tested positive for HPV, and 3 (3%) for HSV2. Moreover, 52 (46%) were tested positive for gonnorhoeae, chlamydia, trichomonas, and/or mycoplasma (MG). Specifically, 9 (8%) were tested positive for gonnorhoeae, 15 (13%) for chlamydia, 33 (28%) for trichomonas, and 16 (13%) for mycoplasma. The distribution of cervical lesions as mild, moderate or severe, and results related to the association of cervical lesions with FGS and STIs, respectively, will be presented at the research symposium.

Conclusion
The findings from this study are expected to have major reproductive health implications for millions of women suffering from FGS and STIs in Sub-Saharan Africa.

The association between sexually transmitted infections and the severity of cervical lesions in women with female genital schistosomiasis

Karoline Jøker[1] • Louise Arenholt[1,2,3] • Suzette Sørensen[1,2] • Caspar Bundgaard-Nielsen[1] • Ann-Maria Jensen[1] • Dorthe Brønnum[1] • Jørgen Jensen[4] • Inge Søkilde[2,5] • Peter Leutscher[1,2]

1Centre for Clinical Research, North Denmark Regional Hospital, Denmark,
2Department of Clinical Medicine, Aalborg University, Denmark,
3Department of Gynecology and Obstetrics, North Denmark Regional Hospital, Denmark,
4Statens Serum Institut, Denmark,
5Department of Molecular Diagnostics, Aalborg University Hospital, Aalborg, Denmark,

INTRODUCTION

Female genital schistosomiasis (FGS) is caused by a parasite, *Schistosoma haematobium,* infecting humans when in contact with fresh water – mainly in Africa and South America. Women with FGS experience gynecological symptoms, which may be hard to differentiate from symptoms of sexually transmitted infections (STIs). Likewise, STIs may present cervico-vaginal lesions similar to characteristic lesions found in women with FGS, such as homogeneous and grainy sandy patches, rubbery papules, and neovascularization. This study aimed to investigate the association between STIs and the severity of cervical lesions in women from Madagascar diagnosed with FGS.

Symptoms and their consequences	Impact
• Vaginal discharge + itching • Pain during sexual intercourse • Spontaneous + post-coital bleeding • Menstruation abnormalities • Infertility • Eroded nodular lesions at the vulva	Symptoms are attributed to STIs
• Shame, mental strain and distress • Stigmatization and social exclusion	Lead to impaired life quality
• Seeking help from traditional leaders	FGS not diagnosed and treated

Table 1: Impact of FGS on women's reproductive health

METHODS

Cytobrush and vaginal lavage fluid, as well as a high-resolution digital image of cervix, were collected from 116 women, clinically diagnosed with FGS in Madagascar. The samples were tested for the following:

- Human papilloma virus (HPV),
- Herpes simplex virus (HSV),
- *Chlamydia trachomatis (CT),*
- *Nesseria gonnorhoeae (NG),*
- *Trichomonas vaginalis (TV),*
- *Mycoplasma genitalium (MG)*

The presence of STIs were compared to the severity of the women's cervical lesions, which were scored as mild (1-15%), moderate (16-30%), or severe (>30%), respectively, based on a cervical lesion proportion (CLP) measured using a digital gridded imaging technique.

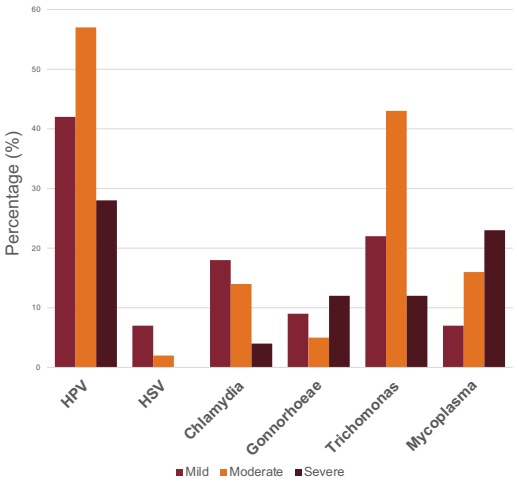

Figure 1: Distribution of STIs amongst women with respectively mild, moderate and severe cervical lesions.

RESULTS

Out of 114 women diagnosed with FGS, 51 (45%) were tested positive for HPV, and 4 (4%) for HSV2. Moreover, out of 115 women, 51 (44%) were tested positive for *Chlamydia trachomatis, Nesseria gonnorhoeae*, *Trichomonas vaginalis,* and/or *Mycoplasma genitalium.* Specifically, 15 (13%) were tested positive for *Chlamydia trachomatis*, 9 (8%) for *Nesseria gonnorhoeae*, 32 (28%) for *Trichomonas vaginalis*, and 16 (14%) for *Mycoplasma genitalium*. The size of the study population varied, due to inadequate sample material.

The distribution of cervical lesions was as follows: mild (n=45; 39%), moderate (n=45, 39%), and severe (n=26; 22%), respectively. For the distribution of STIs amongst those with respectively mild, moderate and severe cervical lesions, se figure 1.

CONCLUSION

The findings from this study are expected to have major reproductive health implications for millions of women suffering from FGS and STIs in Sub-Saharan Africa.

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Humoral immunrespons på SARS-CoV-2 vaccination blandt patienter med inflammatoriske gigtsygdomme og raske bloddonorer

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**Deltager i Forskningskursus 2022 ved Regionshospital Nordjylland*

Baggrund
Patienter med inflammatoriske gigtsygdomme (IRD) som smittes med SARS-CoV-2 er i højere risiko for et alvorligt sygdomsforløb. Derfor har disse patienter været de første til at blive tilbudt vaccination mod COVID-19. Der foreligger flere studier, som peger i retning af, at patienter med IRD generelt responderer dårligere på vacciner. Formålet med studiet er at undersøge det immunologiske respons overfor COVID-19 vaccinen. Derudover undersøge prognostiske faktorer associeret til et dårligere immunologisk respons.

Metoder
Studiet er et prospektivt kohorte studie der undersøger IgG-antistof titre hos patienter med IRD sammenlignet med raske bloddonorer. Studiepopulationen udgør voksne som enten er diagnosticeret med RA, PsA eller SpA som har afgivet blodprøver til Dansk Reuma Biobank, RHN eller raske bloddonorer, tilknyttet Blodbanken i RN. Der benyttes allerede indsamlede blodprøver i biobank og blodbank som baseline. Der indhentes blodprøver på deltagerne og måles IgG-antistoffer ved baseline samt 4-10 uger, 3 og 6 måneder efter tredje vaccination. Analyserne for antistoffer vil blive udført med ELISA og CMIA på Klinisk Immunologisk Afdeling, AAUH. Kliniske oplysninger for patientgruppen er indsamlet via DANBIO for diagnose, varighed, sygdomsaktivitet og medicin. Vaccineinformation er oplyst af deltagerne.

Resultater
Projektet forløber frem til foråret 2023. Der er indsamlet blodprøver på 91 patienter med IRD og tilsvarende 103 bloddonorer. Der er planlagt analyse af blodprøver i efteråret 2022. De præliminære resultater vil blive præsenteret til forskningssymposiet.

Konklusion
Det forventes, at resultaterne vil bibringe viden om vacciners effekt hos patientgruppen og bidrage til en mere målrettet vaccinationsplan.

HUMORAL IMMUNRESPONS PÅ SARS-COV-2 VACCINATION BLANDT PATIENTER MED INFLAMMATORISKE GIGTSYGDOMME OG RASKE BLODDONORER

Sabina Bay Hermansen[1], Karen Buch Lauridsen[2], Kaspar Rene Nielsen[2]
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BAGGRUND

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Der foreligger flere studier, som peger i retning af, at patienter med IRD generelt responderer dårligere på vacciner. Det dårlige immunologiske respons på vaccinerne kan forklares på baggrund af dels den autoimmune sygdom, dels den immundæmpende behandling, som er nødvendig for at holde sygdomsaktiviteten i remission.

Formålet med studiet er at undersøge det immunologiske respons overfor COVID-19 vaccinen. Derudover undersøge prognostiske faktorer associeret til et dårligere immunologisk respons.

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Der er planlagt analyse af blodprøver i efteråret 2022. De præliminære resultater vil blive præsenteret til forskningssymposiet.

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Kardiologi og Endokrinologi

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Long-term risk for heart failure amongst Danish diabetic patients after coronary artery bypass graft surgery

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Background
Ischemic heart disease (IHD) is the leading cause of mortality in the world. One intervention against IHD is coronary artery bypass graft (CABG) surgery which people with diabetes mellitus (DM) account for approximately ¼ of. People with DM have a higher risk of mortality due to heart failure (HF). We aim to describe the risk of developing HF after CABG surgery amongst Danish DM patients.

Methods
Through a nationwide register-based cohort study, patients who underwent CABG surgery from January 1st 2000 to December 31st 2021 were included. In addition to Cox regression, Average Treatment Effect (ATE) was performed, estimating the absolute risk and risk difference of the association between DM status and HF in yearly intervals for a ten-year period.

Results
34,855 patients were included, consisting of 6,909 (19.8%) DM patients. The ATE analysis showed significant difference ($p<0.05$) in absolute risk of HF after CABG surgery between the two groups with a greater absolute risk in the DM group (33.4% vs. 25.1% in the 10th year, respectively) and a higher risk difference of 8.4 pp. (95% CI 0.07 to 0.10) in the 10th year.

Conclusion
The DM group had significantly higher absolute risk of HF ($p<0.05$) after CABG surgery compared to the non-DM group. Over a ten-year period, the risk difference increased with a significant difference between the groups each year ending with a risk difference of 8.4 pp. in the 10th year.

LONG-TERM RISK FOR HEART FAILURE AMONGST DANISH DIABETIC PATIENTS AFTER CORONARY ARTERY BYPASS GRAFT SURGERY

In this register-based cohort study we aim to describe the risk of developing heart failure after coronary artery bypass graft surgery amongst Danish patients.

AUTHORS

Benedicte Bay Oxholm[1], Jeppe Hauch[1], Sidsel le Fevre Karlsen[1], Kristian H. Kragholm[1,2], Lina Tribler Kristiansen[1], Maria Lukacs Krogager[1,3], Peter Christian Leutscher[1,4], Dorte Melgaard[1,5], Morten Schou[1], Christian Torp-Pedersen[6], Marc Møller Søndergaard[1]

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INTRODUCTION

Ischemic heart disease (IHD) is the leading cause of mortality in the world with an increasing incidence. One of the interventions against IHD is coronary artery bypass graft (CABG) surgery and people with diabetes mellitus (DM) account for approximately one quarter of all patients who undergo coronary revascularization.
Furthermore, people with DM have in general a higher risk of mortality due to heart failure (HF).

METHODOLOGY

Through a large nationwide register-based cohort study, patients who underwent CABG surgery from January 1st 2000 to December 31st 2021 were included.
In addition to Cox regression, Average Treatment Effect (ATE) was performed to estimate the absolute risk and risk difference of the association between DM status and HF in yearly intervals for a ten-year period.

RESULTS

34,855 patients were included, consisting of 6,909 (19.8%) DM patients. The ATE analysis showed significant difference ($p<0.05$) in absolute risk of HF after CABG surgery between the two groups with a greater absolute risk in the DM group (33.4% vs. 25.1% in the 10th year, respectively) and a higher risk difference of 8.4 pp. (95% CI 0.07 to 0.10) in the 10th year.

CONCLUSION

The DM group had significantly higher absolute risk of HF ($p<0.05$) after CABG surgery compared to the non-DM group. Over a ten-year period, the risk difference increased with a significant difference between the groups each year ending with a risk difference of 8.4 pp. in the 10th year.

WHAT IS NEW?

- People with DM, both type 1 and type 2 DM, have a higher risk of heart failure, and not just mortality from heart failure, after a coronary artery bypass graft surgery.
- The risk of heart failure is increasing over a ten-year period, both for people with DM and people without DM.

CLINICAL IMPLICATIONS

- People with DM who undergo coronary artery bypass graft surgery should be followed closely post-operatively, as they are at higher risk of heart failure compared to people without DM.

KEY RESULTS

- The absolute risk of heart failure increased from 13.2% to 33.4% (20.2 pp.) in the DM group and from 9.5% to 25.1% (15.6 pp.) in the non-DM group.
- 67.8% of the DM group were affected by hypertension compared to 47.5% of the non-DM group.
- 8.2% of the DM group were affected by chronic kidney disease compared to 2.4% of the non-DM group.
- 52.2% of the DM group were medicated with ACE-inhibitors compared to 28.2% of the non-DM group.
- 83.0% of the DM group were medicated with lipid modifying agents, compared to 69.6%.
- Basic- and high school accounted for 42% each.

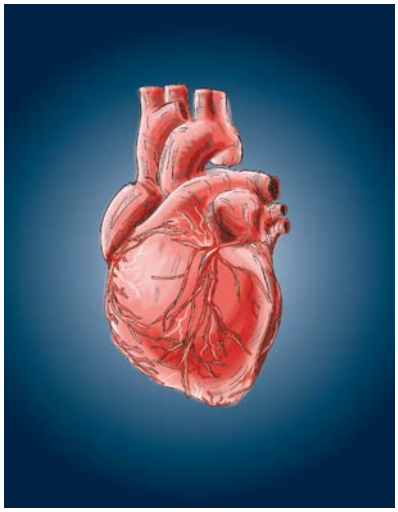


FIGURE - ABSOLUTE RISK

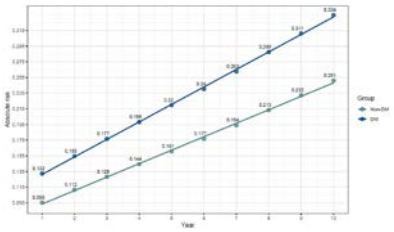
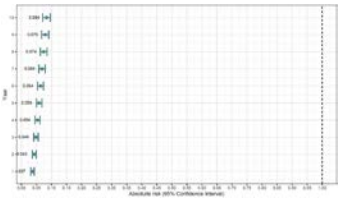


FIGURE - RISK DIFFERENCE



RELATED LITERATURE

Illustration by Maria Pakkenberg
Khan et al. *Global Epidemiology of Ischemic Heart Disease: Results from the Global Burden of Disease Study.*
Holzmann et al. *Long-Term Prognosis in Patients With Type 1 and 2 Diabetes Mellitus After Coronary Artery Bypass Grafting.*
Risinger et al. *Heart failure is a common complication after acute myocardial infarction in patients with diabetes: A nationwide study in the SWEDEHEART registry.*
Dunlay et al. *Type 2 Diabetes Mellitus and Heart Failure: A Scientific Statement.*

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Can we predict heart failure in type 2 diabetes?

Casper Kvist Carlsen[1], Lisa Buhl[1], Peter Bisgaard Stæhr[2], Berit Linde[2], Peter Skrejborg[3], Peter Hindersson[4], Peter Derek Christian Leutscher[3], Steen Hylgaard Jørgensen[2]

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4. Department of Clinical Biochemistry, North Denmark Regional Hospital, Denmark

Background
Cardiovascular disease (CVD), including chronic heart failure (CHF) are highly prevalent in persons with type 2 diabetes (T2D). CVD may be silent in these patients and time to diagnosis is often delayed. The aim of this ongoing study is to investigate whether biomarkers, combined with ECG and echocardiography in a screening set-up can be used to predict the risk of CVD in persons with T2D.

Methods
Persons with T2D and no history of CVD are included, aiming at a study cohort of 250 subjects followed for five years. Analyses included: NT-proBNP, TnI, hs-CRP, albuminuria, eGFR and ECG, Echocardiography and assessment of physical capacity.

Results
A total of 158 patients (64 females) have been enrolled. Median age was 62 years (IQR 13). Median BMI was 30.86 kg/m2(IQR 8.32). Median NT-proBNP level was 83 ng/l(IQR 118), median TnI level was 4 mg/l(IQR 4) and median hs-CRP was 2.01 mg/l(IQR 3.19). Of the subjects, 31% had NT-proBNP levels above recommended cut-off at 125 ng/L and 4.4% had TnI levels above cut-off at 45 ng/L. LVEF was not significantly different in NT-proBNP above/under 125 ng/L(p=0.54). When controlled for eGFR there was neither a correlation between NT-proBNP and LVEF (correlation= -0.09, p=0.36) nor between TnI and LVEF (Correlation=-0.15, p=0.12).

Conclusion
Preliminary results showed that NT-proBNP and TnI values were above recommended cut-off at respectively 31% and 4.4% of the subjects. However, no correlation was found between LVEF and neither NT-proBNP nor TnI when adjusted for eGFR.

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CAN WE PREDICT HEART FAILURE IN TYPE 2 DIABETES?

Casper Kvist Carlsen[1] • Lisa Buhl[1] • Peter Bisgaard Stæhr[2] • Berit Linde[2] • Peter Skrejborg[3] • Peter Hindersson[4] • Peter Leutscher[3] • Steen Hylgaard Jørgensen[2]

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Background:

The prevalence of type 2 diabetes is increasing globally. These individuals have a 2.4-5 fold higher risk of developing heart failure and greater risk of mortality and hospitalization.
Early diagnosis of heart failure may be delayed due to asymptomatic presentation or misclassification of symptoms as other conditions.

Aim

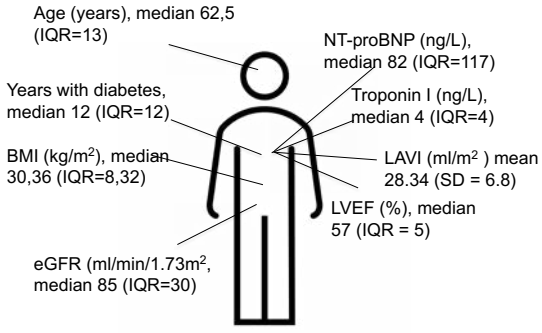
Can simple blood tests, ECG and echocardiography in a screening set-up detect which individuals with type 2 diabetes are in risk of developing chronic heart failure?

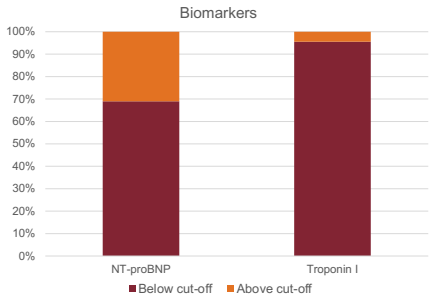
Method

Who? Persons with T2D and no history of CVD are included.
How many? Aiming at 250 subjects followed for five years.
What? NT-proBNP, TnI, hs-CRP, albuminuria, eGFR and ECG, echocardiography and assessment of physical capacity.

Results:

A total of 158 subjects has been enrolled (94 males, 64 females).
Baseline characteristics:





- The biomarkers NT-proBNP and TnI was above cut-off levels for 31% and 4,4% respectively
- A correlation between LAVI and NT-proBNP adjusted for eGFR was found (correlation =0.309, p=<0.001)
- When adjusted for eGFR no correlation was found between LVEF and neither NT-proBNP (correlation= -0.047, p=0.56) nor Troponin (correlation= 0.061, p=0.449).

Conclusion

Preliminary results showed that even though none of the subjects had any known cardiovascular disease NT-proBNP and TnI levels were above recommended cut-off in parts of the population. However, an association between LAVI and NT-proBNP was established might indicating that NT-proBNP could potentially detect asymptomatic diastolic dysfunction.

Acknowledgement: *Thanks to Melsen fonden and STENO center*

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Quality of cardiac rehabilitation in North Denmark Regional Hospital following acute coronary syndrome

David Vadsholt[1], Ahmad Agam[1], Kristian Kragholm[2], Lauge Klement Moltke Østergaard[2,3], Peter Bisgaard Stæhr[1,3], Henrik Vadmann[1,3], Gitte Nielsen[3]

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Background
Coronary heart disease (CHD) is globally a common cause of death. The mortality of CHD is declining, thus emphasizing the importance of cardiac rehabilitation. Cardiac rehabilitation is offered to patients hospitalized with acute coronary syndrome (ACS). Cardiac rehabilitation is not standardized with varying quality. This study investigates the quality of cardiac rehabilitation in patients after ACS in North Denmark Regional Hospital.

Methods
From the National Patient Registry all patients at our institution with ACS from 2017-2021 were identified. Cross linkage with the Regional Cardiac Rehabilitation Database categorized patients according to post-ACS rehabilitation status. As quality marker of cardiac rehabilitation low-density lipoprotein (LDL) was assessed at discharge and at six months follow-up. Cross linkage with the National Prescription Registry identified filled prescriptions of antithrombotics and statin following ACS.

Results
73.52% of 1367 patients underwent revascularization and 49.95% of those initiated rehabilitation. The LDL-level for statin naive patients undergoing revascularization and rehab was 3.2 mmol/L before follow-up and 1.55 mmol/L after follow-up. LDL-level for statin naive patients not undergoing rehab after revascularization was 3.22 mmol/L before follow-up and 1.68 mmol/L after follow-up. 90 days follow-up showed a higher compliance in antithrombotics and statin medicine for patients undergoing rehabilitation.

Conclusion
Significant reduction in LDL-levels at 6 months follow-up was seen for both study groups from baseline, however no clinically significant difference was observed between the groups. Patients undergoing rehabilitation were associated with a higher proportion of optimal antithrombotic and lipid lowering therapy.

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4. *These two authors contributed equally to this work*

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Figure 1

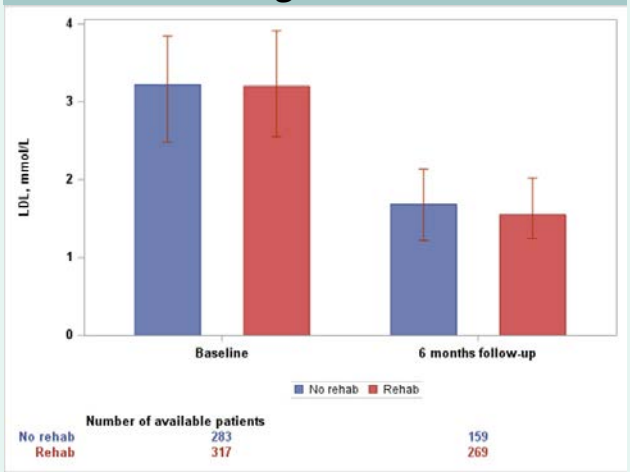

Figure 1 LDL-levels at baseline and after 6 month follow-up for statin naive patients undergoing revascularization.

Table 1

	Revascularization		No revascularization	
	Rehabilitation	No rehabilitation	Rehabilitation	No rehabilitation
Number, N (%)	501	473	41	267
Statin, N (%)	477 (95.2)	399 (84.4)	39 (95.1)	154 (57.7)
Beta blocker, N (%)	250 (49.9)	303 (64.1)	17 (41.5)	131 (49.1)
RASi, N (%)	246 (49.1)	306 (64.7)	18 (43.9)	116 (43.5)
Antidiabetics, N (%)	89 (17.8)	91 (19.2)	2 (4.9)	39 (14.6)
Aspirin, N (%)	433 (86.4)	358 (75.7)	34 (82.9)	147 (55.1)
ADPi, N (%)	489 (97.6)	427 (90.3)	37 (90.2)	137 (51.3)
OAC, N (%)	47 (9.4)	79 (16.7)	41 (15.4)	4 (9.8)
Loop diuretics, N (%)	47 (9.4)	116 (24.5)	4 (9.8)	69 (25.8)
Spironolactone, N (%)	15 (3.0)	66 (14.0)	2 (4.9)	31 (11.6)
Other lipid modifying, N (%)	26 (5.2)	25 (5.3)	2 (4.9)	14 (5.2)
Organic nitrates, N (%)	71 (14.2)	66 (14.0)	10 (24.4)	70 (26.2)
Antithrombotics				
No antithrombotics, N (%)	1 (0.2)	31 (6.6)	2 (4.9)	62 (23.2)
Aspirin only, N (%)	9 (1.8)	8 (1.7)	2 (4.9)	40 (15.0)
ADPi only, N (%)	47 (9.4)	51 (10.8)	2 (4.9)	26 (9.7)
OAC only, N (%)	0	4 (0.9)	0	24 (9.0)
DAPT, N (%)	397 (79.2)	304 (64.3)	31 (75.6)	98 (36.7)
Aspirin+OAC, N (%)	2 (0.4)	3 (0.6)	0	4 (1.5)
ADPi+OAC, N (%)	20 (4.0)	29 (6.1)	3 (7.3)	8 (3.0)
Triple therapy, N (%)	25 (5.0)	43 (9.1)	1 (2.4)	5 (1.9)

Table 1: Pharmaceutical compliance within 90 days after ACS discharge, N = 1282

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Association between discontinuation of anticholinergic drugs and risk of major adverse cardiovascular events in geriatric outpatients

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Background
Anticholinergic drugs are associated with risk of cardiovascular disease. The effect of discontinuing anticholinergic drugs on this risk is unknown. We investigated the association between discontinuation of anticholinergic drugs and risk of major adverse cardiovascular events (MACE) in Danish geriatric falls clinics where medication review is routinely performed.

Methods
All patients over 65 years from Danish geriatric outpatient clinics from 2008 to 2018 using Danish registries were included. We excluded patients who did not receive anticholinergic drugs at baseline or had prior MACE (defined as myocardial infarction, cardiac revascularization, stroke, or cardiovascular death). We calculated anticholinergic drug scale (ADS) scores from prescribed anticholinergic drugs 6 months before and after the geriatric outpatient course. Patients were followed from 6 months after the outpatient course until MACE, death from other causes, loss to follow-up due to emigration or end of study at 31st of January 2019.

Results
We included 14,262 patients with a mean age of 82.5 (SD 7.4) years. The patients mean follow-up time was 2.7 (SD 1.8) years. Mean ADS score at baseline was 2.5 (SD 2.0) with a mean reduction of 1 (SD 1.4) after the outpatient course and 1,881 patients had MACE during follow-up. Compared to no reduction in ADS, adjusted hazard ratios for reductions of 1, 2 or ≥3 were 0.92 (95%CI: 0.83-1.02), 0.77 (95%CI: 0.65-0.90), and 0.80 (95%CI: 0.67-0.96) respectively.

Conclusion
There was an association between greater reduction in ADS and lower risk of MACE in outpatients from Danish geriatric fall clinics.

Association between discontinuation of anticholinergic drugs and risk of major adverse cardiovascular events in geriatric outpatients

Johannes Riis[1,2], Silas Zacharias Clemmensen[2], Lene Torp Hansen[3], Kristian H. Kragholm[2,4], Dorte Melgaard[2]

1: Department of Geriatric Medicine, Aalborg University Hospital, Aalborg, Denmark. 2: Center for Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark.
3: Department of Geriatric Medicine, North Denmark Regional Hospital, Hjørring, Denmark. 4: Department of Cardiology, Aalborg University Hospital, Aalborg, Denmark.

Background

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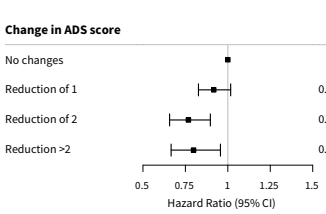

	Change in ADS Score				
	No change N = 4968	Reduction of 1 N = 4909	Reduction of 2 N = 1527	Reduction ≥3 N = 1158	P-value
Age - mean (SD)	82.5 (7.4)	82.6 (7.4)	82.9 (7.3)	82.0 (7.1)	0.009
Female sex – n (%)	3.549 (71.4%)	3527 (71.8%)	1128 (73.9%)	851 (73.5%)	0.19
Baseline ADS – mean (SD)	2.0 (1.6)	2.1 (1.5	3.3 (1.7)	5.7 (2.7)	<0.001
Diabetes – n (%)	932 (18.8%)	865 (17.6%)	280 (18.3%)	223 (19.3%)	0.40
Hypertension – n (%)	2847 (57.3%)	2777 (56.6%)	911 (59.7%)	676 (58.4%)	0.17
CKD – n (%)	371 (7.5%)	350 (7.1%)	117 (7.7%)	90 (7.8%)	0.82
COPD – n (%)	726 (14.6%)	674 (13.7%)	314 (20.6%)	259 (22.4%)	<0.001
Heart failure – n (%)	498 (10.0%)	438 (8.9%)	183 (12.0%)	145 (12.5%)	<0.001
IHD – n (%)	666 (13.4%)	591 (12.0%)	247 (16.2%)	179 (15.5%)	<0.001

Abbreviations: ADS: anticholinergic drug scale, CKD: chronic kidney disease, COPD: chronic obstructive pulmonary disease, IHD: ischemic heart disease

Conclusion

There was greater association between greater reduction in ADS and lower risk of MACE in outpatients from Danish geriatric fall clinics.

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Risk of developing hyperkalemia in patients with hypertension treated with combination antihypertensive therapy – a retrospective register-based study

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1. Centre for Clinical Research, North Denmark Regional Hospital, Denmark

Background
The risk of hyperkalemia in relation to different combinations of antihypertensive therapy remains to be elucidated. Therefore, in this Danish nationwide register-based study, we aimed to investigate the risk of developing hyperkalemia in hypertensive patients treated with combination antihypertensive therapy.

Methods
We decided to match a hyperkalemic patient to two normokalemic patients on renal function, age, sex and time between index date and date of potassium measurement using incidence density matching. Combination therapies were subdivided into 8 groups: beta blockers (BB) and calcium channel blockers (CCB), BB and renin angiotensin system inhibitors (RASi), BB and RASi plus mineralocorticoid receptor antagonists (MRA), CCB and RASi, CCB and RASi plus thiazides, CCB and thiazides, RASi and thiazides, and lastly other combinations. Conditional logistic regression was used to estimate the odds of hyperkalemia for each of the 8 combination therapies for hypertension within 90 days of initiating treatment.

Results
A total of 919 patients with hyperkalemia were matched to 1801 normokalemic patients. In multivariable analysis, odds of developing hyperkalemia when being treated with BB + RASi + MRA was 6.00 (95% CI, 3.82–9.44) compared to CCB+RASi+Thiazides (reference). Other combinations that indicated a strong association with increased hyperkalemia odds: BB+RASi with an odds ratio of 2.41 [95% CI, 1.63-3.55], CCB+RASi (odds ratio, 1.77 [95% CI, 1.17-2.66] and BB+CCB (odds ratio, 1.29 [95% CI, 0.78-2.13].

Conclusion
In conclusion, different combinations of BB + RASi + MRA were significantly associated with an increased risk of developing hyperkalemia within 90 days of initiating treatment.

RISK OF DEVELOPING HYPERKALEMIA IN PATIENTS WITH HYPERTENSION TREATED WITH COMBINATION ANTIHYPERTENSIVE THERAPY – A RETROSPECTIVE REGISTER-BASED STUDY

• Fatma Al-Janabi[1,2] • Fatme Moussa[1,2] • Sarah Taleb[1,2]
• Maria Lukács Krogager MD PhD[1,3] • Kristian Kragholm MD PhD[1,3] • Professor Peter Leutscher PhD[1,2]

[1]Centre for Clinical Research, North Denmark Regional Hospital, Denmark
[2]Faculty of Medicine, Aalborg University
[3]Department of Cardiology, Aalborg University Hospital, Denmark

Background

The risk of hyperkalemia in relation to different combinations of antihypertensive therapy remains to be elucidated. Therefore, in this Danish nationwide register-based study, we aimed to investigate the risk of developing hyperkalemia in hypertensive patients treated with combination antihypertensive therapy.

Key Words:

■beta blockers ■hypertension ■hyperkalemia ■potassium ■renin angiotensin system inhibitors ■mineralocorticoid receptor antagonists

Method

We decided to match a hyperkalemic patient to two normokalemic patients on renal function, age, sex and time between index date and date of potassium measurement using incidence density matching. Combination therapies were subdivided into 8 groups: beta blockers (BB) and calcium channel blockers (CCB), BB and renin angiotensin system inhibitors (RASi), BB and RASi plus mineralocorticoid receptor antagonists (MRA), CCB and RASi, CCB and RASi plus thiazides, CCB and thiazides, RASi and thiazides, and lastly other combinations. Conditional logistic regression was used to estimate the odds of hyperkalemia for each of the 8 combination therapies for hypertension within 90 days of initiating treatment.

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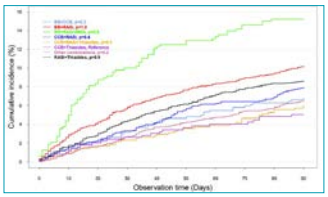
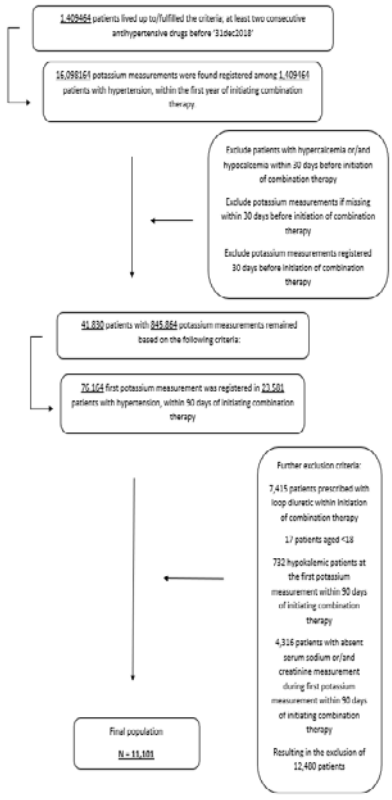
Conclusion

In conclusion, different combinations of BB + RASi + MRA were significantly associated with an increased risk of developing hyperkalemia within 90 days of initiating treatment.

Cumulative incidence proportion curve of hyperkalemia in patients treated with combination antihypertensive therapy. Cumulative incidence proportion of hyperkalemia in patients treated with combination antihypertensive therapy who had available potassium measurements within 90 days from index date and no potassium imbalances up to 30 days before index date (n=11,101)



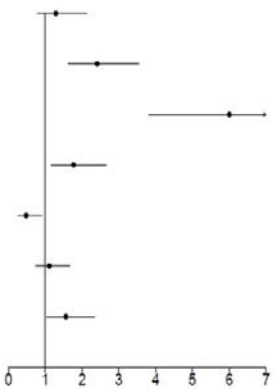
Population flowchart



Multivariable forestplot

Forestplot made of a multivariable conditional logistic regression analysis regarding the hyperkalemia development. The population was matched on age, renal insufficiency, sex, and time between the index date to the first potassium measurement. The model was adjusted for serum sodium, potassium supplements, NSAIDs, and macrolides. The combination of calcium channel blockers with Thiazides was used as reference. BB defines β-blockers; MRA, mineral receptor antagonist; RASi, renin-angiotensin system inhibitors, and CCB, calcium channel blockers

Combination therapies	Odds ratio	Lower CI	Upper CI	p-value
BB+CCB	1.29	0.78	2.13	0.32
BB+RASi	2.41	1.63	3.55	<0.001
BB+RASi+MRA	6.00	3.82	9.44	<0.001
CCB+RASi	1.77	1.17	2.66	0.006
CCB+RASi+Thiazides	0.48	0.26	0.91	0.02
RASi+Thiazides	1.11	0.74	1.67	0.61
Other combinations	1.56	1.04	2.33	0.032



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Aspects of health literacy and cognitive function in adults with diabetic foot ulcers: a cross-sectional study

Morten Bilde Simonsen[1,2,3], Sofie Ladekarl Christiansen[1], Johan Møller Røikjer[3,4,5], Suganthiya S. Croosu[3], Peter Derek Christian Leutscher[1,5], Niels Ejskær[3,4,5], Mona Kyndi Pedersen[1,5]

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3. Steno Diabetes Center North Denmark, Aalborg University Hospital, Denmark
4. Department of Endocrinology, Aalborg University Hospital, Denmark
5. Department of Clinical Medicine, Aalborg University, Denmark

Background
To investigate the cognitive function, knowledge-, attitude- and practice of foot self-care among people with an active diabetes foot ulcer.

Methods
Twelve participants were recruited for the present study. Cognitive function was assessed using Addenbrooke's Cognitive Examination and health literacy using the European Health Literacy Survey Questionnaire. A semi-structured interview guide was developed to evaluate the participant's knowledge, attitude, and foot self-care practice. The qualitative data was analyzed with a deductive approach based on Thematic Analysis described by Braun & Clarke.

Results
The participants were evenly distributed between the three cognitive scoring categories (normal n=4, inclusive n=4, and abnormal n=4). Fluency and memory were the two domains' the participants had the most errors. The qualitative findings represent the following themes: Knowledge, Attitude, and Practice. The findings refer to the participants' understanding of diabetes and its relation to diabetic foot ulcer. It also provides insight into the participants' feelings toward diabetic foot ulcer and their thoughts about their self-image. The findings illustrate how the participants demonstrate their knowledge and attitude through their foot self-care practices. There was no clear pattern between the cognitive and health literacy scores. Some participants with low cognitive scores had good knowledge, while the opposite was also observed.

Conclusion
Some participants were well informed regarding diabetes foot self-care, whereas others were not. The combined methods revealed that a low cognitive score did not necessarily translate into poor knowledge, attitude, and practice toward DM foot self-care.

ASPECTS OF HEALTH LITERACY AND COGNITIVE FUNCTION IN ADULTS WITH DIABETIC FOOT ULCERS

- a cross-sectional study

Morten Bilde Simonsen[1,2,3], Sofie Ladekarl Christiansen[1], Johan Møller Røikjer[3,4,5]Suganthiya S. Croosu[3], Peter Derek Christian Leutscher[1,5], Niels Ejskær[3,4,5], Mona Kyndi Pedersen[1,5]

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[5]Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

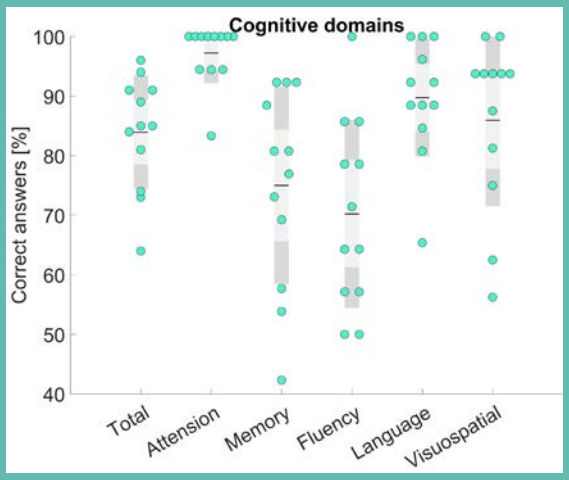
AIM

To investigate the cognitive function, knowledge, attitude and practice of foot self-care among people with an active diabetes foot ulcer.

METHODS

Twelve participants were recruited. Cognitive function was assessed, and a semi-structured interview guide was used to evaluate the participant's knowledge, attitude, and foot self-care practice.

RESULTS



The qualitative findings illustrated how the participants demonstrate their knowledge and attitude through their foot self-care practices. There was no clear pattern between the cognitive scores. Some participants with low cognitive scores had adequate knowledge, while the opposite was also observed.

CONCLUSION

The combined methods revealed that a low cognitive score did not necessarily translate into poor knowledge, attitude, and practice toward DM foot self-care.

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Imaging of cardiac pyruvate metabolism in chronic heart failure

Steen Hylgaard Jørgensen[1,2,3], Peter Bisgaard Stæhr[1], Christoffer Laustsen[3], Henrik Wiggers[2]

1. Department of Cardiology, Diabetes and Endocrinology, North Denmark Regional Hospital, Denmark
2. Department of Cardiology, Aarhus University Hospital, Denmark
3. The MR-Research Centre, Aarhus University, Denmark

Background
In recent years, evidence has mounted, that abnormalities in myocardial metabolism exacerbate chronic heart failure (CHF) and determine treatment response. Hyperpolarized [1-^{13}C] pyruvate magnetic resonance imaging (HP-MRI) has emerged as a novel imaging method with the ability to visualize aerobe and anaerobe metabolism non-invasively. This methodology may thus be well suited as a clinical tool to classify different phenotypes of CHF. Despite its promising potential, the method has never been applied in CHF patients. Hence, the objective of the present study was to study CHF patients using HP-MRI for the first time.

Methods
A cross-sectional study of CHF patients. Major inclusion criteria were LVEF < 50 %, eGFR > 30 mL/min and exclusion criteria were > 50 % of target dose of heart failure medicine. Patients were examined by echocardiography and HP-MRI.

Results
A total of 12 CHF patients were included. We found significant increase in lactate signal in patients with severe CHF (LVEF < 30 %) ($p = 0.01$). Severe CHF was also associated with significant reductions in bicarbonate signal ($p = 0.03$). Among patients, ANOVA showed significant differences in mean lactate/TC ($p < 0.005$), bicarbonate/TC ($p = 0.004$), and lactate/bicarbonate ($p = 0.0001$).

Conclusion
The present study is the first report on HP-MRI in CHF patients. We found substantial heterogeneity in pyruvate metabolism between CHF patients. Regional myocardial contractile dysfunction correlated with increased anaerobe metabolism. Thus, our results suggest that HP-CMR is a sensitive, non-invasive method to detect subtle changes in myocardial metabolism.

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Imaging of cardiac pyruvate metabolism in chronic heart failure - first in human

Steen Hylgaard Jørgensen[1,2], Peter Bisgaard Stæhr[2], Christoffer Laustsen[3] & Henrik Wiggers[1]

[1]Aarhus University Hospital - Dept. Of Cardiology

[2]North Denmark Regional Hospital - Dept. Of Cardiology

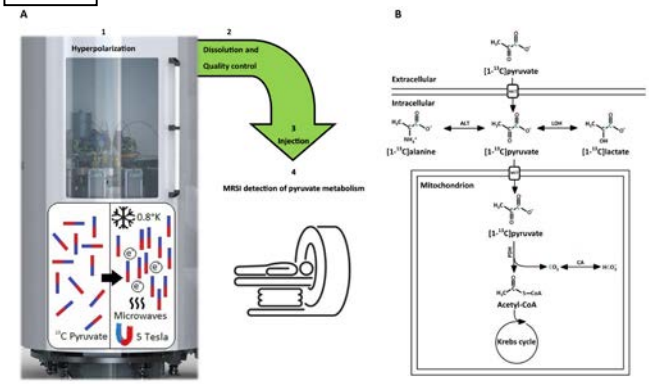
[3]Aarhus University - The MR-Research Centre

The background

Altered metabolism is a key factor in chronic heart failure, but we need a better way to examine this in the patients without using invasive procedures !

Pyruvate is a key molecule in cardiac metabolism. If we enrich pyruvate with a **carbon-13 isotope** and place it in a giant magnet it will become **hyperpolarized** and visible to the MR-scanner. We can then image the fate of pyruvate as it is metabolised into **lactate** or **bicarbonate** depending on metabolic conditions.

Methods



A) Pyruvate enriched with the stable carbon-13 isotope in the first position ([1-^{13}C]pyruvate) is magnetized (hyperpolarized) using a strong magnetic field, microwaves and free electrons at 0.8°K and then injected into the patient.

B) Magnetic resonance spectroscopic imaging (MRSI) can then detect pyruvate metabolism.

The patients

- A cross-sectional study of CHF patients.
- Major inclusion criteria: CHF and LVEF < 50 %.
- Major exclusion criteria: > 50 % of target dose of ACE-inhibitors and beta-blockers.
- Patients were examined by hyperpolarized (HP)[1-^{13}C]pyruvate MRSI.

Results

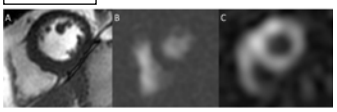
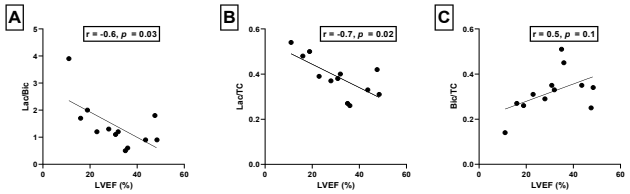


Illustration of HP [1-^{13}C]pyruvate MRSI. A) Anatomical image of mid LV for reference. B) Image of [1-^{13}C] pyruvate signal in RV and LV lumen. C) Image of myocardial lactate signal visible in the myocardium of both RV and LV.



Correlation between LVEF and lactate/bicarbonate (A), lactate/TC (B) and bicarbonate/TC (C).

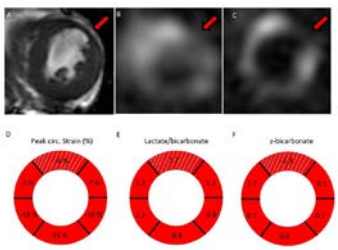


Illustration of metabolic imaging in a patient with CHF and a fully re-vascularized anterior transmural myocardial infarction one months prior to hyperpolarized MRSI. (A) thinning of the myocardium in the infarcted area (red arrow). (B) The lactate signal is obviously reduced in the infarcted area. (C) Visually, the bicarbonate signal was absent in the infarcted area, however, analysis showed preserved signal, although diminished. (D) Peak circ. Strain mid LV. (E) Lactate/bicarbonate ratio is increased in the infarcted area. (F) The z-score for bicarbonate is reduced in the infarcted area.

Conclusions

- The present study is the **first report** on HP [1-^{13}C]pyruvate MRSI detection of altered pyruvate metabolism in CHF patients.
- We demonstrate substantial **heterogeneity in pyruvate metabolism** between CHF patients.
- Reduced LVEF correlated with **increased lactate signal and reduced pyruvate oxidation**.
- Our results suggests that HP [1-^{13}C]pyruvate MRSI can detect unique **metabolic fingerprints** in patients with CHF.

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Tidlig detektering af perifer diabetisk neuropati hos patienter med type 2 diabetes

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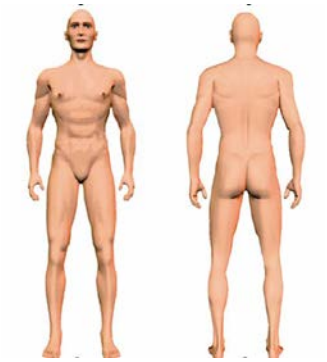
2. Hjertemedicinsk Afdeling, Regionshospital Nordjylland
3. Klinisk Institut, Aalborg Universitet

Baggrund
Perifer diabetisk neuropati (PDN) er en af de hyppigst forekommende senfølger til type 2 diabetes (T2D), og hos 50% af T2D-patienterne vil man se PDN efter 10 år med diabetes. Imidlertid bliver PDN ikke korrekt diagnosticeret hos halvdelen af patienterne, med risiko for udvikling af alvorlige komplikationer som for eksempel fodsår. Der findes ingen helbredende behandling af PDN, men jo tidligere lidelsen kan diagnosticeres jo tidligere kan foranstaltninger for at undgå komplikationer iværksættes. I dette studie vil vi undersøge om det er muligt at bruge niveauet af høj sensitiv CRP (hs-CRP) sammen med en standard sensibilitetstest til hurtigere diagnosticering og prædiktion af PDN.

Metoder
To hundrede og halvtreds Patienter med T2D (inkluderet i andet studie) undersøges 1 gang årligt i 5 år med måling af hs-CRP og standardiseret sensibilitetsundersøgelse. Endvidere skal de udfylde et spørgeskema, PainDetect, for at undersøge om hvorvidt der er en neuropatisk komponent i deres eventuelle smerter. Der undersøges for en eventuel udvikling af hs-CRP-niveauet sammenholdt med ændringer i sensibiliteten og smerter.

Resultater
Det foreligger endnu ingen resultater, men projektet er godkendt af Videnskabsetiske Komite i Region Nordjylland og er opstartet ultimo september 2022.

Konklusion
Det forventes at studiet kan give svar på om udviklingen i niveauet af hs-CRP hos patienter med T2D over tid kan være med til prædiktere om patienten er i risiko for at udvikle PDN og dermed kunne iværksætte korrekt vejledning af patienterne.



TIDLIG DETEKTERING AF PERIFER DIABETISK NEUROPATI HOS PATIENTER MED TYPE 2 DIABETES

Peter Skrejborg[1] • Steen Hylgaard Jørgensen[2] • Peter Christian Leutscher[1,3]

[1]Center for Klinisk Forskning, Regionshospital Nordjylland, Hjørring, Danmark
[2]Hjertemedicinsk Afdeling, Regionshospital Nordjylland, Hjørring, Danmark
[3]Klinisk Institut, Aalborg Universitet, Aalborg, Danmark

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Formål

Der findes ingen helbredende behandling af PDN, men jo tidligere lidelsen kan diagnosticeres jo tidligere kan foranstaltninger for at undgå komplikationer iværksættes. I dette studie vil vi undersøge om det er muligt at bruge niveauet af høj sensitiv CRP (hs-CRP) sammen med en standard sensibilitetstest til hurtigere diagnosticering og prædiktion af PDN.

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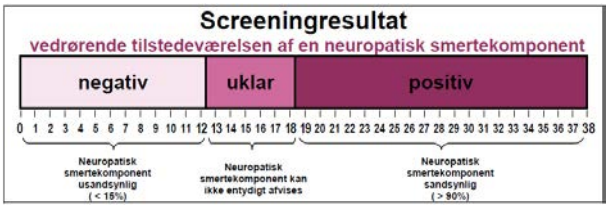
Perspektiver

Det forventes at studiet kan give svar på om udviklingen i niveauet af hs-CRP hos patienter med T2D over tid kan være med til prædiktere om patienten er i risiko for at udvikle PDN og dermed kunne iværksætte korrekt vejledning af patienterne.



Konklusion

Det foreligger endnu ingen resultater, men projektet er godkendt af Videnskabsetisk Komite i Region Nordjylland og er opstartet ultimo september 2022. Projektets resultat forventes at foreligge ultimo 2027.

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Journal audit til sikring af korrekt registrering af diabetes patient diagnoser

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Baggrund
Som en del af den kliniske kvalitetsindsats på Afdeling for Hjerte, Diabetes og Hormonsygdomme ved Regionshospital Nordjylland blev det ultimo 2022 besluttet at kontrollere de registrerede diabetespatienters diagnoser for at sikre at disse var korrekte opdaterede. Ønsket om gennemgang af diagnoserne havde baggrund i et ønske om at få et retvisende overblik over patientpopulationen på afdelingen i relation til forekomst af diabetes-relaterede senkomplikationer.

Metoder
På baggrund af et dataudtræk på patienter med en diabetes diagnose blev der udført et systematisk patient journal audit over en 8 ugers periode for at kontrollere at aktuelt registrerede diagnoser var i overensstemmelse med de i journalen anførte kliniske oplysninger i forhold til diabetes-relaterede senkomplikationer. Såfremt at dette ikke var tilfældet så blev diagnose korrigeret svarende dertil.

Resultater
Blandt 1757 diabetes patienter, som indgik i dette journal audit, måtte diagnosen korrigeres hos 966 (55%) af disse. Således var blot 45% af patienterne anført med en korrekt diagnose. Andelen af type-2 diabetes patienter registreret med en senkomplikation diagnose faldt fra 40% før audit til 20% efterfølgende. Derimod var der ingen ændringer for gruppen af type-1 diabetes patienter.

Konklusion
Dette journal audit blandt diabetes patienter har demonstreret en utilstrækkelig opdatering af diagnose registreringer, som der nu er blevet korrigeret for. Der er endvidere indført nye administrative drift tiltag til at sikre den videre fremadrettede proces med løbende diagnose validering.

JOURNAL AUDIT TIL SIKRING AF KORREKT REGISTRERING AF DIABETES PATIENT DIAGNOSE

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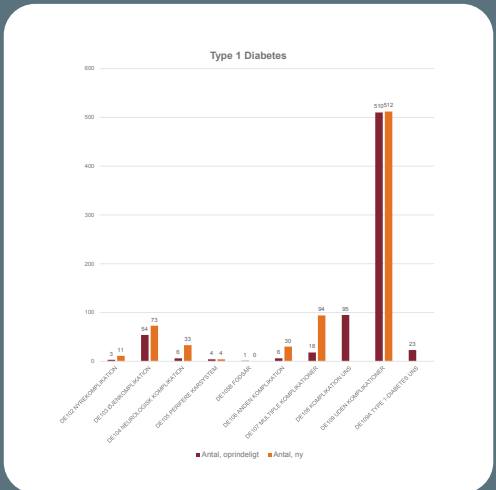
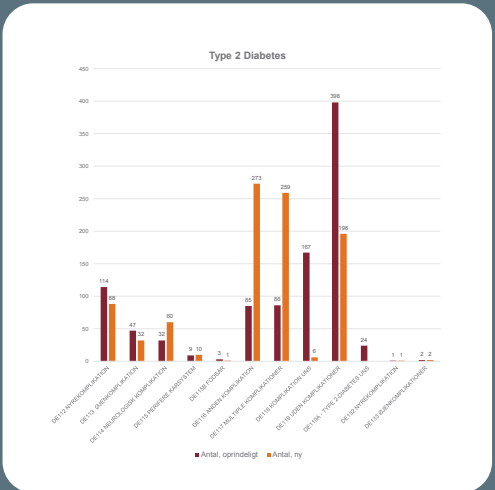
Resultater

- 1757 patienter tilknyttet afdelingen blev gennemgået.
- 45,5% af patienterne havde korrekt diagnose tilknyttet.
- 54,5% af patienterne fik tilknyttet ny korrekt diagnose.
- 18,8% af patienterne fik ændret uspecifik komplikationsdiagnose til en specifik komplikationsdiagnose.
- 40% af type 2 diabetespatienterne var registreret uden komplikationer, men reelt havde kun 20% ingen komplikationer.
- Andelen af type 1 diabetespatienter uden komplikationer forblev uændret.

Konklusion

Dette journal audit blandt diabetes patienter har demonstreret en utilstrækkelig opdatering af diagnose registreringer, som der nu er blevet korrigeret for. Der er endvidere indført nye administrative drift tiltag til at sikre den videre fremadrettede proces med løbende diagnose validering.





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Screening af unge for type 2 diabetes i forbindelse med udskolingsundersøgelse - et feasibility studie

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**Deltager i Forskningskursus 2022 ved Regionshospital Nordjylland*

Baggrund
Der er de seneste år set en stigende incidens af type 2 diabetes (T2D) blandt yngre mennesker i Danmark. Den største risikofaktor for udvikling af T2D er svær overvægt. I forbindelse med udskolingsundersøgelserne ved skolesundhedsplejersken i folkeskolen måles BMI og børn med svær overvægt anbefales at kontakte egen læge med henblik på vejledning og eventuel udredning for T2D/prædiabetes. Det er dog erfaringen, at langtfra alle berørte børn med svær overvægt kontakter egen læge. I dette feasibility studie vil vi undersøge om det er praktisk muligt og klinisk relevant at sundhedsplejersker ved udskolingsundersøgelsen tager finger blodprøver til måling af HbA1c i forbindelse med screening for T2D/prædiabetes.

Metoder
Der udvælges en større skole i Hjørring Kommune og etableres et samarbejde med skolesundhedsplejen. Alle børn med ISO-BMI over 30 tilbydes at deltagelse i projektet. Ved udskolingsundersøgelsen tages en blodprøve fra fingeren der sendes til analyse på Klinisk Biokemisk Afdeling ved Regionshospital Nordjylland. Ved HbA1c over 42 mmol/mol tilbydes udredning i regi af VIBOU (Videnscenter for Børn og Unge med Overvægt).

Resultater
Der foreligger endnu ingen resultater, med resultatet opgøres primært på de involverede parters oplevelse med den tilbudte undersøgelse af HbA1c.

Konklusion
Det forventes at studiet kan give svar på om det er praktisk muligt og relevant at undersøge HbA1c i forbindelse med udskolingsundersøgelserne i forhold til om der findes børn med T2D/prædiabetes. Herefter tages stilling til om der skal laves et større projekt på alle skoler i Region Nordjylland.

Hba1c som fingerprøve ved udskolingsundersøgelse

- et feasibility studie

Camilla Maria Thorvig[1] • Peter Skrejborg[2] • Peter Christian Leutscher[2,3]
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BAGGRUND

Der er en stigende incidens af Type 2 diabetes (T2D) blandt yngre mennesker. Den største risikofaktor for udvikling af T2D er svær overvægt i børne- og ungdomsårene. Ved udskolingsundersøgelserne i folkeskolen måles BMI og børn med svær overvægt anbefales at kontakte egen læge med henblik på vejledning og behandling. Det er dog erfaringen, at langtfra alle berørte børn med svær overvægt kontakter egen læge. I dette feasibility studie vil vi undersøge om det er praktisk muligt og klinisk relevant at sundhedsplejersker ved udskolingsundersøgelsen tager HbA1c som screeningsværktøj for T2D/prædiabetes.

METODE

I samarbejde med sundhedsplejen udvælges en større skole i Hjørring. Alle børn med ISO-BMI over 30 tilbydes at deltagelse i projektet. Ved udskolingsundersøgelsen tages en blodprøve fra fingeren der sendes til analyse på Regionshospital Nordjylland. Ved HbA1c over 42 tilbydes udredning på Børne- og ungeafdelingen i Videnscenter for børn og unge med overvægt. Sundhedsplejerske, forældre og børn vil udfylde kvalitativt spørgeskema om forløbet.

RESULTATER

Der foreligger endnu ingen resultater. Resultatet opgøres primært på de involverede parters oplevelse med den tilbudte undersøgelse af HbA1c.

KONKLUSION

Det forventes at studiet kan give svar på om det er praktisk muligt og relevant aft undersøge HbA1c i forbindelse med udskolingsundersøgelserne i forhold til om der findes børn med T2D/prædiabetes. Herefter tages stilling til om der skal laves et større projekt på alle skoler i Region Nordjylland.

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Kirurgi

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Virtual Reality during colonoscopy – a feasibility study

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4. Department of Clinical Medicine, Aalborg University, Denmark

Background
Colonoscopy is often associated with pain, anxiety and discomfort for the patients for which reason sedation is commonly used. Sedation poses risks as myocardial infarction or hypoxia, why non-pharmacological interventions to reduce pain for these patients are needed. The aim of this study was to investigate the feasibility of virtual reality (VR) headsets as a technology in a colonoscopy setting. The study investigated patients' acceptance of VR as well as the healthcare professionals' experience with VR during colonoscopy.

Methods
Patients were offered VR during colonoscopy and were afterwards asked to fill out a questionnaire about their experience. The healthcare professionals' experience with VR during colonoscopy was investigated through a focus group interview.

Results
In the study, 23 out of 43 invited patients accepted to test the use of VR. All 23 patients reported the experience with VR during their colonoscopy as Excellent or Good. Along, 19 of the 23 patients would Very likely recommend the use of VR to other people. The healthcare professionals did not recommend VR being implemented in a clinical setting where patients are sedated because of a lack of facial expressions.

Conclusion
This study documents that it is possible to use VR in a colonoscopy setting and more than half of the patients chose to use VR. Patients report positive experiences with VR during colonoscopy. The healthcare professionals reported that their relationships and communication with the patients were challenged when using VR. In future studies, it is relevant to be aware of the communication with the patients during the procedure.

VIRTUAL REALITY DURING COLONOSCOPY – A FEASIBILITY STUDY

AUTHORS

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BACKGROUND

Colonoscopy is often associated with pain, anxiety and discomfort for the patients for which reason sedation is commonly used. Sedation poses risks as myocardial infarction or hypoxia, why non-pharmacological interventions to reduce pain for these patients are needed. Non-pharmacological interventions such as video and audio have been found to distract patients and hereby reduce patients' pain, anxiety and discomfort during colonoscopy. Virtual Reality engages the senses and could be an alternative to sedation.

AIM

The aim of this study was to investigate the feasibility of virtual reality (VR) headsets as a technology in a colonoscopy setting.
The study investigated patients' acceptance of VR through their experience and likelihood to recommend the use of VR. Furthermore, the study examined the healthcare professionals' experience with VR during colonoscopy.

METHODOLOGY

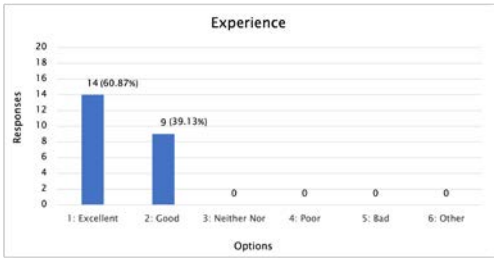
Patients were offered VR during colonoscopy and were afterwards asked to fill out a questionnaire about their experience. The healthcare professionals' experience with VR during colonoscopy was investigated through a focus group interview.

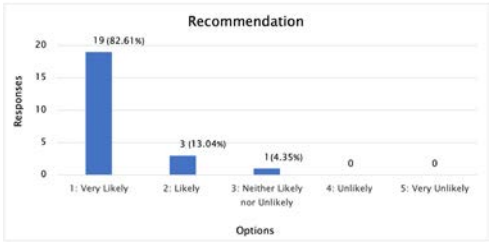
MEASUREMENTS

Patients who used VR during colonoscopy were asked to score their experience, recommendation and discomfort on a likert scale. They were asked about anxiety through State Anxiety Scale from State-Trait Anxiety Inventory (STAI-S) and to rate pain on a Numeric Rang Scale (NRS). Patients' amount of sedation were noted by the nurse giving sedation.
Nurses were interviewed about their experience with VR with a semi-structured interview guide with open-ended questions.

RESULTS

In the study, 23 out of 43 invited patients accepted to test the use of VR. All 23 patients reported the experience with VR during their colonoscopy as Excellent or Good. Along, 19 of the 23 patients would Very likely recommend the use of VR to other people. The healthcare professionals did not recommend VR being implemented in a clinical setting where patients are sedated because of a lack of facial expressions.





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This study documents that it is possible to use VR in a colonoscopy setting and more than half of the patients chose to use VR. Patients report positive experiences with VR during colonoscopy. The healthcare professionals reported that their relationships and communication with the patients were challenged when using VR. In future studies, it is relevant to be aware of the communication with the patients during the procedure.

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Impact of postoperative Intravenous iron therapy on postoperative infections in older patients undergoing hip fracture surgery

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Background
The aim of this study was to investigate whether intravenous iron (II) supplements can reduce the rate of postoperative infections in elderly patients undergoing surgery for hip fractures.

Methods
This observational study included 198 ortho-geriatric patients undergoing hip fracture surgery between July 2018 and May 2020. In May 2019 a local guideline recommending intravenous iron therapy (Monofer©) on the 3rd postoperative day if hemoglobin concentration <6.5 mmol/L after surgery for hip fracture was implemented and patients were included before and after implementation of the guideline. The outcome was infections within 30 days postoperatively defined by an antibiotic prescription.

Results
The patients were divided into four treatment groups: blood transfusion (n=44), IV iron (n=69), blood transfusion + IV iron (n=35) and no treatment (n=50). The number of patients who had an infection within 30 days was similar in the two time periods (38.8% before vs. 38.9% after systematic I.V. iron supplementation, P = 1.00). No significant difference was found between treatment groups when comparing the risk of an infection within 30 days from the third postoperative day.

Conclusions
The study documents no effect of intravenous iron supplements on post-operative infections in older patients after hip fracture surgery.

Infections after hip fracture

Impact of postoperative Intravenous iron therapy on postoperative infections in older patients undergoing hip fracture surgery

Lene T. Hansen[1], Johannes Riis[2], Kristian H. Kragholm[2,3,4], Lis K. Larsen[5], Christian Cavallius[5], Marianne M. Mørch[1], Silas Z. Clemmensen[2,5], Maria L. Krogager[4,6] and Dorte Melgaard[2,7]

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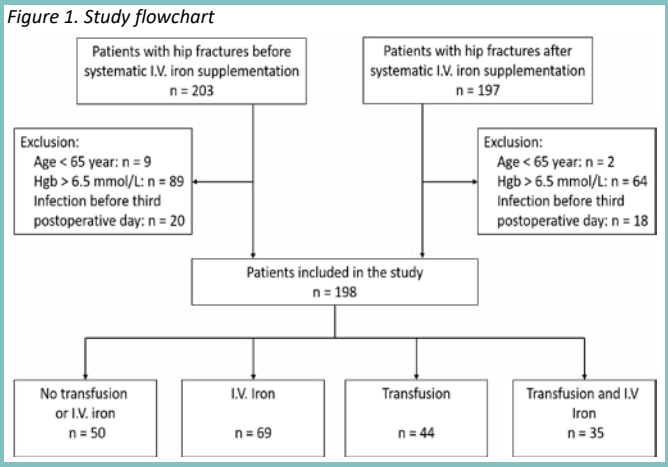
Figure 1. Study flowchart



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The patients were divided into four treatment groups: blood transfusion (n=44), IV iron (n=69), blood transfusion + IV iron (n=35) and no treatment (n=50), see figure 1. The number of patients who had an infection within 30 days was similar in the two time periods (38.8% before vs. 38.9% after systematic I.V. iron supplementation, P = 1.00).

No significant difference was found between treatment groups when comparing the risk of an infection within 30 days from the third postoperative day, see table 1. The study documents no effect of intravenous iron supplements on post-operative infections in older patients after hip fracture surgery.

Table 1. Risk of infection within 30 days of the third postoperative day.

	Risk (%) (95% CI)	Relative risk (95% CI)	p-value
No treatment	37.0 (95% CI: 21.9 – 52.2)	Reference	NA
Monofer alone	34.3 (95% CI: 21.5 – 47.2)	0.93 (95% CI: 0.36 – 1.49)	0.80
Transfusion alone	42.4 (95% CI: 26.6 – 58.2)	1.14 (95% CI: 0.52 – 1.75)	0.64
Both	44.5 (95% CI: 26.8 – 62.1)	1.20 (95% CI: 0.47 – 1.93)	0.59

Adjusted for age, sex, CCI, polypharmacy, haemoglobin at the 3rd postoperative day, and period of inclusion.

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Mikrobiota

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The effect of red clover isoflavones on the urinary microbiota and bladder symptoms in postmenopausal women with and without overactive bladder

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Background
Postmenopausal women have an increased risk of developing bladder disorders, including overactive bladder. It has been speculated that a hormone-dependent shift in the natural composition of bacteria (microbiota) in the bladder after menopause, may cause bladder disorders. Previous studies have shown that intake of isoflavones may relieve other menopause-associated conditions such as bone mass degeneration and hot flashes. We aim to investigate whether intake of isoflavones from red clover, improves bladder symptoms in postmenopausal women, in conjunction with changes in the urinary microbiota.

Methods
In this randomized, double-blind, placebo-controlled trial, postmenopausal women with or without overactive bladder were allocated to receive either fermented red clover extract containing bioavailable isoflavones or a placebo formulation for 90 days. Clinical characteristics (e.g., bladder symptoms) were recorded at baseline and at three-month follow-up. The urinary microbiota composition will be mapped using 16S rRNA gene sequencing, and isoflavone levels monitored in blood samples.

Preliminary results and expected outcomes
A total of 95 women were randomized to either treatment or placebo. Of these, 43 suffered from overactive bladder. Characteristics such as age, BMI, number of births and cesarean sections were comparable between the two groups. The mean study duration was 99.4 ± 13.1 days, and the women had a mean compliance of 94.7 ± 6.67 %. Mapping of the microbiota composition, as well as analysis of clinical data, are in progress. We expect that this study will contribute to increased knowledge about the etiology of bladder disorders in postmenopausal women, and the possible role of the urinary microbiota in this connection.

The effect of red clover isoflavones on the urinary microbiota and bladder symptoms in postmenopausal women with and without overactive bladder

Annemarie Brusen Villadsen[1,2], Caspar Bundgaard-Nielsen[1,2], Bala K. Prabhala[3], Jette B. Kornum[4], Soeren Hagstroem[1,2,5], Peter D. C. Leutscher[1,2], Lars Porskjær Christensen[3], Per Bendix Jeppesen[6], Louise Thomsen Schmidt Arenholt[1,2,7], Suzette Sørensen[1,2,8]

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We aim to investigate whether intake of isoflavones from red clover, improves bladder symptoms in postmenopausal women, in conjunction with changes in the urinary microbiota

Methods

In this randomized, double-blind, placebo-controlled trial, postmenopausal women with or without overactive bladder were allocated to receive either fermented red clover extract containing bioavailable isoflavones (~60 mg isoflavones/d) or a placebo formulation for 90 days.

Clinical characteristics together with diaries about fluid intake, voiding habits, and defecation were recorded at baseline and at a three-month follow-up. Bladder symptoms were assessed using the International Consultation on Incontinence Questionnaire Overactive Bladder (ICIQ-OAB) and Urinary Incontinence Short Form (ICIQ-UI-SF). The urinary microbiota composition will be mapped using 16S rRNA gene sequencing, and isoflavone levels monitored in blood samples (these analyses are in progress).

Results

A total of 95 women were randomized to either treatment or placebo (see figure 1). Of these, 43 suffered from overactive bladder. Characteristics such as age, BMI, smoking, number of births, and cesarean sections were comparable between the two groups (table 1). The mean study duration was 99.4 ± 13.1 days, and the women had a mean compliance of 94.7 ± 6.67 %. Looking at symptomatic women, both treatment groups demonstrated improvements in addition to reduced urgency and overactive bladder symptoms score (ICIQ-OAB), however, no difference in urinary incontinence (ICIQ-UI) was found.

Analysis of diaries has not been carried out yet.

Study design

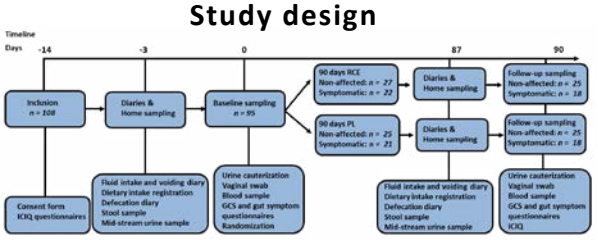

Figure 1 I Study design and participant flowchart of participation through the present study. RCE: Red Clover Extract, PL: Placebo, GCS: Green Climacteric Scale

Baseline characteristic

	Placebo			Red Clover Extract			
	All (n=46)	Non-affected (n=25)	Symptomatic (n=21)	All n (=49)	Non-affected (n=27)	Symptomatic (n=22)	p-value
Age (years), mean ± SD	62.5±6.49	61.8 ±6.93	63.2±5.98	62.2±5.25	61.0±4.48	63.7±5.81	0.33[a]
BMI (kg/m²), median (QR1-QR3)	24.4 (22.2-27.2)	24.8 (22.4-27.0)	24.2 (22-27.9)	24.0 (21.8-28.6)	23.7 (22.1-25.9)	25.8 20.8-29.0	0.78[b]
Smoking status, n (%)							0.32[c]
-Never smoked	19 (20 %)	11 (44 %)	8 (38.1 %)	23 (24.2 %)	13 (48.1 %)	10 (45.5 %)	
-Former smoker	23 (24.2 %)	14 (56 %)	9 (42.9 %)	18 (18.9 %)	10 (37.0 %)	8 (36.4 %)	
-Smoker	4 (4.21 %)	0 (0 %)	4 (19.0 %)	8 (8.42 %)	4 (14.8 %)	4 (18.2 %)	
No of births, median (QR1-QR3)	2 (2-3)	2 (2-3)	2 (2-2)	2 (2-2)	2 (2-2)	2 (2-2)	0.54[b]
No of cesarean, median (QR1-QR3)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.93[b]
ICIQ-UI-SF score (0-21), median (QR1-QR3)	7.5 (3-10)	4 (1-10)	10 (4-13)	5 (0-9)	4 (0-5.5)	8.5 (6-13.8)	0.31[d] **0[e]**
ICIQ-OAB score (0-16), median (QR1-QR3)	5 (4-7)	4 (2-4)	7 (6-8)	5 (4-7)	4 (2-4)	7 (6-8.75)	0.78[d] **0[e]**

Table 1 I Selected baseline characteristics of participants. [a]One-way ANOVA and [b]Kruskal-Wallis test between subgroupings of treatment and disease groups. [c]Chi-square test between overall placebo and red clover extract group. [d]Mann-Whitney test between overall placebo and red clover extract group. [e]Kruskal-Wallis test followed by Dunns post hoc test between subgroupings of treatment and disease groups.

After intervention

Bladder symptoms

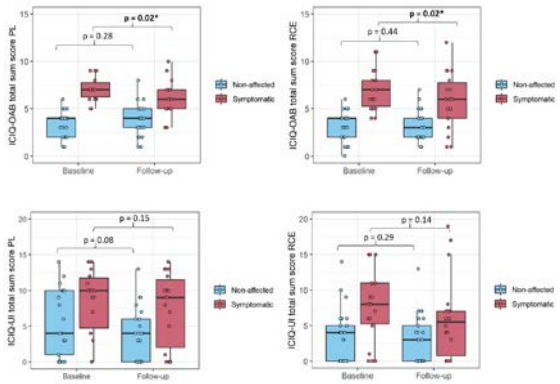

Figure 2 I ICIQ-OAB and ICIQ-UI-SF sum scores at baseline and three-month follow-up. Text in bold indicates statistical significance. ICIQ-OAB: score from 0-16, with higher scores indicating greater severity. ICIQ-UI-SF: score from 0-21, with higher scores indicating greater severity. RCE: Red Clover Extract, PL: Placebo

Conclusions and future perspectives

- Women suffering from overactive bladder have a decrease in symptoms after three months of treatment with red clover extract. However, these changes were as well found in the placebo group, indicating a placebo effect.
- Analysis of voiding habits and incontinence episodes from the bladder diary may give a more objective measure of changes in voiding habits and bladder symptoms.
- Analysis of the microbiota in healthy and symptomatic women may give an indication of the role of the microbiota in overactive bladder.

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Changes in the gut microbiota in patients admitted to the intensive care unit – a case-series study

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Background
Intestinal dysbiosis, characterized by disruption in the abundance of commensal bacteria, induces pathophysiological changes of the gut. Severe alterations of the gut microbiota is observed in patients admitted to the Intensive Care Unit (ICU). Dysbiosis has been reported as a result of broad-spectrum antibiotic therapy and is associated with a higher risk of clinical complications and mortality. The aim of this study was to describe changes in the gut microbiota of ICU patients in conjunction with clinical parameters.

Methods
Thirteen ICU patients were included in this case-series study. Patient data including demographics and clinical characteristics was extracted from medical records and registered in REDcap data management system. Fecal samples were collected daily and analyzed via 16S rRNA sequencing.

Results
Patients had a mean age of 65 years. Mean length of hospital stay (LOS) in ICU was 16 days (SD 12) Five patients (38%) died in ICU. SAPS III score varied between 50 – 100. All patients required mechanical ventilation and received broad-spectrum antibiotics and nutritional therapy. The composition of gut microbiota changed in all patients by a markedly decrease in bacterial diversity. Antibiotics was associated with developing dysbiosis.

Conclusion
The gut microbiota undergoes dysbiotic changes during ICU admission as a result of exposure to broad-spectrum antibiotics. However other therapeutics, including nutritional regimens, may also play a role. Intestinal dysbiosis might trigger and maintain an inflammatory response. Fecal Medical Transplantation may constitute a future therapeutic tool in selected critically ill patients not responding sufficient to standard ICU-treatment.

Changes in GUT MICROBIOTA in patients admitted to the Intensive Care Unit

A Case-series study

BACKGROUND:

Intestinal dysbiosis, characterized by disruption in the abundance of commensal bacteria, induces pathophysiological changes of the gut. Severe alterations of the gut microbiota is observed in patients admitted to the Intensive Care Unit (ICU). Dysbiosis has been reported as a result of broad-spectrum antibiotic therapy and is associated with a higher risk of clinical complications and mortality.
The aim of this study was to describe changes in the gut microbiota of ICU patients in conjunction with clinical parameters.

METHODS:

Thirteen ICU patients were included in this case-series study. Patient data including demographics and clinical characteristics was extracted from medical records and registered in REDcap data management system. Fecal samples were collected daily and analyzed via 16S rRNA sequencing.

Baseline Characteristics	
Patients	13
Demographics	
Age (years)	65 ±12
Gender (male)	9 (69,2%)
Admission	
LOS* ICU** (days)	16,8 ±12,2
LOS* stay prior to ICU (days)	2,5 ±3,5
LOS* after ICU** (days)	4,8 ±6,4
Mortality in ICU**	5 (38,4%)
Chronic co-morbidity	
None	2 (15,4%)
Cardiovascular compromise	8 (61,5%)
COPD***	6 (46,2%)
Diabetes Mellitus	5 (38,5%)
Hypertension	6 (46,2%)
Hypercholesterolemia	5 (38,46)
Severity of disease on ICU admission	
SAPS III score	63,4 ±18,9
COVID (positive)	6 (46,15%)

*Length of Hospitality Stay
**Intensive Care Unit
***Chronic Obstructive Pulmonary Disease

CONCLUSION:

The gut microbiota undergoes dysbiotic changes during ICU admission as a result of exposure to broad-spectrum antibiotics. However other therapeutics, including nutritional regimens, may also play a role. Intestinal dysbiosis might trigger and maintain an inflammatory response. Fecal Medical Transplantation may constitute a future therapeutic tool in selected critically ill patients not responding sufficient to standard ICU-treatment.

RESULTS:

Patients had a mean age of 65 years. Mean length of hospital stay (LOS) in ICU was 16 days (SD 12) Five patients (38%) died in ICU. SAPS III score varied between 50 – 100. All patients required mechanical ventilation and received broad-spectrum antibiotics and nutritional therapy. The composition of gut microbiota changed in all patients by a markedly decrease in bacterial diversity. Antibiotics was associated with developing dysbiosis.

C. Hübner[1] C. Bundgaard-Nielsen[2] Kjeld D. Jensen[3] S. Sørensen[2,4] P. Leutscher[2,4]

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The DANish maternal and offspring microbiome study (DANMOM): a study protocol for a longitudinal prospective cohort

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8. Department of Pediatrics, Aalborg University Hospital, Denmark

Background
The human gut microbiome has a great influence on human health and is established early in life. Several factors have been described that influence how establishment occurs, including mode of delivery, breast feeding, use of antibiotics, and even prenatal factors. Disturbances in some of these factors may be associated with a dysbiotic gut microbiome and disease development. Most studies are cross-sectional, disabling the possibility to identify temporal changes in the microbiome prior to adverse events. Longitudinal prospective cohort studies are therefore vital. Here we present the study protocol for an ongoing longitudinal prospective Danish mother-child cohort.

Methods
Pregnant women are enrolled at gestational weeks 11-14. Offspring are enrolled at birth. We aim to include 300 women. Samples for microbiome and biochemical analyses are collected from the women at gestation weeks 11-15, 19-20, and 34-37. Follow-up samples from the mother and child are collected within 3 days after birth, at 2 weeks postpartum, 6 months, 1 year, 2 years, 3 years, and 5 years. From the mother we collect feces, urine, blood, saliva, vaginal fluid, and breast milk. Feces and a blood spot are collected from the offspring. In addition, we collect a large amount of demographic and medical data using medical charts, registers and questionnaires.

Results
We have currently included 217 women and 74 children. Recruitment runs from June 2019-March 2023.

Conclusion
We expect the DANMOM cohort to provide us with valuable information on the role of the gut microbiome in human disease.

THE DANISH MATERNAL AND OFFSPRING MICROBIOME STUDY (DANMOM): A STUDY PROTOCOL FOR A LONGITUDINAL PROSPECTIVE COHORT

Louise Søndergaard Rold[1,2,3*], Caspar Bundgaard-Nielsen[1,3] Ann-Maria Jensen[1], Søren Jepsen[4], Louise Arenholt[1,3,5], Peter Leutscher[1,2,3] Per Glud Ovesen[6], Søren Hagstrøm[2,3,7], Suzette Sørensen[1,2,3].

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Introduction

The gut microbiota is established early in life and is influenced by several factors such as mode of delivery, breast feeding, use of antibiotics, and maternal health. Disturbances in some of these factors may be associated with a dysbiotic gut microbiome and disease development.

Notably, studies have shown an association between microbiota dysbiosis during pregnancy and development of different pregnancy complications such as gestational diabetes mellitus (GDM) and pre-eclampsia. The altered bacterial composition may be transferred to the infant and thereby exposing it to risk of glucose intolerance and cardiometabolic manifestations later in life. Studies have shown the gut microbiota in children born from mothers with GDM had differences in the gut microbiota between cases and controls, indicating that the maternal dysbiotic microbiome is passed onto the infant and might have an influence on the child's health.

However, most studies are cross-sectional, hindering the possibility to identify temporal changes in the microbiome prior to the occurrence of adverse events. Longitudinal prospective cohort studies are therefore essential. Here we present the study protocol for an ongoing longitudinal prospective Danish mother-child cohort.

Study aim

1) To describe the temporal changes in gut microbiota in the pre- and perinatal period and up to 5 years postpartum in mother-child pairs.

2) To investigate the association between the maternal microbiota, both pre- and postpartum, and the establishment of the infant microbiota.

3) To identify pre- and postnatal clinical, lifestyle and environmental factors that influence the development of the child´s gut microbiota.

4) To investigate when and whether the microbiota differs in pregnant women who experience pregnancy complications compared to women with normal pregnancies.

Sample and data collection from the mother are marked with a black tick, while sample and data collection from the child is marked with a blue tick. A tick with a star indicates that the sample collection is added to the protocol after study initiation and therefore not collected for all participants.

Methods

The DANMOM study is a longitudinal prospective cohort study that will follow 300 pregnant women throughout pregnancy, where 200 of these women and their offspring will be followed from birth and up to 5 years after birth.

Recruitment: The recruitment period runs from June 2019 to March 2023, and sample and data collection continue until October 2028.

Data collection: From the mother, we collect feces, urine, blood, saliva, vaginal fluid and breast milk. Feces and a blood spot are collected from the offspring.

Demographic and medical data will be collected through medical charts, registers and questionnaires.

Analysis: To characterize the bacterial compositions, bacterial DNA will be extracted from the samples and analyzed by 16S rRNA gene sequencing.

Study status

We have so far recruited 223 pregnant women and the drop-out rate during pregnancy is around 13 %. Approximately 55 % of the families choose to participate in the follow-up for mother and child after birth.

Expected outcome

The longitudinal study design will give a detailed overview of the development of microbiota in the pregnant women – from early pregnancy to 5 years postpartum. The longitudinal design furthermore gives us the opportunity to closely follow the transfer of bacteria from mother to child, and thereby identify important factors for healthy seeding of the infant gut.

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Does GDM affect the bacterial composition of human breastmilk? – a case-control study

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**These authors contributed equally to this work.*

Background
The infant gut microbiome is established shortly after birth and is influenced by several factors. During the first months of life, human breast milk (HBM) is a very important factor in modulating the infants gut microbiota. HBM contains bacteria that are directly transferred to the infant during breastfeeding. It has been shown that children of women diagnosed with gestational diabetes mellitus (GDM) have a different gut microbiota compared to children of women without GDM. It is therefore possible that GDM mothers have a different HBM microbiota that is transferred to the infants, thereby affecting early gut microbiota establishment. This study aims to investigate the potential difference in bacterial composition in HBM between GDM- and non-GDM women.

Methods
In total 24 women were included, 18 non-GDMs (control group) and 6 GDMs (case group). A milk sample was collected from each participant 1-3 weeks postpartum and the bacterial composition was examined through 16S rRNA gene sequencing targeting the V4 region.

Results
The GDM and non-GDM groups showed no difference in alpha diversity. A statistically significant difference in beta diversity was found between the groups with the GDM-group showing higher relative abundances of *Streptococcaceae, Streptococcus*, Lactobacillales and Bifidobacteriales among others, while only the order of Staphylococcales favored the non-GDM group.

Conclusion
Our results suggest that women with GDM have a different HBM microbiota compared to non-GDM women. The transfer of this different microbiota to their infants may have negative implications on infant health and gut development.

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THE EFFECT OF GDM ON THE BACTERIAL COMPOSITION OF HUMAN BREAST MILK

Johan Mikkel Guldbæk[1], Caroline Steenberg Lindegaard[1], Stine Kirk[1], Line Damkjær Nygaard[1], Louise Søndergaard Rold[1,2,7], Caspar Bundgaard-Nielsen[2], Ann-Maria Jensen[2], Peter Leutscher[1,2,7], Anne-Cathrine Finnemann Viuff[8], Søren Hagstrøm[1,7,8], Suzette Sørensen[1,2,7]

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INTRODUCTION

The infant gut microbiome is established shortly after birth and is influenced by several factors. During the first months of life, human breast milk (HBM) is a very important factor in modulating the infants gut microbiota. HBM contains bacteria that are directly transferred to the infant during breastfeeding.

It has been shown that children of women diagnosed with gestational diabetes mellitus (GDM) have a different gut microbiota compared to children of women without GDM. It is therefore possible that GDM mothers have a different HBM microbiota that is transferred to the infants, thereby affecting early gut microbiota establishment. This study aims to investigate the potential difference in bacterial composition in HBM between GDM- and non-GDM women.

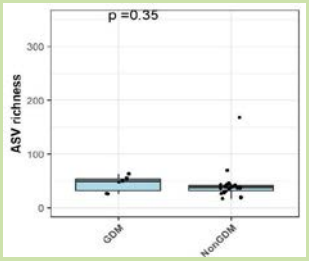
METHOD

A case control study was performed comparing the HBM bacterial composition of GDM and non-GDM women. In total 24 women were included, 18 non-GDMs (control group) and 6 GDMs (case group).

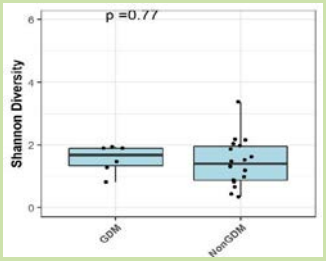
A milk sample was collected from each participant 1-3 weeks postpartum and the bacterial composition was examined through 16S rRNA gene sequencing targeting the V4 region.

RESULTS

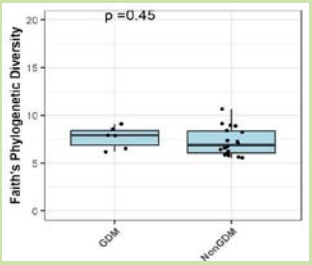
ASV Richness



Shannon Diversity

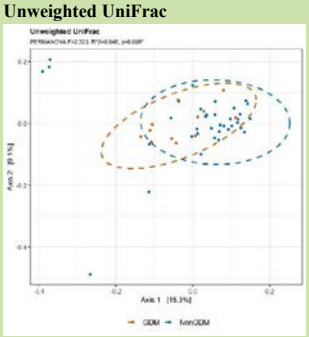


Faith's Phylogenetic Diversity

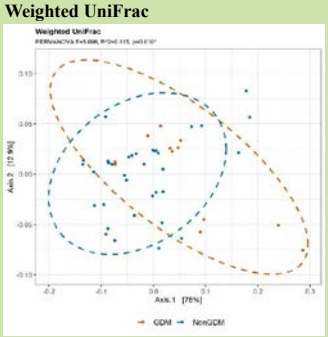


1) Alpha diversity: To detect potential differences in bacterial alpha diversity, each sample was assessed regarding ASV richness, Shannon Diversity and Faith's Phylogenetic Diversity. No statistically significant differences for ASV richness (p=0.35), Shannon Diversity (p=0.77) or Faith's Phylogenetic Diversity (p=0.45) were found between the non-GDM group and the GDM group.

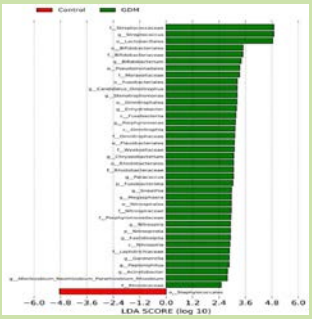
Unweighted UniFrac



Weighted UniFrac



LEFSe



2) Beta diversity: When investigating beta diversity, the bacterial composition of the GDM group and the non-GDM group was found to be statistically significantly different. This applied for both the unweighted UniFrac (p=0.006) and the weighted UniFrac (p=0.010).

3) Comparison of bacterial abundances: When utilizing LEfSe to examine differences in the bacterial relative abundances between the groups, the GDM group showed higher relative abundances of *Streptococcaceae, Streptococcus*, Lactobacillales and Bifidobacteriales among others, while only the order of Staphylococcales favored the non-GDM group.

CONCLUSION

Our results suggest that women with GDM have a different HBM microbiota compared to non-GDM women. The transfer of this different microbiota to their infants may have negative implications on infant health and gut development. Additional studies are needed to further elucidate the GDM microbiome in HBM.

AKNOWLEDGEMENT

We would like to thank the Steno Diabetes Center North Jutland for financial support.

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Inflammatory biomarkers and their relation to dysbiosis of the enteric microbiome

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5. Center for Nutrition and Bowel Failure, Aalborg University Hospital, Denmark

**Participant in the North Denmark Regional Hospital Research Course 2022*

Background
While the etiology of Inflammatory bowel disease (IBD), which includes Crohn's disease (CD) and ulcerative colitis (UC), remains unclear, the pathogenesis is thought to arise from a complex interplay between environmental factors, the microbiome and immune dysregulation in genetically susceptible individuals. The complexity of the microbiome and its interaction with host factors complicates the identification of consistent changes in microbial composition as biomarkers for disease prediction, monitoring and treatment. The aim is to investigate local changes to the intestinal microbiome in patients diagnosed with UC exploring the connection between inflamed tissue and dysbiosis (biopsies). Markers of inflammation (calprotectin; cytokines) and dysbiosis in the microbiome will be investigated in relation to changes in the composition and function of the microbiome (faecal and saliva samples).

Methods
The study is expected to include 40-50 patients. The patients are examined by sigmoidoscopy and seven biopsies will be taken from well-defined areas in the colon: 3 from rectum, 2 from sigmoideum, and 2 from colon descendens. During the sigmoidoscopy the doctor assesses the MAYO score in each segment. Prior to the sigmoidoscopy, the patients receive 3 test tubes for fecal collection: calprotectin, microbiome and metabolome analysis. After examination, 2 saliva samples will be obtained for metabolome analysis. Data will be analyzed using multivariate statistics through specific packages in Rstudio.

Expected results and perspective
Characterizing the taxonomic, functional, and biochemical shifts occurring during inflammation has the potential to reveal new microbial biomarkers to assess disease activity and treatment effectiveness as well as microbiome-modulating treatments, such as prebiotics, probiotics and fecal microbiota transplantation in IBD treatment.

Inflammatory biomarkers and their relation to dysbiosis of the enteric microbiome

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Aim

The aim of the project is to investigate local changes to the intestinal microbiome in patients diagnosed with UC exploring the connection between inflamed tissue and dysbiosis (biopsies). Markers of inflammation (calprotectin; cytokines) and dysbiosis in the microbiome will be investigated in relation to changes in the composition and function of the microbiome (faecal and saliva samples).

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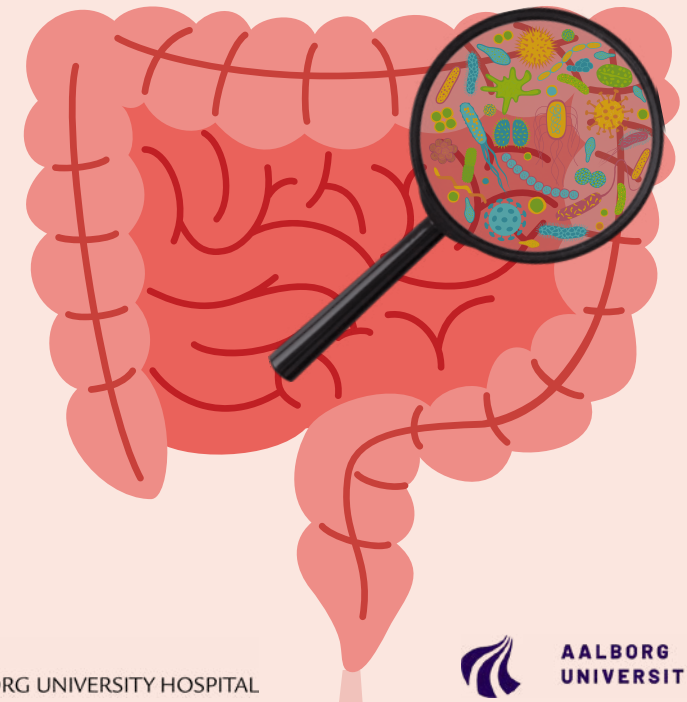

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Evaluating methodology for isolation of bacterial-derived extracellular vesicles from the human gut microbiota

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4. Department of Clinical Biochemistry, Aalborg University Hospital, Denmark

Background
It is well known that an imbalanced gut microbiota is associated with several diseases. How these gut confined bacteria may affect their host is less well described. A possible mechanism could be through the excretion of membrane-enclosed particles, termed extracellular vesicles, from the gut microbiota. These vesicles contain biomolecules and can cross the gut lining and thereby be distributed to distant organs, where they deliver their cargo. The field of gut microbiota-derived extracellular vesicles is in its infancy, and protocols for vesicle isolation are therefore lacking. In this study we wish to compare and evaluate different possible methods, to produce pure isolates of bacterial vesicles, free from human vesicle contamination.

Methods
Isolation and separation of human and microbiota-derived extracellular vesicles, from stool and plasma samples, will be performed using combinations of ultracentrifugation, with and without the use of density gradients, and size exclusion chromatography. Isolated vesicles will be characterized using different quantitative, qualitative, and visual inspection methods.

Results
We expect to identify the optimal methods for bacterial vesicle isolation based on abundance, size, visual appearance, along with bacterial DNA/RNA profiles and protein contents, confirming the source of the vesicles. We expect some level of contamination from human EVs but aim to identify a protocol where this is minimized.

Conclusion
Our study will contribute with a reliable protocol for microbiota-derived extracellular vesicle isolation from human biofluids. This is crucial to pave the way for further investigations into how the gut microbiota communicates with its host in health and disease.

Evaluating methodology for isolation of bacterial-derived extracellular vesicles from the human gut microbiota

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North Denmark Regional Hospital

Marie-Louise Lund Søbye[1], Louise Søndergaard Rold[1,2], Caspar Bundgaard-Nielsen[1], Annemarie Brusen Villadsen[1,2], Leonid Gurevich[3], Maiken Mellergaard[4], Peter Fojan[3], Aase Handberg[2,4], Suzette Sørensen[1,2]

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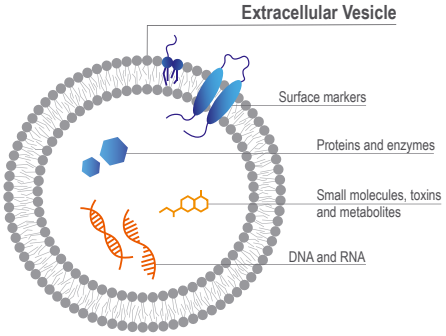
A possible mechanism could be through the excretion of membrane-enclosed particles, termed extracellular vesicles (EVs), from the gut microbiota. These vesicles contain biomolecules and can cross the gut lining and thereby be distributed throughout the entire body. The field of gut microbiota-derived EVs is in its infancy, and protocols for vesicle isolation are therefore lacking.

In this study we wish to compare and evaluate different methods to produce pure isolates of bacterial vesicles, where human vesicle contamination is minimized.



Methods

Blood and stool samples

↓

Filtration
(removal of larger debris)

↓

Ultracentrifugation | **Density gradients** | **PAN exosome kit**
(different methods to remove human EVs, protein aggregates, and minor cell debris)

↓

Size exclusion chromotagraphy (SEC)
(separation of bacterial EVs and free proteins by size into 25 fractions)

↓

Isolated bacterial EVs

↓

Compare methods based on
size and concentration
protein content and surface markers
DNA and RNA profiles
level of human contamination

Conclusion

Our study will contribute with a reliable protocol for the isolation of microbiota-derived EVs from human biofluids.

This is crucial to pave the way for further investigations into how the gut microbiota communicates with its host in health and disease.

Current results

Currently, each isolation step is being tested, optimized and evaluated for different human biofluids, along with several human and bacterial cell lines (controls).

EVs isolated from the gram-positive bacterium *Bacillus subtilis* is presented here, along with one test of stool-derived EVs, using ultracentrifugation as isolation method.

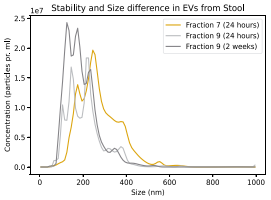


Figure 1. On-going test of the stability of stool-derived EVs during storage (24 hours and 2 weeks). Measured using nanoparticle tracking analysis (NTA). EVs appear preserved after 2 weeks of storage, and the size distribution shifts as expected between fractions.

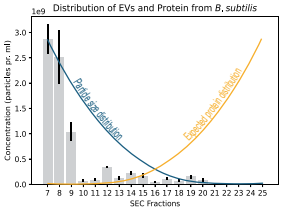


Figure 2. Concentration of *B. subtilis* EVs in each SEC fraction obtained. EVs are primarily located in fractions 7-9. The particle size is decreasing while free protein increases throughout the fractions. Protein measurements will follow. Measured using NTA.

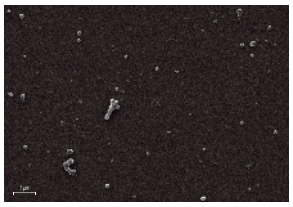


Figure 3. Image of EVs isolated from *B. subtilis*, confirming the size and shape observed in both NTA and AFM below. Measured using scanning electron microscopy (SEM).

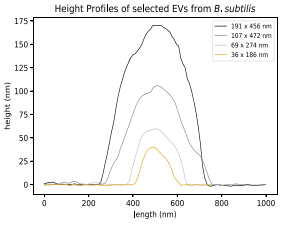


Figure 4. Height profiles of four selected EVs isolated from *B. subtilis*. Extracted from the AFM topography measurements in Figure 5.

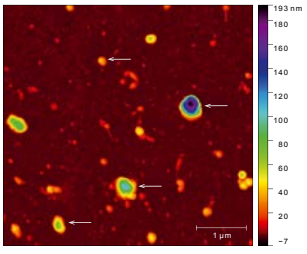


Figure 5. Topography image of EVs isolated from *B. subtilis*. Measured using atomic force microscopy (AFM).

Pædiatri

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A novel follow-up model for diabetes type 1 in children leads to higher glycemic control

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**Participant in the North Denmark Regional Hospital Research Course 2022*

Background
Poor glycemic control in type 1 diabetes in children leads to a higher risk of diabetic complications. In the pediatric department at North Denmark regional hospital, two-thirds of all diabetic children were not well-regulated, defined as HbA_{1c} below 59 mmol/mol, in 2016. A novel model for follow-up was therefore developed to increase the fraction of well-regulated type 1 diabetes children. The aim of this study was to evaluate the effect of a standardized follow-up model for dysregulated diabetes on mean HbA_{1c}.

Methods
All children between 0-18 with type 1 diabetes were included in this study. A novel, standardized model for follow-up if the HbA_{1c} was above 58 mmol/mol was developed, where the children were followed more closely until improvement of glycemic control.

Results
In the reference year, only one-third of children with diabetes were well-regulated and 19% were dysregulated (HbA_{1c} above 75 mmol/mol). After fully implementing the model, two-thirds of the children were well-regulated and only a few percent were dysregulated. The mean HbA1c decreased by almost 10 mmol/mol from the reference year to the following years when the model was fully implemented.

Conclusion
This follow-up model for dysregulated diabetes increased the fraction of well-regulated children in our clinic and decreased the mean HbA_{1c} significantly.

A novel follow-up model for diabetes type 1 in children leads to higher glycemic control

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INTRODUCTION

Poor glycemic control in type 1 diabetes in children leads to a higher risk of diabetic complications. In the pediatric department at North Denmark regional hospital, two-thirds of all diabetic children were not well-regulated, defined as HbA_{1c} below 59 mmol/mol, in 2016. A novel model for follow-up was therefore developed to increase the fraction of well-regulated type 1 diabetes children.

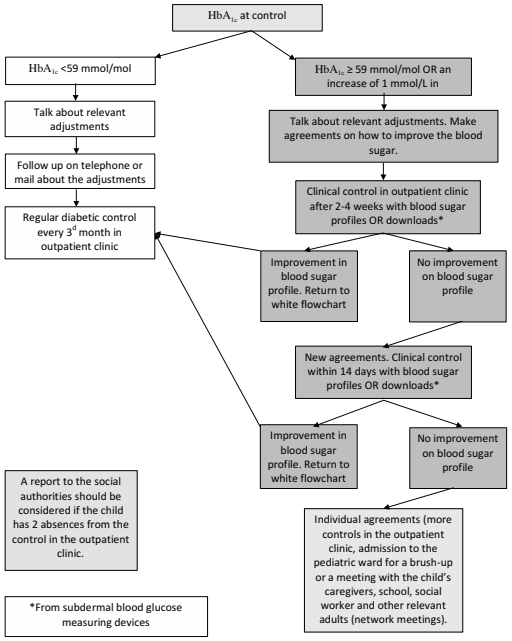
AIM

The aim of this study was to evaluate the effect of a standardized follow-up model for dysregulated diabetes on mean HbA_{1c}.

METHODS

All children between 0-18 with type 1 diabetes were included in this study. A novel, standardized model for follow-up if the HbA_{1c} was above 58 mmol/mol was developed, where the children were followed more closely until improvement of glycemic control (figure 1).

Figure1: follow-up model, the time to next control depended on the HbA_{1c} or blood sugar profile



RESULTS

In the reference year (2016/2017), only one-third of children with diabetes were well-regulated and 19% were dysregulated (HbA_{1c} above 75 mmol/mol). After fully implementing the model, two-thirds of the children were well-regulated and only a few percent were dysregulated (year 2018/2019 and 2019/2020). The mean HbA_{1c} decreased by almost 10 mmol/mol from the reference year to the following years when the model was fully implemented. Table 1 with results below.

Table 1: Demographics, mean HbA_{1c}, HbA_{1c} group, age group and number of consultations by age and HbA_{1c} group. Year 2016/2017 (1st of July 2016 to 30th June 2017) was used as a reference year. The orange box shows the most important results

Year	2016/2017	2017/2018	2018/2019	2019/2020
Persons n (%)				
Total	80	73	75	75
Male	41 (51)	39 (53)	43 (57)	43 (57)
Female	39 (49)	34 (47)	32 (43)	32 (43)
Age group n (%)				
1-12	21 (26)	21 (29)	20 (27)	22 (29)
13-17	59 (74)	52 (71)	55 (73)	54 (71)
Age at diagnosis (years)				
Mean	7.8	7.4	7.9	7.8
95%CI	1.4-14.3	1.3-14.3	1.8-14.3	1.8-14.6
HbA_{1c} (mmol/mol)				
mean	65.6	58.4	56.9	57.7
95%CI	47.9-90.5	44.0-73.1	42.4-74.0	40.3-79.6
IQR	56.0-71.2	51.7-65.0	50.7-61.6	51.2-62.2
p-value	ref	0.003	0.000	0.001
HbA_{1c} group n (%)				
<59 mmol/mol	29 (36)	38 (52)	50 (67)	49 (65)
59-75 mmol/mol	36 (45)	32 (44)	23 (31)	21 (28)
>75 mmol/mol	15 (19)	3 (4)	2 (3)	5 (7)
HbA_{1c} group by age group				
<59 mmol/mol n (% of total persons followed)				
1-12	11 (14)	16 (22)	18 (24)	18 (24)
13-17	18 (23)	22 (30)	32 (43)	31 (41)
59-75 mmol/mol				
1-12	9 (11)	5 (7)	2 (3)	3 (4)
13-17	27 (34)	27 (37)	21 (28)	18 (24)
>75 mmol/mol				
1-12	1 (1)	0 (0)	0 (0)	0 (0)
13-17	14 (18)	3 (4)	2 (3)	5 (7)
Number of outpatient consultations by HbA_{1c} group n (% of total consultations) [median number of consultations per child]				
<59 mmol/mol	125 (32) [4]	197 (45) [5]	296 (56) [5]	214 (50) [4]
59-75 mmol/mol	199 (51) [5]	222 (51) [7]	199 (38) [7]	167 (39) [8]
>75 mmol/mol	67 (17) [4]	16 (4) [4]	30 (6) [15]	42 (10) [8]

CONCLUSION

This follow-up model for dysregulated diabetes increased the fraction of well-regulated children in our clinic and decreased the mean HbA_{1c} significantly.

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NORTH DENMARK REGIONAL HOSPITAL

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Intensive phototherapy from both above and below for 12 hours and the prediction of rebound for neonates with hyperbilirubinemia requiring treatment

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Background
Among term newborn infants around 60 % are jaundiced during the first week of life, caused by elevation of unconjugated bilirubin. Around 2 to 6 % of these are being treated to avoid brain damage. Phototherapy is the treatment of choice for neonatal hyperbilirubinemia and standard treatment is phototherapy from above for 24 hours. The objective of this study was to investigate the efficacy of 12 hours of intensive phototherapy from above and below regarding rebound hyperbilirubinemia, and to evaluate prediction rules for rebound hyperbilirubinemia.

Methods
Infants treated for hyperbilirubinemia at Aalborg University Hospital between March 19, 2016 and March 19, 2017 were followed for 2 days to assess rebound hyperbilirubinemia. A total of 103 infants were included. We compared the rebound percentage in this treatment with the rebound percentage in standard treatments using own data. We furthermore investigated the performance of two prediction models regarding discrimination and calibration.

Results
Thirteen (13%) of the infants suffered rebound hyperbilirubinemia. The association between rebound and type of phototherapy was not statistically significant (p-value: 0.8). More results concerning validation of prediction rules of hyperbilirubinemia will hopefully be presented at the symposium.

Conclusion
Short, intensive phototherapy did not increase the risk of rebound and could be a good treatment solution with shorter stay at the hospital, beneficial for both infants and families.

Intensive phototherapy from both above and below for 12 hours and rebound for neonates with hyperbilirubinemia

Mette Line Donneborg Roed[1,2,3,4], María Rodrigo Domingo[5], Finn Ebbesen[4]

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Objective:

The aims of the present study were to investigate whether 12 hours of phototherapy, from both above and below, using high levels of irradiance, could be a sufficient treatment without infants being readmitted due to rebound hyperbilirubinemia. Also, to develop a prediction rule for rebound hyperbilirubinemia based on maturity.

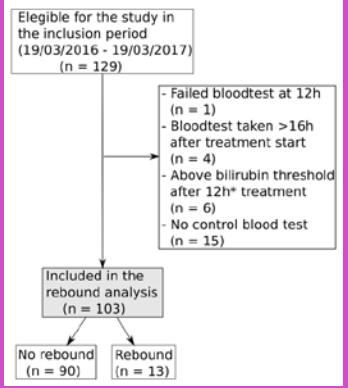
Methods:

Infants treated with intensive phototherapy from both above and below for 12 hours at Aalborg University Hospital between March 19, 2016, and March 19, 2017, were followed for 2 days to assess rebound hyperbilirubinemia. We compared the rebound percentage in this treatment with the rebound percentage in standard treatments using own data. We furthermore investigated prediction models for rebound hyperbilirubinemia.

Results:

A total of 103 infants were included. Thirteen (13%) of the infants suffered rebound hyperbilirubinemia. We did not find an increased risk of rebound associated to intensive phototherapy from both above and below for 12 hours compared to standard treatments (p-value: 0.8). A good prediction rule for rebound hyperbilirubinemia includes gestational age and postnatal age, see the decision tree.

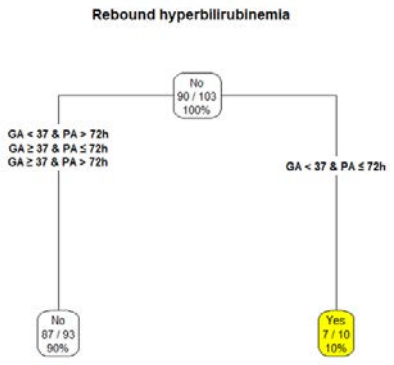
Flowchart of included infants:



Demographic and clinical characteristics of the infants used for the prediction models (N = 103)	
Female*	52 (50 %)
Gestational age (days)**	270 [261; 279]
Postnatal age (days)**	3.5 [2.7; 4.4]
Birthweight (g)***	3310 (578)
Non-Caucasian*	14 (14 %)
Feeding modality*	
Exclusive breastfeeding	60 (58 %)
Formula	6 (6 %)
Mixed	37 (36 %)
Infant's maturity*	
GA ≥ 37, PA > 72h	51 (50 %)
GA ≥ 37, PA ≤ 72h	29 (28 %)
GA < 37, PA > 72h	13 (13 %)
GA < 37, PA ≤ 72h	10 (10 %)
Hours until control blood test**	40 [29; 52]
TSB_0 (mg/dL)**	298 [255; 315]
TSB_{12} (mg/dL)**	180 [156; 197]
ΔTSB_{0-12}(%)**	38 [33; 43]

*N (%), **median [Q1; Q3], *** mean (SD), GA: gestational age, PA: postnatal age (hours).

Decision tree:



Conclusion:

Short, intensive phototherapy did not increase the risk of rebound hyperbilirubinemia and could be a good treatment solution with shorter stay at the hospital, beneficial for both infants and families. A good prediction rule for rebound hyperbilirubinemia includes gestational age and postnatal age.

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Treatment of neonatal hyperbilirubinemia - what is most efficient: BiliCocoon or conventional phototherapy - a randomized controlled multicenter trial

Mette Line Donneborg Roed[1,2,3], Pernille Kure Vandborg[4], Maria Rodrigo Domingo[5], Lars Bender[3,6], Tina Møller[6], Helle Haslund Thomsen[6], Finn Ebbesen[6]

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2. Centre for Clinical Research, North Denmark Regional Hospital, Denmark.
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4. Department of Pediatrics, Viborg Regional Hospital, Denmark
5. Psychiatry, Aalborg University Hospital, Denmark.
6. Department of Pediatrics, Aalborg University Hospital, Denmark

Background
Among term newborn infants 60 % are jaundiced during the first week of life, caused by elevation of unconjugated bilirubin. Around 2 to 6 % of these are treated with phototherapy to avoid brain damage. Standard treatment today is single phototherapy from above. A new device has been developed, the BiliCocoon, where the infants are "wrapped" presumably making them more comfortable. The objective is to determine the efficacy of the BiliCocoon compared to phototherapy from above, measured by the decrease in total serum bilirubin concentration during 24 hours of treatment.

Methods
A randomized controlled, unblinded multicenter trial including otherwise healthy hyperbilirubinemic infants without signs of hemolytic disease requiring phototherapy with gestational age ≥33 weeks, birth weight ≥1800 gram, postnatal age between 24 hours and 14 days. Infants either receiving phototherapy from above or BiliCocoon with equal irradiance for 24 hours. Total serum bilirubin concentration was measured at start and after 24 hours of phototherapy. A power calculation showed that at least 36 infants were required in each group to detect a difference of 6 percentage points in the decrease in total serum bilirubin.

Results
A total of 84 infants were randomized and included in the trial, 43 infants treated with BiliCocoon and 41 infants treated with phototherapy from above. Hopefully the results can be shown at the symposium.

Conclusion
If the BiliCocoon is more effective in treating hyperbilirubinemic infants and is comfortable for infants and parents, we expect this phototherapy device to be used often in the future.

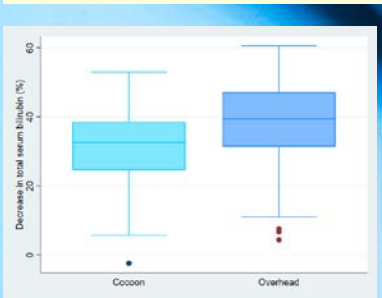
BiliCocoon versus phototherapy from above
- A randomized controlled multicenter trial

Mette Line Donneborg Roed[1,2,3], Pernille Kure Vandborg[4], Maria Rodrigo Domingo[5], Lars Bender[3,6], Tina Møller[6], Helle Haslund Thomsen[6], Finn Ebbesen[6]

1. Department of Pediatrics, North Denmark Regional Hospital, Hjoerring, Denmark
2. Centre for Clinical Research, North Denmark Regional Hospital, Hjoerring, Denmark.
3. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark
4. Department of Pediatrics, Viborg Regional Hospital, Viborg, Denmark
5. Psychiatry, Aalborg University Hospital, Aalborg, Denmark.
6. Department of Pediatrics, Aalborg University Hospital, Aalborg, Denmark

Objective:

To determine the efficacy of the BiliCocoon compared to phototherapy from above, measured by the decrease in total serum bilirubin concentration during 24 hours of treatment.



Results:

A total of 83 infants were randomized and included in the study, 42 infants treated with BiliCocoon, and 41 infants treated with phototherapy from above. Infants in the two groups were comparable concerning demographic and clinical data.

Conclusion:

Phototherapy from above reduced total serum bilirubin concentration significantly more than BiliCocoon during 24 hours of treatment.

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Sundhedsfaglig uddannelse

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Refleksionsramme til de diagnostiske specialer med udgangspunkt i Fundamentals of Care

Kirsten Arriens[1,2], Christina Michno[1,3], Hanne Thomsen[1], Mona Kyndi Pedersen[4]

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2. Solsiden, Specialsektoren, Region Nordjylland, Danmark
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Baggrund
Der er i de diagnostiske specialer ofte tradition for at have en naturvidenskabelig tilgang til opgaveløsningen og i mindre grad diskutere de humanistiske værdier. Hverdagen i de diagnostiske specialer er præget af mange rutineopgaver og et stort patientflow med begrænset tid til den enkelte patient. Bioanalytikeren og radiografen har inden undersøgelsen begrænset viden om patienten, og i kontakten med patienten fylder den instrumentelle-tekniske opgaveløsning meget.
Fundamentals of Care er interessant at introducere i de diagnostiske specialer mhp. at udarbejde et redskab til at holde fokus på de grundlæggende værdier; respekt, omsorg og relationen til patienten.

Metoder
Forandringsteoriens syv trin danner projektmetoden.
Data er fremkommet via analyse af eksisterende forskningsbaseret litteratur med fokus på det korte patientmøde og analyse af narrative cases fra det diagnostiske område.

Resultater
Der er udviklet en reflektionsramme med udgangspunkt i Fundamentals of Care, der synliggør de elementer og processer, der sker i mødet med patienten i det korte diagnostiske møde.

Konklusion
Refleksionsrammen kan anvendes som et redskab til i højere grad at arbejde med personcentreret opgaveløsning indenfor det diagnostiske område. Den giver mulighed for at have fokus på vores faglige viden og teorier i mødet med den enkelte patient og samtidig have fokus på patienten, som et unikt menneske med tilsvarende forskellige behov. Refleksionsrammen rummer både den erfaringsbaserede og den evidensbaserede tilgang til det korte diagnostiske møde med patienten.
Refleksionsrammen støtter op om patientinddragelse, sikkerhed og bedre sammenhængende patientforløb, der alle er centrale aspekter af de nationale kvalitetsmål for det danske sundhedsvæsen.

Refleksionsramme til de diagnostiske specialer med udgangspunkt i Fundamentals of Care

Kirsten Arriens[1,2] • Christina Michno[1,3] • Hanne Thomsen[1] • Mona Kyndi Pedersen[4]

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[2]Solsiden, Specialsektoren, Region Nordjylland
[3]Kvalitet og Patientsikkerhed, Regionshospital Nordjylland
[4]Center for Klinisk forskning, Regionshospital Nordjylland

INTRODUKTION

Hverdagen i de diagnostiske specialer er præget af mange rutineopgaver og et stort patientflow med begrænset tid til den enkelte patient, og i kontakten med patienten fylder den instrumentelle-tekniske opgaveløsning meget.
Vi valgte at introducere Fundamentals of Care i de diagnostiske specialer som et redskab til at holde fokus på de grundlæggende værdier; respekt, omsorg og relationen til patienten.

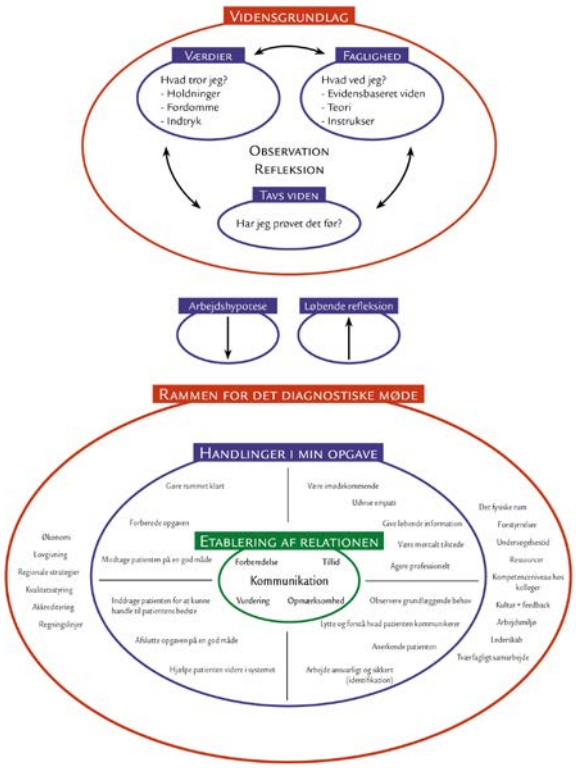
METODE

Forandringsteoriens syv trin danner afsæt for projektets gennemførelse.
Data er fremkommet via analyse af eksisterende forskningsbaseret litteratur med fokus på det korte patientmøde og analyse af narrative cases fra det diagnostiske område.

RESULTATER

Der er udviklet en reflektionsramme med udgangspunkt i Fundamentals of Care, der synliggør de elementer og processer, der sker i mødet med patienten i det korte diagnostiske møde. Refleksionsrammen giver mulighed for at have fokus på både den erfaringsbaserede og den evidensbaserede viden i mødet med den enkelte patient og samtidig have fokus på patienten, som et unikt menneske med tilsvarende forskellige behov.

REFLEKSIONSRAMME FOR DET KORTE DIAGNOSTISKE PATIENTMØDE



KONKLUSION

Refleksionsrammen kan anvendes som et redskab til i højere grad at arbejde med personcentreret opgaveløsning indenfor det diagnostiske område og det korte diagnostiske møde med patienten.
Refleksionsrammen støtter op om patientinddragelse, sikkerhed og bedre sammenhængende patientforløb, der alle er centrale aspekter af de nationale kvalitetsmål for det danske sundhedsvæsen.

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REGIONSHOSPITAL NORDJYLLAND – i gode hænder

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Work-related mental health status among younger physicians in Denmark – a questionnaire-based survey

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Background
Health care professionals are exposed to various work-related stressors. In this context, younger physicians (YPs) seem at particular risk of developing mental health adverse outcomes. The survey aimed to investigate mental health status among YPs in North Denmark Region.

Methods
A work and mental health status questionnaire was developed based on the observations from a focus group interview among four YPs at the North Denmark Regional Hospital. The World Health Organization Five Well-Being Index (WHO-5) and the Major Depression Inventory (MDI) were incorporated in the questionnaire. Data was collected using REDCap and statistical analysis was performed using R.

Results
A total of 300 YPs participated in the survey, hence representing 38 % of the total number of YPs in the region. The following findings were extracted from the survey: 42% of the participants reported general emotional exhaustion more than half of the time, 35 % reported major concern about risk and consequences of making clinical mistakes, and 24% uncertainty regarding their decision to be educated and trained as a medical doctor. Moreover, 34% were observed with WHO-5 score <50 indicating general poor well-being and 17% with MDI-score >20 indicating presence of depressive symptoms. The tendencies were most pronounced among newly graduated YPs (<2yrs)

Conclusions
The results suggest a moderate to high prevalence of work-related mental health challenges among YPs, although apparently modifiable in relation to development of professional identity and robustness by acquirement of clinical experience over time. However, well-being among YPs requires further supporting attention.

WORK-RELATED MENTAL HEALTH STATUS AMONG YOUNGER PHYSICIANS IN DENMARK

– a questionnaire-based survey

AUTHORS

Emil Loenstrup Oehrstroem(1), Henrik Bøggild (2), Peter Derek Christian Leutsche (2,4)

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(4) Department of Clinical Medicine, Aalborg University, Denmark

BACKGROUND

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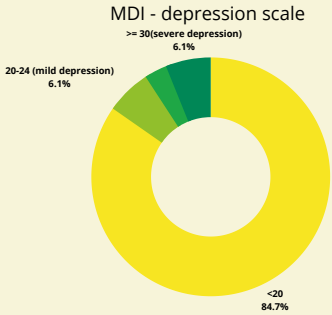
A work and mental health status questionnaire was developed based on the observations from a focus group interview among four YPs at the North Denmark Regional Hospital. The World Health Organization Five Well-Being Index (WHO-5) and the Major Depression Inventory (MDI) were incorporated in the questionnaire. Data was collected using REDCap and statistical analysis was performed using R.

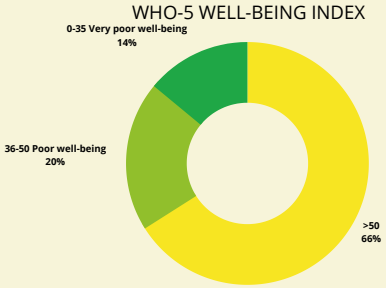
RESULTS

A total of 300 YPs participated (95 "KBU", 58 "intro", 147 "HU") in the survey, hence representing 38 % of the total number of YPs in the region. The following findings were extracted from the survey: 42% of the participants reported general emotional exhaustion more than half of the time, 35 % reported major concern about risk and consequences of making clinical mistakes, and 24% uncertainty regarding their decision to be educated and trained as a medical doctor. Moreover, 34% were observed with WHO-5 score <50 indicating general poor well-being and 17% with MDI-score >20 indicating presence of depressive symptoms. The tendencies were most pronounced among newly graduated YPs (<2yrs).

PERPECTIVES

The results suggest a moderate to high prevalence of work-related mental health challenges among YPs, although apparently modifiable in relation to development of professional identity and robustness by acquirement of clinical experience over time. However, well-being among YPs requires further supporting attention.





%	To a very great extent	To a great extent	To some extent	To a small extent	Not at all
Good introduction to work place	20,7	45,8	23,4	9	1
Adequate supervision	36,3	42,7	15	4,7	1,3
Prepared for your clinical reality	27,1	42,1	22,1	7,4	1,3
Comfortable as a physician	34,8	40,5	19,7	3,7	1,3
Enough time for your patients	7,8	23,2	38,6	24,9	5,5
Doubting oneself	3,3	10,0	37,1	42,8	6,7
Afraid of making mistakes	11,4	23,7	40,1	23,7	1,0
Doubting own carrier as a physician	10,3	13,7	19,3	27,7	29,0

%	All the time	Most of the time	A bit more than half the time	A bit less than half the time	Some of the time	Never
Worn out	4,4	16,1	16,1	15,8	37,9	9,7
Mentally exhausted	4,0	12,1	17,8	15,1	36,2	14,8
Stressed	5,4	9,7	17,8	18,8	36,2	12,1
Irritable	2,3	6,4	13,7	17,1	49,2	11,4

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NORTH DENMARK REGION

Uro-Gynækologi og Obstetrik

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Impact of sensory delivery rooms on birth experience, complication rate and working environment

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Background
”Healing architecture” conceptually covers architecture and interior design that affects the healing ability. In June 2021, new sensory delivery rooms were established in North Denmark Regional Hospital. The aim of this Ph.D. study is 1) to map the knowledge that exists about Healing architecture in a delivery room, 2) to uncover women's birth experience before and after the establishment of the new sensory delivery rooms, 3) to uncover obstetric complications before and after the establishment of the new sensory delivery rooms, and 4) investigate the impact of the new sensory delivery rooms on the working environment for midwives.

Methods
Study 1. With the help of a scoping review, the extent of available literature in the field is assessed. The literature search is carried out in collaboration with a librarian.
Study 2. Data collection regarding the birth experience will be trough questionnaires and interviews.
Study 3. Information about obstetric complications was obtained from the patients´ medical records retrospectively.
Study 4. Data collection regarding the working environment will be trough questionnaires and interviews.

Results
At the moment the data is under collection.

Conclusion
This Ph.D. the study on sensory delivery rooms will provide knowledge that can be used not only in the planning of future delivery rooms, but also future hospital buildings for the benefit of patients, relatives, and staff.

Impact of sensory delivery rooms on birth experience, complication rate and working environment

Anya Eidhammer[1], Ph.D. student; Dorte Melgaard[1], principal supervisor; Julie Glavind[2], Ph.D. co supervisor; Marie Koldkjær Højlund[3], Ph.D. co supervisor
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Background

"Healing architecture" conceptually covers architecture and interior design that affects the healing ability (Aripin, 2006). A scoping review from the World Health Organization in 2019 exploring the evidence of the importance of art for health, describes how music during childbirth is associated with a better birth experience and fewer obstetric complications (Fancourt and Finn, 2019).

In June 2021, new sensory delivery rooms were established in North Denmark Regional Hospital.

The aim of this Ph.D. study is 1) to map the knowledge that exists about Healing architecture in a delivery room, 2) to uncover women's birth experience before and after the establishment of the new sensory delivery rooms, 3) to uncover obstetric complications before and after the establishment of the new sensory delivery rooms, and 4) investigate the impact of the new sensory delivery rooms on the working environment for midwives.

Methods

Study 1. With the help of a scoping review, the extent of available literature in the field is assessed. The literature search is carried out in collaboration with a librarian.

Study 2. Data collection regarding the birth experience will be trough questionnaires and interviews.

The women have been introduced to the project via social media, e.g. the delivery room's Facebook page, the Regional Hospital North Jutland's website and Facebook page and via posters in waiting rooms in the midwife consultation, obstetric outpatient clinics and in the delivery room.

After the birth, the mother and child show up at the maternity ward for the Phenylketonuri-test (PKU), where the study participants received oral and written information about the study and provided written informed consent.

Study 3. Information about obstetric complications was obtained from the patients´ medical records retrospectively.

Study 4. Data collection regarding the working environment will be trough questionnaires and interviews.

Results

At the moment the data is under collection.

Conclusions

This Ph.D. the study on sensory delivery rooms will provide knowledge that can be used not only in the planning of future delivery rooms, but also future hospital buildings for the benefit of patients, relatives, and staff.

References
Aripin, S. (2006) 'Healing architecture: A study on the physical aspects of healing environment in hospital design', *40th Annual Conference of the Architectural Science Association* (ANZAScA), (Weber 1995), pp. 342–349. Available at: http://anzasca.net/wp-content/uploads/2014/08/ANZAScA2006_Srazali-Aripin.pdf.
Fancourt, D. and Finn, S. (2019) What is the evidence on the role of the arts in improving health and well-being? A scoping review. Copenhagen.

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Prolapsoperationer i lokalanæstesi – kan ambulante patientforløb optimeres ved at undgå rus som bedøvelsesmetode?

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Baggrund
Et stigende antal gynækologiske procedurer udføres ambulant i lokalanæstesi (LA). Lokalanæstesien kan suppleres med rus, som dog kræver flere ressourcer og potentielt kan udløse alvorlige bivirkninger. Formålet er at undersøge, om der er forskel i den patientoplevede kvalitet ved operationer for vaginalprolaps foretaget i LA, sammenlignet med samme procedure foretaget i LA/rus. Samtidigt ønsker vi at undersøge, om der er forskel i den samlede mængde lokalanæstesi anvendt i de to grupper.

Metoder
Kvinder under 75 år med vaginalprolaps blev inkluderet i projektet. Patienterne blev ikke randomiseret, studiet var ikke blændet. Kvinderne udfyldte et spørgeskema postoperativt.

Resultater
12 kvinder blev opereret i LA, 8 i LA /rus. En større andel af kvinderne opereret i LA/rus, havde ingen smerter under indgrebet (50% vs. 17%) og 2 timer post-operativt (75% vs. 50%) sammenlignet med kvinderne opereret i LA. Den præoperative analgetiske behandling var ens i begge grupper. 25% af kvinderne opereret i LA var meget utilfredse med forløbet. De resterende kvinder i begge grupper var meget tilfredse. Alle kvinderne ville vælge samme bedøvelsesmetode igen. Der blev anvendt en betydeligt mindre mængde LA i LA-gruppen vs. LA/rus-gruppen (18 vs. 28mL).

Konklusion
Indgreb foretaget i LA/rus, sammenlignet med LA alene, resulterede i mindre per- og post-operative smerter og en større andel tilfredse patienter. Alle patienter ville dog vælge samme metode igen. Dog blev der anvendt en markant højere LA dosis i gruppen med rus. Et nyt randomiseret studie med fokus på LA-dosis og eventuelt afledende procedurer (f.eks. VR-briller) kunne være relevant at gennemføre.

PROLAPSOPERATIONER I LOKALANÆSTESI - KAN AMBULANTE PATIENTFORLØB OPTIMERES VED AT UNDGÅ RUS SOM BEDØVELSESMETODE?

KANUTTE NORDERUD 1,LOUISE THOMSEN SCHMIDT ARENHOLT 1,2,3, CONSTANZE MERKEL 1

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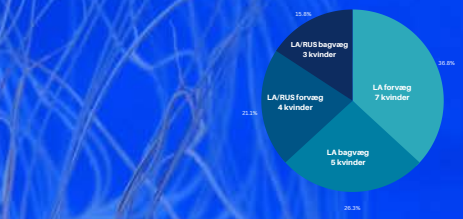
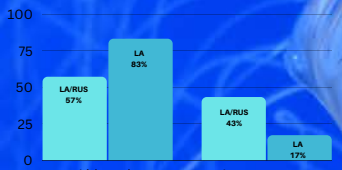
BAGGRUND:
ET STIGENDE ANTAL GYNÆKOLOGISKE PROCEDURER UDFØRES AMBULANT I LOKALANÆSTESI (LA). LOKALANÆSTESIEN KAN SUPPLERES MED RUS, SOM DOG KRÆVER FLERE RESSOURCER OG POTENTIELT KAN UDLØSE ALVORLIGE BIVIRKNINGER. FORMÅLET ER AT UNDERSØGE, OM DER ER FORSKEL I DEN PATIENTOPLEVEDE KVALITET VED OPERATIONER FOR VAGINALPROLAPS FORETAGET I LA, SAMMENLIGNET MED SAMME PROCEDURE FORETAGET I LA/RUS. SAMTIDIGT ØNSKER VI AT UNDERSØGE, OM DER ER FORSKEL I DEN SAMLEDE MÆNGDE LOKALANÆSTESI ANVENDT I DE TO GRUPPER.

METODER:
KVINDER UNDER 75 ÅR MED VAGINALPROLAPS BLEV INKLUDERET I PROJEKTET. PATIENTERNE BLEV IKKE RANDOMISERET, STUDIET VAR IKKE BLÆNDET. KVINDERNE UDFYLDTE ET SPØRGESKEMA POSTOPERATIVT.

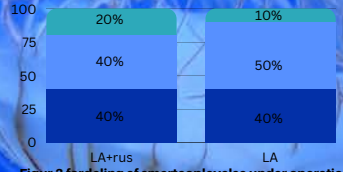
RESULTATER:
12 KVINDER BLEV OPERERET I LA, 7 KVINDER I LA /RUS. DER VAR INGEN SIGNIFIKANT FORSKEL I GENNEMSNITSALDER (LA 57 ÅR VS. LA/RUS 61 ÅR, P=0,37) OG OPERATIONSTYPER (FIGUR 1)
DEN SMERTESTILLENDE BEHANDLING FORUD FOR OPERATION VAR ENS I BEGGE GRUPPER.EN STØRRE ANDEL AF KVINDERNE OPEREERET I LA/RUS, HAVDE INGEN SMERTER UNDER INDGREBET (FIGUR 2) OG 2 TIMER POST-OPERATIVT (FIGUR 3)
SAMMENLIGNET MED KVINDERNE OPEREERET I LA. FORDELING AF SMERTEOPLEVELSE I OPERATIONSFORLØBET VISES I FIGUR 4. ALLE KVINDERNE VILLE VÆLGE SAMME BEDØVELSESMETODE IGEN. DER ER INGEN SIGNIFIKANT FORSKEL I MÆNGDE AF LOKALANÆSTESI SOM BLEV BRUGT UNDER OPERATION (LA- GRUPPE: MEDIAN 16,5 ML (10 ML-38 ML)VS. LA/RUS GRUPPE: (MEDIAN 18,5 ML(10 ML-50 ML) P=0,55)



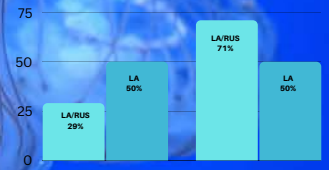
Figur 1 fordeling af operationstyper i forhold til anæstesimetode



Figur 2 kvindernes vurdering af smerter under indgrebet ingen signifikant forskel mellem grupperne p=0,31



Figur 3 fordeling af smerteoplevelse under operation



Figur 4 gennemsnitlige smerte oplevelse i de første 2 timer efter operation ingen signifikant forskel mellem grupperne p=0,62

KONKLUSION:
INDGREB FORETAGET I LA/RUS, SAMMENLIGNET MED LOKALANÆSTESI ALENE VISER INGEN SIGNIFIKANT FORSKEL I OPLEVELSEN AF SMERTER UNDER OPERATION. ALLE PATIENTER VILLE VÆLGE SAMME METODE IGEN. DER BLEV IKKE REGISTRERET ET SIGNIFIKANT HØJER DOSIS LOKALANÆSTESI I EN AF GRUPPERNE. I ET NYT RANDOMISERET STUDIE MED FOKUS PÅ LA-DOSIS OG EVENTUELT AFLEDENDE PROCEDURER (F.EKS. VR-BRILLER) FOR AT MINIMERE SMERTEOPLEVELSE I LOKALANÆSTESI GRUPPEN KUNNE VÆRE RELEVANT AT GENNEMFØRE.

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Cervixdysplasi – er det et problem for patienten?

Eva Damsgaard[*1], Mona Kyndi Pedersen[2,3], Tina Heilesen[1], Louise Thomsen Schmidt Arenholt[1,2,3]

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**Deltager i Forskningskursus 2022 ved Regionshospital Nordjylland*

Baggrund

I Danmark konstateres årligt ca. 330 tilfælde af cervix cancer, hvoraf ca. 100 kvinder dør. Forstadiet til cervix cancer kaldes cervixdysplasi og tilskrives infektion med Human Papillomavirus. I Danmark konstateres årligt ca. 15.000 tilfælde af cervixdysplasi. Ved svær dysplasi, tilbydes patienterne konisatio hvor dysplasien fjernes ved operation. På Ambulatorium for Kvindesygdomme, Gynækologi og Fødsel, Regionshospital Nordjylland er ventetiden fra cervixcytologi til konisatio op mod 20 uger. Vi oplever at patienter med cervixdysplasi ofte er bekymrede og at deres viden om dysplasi samt Human Papillomavirus er varierende. Formålet med undersøgelsen er at få indsigt i patienternes oplevelse af udredningen og behandlingen, og om der er sammenhæng mellem informationsniveauet, ventetiden og patienternes bekymring.

Metoder

Dataindsamlingen foregår ved hjælp af 1) et spørgeskema, der udsendes til 30 patienter, der skal have foretaget konisatio, 2) individuelt dybdegående kvalitativt interview blandt 4 patienter. Spørgeskema udsendes ca. 1 uge før operation og interviewet foregår efter operationen.
Patienter til interview udvælges med henblik på at inddrage både yngre og ældre deltagere.

Resultater

Foreløbige resultater forventes at kunne præsenteres ved symposiet.

Konklusion

Resultaterne fra undersøgelsen vil give indsigt i patienternes oplevelse af forløbet, niveau af bekymring over deres sygdom samt identificere faktorer som kunne give anledning til bekymring. Resultaterne vil danne grundlag for at tilpasse afdelingens tilbud til patienter, som skal have foretaget konisatio, således mest optimale patientforløb etableres.

Cervix dysplasi
- er det et problem for patienten?

Æv Æv Æv.... Så har jeg kontaktblødninger igen – og jeg ved helt sikkert, hvad det betyder....

Baggrund
I Danmark konstateres årligt ca. 330 tilfælde af cervix cancer, hvoraf ca. 100 kvinder dør.
Forstadiet til cervix cancer kaldes cervix dysplasi og tilskrives infektion med Human Papilloma Virus.
Der konstateres årligt ca. 15.000 tilfælde af cervix dysplasi i Danmark.
Ved svær dysplasi, tilbydes patienterne konisatio, hvor dysplasien fjernes ved operation.
På Ambulatorium for Kvindesygdomme, Gynækologi og Fødsel, Regionshospital Nordjylland er ventetiden fra cervix cytologi til konisatio op mod 20 uger.
Vi oplever, at patienter med cervix dysplasi ofte er bekymrede og at deres viden om dysplasi samt Human Papilloma Virus er varierende.

Formål
Formålet med undersøgelsen er at få indsigt i patienternes oplevelse af information, udredning og behandling, og om der er sammenhæng mellem informationsniveauet, ventetiden og patienternes bekymring.

Jeg hader ventetid på prøvesvar – De tanker, der farer gennem mit hoved....

Metode
Dataindsamlingen foregår ved hjælp af
1) Spørgeskema, der udsendes til 30 patienter, der skal have foretaget konisatio.
2) Individuelt dybdegående kvalitativt interview blandt 4 patienter.
Spørgeskema udsendes ca. 1 uge før operation og interview foregår efter operationen.
Patienter til interview udvælges med henblik på at inddrage både yngre og ældre deltagere.

Jeg har fået svar, men jeg blev ikke klogere af at snakke med lægen andet end at de har sendt henvisning til Gyn

Resultater
Foreløbige resultater forventes at kunne præsenteres ved symposiet.

Konklusion
Resultaterne fra undersøgelsen vil give indsigt i patienternes oplevelse af forløbet, niveau af bekymring over deres sygdom samt identificere faktorer, som kunne give anledning til bekymring.

Resultaterne vil danne grundlag for at tilpasse afdelingens tilbud til patienter, som skal have foretaget konisatio, således at det mest optimale patientforløb etableres.

Så skal jeg til tjek i morgen efter keglesnit for 6 måneder siden. Jeg er vanvittig nervøs. Hvordan tackler jeg nervøsiteten?

Eva Damsgaard[1], Mona Kyndi Pedersen[2,3], Tina Heilesen[1], Louise Thomsen Schmidt Arenholt[1,2,3]

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The use of and knowledge about dietary and herbal supplements among gynecological patients

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Background
The use of dietary and herbal supplements (DHS) has increased. However, limited regulations of DHS make it difficult for healthcare providers to keep track of their patients' use of DHS. This study aimed at investigating the prevalence of DHS use among gynecological patients and to achieve a deeper understanding of their personal thoughts, behaviors, and reasons concerning the use of DHS.

Methods
Women, visiting the gynecological outpatient clinic, filled out a questionnaire concerning the use of DHS. To complement the questionnaire, a group of women was invited to participate in a semi-structured interview.

Results
In total, 239 were included. Overall, 81% of the women used DHS. However, only 29% of DHS users had discussed the use with their general practitioner (GP). The most common supplements were multivitamins (45%), vitamin D (44%), calcium (35%), magnesium (31%), and fish oil (29%). Women above the age of 50 used four or more supplements more commonly than younger women. The participants of the interviews (n=4) had a thorough knowledge of the DHS they used. The women had a positive attitude towards DHS and found it safe and less harmful compared to conventional medicine. However, some expressed skepticism about the effect.

Conclusion
The use of DHS is common among gynecological patients and is a well-considered and established part of their daily routine. A good doctor-patient relationship and open-minded GPs are important to the women. However, few discuss the use of DHS with their GP, which may be problematic due to interaction with conventional medicine.

THE USE OF AND KNOWLEDGE ON DIETARY AND HERBAL SUPPLEMENTS AMONG GYNECOLOGICAL PATIENTS

Janni Kristensen[1,2], Chi Tuyet Nguyen[1,2], Emma Elisabeth Skovby Petersen[1,2], Ida Sofie Skovby Petersen[1,2], Annemarie Brusen Villadsen[2,3], Mona Kyndi Pedersen[2,3], Louise Thomsen Schmidt Arenholt[2,3,4]

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[4] *Department of Gynecology and Obstetrics, North Denmark Regional Hospital, Denmark*

Background

The use of dietary and herbal supplements (DHS) has increased. However, limited regulations of DHS make it difficult for healthcare providers to keep track of their patients' use of DHS. DHS can also be problematic due to side effects and interactions with conventional medicine.

This study aimed at investigating the prevalence of DHS use among gynecological patients and to achieve a deeper understanding of their personal thoughts, behaviors, and reasons concerning the use of DHS.

Methods

Women, visiting the gynecological outpatient clinic, filled out a questionnaire concerning the use of DHS. To complement the quantitative data gained from the questionnaire, qualitative methods consisting of semi-structured interviews were included. This was done in order to explore a deeper understanding on the use of DHS and to identify the participants' knowledge, attitudes, and practices concerning this supplement consumption.

Results

239 women were included in the questionnaire. Overall, 81% of the women used DHS. Most commonly used DHS are shown in Figure 1. A significantly (p=0.047) higher number of supplements were used in the group above 50. However, only 29% of DHS users had discussed the use with their general practitioner (GP). The participants of the interviews (n=4) had a thorough knowledge of the DHS they used and a positive attitude towards DHS and found it safe and less harmful compared to conventional medicine (see quote below). However, some also expressed skepticism about the effect of DHS.

Discussion

Reasons behind either consulting or not consulting healthcare providers concerning the use of DHS were many. However, the use of DHS is important to acknowledge and establish so both the consumers/patients and healthcare providers can be aware of for instance possible interactions or adverse effects. To this, further studies on this topic might be beneficial to highlight its importance and to minimize the lack of communication between consumers and healthcare providers.

Conclusion

The use of DHS is common among gynecological patients and is a well-considered and established part of their daily routine. A good doctor-patient relationship and open-minded GPs are important to the women. However, few discuss the use of DHS with their GP, which may be problematic due to interaction with conventional medicine.

"I have this idea that it's better to take some supplements than all that medicine, which I've never liked (...) But it [dietary supplements and herbal medicine] isn't something I'm afraid of taking at all, I would rather take herbal medicine instead of all that medicine [conventional medicine], which I think have many side effects"

Most Commonly Used Dietary Supplements among Participants under and above 50 Years of Age

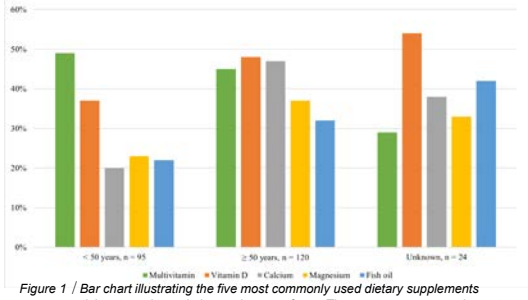

Figure 1 / Bar chart illustrating the five most commonly used dietary supplements among participants under and above 50 years of age. The most common supplements were multivitamins (45%), vitamin D (44%), calcium (35%), magnesium (31%), and fish oil (29%). Women above the age of 50 used calcium (p<0.001) and magnesium (p=0.033) more commonly than younger women.

Number of Dietary and Herbal Supplements among Participants under and above 50 Years of Age

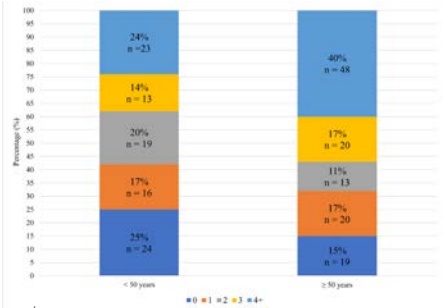

Figure 2 / Bar chart showing the number of dietary and herbal supplements used by each participant for both participants under and above 50 years of age. Women above the age of 50 used four or more supplements more commonly than younger women (p=0.047).

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Patienters oplevelse af Virtual Reality (VR)-briller under udvalgte gynækologiske undersøgelser og indgreb

Louise Thomsen Schmidt Arenholt[1,2,3], Mathilde Holmskov[1], Kanutte Norderud[1], Constanze Merkel[1]

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Baggrund
På grund af risiko for komplikationer ved generel anæstesi, er der gennem de senere år sket et skift således at flere og flere gynækologiske indgreb foretages i lokalbedøvelse. Under lokalbedøvelse er kvinderne vågne, hvilket øger risikoen for nervøsitet, smerte og ubehag.
Anvendelse af VR-briller, hvor man ved hjælp af lyd og billeder distraherer og afleder patienten, har vist sig effektiv til at lindre smerte under mindre mave-tarm kirurgiske indgreb. Der mangler dog viden om effekten af VR-briller under gynækologiske indgreb. Formål med projektet er derfor at undersøge, om brugen af VR-briller under udvalgte gynækologiske indgreb i lokalbedøvelse kan mindske patientens oplevelse af smerter. Ligeledes ønsker vi at undersøge, om brug af VR-briller kan nedsætte operationstiden, blødningsmængden, behovet for smertelindring under indgrebet samt bedre den samlede patientoplevelse.

Metoder
Der planlægges inklusion af 120 kvinder til dette randomiserede ikke-blindede studie. Følgende indgreb er valgt: keglesnitsoperation, mini-kikkert undersøgelse af livmoderen samt operationer for nedsynkning af skedevæggen. Oplysninger vedrørende almindelige demografiske data fra kvinderne samt forventninger til operationen og smerter indhentes ved hjælpe af spørgeskema forud for og lige efter indgrebet, ligesom information om selve indgrebet registreres af personalet på operationsstuen.

Resultater
Der foreligger endnu ingen resultater.

Konklusion
Vi forventer at anvendelse af VR-briller kan nedsætte kvindernes opfattelse af smerte samt bedre den samlede patientoplevelse. Ved anvendelse af VR-briller vil man fremadrettet muligvis kunne udføre flere gynækologiske indgreb i lokalbedøvelse.

Patienters oplevelse af Virtual Reality (VR)-briller under udvalgte gynækologiske undersøgelser og indgreb

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Ved anvendelse af generel anæstesi er der risiko for komplikationer. Gennem de senere år er der derfor sket et skift således at flere og flere gynækologiske indgreb foretages i lokalbedøvelse. Under lokalbedøvelse er kvinderne vågne, hvilket øger risikoen for nervøsitet, smerte og ubehag.
Anvendelse af VR-briller, hvor man ved hjælp af lyd og billeder (f.eks. svømmende delfiner) distraherer og afleder patienten, har vist sig effektiv til at lindre smerte under mindre mave-tarm kirurgiske indgreb. Der mangler dog viden om effekten af VR-briller under gynækologiske indgreb.

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Cesarean scar endometriosis - a retrospective study and assessment of cause, investigation and treatment

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1. Department of Obstetrics and Gynaecology, North Denmark Regional Hospital, Denmark
2. Department of Clinical Medicine, Aalborg University, Denmark
3. Centre for Clinical Research, North Denmark Regional Hospital, Denmark

Background
Abdominal wall endometriosis (AWE) refers to endometrial tissue embedded in the subcutaneous tissue of the abdominal wall. Cesarean scar endometriosis (CSE) is defined as AWE, located in the scar tissue after cesarean section (CS). CSE is a rare disease, and is reported to occur in 0.03-1% of women who have undergone a CS. CSE is associated with symptoms such as pelvic pain together with a painfull mass in the surgical scar. In this study, we aim to provide pathophysiological information concerning CSE, by looking at the characteristics of patients developing this disease, their symptoms, presentation and diagnosis. Furthermore, we intend to examine the pathoanatomical findings, as well as the effect of surgical resection and post-operative follow up.

Methods
In this retrospective study, we included patients surgically treated for CSE at North Denmark Regional Hospital between 2001 and 2022. From medical records we collected information on patients clinical- and cesarean section characteristics, time of presentation, diagnostic techniques, surgical treatment and follow up. Additionally, we plan to include a control group of patients who had undergone a cesarean section in the same time period but without CSE to compare cesarean section characteristics to identify potential risk of developing CSE.

Results
Results are still pending.

Conclusion
We expect that our results will contribute to the understanding of the pathophysiology of CSE and to help improve the diagnosis of the disease.

CESAREAN SCAR ENDOMETRIOSIS

-A RETROSPECTIVE STUDY AND ASSESMENT OF CAUSE, INVESTIGATION AND TREATMENT

Ingvild Olsen[1,2] • Hanna Halkjelsvik[1,2] • Olena Donchulyensko[1] • Louise Arenholt[1-3]

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[2]Department of Clinical Medicine, Aalborg University, Denmark
[3]Centre for Clinical Research, North Denmark Regional Hospital, Hjoerring, Denmark

INTRODUCTION

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Discharge time after birth is associated with parity – a retrospective cohort study

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2. Department of Cardiology, Aalborg University Hospital, Denmark
3. Department of Clinical Medicine, Aalborg University, Denmark

Background
All healthy mothers with uncomplicated births are recommended to be discharged directly from the labour ward a few hours after birth as a change in practice in three hospitals in Denmark. Despite this practice, there is limited knowledge about when mothers leave the hospital after birth in clinical practice. The aim of the study was to To examine the association between discharge time and parity.

Methods
This retrospective study is based on data from the North Denmark Regional Hospital and included mothers giving birth from 25 March 2019 to 10 April 2021.

Results
A total of 1990 mothers were included. Nearly 50% of the new mothers stayed at the hospital less than six hours after birth (26% of primiparous women vs 64% of multiparous women). Primiparous women had an adjusted RR 0.44 (95% CI 0.39-0.49) for discharge ≤ 6 hours, RR 1.71 (95% CI 1.15-2.54) for discharge >6-12 hours, and RR 3.76 (95% CI 3.03-4.67) for discharge >48 hours after birth compared to multiparous women. Multiparous women's adjusted RR for discharge >6-12 hours was 0.15 (95% CI 0.12-0.20) and for discharge >48 hours 0.16 (95% CI 0.14-0.20) compared to discharge less than six hours after birth. Furthermore, smoking, low education level, and younger age were associated with early discharge.

Conclusion
Maternity wards should allocate resources that support inpatient care more than six hours after birth to half of the new mothers. In addition, health care professionals should be aware of mothers discharged early who are smoking, of younger age, lower education level or multiparity.

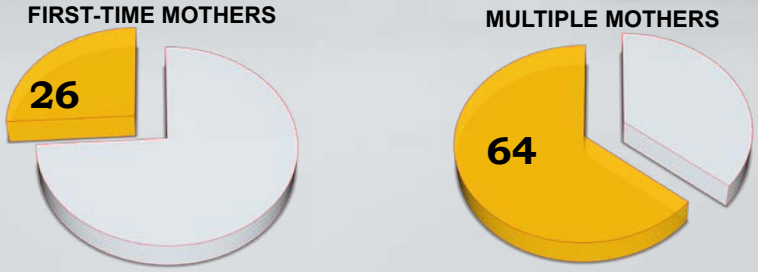
Discharge time after birth is associated with parity

- A retrospective cohort study

Victoria Lindblad[1] • Kristian Hay Kragholm[2] • Anya Eidhammer[1] • Dorte Melgaard[1,3]

[1]Department of Gynecology and Obstetrics, North Denmark Regional Hospital, Hjoerring [2] • Unit of Clinical Biostatistics and Epidemiology and Department of Cardiology, Aalborg University Hospital, Aalborg • [3]Centre for Clinical Research, North Denmark Regional Hospital, Hjoerring

Where Do I Sleep Tonight?



Percent of mothers discharged within six hours after birth

Background

- Since 2018, for all healthy mothers with uncomplicated births, health care professionals have recommended they be discharged directly from the labour ward a few hours after birth, as a change in three hospitals in Denmark.
- There is limited knowledge about when mothers leave the hospital after birth in clinical practice in a setting where discharge is recommended a few hours after an uncomplicated birth.

Objective

- To examine the association between discharge time and parity.

Methods

- This retrospective study is based on data from the North Denmark Regional Hospital and included mothers giving birth from March 25 2019 to April 10 2021.

Results

- A total of 1990 mothers were included.
- Nearly 50% of the new mothers were discharged from the hospital within six hours after birth (26% of primiparous women vs 64% of multiparous women).
- Primiparous women had an adjusted RR 0.44 (95% CI 0.39-0.49) for discharge ≤ 6 hours, RR 1.71 (95% CI 1.15-2.54) for discharge >6-12 hours, and RR 3.76 (95% CI 3.03-4.67) for discharge >48 hours after birth compared to multiparous women.
- Multiparous women's adjusted RR for discharge >6-12 hours was 0.15 (95% CI 0.12-0.20) and for discharge >48 hours 0.16 (95% CI 0.14-0.20) compared to discharge less than six hours after birth.
- Furthermore, smoking, low education level, and younger age were associated with early discharge.

Conclusion

- More primiparous women are assessed as requiring a hospital stay after birth than multiparous women
- Maternity wards should allocate resources that support inpatient care to more than six hours after birth to half of the new mothers.
- Health care professionals should be aware of mothers discharged early who are smoking, of younger age, lower education level or multiparity.

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Short-term prognosis of changes in plasma potassium following an episode of hyperkalaemia in patients with chronic heart failure

Sofie Solhøj Jønsson[1*], Sofie Amalie Sørensen[1*], Sidse Thim Krøgh[1*] Mette Aldahl[4], Dorte Melgaard[2,3], Christian Torp-Pedersen, Peter Søgaard[4], Marc Meller Søndergaard[4], Peter Derek Christian Leutscher[2,3], Kristian Kragholm[4], Maria Lukács Krogager[4]

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2. Centre for Clinical Research, North Denmark Regional Hospital, Denmark
3. Department of Clinical Medicine, Aalborg University, Denmark
4. Department of Cardiology, Aalborg University Hospital, Denmark

**First authors*

Background
There is an increasing prevalence of chronic heart failure (HF). It is well known that patients with HF and disturbances in the potassium level have an increased mortality risk. The aim of this study was to investigate the prognosis of a second plasma-potassium measurement after an episode with hyperkalaemia on short-term mortality in patients with chronic HF.

Methods
From Danish national registers, 2,339 patients with chronic HF and hyperkalaemia (>4.6 mmol/L) at first potassium measurement within 14 - 365 days from concomitant treatment, were identified. To be included, a second measurement was required within 6-30 days subsequent to the first measurement and the 60-day mortality was observed. Based on the second measurement, the patients were divided into five groups: <3.5 mmol/L (n=257), 3.5-4.0 mmol/L (n=709), 4.1-4.6 mmol/L (n=1,204, reference), 4.7-5.0 mmol/L (n=89) and >5.0 mmol/L (n=80). To assess all-cause and cardiovascular mortality we used Cox regression model.

Results
The multivariable analysis showed that patients with potassium concentrations <3.5 mmol/L (hazard ratio (HR): 3.03; 95% CI: 2.49-3.70) and 3.5-4.0 mmol/L (HR: 1.81; 95% CI: 1.54-2.14) had a significant worse prognosis compared to the reference. We observed similar results when calculating the risk of cardiovascular mortality. A restricted cubic spline curve showed a U-shaped relationship between plasma-potassium and all-cause mortality.

Conclusion
Patients with chronic HF and hyperkalaemia who became hypokalaemic after 6-30 days had a significantly increased 60-day all-cause and cardiovascular mortality compared to the reference. This also applied for patients with low normal potassium concentrations (3.5-4.0 mmol/L).

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[1]Department of Health, Science, and Technology, Aalborg University, Aalborg, Denmark
[2]Centre for Clinical Research, North Denmark Regional Hospital, Hjoerring, Denmark
[3]North Denmark Regional Hospital, Hjoerring, Denmark
[4]Department of Clinical Medicine, Aalborg University, Aalborg, Denmark
[5]Department of Cardiology, Aalborg University Hospital, Aalborg, Denmark
[6]Department of Cardiology, Nordsjaellands Hospital, Hillerød, Denmark
[7]Department of Public Health, University of Copenhagen, Denmark

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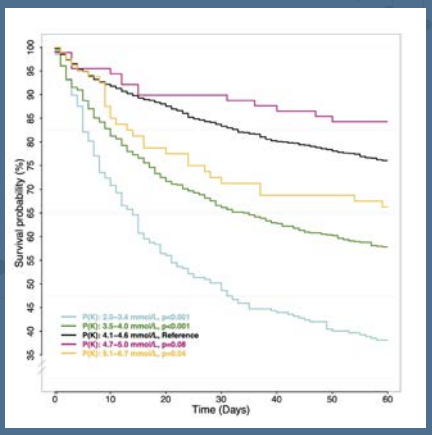

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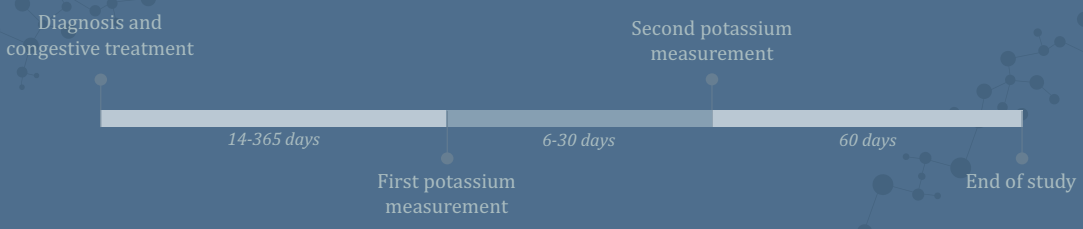

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Involvement of relatives – an observational study in a hospital context

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**Participant in the North Denmark Regional Hospital Research Course 2022*

Background
Research indicates that involvement of relatives improves coping of both patients and relatives in critical situations. This study explored current involvement of relatives of hospitalized patients at a medical and a surgical ward, respectively at North Denmark Regional Hospital.

Methods
Data was collected through participant observations and individual interviews with patients, relatives, and healthcare providers using a Participatory Action Research design. Data analysis was based on the Reflexive Thematic Analysis described by Braun & Clarke.

Results
The preliminary findings cover the following themes: *Barriers and enablers for the involvement of relatives, Various roles of relatives*, and *Different approaches for interaction between relatives and healthcare providers*. Healthcare providers' attitudes towards involvement as well as the organizational structure at the wards influenced the approach of how to involve relatives. Relatives experienced shifting roles and levels of involvement.

Conclusions
This study has contributed with knowledge on current involvement of relatives in a hospital context. Healthcare providers used different methods to involve relatives and various circumstances either complicated or promoted the level of involvement. The next study will expand on preliminary findings, using a participatory research design and user involvement process to investigate how to further develop current practices of involvement of relatives from the perspective of patients, relatives, and healthcare providers.

INVOLVEMENT OF RELATIVES

– AN OBSERVATIONAL STUDY IN A HOSPITAL CONTEXT

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3. Department of Nursing, University College of Northern Denmark, Denmark
4. Department of Orthopedic Surgery, Aalborg University Hospital (North Denmark Regional Hospital), Denmark

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A bibliometric analysis of publications from 2021 from the North Denmark Regional Hospital

Maria Pertou Østergaard[1], Pernille Skou Gaardsted[1]

1. Medical Library, Aalborg University Hospital, Denmark

Background
The aim of this bibliometric analysis is to map the scientific landscape and find trends and correlations in publications from North Denmark Regional Hospital (NDRH) published in 2021.

Methods
A search for publications affiliated to NDRH, limited to year 2021, was run in the bibliographic database Scopus. The search result was exported to SciVal, which is developed to evaluate research activities. Additionally, the search result was exported to VOSviewer, a software tool for visualising bibliometric networks.

Results
58 publications were affiliated to NDRH in 2021 in Scopus, continuing a trend of a yearly increase in the number of publications. The research was published in a diverse range of journal topics. The five most prominent research fields are epidemiology, orthopedics, COVID-19, cardiology and microbiota. The top 3 most cited publications cover subjects related to COVID-19.
More than 50 % of the publications were published in top 25 % Journals based on CiteScore.
The field-weighted citation impact of the publications was 2.67 which indicates that the publications have been cited 167% more that the global average.
International co-authorship has a noticeable effect on number of citations per publication. 10.3 citations on average versus 5.5 citations for publications with national collaboration.
Open access (OA) publications receive almost twice as many citations as publications that are not OA.

Conclusion
This bibliometric analysis shows that international co-authorships, OA publishing and research in a subject with international attention and impact such as COVID-19 seems to have a positive effect on the number of citations received.

A Bibliometric Analysis of Publications from 2021 from the North Denmark Regional Hospital

Maria Pertou Østergaard[1] • Pernille Skou Gaardsted[1]
[1]*Medical Library, Aalborg University Hospital, Aalborg, Denmark*

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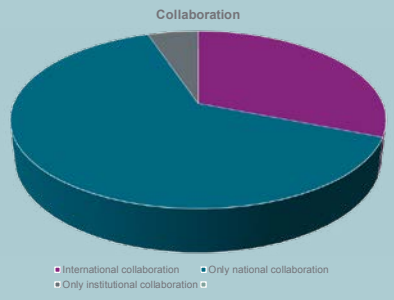

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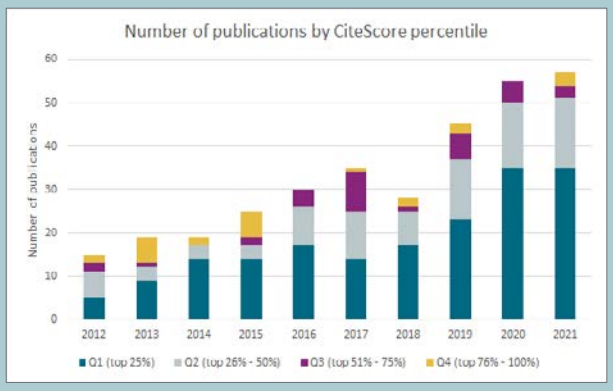
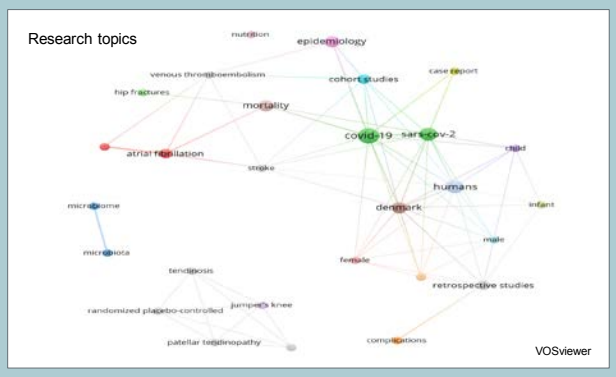
- ☑ OA publishing
- ☑ International co-authorships
- ☑ Popular research topic

= More citations





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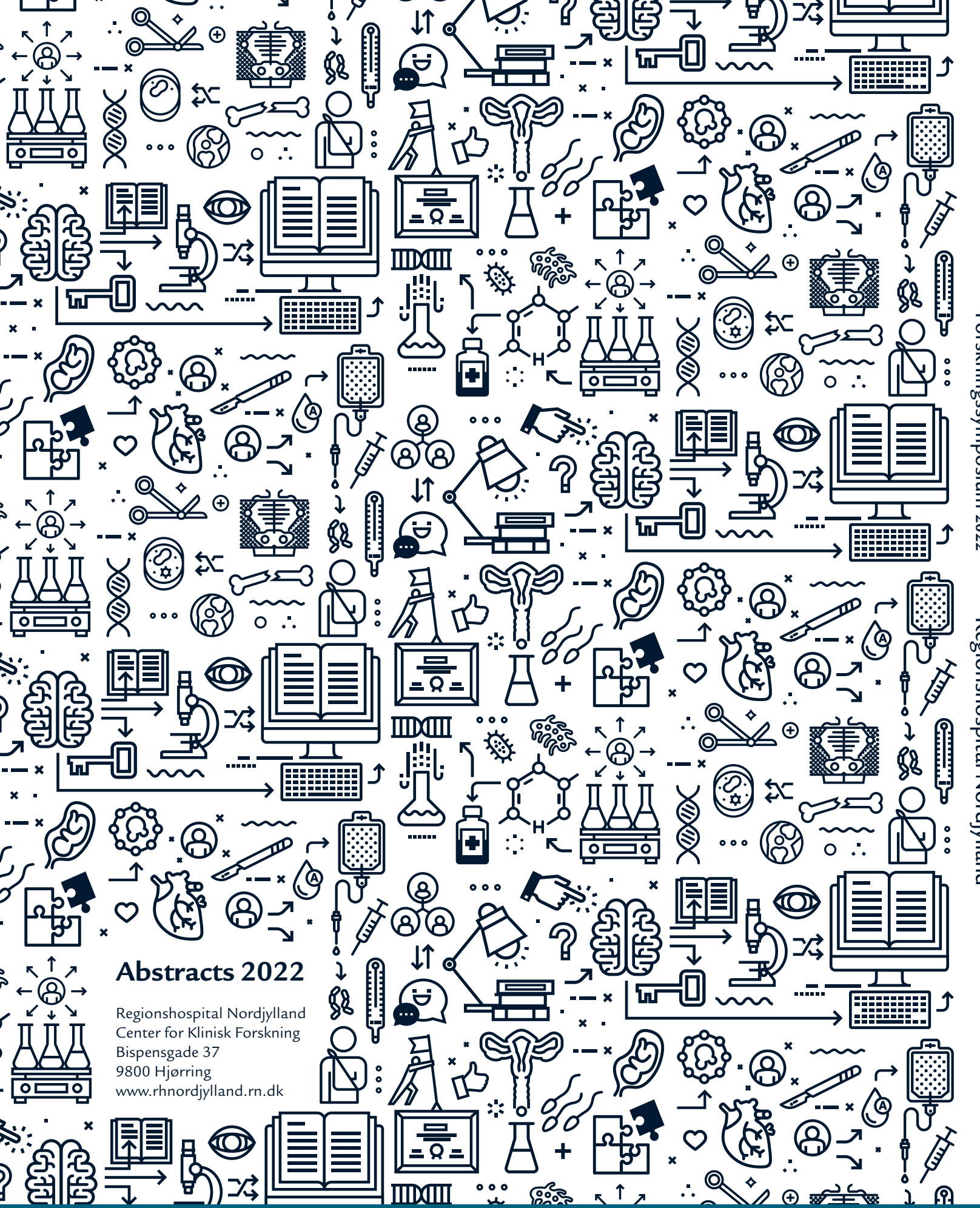

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