



En portefølje af sundhedsfaglig forskning og udvikling ved Regionshospitalet Nordjylland



REGIONSHOSPITAL
NORDJYLLAND

AALBORG
UNIVERSITET

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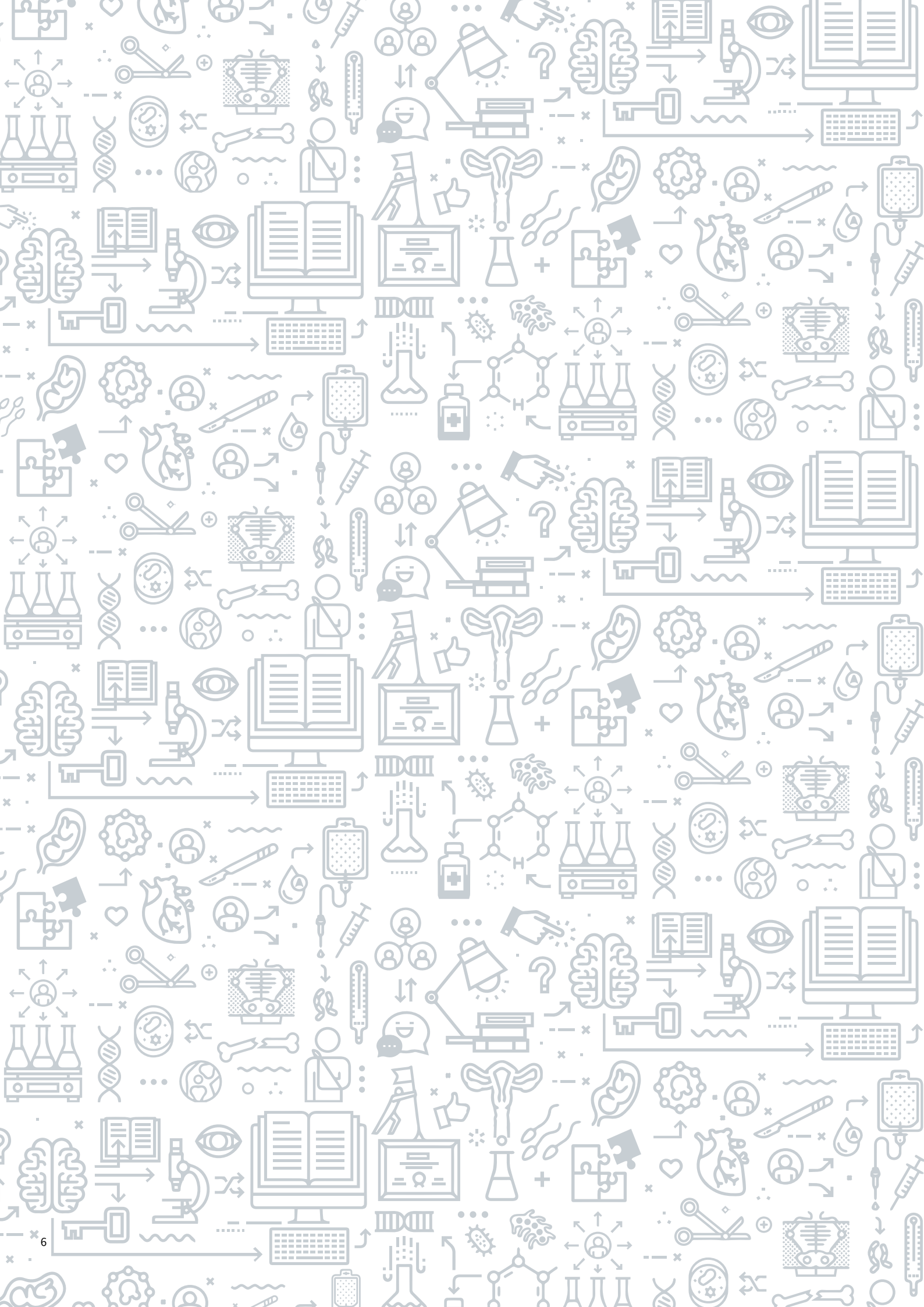
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Forord

Traditionen tro afholdes *Symposium for Klinisk Forskning og Udvikling* på Regionshospitalet Nordjylland (RHN) den første torsdag i november.

Første gang symposiet så dagens lys var i 2016. Baggrunden for dette initiativ var en erkendelse af, at regionshospitalet havde brug for et fælles forum til vidensformidling og dialog i forhold til de forskellige kliniske forsknings- og udviklingsaktiviteter, der udfolder sig i regi af RHN.

I 2016 indgik der 12 abstracts i symposiet, og antallet er støt og roligt steget i årenes løb. I 2024 nåede antallet op på 72, og i år er det steget yderligere til 89. Ganske imponerende hvad der præsteres af klinisk forskning og udviklingsprojekter på RHN. Medvirkende til denne yderligere fremgang er, at symposiet nu i højere grad også favner det sundhedsfaglige uddannelsesområde. Og det giver god mening – netop fordi klinisk forskning, udvikling og uddannelse er tæt samhörige.

En gennemgående ledetråd i de mange projektaktiviteter har i høj grad været drevet af en afsøgende nysgerrighed i forhold til gængs praksis og virke på regionshospitalet. Dette har ikke alene været til gavn for patienter og borgere med henblik på et sundere liv i det nordjyske, men også for medarbejdere i den kontinuerlige proces omkring sundhedsfaglig læring og kompetenceudvikling.

Det danske sundhedsvæsen er i konstant udvikling og sundhedsreformen medfører strategiske og organisatoriske forandringer med omstilling til det nære sundhedsvæsen, implementering af ny teknologi og digitalisering mm. Forandringer der påvirker såvel sundhedsvæsenet som uddannelsesområdet. For at komme godt i mål er der behov for prioriteringer og omstillingsparathed baseret på et solidt informeret grundlag. Derfor er der brug for en analytisk tilgang og tæt monitorering af de iværksatte forandringsprocesser, med det formål at evaluere på om de givne målsætninger bliver indfriet og at sikre fastholdelse af kvaliteten i det danske sundhedsvæsen. I dette scenario, med behov for vidensformidling og dialog, udfylder den årlige afholdelse af RHN-symposiet en vigtig rolle.

Tak til alle der har medvirket i de mange forskellige præsenterede projekter og dermed beriget årets symposium med værdifuld viden og indsigt. Stor respekt for denne ekstraordinære indsats til at løfte RHN symposiet til hvor det er i dag. En særlig tak til Jytte Enevoldsen, Kristine Brøndby Øby og Marie-Louise Lund Søbye ved Center for Klinisk Forskning for på effektiv vis at løse de mange opgaver i forbindelse med planlægning og afholdelse af symposiet. Ligeledes en tak til Mette Henriksen ved Regionshuset for det fine arbejde med grafisk layout af Abstractbogen.

*Peter Derek Christian Leutscher, Professor
Center for Klinisk Forskning, Regionshospitalet
Nordjylland og Klinisk Institut, Aalborg Universitet*

Program

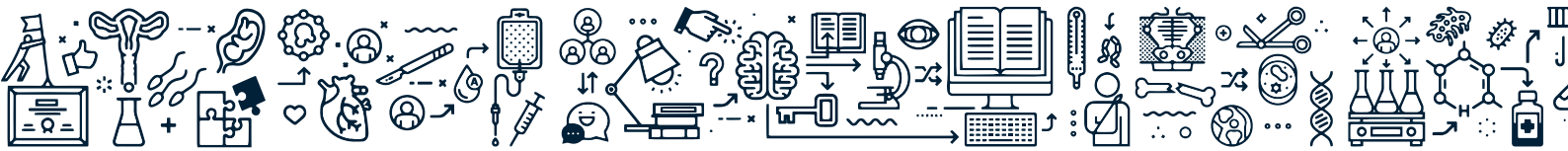
Symposium for Klinisk Forskning og Udvikling

Torsdag den 6. november 2025 – Skou Auditoriet, Regionshospital Nordjylland

- 12.00-12.45 **Poster walk**
Symposiet starter i Glasgangen, hvor det er muligt at studere postere og tale med forskerne
- 12.45-13.00 **Pause**
Alle deltagere bevæger sig til Skou Auditoriet
- 13.00-13.10 **Velkomst**
v/Peter Derek Christian Leutscher, professor, forskningschef, Center for Klinisk Forskning, Regionshospital Nordjylland
- 13.10-13.25 **Forskning og udvikling på RHN: Vejen til bedre patientbehandling**
v/Steffen Helmer Kristensen, lægefaglig direktør, Regionshospital Nordjylland
- 13.25-13.55 **Orale præsentationer del 1, moderator seniorforsker Louise T. S. Arenholt**
Deskriptiv analyse af karakteristika og sårbarheder hos patienter med dysreguleret diabetes på Regionshospital Nordjylland
v/Rebecca Bauer Tørring, Center for Klinisk Forskning, Regionshospital Nordjylland
- Vulvar lichen sclerosus as a risk factor for birth-related perineal tear: a retrospective cohort study
v/Cecilie Hagen Andersen, Afdeling for Mave- og Tarmkirurgi, Regionshospital Nordjylland og Rikke Sloth, Afdeling for Nyremedicin, Aalborg Universitetshospital
- Clinical implications of limited access to cerebral MRI as diagnostic imaging modality in assessment of patients with acute onset of focal neurological symptoms admitted to the North Denmark Regional Hospital
v/Alexander Overgaard Laugesen, Center for Klinisk Forskning, Regionshospital Nordjylland
- 13.55-14.10 **Pause**
- 14.10-14.40 **Orale præsentationer del 2, moderator seniorforsker Louise T. S. Arenholt**
The bacterial profile of gut microbiota-derived extracellular vesicles in third trimester in women with and without gestational diabetes mellitus
v/Louise Søndergaard Rold, Center for Klinisk Forskning, Regionshospital Nordjylland
- BCI-PRIME: Priming motor learning with an associative brain computer interface – perspectives for neurorehabilitation
v/Andrew J. T. Stevenson, Institut for Teknologi og Sundhedsmedicin, Aalborg Universitet, Afdeling for Neurorehabilitering, Regionshospital Nordjylland
- Udvikling af et Spørgeskema med Patient-Rapporterede Oplysninger (PRO) til patienter i Akutmodtagelsen – PROMED studiet
v/Ninna Rysholt Heiner Daugaard, Center for Klinisk Forskning, Regionshospital Nordjylland

14.40-14.50	Pause
14.50-15.35	Poster præsentationer, moderator seniorforsker Mona Kyndi Pedersen AI-sprogmodulering af lægens skriftlige ekkokardiografi svar til at fremme patientens forståelse med samtidig fastholdelse af klinisk validitet <i>v/Simon Skovgaard Sørensen, Center for Klinisk Forskning, Regionshospital Nordjylland</i> Evaluation of AI for bone fracture detection in an emergency room at the North Denmark Regional Hospital <i>v/Ida Bromell Kindberg og Christine Norup Engstrøm, Center for Klinisk Forskning, Regionshospital Nordjylland</i> Vurdering af eksekutiv funktion hos børn og unge med epilepsi – sammenligning af metoder til afdækning af eksekutive vanskeligheder hos børn og unge med epilepsi – pilotprojekt <i>v/Louise Torp Sørensen, Afdeling for Børn og Unge, Aalborg Universitetshospital</i> Characteristics of functional constipation among pediatric patients in the North Denmark Region <i>v/Emma Markmann Henneberg, Afdeling for Børn og Unge, Regionshospital Nordjylland</i> Appropriateness of surveillance colonoscopy in patients ≥ 75 years according to regional guidelines <i>v/Daniel Bornemann, Afdeling for Mave- og Tarmkirurgi, Regionshospital Nordjylland</i> Evaluating pulse wave analysis as a screening metric for cardiovascular risk in diabetes <i>v/Thomas Leck Kæseler, Center for Klinisk Forskning, Regionshospital Nordjylland</i> Unmasking tophaceous gout in patients with type 2 diabetes and foot ulcers: a proof-of-concept study using ulcer debris microscopy and imaging <i>v/Claus Rasmussen, Afdeling for Reumatologi, Regionshospital Nordjylland</i> Epidurale glukokortikoidinjektioner ved cervikal diskusprolaps med radikulopati – effektivitet og sikkerhed <i>v/Nana Babyan, Afdeling for Reumatologi, Regionshospital Nordjylland</i>
15.35-15.45	Uddeling af Regionshospital Nordjyllands Undervisnings- og uddannelsespris 2025 <i>v/Louise T. S. Arenholt, Center for Klinisk Forskning, Regionshospital Nordjylland og Line Bonderup-Knudsen, VenSim, Regionshospital Nordjylland</i>
15.45-15.55	Uddeling af Symposiepriserne Uddeles af bedømmelsesudvalget: • <i>Iben Bøgh Bahnsen, uddannelseschef, Professionshøjskolen UCN</i> • <i>Gitte Nielsen, cheflæge, Afdeling for Hjerte- Diabetes og Hormonsygdomme, Regionshospital Nordjylland</i> • <i>Niels Ejsskjær, professor, overlæge, Klinisk Institut, Aalborg Universitet, Endokrinologisk Afdeling, Steno Diabetes Center Nordjylland, Aalborg Universitetshospital</i>
15.55-16.00	Afslutning

Akut og Intensiv



Implementation of a clinical decision support system for empiric antibiotic therapy: pilot evaluation of TREAT-Essential at a Danish regional hospital

Laura Werning Uhrenholt¹, Logan Morgan Ward¹, Mads Lause Mogensen¹, Peter Derek Christian Leutscher^{2,3}, Marc Ludwig⁴

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

3. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

4. Department of Emergency Medicine, North Denmark Regional Hospital, Hjoerring, Denmark

Background

Antimicrobial resistance is a major public health challenge, and inappropriate use of broad-spectrum antibiotics is a key driver. TREAT-Essential is a clinical decision support system (CDSS) designed to optimize empiric antibiotic therapy by combining patient-specific data, local resistance patterns, and hospital guidelines. We hypothesized that implementing TREAT-Essential would reduce broad-spectrum antibiotic use while maintaining or improving empirical coverage and guideline compliance.

Methods

A pilot evaluation was conducted at the Department of Emergency Medicine, North Denmark Regional Hospital, from May to December 2024. Patients with suspected infection were included if blood cultures were obtained and antibiotic treatment initiated. Outcomes included empirical coverage of bacteremia, compliance with local antibiotic guidelines, antibiotic costs, and ecological impact (WHO AWaRe classification). Treatments recommended by TREAT were compared with those prescribed by clinicians.

Results

A total of 972 patients were included. Compared to treatments prescribed by clinicians, the CDSS recommended 58.0% fewer “Watch” antibiotics ($p<0.001$) and 66.7% more narrow spectrum “Access” drugs ($p<0.001$). For bacteremia cases, empirical coverage increased from 62.1% with clinician prescriptions to 76.7% with CDSS recommendations (+14.7%, $p<0.05$). Full compliance with local guidelines increased from 19.6% to 50.8% (+31.2%, $p<0.001$). The CDSS recommendations were also associated with 10% lower direct antibiotic costs ($p<0.05$).

Conclusions

Compared with clinician prescriptions, TREAT-Essential recommendations resulted in higher empirical coverage, fewer broad-spectrum (“Watch”) antibiotics, more narrow-spectrum (“Access”) antibiotics, and improved compliance with local guidelines.

Implementation of a Clinical Decision Support System for Empiric Antibiotic Therapy: Pilot Evaluation of TREAT-Essential at a Danish Regional Hospital

Laura Werning Uhrenholt¹, Logan Morgan Ward¹, Mads Lause Mogensen¹, Peter Leutcher², Marc Ludwig³, Ulrike Sabine Pielmeir

¹Treat Systems, Aalborg, Denmark, ²Centre for Clinical Research, North Denmark Regional Hospital, Denmark ³Emergency Department, North Denmark Regional Hospital, Denmark

Background

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TREAT-Essential is a clinical decision support system designed to optimize empiric antibiotic therapy by combining patient-specific data, local resistance patterns, and hospital guidelines.

We hypothesized that implementing TREAT-Essential would reduce broad-spectrum antibiotic use while maintaining or improving empirical coverage and guideline compliance.



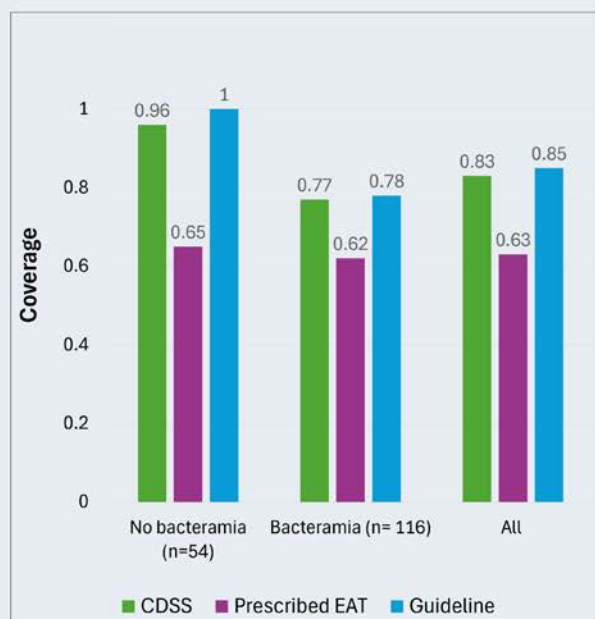
Methods

A pilot evaluation was conducted at the emergency department of Regionshospitalet Nordjylland from May to December 2024. Patients with suspected infection were included if blood cultures were obtained and antibiotic treatment initiated.

Outcomes included empirical coverage of bacteraemia, compliance with local antibiotic guidelines, antibiotic costs, and ecological impact (WHO AWaRe classification). Treatments recommended by TREAT were compared with those prescribed by clinicians.

Results

Measure	TREAT	Clinician	Difference
'Access' drugs, n	750	450	+300 (+66.7%)
'Reserve' drugs, n	0	0	0 (nan%)
'Watch' drugs, n	160	381	-221 (-58.0%)
Eco cost, €, mean	263.05	331.70	-68.65 (-20.7%)
Bacteraemia coverage, %	76.7%	62.1%	+14.7%
Full guideline compliance, n (%)	488 (50.8%)	188 (19.6%)	+31.2%
Partial guideline compliance, n (%)	160 (16.7%)	198 (20.6%)	-3.9%
Direct cost, €, mean	18.19	9.56	8.63 (90.3%)
No treatment, n	108	201	-93 (-46.3%)



Conclusions

TREAT-Essential improved empirical coverage, reduced reliance on broad-spectrum antibiotics, and increased compliance with local guidelines.

These findings suggest that CDSS-based antimicrobial stewardship interventions may provide sustainable benefits for antibiotic use in acute care while preserving treatment effectiveness.



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Clinical evaluation of Corti - AI-assisted ambient documentation in the Emergency Department at North Denmark Regional Hospital

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1. Department of Emergency Medicine, North Denmark Regional Hospital, Hjoerring, Denmark

2. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

Clinical documentation consumes substantial time in acute care pathways and reduces time for direct patient contact. Corti Assistant is a healthcare-specific ambient AI solution that listens during the consultation, transcribes, extracts clinical facts, and generates EHR-ready documents in familiar templates. The solution uses a fact-first workflow in which the clinician validates/edits facts prior to generation, with the potential to reduce after-hours work while preserving clinical control.

Methods

Prospective, 4-week clinical evaluation in the Emergency Department at North Denmark Regional Hospital in autumn 2025. Each consultation is documented in parallel using traditional charting and Corti-supported ambient capture with an automatically drafted note. An expert panel, blinded to the method, rates paired notes on a 0–10 scale for clinical accuracy/completeness, readability/structure, patient perspective, and usability. The primary endpoint is non-inferiority for overall quality rating (AI versus traditional); secondary outcomes include time per patient, the proportion of direct patient statements integrated into the note, and the need for post-encounter editing.

Perspectives

The expectation is that AI-generated notes will be at least on par with traditional notes, with reduced need for post-encounter documentation such that the note is complete upon leaving the room and with greater emphasis on patient statements. A positive evaluation could support productivity, better workflows, and more patient-centered documentation in acute clinical settings.



CLINICAL EVALUATION OF CORTI - AI-assisted ambient documentation in the Emergency Department at North Denmark Regional Hospital

Marc Ludwig^{1,2}, David Otto Sander Olsen², Marianne Pedersen², Simon Hosbond Poulsen^{1,2}

¹ Department of Clinical Medicine, Aalborg University, Denmark

² Emergency Department, North Denmark Regional Hospital, Hjørring, Denmark

Background

Clinical documentation consumes substantial time in acute care pathways and reduces time for direct patient contact. Corti Assistant is a healthcare-specific ambient AI solution that listens during the consultation, transcribes, extracts clinical facts, and generates electronic health record-ready documents in familiar templates. The solution uses a fact-first workflow in which the clinician validates/edits facts prior to generation, with the potential to reduce after-hours work while preserving clinical control.

Methods

Prospective, 4-week clinical evaluation in the Emergency Department at North Denmark Regional Hospital in autumn 2025. Each consultation is documented in parallel using traditional charting and Corti-supported ambient capture with an automatically drafted note. An expert panel, blinded to the method, rates paired notes on a 0–10 scale for clinical accuracy/completeness, readability/structure, patient perspective, and usability. The primary endpoint is non-inferiority for overall quality rating (AI versus traditional); secondary outcomes include time per patient, the proportion of direct patient statements integrated into the note, and the need for post-encounter editing.

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The expectation is that AI-generated notes will be at least on par with traditional notes, with reduced need for post-encounter documentation such that the note is complete upon leaving the room and with greater emphasis on patient statements. A positive evaluation could support productivity, better workflows, and more patient-centred documentation in acute clinical settings.

En ny verden indenfor på intensiv afdeling – den innovative patientstue

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Baggrund

Intensivafdelinger fokuserer primært på teknologisk og medicinsk behandling, mens de fysiske rammer ofte er overset. Det kan medføre isolation, forstyrret døgnrytme og øget risiko for intensivt delir hos patienter. Samtidig kan det skabe distance til pårørende og et stressende arbejdsmiljø for personalet. Projektet adresserer behovet for mere humane og restitutionsfremmende omgivelser.

Metoder

Projektet udvikler en innovativ patientstue med fokus på de fysiske rammer i den non-farmakologiske behandling af intensiv delir og PICS (*post-intensive care syndrome*). Videosekvenser og lyde fra lokalområdet integreres i rummet via projektorer i loftet og på væggen, med henblik på at skabe en nærværende atmosfære og understøtte døgnrytmen. Indholdet tilpasses individuelt til patientens præferencer og behov. Dataindsamling foregår efter ibrugtagen af stuen via kvalitative metoder. Spørgeskemaer vil blive anvendt til at indsamle data om patienters og pårørendes oplevelser af rummet, mens semistrukturerede interviews med personale vil fokusere på effekten på arbejdsmiljøet og plejeindsatsen. Analyse af data vil ske ved tematisk analyse for at identificere centrale temaer og evaluering af effekter.

Perspektiver

Det forventes med projektet at realisere fremtidens innovative patientstue på Intensiv afdeling så rummet skaber et miljø med en nærværende atmosfære, der understøtter og fremmer restitution, ro, optimering af døgnrytme og kognitiv stimulation. Der vil være fokus på at skabe en stue med inddragelse af naturen, en hjemlig og nærværende atmosfære for patienter og pårørende - samt et bedre arbejdsmiljø for personalet. Resultaterne vil blive delt på konferencer og i videnskabelige artikler. Erfaringerne fra den første stue vil desuden danne grundlag for implementering i resten af afdelingen.



”Den Innovative patientstue” - En ny verden indenfor på Intensiv afdeling

Marie Damgaard Winther¹ • Heidi Andersen¹ • Mary Kruse¹ , Niels-Erik Ribergaard¹ • Mona Kyndi Pedersen^{2,3}

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Baggrund

En intensiv afdeling er designet til at redde menneskeliv, og teknologien er essentiel i pleje og behandling for at sikre patientens overlevelse. Miljøet på intensiv er ofte beskrevet som suboptimalt for både patienter og pårørende. Man kan føle sig fremmedgjort og som patient isoleret, og det kan være svært at bevare tilknytning til virkeligheden. Intensivt delir er en kendt problematik i forbindelse med indlæggelse.

Formålet med projektet er at realisere fremtidens innovative patientstue på Intensiv afdeling så rummet skaber et miljø med en nærværende atmosfære, der understøtter og fremmer rehabilitering med inddragelse af natur, musik og meningsfuld kognitiv stimulation.

Projektet vil fokusere på rummet som en del af den non-farmakologiske behandling, herunder optimering af døgnrytme i forhold til pleje og behandling af intensivt delir og forebyggelse af PICS (post intensive care syndrome). Sygeplejen tilpasses den enkelte patient med udgangspunkt i begrebsrammen Fundamentals of Care.

Metode

Der anvendes en kvalitativ tilgang til dataindsamling i form af spørgeskemaer- og semistrukturerede interviews. Spørgeskemaer og interviews er både med patienter, pårørende samt sygeplejersker og læger.

Derudover vil materiale fra spørgeskemaer og interviews anvendes til at danne grundlag for at opnå personcentrerede og situationsorienterede løsninger til den enkelte patient og dennes pårørende.

Den Innovative patientstue har bl.a. fokus på lyde og lys. Videosekvenser og lyde fra lokalområdet vil blive vist på væggen foran patienten og i loftet over sengen.

Perspektivering

Ved realisering af den innovative patientstue forventer vi at finde positive erfaringer med at anvende innovative løsninger som en del af den non-farmakologiske pleje og behandling. Vi ønsker i fællesskab og i samarbejde med andre regionale og nationale aktører at være med til at udvikle fremtidens intensive afdelinger til gavn for patienter, pårørende og personale.

Pårørende:
”jeg var bange for at gå i vejen
for der var apparater over det
hele”

Patient:
”hele min identitet blev taget
fra mig på en eller anden
måde”



Udvikling af et spørgeskema med patient-rapporterede oplysninger (PRO) til patienter i Akutmodtagelsen – PROMED-studiet

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Baggrund

Akutmodtagelsen er ofte præget af et højt tempo, hvilket kan føre til at patientens ønsker og behov samt vigtige symptomer overses. Dette kan have uensigtsmæssige sundhedsmæssige konsekvenser samt at patienten ikke føler sig inddraget. Patient-rapporterede oplysninger (PRO), indsamlet via et spørgeskema, kan bidrage med mere komplette sundhedsrelaterede informationer direkte fra patienten. Patientens PRO-data vil være tilgængelige i den elektroniske patientjournal, hvormed PRO-besvarelsen kan inddrages i lægens og sygeplejerskens dialog med patienten. Projektets formål var at udvikle et PRO-baseret spørgeskema (PROMED) til at understøtte patient-centreret udredning og behandling af patienter i Akutmodtagelsen.

Metoder

Udviklingen af PROMED spørgeskemaet fulgte en iterativ og samskabende tilgang. En ekspertgruppe bestående af sygeplejersker og læger fra hhv. Aalborg (n=3) og Hjørring (n=4) Akutmodtagelse i samarbejde med AmbuFlex (PRO Center) deltog i 5 workshops. I processen blev der inddraget viden fra et scoping review, semistrukturerede interviews med patienter i Akutmodtagelsen (n=15) og ekspertvurderinger. For at sikre overflade- og indholdsvaliditet blev der desuden gennemført kognitive interviews med patienter i Akutmodtagelsen (n=16), og i denne proces blev spørgeskemaet løbende tilrettet. Endelig blev der foretaget tekniske test samt pilotafrøvnings for at sikre funktionalitet og validitet.

Resultater

Processen resulterede i et spørgeskema - PROMED - bestående af 21 spørgsmål. PROMED dækker patientens beskrivelse af; egen problemstilling, bekymringer, symptomer, behandlingspræferencer, generelle helbred, information om pårørende og et fritekstfelt. Patienter over 65 år besvarer 31 spørgsmål, da de også spørges ind til fysisk funktion samt behov for hjemmehjælp.

Konklusioner

Det næste skridt i projektet er at afprøve PROMED i et feasibility studie.

COMING SOON

ET SPØRGESKEMA MED **PATIENT-**
RAPPORTEREDE OPLYSNINGER (PRO) TIL
PATIENTER I AKUTMODTAGELSEN

PROMED STUDIET

FORMÅL
AT SIKRE AT PATIENTENS
STEMME BLIVER HØRT,
HERUNDER AT ØNSKER OG
BEHOV ER MIDTPUNKT FOR
UDREDNING OG BEHANDLING

-UDARBEJDET AF PROMED
ARBEJDSGRUPPEN

FILM OM PRO I
AKUTMODTAGELSEN



GLÆD DIG
**KOMMER TIL JANUAR
2026
AKUTMODTAGELSEN**

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The impact of seasonal tourism on healthcare services: a descriptive analysis from North Denmark Regional Hospital

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Background

The catchment area of North Denmark Regional Hospital includes coastal regions of North Jutland, which experience a significant influx of both domestic and international tourists during the summer period. This seasonal population growth leads to increased demand for healthcare services, particularly in the emergency department. Although hospital catchment areas in Denmark are officially indicative and should be seen in the context of free choice of hospital, they still serve an important function in maintaining sustainable healthcare services. However, the increased number of tourists may represent an unaccounted burden on hospital resources. The purpose of this study is therefore to examine the extent to which patients in the emergency department originate from outside the hospital's official catchment area.

Methods

This study is based on a descriptive analysis of data extracted from NordEPJ, the electronic patient record system used in the North Denmark Region, covering the period from January 2023 to August 2025. The dataset includes all patients who were seen or treated in the emergency department during this period, with particular attention given to patients outside the hospital's catchment area.

Perspectives

Preliminary expectations suggest that a considerable proportion of patients during the summer period are from outside the catchment area, which adds significant pressure on staff and capacity in the emergency department. The findings from this study are expected to provide insights that can form the basis for potential adjustments in resource allocation and policy frameworks in areas characterized by high levels of tourism.



The Impact of Seasonal Tourism on Healthcare Services: A Descriptive Analysis from North Denmark Regional Hospital

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² Office of Finance and Planning, North Denmark Regional Hospital, Hjørring, Denmark

³ Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

The catchment area of North Denmark Regional Hospital includes coastal regions of North Jutland, which experience a significant influx of tourists during the summer period. This seasonal population growth leads to increased demand for healthcare services, especially in the emergency department. The purpose of this study is to examine the extent to which patients in the emergency department (ED) originate from outside the hospital's official catchment area.

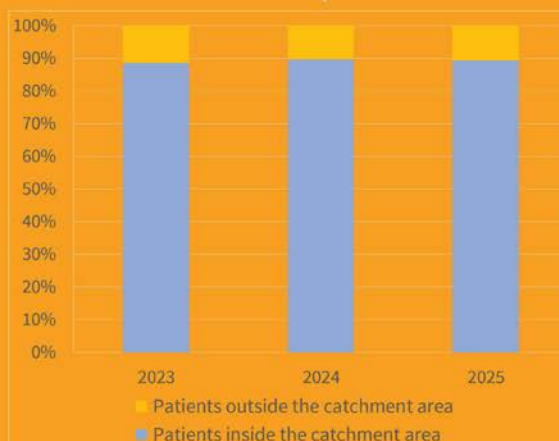
Methods

This study is based on a descriptive analysis of data extracted from NordEPJ, the electronic patient record system used in the North Denmark Region, covering the period from January 2023 to August 2025. The dataset includes all patients who were seen or treated in the emergency department during this period. The study also includes a qualitative component, providing valuable insights into the challenges faced by hospital staff and administration.

Seasonal variations in patients outside the catchment area



Total distribution of patients in the ED



Results

Tourism in North Jutland significantly increases emergency department (ED) activity, especially during the summer, when the number of foreign tourists rises. Approximately 12-17% of patients come from outside the hospital's catchment area, placing additional pressure on resources. Significant gaps in data and a lack of seamless system integration hinder the ability to understand the true costs and origins of patients.

Conclusion

Treating foreign patients presents complex billing and administrative challenges, making it difficult to accurately track costs and patient origins. Clearer guidelines and improved staff training are needed to enhance management and communication around treatment and payment processes. Further research is essential to better understand tourism's impact on healthcare services.

Healing-supportive environment in intensive care - evidence and design for improving patient outcomes

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Background

The intensive care unit (ICU) environment is characterized by advanced technology, continuous monitoring, and life-support interventions. While vital for patient safety, this setting often exposes patients to stressors such as disruptive lighting, high noise levels, and lack of privacy. These factors are associated with delirium, sleep disturbances, anxiety, and long-term complications including Post-Intensive Care Syndrome (PICS). Growing evidence highlights the importance of environmental and architectural design in supporting both clinical outcomes and patient well-being.

Methods

This review synthesizes findings from clinical trials, systematic reviews, and observational studies examining the influence of sensory and spatial factors in the ICU. Key focus areas include light exposure, acoustic conditions, spatial organization, and opportunities for patient orientation and autonomy. Non-pharmacological interventions, such as circadian lighting systems, noise reduction strategies, private rooms, and nature-based stimuli, were assessed in relation to patient recovery and staff performance.

Results

Evidence demonstrates that optimized ICU environments can reduce delirium incidence, improve sleep quality, lower sedation requirements, and support cognitive recovery. Architectural interventions such as daylight access, acoustic optimization, and flexible spatial layouts improve patient comfort and safety. Furthermore, family integration and supportive staff environments are linked to higher satisfaction and reduced stress.

Conclusions

Healing-supportive ICU design has the potential to transform critical care from a technology-dense environment into one that actively promotes recovery and safety. Incorporating evidence-based design strategies, including adaptable lighting, acoustic optimization, and digital orientation tools, should be prioritized in future ICU planning to enhance both patient outcomes and staff well-being.

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Healing-supportive environment in intensive care

- Evidence and design for improving patient outcomes



Background

ICUs are technology-dense but often stressful due to noise, disruptive lighting, and lack of privacy. These stressors increase risk of delirium, sleep disturbance, anxiety, and PICS. Evidence shows that design and environment strongly impact patient and staff outcomes.

Methods

Review of clinical trials, systematic reviews, and observational studies on light, sound, spatial design, and patient orientation. Assessed non-pharmacological interventions such as circadian lighting, noise reduction, single rooms, and nature-based stimuli.

Results

Optimized ICU environments reduce delirium, improve sleep, lower sedation needs, and support cognitive recovery. Daylight, acoustic control, and flexible layouts enhance comfort and safety. Family integration and supportive staff spaces improve satisfaction and reduce stress.

Conclusions

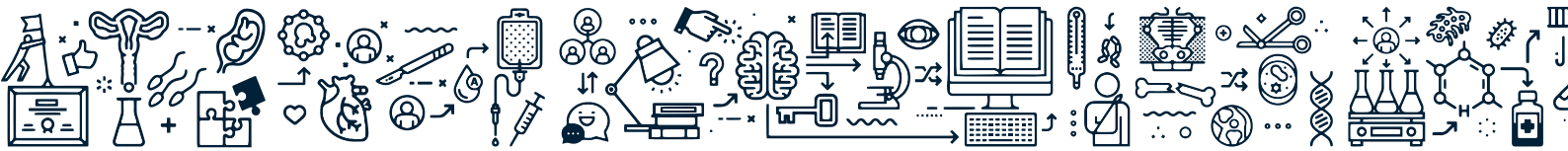
Evidence-based ICU design can transform care to actively promote healing and safety. Strategies such as adaptive lighting, acoustic optimization, and digital orientation tools should be prioritized in future ICU planning to benefit both patients and staff.

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Billediagnostik



Clinical implications of limited access to cerebral MRI as diagnostic imaging modality in assessment of patients with acute onset of focal neurological symptoms admitted to the North Denmark Regional Hospital

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3. Department of Radiology, North Denmark Regional Hospital, Hjoerring, Denmark
4. Department of Emergency Medicine, North Denmark Regional Hospital, Hjoerring, Denmark

Background

In some Danish hospitals, acute MRI is only available only during daytime on weekdays. Hence, acute patients may not always be examined by this imaging modality in a timely manner. In this scenario, this study aimed to investigate the use of cerebral MRI in patients initially examined with CT upon acute admission to a regional hospital.

Methods

Data on acute cerebral CT scans performed at the North Denmark Regional Hospital between April 1, 2022, and December 31, 2023, were retrieved from a regional register. A clinical audit of 220 medical patients without head trauma was conducted. The study assessed clinical parameters for supplementary use of cerebral MRI within 7 days after initial CT.

Results

A total of 25% (n=55) of patients underwent cerebral MRI < 7days after initial CT. Acute infarcts were identified in 20% (n=11) by CT versus 40% (n=22) by MRI. The preceding CT was without abnormalities in 68% (n=15) of the 22 patients. In addition, 77% (n=17) in this group presented with focal neurological symptoms upon hospital admission. Altered state of consciousness was present in four of the remaining 5 patients. At least one patient with MRI confirmed acute infarct was hospitalized within 6 hours of symptom onset.

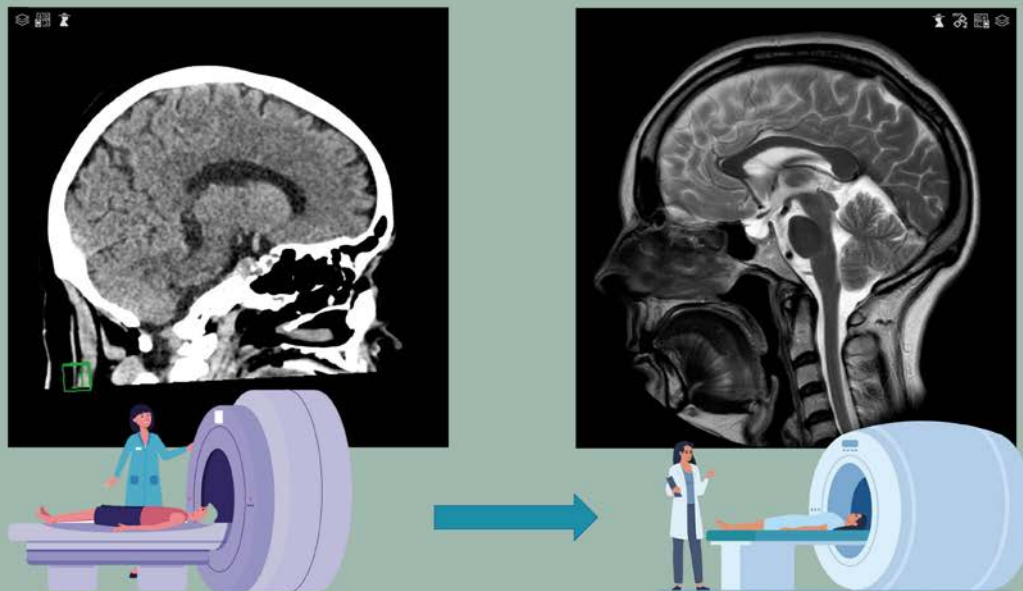
Conclusions

One-fourth of patients initially examined with CT underwent subsequent MRI. This supplementary modality revealed acute infarcts not detected on CT. The findings suggest that some patients would benefit from MRI as the initial modality, highlighting the potential need for improved access to acute MRI at regional hospital level. Further clarification regarding access to MRI is needed.

Clinical implications of limited access to cerebral MRI as diagnostic imaging modality in assessment of patients with acute onset of focal neurological symptoms admitted to the North Denmark Regional Hospital

Alexander Overgaard Laugesen^{1,2}; Mahican Gielen³; Astrid Skytte Kirkegaard²; Rikke Granfeldt^{1,2}; Kristine Vingaard Olesen^{1,2}; Marc Ludwig^{4,5}; Peter Derek Christian Leutscher^{2,5}

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5. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark



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Results

A total of 25% (n=55) of patients underwent cerebral MRI (<7 days) after initial CT. Acute infarcts were identified in 20% (n=11) by CT versus 40% (n=22) by MRI. The preceding CT was without abnormalities in 68% (n=15) of the 22 patients. In addition, 77% (n=17) in this group presented with focal neurological symptoms upon hospital admission. Altered state of consciousness was present in four of the remaining 5 patients. At least one patient with MRI confirmed acute infarct was hospitalized within 6 hours of symptom onset. Among the patients exceeding 48-hour interval, 58% (n=7) had arrived after 11:30 on a Friday and could not be assessed until Monday at 8:00 due to scanner availability.

Conclusion

One-fourth of patients initially examined with CT underwent subsequent MRI. This supplementary modality revealed acute infarcts not detected on CT. The findings suggest that some patients would benefit from MRI as the initial modality, highlighting the potential need for improved access to acute MRI at regional hospital level. Further clarification regarding access to MRI is needed.

Prevalence of gout in patients with type 2 diabetes and foot ulcers: a comparative study of conventional radiology, DECT, and ulcer debris microscopy

Anne Marie Kelter-Wesenberg¹, Kasper Kofod Pedersen¹, Jesper Walther Larsen^{2,5}, Peter C. W. Holm^{3,4}, Trine Stenbak Bisgaard³, Marie-Louise Lund Søbbye⁵, Peter Derek Christian Leutscher^{5,6}, Søren Terpøger Jepsen⁷, Anne Grethe Jurik⁵, Claus Rasmussen^{2,5,6}

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7. Department of Clinical Biochemistry, North Denmark Regional Hospital, Hjoerring, Denmark

Background

Gout is common yet frequently underdiagnosed in elderly patients with type 2 diabetes. Untreated, it leads to urate deposition in the feet, potentially causing ulcers that mimic diabetic foot ulcers. Diagnosis relies on urate crystal identification (microscopy) or imaging. This study evaluated gout prevalence in diabetic patients with foot ulcers using ulcer debris microscopy, conventional radiology, and dual-energy computed tomography (DECT).

Methods

Patients with diabetes were referred to a diabetic foot ulcer clinic with a foot ulcer. Thirty-five patients were enrolled with type 2 diabetes and a foot-ulcers who underwent conventional foot radiography and ulcer debris microscopy. DECT was performed 6-12 months later in 24 surviving patients to detect urate deposits. Findings from all three methods were compared.

Results

Urate crystals were identified in 5 patients (14%) by microscopy. Conventional radiology revealed gout erosions in 11 (31%) and subcutaneous tophi in 7 (20%). DECT detected urate deposits in 8 patients (33%). Overall, 12 patients (34%) showed signs of advanced tophaceous gout.

Conclusions

Unrecognized tophaceous gout may be common in patients with type 2 diabetes and foot ulcers. The presence of urate crystals in ulcer debris and radiologically visible subcutaneous tophi supports a causal role for gout in ulcer development. Limitations - including suboptimal microscopy sampling and DECT performed post-debridement/amputation - may have led to underestimation. Early diagnosis and sufficient urate-lowering therapy could prevent progression to late-stage gout and recurrent ulcers, highlighting the need for routine screening in this high-risk population.

Prevalence of gout in patients with type 2 diabetes and foot ulcers

A comparative study of conventional radiology, DECT, and ulcer debris microscopy

Anne Marie Kelter-Wesenberg¹, Kasper Kofod Pedersen¹, Jesper Walther Larsen^{2,5}, Peter C. W. Holm^{3,4}, Trine Stenbak Bisgaard³, Marie-Louise Lund Søbye⁵, Peter Leutscher^{3,6}, Søren Terpager Jepsen⁷, Anne Grethe Jurik⁵, Claus Rasmussen^{2,5,6}

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1 Gout is common yet frequently underdiagnosed in elderly patients with type 2 diabetes. Left untreated, gout leads to urate deposition in the feet - termed tophi. Tophi can cause ulcers with poor healing that mimic diabetic foot ulcers.

Diagnosis of gout relies on urate crystal identification by microscopy or imaging. This study evaluated gout prevalence in diabetic patients with foot ulcers using ulcer debris microscopy, conventional radiology, and dual-energy computed tomography (DECT).

2 From the diabetic foot ulcer clinic, North Denmark Regional Hospital, and during routine foot ulcer care, 35 patients with type 2 diabetes and foot ulcers were sampled for ulcer debris microscopy. Prior conventional foot radiographs were reviewed and DECT was performed to confirm radiographic findings.

N=35	Ulcer debris microscopy	Prior foot radiology
	14% had urate crystals in their foot ulcers	31% had gout erosions 20% had subcutaneous tophi

Patients who were eligible after 6-12 months

N=24	Dual-energy computed tomography (DECT)
	33% had urate deposits surrounding peripheral joints

Overall, 34% of surviving patients showed signs of advanced tophaceous gout

3 Unrecognized tophaceous gout may be common in patients with type 2 diabetes and foot ulcers. The presence of urate crystals in ulcer debris and radiologically visible subcutaneous tophi supports a causal role for gout in ulcer development in patients with diabetes.

Early diagnosis and sufficient urate-lowering therapy could prevent progression to late-stage gout and recurrent ulcers, highlighting the need for routine screening in this high-risk population.



AI-baseret røntgendiagnostik i skadestuen - behandlersygeplejerskens arbejdsproces og beslutningstagen

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Baggrund

Behandlersygeplejersker arbejder selvstændigt i skadestuen med diagnosticering og behandling ud fra beskrevne instrukser. Siden 2023 har det i Region Nordjylland været muligt at benytte kunstig intelligens (Artificial Intelligence - AI) til at hjælpe med at vurdere frakturer på røntgenbilleder i stedet for at konferere med lægen som hidtil. Vi ønskede derfor at undersøge hvilken betydning AI-baseret røntgendiagnostik i skadestuen har for behandlersygeplejerskens selvstændige arbejdsproces og beslutningstagen i forhold til at planlægge patientens behandlingsforløb.

Metoder

En fænomenologisk-hermeneutisk tilgang blev anvendt til at undersøge behandlersygeplejerskers oplevelser med AI-baseret røntgendiagnostik i skadestuen. Der blev foretaget tre semistrukturerede interviews med behandlersygeplejersker fra skadestuen med forskellig anciennitet og erfaring. Interviewene blev analyseret i tre trin: kodning, kondensering og -fortolkning.

Resultater

Resultaterne viste at erfaring spiller en vigtig rolle, hvor de mest erfarne sygeplejersker har størst tillid til at træffe selvstændige beslutninger med støtte fra AI. De mindre erfarne sygeplejersker, har fortsat brug for at konferere med lægerne, da de oplever at AI ikke altid stiller korrekt diagnose og ikke har erfaringen at læne sig op ad.

Konklusioner

AI-baseret røntgendiagnostik har styrket behandlersygeplejerskers selvstændighed og effektivitet i skadestuen. De kan nu iværksætte behandling uden at konferere med lægen, hvilket især gælder de mest erfarne sygeplejersker. AI bruges som beslutningsstøtte, samtidig med at det faglige skøn forbliver centralt i patientbehandlingen. For at opbygge tillid blandt mindre erfarne sygeplejersker bør undervisning i AI integreres, samt være praksisnær. Samtidig skal der skabes klarhed om ansvar og etiske rammer, så AI opleves som en støtte – ikke en erstatning for den kliniske dømmekraft.

AI-BASERET RØNTGENDIAGNOSTIK I SKADESTUEN

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BEHANDLERSYGEPLEJERSKENS ARBEJDSPROCES OG BESLUTNINGSTAGEN

BAGGRUND

Behandlersygeplejersker arbejder selvstændigt i skadestuen med diagnosticering og behandling.

Siden 2023 har det i Region Nordjylland været muligt at benytte kunstig intelligens (AI) til at vurdere frakturer på røntgenbilleder uden at konferere med lægen.

Vi ønskede derfor at undersøge hvilken betydning AI-baseret røntgendiagnostik i skadestuen, har for behandlersygeplejerskens selvstændige arbejdsproces og beslutningstagen.

METODE

Opgaven anvender en fænomenologisk-hermeneutisk tilgang til at undersøge behandlersygeplejerskers oplevelser med AI-baseret røntgendiagnostik i skadestuen.

Vores empiri blev indsamlet gennem tre semistrukturerede interviews af behandlersygeplejersker med forskellig anciinitet og erfaring.

Disse blev analyseret i tre trin: Meningskodning, -kondensering og -fortolkning. Vi reflekterede desuden over egen forforståelse, anvendte den hermeneutiske cirkel og horisontsammensmeltning til at opnå ny indsigt i emnet.

RESULTATER

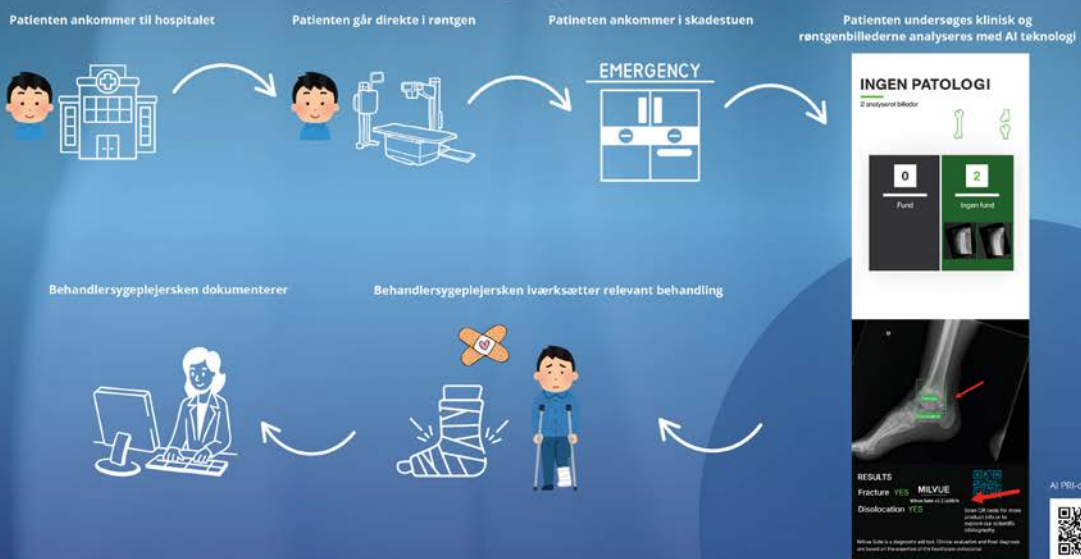
AI-baseret røntgendiagnostik har styrket behandlersygeplejerskers selvstændighed og effektivitet i skadestuen.

De kan nu iværksætte behandling uden lægekonference, hvilket især de mest erfarne sygeplejersker har tillid til.

AI bruges som beslutningsstøtte, men det faglige skøn forbliver centralt i patientbehandlingen.

For at opbygge tillid blandt mindre erfarne sygeplejersker bør undervisning i AI integreres, samt være praksisnær. Samtidig skal der skabes klarhed om ansvar og etiske rammer, så AI opleves som en støtte – ikke en erstatning for den kliniske dømmekraft.

Patientforløb i behandlersygeplejerskens selvstændige arbejdsproces



Thoracic spine radiographic evaluation with breathing technique and different exposure times - room for image quality improvement

Hanne Thomsen¹, Mahican Gielen², Anne Holm Sønderby³, Peter Derek Christian Leutscher^{4,5}, Ane Simony⁶

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6. Department of Orthopedic Surgery, Lillebaelt Hospital, Kolding, Denmark

Background

The aim of this clinical data science study is to evaluate the image quality of the thoracic spine (Th1–Th12) using a breathing technique and varying exposure times. Visualization of the upper thoracic segments is challenged by superimposed lung tissue and vascular structures. This study builds upon a previous project in which only lateral projections were assessed by two experienced radiologists, based on criteria: endplate visibility, bone structure delineation and motion artefacts. In the current study, anterior-posterior (AP) projections are also included, with particular emphasis on Th1–Th3, as this region is frequently difficult to visualize in clinical practice but appears to benefit from the breathing technique.

Methods

The dataset comprises of 400 conventional radiographic examinations acquired using the Siemens Ysio Max system. Patients were randomized to either suspended inspiration or breathing technique, with exposure times of 1, 2, or 3.2 seconds. Image evaluation is performed by radiologist and orthopedic surgeons, both blinded to the imaging protocol, to explore potential differences in interpretation across specialties.

Perspectives

Accurate diagnosis of spinal fractures is critical, as up to 30% of fractures may be missed on conventional radiographs. X-ray remains the first-line imaging modality in emergency departments and radiology units, and improved image quality may reduce the need for CT scans, thereby reducing costs and time spend before diagnosis. Including orthopedic surgeons with different levels of experience in the evaluation, allow for an evaluation of the current standard insight that may influence clinical decision making in radiology units and acute care settings.



Thoracic spine radiographic evaluation with breathing technique and different exposure times

– room for image quality improvement

A clinical data science study

Hanne Thomsen¹ • Anne Holm Sønderby² • Anne Marie Kelter-Wesenberg³ • Mahican Gielen³ • Peter Derek Christian Leutscher^{4,5} • Ane Simony⁶

1. Department of Radiology, North Denmark Regional Hospital, Frederikshavn, Denmark, 2. Section of X-ray Physics, North Denmark, Aalborg University, Denmark, 3. Department of Radiology, North Denmark Regional Hospital, Hjørring, Denmark, 4. Centre for Clinical Research, North Denmark Regional Hospital, Denmark, 5. Department of Clinical Medicine, Aalborg University, Denmark, 6. Department of Orthopedic Surgery, Lillebaelt Hospital, Kolding, Denmark.

Background

X-ray of the thoracic spine is routinely performed to diagnose compression fractures, degenerative and rheumatological disorders. However, visualization of the upper thoracic spine is challenged by overlapping lung tissue and vascular structures, compromising a safe diagnosis.

Previous study

Assessed only **lateral projections**, evaluated by **two radiologists**.

Current study

Aim: To evaluate the image quality of the thoracic spine (Th1–Th12) using breathing technique and suspended inspiration.

Anterior-posterior (AP) and lateral projections included, with a focus on improving visualization of Th1–Th3.

Image evaluation expanded to include **orthopedic surgeons** working in emergency departments.

Interdisciplinary approach

- **Blinded evaluation** by radiologists and orthopedic surgeons
- **Comparison across specialties** to identify differences in interpretation
- **Clinicians with varying experience levels** included

Methods

- **Dataset:** 400 conventional radiographic exams
- **Equipment:** Siemens Ysio Max
- **Randomization:** Breathing technique vs. suspended inspiration
- **Exposure times:** 1, 2 and 3.2 seconds

Perspectives

Up to **30% of spinal fractures** may be missed on conventional X-rays. X-ray remains the **first-line imaging modality** in emergency and radiology departments.

Improved image quality may

- Reduce the need for CT scans
- Lower diagnostic costs and delays
- Support more effective and accurate clinical decision-making

The project is currently in its **early phase**.

Findings have the potential to **inform clinical practice** and **enhance diagnostic standards** in radiology units and acute care settings.

Evaluation of AI for bone fracture detection in an emergency room at the North Denmark Regional Hospital

Ida Bromell Kindberg^{1,2}, Christine Norup Engstrøm^{1,2}, Daniel Bornemann^{1,2}, Peter Derek Christian Leutscher^{1,2}, Mahican Gielen³

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

2. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

3. Department of Radiology, North Denmark Regional Hospital, Hjoerring, Denmark

Background

Artificial Intelligence (AI) is increasingly used as a clinical decision supportive tool in the health care sector, including fracture detection in the emergency department, yet real-world evidence remains limited. March 2024, the AI instrument TechCare Alert (Milvue) was implemented at the North Denmark Regional Hospital for acute skeletal radiography exam. The aim of the study was to evaluate performance of AI for bone fracture detection in an emergency room.

Methods

A total of 1,154 acute X-ray images were randomly selected: ankle (n=354), wrist (n=400), hand (n=200), and foot (n=200) from children and adults. AI radiology diagnostic results were compared to blinded conventional radiologist reading. Each X-ray image was then categorized in accordance with agreement/disagreement status between AI and the radiologist.

Results

Overall fracture detection agreement between AI and radiologist was in the range of 81–92%. Overdiagnosis by AI occurred in 5–16% of discordant cases, while underdiagnosis was 2–5%. Adult ankle X-rays showed the highest overdiagnosis rate by AI (16%). No significant differences were found between children and adults. Changes to the initial treatment plan, incl. patient recall occurred in 5–13% of cases.

Conclusions

AI shows high concordance with radiologists in fracture detection and works well as a supportive tool in emergency care. Performance is comparable across children and adults. Clinical impact of AI–radiologist discrepancies is limited, as physicians integrate clinical context, indicating AI functions as decision support rather than a definitive diagnostic tool with minimal risk for patients..

Evaluation of AI for Bone Fracture Detection in an Emergency Room at the North Denmark Regional Hospital

Ida B. Kindberg^{1,2} • Christine N. Engstrøm^{1,2} • Daniel Bornemann^{1,2} • Peter D. C. Leutscher^{1,3} • Mahican Gielen⁴

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

2. Faculty of Medicine, Aalborg University, Aalborg, Denmark

3. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

4. Department of Radiology, North Denmark Regional Hospital, Hjoerring, Denmark



Background

Artificial Intelligence (AI) is increasingly used as a clinical decision support tool in healthcare, including for fracture detection in the emergency department. However, real-world evidence remains limited. In March 2024, the AI instrument TechCare Alert (Milvue) was implemented at North Denmark Regional Hospital for acute skeletal radiography. The aim of the study was to evaluate the performance of AI in detecting bone fractures in an emergency room setting.



Method

A total of 1,154 acute X-ray images were randomly selected from both children and adults, including ankle (n=354), wrist (n=400), hand (n=200), and foot (n=200). AI generated radiology diagnoses were compared to readings from blinded, conventional radiologists. Each X-ray image was then categorized based on the level of agreement or disagreement between the AI and the radiologist.



Results

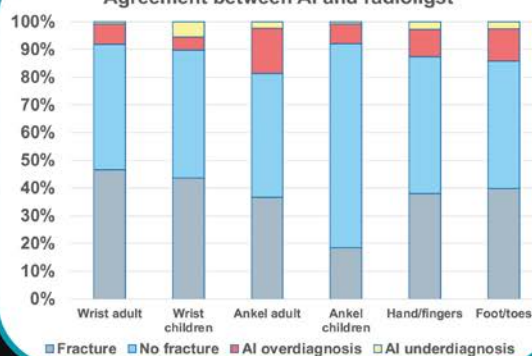
Overall agreement between AI and the radiologist for fracture detection ranged from 81–92%. AI overdiagnosis occurred in 5–16% of cases where there was disagreement between the AI and the radiologist, while underdiagnosis occurred in 2–5%. Adult ankle X-rays exhibited the highest rate of overdiagnosis by AI. No significant differences were found between children and adults. Changes to the initial treatment plan, including patient recall, occurred in 5–13% of cases.



Conclusion

AI demonstrates high concordance with radiologists in fracture detection and functions effectively as a supportive tool in emergency care. Performance is comparable between children and adults. The clinical impact of discrepancies between AI and radiologists is limited, as physicians integrate clinical context. This indicates that AI serves as a decision support rather than a definitive diagnostic tool, posing minimal risk for patients.

Agreement between AI and radiologist



Evaluation of clinical indication and outcomes of chest x-ray in patients presenting to the Emergency Department at North Denmark Regional Hospital

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

2. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

3. Department of Emergency Medicine, North Denmark Regional Hospital, Hjoerring, Denmark

Background

Chest X-ray is frequently used as an early diagnostic examination in emergency departments for clinically suspected conditions such as pneumonia, pneumothorax, pleural effusion or suspicion of cardiac decompensation. In Denmark, more than 600,000 chest X-rays are performed annually, with approximately 3500 carried out at the North Denmark Regional Hospital, Hjoerring. In clinical practice the use of chest X-ray does not always follow a systematic approach based on clinical and paraclinical findings, which may result in unnecessary examinations and increased resource utilization. Several factors contribute to the high number of chest X-ray, including routine practice, limited clinical experience among staff, easy access to imaging, time constraints, and patient pressure. With growing concern regarding the rising use of diagnostic imaging and the potential cancer-associated radiation exposure, this study aims to assess the extent of chest X-ray, its diagnostic yield, and its role in the early diagnostic process.

Methods

This study is designed as a retrospective quality assurance study based on a medical record review of patients admitted to the emergency department at the North Denmark Regional Hospital during the period 2022–2024. For each patient data is analyzed to identify associations between clinical indicators and radiological findings, with the aim of assessing the diagnostic and therapeutic value of the examination.

Perspectives

This study explores whether chest X-ray in the emergency departments are performed with sufficient clinical indication and to what extent unnecessary examinations occur. The findings may support an optimized use of chest X-ray, improving patient care while reducing radiation exposure and resource utilization.

EVALUATION OF CLINICAL INDICATION AND OUTCOMES OF CHEST X-RAY IN PATIENTS PRESENTING TO THE EMERGENCY DEPARTMENT AT NORTH DENMARK REGIONAL HOSPITAL

Maiken Cecilie Eberhard ^{1,2}, Annette Geest Sørensen ^{1,2}, Peter Derek Christian Leutscher ^{1,3}, Marc Ludwig ^{1,4}

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

²Faculty of Medicine, Aalborg University, Aalborg, Denmark

³Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

⁴Department of Emergency, North Denmark Regional Hospital, Denmark

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Stråledosis ved cone beam CT i sammenligning med konventionel røntgen og CT

Morten Harritz Mathiassen^{1,2}, Thøger Persson Krogh^{1,3}

1. Sportsmedicinsk Center, Regionshospital Nordjylland, Frederikshavn, Danmark
2. Afdeling for Led- og Bindevævssygdomme, Aarhus Universitetshospital, Aarhus, Danmark
3. Klinisk Institut, Aalborg Universitet, Aalborg, Danmark

Baggrund

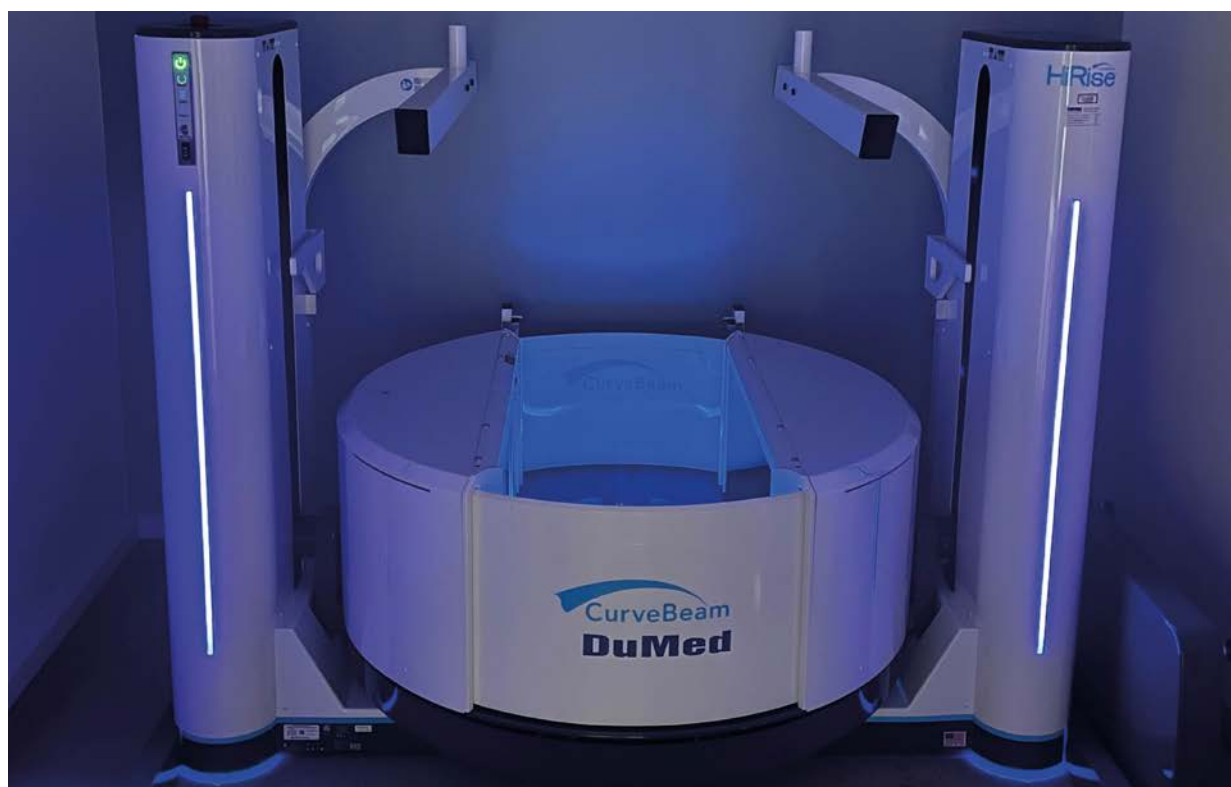
Cone Beam CT (CBCT) er indført på Sportsmedicinsk Center, Regionshospital Nordjylland, til vægtbærende scanninger af ankel, knæ og bækken. Teknologien adskiller sig fra konventionel røntgen og CT ved bl.a. vægtbelastning på led under billeddannelse, høj opløsning og lavere stråledosis. I takt med den stigende fokus og interesse for denne udredningsmulighed, ønsker vi at præsentere den faktiske stråleeksponering ved CBCT sammenlignet med etablerede billedmodaliteter.

Metoder

Projektet baseres på en kvantitativ beskrivelse af stråledoser ved CBCT gennem producentens angivelser, analyse af tekniske specifikationer, brugermanualer og eventuelle tilgængelige målinger. Hertil kommer en systematisk litteratursøgning i PubMed med fokus på rapporterede doser ved CBCT, konventionel røntgen og CT for de relevante anatomiske områder. De indsamlede data sammenstilles og relateres til den gennemsnitlige årlige baggrundsstråling i Danmark (ca. 3–4 mSv) for at sætte resultaterne i et klinisk let forståeligt perspektiv.

Perspektiver

CBCT har en lavere stråledosis end CT, men muligvis en let højere dosis end konventionel røntgen, men med en væsentlig gevinst i billedkvalitet. Opgørelse af de faktuelle stråledoser sammenlignet med standard udredning med røntgen og CT, vil fremadrettet være med til at perspektivere mulighederne og den kliniske anvendelse af CBCT. Resultaterne vil kunne danne grundlag for mere evidensbaserede beslutninger om billeddiagnostiske modaliteter ved udredning af idrætsskader og ortopædiske tilstande.



Stråledosis ved Cone Beam CT i sammenligning med konventionel røntgen og CT

Morten Harritz Mathiassen^{1,2} • Thøger Persson Krogh¹

¹Sportsmedicinsk Center, Regionshospitalet Nordjylland, Frederikshavn, Danmark
²Afdeling for Led og Bindevæv, Aarhus Universitetshospital, Skejby, Danmark

Baggrund

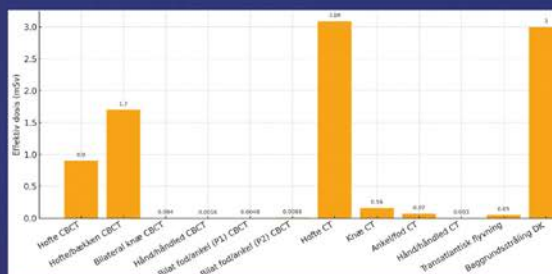
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Metode

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Resultater og Perspektiver

CBCT har en stråledosis, der er på niveau med eller kun lidt højere end konventionel røntgen, og markant lavere end CT, men med samme gevinst i billedkvalitet og 3D-analysemuligheder. Opgørelse af de faktuelle stråledoser sammenlignet med standard udredning med røntgen og CT, vil fremadrettet være med til at perspektivere mulighederne og den kliniske anvendelse af CBCT. Resultaterne vil kunne danne grundlag for mere evidensbaserede beslutninger om billeddiagnostiske modaliteter ved udredning af idrætsskader og ortopædiske tilstande.



Relevans af MRCP-undersøgelser på patienter i udredning for galdesten og cholecystitis – et kvalitetssikringsstudie på Regionshospital Nordjylland, Hjørring

Tina Thomsen^{1*}, Britt Sommer^{1*}, Peter Derek Christian Leutscher^{2,3}, Sune Kjems Skuldbøl¹

1. Billeddiagnostisk Afdeling, Regionshospital Nordjylland, Hjørring, Danmark

2. Center for Klinisk Forskning, Regionshospital Nordjylland, Hjørring, Danmark

3. Klinisk Institut, Aalborg Universitet, Aalborg, Danmark

**Deltager i Kursus i Klinisk Forskning og Udvikling, Regionshospital Nordjylland, 2025*

Baggrund

Hyppigheden af galdestenssygdom og cholecystitis resulterer i et højt antal undersøgelser der skal udføres i billeddiagnostisk regi, for at en diagnose kan stilles. Vi ser i praksis at der ofte henvises til MR af lever og galdeveje (MRCP) på en utilstrækkelig baggrund. MRCP er en meget ressourcekrævende undersøgelse, i et i forvejen presset sundhedsvæsen. På billeddiagnostisk afdeling i Hjørring ses en stigning i antallet af udførte MRCP fra 2021-2024. Alene i 2024 blev der udført 508 MRCP-scanninger. Det er derfor relevant at undersøge om der i alle tilfælde er en relevant årsag til henvisningerne.

Metoder

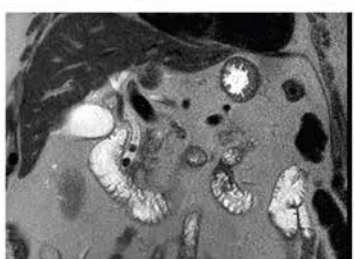
Projektet er et kvalitetssikringsstudie, som baseres på gennemgang af de første 100 henvisninger til MRCP på billeddiagnostisk afdeling, Regionshospital Nordjylland i Hjørring i 2025. Henvisninger og beskrivelser af undersøgelserne trækkes fra EasyViz. En erfaren radiolog sammenholder henvisningen med fund i beskrivelsen, for at kunne vurdere relevansen af den udførte undersøgelse. Vurderingen beror udelukkende på indholdet i henvisningen, som bør beskrive biokemi og/eller symptomer hos patienten.

Perspektiveringer

Med dette projekt forventer vi at kunne belyse omfanget af, i hvor høj grad der udføres MRCP undersøgelser, uden at der findes tilstrækkelig relevans for at bruge ressourcerne på det. Målet med det, er at øge fokus på området og på den måde højne kvaliteten og grundigheden af henvisningerne der sendes.

Relevans af MRCP undersøgelser på patienter i udredning for galdesten og cholecystit

Et kvalitetssikringsstudie på Regionshospitalet Nordjylland



Baggrund

Hyppigheden af galdestenssygdom og cholecystit resulterer i et højt antal undersøgelser der skal udføres i billeddiagnostisk regi, for at en diagnose kan stilles. Vi ser i praksis at der ofte henvises til MR af lever og galdeveje (MRCP) på en utilstrækkelig baggrund. MRCP er en meget ressourcekrævende undersøgelse, i et i forvejen presset sundhedsvæsen. På billeddiagnostisk afdeling i Hjørring ses en stigning på 19,5% i antallet af udførte MRCP fra 2021-2024. Alene i 2024 blev der udført 508 MRCP scanninger. Det er derfor vigtigt at undersøge om der i alle tilfælde er en relevant årsag til henvisningerne.

Metode

Projektet er et kvalitetssikringsstudie, som baseres på gennemgang af 100 randomiseret udvalgte henvisninger til MRCP på billeddiagnostisk afdeling, Regionshospitalet Nordjylland i Hjørring i 2025. Henvisninger og beskrivelser af undersøgelserne trækkes fra EasyViz.

En erfaren radiolog sammenholder henvisningen med fund i beskrivelsen, for at kunne vurdere relevansen af den udførte undersøgelse. I kriterierne for evaluering af den enkelte henvisning indgår biokemi og symptomer hos patienten.

Perspektivering

Med dette projekt forventer vi at kunne belyse omfanget af i hvor høj grad der udføres MRCP undersøgelser, uden at der findes tilstrækkelig relevans for at bruge ressourcerne på det. Målet med det, er at øge fokus på området og på den måde højne kvaliteten og grundigheden af henvisningerne der sendes.

Britt Sommer¹ Tina L Thomsen¹ Peter Leutscher^{2,3} Sune Kjems Skuldbøl¹

1: Billeddiagnostisk afdeling, Hjørring, Regionshospitalet Nordjylland

2: Center for klinisk forskning, Regionshospitalet Nordjylland

3: Klinisk Institut, Aalborg Universitet

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Home-based intravenous antibiotic treatment of children and adolescents

Cathrine Bonde Jørgensen^{1,2,3}, Ellen Buus Steffensen^{1,2,3}, Jacob Christian Vestergaard^{1,2,3}, Frida Leck Kæseler^{3,4}, Søren Hagstrøm^{4,5}, Mette Line Donneberg Roed^{1,3,4}

1. Department of Pediatrics, North Denmark Regional Hospital, Hjoerring, Denmark
2. Department of Health Science and Technology, Aalborg University, Aalborg, Denmark
3. Centre for Clinical Research, North Denmark Regional Hospital, Hjoerring, Denmark
4. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark
5. Department of Pediatrics, Aalborg University Hospital, Aalborg, Denmark

Background

Pediatric outpatient parenteral antimicrobial therapy at home is gaining recognition as a feasible option, yet little is known about parental acceptance. Gaining insight into parental perspectives and identifying eligible cases is essential for safe and effective implementation. The aim of this study is to evaluate the feasibility of home-based pediatric outpatient parenteral antimicrobial therapy (OPAT) in routine care by assessing parental acceptance and identifying eligible pediatric cases through medical record review.

Methods

A descriptive cross-sectional survey was distributed to parents at two pediatric outpatient clinics in March 2025 (Aalborg University Hospital and North Denmark Regional Hospital). The questionnaire addressed treatment preferences, concerns, and demographic factors. Additionally, medical records were reviewed over a two-year period to identify children meeting predefined eligibility criteria for home-based intravenous therapy.

Results

A total of 155 parents participated, all of whom expressed openness to home treatment. Among them, 83% were comfortable with pump-based intravenous antibiotic administration, and 99% accepted home nurse visits. Key concerns included doubts about personal competence, equipment handling, and child safety. Record review of 219 intravenous treatment courses revealed that 35% of children would have been eligible for pediatric outpatient parenteral antimicrobial therapy, potentially avoiding 413 inpatient days. Most eligible courses involved treatment durations of six days or fewer.

Conclusions

There is strong parental support for pediatric home-based intravenous antibiotic therapy in Denmark. Implementation should focus on training, structured support systems, and careful patient selection to ensure safety and acceptance.

Home-based intravenous antibiotic treatment of children and adolescents

Cathrine Bonde Jørgensen¹, Ellen Buus Steffensen¹, Jacob Christian Vestergaard¹,
Frida Leck Kæseler², Søren Hagstrøm^{3,4}, Mette Line Donneborg Roed^{1,2,3}

1. Department of Pediatrics and Adolescent Medicine, North Denmark Regional Hospital, Hjørring, Denmark 2. Centre for Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark 3. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark 4. Department of Pediatrics and Adolescent Medicine, Aalborg University Hospital, Aalborg, Denmark

1 Background

Pediatric outpatient parenteral antimicrobial therapy (pOPAT) at home is gaining recognition as a feasible option, yet little is known about parental acceptance. Gaining insight into parental perspectives and identifying eligible cases is essential for safe and effective implementation. The aim of this study is to evaluate the feasibility of home-based pOPAT in routine care by assessing parental acceptance and identifying eligible pediatric cases through medical record review.

2 Methods

2.1 A descriptive cross-sectional survey was distributed to parents at Aalborg University Hospital and North Denmark Regional Hospital in March 2025. The questionnaire addressed treatment preferences, concerns, and demographic factors.

2.2 Medical records were reviewed over a two-year period to identify how many patients home treatment could have been relevant for, and how many inpatient day could have been saved.

3.1 Results

155 parents participated.

All expressed openness to home treatment.

83% were comfortable with pump-based intravenous antibiotic administration. Key concerns about self administration included doubts about personal competence, equipment handling, and child safety.

99% accepted home nurse visits. Only one participant did not want home nurse treatment.

Concerns about home nurse treatment included scheduling, rotating staff, and discomfort with strangers entering the home.

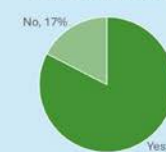
Demographic characteristics	
Age of child	
Range	1 mo. - 17 yr.
Mean	7.8 yr.
SD	4.95 yr.
Birth year of parent, n (%)	
1960s	5 (3.2)
1970s	33 (21.3)
1980s	71 (45.8)
1990s	45 (29.0)
2000s	1 (0.6)
Education level, n (%)	
Lower secondary school	2 (1.3)
General upper secondary education	7 (4.5)
Vocational education	61 (39.4)
Short-cycle higher education	5 (3.2)
Medium-cycle higher education	59 (38.1)
Long cycle higher education	20 (12.9)
Ph.D.	1 (0.6)
Health education, n (%)	
Yes	37 (23.9)
Distance to hospital, km	
Range	1-150
Mean	31.6
SD	29.3
Has the child previously been admitted, n (%)	
Yes	97 (62.6)

Table of the demographic characteristics of the participants in the survey



Blue marks: Participants from North Denmark Regional Hospital
Red marks: participants from Aalborg University Hospital

Are you comfortable with self administration?

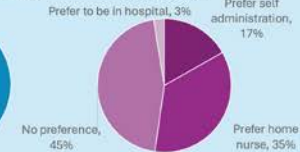


Charts of the treatment preferences of the participant in the survey

Are you comfortable with home nurse administration?



What is your preference of treatment?

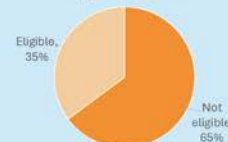


3.2 Results

Record review of 219 intravenous treatment courses revealed that 35% of children would have been eligible for pOPAT, potentially saving 413 inpatient days over the two-year review period.

Most eligible courses involved treatment durations of six days or fewer. Two-thirds of parents in the survey reported that treatment length would not influence their willingness to accept pOPAT.

Was the treatment course eligible for pOPAT?



Charts of the review of medical records

Potentially saved inpatient days	
Total	413
Range	3 - 23
Mean	5.36

4 Conclusion

There is strong parental support for pediatric home-based intravenous antibiotic therapy in Denmark. Implementation should focus on training, structured support systems, and careful patient selection to ensure safety and acceptance. While pOPAT seems promising, implementation must be carefully evaluated on a case-by-case basis, balancing feasibility, safety, and clinical appropriateness.

Er non-pharmacological approach less invasive surfactant administration (NONA-LISA) kommende fremtid for præmature børn? - pilotprojekt

Daiva Gulbinaite^{1*}, Peter Derek Christian Leutscher^{2,3}

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Baggrund

Apnø risiko under analgesi til Less Invasive Surfactant Administration (LISA) kan påvirke proceduren negativt eller mindske LISA effekten. Formålet med projektet er at inkludere 20 nyfødte født før gestationsuge 30 og som opfylder kriterier for surfaktant indgift ved LISA metode.

Metoder

Pilotprojekt på Aalborg Universitetshospital neonatal afsnit. Nyfødte bliver fordelt (randomiseret) i Fentanyl gruppe (intravenøs indgift af Fentanyl bolus 0,5- 1 ug/kg) eller isotonisk saltvands gruppe (intravenøs indgift af isotonisk saltvands bolus). Alle børn skal få standardiserede komfort pleje både før og under proceduren. Analgetika kan ordineres efter lægens skøn. Primære resultater er behov for invasiv ventilation (enten hånd eller mekanisk ventilation gennem endotrakeal tube) for mindst 30 min sammenlagt inden for 24 timer efter NONA-LISA proceduren. Sekundære resultater er modificerede COMFORneo score under proceduren, bronkopulmonal dysplasi diagnose og mortalitet ved gestationsuge 36.

Perspektiver

NONA-LISA projektet har potentiale til at give beviser for en standardiseret tilgang til lindring af ubehag hos præmature børn under LISA proceduren og til at reducere behov for invasiv ventilation. Resultaterne kan påvirke fremtidig klinisk praksis.



Kan standardiseret trøst af præmature nyfødte til indgift af lungemodnende medicin virke ligegodt som (små doser af bedøvende) medicin?

Pilotprojekt

Daiva Gulbinaite¹, Peter Derek Christian Leutscher^{2,3}

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BAGGRUND

Apnø risiko under analgesi til Less Invasive Surfactant Administration (LISA) kan påvirke proceduren negativt eller mindske LISA effekten.

METODER

Pilotprojekt på Aalborg Universitetssygehus neonatalafsnit. Formålet er at inkludere 20 nyfødte født før 30 gestationsuge og som opfylder kriterier for surfaktant indgift ved LISA metode. Nyfødte bliver randomiserede i **Fentanyl gruppe** (intravenøs indgift af Fentanyl 0,5-1 mg/kg) eller **isotonisk saltvands gruppe** (indgift af isotonisk saltvand intravenøs). Alle børn skal få standardiseret komfort pleje både før og under proceduren. Analgetika kan ordineres efter lægens skøn. Primære resultater er behov for invasive ventilation (enten i hånd eller mekanisk ventilation) gennem endotrakeal tube for mindst 30 min sammenlagt indenfor 24 timer efter proceduren. Sekundære resultater er modificerede COMFORTneo score under proceduren, bronkopulmonal dysplasi diagnose og mortalitet ved 36 gestationsuger.

PERSPEKTIVER

Pilotprojektet har potentiale til at give beviser for en standardiseret tilgang til lindring af ubehag hos præmature børn under LISA proceduren og til at reducere invasive ventilation. Resultaterne kan påvirke fremtidig klinisk praksis.

National evaluation of phototherapy devices for neonatal jaundice in Denmark

Emil Lønstrup Øhrstrøm^{1,2,3}, Bo Mølholm Hansen⁴, Rikke Wiingreen⁴, Mette Line Donneborg Roed^{1,2,3}

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3. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark
4. Department of Pediatrics, North Zealand Regional Hospital, Hilleroed, Denmark

Background

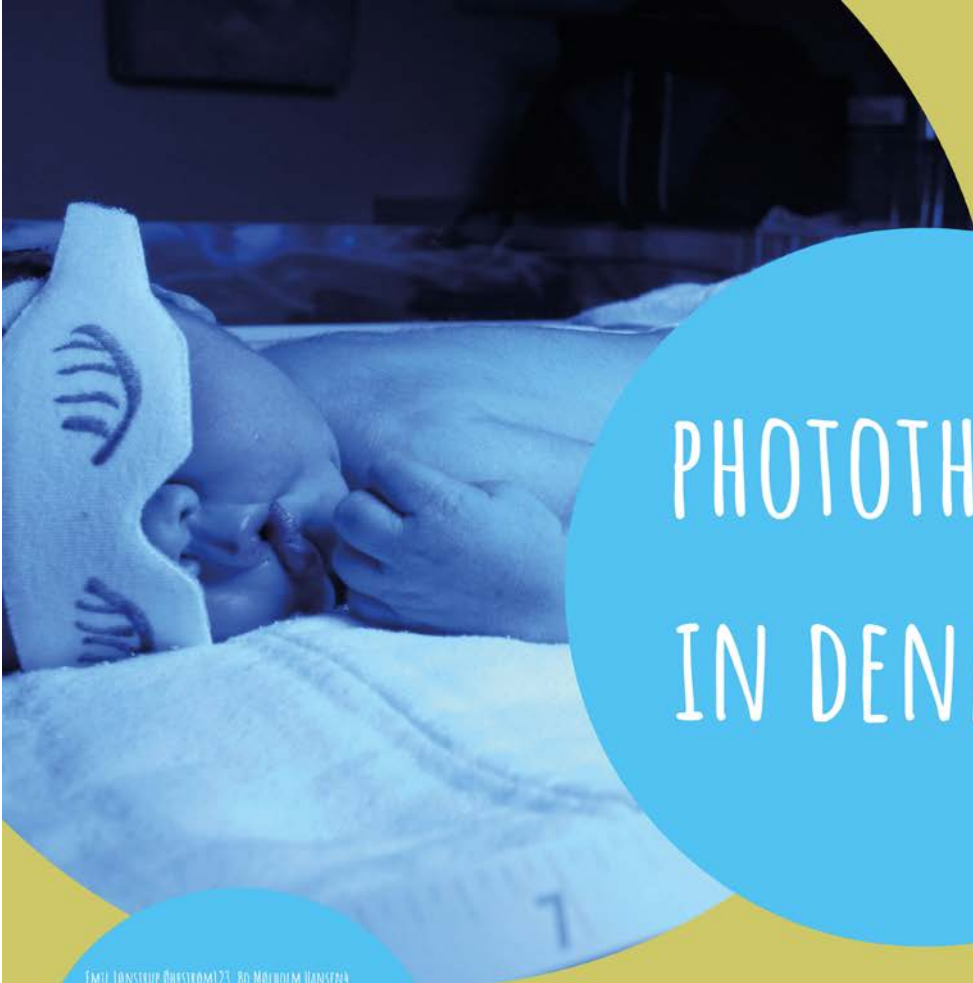
In Denmark, 2–5% of all newborns are treated with phototherapy, the standard treatment for neonatal jaundice. The treatment dose is defined by irradiance, and Danish national guidelines recommend a minimum of 30 $\mu\text{W}/\text{cm}^2/\text{nm}$. A recent study showed that 65% of maternity and neonatal wards in Denmark are unaware of the irradiance delivered by their phototherapy devices, making the actual treatment dose often unknown. This study aims to evaluate the phototherapy devices used for treating neonatal jaundice across Denmark.

Methods

A self-developed questionnaire was distributed to all neonatal and maternity wards in Denmark, collecting information on phototherapy equipment, irradiance, and treatment protocols. In addition, all departments will be visited to document available equipment and perform standardized irradiance measurements for each device.

Perspectives

This study will provide the first national overview of phototherapy practices and irradiance levels in Denmark. The results are expected to reveal gaps between guidelines and clinical practice, supporting improved equipment standards and more uniform, effective, and safe treatment of neonatal jaundice.



PHOTOTHERAPY IN DENMARK

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Introduction

In Denmark, 2–5% of all newborns are treated with phototherapy, the standard treatment for neonatal jaundice. The treatment dose is defined by irradiance, and Danish national guidelines recommend a minimum of 30 $\mu\text{W}/\text{cm}^2/\text{nm}$. A recent study showed that 65% of maternity and neonatal wards in Denmark are unaware of the irradiance delivered by their phototherapy devices, making the actual treatment dose often unknown. This study aims to evaluate the phototherapy devices used for treating neonatal jaundice across Denmark.

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Neonatal hyperbilirubinemia – diagnostics, treatment and follow-up in Denmark

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Background

Neonatal jaundice affects approximately 60% of full-term newborns during their first week of life. 2–5% of newborns require phototherapy, which is the standard treatment. If untreated, it can lead to permanent brain damage. The dose of phototherapy is defined by its irradiance. Although the condition and its treatment are well known, no explicit national guidelines cover diagnostic practices, treatment protocols, or follow-up procedures. Information about these protocols across Denmark is currently lacking. This study aims to examine how neonatal hyperbilirubinemia is diagnosed, treated, and followed up nationwide.

Methods

A self-developed questionnaire was distributed to all neonatal and maternity wards in Denmark. It covered diagnostic procedures, treatment protocols, follow-up practices, and details of phototherapy equipment. Following questionnaire completion, participants were invited to validate their responses through online or in-person interviews.

Results

Twenty-five of 29 departments responded to the questionnaire. Of these, 65% were unaware of the irradiance level used during phototherapy. Seventeen departments (68%) offered home phototherapy. Treatment duration varied from 24 to 72 hours. Various device types are in use, and 30% of departments have no planned follow-up after treatment cessation. Nationwide interviews are ongoing. Additional results will be presented in fall 2025.

Conclusions

Despite national recommendations, the actual “dose” (irradiance) is often unknown, and considerable variation exists in diagnostic, treatment, and follow-up practices across Denmark.

Neonatal Hyperbilirubinemia – Diagnostics, treatment and Follow-up in Denmark



Emil Lønstrup Øhrstrøm^{1,2,3}, Bo Mølholm Hansen⁴, Rikke Wiingreen⁴,
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Introduction

Neonatal jaundice affects approximately 60% of full-term newborns during their first week of life. 2–5% of newborns require phototherapy, which is the standard treatment. If untreated, it can lead to permanent brain damage. The dose of phototherapy is defined by its irradiance.

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This study aims to examine how neonatal hyperbilirubinemia is diagnosed, treated, and followed up nationwide.

Results



25 of 29 departments participated in the survey. 18 of 22 neonatal wards participated in the following interview



45% of departments screen children with risk factors



65% were unaware of the dose (irradiance) being used at their department



Treatment duration spanned from 24 to 72 hours



65% of departments offers home therapy



36% of departments have no follow-up

Methodology



Firstly, an online questionnaire was distributed to all departments in Denmark



Secondly, interviews with relevant personnel were conducted

Conclusion

Despite national recommendations, the actual “dose” (irradiance) is often unknown, and considerable variation exists in diagnostic, treatment, and follow-up practices across Denmark.

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Extreme hyperbilirubinemia and kernicterus spectrum disorder in Denmark from 2000-2024 - a national assessment

Emma Aagaard Nielsen^{1,3}, Frida Leck Kæseler^{1,3}, Emil Lønstrup Øhrstrøm^{1,2,3}, Mette Line Donneborg Roed^{1,2,3}

1. Department of Clinical Medicine Aalborg University, Aalborg, Denmark

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3. Centre of Clinical Research, North Denmark Regional Hospital, Hjoerring, Denmark

Background

Each year in Denmark 42 per 100.000 infants develop extreme neonatal hyperbilirubinemia. On a global scale, the disease is an important contributor to neonatal morbidity and mortality, due to the neurotoxicity of unconjugated bilirubin. Irreversible neurological damage occurs in 1.2 per 100.000 infants in Denmark yearly. In 2008, the timing of the PKU-screening changed, which may have influenced the incidence of extreme hyperbilirubinemia. In addition, the use of immunoglobulin-therapy is presumed to be on the rise. The latest nationwide report is nearly a decade old, highlighting the importance of updating information regarding the incidence, treatment and outcome of neonates with extreme hyperbilirubinemia.

Methods

The study is designed as a nationwide, retrospective cohort for all Danish neonates with extreme hyperbilirubinemia between the years 2000-2024. This study is based upon data collected in a previous study spanning from 2000–2015 and further incorporates new data from 2016–2024. Infants with serum-bilirubin $\geq 450 \mu\text{mol/L}$ within the first month of life will be included through an extract from the National Health Registry. Patient records will be reviewed to assess etiological factors, treatment modalities and clinical outcome.

Perspectives

This study will provide insight into the progression of extreme hyperbilirubinemia in Denmark and its possible neurological complications. This knowledge is essential for development and improvement of our clinical procedures and assessment of current treatment modalities. The results of this study will provide insight into whether current care and management are optimal, ultimately aiming to improve the treatment and outcome of affected infants.

Extreme Hyperbilirubinemia and Kernicterus Spectrum Disorder in Denmark From 2000-2024 - A National Assessment

Emma Aagaard Nielsen ¹, Frida Leck Kæseler ¹, Emil Lønstrup Øhrstrøm ^{1, 2, 3}, Mette Line Donneborg Roed ^{1, 2, 3}

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² Department of Pediatrics and Adolescent Medicine, North Denmark Regional Hospital.

³ Centre for Clinical Research, North Denmark Regional Hospital.

Background

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Prevalence and diagnostic gaps of G6PD-deficiency in infants with extreme neonatal hyperbilirubinemia

Frida Leck Kæseler^{1,3*}, Emil Lønstrup Øhrstrøm^{1,2,3}, Dorte Brønnum¹, Mette Line Donneborg Roed^{1,2,3}

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**Participant in the Introduction Course to Clinical Research and Development, North Denmark Regional Hospital, 2025*

Background

Glucose-6-phosphate dehydrogenase (G6PD)-deficiency is the most prevalent enzyme-deficiency globally. In infants the condition may lead to extreme neonatal hyperbilirubinemia, which can result in bilirubinencephalopathy or even death. Globally, it is estimated that 25% of all cases of extreme neonatal hyperbilirubinemia are due to G6PD-deficiency. As the Danish population increasingly becomes more diverse, the incidence of the G6PD-deficiency related extreme hyperbilirubinemia may increase correspondingly. Nationwide data from 2000-2015 suggests that the prevalence might have been severely underestimated, due to lack of testing at-risk infants. The current prevalence and trend of testing are unknown.

Methods

This study is a Danish nationwide, retrospective cohort between the years 2016-2024. Neonates exposed to extreme neonatal hyperbilirubinemia, serum-bilirubin $\geq 450 \mu\text{mol/L}$, will be identified through a National Health Registry extract. A review of the medical- and laboratory reports enables an identification of infants with extreme hyperbilirubinemia who were at-risk of G6PD-deficiency. In addition, information regarding trends of testing, and the prevalence of G6PD-deficiency related extreme hyperbilirubinemia will be examined.

Perspectives

The most recent data from Denmark is nearly a decade old, highlighting the need for updated information to assess the burden of G6PD-deficiency related extreme hyperbilirubinemia and raise awareness among health care professionals. Furthermore, this study will evaluate possible improvements in current trends of testing; thereby, enabling a review of current clinical procedures. On an individual level, early diagnosis may prevent G6PD-deficiency related haemolysis in later years and facilitate early identification among family members.

Prevalence and Diagnostic Gaps of G6PD-Deficiency in Infants with Extreme Neonatal Hyperbilirubinemia

Frida Leck Kæseler¹ Emil Lønstrup Øhrstrøm^{1,2,3} Dorthe Brønnum¹ Mette Line Donneborg Roed^{1,2,3}

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³ Department of Clinical Medicine, Aalborg University, Denmark

BACKGROUND

Glucose-6-phosphate dehydrogenase (G6PD) deficiency is the most prevalent enzyme-deficiency globally. In infants the condition may lead to extreme neonatal hyperbilirubinemia, which can result in bilirubinencephalopathy or even death. Globally, it is estimated that 25% of non-rhesus related cases of extreme neonatal hyperbilirubinemia are due to G6PD deficiency. As the Danish population increasingly becomes more diverse, the incidence of the G6PD deficiency related extreme hyperbilirubinemia may increase correspondingly. Nationwide data from 2000-2015 suggests that the prevalence might have been severely underestimated, due to lack of testing at-risk infants. The current prevalence and trend of testing are unknown.



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Determinants of treatment outcomes in severe childhood and adolescent obesity: the role of age, gender, socioeconomic status, psychosocial stressors and adherence to treatment

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Background

The prevalence of severe obesity among children and adolescents is increasing, with up to 18% of Danish schoolchildren affected. The condition is associated with serious somatic as well as psychosocial consequences. A multidisciplinary and family-centered approach (TCOCT) used in Denmark, has demonstrated effectiveness in reducing BMI-SDS and improving both physical and mental health, particularly with longer treatment duration and strong adherence. Unfortunately, low socioeconomic status (SES) and mental health challenges are well-documented barriers to adherence, reducing treatment effectiveness. Severe childhood obesity is furthermore an independent risk factor for lower educational attainment, reinforcing a negative cycle of obesity, low SES, and health problems. The study aims to describe the population of children and adolescents with severe obesity treated at 'Videnscenter for Børn og Unge med Overvægt (VIBUO)', focusing on the relationship between SES, psychosocial factors, and adherence to treatment, and to evaluate changes in BMI-SDS in relation to these factors.

Methods

A retrospective chart review of 500-600 patients between the age of 3-18 years treated at VIBUO in Aalborg and Hjoerring from 2018-2023. Patients with less than 2 appointments and/or less than 6 months of treatment are excluded. Data on age, gender, onset of obesity, age at entry of the program, SES, psychosocial factors as well as anthropometric data will be obtained from the preliminary examination and follow-up consultations after 3 months, 1 year and last appointment. Data is analyzed using descriptive statistics.

Perspectives

This study will identify characteristics and factors influencing treatment response, thereby contributing to optimizing care for children and adolescents with severe obesity.

DETERMINANTS OF TREATMENT OUTCOMES IN SEVERE CHILDHOOD AND ADOLESCENT OBESITY

The Role of Age, Gender, Socioeconomic Status, Psychosocial
Stressors and Adherence to Treatment

KAROLINE BASTHOLM WEESGAARD¹, SARA MUNK NIELSEN², CHARLOTTE EGGERTSEN³, TINE CAROC WARNER^{1,2,3}

Background

The prevalence of obesity among children and adolescents is increasing, with up to 18% of Danish schoolchildren affected. The condition is associated with serious somatic as well as psychosocial consequences. A multidisciplinary and family-centered approach (TCOCT) used in Denmark, has demonstrated effectiveness in reducing BMI-SDS and improving both physical and mental health, particularly with longer treatment duration and strong adherence. Unfortunately, low socioeconomic status (SES) and mental health challenges are well-documented barriers to adherence, reducing treatment effectiveness. Severe childhood obesity is furthermore an independent risk factor for lower educational attainment, reinforcing a negative cycle of obesity, low SES, and health problems. The study aims to describe the population of children and adolescents with severe obesity, focusing on the relationship between SES, psychosocial factors, and effectiveness to treatment

Methods

A retrospective chart review of 475 patients between the age of 3-18 years treated at VIBUO in Aalborg and Hjoerring from 2018-2023. Patients with less than 2 appointments and/or less than 6 months of treatment are excluded. Data on age, gender, onset of obesity, age at entry of the program, SES, psychosocial factors as well as antropometric data will be obtained from the preliminary examination and follow-up consultations after 3 months, 1 year and last appointment. Data is analyzed using descriptive statistics and linear mixed-effects model

Perspectives

This study will identify characteristics and factors influencing treatment response, thereby contributing to optimizing care for children and adolescents with severe obesity, in light of the well-documented importance of early intervention, treatment adherence, and social determinants.

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REGION NORDJYLLAND
– i gode hænder



Characteristics of functional constipation among pediatric patients in the North Denmark Region

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Background

Constipation is a common pediatric gastrointestinal disorder, usually managed in primary care but often leading to referral. Most cases are functional constipation (FC), indicating no underlying organic cause. According to ROME IV, FC is defined by infrequent or incomplete defecation. Inadequate management may cause fecal impaction, incontinence, and urinary tract infections (UTI). This study aimed to characterize children with FC admitted to pediatric departments in the North Denmark region over five years.

Methods

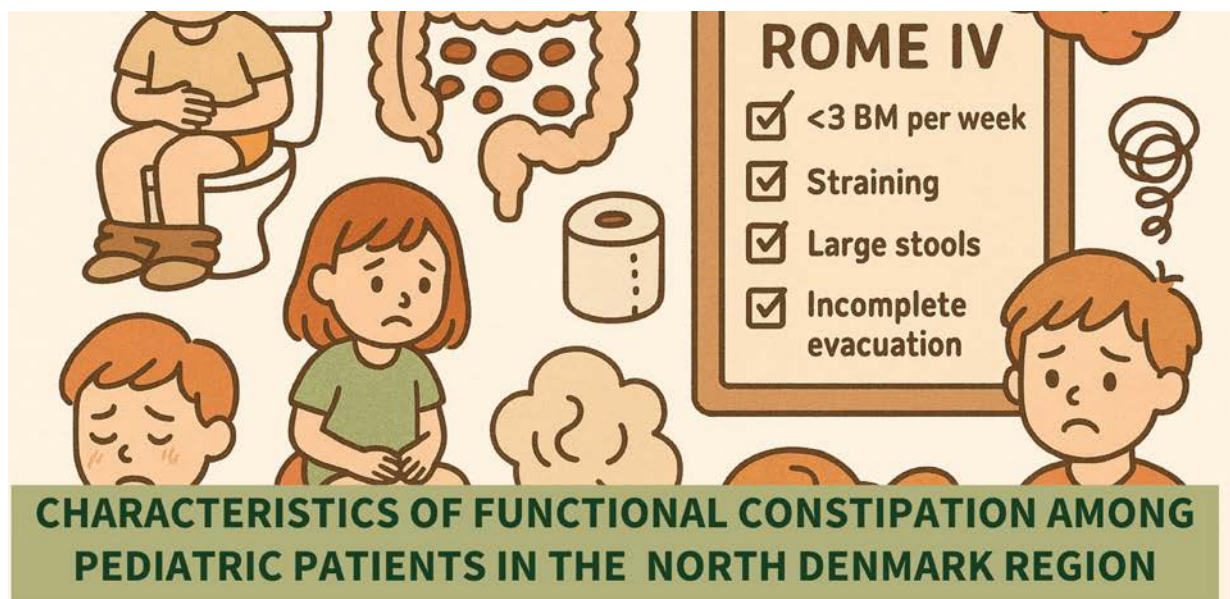
This retrospective observational study included children aged 0–15 years diagnosed with constipation (ICD-10: DK590/DK590A) between March 2019 and February 2024 at Aalborg University Hospital and North Denmark Regional Hospital. Only FC cases were included. Extracted variables included demographics, clinical features of FC, and physical examination findings at initial contact. Data were managed using Research Electronic Data Capture (REDCap).

Results

A total of 1,672 children met the inclusion criteria. Median age was 3.1 years, with equal sex distribution. Nearly half had constipation symptoms for less than one month or >12 months before initial contact. Daily defecation was absent in 48.5%, while 34.6% reported ≤2 defecations per week. Soft stools were most frequent. Rome IV-related symptoms were poorly documented. Fecal incontinence occurred in 23.7%, while UTI and urinary incontinence were less frequent. Pharmacological treatment, particularly osmotic laxatives, was initiated in 96.7% of cases. Non-pharmacological measures were inconsistently documented. Most follow-up periods were short.

Conclusions

This study highlights the young age and clinical variability among pediatric patients diagnosed with FC, with predominant reliance on pharmacological management.



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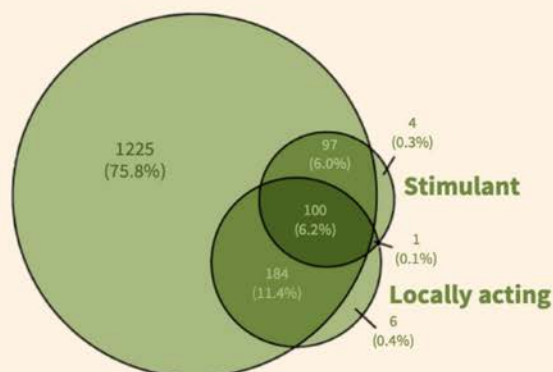
Conclusion

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Demographics

Age, years, median (IQR)	3.1 (0.5; 7.6)
Sex, n (%)	
Female	843 (50.4)
Treatment setting	
Outpatient treatment	1389 (83.1)
Admission	89 (5.3)
Both	194 (11.6)

Osmotic



Vurdering af eksekutiv funktion hos børn og unge med epilepsi – sammenligning af metoder til afdækning af eksekutive vanskeligheder hos børn og unge med epilepsi – pilotprojekt

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**Deltager i Kursus i Klinisk Forskning og Udvikling, Regionshospital Nordjylland, 2025*

Baggrund

Børn og unge med epilepsi oplever ofte kognitive udfordringer, særligt inden for eksekutive funktioner, som har stor betydning for både indlæring og adfærd. Formålet med dette pilotstudie er at sammenligne klinisk vurdering, Epitrack Junior og BRIEF-2 og deres indbyrdes evne til at identificere eksekutive vanskeligheder. Der findes aktuelt ingen studier, der direkte sammenholder disse værktøjer, hvormed resultaterne kan bidrage med ny viden til en mere målrettet indsats.

Metoder

Et tværsnitstudie med 18 deltagere med epilepsi (8-18 år) undersøgt i børneneurologisk ambulatorium, Aalborg Universitetshospital, mellem december 2022 og september 2023. Alle gennemførte Epitrack Junior med børneneuropsykolog, og hjem og skole besvarede BRIEF-2-spørgeskema. Dertil noteredes undersøgernes kliniske vurdering baseret på samlet helhedsindtryk. Data blev analyseret med kappa-test for overensstemmelse og Spearman's rangkorrelation for sammenhæng mellem testene.

Resultater

Klinisk vurdering var, at alle deltagere havde behov for yderligere vejledning til skole/hjem. Epitrack Junior identificerede 66,7 %, BRIEF-Forældre 61,1 % og BRIEF-Skole 55,6 % - tilsammen identificerede de 16 ud af de 18 børn. Der var en svag men signifikant overensstemmelse mellem redskaberne (Kappa = 0,30, $p = 0,01$). Epitrack Junior korrelerede svagt-moderat negativt med BRIEF-Forældre (Spearman's $\rho = -0,41$) og moderat negativt med BRIEF-Skole ($\rho = -0,61$, $p = 0,018$, $n = 15$). Kun 22,2 % havde tidligere eller aktuel kontakt til PPR.

Konklusioner

Pilotstudiet viser, at hverken Epitrack Junior eller BRIEF-2 identificerer alle eller de samme børn og unge med klinisk vurderede eksekutive vanskeligheder, men tilsammen dækker de størstedelen. Dermed indikation for en kombineret vurdering for at sikre en tidlig og målrettet indsats.

Tryk med epilepsi

Hvordan undgår vi at overse børnenes eksekutive vanskeligheder?



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1. INTRODUKTION

Børn og unge med epilepsi oplever ofte kognitive udfordringer, særligt inden for eksekutive funktioner, som har stor betydning for både indlæring og adfærd. Som det første af sin slags har dette pilotstudie til formål at sammenligne klinisk vurdering, Epitrack Junior og BRIEF-2 og deres indbyrdes evne til at identificere eksekutive vanskeligheder.

3. RESULTATER

Kliniske vurderinger var, at *alle* deltagere havde behov for yderligere vejledning til skole og hjem. Epitrack Junior identificerede 66,7 %, BRIEF-Forældre 61,1 % og BRIEF-Skole 55,6 %.

Epitrack Junior og BRIEF-2 identificerede i alt 16 ud af de 18 børn, men ikke de samme.

Der var en svag men signifikant overensstemmelse mellem redskaberne (Kappa = 0,30, $p = 0,01$). Epitrack Junior korrelerede svagt-moderat negativt med BRIEF-Forældre (Spearman's $\rho = -0,41$) og moderat negativt med BRIEF-Skole ($\rho = -0,61$, $p = 0,018$, $n = 15$).

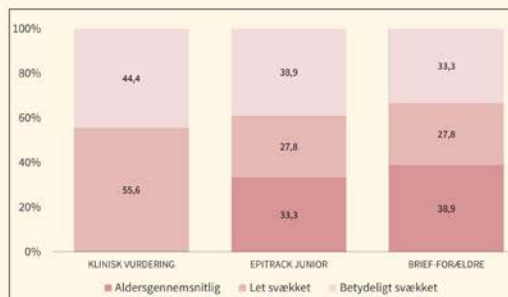
4. KONKLUSION

Epitrack Junior og BRIEF-2 identificerer hverken alle - eller de samme - børn og unge med klinisk vurderet eksekutiv dysfunktion. *Tilsammen* dækker de størstedelen, hvilket understøtter behovet for en kombineret anvendelse i praksis.

2. METODE

Tværsnitstudie med 18 børn med epilepsi, 8-18 år, undersøgt i neurologisk ambulatorium på Aalborg Universitetshospital (dec. 2022-sep. 2023). Børnene gennemførte Epitrack Junior med børneneuropsycholog, mens hjem og skole besvarede BRIEF-2-spørgeskema. Dertil blev undersøgernes kliniske vurdering noteret, baseret på samlet helhedsindtryk.

VURDERING AF EKSEKUTIV FUNKTION



Figur 1: Fordeling af kategorierne aldersgennemsnitligt, let svækket og betydeligt svækket eksekutiv funktionsniveau for hhv. klinisk vurdering, Epitrack Junior og BRIEF-Forældre scoren. BRIEF-skole udløst grundet mikrodøle.



Vi har på Børne- og Ungeafdelingen på Aalborg Universitetshospital, udviklet en tværfaglig model for børn og unge, der diagnosticeres med epilepsi: **Tryk med Epilepsi**.

Målet er at skabe tryk og give både barnet og familien den bedst mulige støtte – fra første møde og hele vejen gennem forløbet.

Behandling af hypoglykæmi hos nyfødte - hvilken administrationsvej for dextrosegel er mest effektiv?

Rasa Cipliene^{1*}, Dorte Brønnum²

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**Deltager i Kursus i Klinisk Forskning og Udvikling, Regionshospital Nordjylland, 2025*

Baggrund

Neonatal hypoglykæmi er en tilstand, der er forbundet med risiko for hjerneskade og hæmmet neurologisk udvikling. Aktuell praksis hvor 40 % dextrosegel 200 mg/kg/dosis appliceres med en finger i kindslimhinden er en effektiv førstelinjebehandling. Det er uklart, hvilken administrationsvej – buccal, sublingual eller generel oral indgivelse – der giver den mest effektive absorption og er til mindst gene for den nyfødte baby.

Metoder

Denne litteraturgennemgang omfatter eksisterende forskning. En litteratursøgning blev foretaget i databaserne PubMed, Cochrane Library og Embase den 06.04.2025 ved hjælp af søgeord som: “newborn”, “infant”, “dextrose”, “administration”, “hypoglycemia”. *Inklusionskriterier:* Artikler publiceret på engelsk eller et skandinavisk sprog, studier udført på mennesker, og med fokus på dextrosegel som behandling. *Eksklusionskriterier:* Kasuistikker, dyreforsøg og studier uden outcome relateret til sikkerhed.

Resultater

I alt 56 studier blev inkluderet. I PubMed blev 40 ud af 578 artikler vurderet som relevante i Cochrane Library 1 ud af 3 artikler og i Embase 15 ud af 1107 artikler. Ingen af studierne sammenlignede buccal, sublingual eller oral administration af dextrosegel til behandling af neonatal hypoglykæmi. I samtlige studier blev buccal administration anvendt hos nyfødte, med én undtagelse, hvor både buccal og sublingual administration blev anvendt. Evidensen er modstridende vedrørende, hvilken administrationsvej der giver den bedste absorption i andre patientgrupper.

Konklusioner

Det er uklart hvilken administrationsvej af dextrosegel der er mest effektiv og mindst generende for nyfødte med hypoglykæmi. Fremtidig forskning bør undersøge, om metoder, som dråbe for dråbe buccal eller sublingual eller general oral indgivelse kan være lige så effektiv og til mindre gene hos nyfødte.

Behandling af hypoglykæmi hos nyfødte - hvilken administrationsvej for dextrosegel er mest effektiv?

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Danmark



Billeder er AI genereret

BAGGRUND

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Urogenital and faecal microbiome in children with bladder and bowel dysfunction

Sofie Axelgaard^{1,2}, Caspar Bundgaard-Nielsen³, Ann-Maria Jensen³, Nadia Ammitzbøll³, Anne Sofie Vedsted³, Morten Aden-Dam¹, Konstantinos Kamperis⁴, Søren Hagstrøm^{5,6}, Suzette Sørensen^{3,6}, Luise Borch¹

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Background

Bladder and bowel dysfunction (BBD) affects up to 20% of children and is a burden for both families and health care practitioners. BBD increases the risk of urinary tract infections (UTIs), which can lead to renal scarring and long-term morbidity. Classical explanations, such as faecal impaction and incomplete emptying, may not fully explain this risk. Emerging evidence suggests a microbial dimension, with gut and urinary microbiota altered in related conditions. Whether children with BBD harbour distinct microbial profiles is unknown. We aimed to characterise urogenital and faecal microbiota in children with BBD compared with healthy peers and explore microbial shifts, hypothesising that BBD is associated with microbial signatures changing with symptom improvement.

Methods

We conducted a multicentre longitudinal case-control study including prepubertal children with treatment-naïve BBD and age- and sex-matched healthy controls. Inclusion criteria for patients were functional constipation and daytime urinary incontinence; controls were free of recent bowel or bladder symptoms. Midstream urine and swabs from the prepuce in boys or perineum in girls were collected. Faecal samples were collected at home with standardised instructions. Samples were processed and analysed by full-length 16S rRNA sequencing. Follow-up at 12 weeks was performed in both groups.

Perspectives

This study will provide insights into microbial signatures associated with BBD and their role in symptom improvement and UTI susceptibility. Findings may help clarify disease mechanisms and identify new therapeutic targets. Preliminary results, including baseline microbiota profiles and treatment-associated shifts, are expected to be presented at the meeting.

UROFECAL MICROBIOME IN CHILDREN WITH BLADDER AND BOWEL DYSFUNCTION

Sofie Axelgaard^{1,2}, Caspar Bundgaard-Nielsen³, Ann-Maria Jensen³, Nadia Ammitzbøll³, Anne Sofie Vedsted³, Morten Aden-Dam¹, Konstantinos Kamperis⁴, Søren Hagstrøm⁵, Suzette Sørensen^{3,6}, Luise Borch¹

¹Department of Pediatrics and Adolescent Medicine, Gedstrup Hospital, Herning, Denmark. ²Department of Clinical Medicine, Aarhus University, Aarhus, Denmark. ³Centre for Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark. ⁴Department of Pediatrics and Adolescent Medicine, Aarhus University Hospital, Aarhus, Denmark. ⁵Department of Pediatrics and Adolescent Medicine, Aalborg University Hospital, Aalborg, Denmark. ⁶Department of Clinical Medicine, Aalborg University, Aalborg, Denmark.



Contact information on corresponding author

BACKGROUND



Bladder and Bowel Dysfunction (BBD) affects up to 20 % of children.



BBD is defined by concurrent bladder and bowel symptoms, most commonly functional constipation and urinary incontinence.



BBD increases the risk of upper urinary tracts infections.



The role of the urofecal microbiome in BBD is not well established.

METHODS



Participants: 72 prepubertal, treatment-naïve children with BBD and 73 age- and sex-matched healthy controls.



Intervention: Children with BBD received bowel management (toilet habits + laxatives) ± standard urotherapy.



Samples: Fecal and midstream urine samples collected at baseline and after treatment.



Follow-up: 12 weeks.

AIM

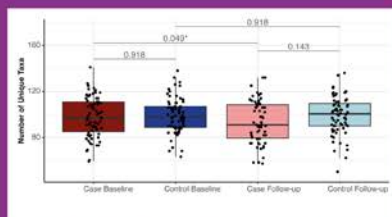


To characterise the **baseline urofecal microbiome** in children with BBD compared with healthy controls.

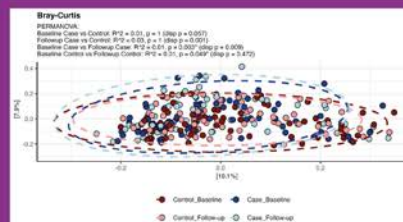


To assess **changes** in the urofecal microbiome after treatment in children with BBD.

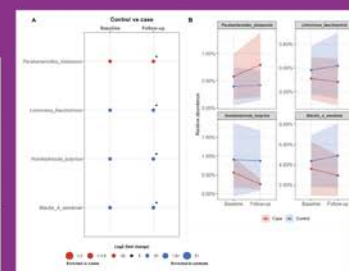
RESULTS, FECAL SAMPLES



Alpha diversity: Comparable number of taxa at baseline; taxa reduced in cases at follow-up.



Beta diversity (Bray-Curtis): No baseline difference; both groups shifted at follow-up.



Composition analysis: No baseline difference; four taxa differ in abundance at follow-up.

CONCLUSION

- Gut microbiome in children with untreated BBD is similar to healthy peers in terms of alpha diversity, beta diversity, and overall composition.
- Standard bowel management decreases gut microbiome diversity and alters dominant species.
- Analysis of urine samples is ongoing and not presented here.



Impact of adverse childhood experiences and comorbidities on multidisciplinary pediatric obesity treatment

Tine Caroc Warner^{1,2,3}, Janifa Nadarajah^{1,2}, Cecilie Sloth Madsen^{1,2}

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

3. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

Childhood obesity is increasing worldwide. Multidisciplinary treatment is offered to children above the 99th percentile in pediatric outpatient clinics in North Jutland. Adverse childhood experiences and comorbidities may influence treatment outcomes, but research on their impact is limited. This study investigates the effects of parental divorce, bullying, and comorbidities on pediatric obesity treatment outcomes.

Methods

Medical records of patients treated at the North Denmark Regional Hospital between January 2014 and December 2023 were retrospectively reviewed. Data on parental marital status, history of bullying, comorbidities, and BMI were collected from four treatment appointments. Associations between BMI changes and psychosocial or comorbidity factors were analyzed using t-tests, ANOVA, chi-square tests, and mixed-effects regression models.

Results

The study included 183 children (49.7% girls); 74 (44%) had divorced parents, 52 (47%) reported bullying, and 51 (28%) had ≥ 1 comorbidities. BMI-SDS decreased significantly from baseline to final appointment for both girls (-0.20 , $p=0.01$) and boys (-0.48 , $p<0.001$). The average treatment duration for participants who completed the program ($n=67$) was 2.48 years (SD 1.46). No significant association was observed between treatment outcomes and parental divorce, bullying, or type of comorbidity. Participants aged 12–18 had a higher mean BMI-SDS at the final consultation than at the one-year follow-up.

Conclusions

Multidisciplinary pediatric obesity treatment effectively reduced BMI-SDS regardless of adverse childhood experiences, comorbidities, gender, or age. Age-specific adjustments may be needed for adolescents to optimize outcomes.

IMPACT

of Adverse Childhood Experiences and Comorbidities on Multidisciplinary Pediatric Obesity Treatment

Tine Caroc Warner^{1,2}, Janifa Nadarajah^{1,2}, Cecilie Sloth Madsen^{1,2}

¹Department of Pediatrics, North Denmark Regional Hospital, Hjørring, Denmark

²Centre for Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark

Childhood obesity is increasing worldwide. Multidisciplinary treatment is offered to children above the 99th percentile in pediatric outpatient clinics in North Jutland. **Adverse childhood experiences and comorbidities may influence treatment outcomes, but research on their impact is limited.** This study investigates the effects of parental divorce, bullying, and comorbidities on pediatric obesity treatment outcomes.

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2

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3

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4

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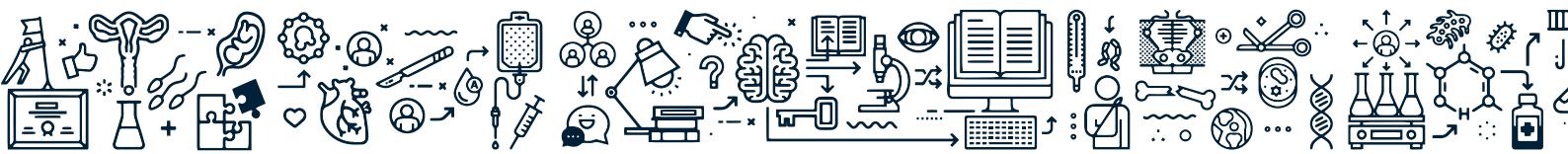
Age-specific adjustments may be needed for adolescents to optimize outcomes.

5

Nevertheless, BMI-SDS decreased significantly from baseline to final appointment for both girls (-0.20, $p=0.01$) and boys (-0.48, $p<0.001$). But adolescents aged 12–18 had a higher mean BMI-SDS at the final consultation than at the one-year follow-up.

Average treatment duration for children who completed the program ($n=67$) was 2.48 years.

Gynækologi og Obstetrik



Interdisciplinary consultation and birth plan for women requesting cesarean section: a mixed-methods study of obstetric, maternal, and neonatal outcomes as well as women's birth experience

Astrid Dalsgaard^{1,3}, Cecilie Jeppesen^{1,3}, Elise Skyggebjerg^{1,3}, Victoria Lindblad^{2,3}, Peter Derek Christian Leutscher^{1,3}, Lars Burmester²

1. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

2. Department of Gynecology and Obstetrics, North Denmark Regional Hospital, Hjoerring, Denmark

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

Background

In 2017, a doctor-midwife clinic was established at North Denmark Regional Hospital aiming to offer pregnant women requesting a cesarean section (CS) an interdisciplinary consultation with an obstetrician and a midwife. Emphasis was placed on developing a birth plan and to ensure that obstetricians and midwives adhered to the plan, when the women gave birth. Currently the clinic conducts about 70 consultations annually, primarily with women with birth anxiety or a previous negative birth experience. Therefore, the overall aim of this project is to evaluate the experiences and perspectives by the women in relation to their interdisciplinary consultations.

Methods

This is a mixed-methods project integrating both quantitative and qualitative research disciplines and methods with data from a cohort of women receiving interdisciplinary consultation in 2020-2025. This project is composed of three separate designs: a) a description of socio-demographic and obstetric characteristics in the cohort by review of medical records, in addition to b) a quantitative survey using Childbirth Experience Questionnaire (CEQ), and c) qualitative semi-structured interviews aiming to obtain in-depth understanding of the women's birth experience.

Perspectives

The objective is to provide better support earlier in pregnancy as well as identify women who may benefit from a birth plan during the first consultation, allowing them to proactively address key concerns and tailor the plan to their individual needs.

CARE

Consultation And birth plan in a doctor-midwife clinic: Results & Experiences

Interdisciplinary consultation and birth plan in a doctor-midwife clinic: A mixed-method study of obstetric, maternal, and neonatal outcomes as well as women's birth experience

Cecilie Jeppesen ¹ • Elise Skyggebjerg ¹ • Astrid Dalsgaard ¹ • Victoria Lindblad ^{2,3} • Peter Leutscher ³
• Lars Burmester ²

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²Department of Gynecology and Obstetrics, North Denmark Regional Hospital, Hjoerring, Denmark

³Centre for Clinical Research, North Denmark Regional Hospital, Hjoerring, Denmark

AIM

Better doctor-midwife clinics • Better pregnancies • Better birth experiences

BACKGROUND

In 2017 practice changed; pregnant women could no longer obtain a cesarean section on maternal request at North Denmark Regional Hospital. Therefore, a doctor-midwife clinic was established; women requesting a cesarean section were offered an interdisciplinary consultation with an obstetrician and a midwife. Emphasis was placed on developing a birth plan and to ensure that obstetricians and midwives adhered to the plan, when the women gave birth. Currently the clinic conducts about 70 consultations annually, primarily with women with birth anxiety or a previous negative birth experience.

The objective is to evaluate the effect of the doctor-midwife clinic by gaining a deeper understanding of the characteristics of women that are offered an interdisciplinary consultation, the content of birth plans, the maternal and neonatal outcomes, and the general birth experience.

METHODS

Data ranging from 2020-2025 are used to compose three separate designs:

- A description of the women in the cohort and their birth plans
- A quantitative survey of the cohort's birth experiences using a validated questionnaire (CEQ)
- Qualitative semi-structured interviews to get an in-depth understanding of the birth experiences

PERSPECTIVES

The objective is to provide better support earlier in pregnancy as well as identify women who may benefit from a birth plan during the first consultation, allowing them to proactively address key concerns and tailor the plan to their individual needs. The results of this study may contribute to a reduction in the number of cesarean sections within the healthcare system by addressing women's perspectives and concerns in collaboration with healthcare professionals.

 NORTH DENMARK
REGIONAL HOSPITAL

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CLINICAL
RESEARCH
North Denmark
Regional Hospital

 AALBORG
UNIVERSITY

This picture is AI-generated

Intraindividual variation of the urogenital microbiome in premenopausal women over a two-month period

Boukje Veenstra^{1,2}, Anna Sofie Faber^{1,2}, Ann-Maria Jensen¹, Caspar Bundgaard-Nielsen¹, Suzette Sørensen^{1,2}, Peter Derek Christian Leutscher^{1,2}, Louise Søndergaard Rold¹, Lisandra Stein Bernardes¹, Louise Thomsen Schmidt Arenholt^{1,2}

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

2. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

The female urogenital microbiome is a complex and dynamic ecosystem, exhibiting significant inter-individual variation and newly recognized intraindividual fluctuations. Dysbiosis in urinary and vaginal microbiomes is increasingly associated with urological and gynecological conditions, yet the factors shaping microbiome composition remain poorly understood. This study investigates weekly changes in the urogenital microbiome of healthy women over two months, aiming to identify influences on its composition and assess the importance of sampling timing in future research.

Methods

Five healthy, non-pregnant, premenopausal women were followed for nine weeks. Weekly blood samples, self-collected vaginal swabs, and mid-stream urine samples were obtained. Daily questionnaires recorded hygiene product use, bleeding, intercourse, and urogenital symptoms. Estradiol and progesterone levels were measured from blood samples. DNA from vaginal and urine samples was analyzed using 16S rRNA gene sequencing (V1–V8 region) and used to assess changes in microbiota via alpha and beta diversity metrics.

Results

Alpha diversity revealed notable inter- and intraindividual variation. Menstrual bleeding significantly increased vaginal Shannon diversity ($p < 0.001$) and nearly affected urine samples ($p = 0.053$). Pad use increased unique OTUs in urine ($p = 0.003$) and decreased vaginal diversity ($p = 0.01$). Cup use reduced urine diversity ($p = 0.028$). PCoA indicated individual differences in microbiome stability. A decline in *Lactobacillus* species was observed during menstruation.

Conclusions

The urogenital microbiome in healthy women is dynamic, with menstrual bleeding and hygiene product use significantly influencing its composition. These factors should be considered when determining sampling timing in future studies.

Intraindividual Variation of the Urogenital Microbiome in Premenopausal Women Over a Two-Month Period

Background

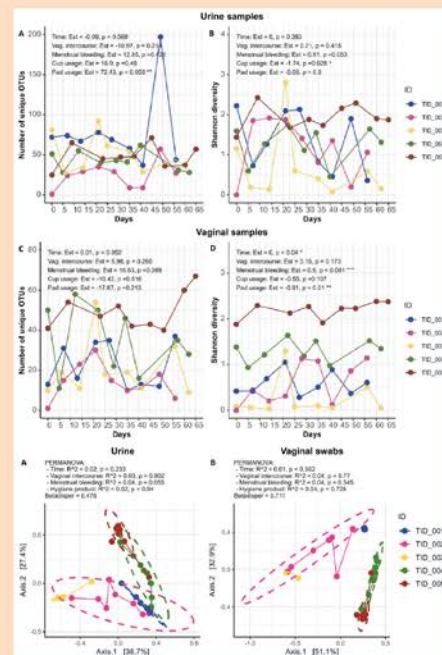
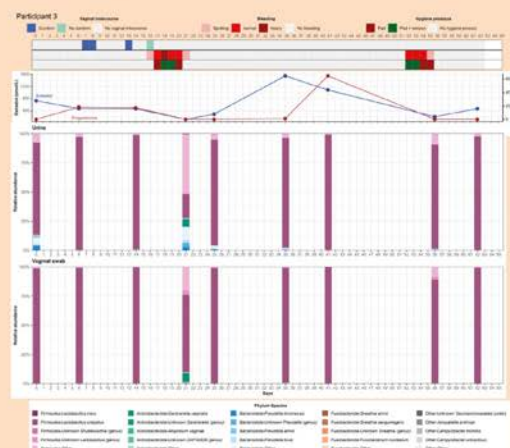
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Does birthing position influence neonatal outcomes in vaginal breech delivery? a comparison of upright and dorsal breech delivery

Catherine Vinge François^{1*}, Aya Mohammed Alsadi^{2,4}, Lars Burmester^{1,3}, Peter Derek Christian Leutscher^{2,4}, Lisandra Stein Bernardes^{1,2}

1. Department of Gynecology and Obstetrics, North Denmark Regional Hospital, Hjoerring, Denmark

2. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

3. Department of Urology, North Denmark Regional Hospital, Hjoerring, Denmark

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

**Participant in the Introduction Course to Clinical Research and Development, North Denmark Regional Hospital, 2025*

Background

Vaginal breech delivery at term remains controversial, particularly since a landmark 2000 trial reported increased perinatal morbidity, mortality, and neonatal hypoxia compared to elective cesarean section (CS). With strict candidate selection and skilled birth teams, vaginal breech birth has regained ground in some Danish maternity units. However, evidence on how maternal birthing position—upright versus dorsal—affects neonatal outcomes is scarce, with only one prior study addressing this. Therefore, the objective of this study is to investigate whether upright positioning during vaginal breech delivery improves neonatal outcomes compared with the dorsal position.

Methods

This 5-year retrospective cohort study will include singleton term breech deliveries in Denmark between June 1, 2020, and May 31, 2025. Exclusion criteria are preterm delivery (<37+0 weeks), estimated fetal weight >4,000 g, intrauterine growth restriction, and hyperextended fetal head. Data will be obtained from the Danish National Patient Register, medical records, the Danish Neonatal Database, the Cause of Death Registry, and electronic health records, including neonatal follow-up at 3, 6, and 12 months. Women will be classified into four groups: (1) vaginal-dorsal, (2) vaginal-upright, (3) elective CS, and (4) emergency CS. Primary outcomes are neonatal mortality or severe morbidity potentially related to delivery method, and degree of hypoxia (Apgar score, umbilical cord pH, base excess). Secondary outcomes follow PREMODA study definitions to enable international comparison.

Perspectives

Results may guide clinical decision-making on breech delivery, refine selection criteria, and reduce unnecessary cesarean sections while maintaining neonatal safety.

BOTTOM FIRST

Does Birthing Position Influence Neonatal Outcomes in Vaginal Breech Delivery? A Comparison of Upright and Dorsal Breech Delivery

Catherine Vinge François¹, Aya Mohammed Alsadi², Lars Burmester^{1,3}, Peter Derek Christian Leutscher^{4,5}, Lisandra Stein Bernardes^{1,2}

- ¹ Department of Gynaecology and Obstetrics, North Denmark Regional Hospital, Hjørring, Denmark
- ² Faculty of Medicine, Aalborg University, Aalborg, Denmark
- ³ Department of Urology, North Denmark Regional Hospital, Hjørring, Denmark
- ⁴ Department of Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark
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BACKGROUND

Vaginal breech delivery at term remains controversial, particularly since a landmark 2000 trial reported increased perinatal morbidity, mortality, and neonatal hypoxia compared to elective cesarean section (CS). With strict candidate selection and skilled birth teams, vaginal breech birth has regained ground in some Danish maternity units. However, evidence on how maternal birthing position—upright versus dorsal—affects neonatal outcomes is scarce, with only one prior study addressing this. Therefore, the objective of this study is to investigate whether upright positioning during vaginal breech delivery improves neonatal outcomes compared with the dorsal position.

PERSPECTIVE

This study has the potential to provide valuable evidence in the ongoing debate on the optimal management of term breech presentations. By assessing whether upright vaginal breech delivery improves neonatal outcomes compared with the dorsal position, the findings may help reduce unnecessary surgical interventions in otherwise healthy women with healthy fetuses. A clearer understanding of how birthing position affects neonatal mortality, severe morbidity, and hypoxia could inform improved clinical guidelines and decision-making. Furthermore, the study may contribute to refining selection criteria for vaginal breech delivery, which currently—both nationally and internationally—depend heavily on local policies and the expertise of the attending obstetric team. Ultimately, the results could support a more individualized and evidence-based approach to breech birth, balancing maternal and neonatal safety with the reduction of unnecessary cesarean sections.

METHOD

This 5-year retrospective cohort study will include singleton term breech deliveries in Denmark between June 1, 2020, and May 31, 2025. Exclusion criteria are preterm delivery (<37+0 weeks), estimated fetal weight >4,000 g, intrauterine growth restriction, and hyperextended fetal head. Data will be obtained from the Danish National Patient Register, medical records, the Danish Neonatal Database, the Cause of Death Registry, and electronic health records, including neonatal follow-up at 3, 6, and 12 months. Women will be classified into four groups: (1) vaginal-dorsal, (2) vaginal-upright, (3) elective CS, and (4) emergency CS. Primary outcomes are neonatal mortality or severe morbidity potentially related to delivery method, and degree of hypoxia (Apgar score, umbilical cord pH, base excess). Secondary outcomes are the interventions required for delivery depending on birthing position, including frequency and type of maneuvers.

INCLUSION CRITERIA

- Gestational age ≥ 36+6
- Estimated fetal weight < 4000 g
- Intrauterine growth restriction
- Deflected fetal head



Vulvar lichen sclerosis as a risk factor for birth-related perineal tear: a retrospective cohort study

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Background

Vulvar lichen sclerosis is a chronic inflammatory condition of the anogenital region. Although diagnosed in approximately 1.7% of women, the true prevalence is likely underestimated. Evidence regarding its impact during pregnancy and childbirth remains limited. This study aims to investigate the risk of obstetric perineal tears during vaginal delivery in women with vulvar lichen sclerosis.

Methods

Medical records of patients diagnosed with vulvar lichen sclerosis who gave birth between October 2019 and September 2024 in the North Denmark Region were included. For each patient with vulvar lichen sclerosis, two controls without the condition were analyzed. Maternal and obstetric factors were examined in relation to their association with perineal tears, controlling for relevant variables

Results

In total 277 medical records of patients with vulvar lichen sclerosis and 533 controls were included. In multivariate analysis adjusted for parity, birth weight, head circumference, and vacuum-assisted delivery, vulvar lichen sclerosis was associated with a significantly increased risk of second-degree (relative risk 1.371, $p < 0.001$) and third-degree tears (relative risk 3.374, $p = 0.012$) compared to controls. Within the vulvar lichen sclerosis group, nulliparity, vacuum-assisted delivery, vaginal introitus narrowing before pregnancy, pruritus and/or white patches or fragile skin during pregnancy, and induction with Syntocinon were associated to higher risk of perineal tear.

Conclusions

Vulvar lichen sclerosis was associated with an increased risk of second- and third-degree perineal tears. Vaginal introitus narrowing before pregnancy and vulvar symptoms were associated with the occurrence of third-degree tears among patients with vulvar lichen sclerosis.

Vulvar Lichen Sclerosus as a Risk Factor for Birth-related Perineal Tear: A Retrospective Cohort Study



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Background

Vulvar lichen sclerosus is a chronic inflammatory condition of the anogenital region. Although diagnosed in approximately 1.7% of women, the true prevalence is likely underestimated. Evidence regarding its impact during pregnancy and childbirth remains limited.

This study aims to investigate the risk of obstetric perineal tears during vaginal delivery in women with vulvar lichen sclerosus.



Methods

Medical records of patients diagnosed with vulvar lichen sclerosus who gave birth between October 2019 and September 2024 in the North Denmark Region were included. For each patient with vulvar lichen sclerosus, two controls without the condition were analyzed. Maternal and obstetric factors were examined in relation to their association with perineal tears, controlling for relevant variables.

Results

In total 277 medical records of patients with vulvar lichen sclerosus and 533 controls were included.

In multivariate analysis adjusted for parity, birth weight, head circumference, and vacuum-assisted delivery, **vulvar lichen sclerosus was associated with a significantly increased risk of second-degree (relative risk 1.371, $p < 0.001$) and third-degree tears (relative risk 3.374, $p = 0.012$) compared to controls.**

Within the vulvar lichen sclerosus group, nulliparity, vacuum-assisted delivery, vaginal introitus narrowing before pregnancy, pruritus and/or white patches or fragile skin during pregnancy, and induction with Syntocinon were associated to higher risk of perineal tear.

Incidence of perineal tears in the group of women with lichen sclerosus and the controls

	VLS group (n = 224)	Control group (n = 441)	p-value
No suturing-required tear, n (%)	36 (16.6)	102 (23.1)	$p = 0.048$
Suturing-required tear, n (%)	188 (83.9)	335 (76.0)	$p = 0.047$
First-degree tear	75 (33.5)	182 (41.3)	$p = 0.095$
Second-degree tear	101 (45.1)	147 (33.3)	$p = 0.004$
Third-degree tear	12 (5.4)	6 (1.4)	$p = 0.004$
Fourth-degree tear	0 (0.0)	0 (0.0)	-
Missing data, n (%)	0 (0.0)	4 (0.9)	



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Conclusions

► **Vulvar lichen sclerosus** was associated with an increased risk of second- and third-degree perineal tears.

► **Vaginal introitus narrowing** before pregnancy and **vulvar symptoms** were associated with the occurrence of **third-degree tears** among patients with vulvar lichen sclerosus.



Comparison of available tests for fetal wellbeing assessment: a systematic review of randomized trials

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Background

Diagnosing fetal distress during pregnancy and childbirth allows timely interventions, reducing neonatal complications. However, despite numerous tests to assess fetal well-being, the high rate of false-positive often result in unnecessary interventions. Selecting the most accurate test is crucial for guiding obstetrical decisions. This systematic review aims to compare randomized trials evaluating different intrapartum tests for fetal well-being.

Methods

Following PRISMA guidelines, PubMed, Embase, and Cochrane were searched for randomized trials from the past 30 years comparing two or more fetal assessment methods. Two independent reviewers conducted data extraction and bias assessment.

Results

Twenty-seven trials met inclusion criteria. Techniques studied included ST analysis (8), computerized (2) and non-computerized (18) cardiotocography, fetal pulse oximetry (5), scalp blood sampling (5), manual stimulation (1), intermittent auscultation (7), and amniotic fluid assessment (2). No method consistently reduced major neonatal complications. Cardiotocography was linked to higher obstetric intervention rates. Most trials included mixed maternal profiles, with few analyzing high-risk subgroups. In one subgroup analysis, computerized cardiotocography showed lower fetal acidemia in women with pre-existing conditions or complicated pregnancies. These findings suggest a potential benefit in high-risk groups, although effects were outcome-specific and other neonatal outcomes showed no significant differences. Adjunctive tests occasionally reduced interventions, but evidence was inconsistent and underpowered. Risk of bias varied; only a few multicenter trials were low risk, while most raised concerns or were high risk.

Conclusions

No intrapartum monitoring method has proven superior in preventing major neonatal complications. Adjunctive techniques may affect intervention rates, but their impact on morbidity and mortality remains uncertain. Further high-quality research is needed.

COMPARISON OF AVAILABLE TESTS FOR FETAL WELL-BEING ASSESSMENT: A SYSTEMATIC REVIEW OF RANDOMIZED TRIALS

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BACKGROUND

Diagnosing fetal distress during pregnancy and childbirth allows timely interventions, reducing neonatal complications. However, despite numerous tests to assess fetal well-being, the high rate of false-positive often result in unnecessary interventions. Selecting the most accurate test is crucial for guiding obstetrical decisions. This systematic review aims to compare randomized trials evaluating different intrapartum tests for fetal well-being.

METHODS

Following PRISMA guidelines, PubMed, Embase, and Cochrane were searched for randomized trials from the past 30 years comparing two or more fetal assessment methods. Two independent reviewers conducted data extraction and bias assessment.

RESULTS

Twenty-seven trials met inclusion criteria. Techniques studied included STAN (8), computerized (2) and non-computerized (18) cardiotocography, fetal pulse oximetry (5), scalp blood sampling (5), manual stimulation (1), intermittent auscultation (7), and amniotic fluid assessment (2) (Table 1). No method proved superior to another in reducing major neonatal outcomes in the randomized clinical trials assessed in this review. Cardiotocography was linked to higher obstetric intervention rates. Most trials included mixed maternal profiles, with few analyzing high-risk subgroups. In one subgroup analysis, computerized cardiotocography showed lower fetal acidemia in women with pre-existing conditions or complicated pregnancies. These findings suggest a potential benefit in high-risk groups, although effects were outcome-specific and other neonatal outcomes showed no significant differences. Adjunctive tests occasionally reduced interventions, but evidence was inconsistent and underpowered. Risk of bias varied (Figures 1 and 2); only a few multicenter trials were low risk, while most raised concerns or were high risk.

Table 1. Characteristics and main findings of 27 randomized trials on intrapartum fetal monitoring.

Intervention / Control	Number of trials	Maternal-Fetal Risk Profile in the Studies	Total N	Year of publication	Main Results
STAN vs Cardiotocography	7	1 high-risk maternal and fetal 3 mixed maternal and high-risk fetal 3 mixed maternal and low-risk fetal	22,244	2001–2023	STAN generally reduced the need for fetal blood sampling, decreased metabolic acidosis in 2 studies, and one study reported higher 5-minute Apgar <3 in the cardiotocography group.
STAN vs Cardiotocography + Fetal Blood Sampling	1	1 mixed maternal and high-risk fetal	1,103	2022	STAN reduced the need for fetal blood sampling with no significant difference in neonatal outcomes.
Computerized Cardiotocography vs Cardiotocography	2	2 mixed maternal and high-risk fetal	53,772	2017	Computerized cardiotocography slightly increased fetal blood sampling without improving neonatal outcomes overall, though one study found it may reduce newborn acidemia in high-risk women with pre-existing or pregnancy complications.
Cardiotocography vs fetal ECG (PR interval analysis)	1	1 mixed maternal and high-risk fetal	1,838	2000	No significant difference in neonatal outcomes.
Cardiotocography + Fetal Pulse Oximetry vs Cardiotocography	4	1 mixed maternal with both high- and low-risk fetal 3 mixed maternal and high-risk fetal	7,311	2000–2006	In one study fetal pulse oximetry reduced 5-minute Apgar <7 and neonatal acidosis in newborns delivered by assisted vaginal delivery or cesarean.
Fetal scalp stimulation vs Cardiotocography	1	1 mixed maternal and high-risk fetal	327	2022	No significant difference in neonatal outcomes.
Cardiotocography + Fetal Blood Sampling vs Cardiotocography + Fetal Blood Sampling + continuous Fetal Pulse Oximetry	1	1 mixed maternal and high-risk fetal	146	2004	Continuous fetal pulse oximetry reduced fetal scalp blood sampling by 50%, without significant differences in neonatal outcomes.
Fetal Scalp Blood Sample Lactate vs Fetal Scalp Blood Sample pH	2	1 high-risk maternal and fetal 1 mixed maternal and high-risk fetal	3,333	1998–2008	No significant difference in neonatal outcomes.
Fetal Scalp Blood Sample Lactate + Cardiotocography vs Cardiotocography	1	1 mixed maternal and high-risk fetal	123	2021	5-minute Apgar score <7 had a higher incidence in cardiotocography plus fetal scalp blood sample lactate group.
Continuous Fetal Heart Rate monitoring vs Intermittent auscultation	2	1 mixed maternal and low-risk fetal 1 low-risk maternal and fetal	3,873	2018–2019	No significant difference in neonatal outcomes.
Admission Cardiotocography vs Intermittent auscultation	1	1 low-risk maternal and fetal	6,580	2003	Admission cardiotocography increased fetal blood sampling, but there was no significant difference in neonatal outcomes.
Doppler auscultation vs Admission Cardiotocography	2	2 low-risk maternal and fetal	4,085	2002–2003	No significant difference in neonatal outcomes.
Amniotic Fluid Index vs Single Deepest Pocket	1	1 mixed maternal and low-risk fetal	1,000	2004	No significant difference in neonatal outcomes.
Amniotic Fluid Index + Cardiotocography vs Cardiotocography	1	1 mixed maternal and low-risk fetal	893	2004	No significant difference in neonatal outcomes.



Figure 1. Risk of bias assessment with RoB2 in 21 randomized controlled trials with intention-to-treat analysis, comprising 64 neonatal outcomes, including metabolic acidosis, admission to neonatal intensive care unit, hypoxic-ischemic encephalopathy, neonatal death, perinatal death, stillbirth, and cerebral palsy. The figure depicts the proportion of outcomes rated as low risk (green), some concerns (yellow), or high risk of bias (red) across the five RoB2 domains and the overall judgment.

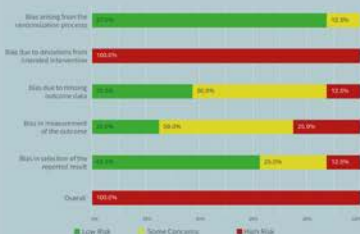


Figure 2. Risk of bias assessment with RoB2 in six randomized controlled trials with per-protocol analysis, comprising eight neonatal outcomes, including metabolic acidosis, admission to neonatal intensive care unit, and neonatal death. The figure shows the proportion of outcomes rated as low risk (green), some concerns (yellow), or high risk of bias (red) across the five RoB2 domains and the overall judgment.

CONCLUSIONS

Among the methods studied for intrapartum monitoring, none has been shown to be superior in preventing major neonatal complications. STAN may be associated with lower incidence of 5-minutes Apgar and metabolic acidosis when compared to cardiotocography. Adjunctive techniques may affect intervention rates, but their impact on morbidity and mortality remains uncertain. Further high-quality research is needed.

Image segmentation of cervical grainy sandy patches lesions associated with female genital schistosomiasis using deep convolutional neural network with U-NET architecture

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Background

Female genital schistosomiasis (FGS) is a neglected but highly prevalent disease in sub-Saharan Africa, caused by *Schistosoma haematobium* egg-induced inflammation in the pelvic organs. FGS is characterized by four distinct mucosal lesions in the lower female genital tract: grainy sandy patches (GSP), homogeneous yellow sandy patches, abnormal blood vessels, and rubbery papules. The lesions give rise to urogenital complaints, such as discharge and pain. The study focuses on the segmentation of GSP lesions using a deep-learning convolutional neural network.

Methods

A total of 583 cervical images from women in a *S. haematobium* endemic region of Madagascar, all exhibiting FGS-associated lesions, were used for this study. Weak annotations (non-pixel-wise) were generated using QubiFier software. A U-Net model with a focal loss function and an Adam optimizer was trained to segment GSP lesions.

Results

The model achieved a Dice similarity coefficient score of 0.61, accuracy of 0.86, sensitivity of 0.90, and specificity of 0.86. While the model performed well, the performance was affected by factors such as weak annotations, image quality issues, and artefacts like specular reflections.

Conclusions

These findings highlight the potential of U-Net-based models for automated lesion segmentation in FGS, with important implications for healthcare in resource-limited settings. Integration of such models into smartphone-based diagnostic tools could enable non-invasive, real-time detection of FGS in regions lacking specialized medical equipment or expertise. This approach may significantly enhance access to diagnosis of FGS, hence treatment, particularly in rural and underserved areas of sub-Saharan Africa, where FGS remains a substantial public health burden.

IMAGE SEGMENTATION OF CERVICAL GRAINY SANDY PATCHES LESIONS ASSOCIATED WITH FEMALE GENITAL SCHISTOSOMIASIS USING DEEP CONVOLUTIONAL NEURAL NETWORK WITH U-NET ARCHITECTURE

Karl Emil Jøker¹ • Peter Leutscher^{1,2} • Kristine Øby¹ • Karoline Jøker¹ • Bodo Sahondra Randrianasolo³ • Maciej Plocharski⁴ • Louise Arenholt^{1,2}

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Background

- Female genital schistosomiasis (FGS) is a neglected tropical disease
- Prevalent in sub-Saharan Africa, caused by *Schistosoma haematobium* parasite
- FGS is characterized by four distinct mucosal lesions in the lower female genital tract
- One of which is Grainy sandy patches (GSP)
- The lesions give rise to urogenital complaints, such as discharge and pain
- Currently, standard diagnosis is visual inspection of the cervix and vaginal wall
- The study focuses on the segmentation of GSP lesions using a deep-learning convolutional neural network.



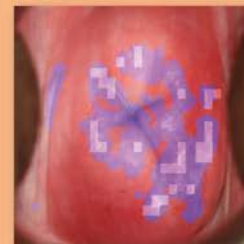
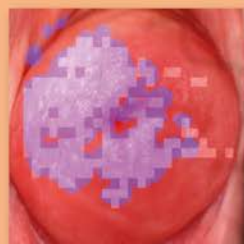
Method

- 583 cervical images from women in Madagascar,
- Weak annotations (non-pixel-wise) were generated using QubiFier software
- U-Net model architecture
- Focal loss function and Adam optimizer
- Dataset Split: Training: 408, Validation: 88, Testing: 87

Results

Evaluation metrics and model predictions are shown below. The metrics are calculated using pixelwise calculations for each image averaged across the test dataset. While the model performed well, the performance was affected by factors such as weak annotations, image quality issues, and artifacts like specular reflections.

Dice Coefficient	0.61
Accuracy	0.86
Sensitivity	0.90
Specificity	0.86



Annotation Model Prediction

Conclusion

These findings highlight the potential of U-Net-based models for automated lesion segmentation in FGS, with important implications for healthcare in resource-limited settings. Integration of such models into smartphone-based diagnostic tools could enable non-invasive, real-time detection of FGS in regions lacking specialized medical equipment or expertise. This approach may significantly enhance access to diagnosis of FGS, hence treatment, particularly in rural and underserved areas of sub-Saharan Africa, where FGS remains a substantial public health burden.

Assessing the potential of thermal ablation treatment for FGS-associated cervical lesions: a pilot study among women treated for aceto-white lesions or high-risk HPV in Eswatini

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6. Ministry of Health, Eswatini
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Background

Female genital schistosomiasis (FGS), caused by *Schistosoma haematobium* egg deposition in genital tissue, is a highly prevalent yet underrecognized condition in sub-Saharan Africa. FGS contributes to gynecological complaints, such pain, vaginal discharge, bleeding, in addition to infertility, and increased susceptibility to HIV, but treatment options remain limited. Praziquantel effectively clears adult worms but shows little effect on FGS-associated cervical lesions, in particular sandy patches. The study aim was to evaluate thermal ablation (TA), currently used for treating cervical precancerous lesions, on FGS cervical lesions.

Methods

This study was conducted in Sithobela, Eswatini, within the INTEGRATION project. Women aged 20–49 years undergoing cervical screening were assessed for FGS lesions using colposcopy. Participants who received TA for acetowhite lesions or high-risk HPV and had concurrent FGS lesions were invited for follow-up ≥ 6 months later. Cervical lesion proportions were quantified through blinded image analysis before and after TA.

Results

Of 321 women screened, 11 with FGS-associated lesions underwent TA and returned for follow-up. The mean cervical lesion proportion decreased significantly from 8.5% to 4.3% ($p=0.046$). In 7 of 11 cases, lesions were reduced, with the cervix appearing more pale and homogenous post-treatment.

Conclusions

Thermal ablation may reduce cervical lesion burden in women with FGS, potentially alleviating complaints. Hence, TA may serve as a complementary intervention alongside praziquantel. Larger follow-up randomized clinical studies are needed.

ASSESSING THE POTENTIAL OF THERMAL ABLATION TREATMENT FOR FGS-ASSOCIATED CERVICAL LESIONS: A PILOT STUDY AMONG WOMEN TREATED FOR ACETO-WHITE LESIONS OR HIGH-RISK HPV IN ESWATINI

Karoline Joker¹, Louise Thomsen Schmidt Arenholt^{1,2,3}, Bongekile Maphalala⁴, Arnould Kadingi⁴, Teresa Norris⁵, Xolisile Dlamini⁶, Peter Leutscher^{1,2}, Eyrun Kjetland^{4,7}
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Baseline image of cervix



Thermal ablation



Image of cervix after anti-schistosomal and thermal ablation treatment.

Background

Female genital schistosomiasis (FGS), caused by *Schistosoma haematobium* egg deposition in genital tissue, is a highly prevalent yet underrecognized condition in sub-Saharan Africa. FGS contributes to gynecological complaints, such as pain, vaginal discharge, bleeding, in addition to infertility, and increased susceptibility to HIV, but treatment options remain limited. Praziquantel effectively clears adult worms but shows little effect on FGS-associated cervical lesions, in particular sandy patches. The study aim was to evaluate thermal ablation (TA), currently used for treating cervical precancerous lesions, on FGS cervical lesions.

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The bacterial profile of gut microbiota-derived extracellular vesicles in third trimester in women with and without gestational diabetes mellitus

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Background

Pregnant women with gestational diabetes mellitus (GDM) have an altered gut microbiota, which may contribute to GDM development, though the mechanisms remain unclear. One proposed mechanism is the release of gut microbe-derived extracellular vesicles (GM-EVs) from the gut bacteria. These GM-EVs can cross the gut barrier and have a systemic effect on the host. The aim of this study was to investigate if women with GDM release a GDM-specific bacterial GM-EV profile that have the potential to contribute to GDM development.

Methods

GM-EVs were isolated from fecal samples collected in the third trimester of pregnancy from women in the DANish Maternal and Offspring Microbiome (DANMOM) cohort study. The bacterial composition of the GM-EVs and fecal samples they originated from were analyzed with 16S rRNA gene sequencing. Nanoparticle tracking analysis was used to investigate particle number and size in the GM-EV samples.

Results

GM-EVs from women with and without GDM were similar in size, number, and bacterial diversity. However, based on 16S rRNA gene sequencing, GM-EVs originating from *Tyzzarella*, *Dialister*, and *NK4A214 group* were lower in relative abundance in women with GDM compared to controls.

Conclusions

We observed differences in GM-EV profiles between women with and without GDM in third trimester of pregnancy. While GM-EVs may contribute to GDM pathophysiology, more research is needed to determine their potential impact on host metabolism.

The bacterial profile of gut microbiota-derived extracellular vesicles in third trimester in women with and without gestational diabetes mellitus

Louise Søndergaard Rold^{1,2,3}, Caspar Bundgaard-Nielsen¹, Marie-Louise Lund Søbøye¹, Anne Sofie Vedsted¹, Ann-Maria Jensen¹, Andrew Lai^{4,5}, Carlos Salomon^{4,5}, Peter Leutscher^{1,2}, Per Glud Ovesen^{6,7,8}, Søren Hagstrøm^{2,3,9}, Suzette Sørensen^{1,2,3}

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Background

The incidence of women developing gestational diabetes mellitus (GDM) is increasing. This increase is troubling since GDM is associated with a higher risk of subsequent obesity and type 2 diabetes for both mother and child. Studies have reported that women with GDM have altered gut microbiota (dysbiosis), but it is unknown if and how the altered bacterial composition can contribute to GDM.

Bacteria in the gut release small vesicles (GM-EVs) that can cross the gut barrier and be delivered to host cells. These vesicles contain for instance protein, DNA, and other metabolites from the bacteria. The functions of the GM-EVs in the human body depend on which bacteria they are released from.

Our hypothesis is that women with GDM have a different gut microbiota that releases GDM-associated GM-EVs which have the potential to cross the gut barrier and have a systemic effect in the host.

The aim of this study is therefore to investigate if it is the same bacteria that releases GM-EVs in women with and without GDM.

Methods

Participants and samples

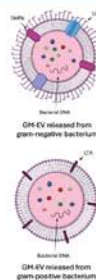
46 pregnant women with GDM and 40 women without GDM from the DANish Maternal and Offspring Microbiome cohort study (DANMOM) were included in this study.

Fecal samples were collected in third trimester of pregnancy.

Isolation of GM-EVs from fecal samples

First, a crude extract was made by removing larger debris, bacteria and undigested food by centrifugation and filtration. Then Size Exclusion Chromatography (SEC) was used to isolate GM-EVs and remove contaminants such as free proteins.

Isolation of GM-EVs was validated by detection of expected vesicle contents such as protein markers and bacterial DNA



Bacterial profile of GM-EVs and gut microbiota

A GM-EV sample was investigated from each participant.

The bacterial profile of GM-EVs and the gut microbiota bacterial profile were identified by sequencing the V1-V8 region of the bacterial 16S rRNA gene with Oxford Nanopore Technologies.

Number of bacteria, bacterial composition and relative abundance of specific bacteria was compared between the groups.

Results

GM-EVs did not differ in number and overall bacterial composition between women with and without GDM.

No statistical differences could be seen in the number of unique bacteria (taxa) in GM-EV samples from women with and without GDM (see figure 1A).

Furthermore, beta diversity (Bray-Curtis dissimilarity) showed that GM-EVs from women with and without GDM clustered together indicating similar bacterial composition in the GM-EVs from the two groups (see figure 1B).

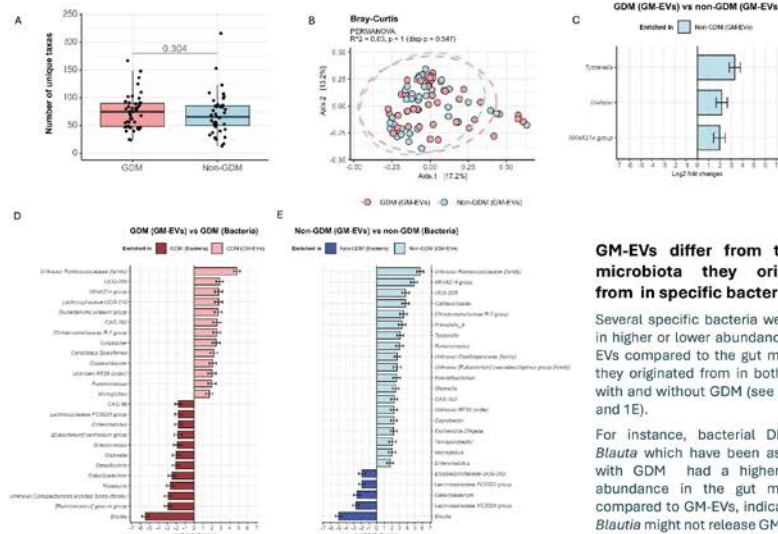


Figure 1. A. Number of unique taxa. B. PCA plot illustrating differences in bacterial DNA composition. C. Differences in bacterial DNA from specific bacteria in GM-EVs from women with and without GDM. D. Differences bacterial DNA from specific bacteria in GM-EVs compared to the gut microbiota they originated from in GDM samples. E. Differences bacterial DNA from specific bacteria in GM-EVs compared to the gut microbiota they originated from in non-GDM samples

GM-EVs from women with GDM had a lower relative abundance of DNA from three bacteria.

There was no differences in the number and size of particles released from women with and without GDM (data not shown).

However, women with GDM had a lower relative abundance of GM-EVs released from the bacteria *Tyzerella*, *Dialister*, and *NK4A214* group (see figure 1C).

GM-EVs differ from the gut microbiota they originated from in specific bacteria.

Several specific bacteria were found in higher or lower abundance in GM-EVs compared to the gut microbiota they originated from in both women with and without GDM (see figure 1D and 1E).

For instance, bacterial DNA from *Blautia* which have been associated with GDM had a higher relative abundance in the gut microbiota compared to GM-EVs, indicating that *Blautia* might not release GM-EVs.

Conclusion

DNA from three bacteria was found in a lower relative abundance in GM-EVs from pregnant women with GDM compared to women without GDM. Our results therefore suggest that there is a difference in which bacteria that release GM-EVs in women with GDM. However, it is still unknown if the lower a lower abundance of GM-EVs released from the bacteria *Tyzerella*, *Dialister*, and *NK4A214* group can have an influence on metabolic processes such as insulin and glucose regulation in women with GDM.

Furthermore, different bacterial profiles between GM-EVs and the gut microbiota they are released from indicates that not all bacteria have an active role in releasing GM-EVs. This highlights the value of examining both microbial composition and GM-EV release when studying gut microbiota in GDM.

While GM-EVs may contribute to GDM pathophysiology further research in the function of GM-EVs is warranted.

Comparison of DNA extraction methods for detection of bacterial DNA in breast milk from women with and without gestational diabetes mellitus

Natasja Kirkegaard Juel Rasmussen^{1,2}, Nadia Ammitzbøll¹, Anne Sofie Vedsted¹, Ann-Maria Jensen¹, Suzette Sørensen^{1,3}, Caspar Bundgaard-Nielsen¹, Louise Søndergaard Rold¹

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2. Department of Biomedical Laboratory Science, University College of Northern Denmark, Hjoerring, Denmark

3. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

Gestational diabetes mellitus (GDM) is a common pregnancy complication associated with increased risk of metabolic disease in offspring. Some studies suggest that women with GDM may have a different breast milk bacterial profile, potentially influencing infant microbiota development. Research is challenged by the low bacterial DNA in breast milk, making it essential to identify high-yield extraction methods before profiling samples from women with GDM.

Methods

Breast milk DNA from 5 women with and 5 without GDM was extracted with both the QIAamp PowerFecal Pro (PowerFecal) and QIAamp Viral RNA Mini (Viral) kits for each sample. DNA yield was quantified by Qubit fluorometry, and bacterial DNA was amplified by qPCR targeting the 16S rRNA gene. Results were compared to determine the most effective DNA extraction kit for recovering bacterial DNA in breast milk.

Results

In 9 of 10 samples, the Viral kit yielded higher DNA concentrations compared to the PowerFecal kit. Analyses of bacterial DNA concentrations are ongoing and will be presented on the poster.

Conclusions

Preliminary results indicate that the choice of extraction kit affects the DNA concentration obtained from breast milk samples, with the Viral kit yielding higher concentrations. As only the overall DNA concentration has been assessed, qPCR results will be needed to clarify whether similar differences are seen for bacterial DNA yield. If this is the case, the viral kit may be more suitable for studies of bacterial DNA in breast milk samples.

Improving microbiota DNA extraction from human breast milk: PowerFecal Pro DNA kit yield more bacterial DNA compared to Viral RNA Mini kit

Natasja Kirkegaard Juel Rasmussen^{1,2}, Nadia Ammitzbøll¹, Anne Sofie Vedsted¹, Ann-Maria Jensen¹, Suzette Sørensen^{1,3}, Caspar Bundgaard-Nielsen¹, Louise Søndergaard Rold¹

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Introduction

Gestational diabetes mellitus (GDM) is a common pregnancy complication associated with increased risk of metabolic disease in offspring.

Some studies suggest that women with GDM may have a different breast milk bacterial profile, potentially influencing infant microbiota development.

Research is challenged by the low bacterial DNA in breast milk, making it essential to identify high yield extraction methods before profiling samples from women with GDM.



Methods

Breast milk DNA from 5 women with and 5 without GDM was extracted with both the QIAamp PowerFecal Pro DNA kit and QIAamp Viral RNA Mini kit for each sample.

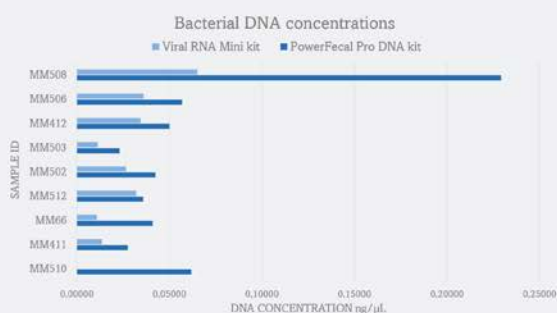
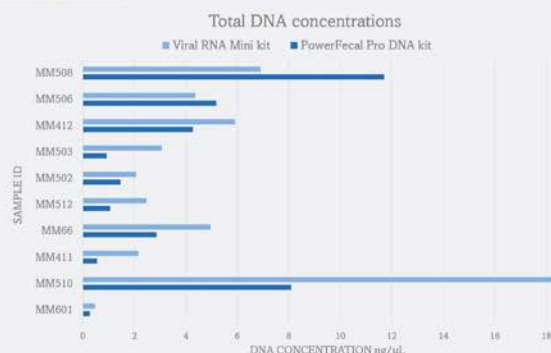
The total concentration of yielded DNA was quantified by Qubit fluorometry, and bacterial DNA was amplified by qPCR targeting the 16S rRNA gene.

Results were compared to determine the most effective DNA extraction kit for recovering bacterial DNA in breast milk.

Results: Total DNA concentrations

In 8 out of 10 samples the Viral RNA Mini kit yielded higher DNA concentrations than the PowerFecal Pro DNA kit.

This quantification reflected the total DNA concentration in the samples, including human, viral, and bacterial DNA.



Results: Bacterial DNA concentrations

When bacterial DNA concentrations were assessed using qPCR, a different pattern emerged.

In all the samples the PowerFecal Pro DNA kit yielded higher DNA concentrations compared to the Viral RNA Mini kit.

In 5 out of 9 samples the PowerFecal Pro DNA kit even yielded twice as much DNA compared to the Viral RNA Mini kit.

Sample MM601 was excluded due to invalid results.

Conclusion

This study concludes that the choice of DNA extraction kit significantly influences the yield of bacterial DNA from breast milk samples. While DNA quantification using the Qubit Fluorometry indicated that the Viral RNA Mini kit yielded the highest total concentration of DNA, the qPCR results revealed that the PowerFecal Pro DNA Kit was in fact more effective at extracting bacterial DNA specifically in breast milk samples.

Fra opgavecentreret til familiecentreret sygepleje – fremtidsværksted som metode til at igangsætte implementering i klinisk praksis

Tina Heilesen¹, Bente Frydkjær Rømer^{2,3}, Kathrine Bøgeskov Junior^{2,3}, Lenette Scheufens¹, Birgitte Fjord Christensen¹, Helle Olesen¹, Birgitte Vinther Møller Engstrøm¹, Louise Nødgaard¹

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Baggrund

Barselsafdelingen oplever i dag mere komplekse patientforløb, samtidigt med øgede krav om at understøtte amning, barnets trivsel og familiedannelse. Et stigende antal sårbare familier stiller yderligere krav til sygeplejerskerne om medindddrage, differentiere og individualisere sygeplejen. På Afdeling for Kvindesygdomme, Graviditet og Barsel, Regionshospital Nordjylland, er der derfor iværksat et medarbejderinitieret udviklingsprojekt med fokus på at implementere familiecentreret pleje (FCC). FCC rummer potentiale til at styrke partnerskab, delt ansvar og samarbejde mellem patienter, pårørende og sundhedsprofessionelle.

Metoder

Udviklingsprojektet er inspireret af pragmatisk aktionsforskning, en praksisnær tilgang, der søger at udvikle viden, som kan afprøves i klinisk praksis og samtidig skabe rammer for læring og forandring. I processen blev der identificeret tre centrale udviklingsområder: behov for øget forståelse for teorien bag FCC, etablering af et fælles sprog for FCC, samt styrket vidensdeling mellem ledelse og medarbejdere. Empirien indsamles gennem afholdelse af Fremtidsværksted med ledelse og medarbejdere (n=18).

Resultater

Fremtidsværkstedet resulterede i fire praksisnære anbefalinger til implementeringen af FCC: i) Tavlekoncept til dialog og forventningsafstemning, ii) Afholdelse af målrettede indlæggelsessamtaler, iii) Prioritering af faglig sparring og iv) Familievenlig indretning. Processen har endvidere bidraget til fælles refleksion og organisatorisk læring, som tilsammen har skabt et fælles fundament og delt ejerskab i implementeringen af FCC.

Konklusioner

Projektet viser, at Fremtidsværksted er en anvendelig metode til at styrke dialog, læring og fælles prioritering af anbefalinger til implementering. Samtidig peger erfaringerne på, at implementering af FCC kræver en systematisk tilgang. Afdelingen har derfor valgt at inddrage Forandringsteori, som redskab til at strukturere, målrette og evaluere de videre indsatser.

Fra opgavecentreret til familiecentreret sygepleje - fremtidsværksted som metode til implementering i klinisk praksis

Tina Hellesen¹, Bente Frydkjær Romer^{2,3}, Kathrine Bøgeskov Junior^{2,3}, Lenette Scheufens¹, Birgitte Fjord Christensen¹, Helle Olesen¹,
Birgitte Vinther Møller Engstrøm¹, Christina Højmark Østergaard¹, Louise Nødgaard¹

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3. Institut for Kultur og læring, Kandidatuddannelsen i Læring og forandringsprocesser, Aalborg Universitet



Baggrund

Barselsafdelingen oplever i dag mere komplekse patientforløb, samtidigt med øgede krav om at understøtte amning, barnets trivsel og familiedannelse. Et stigende antal sårbare familier stiller yderligere krav til sygeplejersken om at medinddrage, differentiere og individualisere sygeplejen. På Afdeling for Kvindesygdomme, Graviditet og Barsel, Regionshospitalet Nordjylland er der derfor iværksat et medarbejderinitieret udviklingsprojekt med fokus på at implementere familiecentreret pleje (FCC)

Metode

Udviklingsprojektet er inspireret af pragmatisk aktionsforskning, en praksisnær tilgang, der søger at udvikle viden, som kan afprøves i klinisk praksis og samtidig skabe rammer for læring og forandring. I processen blev der identificeret tre centrale udviklingsområder: behov for øget forståelse for teorien bag FCC, etablering af et fælles sprog for FCC samt styrket vidensdeling mellem ledelse og medarbejdere. Empirien indsamles gennem afholdelse af Fremtidsværksted med ledelse og medarbejdere

Resultater

Fremtidsværkstedet resulterede i fire praksisnære anbefalinger til understøttelse af implementeringen af FCC.

Tavlekoncept til dialog og forventningsafstemning

Afholdelse af målrettede indlæggelsessamtaler

Prioritering af faglig sparring

Familievenlig indretning

Konklusion

Projektet viser, at Fremtidsværksted er en anvendelig metode til at styrke dialog, læring og fælles prioritering af anbefalinger til implementering. Samtidig peger erfaringerne på, at implementering af FCC kræver en systematisk tilgang. Afdelingen har derfor valgt at inddrage Forandringsteori, som redskab til at strukturere, målrette og evaluere arbejdet med implementeringen af de valgte anbefalinger og indsatser

Mapping healthcare professionals' practices regarding gestational diabetes and maternal weight gain in Northern Denmark

Victoria Lindblad^{1,2}, Tina Heilesen¹, Pia Hammer¹, Mettine Thorsmark Madsen², Mona Kyndi Pedersen^{2,3}

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

3. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

Gestational diabetes mellitus (GDM) affects 7% of pregnant women in the North Denmark Region, with 43% having a BMI over 25. GDM increases the risk of birth complications and type 2 diabetes for both mother and child. Health promotion by healthcare professionals is crucial to support women in preventing GDM and excessive weight gain.

Methods

A comprehensive questionnaire was mailed to obstetricians, nurses, sonographers, and midwives at Aalborg University Hospital (Aalborg and Thisted) and North Denmark Regional Hospital. Participants were asked how they addressed diet and exercise with pregnant women. The questionnaire was distributed in two rounds, with the final response deadline on 18 May 2025.

Results

A total of 101 participants (36%) responded. Key barriers to discussing diet included lack of time (47%), perceived lack of interest from the woman (45%), and concern about stigmatization (35%). Similar patterns were observed for physical activity discussions. Only 7% initiated a conversation at BMI 27, while 71% used a BMI >30 as the threshold for discussing weight. Other topics, such as partner support or mental well-being, were addressed by 46% of respondents, while 41% did not discuss other GDM-related risk factors. Sixty-two percent rarely or never asked women to weigh themselves, with 26% reporting resistance from the woman or concern about stigmatization. Ninety percent agreed it is important to know about colleagues' health promotion activities.

Conclusions

The findings identify areas where targeted quality improvement projects can enhance health promotion practices, consequently benefiting pregnant women and their children.



Sundhedsprofessionelles praksis

Graviditetsdiabetes og vægt

47 % oplever tidsmangel

45 % oplever manglende interesse fra gravide

Sundhedsprofessionelles oplevelser af barrierer for at tale om kost med kvinden

35 % er bekymret for at stigmatisere

Så mange sundhedsprofessionelle tager initiativ til samtaler med gravide om kost ved BMI

≥ 27 — 7%

≥ 30 — 71%

46 % sundhedsprofessionelle samtaler med kvinden om støtte fra partner eller mentalt velvære

Victoria Lindblad^{1,2}, Tina Heilesen¹, Pia Hammer Luther¹, Mettine Thorsmark Madsen² og Mona Kyndi Pedersen^{2,3}

¹ Afdeling for Kvindesygdomme, Graviditet og Fødsel, Regionshospital Nordjylland, Hjørring, Danmark

² Center for Klinisk Forskning, Regionshospital Nordjylland, Hjørring, Danmark

³ Afdeling for Klinisk Medicin, Aalborg Universitet, Aalborg, Danmark

Maternal and fetal fat distribution in GDM pregnancies (FaPDi-GDM)

Victoria Lindblad^{1,2}, Jennifer Lindberg³, Lise Haaber Thomsen³, Aasa Wraae Olsen³, Sidsel Linneberg Rathcke³, Jens Brøndum Frøkjær³, David Peters³, Anne Nødgaard Weidemann Sørensen^{1,2,4,5}

1. Department of Gynecology and Obstetrics, North Denmark Regional Hospital, Hjoerring, Denmark
2. Centre for Clinical Research, North Denmark Regional Hospital, Hjoerring, Denmark
3. Department of Gynecology and Obstetrics, Aalborg University Hospital, Aalborg, Denmark
4. Department of Gynecology and Obstetrics, Regional Hospital Randers, Randers, Denmark
5. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

The prevalence of gestational diabetes (GDM) was 7% in North Denmark and is associated with severe short- and long-term metabolic health risks for both mother and offspring. Although a high BMI is strongly associated with GDM, GDM also occurs in non-obese women, with 30% in North Denmark. Recent studies indicate that maternal subcutaneous and visceral fat may be biomarkers of risk. However, maternal fat distribution during and after pregnancy is not well described. This study aims to compare maternal and fetal fat distribution in women with and without GDM using Magnetic Resonance Imaging (MRI).

Methods

This is a prospective longitudinal cohort study of 150 pregnant women (75 in each arm matched in BMI) in the period from 2024 to 2027. We estimate the fat fraction by DIXON MRI protocol in the maternal subcutis, pancreas, kidney, and liver. Furthermore, we evaluate the fat fraction in the total fetus and the fetal liver.

Perspectives

By examining maternal fat distribution at gestational week 34 and postpartum, this study can contribute to understanding whether metabolic differences associated with GDM are specific to pregnancy or persists after delivery. The findings may indicate if fat deposits contribute to long-term metabolic risk and improve our understanding of fat distribution as a marker of metabolic health. Additionally, the study will provide insight into how GDM affects fetal fat distribution, potentially indicating altered metabolic programming compared to fetuses of mothers without GDM..

Maternal and Fetal Fat Distribution in GDM Pregnancies (FaPDi-GDM)

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¹ Department of Gynecology and Obstetrics, North Denmark Regional Hospital, Hjørring, Denmark; ² Center for Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark; ³ Department of Obstetrics and Gynecology, Aalborg University Hospital; ⁴ Department of Obstetrics and Gynecology, Regional Hospital Randers; ⁵ Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

- 7% pregnant develops GDM
- Severe short- and long-term consequences for both mother and fetus
- Strong association between high BMI and GDM
- However, 30% non-obese develops GDM
- Maternal fat distribution may be biomarker for risk of GDM (subcutaneous and visceral fat)

Methods

Comparison
GA 34 and after birth

75 GDM



75 Non-GDM

Fat fraction estimated by MRI

- Maternal: Subcutis, liver, pancreas, kidney
- Fetal: total fetal and liver

Perspective

This study will enhance understanding of:

- Whether **metabolic differences in GDM** are pregnancy-specific or persist after delivery
- If **fat deposits** contribute to long-term metabolic risk
- Whether **fat distribution** can serve as a marker of metabolic health
- How **GDM influences fetal fat distribution**, potentially reflecting altered metabolic programming

Implications

This study will generate new knowledge, and findings may inform prevention strategies, improve monitoring of metabolic risk, and enhance understanding of maternal and fetal metabolic health in GDM

More than a number: women's preferences and perspectives on weight terminology in pregnancy – a Danish mixed-method study

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1. Department of Gynecology and Obstetrics, North Denmark Regional Hospital, Hjoerring, Denmark

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

3. Department of Quality, Patient Safety and Work Environment, North Denmark Regional Hospital, Hjoerring, Denmark

4. Department of Sociology and Social Work, The Faculty of Social Sciences and Humanities, Aalborg University, Aalborg, Denmark

Background

Weight stigma in maternity care can negatively affect women's experiences and health outcomes. However, little is known about what words about weight Danish pregnant women preferers and dislikes. This study explored their preferences for terminology used by healthcare professionals in conversations about weight.

Methods

A convergent mixed-methods design was applied. Data were collected through an online survey distributed nationally via social media, including structured questions and unlimited free-text fields. The survey asked which terms women preferred and least preferred when discussing weight in pregnancy. Descriptive frequency analyses were conducted on quantitative data, and qualitative responses were analyzed thematically.

Results

A total of 1,071 women participated, of whom 348 provided free-text comments. In total, 59% of the women preferred weight in kilograms, perceived as neutral and factual. Over half (51%) disliked “underweight,” “normal weight,” and “overweight”, and were often experienced as judgmental and harmful, reinforcing feelings of shame. Furthermore, 48% disliked BMI and many questioned the validity of BMI as a health indicator, describing it as outdated, stigmatizing, and reductive. Participants preferred respectful, individualized conversations focusing on overall health rather than weight. For some, tone mattered more than terminology, but repeated focus on weight caused distress and feelings of being reduced to numbers.

Conclusions

Findings highlight the need to move away from BMI categories and stigmatizing terms toward neutral, person-centered communication. Sensitive language and a focus on holistic health may reduce stigma and promote more respectful, inclusive maternity care.

More than a Number: Women's preferences and perspectives on Weight Terminology in Pregnancy A Danish Mixed-Method Study

Victoria Lindblad^{1,2}, Kathrine Reidl Olsen³, Anna Ryberg⁴

¹ Department of Obstetrics and Gynecology, North Denmark Regional Hospital, Hjørring, Denmark

² Center for Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark

³ Department of Quality, Work Environment and Patient Safety, North Denmark Regional Hospital, Hjørring, Denmark

⁴ Department of Sociology and Social Work, The Faculty of Social Sciences and Humanities (SOSA), Social Work in the field of Psychiatry and Disability

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Findings highlight the need to move away from BMI categories and stigmatizing terms toward neutral, person-centered communication. Sensitive language and a focus on holistic health may reduce stigma and promote more respectful, inclusive maternity care.



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Prevention of GDM recurrence (DiaNoMi) – a multicenter randomized controlled trial (RCT)

Victoria Lindblad^{1,2}, Sidsel Boie³, Lisandra Stein Bernades^{2,4}, Charlotte Brix Andersson^{5,6}, Anne Nødgaard Weidemann Sørensen^{1,2,3,7}

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5. Department of Gynecology and Obstetrics, Aalborg University Hospital, Thisted, Denmark
6. Danish Centre for Health Services Research (DACs), Aalborg University, Aalborg, Denmark
7. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

In 2024, 7% of pregnant women in North Denmark developed gestational diabetes mellitus (GDM), with 50% of these women experiencing GDM in a subsequent pregnancy. GDM is associated with significant short- and long-term obstetric and metabolic consequences for both mother and offspring. Studies indicate that a moderate carbohydrate diet without fat and protein restriction can improve glycaemic control in type 2 diabetes patients. Therefore, this study aims to examine whether a moderate carbohydrate, healthy fat (MCHF) diet can reduce the risk of GDM recurrence by 30% and optimize maternal metabolism evaluated by subcutaneous and visceral fat.

Methods

A multicenter randomized controlled trial, including 374 pregnant women with previous GDM at the Northern Region and Regional Hospital Randers between January 2026 and December 2028. The intervention diet will be introduced through a digital platform with informative and motivational videos and live webinars. The women will be recruited at gestational week 5-10.

Perspectives

Dietary interventions that reduce maternal hyperglycemia may lower the incidence of obstetric complications, improve metabolic health, and mitigate the long-term risk of type 2 diabetes in both mother and offspring. This preventive strategy has potential to be implemented in clinical practice at low cost and to be scaled to other obstetric departments, nationally and internationally. The next step will be testing the intervention in other populations of pregnant women at high risk.

PREVENTION of pregnancy DIABETES recurrence (GDM)

Victoria Lindblad^{1,2}, Sidsel Boie³, Lisandra Stein Bernades⁴, Charlotte Brix Andersson^{5,6}, and Anne Nødgaard Weidemann Sørensen^{1,2,3,6,7}

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A Randomized Controlled Trial (RCT) - Multicenter

Recruitment: Department of Obstetrics and Gynecology at Aalborg University Hospital (Aalborg and Thisted), North Denmark Regional Hospital, Regional Hospital Randers

RANDOMISATION

- **Participants:** Pregnant women with previous GDM
- **Inclusion at gestation week 5-10 (total n=374)**
- **Baseline examination*** at inclusion
- **Decision of MRI (n=100; 50 in each arm)**
- **Randomisation 1:1**

Intervention group (n=187)

Control group (n=187)

INTERVENTION

- 100-125 g carbohydrate daily, no calorie restriction
- Access to digital platform
- 3 - 6 educational and motivational videos per week
- Live one-hour webinars every two weeks

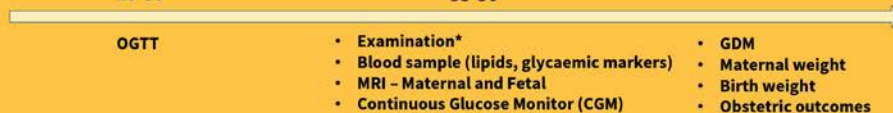
Standard care

EXAMINATION

Gestational week
28-30

Gestational week
33-36

Birth



COMPARE Intervention Group Versus Control Group

OUTCOME

- 30% reduction of recurrent GDM
- Reduced visceral fat in mother and fetus
- Improved cardiometabolic health

* Examination: Bioimpedance assessment of maternal body composition, blood pressure, weight, height, fetal ultrasound scan (fetal weight and doppler flow),

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Triba

Recurrent GDM – a Danish national registry study

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Background

Gestational Diabetes Mellitus (GDM) is the most common complication of pregnancy and is associated with significant short- and long-term obstetric and metabolic consequences for both mother and offspring. In 2024, 6% of pregnant women in Denmark developed GDM. Studies have reported women with prior GDM have a recurrence risk ranging from 30% to 80%, which is influenced by ethnicity and lifestyle. Some studies have found rates between 30-37% in a non-Hispanic white population. Another prospective Danish study, including 72 women with GDM in their first pregnancy and a subsequent pregnancy within five years found a recurrence rate of 47%. Therefore, the aim in this study is to describe the prevalence and risk factors of recurrent GDM in a Danish population.

Methods

A retrospective register cohort study based on national data from 2009 to 2023. We include women with a second pregnancy with GDM in their first pregnancy (n~9.000). We exclude multiple pregnancy and pregestational diabetes at index pregnancy. The primary outcome is GDM diagnosed in the second pregnancy. Secondary outcome is interpregnancy diagnosis of pregestational diabetes.

Perspectives

Recurrent GDM is a frequent and costly challenge with major health implications for both mother and child. By describing the prevalence and risk factors of recurrent GDM in a large Danish population, this study will provide important knowledge for future prevention strategies. Identifying women at highest risk will make it possible to develop targeted interventions, improve maternal and child health outcomes, and support cost-benefit evaluations of preventive strategies in clinical practice.

RECURRENT DIABETES IN PREGNANCY (GDM) – A DANISH NATIONAL REGISTRY STUDY

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Background

- GDM is associated with severe short- and long-term obstetric and metabolic complications for mother and offspring
- Previous GDM is a strong risk factor for recurrence in subsequent pregnancy
- Studies reported 30% to 80% GDM recurrence
- Ethnicity, genetics, and lifestyle influence the risk of recurrence

Aim

- To describe the prevalence and risk factors of recurrent GDM in a Danish population
- To describe the prevalence of interpregnancy diagnosis of pre-gestational diabetes

Methods

- A retrospective register study
- Nationale data from 2009 to 2023 (n~ 9000)
- Inclusion: women with a second pregnancy with GDM in their first pregnancy
- Exclusion: Multiple pregnancy and pre-gestational diabetes at index pregnancy
- Data is provided by Danish Centre for Health Services Research (DACS), Aalborg University
- Data will be analyzed in a secure environment provided by Denmark's Research Machine (Forskermaskinen)



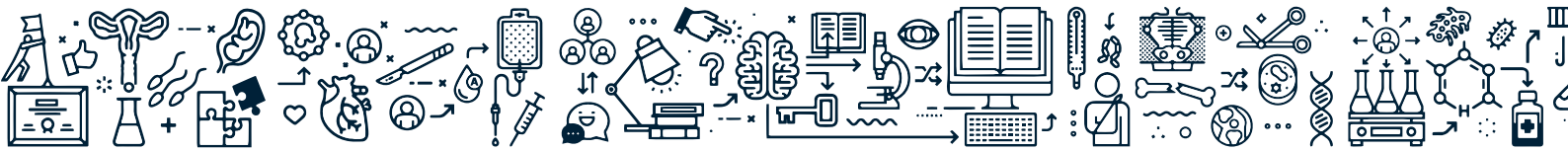
Perspective

This study will provide important and new knowledge for future prevention strategies.

Identifying women at highest risk of GDM recurrence and interpregnancy diabetes will contribute to:

- targeting preventive interventions more precise
- Improving maternal and child health outcomes
- supporting cost-benefit assessments when developing preventive strategies in clinical practice

Intern Medizin



AI-sprogmodulering af lægens skriftlige ekkokardiografi svar til at fremme patientens forståelse med samtidig fastholdelse af klinisk validitet

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Baggrund

Manglende indsigt i sundhedsfaglig terminologi kan ofte hæmme patienters forståelse af skriftlige undersøgelsessvar på *Sundhed.dk*. AI-sprogmodulering rummer potentiale til at afhjælpe disse kommunikative udfordringer. Formålet med dette studie var at undersøge hjertepatienters forståelse af den lægefaglige ekkokardiografi beskrivelse i sammenligning med en tilsvarende AI-sprogmoduleret version på lægmandssprog. End videre blev den klinisk validitet af AI versionen evalueret.

Metoder

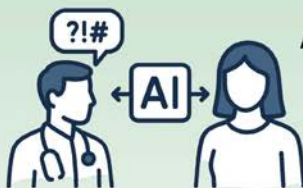
Studiet blev udført i kardiologisk ambulatorium på Regionshospital Nordjylland. Deltagende patienter blev bedt om at læse deres originale ekkokardiografi-beskrivelse og angive i hvor høj grad, de forstod indholdet i forhold til en AI-moduleret version af samme beskrivelse med brug af RNchat. I relation til klinisk validitet af den AI-sprogmodulerede ekkokardiografi-beskrivelse, blev 4 kardiologer bedt om at evaluere de parvise versioner ud fra en skala fra 1 (meget dårligt) til 10 (meget godt).

Resultater

Blandt 17 deltagende patienter angav 24% tilfredsstillende forståelse af den originale ekkokardiografi-beskrivelse versus 77% for den AI-sprogmodulerede version ($p=0,022$). 83% af patienterne rapporterede ønske om at få adgang til en supplerende sprogmoduleret version af den lægefaglige ekkokardiografi-beskrivelse. Kardiologerne vurderede den klinisk validitet af den AI-modulerede version som tilfredsstillende med en samlet gennemsnitsscore på 6,8 (SD 2,2).

Konklusioner

Patienterne oplevede signifikant øget forståelse af den AI-sprogmodulerede version i forhold til den originale ekkokardiografi-beskrivelse. Tilsvarende evaluerede kardiologerne klinisk validitet af AI-sprogmodulering som tilfredsstillende, men dog med plads til forbedring. Der er brug for yderligere forskning og udviklingsmæssige tiltag i forhold til anvendelse af AI-sprogmodulering til kommunikation af skriftlige undersøgelsessvar til patienterne, såvel inden for kardiologien som andre specialer.



AI-sprogmodulering af lægens skriftlige ekkokardiografi svar til at fremme patientens forståelse med samtidig fastholdelse af klinisk validitet.

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Baggrund

Manglende indsigt i sundhedsfaglig terminologi kan ofte hæmme patienters forståelse af skriftlige undersøgelsessvar på Sundhed.dk. AI-sprogmodulering rummer potentiale til at bedre kommunikative udfordringer mellem læger og patienter.

Formålet er at øge egen sundhedsforståelse, uden kompromis af klinisk validitet.

Metode

17 deltagende patienter læste både deres originale ekkokardiografi-beskrivelse og en version af samme beskrivelse moduleret af RnChat og angav deres forståelse af indholdet for begge versioner.

4 kardiologer evaluerede de parvise versioner ud fra en skala fra 1 (meget dårligt) til 10 (meget godt) i forhold til klinisk validitet.

Original EKKO beskrivelse

Transtorakal ekkokardiografi med vævsdoppler

Normal biventrikulær funktion og kammerdimensioner.

Ingen valvulopati.

Aortaroden og venstre atrium normalt dimensioneret.

Høje E' værdier, normalt transmitralt flow.

LAVI 21 ml/m².

Ingen tegn på forhøjet pulmonaltryk.

Perikardiet uden ansamling.

Konklusion: Helt normal undersøgelse.



AI sprogmoduleret EKKO beskrivelse

Undersøgelse: Ultralydsscanning af hjertet (Ekkokardiografi)

Resultater:

Hjertets to hovedkamre (venstre og højre ventrikel) fungerer normalt og har en normal størrelse. Der er ingen tegn på problemer med hjerteklapperne.

Aorta-rod (den store blodåre, der fører blod fra hjertet) og venstre forkammer (atrium) har en normal størrelse.

Målinger af hjertets funktion (E' værdier og transmitralt flow) er normale.

Venstre forkammers størrelse (LAVI) er inden for normalområdet.

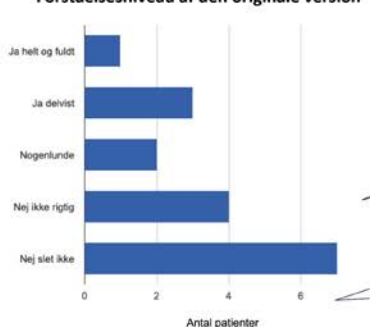
Der er ikke tegn på forhøjet tryk i blodårerne til lungerne.

Der er ingen væskeansamling omkring hjertet.

Konklusion: Undersøgelsen er helt normal.

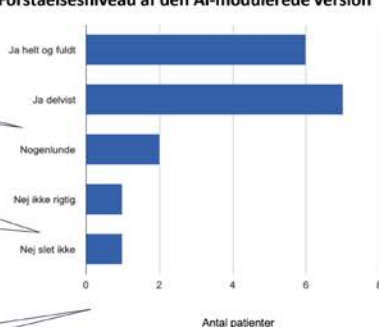
Resultater

Forståelsesniveau af den originale version



24% af patienter angav tilfredsstillende forståelse

Forståelsesniveau af den AI-modulerede version



77% af patienter angav tilfredsstillende forståelse

Konklusion

Patienterne oplevede signifikant øget forståelse af den AI-sprogmodulerede version i forhold til den originale ekkokardiografi-beskrivelse. Tilsvarende evaluerede kardiologerne klinisk validitet af AI-sprogmodulering som tilfredsstillende, men dog med plads til forbedring.

Occurrence of osteitis condensans ilii in cohort of patients diagnosed with axial spondyloarthritis

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Background

Axial spondyloarthritis (axSpA) diagnosis can be challenging. Other conditions such as osteitis condensans ilii (OCI) may simulate axSpA clinically and by imaging. The aim of the study was to investigate the challenges in differentiation of OCI from axSpA.

Methods

The clinical and imaging findings of a cohort of 129 patients (49 women; 80 men), initially diagnosed with axSpA, were re-evaluated. MRI and radiography and/or CT of the SIJ were re-assessed by an experienced radiologist blinded to clinical findings regarding fulfillment of the modified New York (mNY) criteria and thresholds for MRI changes consistent with axSpA. Global assessment of the presence of axSpA with a confidence level from -5 to +5 was performed, and a second experienced radiologist performed a similar blinded global assessment. OCI consensus diagnoses were obtained based on imaging, clinical and biochemical findings.

Results

Seven women had by imaging OCI with confidence levels of -5 - -4 (mean -3.9) by the primary and -5 - -1 (mean -3.6) by the secondary investigator. Clinical and biochemical findings support the diagnoses. None of them fulfilled the mNY criteria, but all fulfilled thresholds for MRI fat deposition consistent with axSpA, and five also thresholds for subchondral bone marrow edema (BME). The detected OCI MRI characteristics were sclerosis predominating at the anterior-middle iliac joint areas with peripheral BME and fat deposition and subchondral fat deposition predominantly in the sacrum.

Conclusions

OCI MRI changes can mimic axSpA, but the location of sclerosis, BME and fat deposition can be used to differentiate.

Occurrence of osteitis condensans ilii in cohort of patients diagnosed with axial spondyloarthritis

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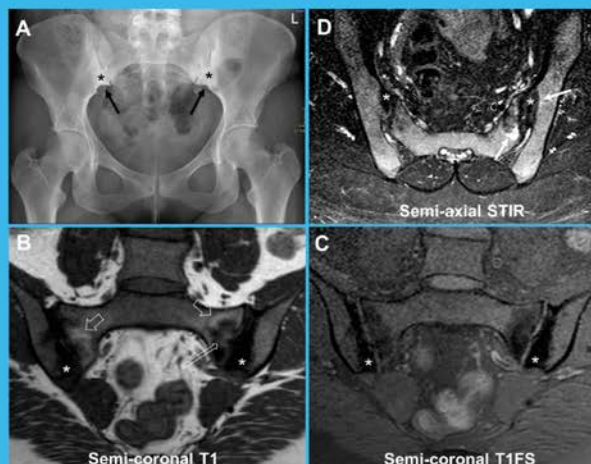
Contact: a.jurik@rm.dk

Background

- Axial spondyloarthritis (axSpA) is a potentially disabling inflammatory arthritis of the spine and sacroiliac joints
- Diagnosis is based on combination of symptoms, physical, laboratory, and imaging findings and can be challenging
- Other conditions such as osteitis condensans ilii (OCI) may simulate axSpA clinically and by imaging
- The aim of the study was to investigate the challenges in differentiation of OCI from axSpA

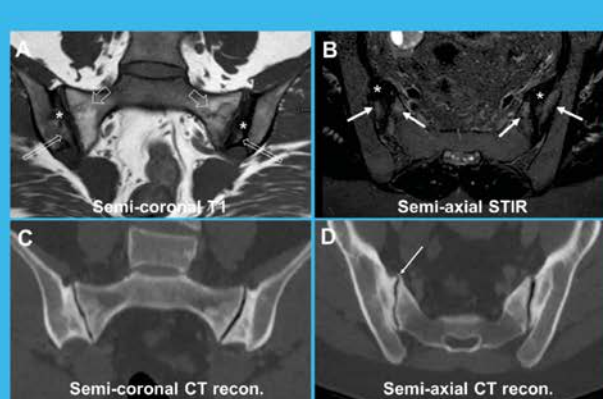
Conclusion

OCI MRI changes can mimic axSpA, but the location of sclerosis, BME and fat deposition can be used to differentiate



Case 1, initial examination at the age of 31 years

- Radiographically bilateral triangular iliac sclerosis at the lower part of the sacroiliac joints (SIJs) with concomitant paracortical sulcus formation (black arrows)
- MRI - iliac sclerosis (asterisks) and bone marrow edema (BME) at the left SIJ (arrow) and in the sacrum, mainly located peripheral to an area with fat deposition (arrow), fat deposition in the sacrum (open arrows) surrounding subchondral areas with a mixture of sclerosis and fat deposition (slim open arrow)



Case 1, MRI, 10 years later

- Persistence of iliac sclerosis (asterisks), with dispersed areas of fat deposition (slim open arrows)
- Scattered BME at both SIJs (arrows), and the fat deposition in the sacrum has markedly increased on both sides (open arrows) replacing most of the previously sclerotic areas

CT further one year later, (C) semi-coronal and (D) semi-axial reconstructions show no sign of erosions, but vacuum phenomenon in both joints and joint space narrowing on the right side with concomitant osteophyte formation, especially anteriorly (slim arrow). There is increased density in the subchondral areas on both side of the joints consistent with sclerosis, but not homogeneous dense consistent with scattered areas with both BME and fat within the sclerosis as detected by MRI.

Methods

- Study population: a cohort of 129 patients (49 women; 80 men), initially diagnosed with axSpA, and treated at the Department of Rheumatology, North Denmark Regional Hospital in August 2023
- The clinical and imaging findings were re-evaluated
- MRI and radiography and/or CT of the SIJ were re-assessed by an experienced radiologist blinded to clinical findings regarding fulfillment of the modified New York (mNY) criteria and thresholds for MRI changes consistent with axSpA.
- Global assessment of the presence of axSpA with a confidence level from -5 to +5 was performed, and a second experienced radiologist performed a similar blinded global assessment.
- OCI consensus diagnoses were obtained based on imaging, clinical and biochemical findings.

Results

- Seven women had by imaging OCI with confidence levels of -5 - -4 (mean -3.9) by the primary and -5 - -1 (mean -3.6) by the secondary investigator
- Clinical and biochemical findings support the diagnoses
- None of them fulfilled the mNY criteria
- All fulfilled thresholds for MRI fat deposition consistent with axSpA, and five also thresholds for subchondral bone marrow edema (BME)
- The detected OCI MRI characteristics were:
 - sclerosis predominating at the anterior-middle iliac joint areas with BME and fat deposition at the periphery
 - subchondral fat deposition predominantly in the sacrum

Evaluating pulse wave analysis as a screening metric for cardiovascular risk in diabetes

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5. Department of Cardiology, North Denmark Regional Hospital, Hjoerring, Denmark

Background

Diabetes mellitus (DM) is associated with macrovascular disease and microvascular damage. Pulse wave analysis (PWA) is a non-invasive technique that may allow earlier identification of vascular changes through aortic augmentation index at heart rate 75 (Alx@75) and the subendocardial viability ratio (SEVR).

Methods

This cross-sectional study, 104 adults with type 1 or type 2 DM from North Denmark Regional Hospital underwent PWA using the SphygmoCor XCEL device. Clinical data, including HbA1c, blood pressure, lipid profile, renal function, and complications, were extracted from medical records. Participants were classified as regulated (HbA1c < 70 mmol/mol) or dysregulated (≥ 70 mmol/mol).

Results

Alx@75 was significantly higher in individuals with atherosclerosis (25.3% vs 20.3%, $p < 0.05$). SEVR was lower in individuals with retinopathy (135.9% vs 147.6%, $p < 0.05$) and neuropathy (134.8% vs 145.6%, $p < 0.05$), but higher in nephropathy (151.7% vs 139.2%, $p < 0.05$). HbA1c was associated with an increased risk of developing at least one complication (OR=1.046, $p = 0.013$). Type 2 diabetes compared to type 1 was associated with increased odds of nephropathy (OR=2.75, $p = 0.034$), but reduced odds of retinopathy (OR=0.291, $p = 0.004$). Alx@75 correlated positively with age ($r = 0.31$, $p < 0.01$) and female gender ($r = 0.37$, $p < 0.001$). SEVR correlated negatively with systolic blood pressure ($r = -0.26$, $p < 0.05$), and female gender ($r = -0.33$, $p < 0.05$). No significant differences were found between regulated and dysregulated groups (Alx@75: $p = 0.25$; SEVR: $p = 0.91$).

Conclusions

Alx@75 was associated with atherosclerosis, while SEVR reflected microvascular complications. HbA1c was associated with developing complications. These findings suggest PWA may supplement conventional markers and allow early detection of complications and cardiovascular risk in DM.



Ref.: Cardix.com

PULSE WAVE ANALYSIS AS A SCREENING METRIC FOR CARDIOVASCULAR RISK IN DIABETES

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Background

Diabetes mellitus (DM) is associated with macrovascular disease and microvascular damage. Pulse wave analysis (PWA) is a non-invasive technique that may allow earlier identification of vascular changes through aortic-augmentation-index at heart rate 75 (Alx@75) and the subendocardial-viability-ratio (SEVR).

Methods

In this cross-sectional study 104 adults with DM from North Denmark Regional Hospital underwent PWA using the SphygmoCor XCEL device. Clinical data, including HbA1c, blood pressure, lipid profile, renal function, and complications, were extracted from medical records. Participants were classified as regulated (HbA1c <70 mmol/mol) or dysregulated (HbA1c ≥ 70 mmol/mol).

Results

Alx@75 was significantly higher in individuals with atherosclerosis. SEVR was lower in individuals with retinopathy and neuropathy, but higher in nephropathy. Higher SEVR showed protection against neuropathy (OR=0.975, p=0.010) and retinopathy (OR=0.983, p=0.043), while elevated Alx@75 was associated with an increased odds of atherosclerosis (OR=1.039, p=0.061). Alx@75 significantly correlated positively with age and female gender. SEVR significantly correlated negatively with systolic blood pressure, and female gender. No significant differences were found between regulated and dysregulated groups (Alx@75: p=0.25; SEVR: p=0.91).

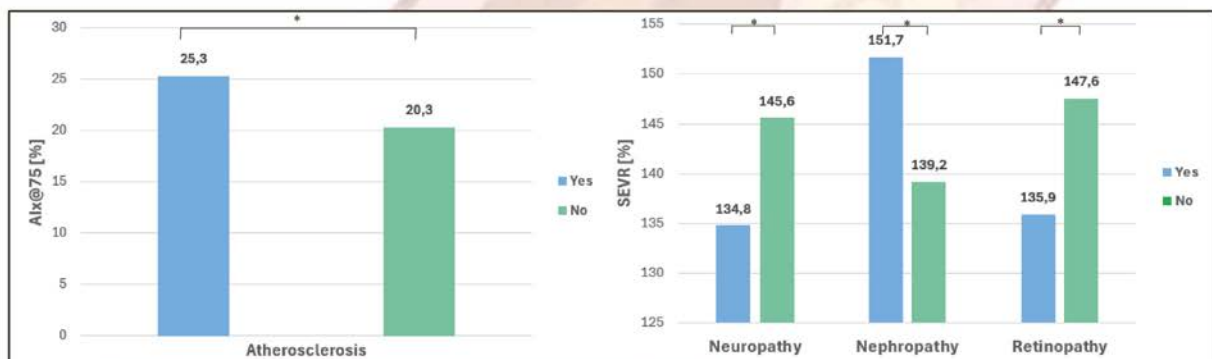


Figure 1 shows Alx@75 values for individuals with (Yes) and without (No) atherosclerosis, respectively. Furthermore, it shows SEVR values with (Yes) and without (No) neuropathy, nephropathy and retinopathy, respectively. Asterisk (*) marks statistical significance.

Ref.: istockphoto.com

Conclusions

Alx@75 was associated with atherosclerosis, while SEVR reflected microvascular complications. From a clinical perspective, PWA could serve as an early, non-invasive screening metric and treatment guidance for individuals diagnosed with DM. Hereby, PWA may supplement conventional markers and allow earlier detection of complications and cardiovascular risk in DM. However, implementation should await longitudinal validation with actionable cut-offs, including potential sex-, age- and blood-pressure-correlated reference ranges.

AID-teknologi til patienter med dysreguleret type 1-diabetes og psykosocial sårbarhed: resultater fra et 12-måneders case-baseret interventionsstudie

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Baggrund

Håndtering af type 1-diabetes udgør en betydelig psykisk belastning, især for patienter med samtidig psykosocial sårbarhed, hvilket øger risikoen for dårlig diabetesregulering, øget indlæggelsesfrekvens samt nedsat livskvalitet. Automated Insulin Delivery (AID-teknologi) kan automatisere insulinadministration, men teknologien har været begrænset for denne patientgruppe. Formålet var at undersøge, om AID-teknologi kunne optimere diabetesregulering og trivsel hos patienter med dysreguleret type 1-diabetes og samtidig psykosocial sårbarhed.

Metoder

Fem patienter med HbA1c >70 mmol/mol og psykosocial sårbarhed blev tilbudt behandling med AID-teknologi (Medtronic 780G med Guardian 4 sensor). Baselinedata blev opgjort under patienternes tidligere behandling med insulin pen og Flash Glucose Monitoring (FGM). Interventionen inkluderede en kort introduktion til AID-pumpen, simpel diætistvejledning samt behovsorienteret sygeplejeopfølgning. Evaluering omfattede HbA1c, TIR og WHO-5 ved baseline, 3, 6 og 12 mdr.

Resultater

Ved baseline var median HbA1c 82 mmol/mol (75–103). Den faldt fra 82 mmol/mol til 66 mmol/mol ved 3 måneder, 71 mmol/mol ved 6 måneder og 73 mmol/mol (64–113) ved 12 måneder (n=5). Median TIR steg fra 21 % (18–32) til 53 % (43–57) ved 12 måneder (n=4). WHO-5 trivselsindeks steg fra 56 (28–68) til 72 (60–92) (n=5). Fire af fem patienter havde en klinisk signifikant forbedring i trivsel, og tre patienter havde lavere HbA1c efter 12 måneder.

Konklusioner

Studiet peger på, at AID-teknologi kan forbedre både behandlingskvalitet og trivsel hos patienter med dysreguleret type 1-diabetes og psykosocial sårbarhed. Erfaringerne viser, at ekstra støtte i opstartsfasen er afgørende, da patienterne ofte havde svært ved at håndtere tekniske udfordringer selvstændigt.

1 Håndtering af type 1 diabetes udgør en betydelig psykisk belastning, især for patienter med samtidig psykosocial sårbarhed.

Dette øger risikoen for dårlig diabetes-regulering, øget indlæggelsesfrekvens samt nedsat livskvalitet.

Automated Insulin Delivery (AID-teknologi) kan automatisere insulin-administrationen, men teknologien har været begrænset for denne patientgruppe.

Formålet var at undersøge, om AID-teknologi kunne optimere diabetes-regulering og trivsel hos patienter med dysreguleret type 1 diabetes og samtidig psykosocial sårbarhed.

2 Fem patienter med HbA1c > 70 mmol/mol og psykosocial sårbarhed blev tilbudt at skifte til behandling med AID-pumpe.

Kort introduktion til AID-pumpen og simpel diætist vejledning.

Sygepleje-opfølgning blev tilbudt efter behov.

Evalueret af HbA1c, Time-in-Range, samt trivsel (WHO-5) ved 0, 3, 6 og 12 måneder.



LEV
—godt—
MED
DET

Automatisk
insulin-administration:

Bedre trivsel
og behandling
til sårbare patienter
med type 1 diabetes

Et
casebaseret
interventions
studie



3 Bedre blodsukkerregulering, bedre Time-in-Range og øget trivsel

Resultaterne peger på, at AID-teknologi kan forbedre både behandlingskvalitet og trivsel (WHO-5) hos patienter med dysreguleret type 1 diabetes og psykosocial sårbarhed.

Erfaringerne viser, at ekstra støtte i opstartsfasen er afgørende, da patienterne ofte havde svært ved at håndtere tekniske udfordringer selvstændigt.



Måneder



HbA1c



Time-in-Range



WHO-5

Måneder	HbA1c	Time-in-Range	WHO-5
0	82 mmol/mol	21%	56%
12	73 mmol/mol	53%	72%

*Vise resultaterne af et gennemsnit af alle 5 patienter.

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Long-chain omega-6 fatty acids in adipose tissue and the risk of acute ischemic cardiovascular events

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Background

The long-chain omega-6 fatty acids, arachidonic acid (AA) and dihomo-gamma-linolenic acid (DGLA), may give rise to a range of pro-inflammatory and pro-thrombotic eicosanoids, but their role in cardiovascular disease remains controversial. Therefore, we aimed to investigate the association between adipose tissue content of AA and DGLA and the risk of acute ischemic cardiovascular events.

Methods

We conducted a case-cohort study nested within the Danish Diet, Cancer and Health cohort (n = 52,374). Baseline adipose tissue content of AA and DGLA was determined by gas chromatography in all incident cases and in a random sample of the cohort (n = 4,484). Incident cases of acute ischemic cardiovascular events defined as a composite of myocardial infarction and ischemic stroke were identified through nationwide Danish registries. Statistical analyses were performed using weighed Cox proportional hazard regression adjusted for established risk factors.

Results

During a median of 16.8 years of follow-up, we identified a total of 6,008 acute ischemic cardiovascular events with complete information. Multivariable analyses showed a positive association between both AA and DGLA and the risk of acute ischemic cardiovascular events. Thus, the hazard ratio of acute ischemic cardiovascular events was 1.16 (95% CI: 1.00; 1.34) for AA and 1.44 (95% CI: 1.22; 2.69) for DGLA when comparing the highest quintile with the lowest quintile in adipose tissue, respectively.

Conclusions

A high content of AA and DGLA in adipose tissue was associated with a higher risk of acute ischemic cardiovascular events.

Long-chain omega-6 fatty acids in adipose tissue and the risk of acute major ischemic cardiovascular events

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Background

The long-chain omega-6 fatty acids arachidonic acid and dihomo- γ -linolenic acid are pro-inflammatory and pro-thrombotic, but their role in cardiovascular disease remain controversial.

Objective

To investigate the associations between adipose tissue content of arachidonic acid and dihomo- γ -linolenic and the risk of acute major ischemic cardiovascular events.

Methods

- We used a case-cohort study design nested within the Danish Diet, Cancer and Health cohort (n = 52,374)
- Incident cases of acute major ischemic cardiovascular events was defined as a composite of myocardial infarction and ischemic stroke. Outcome information was retrieved by record linkage with nationwide Danish registries (Figure)
- Fatty acid composition was determined by gas chromatography in all incident cases and in a random sample of the cohort (n = 4,484).
- Statistical analyses were performed using weighed Cox proportional hazard regression adjusted for established risk factors.

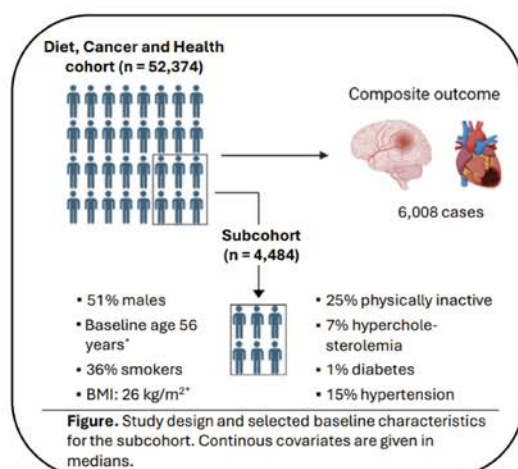


Table. Risk of acute major ischemic events by quintiles of long-chain n-6 fatty acids in adipose tissue

Percentage of total fatty acids		Acute major ischemic events (n = 6,008)	
Percentage of total fatty acids	Cases (n)	Age- and sex adjusted	Multivariable adjustment [†]
		HR (95% CI)	HR (95% CI)
Arachidonic acid			
Q1 0.13-0.28	1,112	1	1
Q2 0.29-0.33	1,158	1.03 (0.90; 1.17)	1.04 (0.92; 1.19)
Q3 0.34-0.38	1,303	1.19 (1.05; 1.35)	1.15 (1.01; 1.32)
Q4 0.39-0.44	1,179	1.22 (1.08; 1.39)	1.11 (0.96; 1.27)
Q5 0.45-1.31	1,256	1.33 (1.17; 1.51)	1.16 (1.00; 1.34)
Dihomo- γ -linolenic acid			
Q1 0.06-0.12	1,161	1	1
Q2 0.13-0.15	1,435	0.99 (0.88; 1.12)	1.01 (0.89; 1.14)
Q3 0.16-0.18	1,140	1.19 (1.04; 1.35)	1.22 (1.06; 1.40)
Q4 0.19-0.22	963	1.07 (0.93; 1.23)	1.00 (0.86; 1.16)
Q5 0.23-0.80	1,309	1.61 (1.40; 1.86)	1.44 (1.22; 1.69)

Values are hazard ratios (HR) with 95% confidence intervals (CI) calculated using Cox proportional hazard regression allowing for separate baseline hazards among men and women.

[†] Multivariable adjustment included baseline age, length of schooling, smoking, physical activity, waist circumference, body mass index and alcohol intake.

Results

- A total of 6,008 participants developed an acute major ischemic cardiovascular event during a median of 16.8 years of follow-up.
- The median adipose tissue content of arachidonic acid was 0.36% and 0.16% for dihomo- γ -linolenic acid.
- Multivariable analyses showed that participants in the highest quintile of arachidonic acid and dihomo- γ -linolenic acid had a higher risk of acute major ischemic compared to participants in the lowest quintile, respectively.
- Additional adjustment for comorbidities including history of diabetes mellitus, hypertension and hypercholesterolemia yielded similar results.
- Sex-specific analyses showed similar pattern of associations in men and women.

Conclusion

A high content of arachidonic acid and dihomo-gamma-linolenic in adipose tissue was associated with a higher risk of acute major ischemic cardiovascular events.

Adherence to gout treatment guidelines in patients with reduced kidney function: a Danish prospective cohort study with 2 years of follow-up

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Background

Reduced kidney function (RKF), including chronic kidney disease, affects approximately 9% of the global population and frequently coexists with gout, which impacts about 3% of individuals. Poor gout management in patients with RKF accelerates joint destruction, exacerbates kidney dysfunction, and increases cardiovascular risk, thereby worsening morbidity and mortality. This study assessed adherence to recommended gout treatment guidelines two years after confirmed gout diagnosis in patients with moderate RKF or worse (eGFR < 60 mL/min/1.73 m²).

Methods

From a prospective cohort of gout patients confirmed by microscopy-identified urate crystals, we identified those with concomitant RKF. Patients were treated in real-world healthcare settings. The primary outcome was achieving target serum urate levels two years post-diagnosis: <0.36 mmol/L for general gout management and <0.30 mmol/L for patients with tophi.

Results

Of 286 gout patients, 113 (40%) had RKF. The median age was 76 years, 68% were male, and comorbidities were common. Sixty percent of patients maintained urate levels sufficient to prevent new tophi. However, 46% had tophi at diagnosis, and only 48% of these achieved levels low enough to dissolve tophi. The mean prescribed allopurinol dose was 244 mg/day, often insufficient to achieve target urate levels. Two-year mortality was 27%.

Conclusions

Gout in patients with RKF is often inadequately managed, potentially leading to complications and reduced quality of life. These findings reflect typical clinical practice. Optimizing allopurinol dosing, as per guideline recommendations, could enhance patient outcomes. Adherence to both rheumatology and nephrology guidelines remains suboptimal, highlighting the need for improved interdisciplinary management.

Adherence to gout treatment guidelines in patients with reduced kidney function

A Danish prospective cohort study with 2 years of follow-up

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1 Reduced kidney function, including chronic kidney disease, affects approximately 9% of the global population and frequently coexists with gout, which impacts about 3%. Gout is often caused by a reduced renal excretion of uric acid.

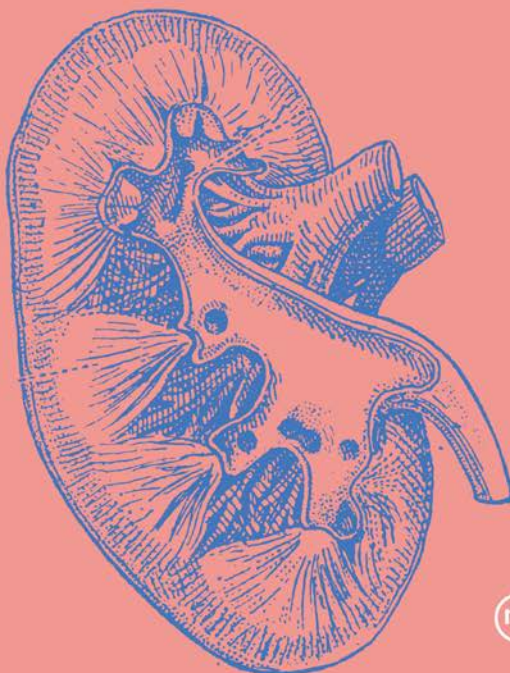
Poor gout management in patients with reduced kidney function accelerates joint destruction, exacerbates kidney dysfunction, and increases cardiovascular risk, thereby worsening morbidity and mortality. Furthermore, excess circulating uric acid leads to peripheral urate depositions, known as tophi, which can ulcerate and cause foot ulcers with poor healing.

This study assessed adherence to recommended gout treatment guidelines two years after confirmed gout diagnosis in patients with moderate to worse reduced kidney function (eGFR < 60 mL/min/1.73 m²).

**Recommended
urate targets for
gout treatment:**

serum urate levels
< 0.36 mmol/L
in patients with
no tophi

serum urate levels
< 0.30 mmol/L
in patients with
tophi



2 From a prospective cohort of 286 confirmed gout patients, we identified those with moderate to worse reduced kidney function (eGFR < 60 mL/min/1.73 m²). Patients were treated in various real-life healthcare settings.

N=286

With reduced kidney function (n=113)

40% of patients with gout
also had reduced kidney function

46% had tophi
at time of diagnosis

Patients with gout who survived 2 years

n=82

With reduced kidney function

27% of the patients past away
in the first 2 years

48% with tophi
met urate targets

60% without tophi
met urate targets

244 mg was the mean daily Allopurinol dose

3 Gout in patients with reduced kidney function is often inadequately managed, potentially leading to complications and reduced quality of life. These findings reflect typical clinical practice.

Allopurinol is the most used urate lowering therapy. Optimizing Allopurinol dosing, as per guideline recommendations, could enhance patient outcomes. Generally, a daily dose of 300-350 mg Allopurinol is sufficient to achieve urate targets in most patients.

Adherence to both rheumatology and nephrology guidelines remains suboptimal, highlighting the need for improved interdisciplinary management of gout.

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Managing gout in patients with diabetes: adherence to treatment guidelines in a Danish prospective cohort study with 4 years of follow-up

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Background

Diabetes affects about 6% of the population, with 20% developing foot ulcers. Gout impacts 3% of the population, and without sufficient urate-lowering therapy, many individuals will develop urate deposits in the skin of the feet, known as tophi. Patients with diabetes have more frequent contact with health-care providers for routine diabetes care, which could facilitate earlier identification and treatment of common and serious comorbidities such as gout. However, adherence to gout treatment in patients with diabetes has not been studied. This study assessed adherence to recommended gout treatment in patients with diabetes in real-life settings.

Methods

From a prospective cohort of gout patients confirmed by microscopy-identified urate crystals, we identified those with concomitant diabetes. Patients were treated in various real-life healthcare settings. The primary outcome was achieving target serum urate levels four years post-diagnosis: <0.36 mmol/L for general gout management and <0.30 mmol/L for patients with tophi.

Results

Of 286 gout patients, 85 (30%) had diabetes. The median age was 71 years, and 76% were male, with several comorbidities. Urate levels sufficient to prevent new tophi were maintained by 58%. However, 45% had tophi at diagnosis, and only 46% of these achieved levels low enough to dissolve tophi.

Conclusions

Gout in patients with diabetes is often inadequately managed, potentially leading to persistent tophi, which may ulcerate and contribute to foot ulcers. These findings likely reflect typical treatment settings. Affordable and effective gout treatment could prevent tophi formation and improve outcomes. Incorporating gout screening into diabetes management guidelines is recommended.

Managing gout in patients with diabetes

Adherence to treatment guidelines

A Danish prospective cohort study with 4 years of follow-up

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1 Diabetes affects about 6% of the population, with 20% developing foot ulcers. Gout impacts 3% of the population, and without sufficient urate-lowering therapy, often Allopurinol, many individuals will develop urate deposits in the skin of the feet, known as tophi. Tophi can ulcerate causing foot ulcers with poor healing.

Patients with diabetes have more frequent contact with healthcare providers for routine diabetes care, which could facilitate earlier identification and treatment of common and serious comorbidities such as gout. However, adherence to gout treatment in patients with diabetes has not been studied. This study assessed adherence to recommended gout treatment in patients with diabetes in real-life settings.

2 From a prospective cohort of 286 confirmed gout patients, we identified those with concomitant diabetes. Patients were treated in various real-life healthcare settings.

N=286	With diabetes (n=85)	Without diabetes (n=201)
	30% had diabetes (all types)	70% had no known diabetes
	45% had tophi at time of diagnosis	35% had tophi at time of diagnosis

Patients with gout who survived 4 years

N=219	With diabetes (n=67)	Without diabetes (n=152)
	58% without tophi met urate targets	54% without tophi met urate targets
	46% with tophi met urate targets	33% with tophi met urate targets
	302 mg was the mean daily Allopurinol dose	265 mg was the mean daily Allopurinol dose



Recommended urate targets for gout treatment:

serum urate levels
< 0.36 mmol/L
in patients with
no tophi

serum urate levels
< 0.30 mmol/L
in patients with tophi

3 Gout in patients with diabetes is often inadequately managed and tophi are more prevalent among patients with diabetes. Without proper urate-lowering therapy achieving and sustaining the recommended serum urate targets, tophi may develop and/or reoccur, potentially ulcerate and contribute to foot ulcers with poor healing.

Gout is prevalent among patients with diabetes who in general are at risk of developing foot ulcers. Therefore, incorporating gout screening into diabetes management guidelines is highly recommended. The treatment of gout is affordable and effective, and compatible with diabetes medications.

By achieving the recommended treatment targets, tophi formation can be prevented and outcomes related to foot ulcers caused by mismanaged gout can be improved.

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Claus Rasmussen et al., Adherence to gout treatment guidelines in patients with diabetes: A Danish prospective cohort study with 4 years of follow-up. Primary Care Diabetes, 2025 August 26.

Unmasking tophaceous gout in patients with type 2 diabetes and foot ulcers: a proof-of-concept study using ulcer debris microscopy and imaging

Claus Rasmussen^{1,2,3}, Jesper Walther Larsen^{1,2}, Peter C. W. Holm^{4,5}, Trine Stenbak Bisgaard⁴, Marie-Louise Lund Søbbye², Søren Terpager Jepsen⁶, Peter Derek Christian Leutscher^{2,3}, Gunnar Lauge Nielsen^{5,7}, Anne Grethe Jurik²

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Background

Among patients with diabetes, 20% develop foot ulcers, which carry a high risk of amputation and mortality. Gout is frequently underdiagnosed in this population. Left untreated gout frequently leads to urate deposits in the feet - known as tophi - which may ulcerate and mimic foot ulcers mistakenly thought to be caused by diabetes. Patients often fail to recall previous gout attacks, complicating gout diagnosis. The prevalence of tophaceous gout in patients with diabetes and foot ulcers remains unstudied. This study aimed to determine whether debris samples from foot ulcers in patients with diabetes, when examined using polarized light microscopy, could reveal previously unrecognized tophaceous gout.

Methods

A sample of 35 patients were recruited from a multidisciplinary diabetes foot ulcer center. Ulcer debris samples were collected during routine care and examined by microscopy. Conventional radiographs were reviewed for signs of gout.

Results

Urate crystals were identified in 5 of 35 ulcer debris samples (14%), strongly suggesting previously unrecognized gout. Radiographic findings further supported tophaceous gout as the primary cause of these foot ulcers.

Conclusions

These findings suggest that unrecognized tophaceous gout may be relatively common among patients with type 2 diabetes and foot ulcers. However, selection bias may have overestimated prevalence, while insufficient or contaminated samples may have led to underestimation. Further refinement of sampling and examination techniques - ideally supplemented by imaging before ulcer treatment - is needed to improve detection of all cases with urate crystals and ensure that negative findings reflect the true absence of gout rather than technical limitations.

Unmasking tophaceous gout in patients with type 2 diabetes and foot ulcers

a proof-of-concept study using ulcer debris microscopy and imaging

Claus Rasmussen^{1,2,3}, Jesper Walther Larsen^{1,2}, Peter C. W. Holm^{4,5}, Trine Stenbak Bisgaard⁴, Marie-Louise Lund Søbye², Søren Terpørg Jepsen⁶, Peter Leutscher^{2,3}, Gunnar L. Nielsen^{3,7}, Anne Grethe Jurik²

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Unrecognized gout causes foot ulcers in patients with diabetes

1 Background

Among patients with diabetes, 20% develop foot ulcers, which carry a high risk of amputation and mortality. Gout is frequently underdiagnosed in this population. Left untreated gout frequently leads to urate deposits in the feet, known as tophi, which may ulcerate and mimic foot ulcers mistakenly thought to be caused by diabetes.

Patients often fail to recall previous gout attacks, complicating gout diagnosis. The prevalence of tophaceous gout in patients with diabetes and foot ulcers remains unstudied.

2 Methods

A sample of 35 patients were recruited from a multidisciplinary diabetes foot ulcer clinic. Ulcer debris samples were collected during routine ulcer care and examined by polarized light microscopy. Conventional radiographs were reviewed for signs of gout.

This study aimed to determine whether debris samples from foot ulcers in patients with diabetes could reveal previously unrecognized tophaceous gout.

3 Results

Case 1 – Male, 91



(A) Photograph of the ulcer taken on the same day the debris was sampled for microscopy. (B) Radiographs, anterior and oblique view (the same day) show erosions (arrows) and soft tissue calcifications medially and dorsally at the first metatarsophalangeal joint (MTP 1) (open arrows).

Case 3 – Male, 92



(A) Photograph of the right second toe taken on the day the ulcer debris was sampled. The right first toe had been amputated two years earlier. (B) Anterior radiographs of the right foot 7 years previously show tophus formation in the soft tissues at the second distal interphalangeal joint (open arrows) with accompanying osseous destruction (arrow) in addition to characteristic erosive changes at the first metatarsophalangeal and interphalangeal joints (arrows).

Case 2 – Female, 71



(A) Photograph taken by the patient at home on the day the tophus ruptured on the right second toe. Debris from the ulcer was sampled two weeks later. (B) Radiographs, anterior view (B1) and enlarged oblique view of the right foot (B2), show soft tissue calcifications at MTP 2 and 5 (open arrows) and erosion of the metatarsal head at MTP 5 (arrow). (C) Supplementary dual energy computer tomography (DECT) shows precipitation of urate deposits as green masses at the right MTP 5 and MTP 1 bilaterally and between the right MTP 2 and MTP 3 (arrow). There were corresponding urate deposits at the left forefoot and also in the tarso-metatarsal region where there were no visible gout changes on the radiographs. The total volume of urate deposition in the scan-field was 3.39 cm³.

Case 4, Female, 87



(A) Photograph of the ulcer at the left first metatarsophalangeal joint taken on the day of debris sampling. (B) Microscopy (10x magnification) with polarized light showing numerous needle-shaped birefringent urate crystals. Anterior radiographs of the left foot (C1) with additional magnification of the first metatarsophalangeal joint (C2) show soft tissue swelling at MTP 1 with weakly condensations (open arrows) compatible with urate deposits and superficial erosions at the base of the proximal phalanx (arrows). In addition, there is hallux valgus deformation with bone apposition medially on the metatarsal head.

Case 5 – Female, 79



(A) Photograph of a dry ulcer taken six weeks after surgical drainage of a tophus at the left first metatarsophalangeal joint. Ulcer debris for microscopy was sampled the day following the surgical drainage. (B) Radiographs, anterior view (B1) and enlarged oblique view of the left foot (B2), show soft tissue calcifications medially and dorsally at MTP 1 (open arrows) and erosion at the metatarsal head (arrow). (C) Supplementary DECT two months later shows precipitation of urate deposits as green masses at the left MTP 1 (arrows) and also at the left tarsal region and medially at the left ankle in addition to the right tarso-metatarsal region. The total volume of urate deposition in the scan-field was 1.78 cm². The green deposits at the nails are due to artefacts.

4 Conclusion

5 of 35 patients had unrecognized gout (14%) identified by urate deposits in ulcer debris.

Supported by radiographic findings, this strongly suggests that gout was the primary cause of these foot ulcers.

These findings suggest that unrecognized tophaceous gout may be relatively common among patients with type 2 diabetes and foot ulcers. However, selection bias may have overestimated prevalence, while insufficient or contaminated samples may have led to underestimation. Further refinement of sampling and examination techniques, ideally supplemented by imaging before ulcer treatment, is needed to improve detection of all cases with urate deposits and ensure that negative findings reflect the true absence of gout rather than technical limitations.

Increasing physician continuity in Danish geriatric wards: an appreciative inquiry

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4. Department of Geriatric and Palliative Medicine, Copenhagen University Hospitals, Bispebjerg and Frederiksberg, Copenhagen, Denmark

Background

Geriatric patients often need longer hospital stays than other internal medicine patients. We hypothesize that increased physician continuity doing medical rounds may increase both patient and physician satisfaction and shorten the length of stay at the hospital. Here we describe the start of an improvement project in three parts to improve continuity of medical rounds at geriatric wards. Our dream is a situation where the patient can expect the same physician the next day in ward rounds, instead of an endless row of new physicians. We want to measure whether we can increase continuity in geriatric departments in four Danish hospitals, and whether this improves satisfaction of patients, relatives and physicians as well as length of stay at the hospital.

Methods

In this first part we assessed senior physician continuity and calculated the number of consecutive days each physician has been present in the same ward. We collected data from four Danish geriatric departments. Data was collected in October and November 2024.

Results

Data from four Danish geriatric wards, with 45, 32, 20 and 16 beds respectively, shows the monthly average of consecutive days was 1.50 days (minimum 1.13, maximum 1.81).

Conclusions

Physician continuity in geriatric ward rounds appears to be quite low in Danish hospitals. We plan to use appreciative inquiry to create aligned, committed action to improve continuity in ward rounds for geriatric patients.

Physician Continuity in Danish Geriatric Wards: An Appreciative Inquiry

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Introduction

Geriatric patients often need longer hospital stays, than other internal medicine patients. Longer stays, means meeting more physicians. We hypothesize that increased physician continuity doing medical rounds may increase both patient and physician satisfaction and shorten the length of stay.

This is an improvement project to look into and maybe improve continuity. First step is to measure continuity in danish geriatric wards, in 4 different hospitals.

Going forward, we want to determine whether we can increase continuity and whether this improves satisfaction of patients, relatives and physicians as well as length of stay at the hospital



Methods

- We assessed senior physician continuity, and calculated the number of consecutive days each physician has been present in the same ward
- We collected data from four Danish geriatric departments
- Data was collected in October and November 2024



Results

Data from four Danish Geriatric wards.

45, 32, 20 and 16 beds respectively, all together 113 beds.

The monthly average of consecutive days was 1.50 days (minimum 1.13, maximum 1.81).

Conclusion

Physician continuity in geriatric ward rounds appears to be quite low in Danish hospitals. We plan to use appreciative inquiry to create aligned, committed action to improve continuity in ward rounds for geriatric patients



The Capital Region
of Denmark



Ny strategi til tidlig opsporing af urinsyregigt blandt patienter med diabetes – en hyppig og overset sygdom der forårsager kroniske fodsår

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Baggrund

Både diabetes og urinsyregigt forårsager kroniske fodsår, dog med forskellig årsag og behandlingsstrategi. Hver femte patient med diabetes har også urinsyregigt, men alligevel er urinsyregigt ikke en del af behandlingsvejledningen for diabetiske fodsår. Dette kan medføre at urinsyregigt overses som primær eller komplicerende årsag til fodsåret, med alvorlige konsekvenser for patienten, herunder gentagne sår, nyreskader, amputation og tidlig død. Behandlingen af urinsyregigt er effektiv, sikker og billig, men diagnosticeringen kan være udfordrende hos patienter med diabetes, da begge sygdomme giver de samme gener i fødderne, herunder kronisk smerte og hævelse. Derfor er der behov for en ny diagnostisk tilgang til urinsyregigt blandt patienter med diabetes.

Metoder

Fra patienter med diabetes og fodsår, som modtager sårpleje i Sårambulatoriet på Regionshospital Nordjylland, indsamles sårskrab til systematisk udvikling af nye analysemetoder, der påviser urinsyregigt direkte igennem sår. Journaldata indsamles med henblik på at identificere kliniske risiko parametre i relation til udviklingen af urinsyregigt blandt patienter med diabetes. Målttede fodskanninger udføres til verificering af eventuel urinsyregigt. Herefter sammenholdes resultater fra sårskrab og skanninger med journaldata for at udvikle en samlet strategi, der tidligere og mere effektivt opsporer de patienter som har brug for behandling for urinsyregigt.

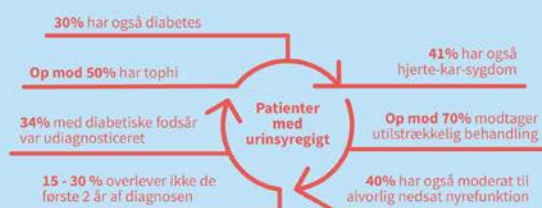
Perspektiver

Studiet sigter mod at belyse en ofte overset sammenhæng imellem diabetes og urinsyregigt i relation til fodsår, gennem forbedret opsporing og diagnostik af denne patientgruppe. Målet er tidligere og mere målrettet opsporing, forebyggelse og behandling på tværs af hele patientforløbet, lige fra besøg hos egen læge til behandlinger og forløb i sår- og fodklinikker samt hospitaler.

Ny strategi til tidlig opsporing af urinsyreigt blandt patienter med diabetes

1 Urinsyreigt er en generelt underbehandlet sygdom. Uden tilstrækkelig behandling lider patienten under smertefulde anfald samt en gradvis ophobning af overskydende urinsyre omkring ydre led. Disse ophobninger, kaldet tophi, kan udvikle sig til kroniske fodsår.

Urinsyreigt er en metabolisk sygdom med omfattende systemisk påvirkning når den ikke behandles efter tilstrækkeligt. Vi har tidligere vist i Nordjylland:



Både diabetes og urinsyreigt forårsager kroniske fodsår, dog med forskellig årsag og behandlingsstrategi. Alligevel er urinsyreigt ikke en del af behandlingsvejledningen for diabetiske fodsår. Dette kan medføre at urinsyreigt overses som primær eller komplicerende årsag til fodsåret, med alvorlige konsekvenser for patienten, herunder gentagne sår, nyreskader, amputation og tidlig død.

Behandlingen af urinsyreigt er effektiv, men diagnosticeringen kan være udfordrende hos patienter med diabetes, da begge sygdomme giver de samme gener i fødderne, herunder kronisk smerte og hævelse. Derfor er der behov for en ny diagnostisk tilgang til urinsyreigt blandt patienter med diabetes. En strategi som baserer sig på objektive fund (mikroskopi og Dual-Energy CT (DECT)) frem for subjektive oplevelser af smerte.

3 Målet er tidligere og mere målrettet opsporing, forebyggelse og behandling af urinsyreigt på tværs af hele patientforløbet, lige fra besøg hos egen læge til behandlinger og forløb i sår- og fodklinikker samt hospitaler.

Behandlingen for urinsyreigt er sikker og billig, og udskiller effektivt overskydende urinsyre hvilket markant sænker risikoen for smertefulde anfald, alvorlige fodsår og amputationer, samt forbedrer den metaboliske tilstand og livskvaliteten generelt.

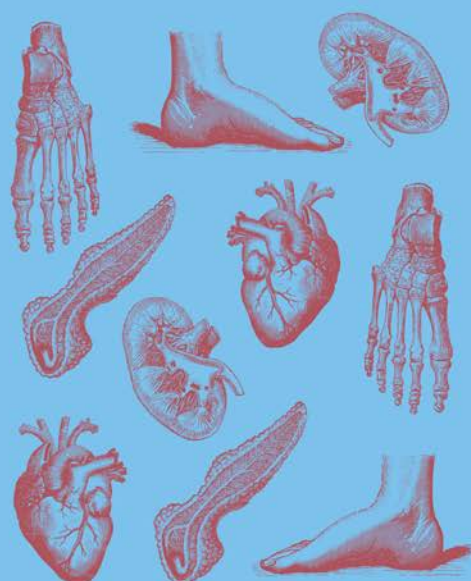
En hyppig og overset sygdom der forårsager kroniske fodsår

Jesper Walther Larsen^{1,2}, Marie-Louise Lund Søbye²,
Peter Clement Waldhauer Holm³, Niels Ejlskjær^{3,4,5},
Peter Leutscher^{2,4}, Peter Rubak¹, Claus Rasmussen^{1,2,4}

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2 Patienter med diabetes og/eller urinsyreigt undersøges i ambulatorierne for henholdsvis diabetes, sår og reumatologi. Dette med henblik på at udvikle og verificere nye analysemetoder samt at blive klogere på hvordan vi effektivt opsporer urinsyreigt på tværs af specialer.

Patienter med diabetes i Diabetesambulatoriet	Patienter med diabetes og fodsår i Sårambulatoriet
DECT udføres til systematisk afdækning af forekomsten af urinsyreigt	Sårskrab indsamles til systematisk udvikling af nye analysemetoder, der påviser urinsyreigt under rutine sårbehandling
Journaler gennemgås for bedre screening på tværs af specialer	Journaler gennemgås for bedre screening på tværs af specialer
Patienter med urinsyreigt	
Sårskrab og skanninger sammenholdes med journaldata for at udvikle en samlet strategi, der tidligere og mere effektivt opsporer de patienter som har brug for behandling for urinsyreigt	



Identifying predictors of outcome of dialysis treatment compared to conservative kidney management in advanced chronic kidney disease to inform AI-based decision support

Kasper Vium Andersen^{1*}, Charlotte Strandhave^{1,2}, Louis Bay Nygaard¹, Peter Derek Christian Leutscher^{2,3}, My Hanna Sofia Svensson¹

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

**Participant in the Introduction Course to Clinical Research and Development, North Denmark Regional Hospital, 2025*

Background

Chronic kidney disease (CKD) is a growing global health concern, driven by ageing populations and rising cardiovascular and metabolic disease rates. For patients with end-stage kidney disease, treatment typically involves either dialysis or non-dialytic conservative care. While survival outcomes vary, dialysis often entails significant time and quality-of-life burdens. Currently, no standardized tool exists to support individualized treatment decisions. The aim of this study is to identify predictors for mortality and adverse outcomes among patients receiving dialysis compared to those managed conservatively.

Methods

We will conduct retrospective cohort study using Danish registry data from Statistics Denmark (2015–2025). Inclusion will consist of patients with advanced kidney failure defined as <30 mL/min/1.73 m² measured on two occasions at least 90 days apart (KDIGO guidelines), prior to choice of treatment. Patients will be identified using the national patient register, the pharmaceutical sales register and The Clinical Laboratory Information register. Primary outcomes will include mortality and quality of life. Variables will include data regarding age, sex, various blood samples and Charlson comorbidity index.

Perspectives

If we, by using simple tests, e.g., blood samples, can predict which patients with CKD have a limited life expectancy, we can make more evidence-based and clinically sound treatment decisions. Thus, allowing us to offer dialysis to appropriate patients, namely those expected to achieve improved quality of life and prolonged survival with dialysis. This approach would help avoid unnecessary treatment of an already highly multimorbid and aging patient population, aligning with the principles of the *Choosing Wisely* campaign.



Identifying predictors of outcome of dialysis treatment compared to conservative kidney management in advanced chronic kidney disease to inform AI-based decision support

Kasper Vium Andersen¹, Charlotte Strandhave^{1,2}, Louis Bay Nygaard¹, Peter Derek Christian Leutscher^{2,3}, My Hanna Sofia Svensson^{1,3}

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Background

Chronic kidney disease (CKD) is a growing global health concern, driven by ageing populations and rising cardiovascular and metabolic disease rates. For patients with end-stage kidney disease, treatment typically involves either dialysis or non-dialytic conservative care. While survival outcomes vary, dialysis often entails significant time and quality-of-life burdens. Currently, no standardized tool exists to support individualized treatment decisions.

Aim: The aim of this study is to identify predictors for mortality and adverse outcomes among patients receiving dialysis compared to those managed conservatively.

Method

We will conduct retrospective cohort study using Danish registry data from Statistics Denmark (2015–2025). Inclusion will consist of patients with advanced kidney failure defined as <30 mL/min/1.73 m² measured on two occasions at least 90 days apart (KDIGO guidelines), prior to choice of treatment. Patients will be identified using the national patient register, the pharmaceutical sales register and The Clinical Laboratory Information register. Primary outcomes will include mortality and quality of life. Variables will include data regarding age, sex, various blood samples and Charlson comorbidity index.

Perspectives

If we, by using simple tests, e.g., measures of sarcopenia, frailty, or cognitive function, can predict which patients with CKD have a limited life expectancy, we can make more evidence-based and clinically sound treatment decisions. This would allow us to offer dialysis to the appropriate patients, namely those expected to achieve improved quality of life and prolonged survival with dialysis, rather than, as is often the case today, relying on the clinician's "gut feeling" when deciding between dialysis and conservative care. Such an approach would help avoid unnecessary treatment of an already highly multimorbid and aging patient population, aligning directly with the principles of the Choosing Wisely campaign

Molecular prediction of disease occurrence and disease course in inflammatory bowel disease based on the NorDIBD cohort

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4. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

The inflammatory bowel diseases (IBDs), ulcerative colitis (UC) and Crohn's disease (CD), are diseases with onset in young adulthood and with a lifelong and unpredictable disease course. It is believed that genetic factors as well as environmental, microbiome and immunological factors play a role. Due to the limited etiological understanding of IBD, molecular prediction of the disease course is very limited, and therefore still no personalized medicine exists in IBD. The aim of the present project is to examine molecular markers on a large geographically well-defined patient cohort, to be able to link molecular markers to disease onset, disease phenotype, and disease course, including treatment response, to ultimately pave the way for personalized medicine in this field.

Methods

The study is based on participants from the North Denmark IBD (NorDIBD) cohort encompassing all living IBD patients in the North Denmark Region (Part A, ~5,000) and all newly diagnosed IBD patients for a period of two years (Part B, ~300). Blood and fecal samples for molecular analyses of potential biomarkers are collected from all participants. These analyses include whole genome sequencing, proteomics, metabolomics, and microbiota profiling.

Results

Since January 2023 nearly 4,500 invitations have been sent out to eligible patients. So far 1500 patients have been included for part A and around 150 patients for part B. Molecular analyses are pending.

Conclusions

In the longer term, we expect that a blood test or stool sample analysis can assist the physician in informing the patient on expected disease course and progression, as well as make recommendations regarding therapy.

KAN VI?

forudsige sygdomsforløbet og tilrettelægge behandlingen for den enkelte patient med inflammatorisk tarmsygdom?

Nadia Ammitzbøll^{1,2,3} Suzette Sørensen^{1,4} Stine Kjærsgaard Hansen^{2,3} Tine Jess^{2,3} Lone Larsen^{2,3}

¹Centre for Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark, ²Center for Molecular Prediction of Inflammatory Bowel Disease (PREDICT), Department of Clinical Medicine, Aalborg University, Copenhagen, Denmark, ³Department of Gastroenterology & Hepatology, Aalborg University Hospital, Aalborg, Denmark, ⁴Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Hvorfor gør vi det?

Det anslås, at der i Danmark er 50.000 patienter med en af de inflammatoriske tarmsygdomme, colitis ulcerosa eller morbus crohn.

Sygdommene kan være forbundet med nedsat livskvalitet, øget sygelighed samt i sjældre tilfælde død.

Årsagen til sygdommen er fortsat ukendt og man kender ikke sygdomsforløbet hos den enkelte patient. Det formodes, at arvelige såvel som miljømæssige faktorer spiller en rolle.

Det nationale grundforskningscenter PREDICT, arbejder på at forstå forekomsten og forløbet af de inflammatoriske tarmsygdomme bedre. Som en del af dette arbejde indsamles informationer og sygdomsforløbet hos de 7-8000 patienter med inflammatoriske tarmsygdomme, der er diagnosticeret i Region Nordjylland. Denne viden sammenholdes med molekylære markører (arvemasse, blod, fæces, tarmflora, samt stofskifte- og proteinomsætning) for at identificere markører det kan forudsige sygdomsforløbet og behandlingsprocessen for den enkelte patient.



Hvordan gør vi det?

Ca. 4.500 patienter i Nordjylland er inviteret siden 2023



Studie A

Studie B

1 besøg

8 besøg

Ca. 1500 patienter deltager

Ca. 150 patienter deltager

Vi indsamler og søger efter:

Biomarkører
Arvelighed
Omsætning i blodet

Tarmflora
Biomarkører

Diagnose dato
Sværhedsgrad
Bivirkninger



Hvis du ønsker at vide mere om forsøget eller ønsker at deltage, er du meget velkommen til at kontakte os.

Projektsygeplejerske Lotte Hansen,
tlf.: 97666503, email: lkjh@rn.dk eller

Forskningsassistent Nadia Ammitzbøll,
tlf.: 97641763, email: n.ammitzboell@rn.dk

Epidurale glukokortikoidinjektioner ved cervikal diskusprolaps med radikulopati – effektivitet og sikkerhed

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2. Afdeling for Anæstesi og Intensiv, Regionshospital Nordjylland, Hjørring, Danmark
3. Klinisk Institut, Aalborg Universitet, Aalborg, Danmark

Baggrund

Cervikal radikulopati forårsaget af diskusprolaps kan give betydelige smerter og funktionsnedsættelse. Epidurale steroidinjektioner (ESI) kan anvendes som behandling ved manglende effekt af konservativ behandling, men opfølgning på effekt og sikkerhed blandt patienter i Danmark er begrænset. Formålet med studiet var at evaluere effekten og sikkerheden af cervikale ESI i en dansk patientgruppe.

Metoder

Retrospektivt studie blandt patienter, tilknyttet Reumatologisk ambulatorium RHN i 2018-2023, som havde en symptomgivende MR-verificeret cervikal diskusprolaps, som ikke responderede tilfredsstillende på konservativ behandling og var mulige kandidater til en operativ behandling. Patienterne fik 1-3 epidurale steroidinjektioner med mindst 3 måneders interval. Klinisk opfølgning blev foretaget 1 år efter den sidste injektion, med vurdering af VAS (0-10) for nakkesmerter og armsmerter, medicinforbrug og funktion ved Odom's score.

Resultater

15 patienter blev inkluderet i studiet med gennemsnitsalder på 53 år. 1 år efter den sidste injektion, var der signifikant fald i VAS-score for nakkesmerter fra 7,3 til 4,9, og armsmerter fra 7,9 til 3,6. Forbrug af paracetamol og NSAID blev reduceret med 40 %, mens morfinforbrug reduceret med 13,4%. Odom's score viste, at 47 % havde et godt til fremragende effekt 1 år efter steroidinjektionen, mens 60 % oplevede stadig funktionsnedsættelse. Behandlingen blev godt tolereret uden komplikationer. En patient blev opereret for prolapsen i opfølgningsperioden.

Konklusioner

Epidurale steroidinjektioner er en sikker behandling med moderat langtidseffekt ved diskusprolaps udløst cervikal radikulopati. Behandlingen førte til markant smertelindring og reduceret medicinforbrug hos mange patienter, men et betydeligt antal havde fortsat symptomer, hvilket understreger behovet for individualiseret behandling.

Epidural steroid injektions behandling ved cervical diskusprolaps med radikulopati. Er det effektivt og sikkert?



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² Anæstesiologisk afdeling, Regionshospital Nordjylland, Hjørring

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Baggrund

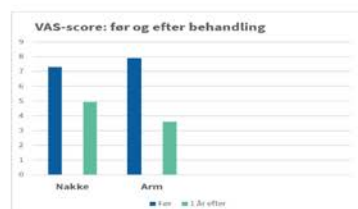
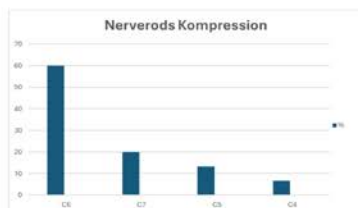
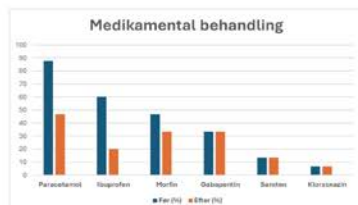
- Cervikal radikulopati forårsaget af diskusprolaps kan give betydelige smerter og funktionsnedsættelse.
- Epidurale steroidinjektioner (ESI) anvendes som behandling ved manglende effekt af konservativ behandling, men opfølgning på effekt og sikkerhed er begrænset.
- Behandlingen tilbydes ikke rutinemæssigt i DK.
- Formålet var at evaluere effekten og sikkerheden af cervikale ESI i en dansk patientgruppe.

Metode

- Retrospektivt studie af patienter med MR-verificeret cervical diskusprolaps og radikulopati, der ikke responderede tilfredsstillende på fysioterapi og smertestillende medicin i perioden 2018-2023.
- Patienterne fik 1-3 steroidinjektioner/ Lederspan med mindst 3 måneders interval
- Indgrebet blev udført på Anæstesiologisk afdeling i samarbejde med Reumatologisk afdeling, RHN, Hjørring
- Opfølgning efter 1 år, med effektvurdering af VAS for nakkesmerter og armsmerter, medicinforbrug og funktion ved Odom's score

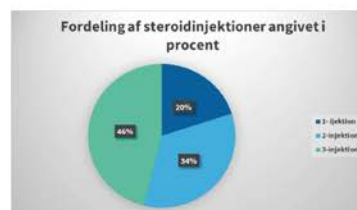
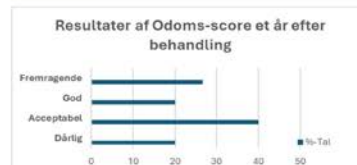
Resultater

- 15 patienter**, 53% kvinder (N=8), gennemsnitsalder 53 år (range 27-79)
- MR fund** med samtidige degenerative forandringer 73,3% (N=11)
- Nakkesmerter**: VAS-score faldt fra 7,3 til 4,9
- Armsmerter**: VAS-score faldt fra 7,9-4,9
- Forbruget** af Paracetamol og Ibuprofen: reduceret med 40 %
- Morfinforbrug** reduceret med 13,4 %.
- Odom's score**: 46,7 % havde et godt til fremragende resultat, mens 20 % : funktionsnedsættelse eller nedsat erhvervsevne.
- Behandlingen** blev godt tolereret uden komplikationer, og 1 patient blev opereret.



Odoms Score Tabel

0	Ingen motorisk funktion: Ingen bevægelse eller følelse
1	Begrænset motorisk funktion: Begrænset bevægelse i muskler
2	Mild funktion: Nogle funktioner er tilbage, men ikke normalt
3	Moderat funktion: God funktion med visse begrænsninger
4	God funktion: Næsten normal funktion, men med nogle svagheder



KONKLUSION

- Epidurale steroidinjektioner er en sikker behandling med moderat langtidseffekt ved cervical radikulopati.
- Behandlingen førte til markant smertelindring og reduceret medicinforbrug hos mange patienter, men et betydeligt antal havde fortsat symptomer, hvilket understreger behovet for individualiseret behandling.

Deskriptiv analyse af karakteristika og sårbarheder hos patienter med dysreguleret diabetes på Regionshospitalet Nordjylland

Rebecca Bauer Tørring^{1,2}, Oday Alhamadani¹, Martin Højgaard Bagger³, Caspar Bundgaard-Nielsen¹, Kristine Brøndbjerg Øby⁴, Dorthe Brønnum¹, Peter Derek Christian Leutscher^{1,4}, Berit Maria Linde³

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Baggrund

HbA1c-niveauet er en nøgleindikator for kvalitetsmål i diabetesbehandlingen i Danmark. Et HbA1c ≥ 70 mmol/mol indikerer alvorlig dysregulering og er forbundet med markant øget risiko for diabetesrelaterede komplikationer. Data fra Regionshospitalet Nordjylland (2024) viser, at en betydelig andel af patienter med type 1- og type 2-diabetes har et HbA1c, som overstiger de fastsatte kvalitetsmål. Formålet var at beskrive karakteristika og sårbarhedspositioner hos patienter i denne gruppe.

Metoder

Data fra Diabetesdatabasen og kvalitetsdata blev suppleret med oplysninger om bl.a. sårbarhed via journalgennemgang. Data blev analyseret med deskriptiv statistik samt kvalitativ tematisk analyse.

Resultater

Af den samlede population havde 32% (n=539) dysreguleret diabetes (HbA1c ≥ 70 mmol/mol). I denne gruppe udgjorde type 1-diabetes 42%, type 2-diabetes 53% og øvrige diabetestyper 5%. Gruppen var karakteriseret ved en høj forekomst af patienter i forskellige sårbare positioner, ofte i samspil. Blandt de sårbare patienter var multisygdom (≥ 2 samtidige kroniske sygdomme) hyppigst forekommende (76%), efterfulgt af psykisk sygdom (18%) og social udsathed (12%).

Konklusioner

Hver 3. patient i diabetesambulatoriet på Regionshospitalet Nordjylland har dysreguleret diabetes. Denne patientgruppe omfattede både type 1- og type 2-diabetes og var kendetegnet ved en høj forekomst af sårbarhedspositioner, særligt multisygdom, psykisk sygdom og social udsathed. Resultaterne peger på et øget behov for differentierede og behovsdrivne behandlingstilbud, der tilgodeser både den medicinske behandling, teknologiske løsninger samt de komplekse sårbarhedsfaktorer som patienterne lever med.

1 Data fra Regionshospitalet Nordjylland (2024) viser, at en betydelig andel af patienter med type 1 og type 2 diabetes har et HbA1c, som overstiger de fastsatte kvalitetsmål.

HbA1c-niveauet er en nøgleindikator for kvalitetsmål i diabetesbehandlingen i Danmark. Et HbA1c ≥ 70 mmol/mol indikerer alvorlig dysregulering og er forbundet med markant øget risiko for diabetes-relaterede komplikationer.

En mulig årsag til udfordringer med diabetes-reguleringen kan være en høj forekomst af psykosocial sårbarhed hos denne patientgruppe. Derfor blev karakteristika og sårbarhedspositioner hos disse patienter beskrevet via data fra Diabetesdatabasen, kvalitetsdata og supplerende oplysninger via journal-gennemgang.



LEV
—livet—
MED
DET

Patienter med diabetes: Karakteristika og sårbarheder på Regionshospitalet Nordjylland

En
deskriptiv
analyse

2 Hver tredje patient i diabetes-ambulatoriet på Regionshospitalet Nordjylland har dysreguleret diabetes.

I alt blev 539 patienter med HbA1c ≥ 70 mmol/mol identificeret, omfattede både type 1 (41,7%) og type 2 (54,5%) diabetes.

Patientgruppen er kendetegnet ved en høj forekomst af sårbarhedspositioner, særligt multisygdom, psykisk sygdom og social udsathed.

Kønsopdelte analyser viser, at mænd med type 2 diabetes oftere er multisyge, mens kvinder, især med type 2 diabetes, i højere grad er registreret med psykisk sygdom.

Resultaterne peger på et øget behov for differentierede og behovsdrivne behandlingstilbud, der tilgodeser både den medicinske behandling, teknologiske løsninger samt de komplekse sårbarhedsfaktorer som patienterne lever med.

Procentvis fordeling af sårbarhedsgrupper

	Type 1 diabetes	Type 2 diabetes
Etnisk minoritetsbaggrund	1,3%	1,4%
Unge med type 1 diabetes	4,4%	0%
Handicap	4,9%	7,1%
Socialt udsat	14,2%	9,2%
Psykisk sygdom	18,7%	16,7%
Multisygdom	63,1%	84,7%

Rebecca Bauer Tørring^{1,2}, Oday Alhamadani³, Martin Højgaard Bagger³, Caspar Bundgaard-Nielsen¹, Kristine Brøndbjerg Øby¹, Dorte Brønnum¹, Peter Leutscher^{1,4}, Berit Maria Linde³

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Reumatoid arthritis og den gastrointestinale mikrobiota: et narrativt review

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Baggrund

Reumatoid arthritis (RA) er en kronisk autoimmun sygdom, der medfører ledinflammation og ekstra-artikulære manifestationer. Den præcise ætiologi er ukendt, og flere studier har indikeret, at den gastrointestinale (GI) mikrobiota kan spille en rolle i RAs patogenese. Den aktuelle behandling baseres på immunmodulerende lægemidler, men disse har ofte bivirkninger, og er ikke altid tilstrækkeligt effektive. Formålet med studiet var at undersøge, om der findes et RA-relateret mikrobiom baseret på publicerede studier, da en bedre forståelse af patogenesen bag RA, kan åbne for nye behandlingsmuligheder.

Metoder

En litteratursøgning blev udført i PubMed, Embase og Cochrane i april 2024 for at identificere studier, som undersøgte GI mikrobiota hos personer med risiko for RA og RA-patienter >18 år sammenlignet med raske kontroller (HC). Population, Intervention, Comparison, Outcome-metode blev anvendt til at definere inklusionskriterier. Følgende data blev indsamlet: demografi, mikrobiom-relateret data (oral/intestinal, undersøgelsesmetode, alfa/betadiversitet, forekomst af specifikke bakteriearter), sygdomsaktivitetsrelateret data i interventionsstudierne.

Resultater

108 studier opfyldte inklusionskriterierne. 29 blev udvalgt til artiklen. I RA-risikogruppen var der få signifikante forskelle i alfa/betadiversitet sammenlignet med HC. Hos RA-patienter fandtes signifikante forskelle i betadiversitet samt reduceret forekomst af butyrat-producerende bakterier sammenlignet med HC. Resultaterne angående den orale mikrobiota var inkonsistente, men flere kandidatbakterier blev fremhævet i RA-gruppen, bl.a. forskellige Streptokok-arter. Interventionsstudierne viste varierende effekt på RA-symptomer.

Konklusioner

Man kunne ikke identificere et RA-relateret mikrobiom. Studiernes undersøgelsesmetoder og resultater varierer, men samlet set tyder det på en ubalance med færre gavnlige og flere potentielt pro-inflammatoriske bakterier i RA-gruppen. Der forskes i flere mikrobiom-baserede behandlingsmetoder, hvoraf nogle viser lovende resultater.

REUMATOID ARTRITIS OG DEN GASTROINTESTINALE MIKROBIOTA: ET NARRATIVT REVIEW

Sophie Amalie Lindhardt^{1,2,3} • Caspar Bundgaard-Nielsen³ • Peter Derek Christian Leutscher^{1,3} • Suzette Sørensen^{1,3} • Asta Linauskas^{1,2}

1 Klinisk institut, Aalborg Universitet, Aalborg, Danmark

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BAGGRUND

- Reumatoid arthritis (RA) er en kronisk autoimmun sygdom, der medfører ledinflammation og ekstra-artikulære manifestationer.
- Den præcise ætiologi er ukendt, og flere studier har indikeret, at den gastrointestinale (GI) mikrobiota kan spille en rolle i patogenesen.



METODE

- En systematisk litteratursøgning blev udført i PubMed, Embase og Cochrane i april 2024 for at identificere studier, som undersøgte GI mikrobiota hos voksne patienter med RA eller risiko for RA.
- Kliniske, demografiske og mikrobiota-relaterede data blev indsamlet.



FORMÅL

- At undersøge, om der findes et RA-relateret mikrobiom, da en bedre forståelse af patogenesen bag RA, kan åbne for nye behandlingsmuligheder.



RESULTATER

- 108 studier opfyldte inklusionskriterierne. 29 blev udvalgt til artiklen.
- Der var få signifikante forskelle i alfa/betadiversitet i RA-risikogruppen ift. raske kontroller.
- Der var signifikante forskelle i betadiversitet og reduceret forekomst af butyrat-producerende bakterier hos RA-patienter ift. raske kontroller.
- Data angående den orale mikrobiota var inkonsistente, men flere kandidatbakterier blev fremhævet.
- Mikrobiota-relaterede interventionsstudier viste varierende effekt på RA-symptomer.



KONKLUSIONER

- Man kunne ikke identificere et RA-relateret mikrobiom.
- Studiernes undersøgelsesmetoder og resultater varierer. Samlet tyder det på, at RA-patienter har en bakteriesammensætning med færre gavnlige og flere potentielt pro-inflammatoriske bakterier.
- Der forskes i flere mikrobiom-baserede behandlingsmetoder, hvoraf nogle viser lovende resultater.



The effect of percutaneous coronary intervention on echocardiographic strain and left ventricular ejection fraction in patients with chronic total occlusion of the coronary arteries and with the implication of a new modality

Sura Raheem¹, Peter Sogaard^{2,3}, Tomas Zarembo^{2,3}

1. Department of Diabetes, Heart and Metabolic Disease, North Denmark, Regional Hospital, Hjoerring, Denmark
2. Department of Cardiology, Aalborg University Hospital, Aalborg, Denmark
3. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

Chronic total occlusion (CTO) of the coronary arteries is a challenging problem in cardiology, often associated with reduced left ventricular performance. Echocardiographic measures such as global longitudinal strain (GLS) and left ventricular ejection fraction (LVEF) may lack sensitivity for discovering regional contractile dysfunction. Our Aim is to evaluate the impact of PCI on echocardiographic strain and LVEF in CTO patients, with a novel focus on the Index of Contractile Asymmetry (ICA), a parameter designed to quantify regional discrepancies in myocardial contraction.

Methods

This retrospective cohort study included 78 patients with CTO treated at Aalborg University Hospital between January 2021 and September 2023. Patients were divided into two groups: optimal medical therapy plus PCI (OMT+PCI, n=39) and OMT alone (n=39). One patient in the OMT group died during followup. Preprocedure echocardiographic data were unavailable for 2 OMT+PCI and 1 OMT patient; followup scans at 6 months were missing for 2 OMT+PCI and 3 OMT patients.

Results

No statistically significant differences were observed between groups in LVEF ($p=0.10$) or GLS ($p=0.81$) from baseline to 6 months. ICA also showed no significant change in either group, indicating no measurable improvement in regional contractile recovery.

Conclusions

PCI in addition to OMT did not significantly improve global or regional myocardial mechanics compared with OMT alone. While ICA did not detect recovery in this research, its capability to quantify contractile asymmetry highlights its potential value in future studies aiming patients with greater ischemic burden.

The Effect of Percutaneous Coronary Intervention on Echocardiographic Strain and Left Ventricular Ejection Fraction in Patients with Chronic Total Occlusion of the Coronary Arteries and with the Implication of a New Modality

Sura Raheem¹, Peter Søgaard², Tomas Zaremba², Harman Yonis³

¹ Department Of Diabetes, Heart and Thyroid Disease, North Denmark Regional Hospital, Hjørring, Denmark.

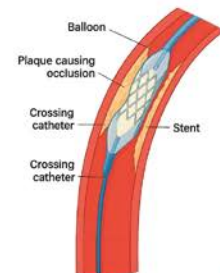
² Department Of Cardiology, Aalborg University Hospital, Denmark.

³ Acute and Trauma Center, Aalborg University Hospital, Denmark.

Background

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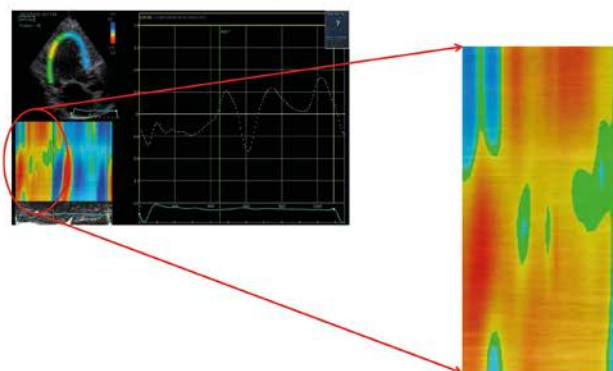
PCI FOR CTO CORONARY ARTERY



Methods

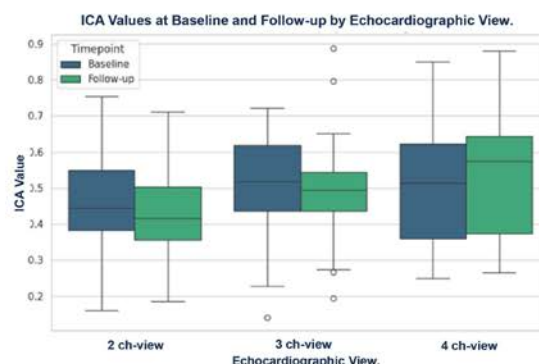
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Curved anatomical M-mode (CMM) Plot of systolic strain rate in an apical 3 chambers view.



Results

No statistically significant differences were observed between groups in LVEF ($p=0.10$) or GLS ($p=0.81$) from baseline to 6 months. ICA also showed no significant change in either group, indicating no measurable improvement in regional contractile recovery.



Conclusion

PCI in addition to OMT did not significantly improve global or regional myocardial mechanics compared with OMT alone. While ICA did not detect recovery in this research, its capability to quantify contractile asymmetry highlights its potential value in future studies aiming patients with greater ischemic burden.

Unseen but impactful: gout as a neglected comorbidity in cardiovascular care

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2. Department of Cardiology, North Denmark Regional Hospital, Hjoerring, Denmark
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Background

Cardiovascular diseases (CVD) affect about 6% of the global population and are a leading cause of death. Gout impacts approximately 3% of the population, and many do not receive adequate urate-lowering therapy to prevent disease progression. Gout is frequent in patients with CVD, and poorly managed gout is associated with cardiovascular complications, warranting proper gout treatment. This study assessed adherence to recommended gout treatment in patients with CVD.

Methods

From a prospective cohort of gout patients confirmed by microscopy-identified urate crystals, we identified those with concomitant CVD (ischemic heart disease, atrial fibrillation, or heart failure). Patients were treated in real-life healthcare settings. The primary outcome was achieving recommended target serum urate levels two years post-diagnosis: <0.36 mmol/L for general gout management and <0.30 mmol/L for patients with tophi.

Results

Of 286 gout patients, 117 (41%) had CVD. The median age was 71 years, 76% were male, and most had multiple comorbidities. Recommended urate levels to prevent disease progression were achieved by 59%. However, 45% had tophi at diagnosis, and only 33% of these achieved levels sufficient to dissolve tophi. The mean prescribed dose of allopurinol was 253 mg/day, which was often insufficient to achieve target urate levels.

Conclusions

Gout in patients with CVD is often inadequately managed, potentially increasing the risk of serious cardiovascular events. These findings reflect typical treatment settings. Optimizing allopurinol dosing and adherence to gout treatment guidelines could improve outcomes and reduce cardiovascular risk. Incorporating gout screening into CVD management guidelines is recommended.

Gout as a Neglected Comorbidity in Cardiovascular Care

Zaayneb Sediqi^{1*}, Oliver B. Pedersen^{2, 5, 6}, Søren T. Jepsen³, Steen H. Jørgensen¹, Claus Rasmussen^{4, 5, 6}

¹ Department of Cardiology, Aalborg University Hospital, Aalborg, Denmark
² Department of Cardiology, North Denmark Regional Hospital, Hjørring, Denmark
³ Department of Clinical Biochemistry, North Denmark Regional Hospital, Hjørring, Denmark
⁴ Department of Rheumatology, North Denmark Regional Hospital, Hjørring, Denmark
⁵ Center for Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark
⁶ Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

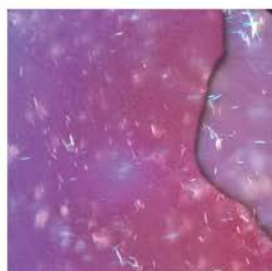
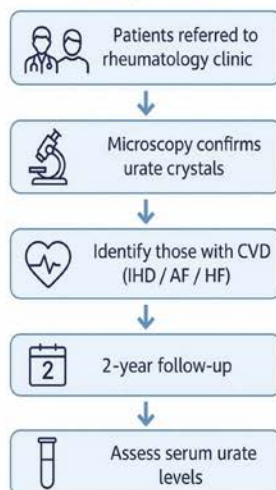
1. Background and aim

Cardiovascular diseases (CVD) affect about 6% of the global population and are a leading cause of death. Gout affects approximately 3% and is common in patients with CVD. Poorly managed gout increases cardiovascular complications. This study assessed adherence to recommended gout treatment in patients with CVD.

2. Methods

- Prospective cohort study (N=286).
- Gout confirmed by microscopy of urate crystals.
- Included if concomitant CVD (IHD, AF or HF)
- Treated in real-life healthcare settings.
- Primary outcome: Achievement of optimal treatment target in patients with gout and CVD.

Study Flow



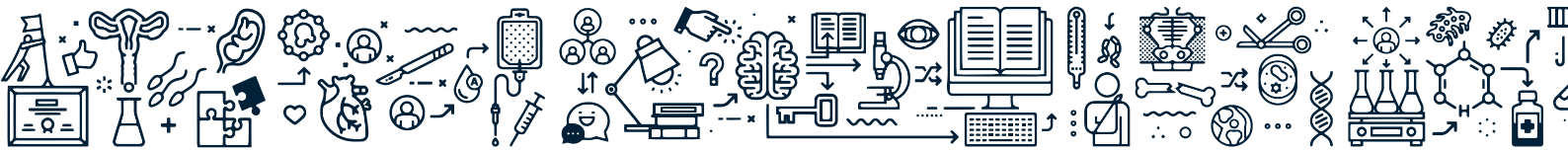
3. Results

- 286 gout patients included
- 117 (41%) had concomitant CVD
- 56% achieved target plasma urate (<0,36 mmol/L)
- 33% of those with tophi achieved target plasma urate (<0,30 mmol/L)

4. Conclusion

Gout in patients with CVD is frequently undertreated, which may increase the risk of serious cardiovascular events. Optimizing allopurinol dosing and adherence to treatment guidelines may improve outcomes and reduce cardiovascular risk.

Kirurgi



Video consultations in preoperative assessment of gallstone patients

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2. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

Video consultations offer new opportunities to accommodate patients' daily lives by eliminating the need for travel and childcare, as well as reducing time off work. This study evaluated the use of video consultations with patients referred to the abdominal surgery department regarding potential elective cholecystectomy. Patients eligible for surgery also required preoperative assessment by an anesthesiologist.

Methods

Inclusion criteria for eligible study participants were established in collaboration with the anesthesiology department. Patient information materials were revised to align with current clinical guidelines and included a video about the procedure. Consultations were conducted via *Borgerplatformen* using webcam and headset. A follow-up questionnaire assessed patient experience; 13 out of 23 responded (57%).

Results

The surgeon reported substantial technical challenges: of the first 16 consultations, 2 were without issues; 7 proceeded despite difficulties; 7 required follow-up phone calls. Headset issues were particularly disruptive. Patient comments highlighted both technical problems and appreciation for the overall experience. The anesthesiologists encountered fewer technical issues and have since expanded the use of video consultations to other patient groups.

Conclusions

Video-based preoperative consultations for gallstone patients are feasible when inclusion criteria are strictly followed and reliable technical equipment is used. The main challenge lies in ensuring a stable IT setup and internet connection for effective communication.



Videokonsultationer i præoperativ vurdering af galdestenspatienter

Anna Ramsgaard-Jensen¹ • Kathrine Holte¹ • Jane Hansen Kjærgaard¹

¹Mave- og Tarmkirurgisk Afdeling, Regionshospitalet Nordjylland, Hjørring, Danmark

BAGGRUND

Videokonsultationer tilbyder nye muligheder for at akkommodere patienternes travle hverdag. Ved brug af telekommunikation er det ikke nødvendigt for patienter at transportere sig til sygehuset, tage fri fra arbejde, arrangere børnepasning mv. Videokonsultationer præsenterer herved en fleksibel og ressourcebesparende løsning for patienten. Patientgruppen i denne undersøgelse omfattede patienter henvist til vurdering hos en abdominalkirurg i galdeambulatoriet mhp. eventuel elektiv cholecystektomi. De patienter, der blev tilbudt operation, skulle ligeledes vurderes af en anæstesiolog ift. præoperativ status og ASA score.

METODE

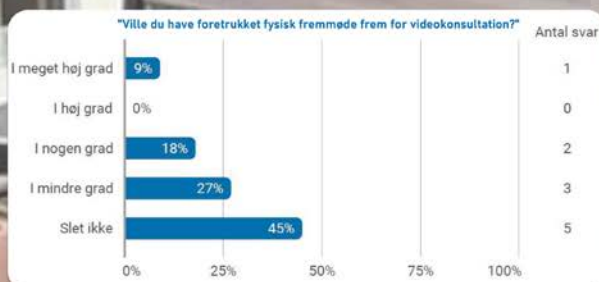
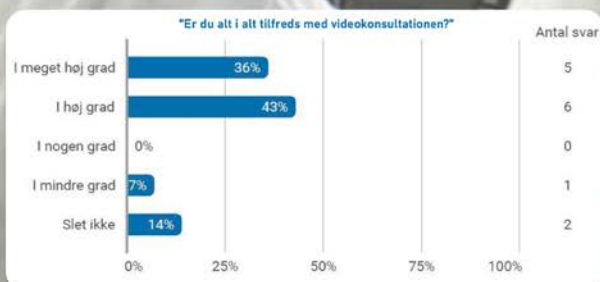
I samråd med anæstesen blev en række kriterier opsat, som patienterne skulle opfylde, for at kunne indgå i undersøgelsen:

- ASA 1-2
- Et afstemt FMK
- Oplagt galdestenssygdom ud fra anamnesen
- <50 år

Som en del af forberedelsen til videokonsultationerne blev den eksisterende patientinformation gennemgået og opdateret, så indholdet stemte overens med gældende kliniske retningslinjer og aktuell praksis. I materialet kunne patienterne desuden finde et link til en video om operationen. Foruden ovennævnte information fremgik det i indkaldelsesbrevet til patienterne, at hvis de foretrak personligt fremmøde, skulle de selv kontakte afdelingen. Videokonsultationerne foregik via systemet Borgerplatformen under anvendelse af webcam og headset. Der blev sendt et spørgeskema til deltagerne, som opfølgning på patientoplevelsen. Ud af 23 deltagere svarede 11 på alle spørgsmål og 2 på nogle. Dette gav en svarprocent på 57%.

RESULTATER

Resultaterne af undersøgelsen kan inddeles i erfaringerne fra henholdsvis den kirurg og de anæstesiologer, der deltog i videokonsultationerne. Fra den kirurgiske side var der en del udfordringer med teknikken. Ud af de første 16 samtaler var kun 2 uden tekniske problemer, 7 kunne gennemføres på video trods udfordringer og 7 krævede supplerende telefonopkald. Særligt det udlånte headset gav en del udfordringer, herunder ved dikteringen efter konsultationerne, da headsettet og diktafonen ikke kunne være tilsluttet computeren samtidig. I det tilsendte spørgeskema havde patienterne mulighed for at tilføje eventuelle kommentarer, hvilket 4 patienter gjorde. To af kommentarerne var repræsentative: *"Teknik drillede fra hospitalets side, de havde svært ved at komme på, lyden var dårlig flere gange undervejs, endte med telefonopkald. Men al information blev givet og var god."* og *"Fint med besked på sms om at forberede sig og godt der var kamera. Det er vigtigt for mig når det er online. Bliver lidt usikker på om jeg har logget korrekt på når jeg kommer til at vente efter mødestart og ved ikke hvad jeg så skal stille op. Måske I kan forberede jeres pt på den situation? Ellers meget fin og brugbar konsultation"*. De deltagende anæstesiologer oplevede ikke samme tekniske udfordringer og har valgt at udvide tilbuddet til andre patientgrupper.



KONKLUSION

Den overordnede konklusion af denne undersøgelse er, at videoforundersøgelser af patienter henvist til galdeambulatoriet kan gennemføres såfremt patienterne er korrekt visiteret efter de i metode-afsnittet definerede kriterier og at det tekniske udstyr fungerer. Den største udfordring ligger i at sikre en optimal forbindelse til patienten ved hjælp af velfungerende IT-udstyr og en stabil internetforbindelse.

Patientoplevelsen under gastroskopi – et kvalitetsudviklingsprojekt

Camilla Borrisholt¹, Anders Linde¹, Kathrine Reidl Olsen²

1. Afdeling for Kirurgi, Regionshospital Nordjylland, Hjørring, Danmark

2. Kontor for Kvalitet, Patientsikkerhed og Arbejds miljø, Regionshospital Nordjylland, Hjørring, Danmark

Baggrund

Hvert år får mere end 1700 patienter foretaget en gastroskopi på Regionshospital Nordjylland. Disse patienter går ind til undersøgelsen med hver deres forventninger og behov, og mange oplever den som ubehagelig, uanset om det er første gang, eller om de har prøvet det før. Derfor blev der i efteråret 2024 igangsat et kvalitetsudviklingsprojekt med fokus på at styrke den patientoplevede kvalitet. Projektets formål er at undersøge, hvad patienter og personale oplever som et godt gastroskopiforløb, og hvordan denne viden kan anvendes til at understøtte en systematisk og patientcentreret praksis.

Metoder

Datagrundlaget består af tre dele: (1) Kvalitative interviews med læger og sygeplejersker involveret i gastroskopier med fokus på erfaringer, praksis samt oplevede udfordringer. (2) Interviews med patienter, som for nylig har gennemgået gastroskopi, med fokus på information, tryghed og mulighed for sedation. (3) Spørgeskemaer udsendt til patienter, der får foretaget gastroskopi, med fokus på patientinvolvering, ubehag, information og mulighed for sedation.

Resultater

Patienter og personale tillægger omsorg, inddragelse og klare roller i teamsamarbejdet stor betydning for, at et gastroskopiforløb opleves som tilfredsstillende. Omsorg og tryghed er fundamentet for den gode patientoplevelse og både relationen mellem personale og patient samt en god atmosfære på stuen er central for at skabe ro og tryghed under undersøgelsen. Tidlig, klar og ærlig information samt en inddragende dialog med fokus på den enkelte patients behov og ønsker er ligeledes vigtig for en god patientoplevelse. Klare roller og forventningsafstemning i teamsamarbejdet understøtter muligheden for at tilpasse forløbet til den enkelte patient.

Tryghed og kvalitet i et gastroskopiforløb

Et kvalitetsprojekt i med fokus på patient- og personaleperspektiver

Camilla Borrisolt¹, Anders Linde¹ og Kathrine Reidl Olsen²

Kirurgisk Afdeling, Regionshospital Nordjylland
Kontor for Kvalitet, Patientsikkerhed og Arbejdsmiljø, Regionshospital Nordjylland

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Metode

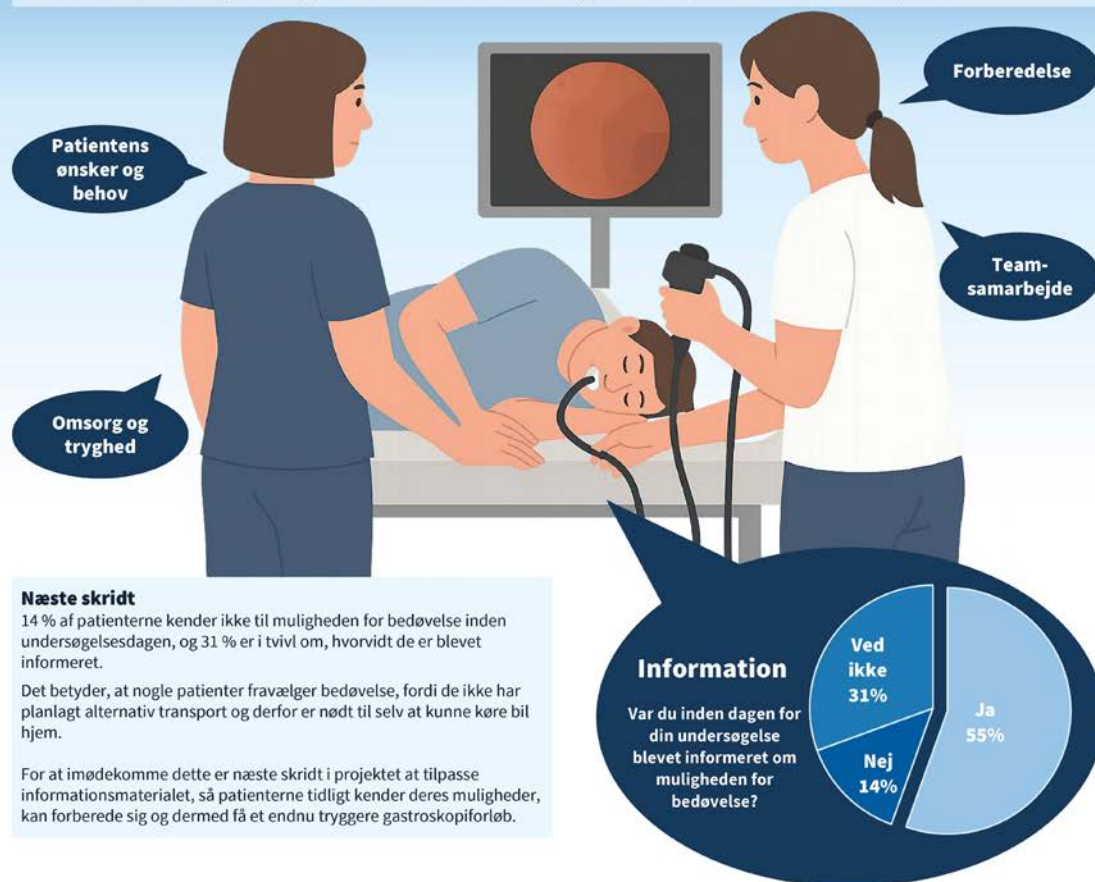
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3. Et spørgeskema udsendt til patienter, der får foretaget gastroskopi, med fokus på patientinvolvering, ubehag, information og mulighed for bedøvelse.

Perspektiver

Patienter og personale tillægger omsorg, inddragelse og klare roller i teamsamarbejdet stor betydning for, at et gastroskopiforløb opleves som tilfredsstillende:

- Omsorg og tryghed er fundamentet for den gode patientoplevelse og både relationen mellem personale og patient samt en god atmosfære på stuen er central for at skabe ro og tryghed under undersøgelsen.
- Tidlig, klar og ærlig information samt en inddragende dialog med fokus på den enkelte patients behov og ønsker er ligeledes vigtig for en god patientoplevelse.
- Klare roller og forventningsafstemning i team-samarbejdet understøtter muligheden for at tilpasse forløbet til den enkelte patient.



Appropriateness of surveillance colonoscopy in patients ≥ 75 years according to regional guidelines

Daniel Bornemann^{1,2,3}, Anders Linde¹, Kathrine Holte^{1,2}

1. Department of Gastrointestinal Surgery, North Denmark Regional Hospital, Hjoerring, Denmark
2. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark
3. Centre for Clinical Research, North Denmark Regional Hospital, Hjoerring, Denmark

Background

Surveillance colonoscopy after polypectomy or colorectal cancer treatment is widely used to detect a recurrent or new cancer. However, adherence to guideline-based criteria is essential to avoid unnecessary procedures, especially in elderly patients where risks may outweigh benefits. Current Danish guidelines recommend limiting surveillance in patients aged 75 years or older unless specific high-risk features are present.

Methods

A retrospective chart review of 230 patients aged ≥ 75 years scheduled for surveillance colonoscopy between September 2024 and September 2025 was performed. Eligibility for follow-up was assessed according to regional guidelines, and procedures were categorized as appropriate or potentially avoidable.

Results

Of the 230 scheduled colonoscopies, 156 (67.8%) did not fulfill criteria for surveillance and could be cancelled. This included 71 of 131 non-screening patients (54.2%) and 85 of 99 screening patients (85.9%).

Conclusions

More than two-thirds of surveillance colonoscopies in patients aged ≥ 75 years could be avoided based on current guidelines. Increased focus on pre-procedure eligibility assessment is warranted to optimize clinical practice and resource allocation.

Appropriateness of Surveillance Colonoscopy

in Patients ≥ 75 Years According to Regional Guidelines

Daniel Bornemann¹, Anders Linde¹, Kathrine Holte¹

¹ Department of Abdominal Surgery, North Denmark Regional Hospital, Hjoerring, Denmark

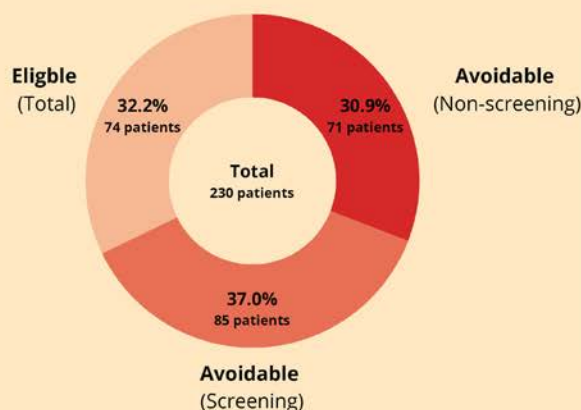
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Of the **230** scheduled colonoscopies, **156 (67.8%)** did not fulfill criteria for surveillance and could be cancelled.

This included **71** of **131** non-screening patients (**54.2%**) and **85** of **99** screening patients (**85.9%**).

CONCLUSION

More than two-thirds of surveillance colonoscopies in patients aged ≥ 75 years could be avoided based on current guidelines.

Increased focus on pre-procedure eligibility assessment is warranted to optimize clinical practice and resource allocation.

Impact of acute lower endoscopy on diagnostic and therapeutic outcomes in patients with acute lower gastrointestinal bleeding: a retrospective study

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2. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

Acute lower gastrointestinal bleeding (LGIB) is a common medical emergency. This study aims to evaluate the impact of acute lower endoscopy on diagnostic accuracy, therapeutic outcomes, and hospital admission length, and to explore the Oakland score's role in predicting success.

Methods

We conducted a retrospective study of LGIB patients who underwent an acute lower endoscopy due to bleeding, during a hospital admission, in 2024. After screening all colonoscopies performed during this year, 41 patients were included. Data on demographics, Oakland scores, diagnostic findings, therapeutic interventions, and admission lengths were collected. Patient selection may be biased, as the criteria for acute colonoscopy are not standardized.

Results

A definitive bleeding source was identified in 8 of the 41 patients, with 4 receiving endoscopic therapy. Three patients had prior surgical or endoscopic interventions within one month, and 2 received therapy during the acute endoscopy. Admission lengths were similar across groups. Patients with a confirmed bleeding source exhibited a lower median Oakland score (14 vs. 23).

Conclusions

Endoscopy did not significantly reduce hospital admission length. However, 2 of the 4 patients receiving endoscopic therapy had complications from prior interventions, highlighting complexities in LGIB management. We plan to expand the study to include a 3-year period to strengthen the findings and better assess the impact of acute endoscopy.



Impact of Acute Lower Endoscopy on Diagnostic and Therapeutic Outcomes in Patients with Acute Lower Gastrointestinal Bleeding: A Retrospective Study

Dánjal Hofgaard Hestoy¹, Kathrine Holte¹, Rasmus Virenfeldt Flak¹

¹ Department of Gastrointestinal Surgery, North Denmark Regional Hospital, Hjørring, Denmark

Background

Acute lower gastrointestinal bleeding (LGIB) is a common medical emergency. This study aims to evaluate the impact of acute lower endoscopy on diagnostic accuracy, therapeutic outcomes, and hospital admission length, and to explore the Oakland score's role in predicting success.

Method

We conducted a retrospective study of LGIB patients who underwent an acute lower endoscopy due to bleeding, during an hospital admission, in 2024. After screening all colonoscopies performed during this year, 41 patients were included. Data on demographics, Oakland scores, diagnostic findings, therapeutic interventions, and admission lengths were collected. Patient selection may be biased, as the criteria for acute colonoscopy are not standardised.

Results

A definitive bleeding source was identified in 8 of the 41 patients, with 4 receiving endoscopic therapy. Three patients had prior surgical or endoscopic interventions within one month, and 2 received therapy during the acute endoscopy. Admission lengths were similar across groups. Patients with a confirmed bleeding source exhibited a lower median Oakland score (14 vs. 23).

Conclusion

Endoscopy did not significantly reduce hospital admission length. However, 2 of the 4 patients receiving endoscopic therapy had complications from prior interventions, highlighting complexities in LGIB management. We plan to expand the study to include a 3-year period to strengthen the findings and better assess the impact of acute endoscopy.



Laparoscopic vs. open surgery for adhesive small bowel obstruction: a comparative analysis of post-operative complications and mortality

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4. Department of Health Science and Technology, Aalborg University, Aalborg, Denmark

**Participant in the Introduction Course to Clinical Research and Development, North Denmark Regional Hospital, 2025*

Background

Adhesive small bowel obstruction (ASBO) constitutes one of the most common causes of acute surgical admissions and is associated with significant morbidity and mortality. The optimal surgical approach for ASBO remains a subject of ongoing debate. Several studies have investigated the postoperative complications and mortality in laparoscopic versus open surgery, with inconclusive findings. The aim of this study, therefore, is to investigate postoperative complications and mortality in laparoscopic vs. open surgery for ASBO.

Methods

Data from all patients admitted at North Denmark Regional Hospital in a 5-year period from January 2020 to January 2025 with an ICD10-code consistent with small bowel obstruction combined with an operation code was extracted. All data such as demographics, perioperative findings and postoperative complications was collected by reviewing patient journals.

Results

A total of 138 patients was included, with 102 undergoing laparoscopic surgery and 36 undergoing open surgery. 41 patients in the laparoscopic group were converted to open surgery. There was a significant difference in Clavien-Dindo classification between the groups, favoring laparoscopic surgery ($Z=-3.260$, $p=0.0011$). Bowel injuries occurred in 22/102 (21.6%) patients in the laparoscopic group and 18/36 (50.0%) in the open group, showing a statistically significant difference (Fisher's exact test, $p=0.001$). Thirty-day mortality was 4.9% (5/102) in the laparoscopic group and 11.1% (4/36) in the open group. These results were not statistically significant (Fisher's exact test, $p=0.240$).

Conclusions

Laparoscopic surgery was associated with fewer complications and bowel injuries compared to open surgery, with no significant difference in thirty-day mortality.

Laparoscopic vs. open surgery for adhesive small bowel obstruction

Elisabeth Desirée Kjærsgaard¹, Peter Derek Christian Leutscher^{2,3}, Lise Ulse Thomsen⁴, Anna Laura Ravnholt Nissen⁴, Kathrine Holte^{1,3}

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Method

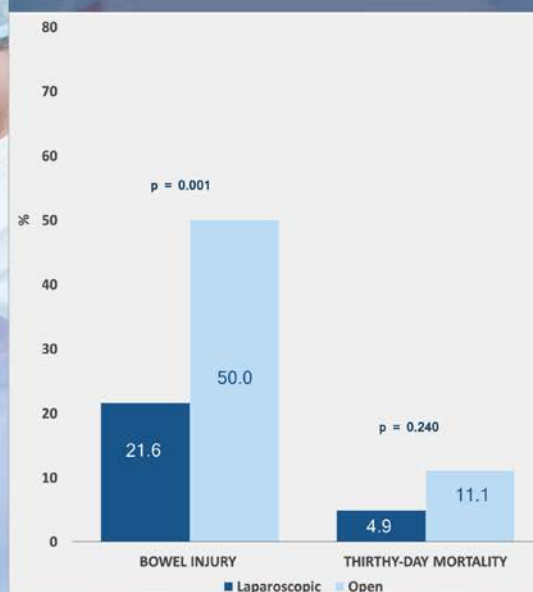
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Results



Conclusion

Laparoscopic surgery was associated with fewer complications and bowel injuries compared to open surgery, with no significant difference in thirty-day mortality.

Fascial dehiscence and abdominal wall closure: a retrospective analysis of suture techniques in elective and emergency laparotomies

Peer Steenbock^{1*}, Peter Derek Christian Leutscher^{2,3}, Kathrine Holte^{1,3}

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

3. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

**Participant in the Introduction Course to Clinical Research and Development, North Denmark Regional Hospital, 2025*

Background

Fascial dehiscence (FD) is a potentially life-threatening complication after abdominal surgery, occurring in up to 5% of elective and 8.5–45% of emergency laparotomies. FD is associated with increased morbidity, mortality (up to 35%), and a high risk of developing incisional hernias. Suture technique has been shown to significantly influence the risk of FD. While conventional closure using large tissue bites remains common practice, recent evidence supports the “small bites” technique with a $\geq 4:1$ suture-to-wound length ratio to reduce the risk of FD and postoperative hernia formation.

Methods

This retrospective quality assurance study includes all patients who underwent laparotomy at Hjørring Regional Hospital or Aalborg University Hospital between March 1, 2020, and March 1, 2025, and subsequently developed FD. Data are extracted from electronic medical records (EPJ) using relevant surgical codes (KJWA*, KJWF*) and include patient demographics, ASA score, comorbidities (e.g., diabetes, COPD, smoking, BMI, Charlson index), operative variables (indication for surgery, technique, suture material, suture method, suture-to-wound length ratio), and postoperative outcomes (time to dehiscence, complications, mortality). Data are registered in REDCap and analyzed using descriptive and comparative statistics (χ^2 test, t-test/Mann-Whitney U). The project is registered as a clinical quality assurance study and complies with Danish ethical and GDPR regulations.

Perspectives

The study aims to assess compliance with evidence-based abdominal closure techniques and identify patterns associated with increased FD risk. Results may inform future improvements in surgical practice, standardization of closure methods, and ultimately contribute to enhanced patient safety and outcomes following laparotomy in the North Denmark Region.

Fascial Dehiscence and Abdominal Wall Closure: A Retrospective Analysis of Suture Techniques in Elective and Emergency Laparotomies

Peer Steenbock (1), Peter Leutscher (2), Kathrine Holte (1, 2)

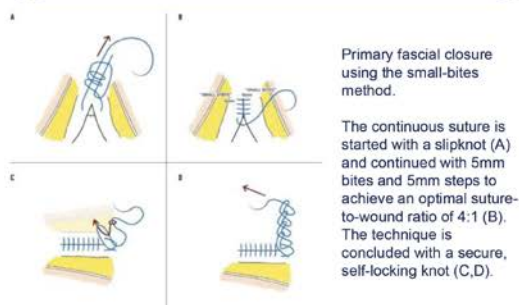
Department of Gastrointestinal Surgery, Hjørring Regional Hospital Clinical Institute, Aalborg University

Introduction

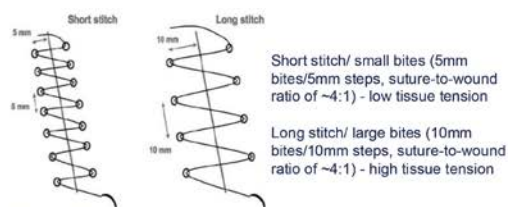
- **Fascial Dehiscence (FD):** A potentially life-threatening complication after abdominal surgery, occurring in up to 45% of emergency cases [1]. FD is defined as the separation of the fascial edges of a closed abdominal wound.
- **Consequences:** Increased mortality (up to 35%), longer hospital stays, and a high risk of developing incisional hernias [2].
- **The Problem:** While conventional closure using large tissue bites remains common practice, recent evidence supports the "small bites" technique with a $\geq 4:1$ suture-to-wound length ratio to reduce the risk of FD and postoperative hernia formation [3, 4, 5].

Methods

- **Study Design:** Retrospective analysis of patient charts (March 2020 – March 2025).
- **Patients:** All who underwent laparotomy and subsequently developed fascial dehiscence. Exclusions include age under 18, cases without primary fascial closure or adequate documentation of the suture technique, and fascial dehiscence resulting from trauma or reoperation.
- **Data Collection:** Demographics, comorbidities, surgical details (suture technique, suture-to-wound length ratio), and postoperative complications.
- **Statistics:** Descriptive statistics, Chi-squared test, and t-test for group analysis.



Source: <https://ugeskriftet.dk>



Source: <https://researchgate.com>

Expected results

- We expect to find a lack of standardization in suture techniques.
- We hypothesize that patients with fascial dehiscence were significantly more likely to have been operated on using non-guideline-compliant suture techniques.
- The results are expected to identify patterns that increase the risk of fascial dehiscence.

Perspectives

- The study will serve as a basis for standardizing suture techniques in the North Denmark Region.
- Improved adherence to guidelines can enhance patient safety and surgical outcomes.
- Findings may be used to inform future intervention studies or training programs.

Objectives

- To investigate the application of suture techniques at Aalborg and Hjørring hospitals.
- To assess compliance with current clinical guidelines.
- To analyze the association between non-standardized suture techniques and the occurrence of fascial dehiscence.

Contact

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Kvalitetssikring i genbehandling af medicinske flergangsinstrumenter - en undersøgelse af ompakning efter fejlkoder

Ulla Kammer Olesen^{1*}, Tove Filt¹, Mona Kyndi Pedersen^{2,3}, Dorte Brønnum²

1. Sterilcentralen, Regionshospital Nordjylland, Frederikshavn, Danmark

2. Center for Klinisk Forskning, Regionshospital Nordjylland, Hjørring, Danmark

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**Deltager i Kursus i Klinisk Forskning og Udvikling, Regionshospital Nordjylland, 2025*

Baggrund

Sterilcentraler genbehandler medicinsk flergangsudstyr og i selve genbehandlingen kan der opstå fejl. Elektronisk sporbarhed i genbehandlingen er et krav og muliggør identifikation af fejl, hvilket har betydning for kvalitet og patientsikkerhed. Projektets formål er at belyse omfanget af ompakning på grund af fejlkoder og om bestemte årsager gør sig gældende.

Metoder

Data er trukket fra sporingssystemet T-Doc i perioden d. 1/1-24 til 31/12-24. Der blev anvendt deskriptiv statistik. Data blev kategoriseret og analyseret i forhold til type, hyppighed og tidsmæssig fordeling. Dette derefter sammenholdt med udefrakommende årsager - såsom maskinfejl og personalemangel.

Resultater

I perioden genbehandles godt 19000 sporbare enheder. Andelen fejlkoder var ca. 10 %. Af disse var ca. 1/3 instrumenter, der overskred dato for udløb. Fraregnet udløbs-instrumenter, udgjorde fejlkodeprocenten ca. 6,5%. Hyppigste fejlkode var kategoriseret som generelle (56,0 %), derefter manglende scanning (22,0 %), udskiftning af instrument (8,4%), fejl i container/indernet (6,1%), manglende instrument (5,1%), manglende implantat (2,0%) samt anden ompakning (0,4%). Flest ompakninger på grund af fejlkoder forekom i tidsrummet kl. 10-15, uden umiddelbar sammenhæng til maskinfejl eller personaleressourcer.

Konklusioner

Elektronisk sporbarhed synliggør fejl i genbehandlingen og en stor andel af fejlkoderne er kategoriseret som "generelle". Dette kan afspejle enten manglende muligheder for specifik kodning eller utilstrækkelig brug af eksisterende koder. Dette peger på behov for systemtilpasning og styrket registreringspraksis.



Kvalitetssikring i genbehandling af medicinske flergangsinstrumenter

- En undersøgelse af ompak efter fejlkoder

Ulla Kammer Olesen¹, Tove Filt¹, Mona Kyndi Pedersen², Dorthe Brønnum²

¹Sterilcentralen, Regionshospital Nordjylland, Frederikshavn

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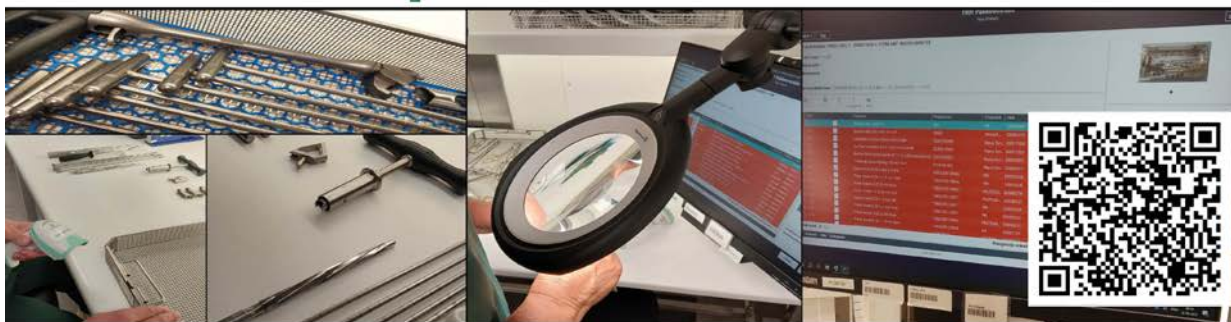
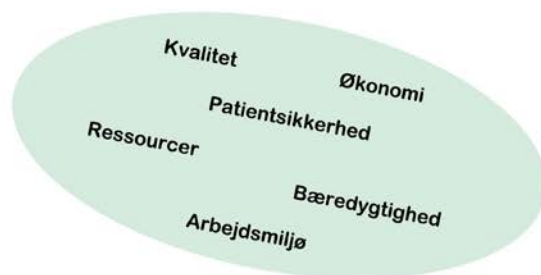
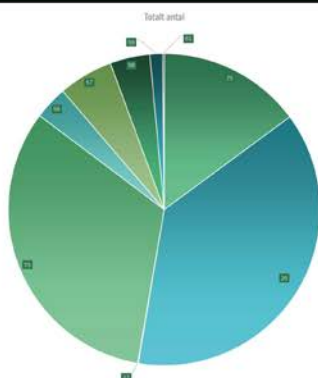
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FIGUR 1: typer af fejlkoder

- 25)Manglende scanning
- 26) Generelt
- 27) Ompak
- 55) Omvask udløb
- 56) Manglende instrumenter
- 57) Udskiftning af instrument
- 58) Fejl container/indernet
- 59) Manglende implantat
- 61) Forkert status pakket



Evaluating the efficacy of suture mesh vs. planar mesh in ventral hernia treatment – a protocol for a randomized, blinded multicenter study

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Background

Surgery for small ventral hernia (< 2 cm) is one of the most frequently performed operations in Denmark (2469 procedures in 2023). Despite it being a relatively small operation, up to 7.1% of patients are readmitted <90 days after surgery, primarily due to wound problems. The most important outcome measures following small ventral hernia repair are postoperative wound events (SSO) and long-term hernia recurrence. Current standard treatment of these hernias in Denmark is open surgery with planar mesh. This method is superior to suture closure in terms of recurrence rates, however with more SSO. Recently, a mesh-suture has been developed, combining the properties of both suture and mesh, allowing ingrowth of tissue, while having the tensile strength nearly identical to surgical suture.

Methods

Multicenter, blinded, randomized controlled trial aiming to investigate differences in SSO, Quality of Life (QoL) and operation time in small ventral hernia repair with mesh-suture or planar mesh as well as evaluate wider socio-economic parameters and recurrence rates. Powered as a superiority study, with planned sample size of 280 patients. Investigator-initiated, not company sponsored. Primary outcome: SSO on postoperative day 7-13. Secondary outcomes: QoL on postoperative day 7-13 and day 90. Duration of surgery (min). Sub-studies 1-3: Long-term recurrence, QoL and socio-economic parameters (return to work, analgesic use and primary sector contact) until 5 years postoperatively.

Perspectives

By reducing surgical trauma, we anticipate better QoL as well as fewer SSO, and if proven superior, mesh-suture may become the standard repair for this hernia type in Denmark.

Evaluating the Efficacy of Suture Mesh vs. Planar Mesh in Ventral Hernia Treatment – a protocol for a randomized, blinded multicenter study

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¹Kirurgisk afdeling, Regionshospitalet Nordjylland, Hjørring, Danmark
²Center for Klinisk Forskning, Regionshospitalet Nordjylland, Hjørring, Danmark

INTRODUCTION

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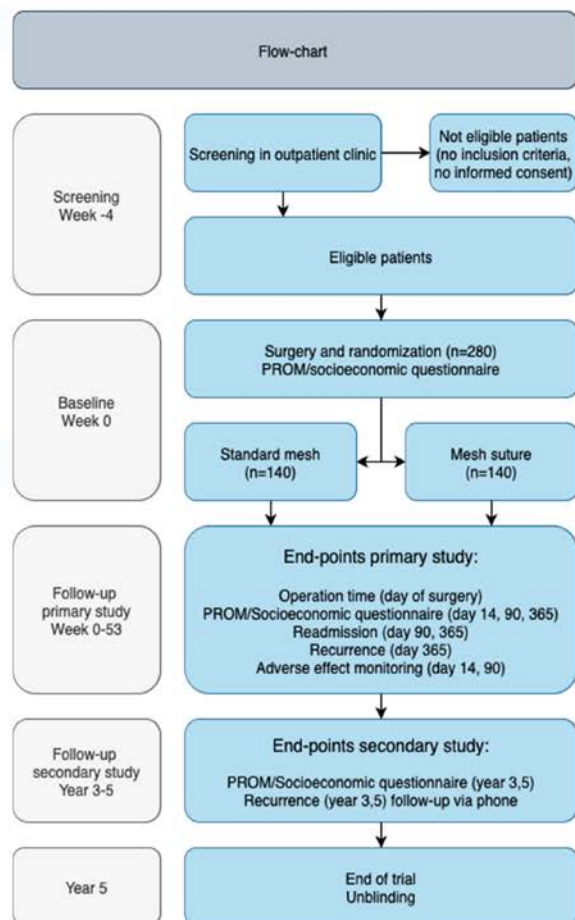
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Sub-studies 1-3: Long-term recurrence, QoL and socio-economic parameters (return to work, analgesic use and primary sector contact) until 5 years postoperatively.



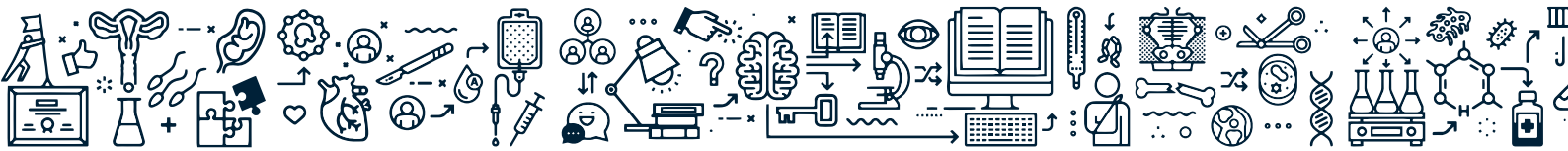
Flow-chart



PERSPECTIVES

By reducing surgical trauma, we anticipate better quality of life as well as fewer wound problems, and if proven superior, mesh-suture may become the standard repair for this hernia type in Denmark.

Onkologi



Diagnose af pleural mesoteliom (lungehindekræft): potentialet i checkpoint kinase 1 protein (pCHK1) som ny biomarkør

Azadeh Asghari Birbaneh^{1,2}, Christos Meristoudis³, Vasiliki Panou^{4,5}, Caspar Bundgaard-Nielsen², Peter Derek Christian Leutscher^{2,6}, Morten Johansen¹, Oluf Dimitri Røe^{7,8,9}

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9. Afdeling for Onkologi, Levanger Hospital, Levanger, Norge

Baggrund

Pleural mesoteliom (PM), også kendt som lungehindekræft, er en malignitet med diagnostiske udfordringer, heriblandt differentialdiagnosticering mod benign mesotelproliferation. I mange solide tumorer er der overexpression af pCHK1, som modvirker genominstabilitet. Formålet med dette studie var at undersøge pCHK1-ekspression i PM samt en kontrol gruppe (KG) med fokus på diagnostisk anvendelighed.

Metoder

I et retrospektivt studie blev tissue microarrays konstrueret fra cytologiske prøver af PM (n = 74) og KG (n = 33). Immunhistokemisk farvning for pCHK1 blev vurderet i kerne, cytoplasma og inflammatoriske celler.

Resultater

I KG blev nuklear pCHK1-ekspression observeret i 24 %, cytoplasmatisk i 9 %, og samlet 33 % havde positivitet i mindst én komponent. I PM var ekspressionen markant højere med 86 % nuklear- og 68 % cytoplasmapositivitet samt 88 % positive i mindst én komponent. Blandt KG viste kun 5 % af de ikke-reaktive nuklear ekspression (NMC), mens reaktiv hyperplasi (RPM) havde højere forekomst (50 % nuklear, 21 % cytoplasmatisk). ROC-analyser viste, at NMC havde den bedste diskriminationskraft, særligt i kerne- (AUC 0,91) og cytoplasmaanalyserne (AUC 0,84). RPM alene præsterede svagere (AUC 0,68–0,73), og kombinationen NMC+RPM gav kun en moderat forbedring uden overlegenhed i forhold til NMC alene.

Konklusioner

NMC har den bedste diagnostiske performance, i kerne- og cytoplasmaanalyserne. Cytoplasmatisk pCHK1 fremstår som den mest lovende markør til at adskille PM fra NMC i cytologiske prøver. RPM har begrænset diagnostisk værdi, mens kombineret nuklear og cytoplasmatisk vurdering øger sensitiviteten, men ikke præcisionen, og bør tolkes varsomt ved reaktive forandringer.



DIAGNOSE AF PLEURAL MESOTELIOM (LUNGEHINDEKRÆFT):

Potentialet i Checkpoint kinase 1 protein (pCHK1) som ny biomarkør.

• Azadeh Asghari Birbaneh^{1,2} • Christos Meristoudis³ • Vasiliki Panou^{4,5} • Caspar Bundgaard Nielsen² • Peter Christian Leutscher² • Morten Johansen¹ • Oluf Dimitri Røe^{6,7}

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²Center for Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark

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⁴Department of Respiratory Medicine, Odense University Hospital, Denmark

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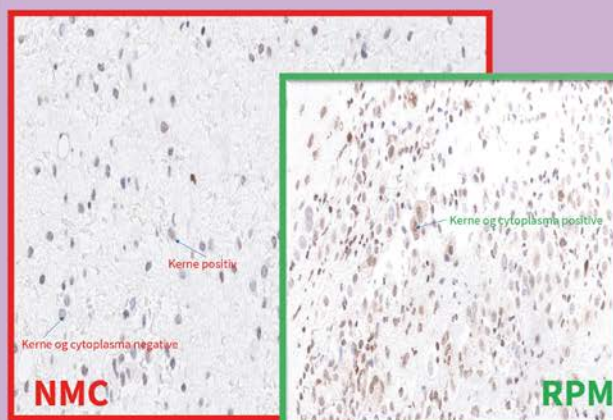
⁷Department of Oncology, Levanger Hospital, Norway

Baggrund

- Diagnosen lungehindekræft kan udfordre lægerne.
- Skelnen mellem kræft og benigt vækst er svært.
- pCHK1 kan være en nyttig markør.
- Formål: At undersøge, om pCHK1-ekspression i cellernes forskellige strukturer kan anvendes til at skelne mellem patienter med lungehindekræft (PM) og en kontrolgruppe (KG) uden malign lungesygdom.

Metode

- Vi undersøgte, hvor godt pCHK1-farvning kunne skelne mellem tumorceller og normale mesotelceller.
- Analysen omfattede både reaktive og ikke-reaktive mesotelceller i kontrolgruppen.
- Vi vurderede markerernes evne til at skelne diagnoser ved at beregne testens nøjagtighed.
- Vi fastsatte det bedste grænsepunkt for, hvornår en prøve skulle betragtes som positiv.
- Resultaterne blev vist med kurver, der illustrerer markerernes diagnostiske styrke.

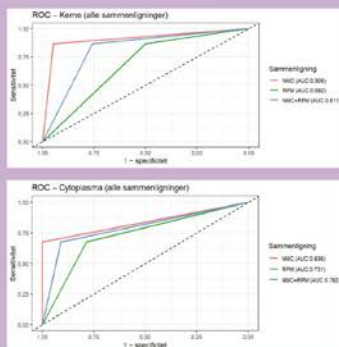


Resultat

- KG (n:33), var en blanding af patienter med ikke reaktive mesotelceller (NMC) (n:19), and reaktive mesotelceller (RPM) (n:14).
- KG: 24 % kerne, 9 % cytoplasmatisk, 33 % samlet positivitet.
- PM: 86 % kerne, 68 % cytoplasmatisk, 88 % samlet positivitet.
- NMC: kun 5 % kerne positivitet.
- RPM: 50 % kerne, 21 % cytoplasmatisk.

ROC-analyser:

- NMC bedst (AUC 0,91 kerne; 0,84 cytoplasmatisk)
- RPM svagere (AUC 0,68-0,73)
- NMC+RPM gav kun moderat forbedring



Konklusion

- NMC har den bedste diagnostiske performance, mens cytoplasmatisk pCHK1 er den mest lovende marker til at adskille PM fra NMC.

Implementering af rød-gul-grøn-handlingsalgoritme for optimering af kræftforløb på urologisk afdeling

Joachim Samsø Bavnhøj¹, Henrik Weinreich², Eva Damgaard², Else-Marie Nielsen², Christina Hounsgaard³, Anni Lützen¹, Vivi Pedersen¹

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2. Afdeling for Nyre- og Urinvejskirurgi, Regionshospital Nordjylland, Hjørring, Danmark
3. Afsnit for Billeddiagnostik, Regionshospital Nordjylland, Hjørring, Danmark

Baggrund

De danske kræftpakker sikrer ensartet udredning og behandling bl.a. gennem standardforløbstider, der er en faglig anbefaling for hvor hurtigt et kræftudredningsforløb bør forløbe fra henvisning til behandling. For at overholde forløbstiderne, er det vigtigt at sundhedsadministrativt personale ved nøjagtigt, hvornår patienter skal bookes og hvilke handlemuligheder der findes ved manglende ledige tider. I dette kvalitetsudviklingsprojekt implementerede vi, på en urologisk afdeling, en *rød-gul-grøn-handlingsalgoritme*, der anviser sekretærernes handlemuligheder, når der mangler ledige, hurtige tider til CT og kikkertundersøgelse af blæren.

Metoder

Baselinedata blev indsamlet gennem audit på 82 patientjournaler fra november 2024. I alt 26 af de 82 forløb fulgte ikke det udvalgte udredningsforløb og blev derfor ekskluderet. Implementeringen startede d. 1. februar 2025 og indsatsen fulgtes månedligt gennem journalaudit indtil juli 2025.

Resultater

Efter implementering faldt varigheden fra henvisning til CT og cystoskopi. Før implementering (november 2024) tog det 20,5 og 18,5 dage (median og gennemsnit) fra henvisning til udført CT og cystoskopi. Efter implementering, i juli 2025, tog det 13 og 12 dage (median og gennemsnit) svarende til en reduktion af median forløbstid på 37% (reduktion på 7,5 dage).

Konklusioner

Rød-gul-grøn-handlingsalgoritmen anvendt i dette studie viste sig at være et simpelt og effektivt redskab til at reducere varigheden af kræftudredningsforløb. Handlingsalgoritmer og action-cards er hyppigt anvendt i kvalitets- og forbedringsprojekter og et velkendt værktøj i den sundhedsprofessionelle verden, da det er enkelt og let at implementere. Dette studie viser, at det også er særdeles effektivt i sundhedsadministrative processer, når handlemulighederne er tydeligt beskrevet og aftalt af alle parter.

Implementering af rød-gul-grøn-handlingsalgoritme for optimering af kræftforløb på urologisk afdeling

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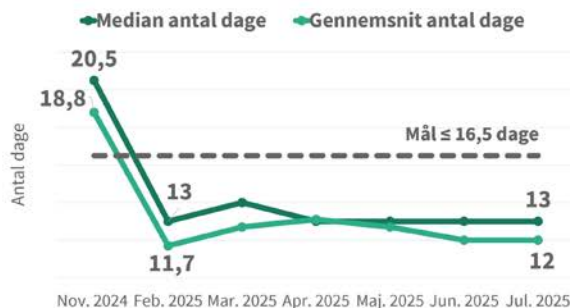
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INTRODUKTION

De danske kræftpakker sikrer ensartet udredning og behandling bl.a. gennem standardforløbstider, der er en faglig anbefaling for hvor hurtigt et kræftudredningsforløb bør forløbe fra henvisning til behandling. For at overholde forløbstiderne, er det vigtigt at sundhedsadministrativt personale ved nøjagtigt, hvornår patienter skal bookes og hvilke handlemuligheder der findes ved manglende ledige tider. I dette kvalitetsudviklingsprojekt implementerede vi, på en urologisk afdeling, en rød-gul-grøn-handlingsalgoritme, der anviser sekretærens handlemuligheder, når der mangler ledige, hurtige tider til CT og kikkertundersøgelse af blæren.

RESULTATER

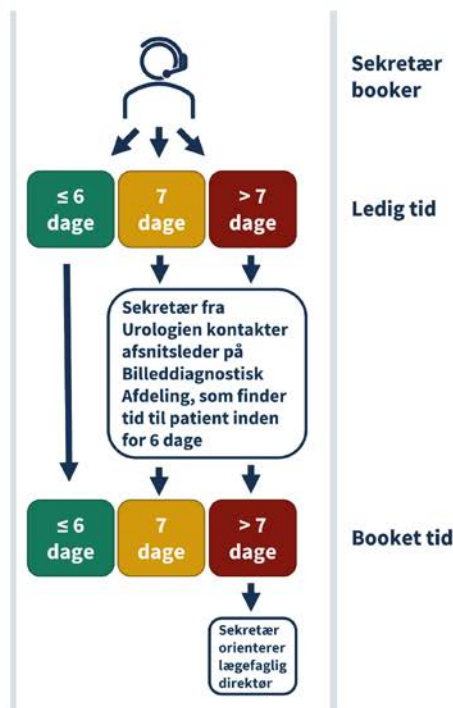
Efter implementering faldt varigheden fra henvisning til CT og cystoskopi. Før implementering (november 2024) tog det 20,5 og 18,5 dage (median og gennemsnit) fra henvisning til udført CT og cystoskopi. Efter implementering, i juli 2025, tog det 13 og 12 dage (median og gennemsnit) svarende til en reduktion af median forløbstid på 37% (reduktion på 7,5 dage).



Figur 2: Figuren viser det median og gennemsnitlige antal dage fra patienten henvises i en kræftpakke, til der er udført og beskrevet CT-urografi og cystoskopi. Baseline er dannet på 56 forløb i november 2024.

METODE

Baselinedata blev indsamlet ved audit på 82 patientjournaler fra november 2024. I alt 26 af de 82 forløb fulgte ikke det udvalgte udredningsforløb og blev derfor ekskluderet. Implementeringen startede d. 1. februar 2025 og indsatsen fulgtes månedligt til og med juli 2025.



Figur 1: En rød-gul-grøn-handlingsalgoritmen for sekretærer på en urologisk afdeling. Algoritmen viser sekretærens handlemuligheder for booking af patient ud fra tilgængelige CT-tider. Lignede algoritme blev implementeret for tider til cystoskopi.

RESULTATER

Rød-gul-grøn-handlingsalgoritmen anvendt i dette studie viste sig at være et simpelt og effektivt redskab til at reducere varigheden af kræftudredningsforløb. Handlingsalgoritmer og action-cards er hyppigt anvendt i kvalitets- og forbedringsprojekter og et velkendt værktøj i den sundhedsprofessionelle verden, da det er enkelt og let at implementere. Dette studie viser, at det også er særdeles effektivt i sundhedsadministrative processer, når handlemulighederne er tydeligt beskrevet og aftalt af alle parter.

Betydning af rapporterede stråleterapeutiske kontrolpunkter for den adaptive behandlingsstrategi hos patienter med lungekræft

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**Deltager i Kursus i Klinisk Forskning og Udvikling, Regionshospital Nordjylland, 2025*

Baggrund

Ved kurativ strålebehandling af patienter med lungekræft anvendes daglige Cone-Beam CT-skanninger (CBCT), som muliggør justering af stråleplanen, kaldet adaptive radiotherapy (ART). Ved Aalborg Universitetshospital anvendes bestemte kontrolpunkter til dagligt at vurdere anatomiske forandringer. Hvis samme kontrolpunkt overskrider en patient-specifik tolerance tre behandlinger i træk vurderes betydningen af hospitalsfysikere. Formålet er at undersøge hvor ofte i strålebehandlingsforløbet det registreres, at samme kontrolpunkt overskrider den patient-specifikke tolerance tre behandlinger i træk, samt betydningen for ART.

Metoder

Gennem en strålejournalaudit indhentes data på patienter, som har gennemført kurativ strålebehandling for lungekræft i perioden 2020 – 2025. Medtaget er patienter med én lungetumor samt mediastinale lymfeknuder. Til dataanalysen anvendes simpel deskriptiv statistik.

Resultater

Af 4292 fraktioneringer blev der observeret 567 (13 %) tilfælde, hvor samme kontrolpunkt overskrider en patient-specifik tolerance tre behandlinger i træk. Heraf blev 295 (52%) sendt til vurdering, hvoraf hospitalsfysikerne aktivt har vurderet 273 (93 %). Der blev udført konsekvensberegning på 104 (38 %) og 22 (8 %) endte på konference. Konferencen resulterede i 3 (14 %) re-planlægninger, 6 (27 %) nye CT-skanninger og 13 (59 %) fortsatte uændret. Der er observeret 272 (48%) tilfælde, hvor samme kontrolpunkt overskrider tolerancen tre behandlinger i træk, men ikke er sendt til vurdering.

Konklusioner

Halvdelen af tilfældene, som blev sendt til vurdering skyldes overskredne tolerancer på samme kontrolpunkt tre behandlinger i træk. Størstedelen af disse havde ingen betydning for ART, idet meget få endte i re-planlægning og ny CT-skanning. Dog ses der behov for at styrke registreringspraksis.



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Formålet er at undersøge hvor ofte i strålebehandlingsforløbet det registreres, at samme kontrolpunkt overskrider den patient-specifikke tolerance tre behandlinger i træk, samt betydningen for ART.

- Patienter der har gennemført kurativ intenderet strålebehandling for lungekræft
- Med én lungetumor samt mediastinale lymfeknuder
- I perioden juni 2020 – juni 2025.

The effects of fractional CO₂ laser on vaginal and urinary microbiota among breast cancer survivors

Sine Jacobsen^{1,2}, Caspar Bundgaard-Nielsen³, Marianne Glavind-Kristensen⁴, Anders Bonde Jensen^{2,5}, Axel Forman⁴, Suzette Sørensen^{3,6}, Pinar Bor^{2,4}

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6. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

Genitourinary syndrome of menopause (GSM) is highly prevalent among breast cancer survivors (BCSs) receiving endocrine therapy, partly due to oestrogen deprivation. Vaginal CO₂ laser therapy is increasingly used as a non-hormonal option for GSM, yet its impact on vaginal and urinary microbiota remains unclear.

Methods

Twenty-six BCSs undergoing endocrine therapy received five sessions of vaginal CO₂ laser treatment. Vaginal swabs and midstream urine samples were collected at baseline and at follow-up, approximately 2 months after final treatment. Microbial DNA was sequenced using 16S rRNA gene sequencing (Oxford Nanopore MinION). Alpha- and beta-diversity, microbial composition, and predicted functional pathways were analysed using mixed models, PERMANOVA, and ANCOM-BC, adjusting for age, smoking, sexual activity, and type of endocrine therapy.

Results

No significant overall changes in vaginal microbiota composition were observed after treatment regarding richness, Shannon diversity, or phylogenetic diversity. Beta-diversity also showed no consistent shifts. Endocrine therapy type had the greatest influence, with Tamoxifen associated with lower richness and diversity compared with aromatase inhibitors. Urinary microbiota was more heterogeneous; modest longitudinal changes remained after adjustment ($p < 0.05$). Sexual activity correlated with higher urinary richness while smoking and endocrine therapy were key predictors of microbial variability.

Conclusions

Fractional CO₂ vaginal laser therapy did not induce significant or consistent alterations in vaginal or urinary microbiota among BCSs with GSM. Microbial patterns were mainly shaped by endocrine therapy and lifestyle factors, rather than by laser treatment.

The Effects of Fractional CO₂ laser on Vaginal and Urinary Microbiota among Breast Cancer Survivors

Sine Jacobsen^{1,2}, Caspar Bundgaard-Nielsen³, Marianne Glavind-Kristensen⁴, Anders Bonde Jensen^{2,5}, Axel Forman⁴, Suzette Sørensen^{3,6}, Pinar Bor^{2,4}

¹Department of Obstetrics and Gynaecology, Randers Regional Hospital, ²Department of Clinical Medicine, Aarhus University, ³Centre for Clinical Research, North Denmark Regional Hospital, ⁴Department of Obstetrics and Gynaecology, Aarhus University Hospital, ⁵Department of Oncology, Aarhus University Hospital, ⁶Department of Clinical Medicine, Aalborg University

Background

Three out of four breast cancer survivors (BCSs) experience one or more symptoms as part of the genitourinary syndrome of menopause (GSM):



- Vaginal symptoms: e.g. dryness, itching, burning
- Urinary symptoms: e.g. incontinence, urinary tract infections
- Sexual symptoms: e.g. dyspareunia

Vaginal and urinary microbiota are important for urogenital health.

Vaginal CO₂ is used as a non-hormonal treatment for GSM, but its effect on the microbiota is unknown.

Methods

Participants: 26 BCSs on endocrine therapy

Intervention: 5 sessions of fractional CO₂ vaginal laser

Sampling: Vaginal swabs + midstream urine at baseline and 2 months post-treatment

Analysis: 16S rRNA sequencing (Oxford Nanopore MinION); alpha/beta diversity (mixed models, PERMANOVA); differential abundance (ANCOM-BC).

Adjusted for: age, smoking, sexual activity, type of endocrine therapy

Results

Vaginal microbiota (see Figure 1):

- No significant changes in richness, Shannon diversity, or phylogenetic diversity
- Beta diversity stable
- Endocrine therapy type strongly influenced composition (Tamoxifen = lower richness/diversity than Letrozole)

Urinary microbiota (see Figure 2):

- More heterogeneous
- Modest overall change over time ($p < 0.05$ after adjustment).
- Sexual activity was linked to higher urinary microbial richness
- Smoking and endocrine therapy = strongest predictors

No consistent restoration of Lactobacillus dominance or functional pathway changes detected.

TAKE HOME MESSAGES

- ✓ Vaginal CO₂ laser did not change vaginal microbiota
- ✓ Urinary microbiota showed a modest but significant shift
- ✓ Endocrine therapy type and lifestyle were the main drivers of microbiota composition in BCSs with GSM

Results (continued)

Figure 1 – Bray-Curtis plot vaginal microbiota

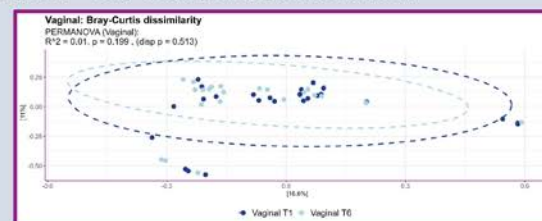
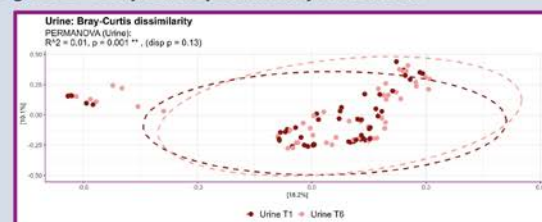


Figure 2 – Bray-Curtis plot urinary microbiota



Footnotes

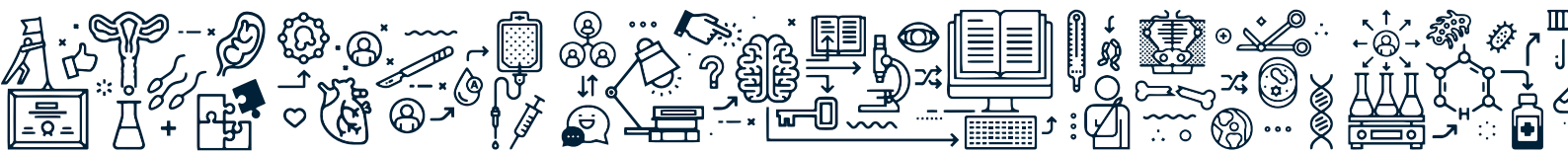
Ethics approval: Regional Science Ethical Committee (1-10-72-183-22); Danish Data Protection Agency (1-16-02-327-22)

Trial registration: ClinicalTrials.gov NCT06007027

Funding: The Research Fund, Randers Regional Hospital, The Health Research Foundation of Central Denmark, The Danish Cancer Society, The A.P. Moeller Foundation, The Danish Medical Association's Research Fund



Sportsmedizin



Effects of foot posture on patellofemoral alignment in patients with patellofemoral pain syndrome: a weight-bearing CBCT study

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2. Centre for Sports Medicine, North Denmark Regional Hospital, Frederikshavn, Denmark

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

4. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

**Participant in the Introduction Course to Clinical Research and Development, North Denmark Regional Hospital, 2025*

Background

Patellofemoral Pain Syndrome (PFPS) is a prevalent knee disorder that substantially impairs function and quality of life. Its etiology is multifactorial, involving abnormal patellar tracking and altered limb kinematics, potentially influenced by distal alignment. Excessive foot pronation has been proposed to increase tibial and femoral internal rotation, thereby elevating lateral patellofemoral stress. However, the causal relationship remains unclear, and no study has systematically examined whether controlled changes in foot posture affect patellofemoral alignment under weight-bearing conditions. Cone Beam Computed Tomography (CBCT) provides high-resolution, three-dimensional assessment of lower limb alignment during physiological load and may offer novel insights into foot–knee interactions.

Methods

This cross-sectional study will include patients with clinically diagnosed PFPS and age- and sex-matched asymptomatic controls. Each participant will undergo six standardized bilateral weight-bearing CBCT scans, combining two knee flexion angles (0° and 30°) with three foot positions (neutral, maximal pronation, and maximal supination). The study will evaluate differences in foot posture, pronation capacity, and patellofemoral alignment across foot positions and flexion angles. A minimum of 12 participants per group will be included. Group comparisons and within-subject effects of altered foot posture will be analyzed using appropriate statistical models with adjustment for covariates.

Perspectives

This study will determine whether distal foot posture systematically alters patellofemoral alignment and whether these effects differ between PFPS patients and controls. The findings may provide a biomechanical rationale for orthotic interventions, establish CBCT as a clinically feasible imaging tool, and support more targeted strategies for managing PFPS.



A NEW 3D IMAGING APPROACH FOOT POSTURE AND KNEE ALIGNMENT IN PATELLOFEMORAL PAIN SYNDROME: A WEIGHT- BEARING CONE BEAM CT STUDY

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1. Department of Rheumatology, North Denmark Regional Hospital, Hjørring, Denmark

2. Sports Medicine Center, North Denmark Regional Hospital, Frederikshavn, Denmark

3. Centre for Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark

Background

- Patellofemoral pain syndrome (PFPS) is one of the most common causes of knee pain.
- Flat/pronated feet can cause tibial and femoral internal rotation, leading to lateral patellar displacement and higher patellofemoral joint stress.
- Cone Beam CT (CBCT) is a new 3D imaging technology that can scan foot and knee while standing, offering new insight into joint mechanics
- To our knowledge, no study has examined whether foot posture alters patellofemoral alignment in PFPS using weight-bearing CBCT.

Methods

- Cross-sectional study including patients with PFPS and age-/sex-matched healthy controls.
- Each participant undergoes six standing CBCT scans: Knee at 0° and 30° flexion, each combined with foot in neutral, pronated, and supinated position.
- We aim to include ≥12 participants per group.
- Outcomes: Differences in foot posture and patellofemoral alignment between PFPS patients and controls, and within individuals across foot positions and knee flexion angles.

Does foot posture affect patellofemoral alignment in patellofemoral pain syndrome?

CBCT: Cross sectional view of patellofemoral joint



Curvebeam Cone Beam CT scanner



Perspectives

- CBCT enables weight-bearing 3D imaging with low radiation dose — fast and feasible.
- Results may provide a scientific basis for considering foot posture in PFPS.
- If foot posture influences patellofemoral alignment, it may explain the effect of orthoses and foot exercises.

Social påvirkning af skader hos elite ungdomsfodboldspillere

Thøger Persson Krogh¹, Søren Kaalund¹, Ulrich Fredberg^{1,2}

1. Sportsmedicinsk Center, Regionshospital Nordjylland, Frederikshavn, Danmark

2. Forskningsenhed for Reumatologi, Klinisk Institut, Syddansk Universitet, Odense, Danmark

Baggrund

Skader ved ungdomsfodbold er hyppigt forekomne og kan have stor social og psykisk betydning ikke kun for spilleren, men også for de nærmeste pårørende (forældre). Der ses ofte unge elitespillere, der har været på en odysse af forskellige behandlere for kliniske almindelige, men langvarige skader (fx apofysitter). Det er et område, der er sparsomt undersøgt, og hvor behandlingsmuligheder af den fysiske skade ofte er på et højt niveau i eliteklubber, halter tiltagene til behandling/forebyggelse af de sociale følgeskader hos fx forældre og spiller langt efter. Det vil derfor være et betydelig løft, hvis der kommer større fokus på at udvikle og implementere øvelser, der videnskabeligt dokumenteret forbedrer præstationer og reducerer skader.

Metoder

Der etableres en regional database omfattende 1-2 jyske elite fodboldklubber og klubberne i deres optageområde, hvor skader hos U10-U15-spillere registreres hver uge på sms. Ved skader kontaktes spillerne af en fysioterapeut mhp. at fastslå en mulig diagnose og behov for vurdering. Databasen kan med tiden udvides til at omfatte hele landet. Hvis skaderne varer mere end én måned kontaktes forældre med henblik på interview af både forældre og spiller.

Perspektiver

Ved at få en større opmærksomhed på de sociale følger hos spiller og familie når en eliteungdomsspiller får en langvarig skade, er der forhåbning om, at der kan opnås kompetencer til at håndtere de sociale og psykiske udfordringer hos spiller og spilleren omgivelser og i bedste fald løs problemerne i opløbet.

SOCIAL PÅVIRKNING AF SKADER HOS ELITE UNGDOMSFODBOLDSPILLERE

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1) Center for Sports Medicine, Regional Hospital of Northern Denmark, Frederikshavn, Denmark
2) Research Unit of Rheumatology, Department of Clinical Research, Odense University Hospital, Denmark



Baggrund

Skader ved ungdomsfodbold er hyppigt forekomne og kan have stor social og psykisk betydning. Der ses ofte unge elitespillere, der har været på en odysse hos forskellige behandlere for almindelige, men langvarige skader (fx apofysitter). Mens behandlingsmuligheder af den fysiske skade ofte er på et højt niveau i eliteklubber, halter tiltagene til behandling/forebyggelse af de sociale følgeskader hos fx forældre og spiller langt efter.



Metoder

Der etableres en regional database omfattende 1-2 jyske elite fodboldklubber og klubberne i deres optageområde, hvor skader hos U10-U15-spillere registreres hver uge på sms. Ved skader kontaktes spillerne af en fysioterapeut mhp. at fastslå en mulig diagnose og behov for vurdering. Databasen kan med tiden udvides til at omfatte hele landet. Hvis skaderne varer mere end én måned kontaktes forældre mhp. Interview af både forældre og spiller.



Perspektiver

Ved at få en større opmærksomhed på de sociale følger hos spiller og familie når en eliteungdomsspiller får en langvarig skade, er der forhåbning om, at der kan opnås kompetencer til at håndtere de sociale og psykiske udfordringer hos spiller og spilleren omgivelser og i bedste fald løse problemerne i opløbet.



Kilde: Billede genereret med kunstig intelligens



REGIONSHOSPITALET NORDJYLLAND
– i gode hænder

[illegible]

Validation of surface electromyography for quantifying muscle strain in urological surgeons during endoscopic procedures

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Background

Musculoskeletal disorders are prevalent among urological surgeons, with up to 86% of them reporting yearly work-related pain during retrograde intrarenal surgery (RIRS). Surface electromyography (sEMG) offers a non-invasive method enabling to quantify the level of muscular activation, but its validity in surgical settings has not yet been established.

Methods

A prospective validation study will be conducted at the Department of Urology, Aalborg University Hospital. At least two surgeons will perform a minimum of two RIRS procedures, separated by ≥ 12 hours. The sEMG of the Triceps Brachii, Biceps Brachii, Upper Trapezius and Erector Spinae will be recorded in agreement with the SENIAM recommendations. sEMG root-mean-square values will be extracted using procedural time-stamps and analyzed to identify a high level of muscle activation. Subjective assessments of pain intensity and rate of perceived exertion will be collected after each procedure using a visual analogue scale and the Borg CR10 scale. Reproducibility, sensitivity, and criterion validity will be evaluated in relation to subjective ratings.

Perspectives

This study will show that the sEMG technique can reliably detect the level of activation of muscles and thus can be used as an objective tool for ergonomic risk assessment in endoscopic urology. In the future, this method can guide targeted interventions (e.g., table-height optimization and micro-break scheduling) and serve as an outcome measure in future trials aimed at preventing work-related musculoskeletal disorders among surgeons.

HEY SURGEONS!

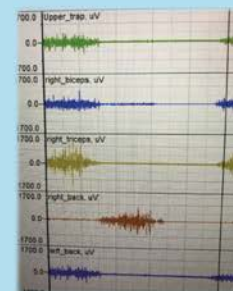
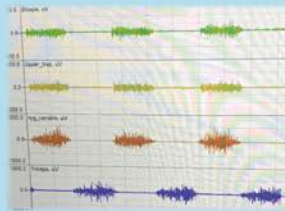
Feeling the strain today?

Validation of Surface Electromyography for Quantifying Muscle Strain in Urological Surgeons During Endoscopic Procedures

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THE PROBLEM

Musculoskeletal disorders plague urological surgeons worldwide¹.

81% of surgeons report yearly work-related pain from retrograde intrarenal surgery (RIRS)².

Current assessment methods rely on subjective reporting - but what if we could measure muscle strain objectively?

RESEARCH QUESTION

Can surface electromyography (sEMG) be established as a reliable tool for measuring surgical muscle strain during urological procedures?

OUR METHOD

We are conducting a prospective validation study of sEMG in surgical settings.

What we measure:

- Triceps Brachii
- Biceps Brachii
- Upper Trapezius
- Erector Spinae

How we do it:

- ✓ SENIAM electrode placement standards
- ✓ Real surgical procedures at Aalborg University Hospital

Why it matters:

Objective measurement = targeted interventions = healthier surgeons⁴

THE IMPACT

This validation study will establish sEMG as a reliable tool for measuring surgical muscle strain⁵.

Expected outcomes:

- Reproducible muscle activity measurements
- Sensitive detection of strain patterns
- Valid assessment of surgical ergonomics

Clinical applications:

- ✓ Identification of high-risk procedures
- ✓ Optimization of surgical positioning
- ✓ Design of targeted interventions
- ✓ Prevention of work-related injuries

The future:

Evidence-based ergonomic improvements that keep surgeons healthy throughout their careers.

References: ¹ Epstein S, Sparer EH, Tran BN, et al. Prevalence of Work-Related Musculoskeletal Disorders Among Surgeons and Interventionalists: A Systematic Review and Meta-analysis. *JAMA Surg.* 2018;153(2):e174947. doi:10.1001/jamasurg.2017.4947 ² Gabrielson AT, Tanidir Y, Castolani D, et al. A Global Survey of Ergonomics Practice Patterns and Rates of Musculoskeletal Pain Among Urologists Performing Retrograde Intrarenal Surgery. *J Endourol.* 2022;36(9):1168–1176. doi:10.1089/end.2022.0075 ³ Liu S, Li Y, Li D, et al. Advances in objective assessment of ergonomics in endoscopic surgery: a review. *Front Public Health.* 2024;11:1281194. doi:10.3389/fpubh.2023.1281194 ⁴ Matern U. Ergonomic deficiencies in the operating room: examples from minimally invasive surgery. *Work.* 2009;33(2):165–168. doi:10.3233/WOR-2009-0862 ⁵ De Luca CJ. The use of surface electromyography in biomechanics. *J Appl Biomech.* 1997;13(2):135–163. doi:10.1123/jab.13.2.135

Prøvehandlinger til styrkelse af læring, kompetenceudvikling og rekruttering gennem hospitalets uddannelsesstrategi

Charlotte Fuglesang¹, Nathja Bartholomæussen Nielsen²

1. Hospitalsledelsen, Regionshospital Nordjylland, Hjørring, Danmark

2. Team Business ApS, Aalborg, Danmark

Baggrund

Som led i hospitalets uddannelsesstrategi er der igangsat tre prøvehandlinger med det formål at afprøve og kvalificere nye tiltag, som kan styrke læring, kompetenceudvikling og rekruttering. Initiativerne skal bidrage til at fremme tværfagligt samarbejde, skabe autentiske læringsmiljøer og understøtte kontinuitet og tilknytning mellem studerende og afdelinger.

Metoder

De tre prøvehandlinger omfatter: (1) et grundkursus i teambaseret arbejde for alle medarbejdere, hvor viden om effektive teams i sundhedsvæsenet danner afsæt for en kombination af teori og praktiske øvelser. Kurset skal træne samarbejde, kommunikation og rolleforståelse og samtidig kunne tilpasses forskellige faggrupper og organisatoriske niveauer, så det understøtter et lærende og samarbejdende miljø på tværs af fagligheder. (2) Et uddannelsesafsnit inspireret af Gødstrup-modellen, hvor simulation, patientforløb og praksis bindes tæt sammen. Her skabes rammer for autentisk læring, peer learning og tværfagligt samarbejde, samtidig med at afsnittet fungerer som et udviklingslaboratorium for nye undervisnings- og behandlingsformer. (3) Et stamafdelingskoncept inspireret af Esbjerg-modellen, hvor studerende tilknyttes én afdeling gennem hele deres uddannelsesforløb. Det skaber kontinuitet, tryghed og stærkere relationer, giver bedre mulighed for individuelle læringsplaner og styrker tilhørsforholdet til hospitalet. Alle prøvehandlinger udvikles af arbejdsgrupper, der leverer forslag til indhold, struktur, organisering og samarbejdsflader med uddannelsesinstitutioner.

Perspektiver

Prøvehandlingerne forventes at give værdifulde erfaringer med, hvordan hospitaler kan styrke kompetenceudvikling og rekruttering gennem systematiske uddannelsesstrategier. Ved at afprøve forskellige modeller kan projektet bidrage til at identificere *best practice* og danne grundlag for en eventuel bredere implementering.

RHN'S UDDANNELSESSTRATEGI

Prøvehandlinger til styrkelse af læring, kompetenceudvikling og rekruttering

Charlotte Fuglesang¹, Nathja Bartholomæussen Nielsen²

¹Hospitalsledelsen, Regionshospital Nordjylland, Hjørring, Danmark. ²Team Business ApS, Aalborg, Danmark

Baggrund

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De tre prøvehandlinger omfatter: (1) Grundkursus i teambaseret arbejde for alle medarbejdere. (2) Et uddannelsesafsnit hvor simulation, patientforløb og praksis bindes tæt sammen. (3) Stamafdelingskoncept hvor studerende tilknyttes én afdeling igennem deres uddannelsesforløb.



Perspektiver

Prøvehandlingerne forventes at give værdifulde erfaringer med, hvordan hospitaler kan styrke kompetenceudvikling og rekruttering gennem systematiske uddannelsesstrategier. Ved at afprøve forskellige modeller kan projektet bidrage til at identificere best practice og danne grundlag for en eventuel bredere implementering.

Regionshospital Nordjylland som uddannelseshospital – en strategisk satsning på livslang læring og faglig fornyelse i sundhedsvæsenet

Charlotte Fuglesang¹, Steffen Helmer Kristensen¹

1. Hospitalsledelsen, Regionshospital Nordjylland, Hjørring, Danmark

Baggrund

Sundhedsvæsenet står midt i en omstilling, hvor løsninger findes i evnen til at tænke nyt, lære hurtigt og samarbejde bredt. I denne virkelighed er uddannelse ikke en sideopgave – det er en forudsætning for, at vi lykkes. Regionshospital Nordjylland (RHN) har derfor truffet et strategisk valg: Vi vil være et uddannelseshospital, hvor læring og udvikling er drivkræfter i alt, vi gør. Med vores placering i det nordlige Danmark og en særlig rolle i forhold til både sygehus-, kommune- og praksissektoren, har vi både mulighed og forpligtelse til at tage ansvar.

Metoder

Strategien er udviklet med en konsekvent nedefra-tilgang, hvor vi har arbejdet efter principperne i en fair proces. Det betyder, at ledere, medarbejdere og samarbejdspartnere har været aktivt involveret gennem hele forløbet – fra tidlig idéudvikling, formulering af strategiske indsatsområder og til beskrivelse af reelle strategiske forandringer. Denne tilgang understøtter ejerskab, legitimitet og lokal relevans, men indebærer også et spændingsfelt mellem bred inddragelse og behovet for retning og fremdrift. Gennem workshops og tematiske skriveprocesser er strategien vokset frem som et fælles projekt. Sideløbende har vi opbygget læringszoner, hvor praksisnær undervisning, teamtræning, simulation og digitale løsninger spiller sammen.

Perspektiver

RHN vil mere end at uddanne – vi vil forme fremtidens sundhedsvæsen. Et stærkt uddannelseshospital er en magnet for dygtige fagpersoner og en motor for kvalitet og innovation. Vores ambition er at være et fyrtårn i et sundhedsvæsen under forandring: Et sted hvor fagligheden dyrkes, nysgerrigheden næres, og nye løsninger får lov at gro. Fremtidens sundhedsvæsen skal ikke blot levere – det skal lære. Det ansvar tager vi på os.

RHN'S UDDANNELSESSTRATEGI

Regionshospital Nordjylland som uddannelseshospital En strategisk satsning på livslang læring og faglig fornyelse i sundhedsvæsenet

Charlotte Fuglesang¹, Steffen H. Kristensen¹

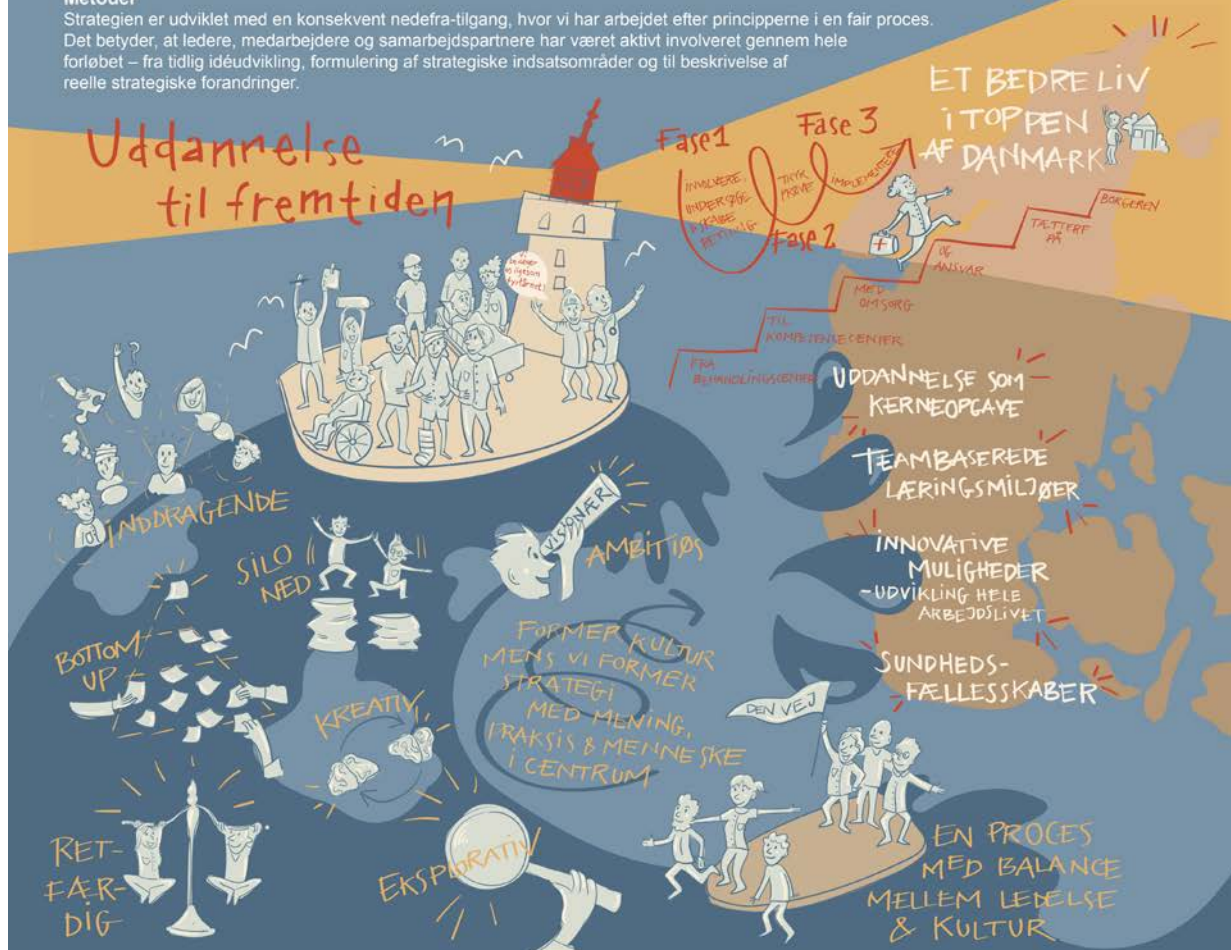
¹Hospitalsledelsen, Regionshospital Nordjylland, Hjørring, Danmark

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Sygepleje til fremtiden - strategi for udvikling og forskning i sygepleje Regionshospital Nordjylland 2025-2029

Charlotte Fuglesang¹, Hildur Hamper², Marianne Godt Hansen³, Tina Heilesen⁴, Jette Larsen⁵, Rikke Rishøj Mølgaard^{1,6}, Daniel Krag Nielsen^{1,6}, Mona Kyndi Pedersen^{7,8}, Bente Frydkjær Rømer^{1,7}

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3. Marianne Godt Hansen, Ekstern konsulent, Aarhus, Danmark
4. Afdeling for Kvindesygdomme, Graviditet og Fødsel, Regionshospital Nordjylland, Hjørring, Danmark
5. Team Talenterne Hus, Regionshospital Nordjylland, Hjørring, Danmark
6. Sygeplejerskeuddannelsen, Professionshøjskolen UCN, Hjørring, Danmark
7. Center for Klinisk Forskning, Regionshospital Nordjylland, Hjørring, Danmark
8. Klinisk Institut, Aalborg Universitet, Aalborg, Danmark

Baggrund

Fremtidens sundhedsvæsen skal imødekomme udfordringer, hvor geografisk og social ulighed i sundhed, sektorovergange samt integration mellem somatik og psykiatri kræver nytænkning. Desuden kræver udviklingen prioritering af ressourcer med henblik på at styrke personcentreret, situationsorienteret og evidensbaseret sygepleje. Strategien ”Sygepleje til fremtiden” på Regionshospital Nordjylland skal bidrage til at skabe et mere sammenhængende og bæredygtigt sundhedsvæsen, hvor udvikling og forskning i klinisk sygepleje bidrager til brobygning mellem sektorer, professioner og patientforløb.

Metoder

Strategien operationaliseres gennem to programmer for udvikling og forskning med konkrete mål og milepæle for aktiviteter og initiativer. De to programmer handler om ”Sygepleje i patienternes nærmiljø” og ”Sygepleje, der bidrager til lighed i sundhed, forebyggelse og rehabilitering”. Projekterne i de to programmer udspringer af hverdagens undren, faglig refleksion samt modet til at stille spørgsmål og være nysgerrig. Projekterne udvikles i samarbejde mellem relevante interne og eksterne aktører på tværs af sektorer, professioner og patientforløb. Data indsamles og bearbejdes systematisk med henblik på at kunne udvikle fremtidens sygepleje.

Perspektiver

Strategien ”Sygepleje til Fremtiden” styrker helhed og sammenhæng i sundhedsvæsenet gennem sygepleje, der er personcentreret, situationsorienteret og tværsektoriel. Denne helhed er den nødvendige vej for at skabe bedre sundhed og livskvalitet. Strategien skal bidrage til at stadfæste en kultur, hvor innovation, læring og kompetenceudvikling er en del af klinisk praksis. Dette sker gennem kontinuerlig fokus på udvikling og forskning i klinisk sygepleje. Regionshospital Nordjylland positionerer sig lokalt, regionalt og nationalt, hvor udviklings- og forskningsindsatser omsættes til konkrete forandringer, der bidrager med løsninger på sundhedsvæsenets aktuelle og fremtidige udfordringer.

Sygepleje til fremtiden

Strategi for udvikling og forskning i sygepleje

Charlotte Fuglesang¹, Hildur Hamper², Marianne Godt Hansen³, Tina Heilesen⁴, Jette Larsen⁵, Rikke Rishøj Mølgaard^{1,6}, Daniel Krag Nielsen^{1,6}, Mona Kyndi Pedersen^{7,8} og Bente Frydkjær Rømer^{1,7}

1) Hospitalsledelsen, Regionshospital Nordjylland, Hjørring, Danmark

2) Kirurgisk afdeling, Regionshospital Nordjylland, Hjørring, Danmark

3) Marianne Godt Hansen, Ekstern konsulent, Aarhus, Danmark

4) Afdeling for Kvindesygdomme, Graviditet og Fødsel, Regionshospital Nordjylland, Hjørring, Danmark

5) Talenternes Hus, Regionshospital Nordjylland, Hjørring, Danmark

6) Sygeplejerskeuddannelsen, Professionshøjskolen UCN, Hjørring, Danmark

7) Center for Klinisk Forskning, Regionshospital Nordjylland, Hjørring, Danmark

8) Klinisk Institut, Aalborg Universitet, Aalborg, Danmark

Baggrund

Fremtidens sundhedsvæsen kræver nytænkning samt prioritering af ressourcer med henblik på at styrke personcentreret, situationsorienteret og evidensbaseret sygepleje.

Strategien "Sygepleje til fremtiden" på Regionshospital Nordjylland skal bidrage til at skabe et mere sammenhængende og bæredygtigt sundhedsvæsen, hvor udvikling og forskning i klinisk sygepleje bidrager til brobygning mellem sektorer, professioner og patientforløb.



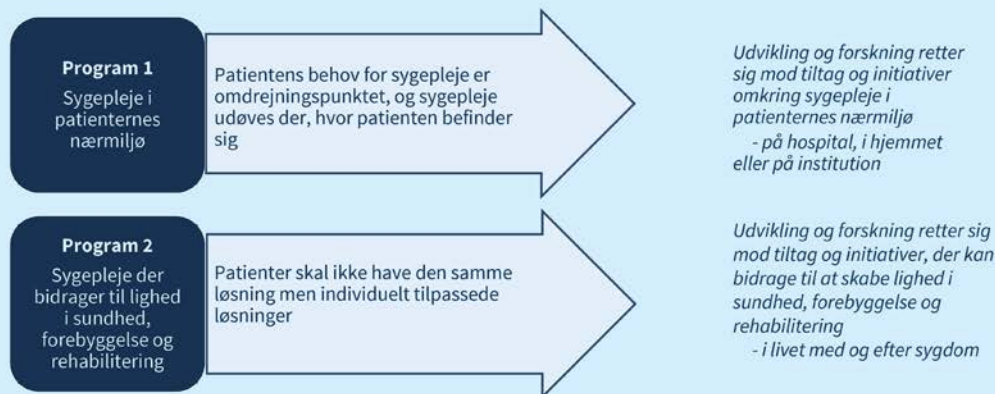
Perspektiver

Strategien styrker helhed og sammenhæng i sundhedsvæsenet gennem sygepleje, der er personcentreret, situationsorienteret og tværsektoriel.

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Regionshospital Nordjylland positionerer sig lokalt, regionalt og nationalt, hvor udviklings- og forskningsindsatser omsættes til konkrete forandringer.

Metode: Strategien operationaliseres gennem to programmer for udvikling og forskning:



Kontakt

Vil du høre mere om strategien eller vil du drøfte en projektidé, så tag kontakt:



Rikke Rishøj Mølgaard
Programchef, Program 1
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Lærings- og forbedringsteam patientforløb

Christina Michno¹, Vivi Pedersen¹, Steffen Helmer Kristensen²

1. Kontor for Kvalitet, Patientsikkerhed og Arbejds miljø, Regionshospital Nordjylland, Hjørring, Danmark

2. Hospitalsledelsen, Regionshospital Nordjylland, Hjørring, Danmark

Baggrund

Siden 2018 har hospitalet haft Kvalitets/UTH-teams med det formål at sikre læring fra utilsigtede hændelser. I 2023 kom nye anbefalinger fra Styrelsen for Patientklager ift. at sikre anvendelse af læring fra patientklager. Derudover findes mange andre datakilder til læring og forbedring af kvaliteten og sikkerheden i patientforløb: Landsdækkende Undersøgelse af Patienttilfredshed, kliniske kvalitetsdatabaser, infektionshygiejne, overholdelse af patientrettigheder etc. Eksisterende organisering sikrer ikke udvikling af patientforløb ud fra læring fra alle datakilder. En manglende systematik i sammenkobling af læring fra datakilder kan udfordre videndeling ned, på tværs og op. Derudover kan ressourcer spildes på overlappende indsatser og manglende overblik, der udfordrer effektivitet og fremdrift i kvalitet og patientsikkerhed i patientforløb.

Metoder

For at styrke patientsikkerheden og inkl. læringen fra alle datakilder implementeres Lærings- og Forbedringsteam Patientforløb (LFP). Kontor for Kvalitet, Patientsikkerhed og Arbejds miljø er tovholder på processen og via Råd for Kvalitet og Patientsikkerhed (RKP) og udvidet hospitalsledelse kvalificeres og godkendes proces for implementering. Afdelings-LFP skal bestå af ledelse og relevante ressourcepersoner fra forskellige faggrupper, der arbejder tværfagligt med læring og tiltag fra relevante datakilder.

Perspektiver

Formålet er at sikre en mere systematisk og ressourceeffektiv tilgang til læring og forbedring i patientforløb. Desuden at fremme videndeling op, ned og på tværs med et styrket ledelsesmæssigt ophæng, der fordrer en prioritering af indsatser og forbedringstiltag. Dertil en styrket inddragelse af relevante faglige ressourcepersoner i LFP. Omstruktureringen sker i overensstemmelse med Region Nordjyllands strategiske fokusområder mv. hvor hospitalet skal arbejde med kvalitetsforbedring.

Lærings- og Forbedringsteam Patientforløb

Christina Michno¹ • Vivi Pedersen¹ • Steffen Helmer Kristensen²

¹Kontor for Kvalitet, Patientsikkerhed og Arbejdsmiljø, Regionshospitalet Nordjylland, Hjørring, Danmark

²Hospitalsledelsen, Regionshospitalet Nordjylland, Hjørring, Danmark

BAGGRUND

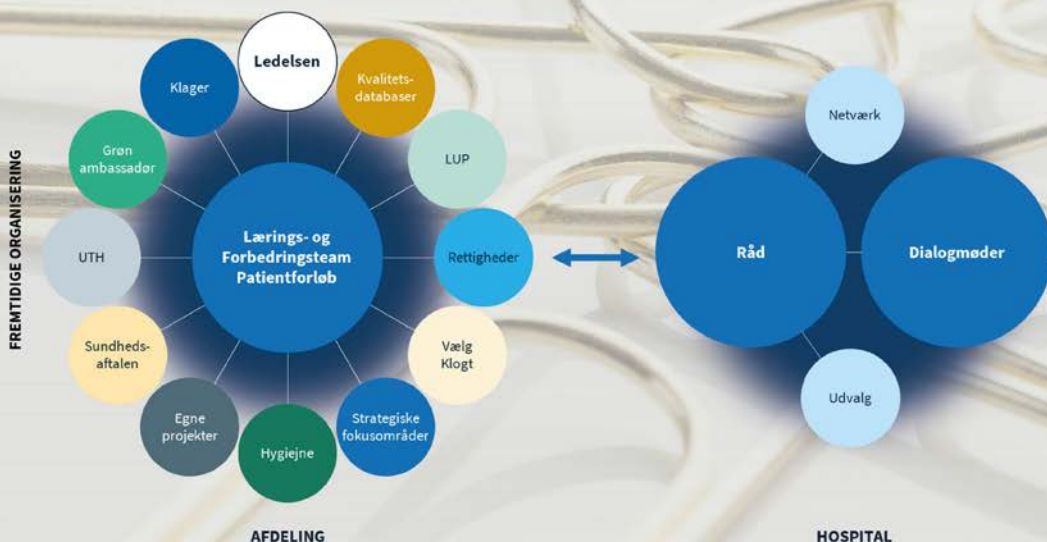
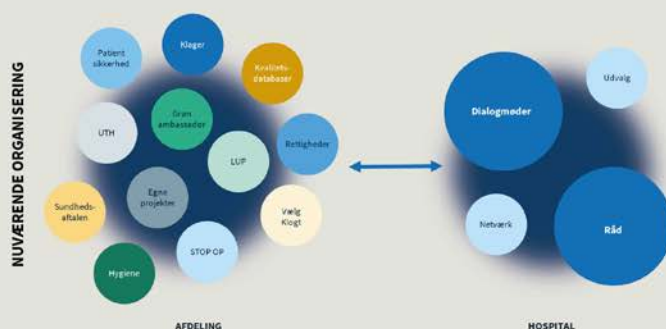
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PERSPEKTIVER

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Trivsel blandt yngre læger i Akutmodtagelsen

Emma Victoria Keseler¹, Louise Thomsen Schmidt Arenholt^{2,3}, Jette Kolding³, Tine Klitgaard⁴, Peter Derek Christian Leutscher^{2,3}, Anja Kirstein²

1. Institut for Kultur og Læring, Aalborg Universitet, Aalborg, Danmark
2. Center for Klinisk Forskning, Regionshospitalet Nordjylland, Hjørring, Danmark
3. Klinisk Institut, Aalborg Universitet, Aalborg, Danmark
4. Enheden for Postgraduat Lægelig Uddannelse, Aalborg Universitetshospital, Aalborg, Danmark

Baggrund

KBU-læger i akutmodtagelsen arbejder til tider under et højt arbejdspress, hvor hurtige kliniske beslutninger er en central del af hverdagen. Læger befinder sig i et krydspres mellem nye arbejdsrelationer, organisatoriske rammer og patientbehandling, som alle bidrager til den trivselsproblematik, som mange yngre læger står i. For at belyse dette, tager denne undersøgelse udgangspunkt i Regionshospitalet Nordjyllands akutmodtagelse med særligt fokus på sammenhængen mellem klinisk beslutningstagen og KBU-lægers trivsel.

Metoder

Undersøgelsen gennemføres i perioden 1. september til 31. oktober 2025 med en kombination af kvantitative og kvalitative tilgange. KBU-læger i akutmodtagelserne på Thisted Sygehus, Aalborg Universitetshospital og Regionshospitalet Nordjylland besvarer spørgeskemaer, hvoraf lægerne på Regionshospitalet Nordjylland yderligere inviteres til interviews. Interviewene tager afsæt i refleksive og erfaringsbaserede spørgsmål med henblik på at belyse sammenhængen mellem trivsel og klinisk beslutningstagen.

Perspektiver

Resultaterne forventes at bidrage med ny viden om, hvordan beslutningsprocesser i akutte situationer påvirker yngre lægers trivsel. Denne viden kan skabe grundlag for målrettede tiltag, der styrker både læringsmiljø og arbejdsglæde i akutmodtagelser.

Trivsel under pres?

Emma Victoria Keseler¹ · Louise Thomsen Schmidt Arenholt^{2,3} · Maika Helene Shakar⁴ · Jette Kolding³ · Tine Klitgaard⁵ · Peter Derek Christian Leutscher^{2,3} · Anja Kirstein²

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4. Akutafdeling, Regionshospitalet Nordjylland, Hjørring, Danmark

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Interviewene tager afsæt i refleksive og erfaringsbaserede spørgsmål med henblik på at belyse sammenhængen mellem trivsel og klinisk beslutningstagen.

Fremragende og supervision i top

Frygt for at glemme eller fejle

RESULTATER

Spørgeskemaet peger på forskelle mellem de forskellige akutmodtagelser; I den ene akutmodtagelse oplever KBU-lægerne et stærkt læringsmiljø, mens der i en anden i højere grad fremhæves et **arbejdspress, manglende restitution og bekymringer for at begå fejl**. Samlet set understreger disse foreløbige resultater, at organisatoriske rammer og kultur spiller en afgørende rolle for yngre lægers trivsel og kliniske beslutningstagen i akutte situationer.

Der arbejdes herfra videre med at belyse ovenstående mistrivsel gennem interviews med henblik på at styrke både arbejdsglæde og læringsmiljø.

Uddannelse som kerneopgave

Liselotte Ingemann Pedersen¹, Jette Larsen¹, Karen Lyng Larsen¹

1. Tværgående Funktioner, Team Talenternes Hus, Regionshospital Nordjylland, Hjørring, Danmark

Baggrund

Den nye uddannelsesstrategi på Regionshospital Nordjylland fremhæver, at uddannelses er en kerneydelse. Uddannelse og kompetenceudvikling er ligeledes fremtrædende i de 14 politiske pejlemærker i Region Nordjylland. Regionshospital Nordjylland er et stort uddannelsessted, hvor der hvert år er flere hundrede uddannelsessøgende i klinik. Det betyder, at størstedelen af det faste personale i perioder indgår som meduddanner. Statusmøder viser, et ønske om at delagtiggøre kollegaerne mere i uddannelsesopgaven og der ses et behov kompetenceudvikling. Projektets formålet er at øge meduddannerenes kompetencer i at tilrettelægge læringssituationer i praksis i forhold til uddannelsessøgende med forskellige læringsforudsætninger. Nyeste forskning fra CEFU viser, at flere unge under uddannelse lever med funktionsnedsættelser eller sårbarhed i et læringsperspektiv fordrer det en anderledes tilgang til læring.

Metoder

Projektet er et kvalitativt udviklingsprojekt. Der er udviklet et 2 timers basiskursus i læring med udgangspunkt i pædagogiske principper ud fra Knud Illeris samt Hiim og Hippe. Målgruppen er: tværfagligt sundhedspersonale med funktion som meduddanner. Indholdet i undervisningen er baseret på: Hvem er de unge? Hvordan skaber man motivation? Hvilke faktorer er gældende i forhold til at lære noget? Hvad er rollen som meduddanner og hvordan gives konstruktiv feedback?

Perspektiver

At uddannelsessøgende møder et læringsmiljø hvor alle bidrager til deres læring. Kursusdeltagerne kvalificerer sig til at stille sig åbne og nysgerrige og understøtte læring med øje for den enkeltes læringsforudsætninger og mål. Der er perspektiver i diskursanalyser med udgangspunkt i f.eks.: *Hvordan taler studerende og medarbejdere om at lære noget? Hvordan lærer man bedst?* Basiskurset følges op med evalueringer i Forms.

UDDANNELSE SOM KERNEOPGAVE

- kursus i læring for basispersonale

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Alle situationer er potentielle læringsituationer - men det er ikke i alle situationer at der sker læring

BAGGRUND

Den nye uddannelsesstrategi på Regionshospital Nordjylland fremhæver, at uddannelse er en kerneydelse. Uddannelse og kompetenceudvikling er ligeledes fremtrædende i de 14 politiske pejlemærker i Region Nordjylland.

Regionshospital Nordjylland er et stort uddannelsessted, hvor der hvert år er flere hundrede uddannelsessøgende i klinik. Det betyder, at størstedelen af det faste personale i perioder indgår som meduddanner. Statusmøder med afdelingerne viser, et ønske om at delagtiggøre kollegaerne mere i uddannelsesopgaven og der ses et behov for kompetenceudvikling.

Projektets formål er at øge meduddannerenes kompetencer i at tilrettelægge læringsituationer i praksis i forhold til uddannelsessøgende med forskellige læringsforudsætninger. Nyeste forskning fra CEFU viser, at flere unge under uddannelse lever med funktionsnedsættelser eller sårbarhed. I et læringsperspektiv fordrer dette en anderledes tilgang til læring.

METODE

Projektet er et kvalitativt udviklingsprojekt. Der er udviklet et 2-timers basiskursus i læring med udgangspunkt i pædagogiske principper ud fra Knud Illeris samt Hiim og Hippe.

Målgruppen er: tværfagligt sundhedspersonale med funktion som meduddanner. Indholdet i undervisningen er baseret på:

Hvem er de unge? Hvordan skaber man motivation? Hvilke faktorer er gældende i forhold til at lære noget? Hvad er rollen som meduddanner og hvordan gives konstruktiv feedback?

PERSPEKTIVER

At uddannelsessøgende møder et læringsmiljø, hvor alle bidrager til deres læring. Kursusdeltagerne kvalificerer sig til at stille sig åbne og nysgerrige og understøtte læring med øje for den enkeltes læringsforudsætninger og mål.

Der er perspektiver i diskursanalyser med udgangspunkt i f.eks.: Hvordan taler studerende og medarbejdere om at lære noget? Hvordan lærer man bedst? Basiskurset følges op med evalueringer i Forms.

Stability vs. rotation: investigating medical students' well-being and identity in clinical training

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

Background

Medical students experience high levels of stress, burnout and reduced well-being, partly due to frequent departmental transitions during clinical training. To address this, Aalborg University is piloting a surgical semester where students are continuously placed in one department (Hjoerring) compared to rotating between three departments (Aalborg). This study aimed to explore students' well-being, self-esteem, professional identity and exam results in relation to clinical placement structure.

Methods

This mixed-method study compares data from questionnaires (MCPIS-9, WEMWBS, RSES), individual interviews and exam results from students at the surgical semester in Aalborg and Hjoerring, gathered sequentially from autumn 2024 to autumn 2025. Individual interviews, including pilot testing, are planned for October 2025. Data will be analyzed using descriptive statistics and thematic analysis.

Results

To date, 73 students have completed the questionnaires (21 Hjoerring, 52 Aalborg). Overall questionnaire scores showed no significant difference between locations. Regarding professional identity, 33% of students in Hjoerring and 56% in Aalborg reported not feeling part of the medical profession ($p=0.083$). Students in Hjoerring felt significantly more useful in the clinic ($p=0.002$). Overall well-being scores were low across both groups, especially regarding feeling loved and relaxed.

Conclusions

Preliminary findings suggest that continuous placement may enhance students' sense of professional identity and perceived usefulness. However, well-being remains low overall. Further data from interviews and exam results will provide deeper insight into how clinical structure impacts student experience. These findings may inform future strategies to support medical students' well-being and professional development.

Stability vs. Rotation:

Investigating Medical Students' Well-Being and Identity in Clinical Training

Pam Huntjens^{1,2}, Anja Kirstein², Jette Kolding Kristensen¹, Louise Arenholt^{1,2}

1) Department of Clinical Medicine, Aalborg University, Aalborg, Denmark 2) Centre for Clinical Research, North Denmark Regional Hospital, Hjoerring, Denmark

BACKGROUND

Medical students experience high levels of stress, burnout and reduced well-being, partly due to frequent departmental transitions during clinical training. To address this, Aalborg University is piloting a surgical semester where students are continuously placed in one department (Hjoerring) compared to rotating between three departments (Aalborg).

This study aims to explore students' well-being, self-esteem, professional identity and exam results in relation to clinical placement structure

METHODS

This Mixed-Method study gathers data in the period of autumn 2024 - spring 2026 from questionnaires, individual semi-structured interviews and exam results



Did you know that students in Hjoerring feel more useful in the clinic than students in Aalborg?

PRELIMINARY RESULTS

73 students included; 21 from Hjoerring and 52 from Aalborg

Overall questionnaire scores showed no significant difference between locations

48% of the students in Hjoerring feel like a part of the medical profession in comparison to 19% of the students in Aalborg



PERSPECTIVES

Preliminary findings suggest that continuous placement may enhance students' sense of professional identity and perceived usefulness.

Further data from interviews and exam results will provide deeper insight into how clinical structure impacts student experience and may support future strategies to support medical students' well-being



Caring to stay – insights into nurses' well-being, motivation and workforce sustainability

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Background

The shortage of nurses has been recognized as a global problem that affects the quality, cost, and efficiency of healthcare systems. The reasons for shortages of nurses are multifaceted and might be related to nurses not wanting to work under the present conditions. Thus, improvement of working conditions will be an investment in nurse staffing, which will attract new nurses and decrease turnover. Concurrently, a growing number of nurses have intentions to leave the profession. Therefore, retaining nurses is urgent.

Methods

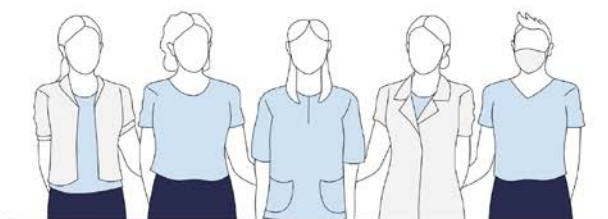
The study aims to identify psychosocial factors in the work environment that influence nurses' well-being and motivation to stay in the profession. The study applies a convergent mixed methods design. A survey based on the validated questionnaire "Copenhagen Psychosocial Questionnaire II" (COPSOQ II) will be used for data collection. All nurses (n=4000) in the North Denmark Region will be invited to participate in the survey. Qualitative data will be collected through individual semi-structured interviews with a subsample of nurses (n=25) who participated in the survey. Self-determination theory (SDT) will be used as the theoretical framework.

Perspectives

The study will provide new knowledge about the conditions that support or undermine nurses' well-being and motivation to stay and thereby inform management strategies to increase retention of nurses and thereby improve workforce sustainability within nursing care.

Caring to STAY

Insights into nurses' well-being, motivation, and workforce sustainability



BACKGROUND

The shortage of nurses has been recognized as a global problem that affects the quality, cost, and efficiency of healthcare systems. The reasons for shortages of nurses are multifaceted and might be related to nurses not wanting to work under the present conditions. Thus, improvement of working conditions will be an investment in nurse staffing, which will attract new nurses and decrease turnover. Concurrently, a growing number of nurses have intentions to leave the profession. Therefore, retaining nurses is urgent.

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STUDY 1

Quantitative data.
Survey: COPSQ II
To examine factors influencing
nurses' well-being
(N=4000).



STUDY 2

Qualitative data.
Interview with a sub-sample
of nurses from study 1.
Exploring factors motivating nurses to
stay or consider leaving the profession
(N= 25).



MIXED METHODS INTEGRATION

1 + 1 = 3
Findings from the studies will be
integrated to inform targeted solutions
to retain nurses in the profession.



AIM

The study aims to identify psychosocial factors in the work environment that influence nurses' well-being and motivation to stay in the profession. In addition, the study will examine whether generational differences affect both nurses' attachment to and attraction toward the profession.

METHODS

The study applies a mixed methods design. A survey based on the validated questionnaire "Copenhagen Psychosocial Questionnaire II" (COPSQ II) will be used for data collection. All nurses (n=4000) in the North Denmark Region will be invited to participate in the survey. Qualitative data will be collected through individual semi-structured interviews with a subsample of nurses (n=25) who participated in the survey. Self-determination theory (SDT) will be used as the theoretical framework.

PERSPECTIVES

The study will provide new knowledge about the conditions that support or undermine nurses' well-being and motivation to stay and thereby inform management strategies to increase retention of nurses and thereby improve workforce sustainability within nursing care.

CONTACT

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Well-being, mental health, and work contentment among junior doctors in abdominal surgical departments in Denmark

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2. Department of Geriatrics, Aalborg University Hospital, Aalborg, Denmark

3. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

In recent years, the mental health and well-being of junior doctors (JD) in Denmark have gained increased attention. Particularly in surgical specialties, concerns around stress, burnout, and work environment have been documented. A survey by *Yngre Læger* found that 60% of doctors in surgical fields experienced work-related stress. This study aimed to assess the well-being, mental health, and job satisfaction of JD in abdominal surgery (AS) across Denmark.

Methods

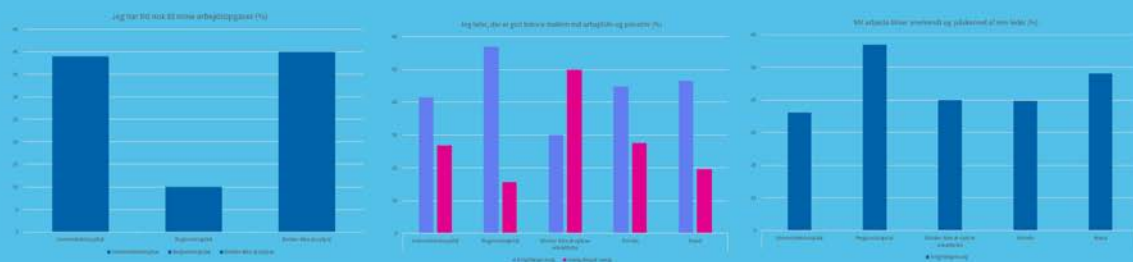
A nationwide electronic survey was distributed to JD in AS, focusing on stress, work-life balance, institutional support, job satisfaction, and perceived discrimination. To date, 137 out of an estimated 430 JD have responded.

Results

Preliminary results indicate that 63.1% report a high-paced work environment and 56.9% feel the workload is heavy. Burnout is reported by 37.6% and stress by 29.7%. Additionally, 11.6% report experiencing differential treatment, and 29.2% feel a mismatch between workload and available time. These challenges are most common among women, part-time staff, those returning from sick leave, and international JD. Despite these concerns, 76.7% express overall job satisfaction, and 47.1% would recommend the position to others.

Conclusions

In conclusion, while JD in AS generally report positive well-being and job satisfaction, targeted support may be beneficial for certain subgroups.



Yngre kirurgers trivsel, mentale sundhed og jobtilfredshed på abdominalkirurgiske afdelinger i Danmark

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Baggrund

De seneste år er der kommet øget fokus på mentale sundhed og trivsel i Danmark. Især indenfor kirurgiske specialer er der dokumenteret bekymringer om stress, udbændthed og dårligt arbejdsmiljø i international litteratur. En undersøgelse fra Yngre Læger viste, at 60% af lægerne indenfor de skærende specialer oplevede arbejdsmæssig stress. Denne undersøgelse havde til formål at vurdere trivsel, mental sundhed og jobtilfredshed nationalt blandt yngre kirurger i abdominalkirurgi.

Metode

Et elektronisk spørgeskema med fokus på stress, work-life balance, institutionel støtte, arbejdsglæde og oplevet diskrimination blev sendt ud til alle yngre kirurger ansat på abdominalkirurgiske afdelinger i hele landet. Det blev sendt ud via TR-systemet. 145 ud af estimerede 430 har svaret.

Resultater

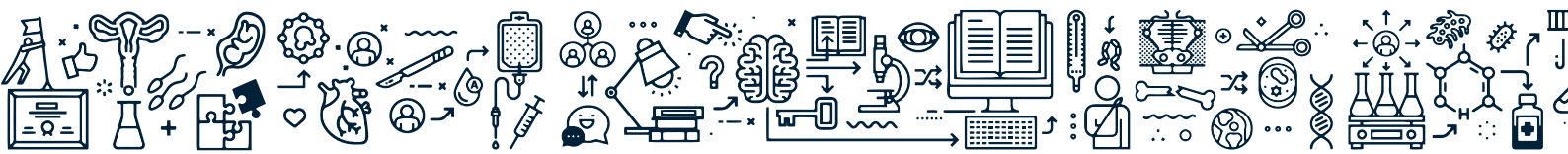
57,6% af de adspurgte var ansat på et universitetshospital, 34,4% på et regionshospitalet og 10% ønskede ikke at oplyse dette. 61,1% var kvinder og 38,9% etnisk danske. Undersøgelsen viste, at 64,1% oplever et højt tempo men kun 29,8% har ikke tid nok til deres opgaver. 38,3% føler sig ofte følelsesmæssigt udmattende, og 31% føler sig stresset. Derudover rapporterede 11,8% om forskelsbehandling – mest udbredte blandt kvinder, deltidsansatte, dem der vendte tilbage efter sygefravær samt kirurger med anden etnisk baggrund end dansk. 7,6% føler sig diskrimineret på baggrund af køn. På trods af disse bekymringer er 75,7% alt taget i betragtning tilfredse med deres arbejdsplads, og 46,9% vil anbefale stillingen til andre. 45,9% oplever god balance mellem arbejde og privatliv. Dog angiver 15,3% ikke at ville være speciallæge igen, hvis de skulle vælge i dag.

Konklusion

Sammenfattende viser undersøgelsen, at yngre kirurger i Danmark generelt oplever højt arbejdstempo, men tilfredshed med jobbet. Dog angiver 38,8% udmattelse og 31% stress. Særligt ser det ud til at gælde på universitetshospitaler. Til trods for stor tilfredshed alt taget betragtning, er det bemærkelsesværdigt at 15,3% ikke ville vælge kirurgi igen. Flere besvarelser ville kunne skabe et tydeligt billede, og give større styrke til sammenligninger. Men den umiddelbare vurdering er, at yngre kirurger i Danmark er glade for deres arbejde.



Øvrige



BCI-PRIME: priming motor learning with an associative brain computer interface – perspectives for neuro-rehabilitation

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Background

Motor rehabilitation after stroke aims to restore function by promoting neuroplasticity. Associative brain-computer interface (aBCI) interventions, which pair cortical activity with peripheral nerve stimulation (PNS) during movement attempts, may enhance motor learning and increase corticospinal excitability. This study investigated the priming effects of aBCI on motor learning in healthy individuals to inform future neurorehabilitation strategies.

Methods

Twenty-eight healthy participants were randomized to an aBCI intervention or sham group. The intervention group received 30 pairings of PNS at motor threshold, timed to coincide with peak negativity of the movement-related cortical potential (MRCP) during wrist extension. The sham group received subthreshold PNS. Motor learning was assessed using a visuomotor accuracy tracking (VAT) task at baseline, post-training, and during a 30-minute retention test. Corticospinal excitability was measured via transcranial magnetic stimulation (TMS)-induced motor evoked potentials (MEPs) before and after the aBCI and VAT sessions.

Results

Both groups improved VAT performance, but the aBCI group showed significantly greater improvement ($p = 0.02$). MEP amplitudes increased significantly in the aBCI group following intervention and motor training ($p < 0.001$), indicating enhanced corticospinal excitability. The sham group showed an increase in MEPs only after VAT training ($p < 0.01$).

Conclusions

aBCI priming enhanced motor learning and corticospinal excitability in healthy participants. These findings support the potential of BCI-PRIME as a neurorehabilitation tool. Future studies in sub-acute stroke patients will evaluate its clinical efficacy in single-session priming and repeated priming across a four-week rehabilitation program.

BCI-PRIME:

Priming motor learning with an associative brain computer interface



CNR

Center for Neurotechnology
and Rehabilitation

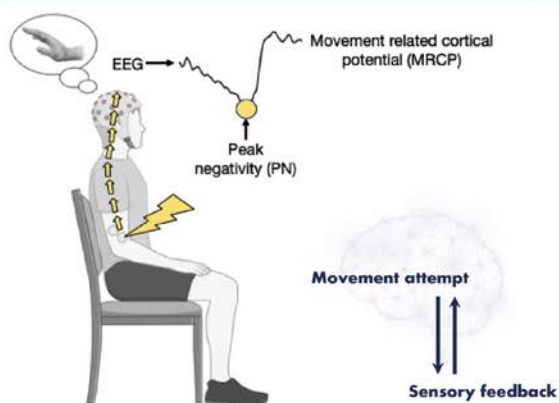
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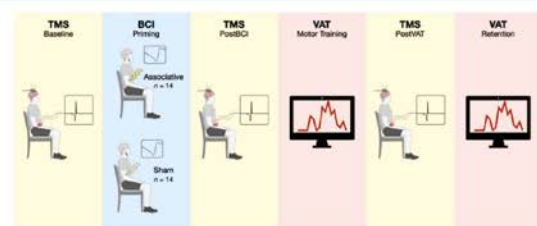
³Department of Neurology, Aalborg University Hospital, Denmark

Associative Brain Computer Interface

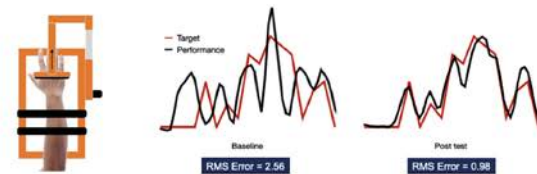


Associative brain-computer interface (aBCI) interventions, which pair cortical activity with peripheral nerve stimulation during movement attempts, may enhance motor learning and increase corticospinal excitability. This study investigated the priming effects of aBCI on motor learning in healthy individuals to inform future neurorehabilitation strategies.

Study Design

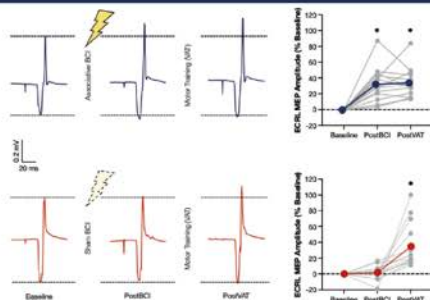


Motor Learning Task



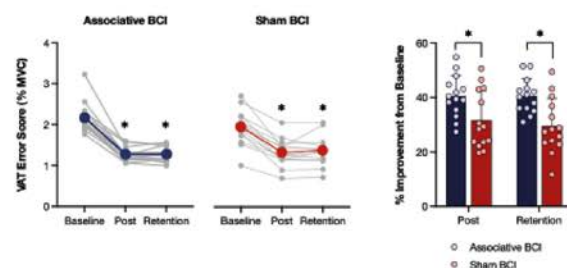
Visuomotor accuracy tracking (VAT) task using isometric wrist extension.

aBCI Enhanced Corticospinal Excitability



Transcranial magnetic stimulation (TMS)-elicited motor evoked potential (MEP) amplitudes increased significantly in the aBCI group following the intervention and motor training ($p < 0.001$), indicating enhanced corticospinal excitability. The sham group showed an increase in MEPs only after VAT training ($p < 0.01$).

aBCI Improved Motor Learning



Performance on the VAT improved for both groups ($p < 0.001$) but improved significantly more in the aBCI group than the sham BCI group ($p = 0.02$).

Conclusions

aBCI priming enhanced motor learning and corticospinal excitability in healthy participants. These findings support the potential of BCI-PRIME as a neurorehabilitation tool. Future studies in sub-acute stroke patients will evaluate its clinical efficacy in single-session priming and repeated priming across a four-week rehabilitation program.

Disease pattern in Danish patients with neurofibromatosis type 2-related schwannomatosis

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**Deltager i Kursus i Klinisk Forskning og Udvikling, Regionshospital Nordjylland, 2025*

Background

Neurofibromatosis Type 2 (NF2)-related schwannomatosis (SWNV, OMIM 101000) is an autosomal dominant genetic disease characterized by the development of multiple tumors of the central and peripheral nervous system, particularly affecting both vestibulocochlear nerves, but also the spinal cord and meninges. The pathogenic variant in the *NF2* gene can be inherited from a parent or arise de novo. Regardless of origin, there is a 50% risk that a child of a person with an *NF2* variant will inherit it. A challenge arises when patients meet the clinical criteria for *NF2*-related schwannomatosis, but a causal pathogenic variant has not been detected. This complicates patient counseling. With this project, we aim to map disease patterns in patients with *NF2*-related schwannomatosis in Denmark. The focus will be on whether there are differences in the disease characteristics between patients with and without a detected causal genetic variant.

Methods

This study will involve the retrospective collection of clinical and genetic data from medical records of individuals with schwannomatosis in Denmark. Statistical analyses will be used to describe and compare disease characteristics in the enrolled patients. Descriptive statistics will be applied to summarize demographic, clinical, and genetic data. To explore potential differences between patients with and without a confirmed genetic variant, comparative analyses will be conducted using appropriate statistical tests.

Perspectives

The results of the project will contribute to a deeper understanding of the natural history of the disease, which will greatly benefit clinicians in determining treatment strategies and follow-up care for patients.

More nuanced counseling and personalized treatment strategies

Tracing the disease landscape of *NF2*-related schwannomatosis

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BACKGROUND

Neurofibromatosis Type 2 (*NF2*)-related schwannomatosis is an autosomal dominant genetic disease characterized by the development of multiple tumors of the central and peripheral nervous system, particularly affecting both vestibulocochlear nerves, but also the spinal cord and meninges. The disease-causing gene variant can either be inherited from a parent or arise *de novo*. Regardless of origin, there is a 50% risk that a child of a person with an *NF2* gene variant will inherit it.

A diagnostic challenge arises when patients meet the clinical criteria for *NF2*-related schwannomatosis, but a causal pathogenic variant has not been detected in the genetic analyses that have been

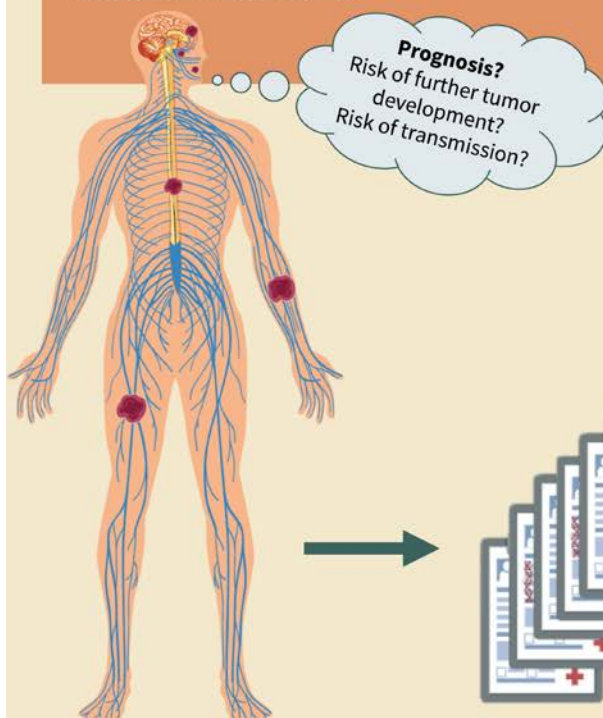
performed. This complicates counseling—both in relation to determining the appropriate treatment strategy for the individual patient and in providing guidance to first-degree relatives.

With this project, we aim to map disease patterns in patients with *NF2*-related schwannomatosis in Denmark to contribute to a deeper understanding of the natural history of the disease. The focus will be on whether there are differences in the disease characteristics and inheritance between patients with and without a detected genetic variant.

METHODS

This study will involve the retrospective collection of clinical and genetic data from medical records of individuals diagnosed with *NF2*-related schwannomatosis in Denmark.

Statistical analyses will be used to describe and compare disease characteristics in the enrolled patients. To explore potential differences between patients with and without a confirmed genetic variant, comparative analyses will be conducted using appropriate statistical tests depending on data distribution and variable type.



PERSPECTIVES

We hypothesize that patients without a detected causal pathogenic variant have a milder disease course. If this hypothesis proves correct, the results will enable us to provide more nuanced counseling, personalized treatment strategies, and screening programs for their relatives.

Investigating the temporal stability of gut microbiota-derived extracellular vesicle release in healthy adults

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Background

Gut microbiota-derived extracellular vesicles (GM-EVs) play an important role in microbiome-host communication in health and disease. Studies investigating GM-EVs from clinical samples, often rely on a single time point collection. The gut microbiota (GM) is known to be stable over time, it has, however, not been investigated if GM-EV secretion is likewise stable. More knowledge on temporal fluctuations in GM-EV secretion is therefore warranted.

Methods

Fecal samples were collected from five donors once a week over five weeks. GM-EVs were isolated by size exclusion chromatography, and characterized by particle number, size, and gram-positive to gram-negative EV ratio. Additionally, we investigated the bacterial origin of GM-EVs by 16S rRNA gene sequencing. The analysis of bacterial protein cargo of GM-EVs will be performed by mass spectrometry to assess for any changes in functional capacity.

Results

16S sequencing data revealed a clear distinction between GM and GM-EV composition for all five donors. This includes a higher alpha-diversity within the GM compared to the GM-EVs. As for beta-diversity, GM-EV samples formed a cluster separate from the GM. Notably, samples from the same donor clustered together within the GM-EV group. Temporal fluctuations were smaller than inter-donor differences, suggesting a stable GM-EV composition over time.

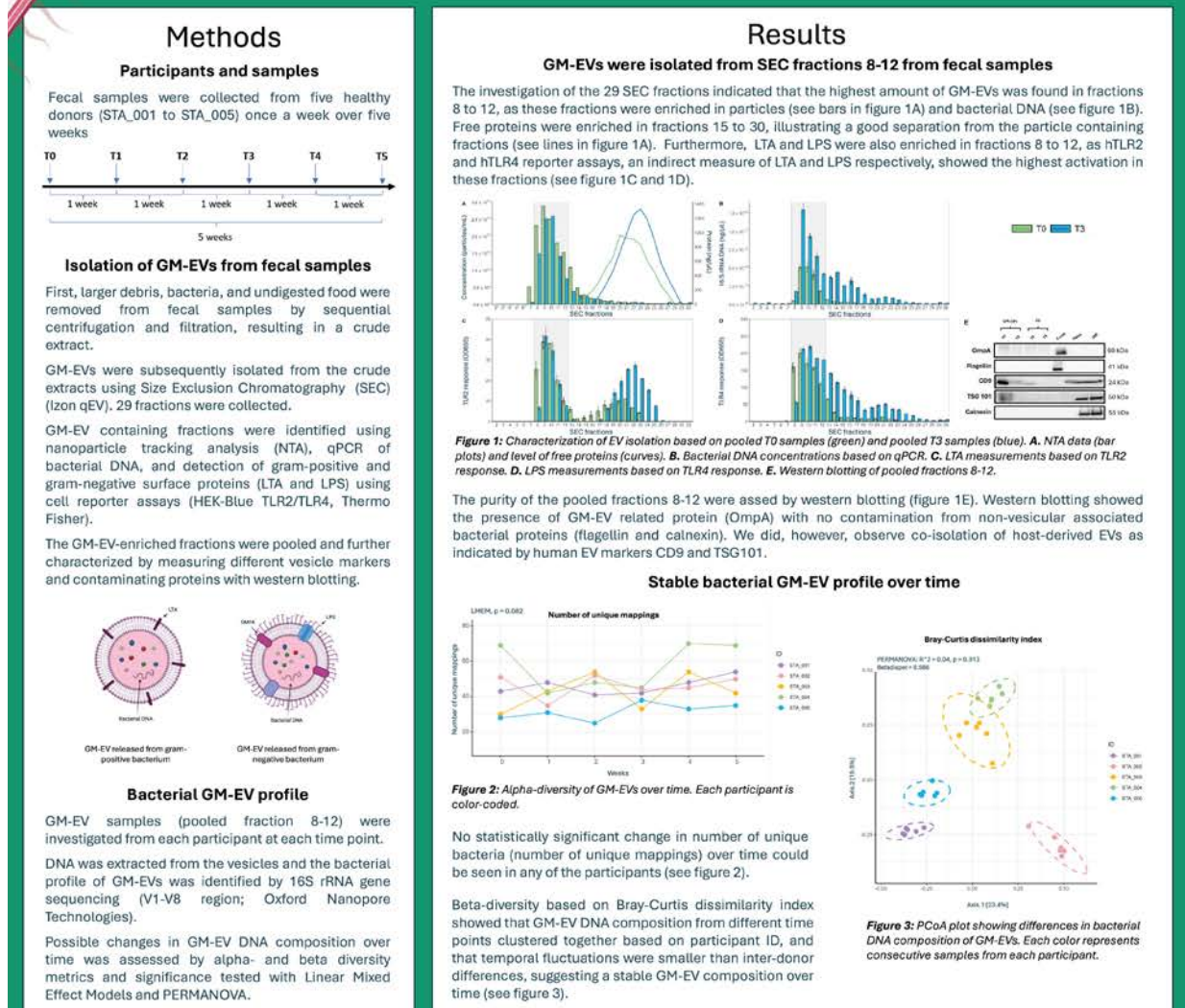
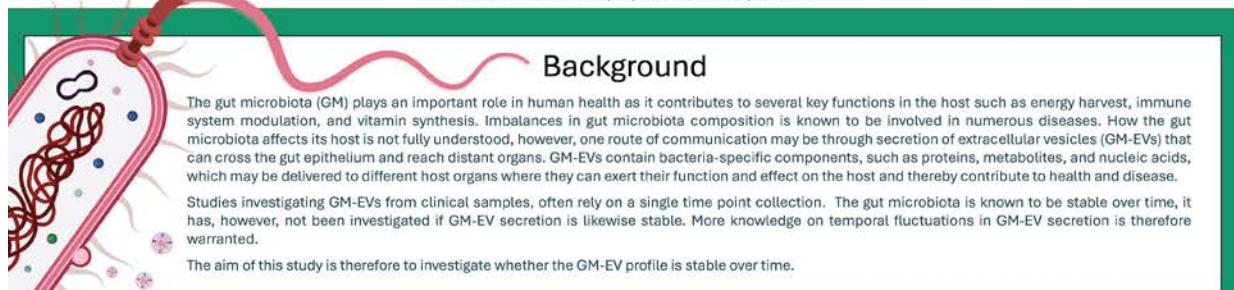
Conclusions

The GM-EV composition is stable over time, justifying single time point collections in GM-EV studies.

Investigating the temporal stability of gut microbiota-derived extracellular vesicle release in healthy adults

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Conclusion

In conclusion, this longitudinal study showed that GM-EV diversity appears to be stable over time, for healthy adults, justifying single time point collections and investigation in GM-EV studies. Further research is necessary to assess whether the same is the case for different patient groups or under various conditions (e.g. use of medication, dietary changes, etc.).

Udfasning af urinstix på Regionshospital Nordjylland

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Baggrund

Regionshospital Nordjylland (RHN) arbejder kontinuerligt med at forbedre patientforløb og patientsikkerhed. I forlængelse af „Vælg Klogt“-anbefalinger om korrekt diagnosticering af urinvejsinfektioner (UVI) og begrænsning af antibiotikaforbrug, initierede RHN en intervention for at reducere overdiagnosticering og overforbrug. Traditionel diagnostik med urinstix fører ofte til falsk-positive resultater. Formålet var at optimere diagnostisk praksis og antibiotikaordinering ved mistanke om UVI på RHN, for at forbedre patientsikkerheden, effektivisere behandlingen og forebygge antibiotikaresistens.

Metoder

Den kliniske regionale retningslinje for UVI blev revideret baseret på nyeste evidens og implementeret med undervisning, action cards og fjernelse af urinstix-kits fra relevante afdelinger (stadig tilgængelige via klinisk biokemisk afdeling). Effekten blev evalueret ved at analysere data for urinstix-forbrug, antallet af urinprøver til dyrkning og resistensbestemmelse (D+R), samt antallet af udskrevne recepter på pivmecillinam (januar 2024 – juni 2025).

Resultater

Data præsenteret på ESCMID-konferencen i Wien i 2025 viste et signifikant fald i forbruget af urinstix-tests (fra 582 til 33 per måned, en reduktion på 94%), hvilket estimeres til at spare 2500 timer årligt. Antallet af urinprøver til dyrkning faldt med 31% (fra 650 til 450 per måned), og antallet af udskrevne recepter på pivmecillinam faldt med 19,5% (fra 477 til 384 per måned). Yderligere data fra juni 2024 til juni 2025 er under analyse og vil blive præsenteret på poster.

Konklusioner

Implementeringen af denne intervention demonstrerer en succesfuld optimering af diagnostisk praksis og antibiotikaordinering ved UVI, hvilket understøtter „Vælg Klogt“-anbefalingen. RHN forventer fortsat forbedringer i patientbehandlingen, frigivet tid til sundhedspersonalet og et bidrag til at forebygge antibiotikaresistens.

Udfasning af urinstix på Regionshospital Nordjylland

C. Holm ^{1,2}, S.A. Shakar ^{1,2}, J. Hjorthede Christoffersen ^{1,2}, V. Pedersen ^{1,2}

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2. Kvalitet, Patientsikkerhed og Arbejdsmiljø, Regionshospital Nordjylland, Hjørring, Danmark

Baggrund

Regionshospital Nordjylland (RHN) har kontinuerlig fokus på at optimere patientforløb, patientsikkerhed og kvaliteten af behandling, pleje og rehabilitering i overensstemmelse med nationale mål og strategier. I forlængelse heraf adresserer implementering af "Vælg Klogt"-anbefalingerne behovet for præcis diagnosticering af urinvejsinfektioner (UVI) med henblik på at minimere unødvendige undersøgelser, behandling og dermed begrænse antibiotikaforbruget. Den traditionelle diagnostiske metode baseret på urinstix er kendt for at generere falsk-positive resultater. Som følge heraf iværksatte RHN primo 2024 en intervention med henblik på udfasning af urinstix for diagnostik af UVI.

Formål

Formålet var at optimere UVI diagnostik, reducere overdiagnostisering og antibiotikaforbrug for at understøtte forebyggelse af antibiotikaresistens, samt frigøre personaleressourcer til andre kerneopgaver.

Metode

Regional gruppe der arbejder med UVI reviderede klinisk retningslinje for diagnostik og behandling af UVI efter nyeste evidens. Aktioncards blev udarbejdet og implementeret samtidig med, at urinstix test blev fjernet fra relevante afdelinger. Urinstix kan fortsat rekvireres af afdelingerne, når de er lægeordineret via Klinisk biokemisk Afdeling (KBA) og ved anden indication end mistanke om UVI. For at evaluere interventionens effekt, blev data indsamlet før, under og efter: Analyse af urinstix ved KBA, antal af urinprøver indsendt til klinisk mikrobiologisk afdeling (KMA) for dyrkning og resistens (D+R), gennemsnitlig antal ordinationer af pivmecillinam samt estimeret tidsforbrug for sundhedspersonalet ved udførelse og analyse af urinstix test.

Resultat

6 måneder efter intervention er resultaterne præsenteret som poster [her](#) på ESCMID GLOBAL i Wien. Efter et år er det gennemsnitlige månedlige forbrug faldet yderligere fra 639 stk. til 81 stk., svarende til en reduktion på 87% [Figur 1](#). Denne ændring estimeres til at frigøre 2.500 timer årligt, hvilket svarer til 1,3 årsværk. Interventionen resulterede ligeledes i en reduktion på 23% i antallet af urinprøver sendt til D+R (fra 661 stk./mdr. til 506 stk./mdr. [Figur 2](#)). Endvidere observeredes et fald i udskrivningen af Pivmecillinam-recepter på 19% (fra 79 stk./mdr. til 64 stk./mdr. [Figur 3](#)).

Konklusion

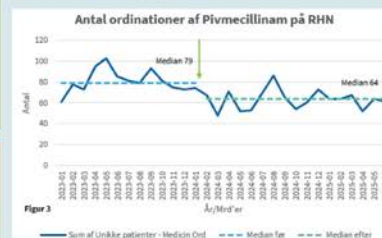
Interventionen viser lovende resultater i forhold til at optimere diagnostik og antibiotikakoordination for UVI på RHN. Dette understøtter bestræbelserne på at minimere udviklingen af antibiotikaresistens både på et nationalt og globalt plan. Det vil fortsat være nødvendigt at følge interventionen for at sikre, vi opretholder den positive udvikling og identificerer eventuelle justeringer.



Figur 1



Figur 2



Figur 3



Involverede

Sørensen Azu Klinisk Farmakologisk Enhed Aalborg Universitetshospital, Aalborg, Danmark - Hjælp med dataindsamling
Sørensen Maj Sørensen Infektionsmedicinsk afdeling Aalborg Universitetshospital, Aalborg, Danmark - Redigering af regional retningslinje
Jette Broemmann Kornum Klinisk Mikrobiologisk afdeling Aalborg Universitetshospital, Aalborg, Danmark
Trine Langkilde Hagen Medicinsk Afdeling Aalborg Universitetshospital, Aalborg, Danmark
Nina Aak Klinisk Mikrobiologisk Afdeling Aalborg Universitetshospital, Aalborg, Danmark - Opdatering af regional retningslinje Antibiotikabehandling

Influence of collection time on urinary bacterial profiles

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2. Department of Biomedical Laboratory Science, University College of Northern Denmark, Hjoerring, Denmark

3. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

Several studies have shown that healthy individuals harbor bacteria in their urine. The bacterial composition in urine is typically investigated by sequencing bacterial DNA. However, the bacterial DNA content in urine is generally low, which can be a limitation in studies. Since urine concentration varies throughout the day, it is possible that the amount of bacterial DNA also varies. However, little is known about whether the timing of urine collection affects these measurements. This study therefore investigates potential differences in bacterial DNA concentrations between morning and evening urine.

Methods

Urine were collected from five anonymous participants. Each participant collected a mid-stream urine sample in the morning and in the evening. Urine samples were analyzed using Qubit fluorometry for quantification of DNA concentrations, and 16S rRNA qPCR for bacterial DNA detection. ELISA based measurements of urinary creatinine were performed to investigate if the bacterial DNA concentration was associated with urine concentration.

Results

Preliminary results indicate that overall DNA concentrations differ between morning and evening urine. At the same time, urine concentration, as indicated by creatinine content, also differs. The DNA/creatinine content, however, remains relatively stable, indicating that differences are mainly due to urine concentration.

Conclusions

This study may improve understanding of pre-analytical variation in urine analyses and the impact of collection time. Preliminary results include measurements of bacterial DNA levels in morning and evening urine, normalized for creatinine content, as well as assessments of urine purity. These results will be presented in detail at the final poster.

Bacterial DNA in the urine is released at an equal rate in the morning and evening

Kristina Lidia Bang Petersen^{1,2} • Nadia Ammitzbøll¹ • Anne Sofie Vedsted¹ • Ann-Maria Jensen¹ • Suzette Sørensen^{1,3} • Louise, Søndergaard Rold¹ • Caspar Bundgaard-Nielsen¹

1. Centre for Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark
2. Department of biomedical laboratory science University College of Northern Denmark, Hjørring, Denmark
3. Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Background

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Little is known about whether the timing of urine collection affect these measurements. This study therefore investigates potential differences in bacterial DNA concentrations between morning and evening urine.

Method

Urine were collected from five anonymous participants. Each participant collected a mid-stream urine sample from first morning urine and from urine in the evening. Urine samples were analyzed using 16S rRNA qPCR for bacterial DNA detection.

To compare bacterial DNA concentrations with how concentrated the urine was, ELISA was used to measure urine creatinine. Creatinine is continuously released into the urine and thus serve as an indicator of urine concentration.

Results

Quantification of bacterial DNA revealed generally low concentrations across most participants. Within each participant, the bacterial DNA concentration varied. However, no overall consistent pattern could be seen in which sample had the highest concentration. A paired t-test supported these observations, showing no statistically significant difference between the two collection times with $p = 0.536$.

Since urine concentration varies between first morning urine and evening urine, we next normalized bacterial urine concentration to the urine creatinine concentration. Again, despite individual variation, no consistent difference in bacterial DNA was observed between morning and evening samples ($p = 0.954$).

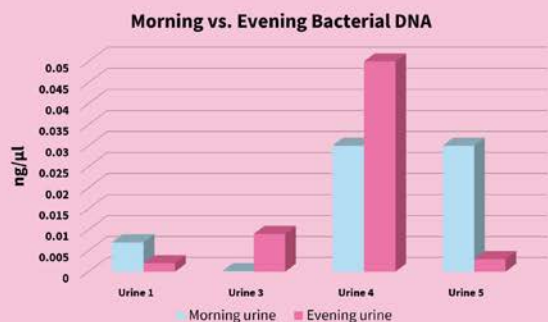


Figure 1. Bar graph showing total bacterial DNA concentrations measured in paired first morning urine and evening urine samples. Urine from participant 2 was removed due to technical issues.

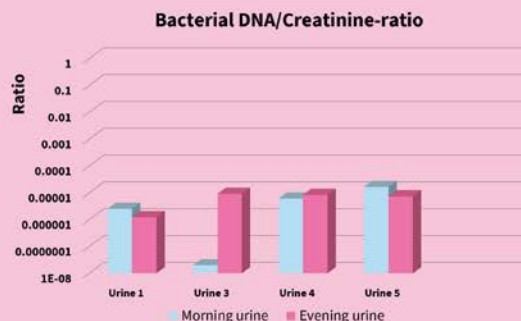


Figure 2. Bacterial DNA/creatinine ratios in morning and evening urine samples from five participants. No systematic differences were observed between collection times, suggesting that sampling time has limited impact on bacterial DNA when normalized to creatinine. Urine from participant 2 was removed due to technical issues.

Conclusion

No significant differences were observed in bacterial DNA concentrations or DNA/creatinine ratios between first morning urine and evening urine samples. These results suggest that the time of urine collection does not substantially affect bacterial DNA quantification when normalized to creatinine, although interindividual variation may still occur.

Further research with larger cohorts is needed before clinical standardization.

Interdisciplinary collaboration between occupational therapists and dietitians in dysphagia care: unified development of food and drink consistency brochures and nutritional drink guidance

Pia Simonsen Lentz¹, Camilla Støvring², Pernille Lynge Holler², Anne Nørtoft Norup¹, Kivie Kirstine Jespersen¹

1. Department of Physiotherapy and Occupational Therapy, North Denmark Regional Hospital, Hjoerring, Denmark
2. Dietetics Unit, North Denmark Regional Hospital, Hjoerring, Denmark

Background

When occupational therapists and dietitians assess and treat patients with dysphagia, adjustments to food and drink consistencies are often required as compensatory treatment. Previously, occupational therapists and dietitians at the North Denmark Regional Hospital, Hjoerring have guided patients using discipline-specific consistency brochures and guidance, which led to inconsistent and sometimes contradictory recommendations regarding consistency types and posing risks to patient safety. To address this, the aim was to strengthen interdisciplinary collaboration between occupational therapists and dietitians to ensure safe, effective, and nutritionally adequate intake through unified guidance on food and drink consistencies.

Methods

We reviewed existing national recommendations on dysphagia diets and fluid viscosity. Guidelines from the Danish Health Authority and the National Dietary Handbook were used to qualify and develop new interdisciplinary guidance and harmonize consistency materials. Nutritional drinks used in the department were tested for viscosity to determine their consistency levels.

Perspectives

Joint interdisciplinary brochures describing soft-, gratin-, and creamy consistencies were developed and are now used by both occupational therapists and dietitians across all departments for patients with dysphagia. A consistency-level chart for nutritional drinks was created and made visible in all departments. New consistency overviews for both food and fluids were developed based on national recommendations and are now being tested by occupational therapists and dietitians across all hospital units, aiming for clinical implementation. The collaboration has led to the establishment of an interdisciplinary dysphagia network consisting of occupational therapists, dietitians, and a food consultant across all sites of North Denmark Regional Hospital.



Interdisciplinary Collaboration Between Occupational Therapists and Dietitians in Dysphagia Care:

Unified Development of Food and Drink Consistency Brochures and Nutritional Drink Guidance

Pia Simonsen Lentz¹, Camilla Støvring², Pernille Lynge holler², Anne Nørtoft Norup³, Kivie Kirstine Jespersen³

1. MScPH, Clinical Instructor and Occupational Therapist, Department of Physiotherapy and Occupational Therapy, North Denmark Regional Hospital, Hjoerring, Denmark

2. Clinical Dietitian, Dietetics Unit, North Denmark Regional Hospital, Hjoerring, Denmark

3. Occupational Therapist, Department of Physiotherapy and Occupational Therapy, North Denmark Regional Hospital, Hjoerring, Denmark

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Patienters oplevelse af samtalekort i ambulant kontrol for hidrosadenitis suppurativa (HS)

Stine Warming Vangsø^{1*}, Sofie Kold^{1*}, Mona Kyndi Pedersen^{2,3}, Helle Enggard⁴

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**Deltager i Kursus i Klinisk Forskning og Udvikling, Regionshospital Nordjylland, 2025*

Baggrund

Hidrosadenitis suppurativa (HS) er en kronisk hudsygdom med tilbagevendende, smertefulde bylder i hudfolder som armhuler, lyske og under brysterne. Sygdommen påvirker livskvaliteten og kræver en personcentreret tilgang, så behandlingen målrettes den enkeltes udfordringer og problemer med HS. Det forudsætter aktiv patientinddragelse, men der findes endnu ingen evidensbaserede metoder til dette. Herlev-Gentofte Hospital har udviklet samtalekort til at støtte patientinddragelse i ambulant behandling. Afdeling for Hud- og Kønssygdomme på Aalborg Universitetshospital har fået tilladelse til at afprøve disse samtalekort i sygeplejeledede HS-konsultationer. Formålet er derfor at undersøge, hvordan samtalekort anvendes og opleves af patienter med HS i sygeplejeledede konsultationer.

Metoder

Samtalekortene består af ni kort med overskrift og billede. Patienten vælger relevante kort, og gennem samtale identificerer patient og sygeplejerske i fællesskab problemstillinger og mulige løsninger. Undersøgelsen inkluderer patienter over 18 år med HS, som har deltaget i mindst én konsultation med samtalekort. Patienter ekskluderes, hvis de ikke taler dansk, modtager telefonisk konsultation eller ikke kan afgive informeret samtykke grundet svær psykisk sygdom.

For patienter, der har givet informeret samtykke, registreres, hvilke kort der anvendes, konsultationens længde og patientens demografi, som analyseres med beskrivende statistik. Patienternes oplevelse undersøges via semistrukturerede interviews med ca. 15 deltagere og analyseres med reflektiv tematisk analyse.

Perspektiver

Undersøgelsen vil bidrage med viden om, hvorvidt samtalekort er en egnet metode til at fremme patientinddragelse og understøtte personcentreret sygepleje. Resultaterne skal ydermere anvendes til at styrke forankringen af *Fundamentals of Care* gennem implementering af samtalekort i sygeplejen. Dataindsamlingen forventes påbegyndt ultimo 2025.

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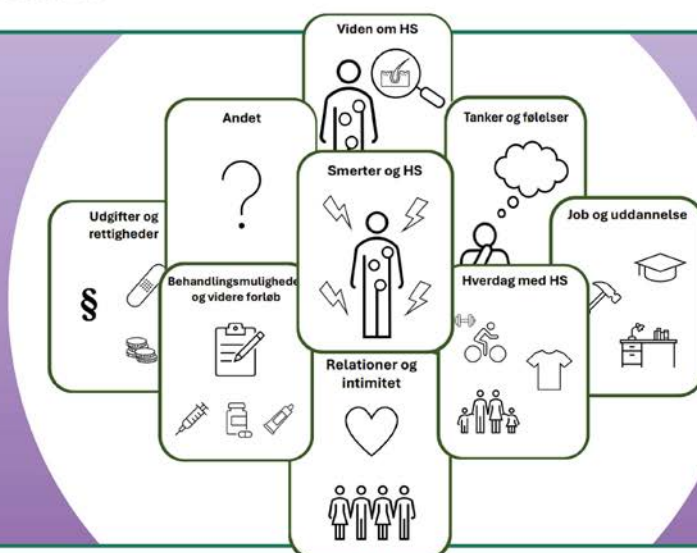
²Center for Klinisk Forskning Regionshospital Nordjylland, Hjørring, Danmark, Klinisk institut Aalborg Universitet, Aalborg Danmark.

³Center for Klinisk Sygepleje Forskning, Aalborg Universitetshospital, Aalborg, Danmark.

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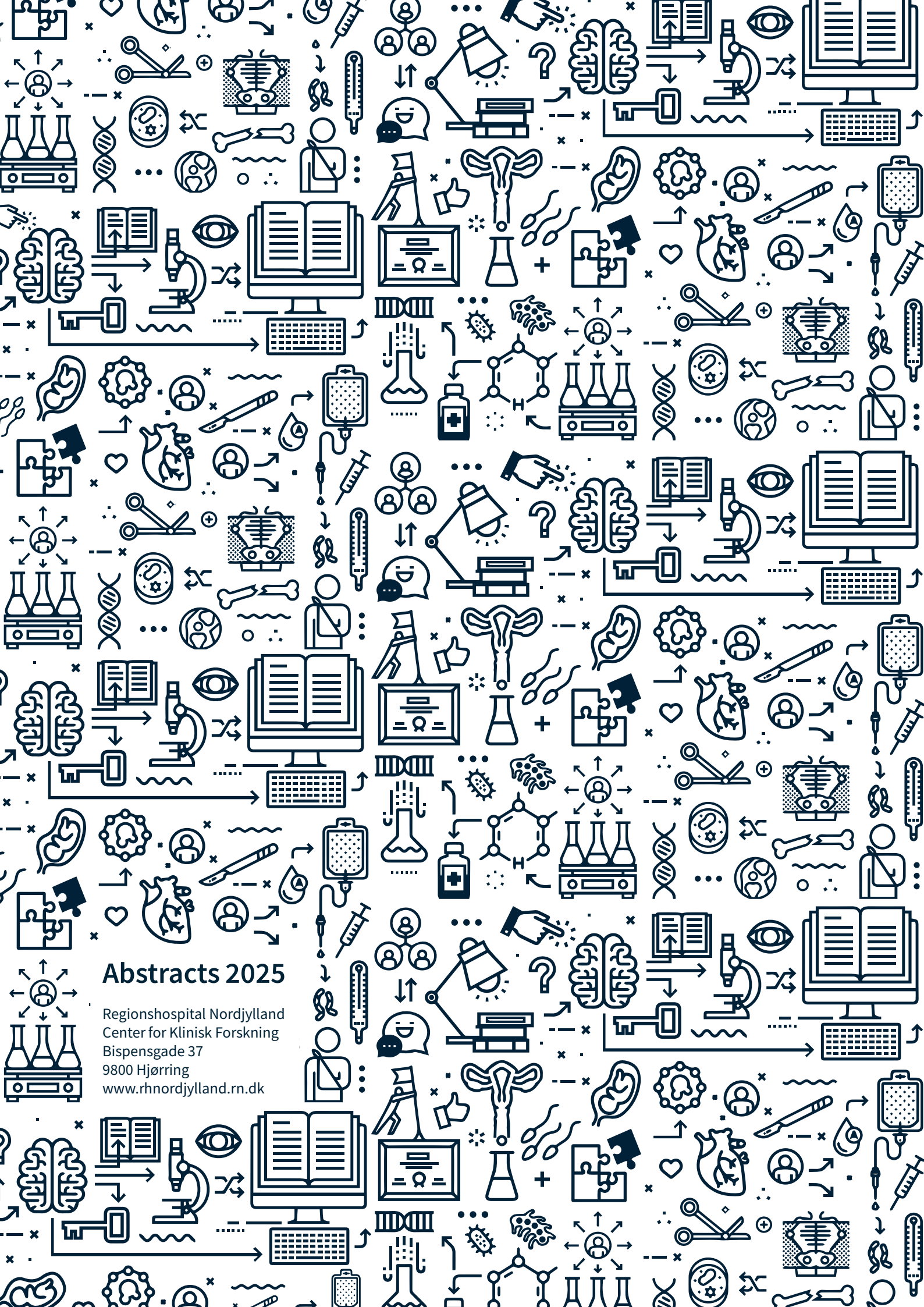
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Abstracts 2025

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