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Leder

Redaktionens forord - 2024 kunne blive året, hvor vi når vores mål

Af redaktionen: Gitte B. Tygesen, Iben Duvald, Christian Skjærbæk, Helene Skjøt-Arkil, Peter Biesenbach, Lea Holst og Mikkel S. H. Jensen

2023 har været et rigtig godt år for tidsskriftet, som har modtaget rigtig mange bidrag. Faktisk blev 2023 det år, hvor vi publicerede flest originale artikler - og vi fortsætter i år, da dette nummer er der rigtig mange spændende bidrag, som vidner om den mangeartede videnskabelige produktion på akutområdet i Danmark. I dette nummer kan du ud over en spændende artikel om 'End-of-Life Care: A Survey of Hospital Staff in Denmark' finde de mange abstracts fra DEMC10. Så kunne du ikke deltage i konferencen i efteråret, eller nåede du ikke rundt til alle posterne, har du nu mulighed for i ro og mag at dykke ned i de mange emner.

I redaktionen har vi i 2023 både sagt farvel og goddag til nye medlemmer. Stifter og initiativtager Marie K. Jessen trådte ud af redaktionen i december. Vi fra redaktionens side siger tusind tak til Marie for at have knoklet for tidsskriftet og for at være en drivkraft bag ønsket om at blive PubMed indekseret. Samtidig har vi i 2023 sagt goddag til to nye redaktører - begge fra syd, nemlig Helene Skjøt-Arkil og senest Peter Biesenbach.

En stor tak til alle, som har bidraget enten som forfattere eller bedømmere i 2023. Har du eller en kollega lyst til at dele jeres videnskabelige viden med resten af det danske akutfolk, så indsend endelig en artikel eller et andet bidrag til tidsskriftet. Vi håber at 2024 bliver året, hvor vi når vores mål om at blive indekseret på PubMed.

De bedste nytårshilsner med håbet om et godt 2024,

Redaktionen Dansk Tidsskrift for Akutmedicin

Redaktionen

Dansk Tidsskrift for Akutmedicin

Original-, udviklings-, og kvalitets artikler

End-of-Life Care: A Survey of Hospital Staff in Denmark

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End-of-life care,
Emergency medicine,
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Acute palliation concept

Abstract

Background: Many patients want to die at home, but do not get their wishes fulfilled. To combat this, it is important to understand the challenges that stand in the way of healthcare professionals being able to discharge people from a department of emergency medicine to receive good quality end-of-life care (EOL) in their own homes.

Aim: The aims of this study were to 1) determine if staff at Emergency Departments experienced significant challenges related to EOL care, 2) how often this led to unnecessary hospital admissions, and 3) if a new "Acute Palliation Concept" (APC) might alleviate some of the challenges identified above.

Material and method: This was a cross-sectional survey among doctors (n=53) and nurses (n=74) working in Departments of Emergency Medicine or General Practice in the North Denmark Region. The questionnaire covered the healthcare professionals' backgrounds, their perceptions of current challenges in EOL care, and the potential effects of the APC.

Results: Among the healthcare professionals, 53% of responders found the most challenging aspect of EOL care to be "Logistic Issues" and 21% "Time consumption". Out of the responders, 64% had sometimes, often, or always felt the need to admit/maintain admission/push to admit a dying patient, because it was too challenging to start the EOL care at home. On the potential effect of APC, 74% thought it would save time. In addition, most responders thought it would give both the patient and their next of kin better EOL care.

Conclusion: This study showed that doctors and nurses in the Departments of Emergency Medicine did experience noteworthy challenges related to providing EOL care and that these challenges led to hospital admissions instead of the patient being discharged to EOL in their home. This was experienced by 86 % of the staff. This may be problematic as literature suggests that it is against many patients' wishes besides being very expensive for a health care system.

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Background

World Health Organization (WHO) defines palliative care as "*Palliative care is a crucial part of integrated, people-centered health services. Relieving serious health-related suffering, be it physical, psychological, social, or spiritual, is a global ethical responsibility*"(1).

In 2021, 56,868 citizens died in Denmark, of which 50% died at home (death at the home address or nursing home), 36% died in a hospital while the remaining deaths were distributed among hospices, or unknown (2). Among patients suffering from cancer, 71% wanted to die at home. This is contradictory to the fact that 48% of patients who suffered from cancer who preferred home death, had their preference met (3). To fulfill the patients' and their relatives' wishes about dying at home, good end-of-life (EOL) care is needed (4). Specialized palliative treatment takes place in parts of the healthcare system, whose main task is palliative care. On the other hand, basic palliative treatment occurs in numerous places in the health care system, including general practices (GP), municipality care, and hospitals which is provided by healthcare personnel whose main task is not palliative care. Furthermore, palliative care must be coordinated cross-sectoral across different professional groups, including doctors, nurses, or physiotherapists. Organizational issues arise due to a lack of sufficient computer systems, exchange of information, and formal national agreement on the division of labor (5). Studies have shown that relatives of palliative patients have experienced insufficient palliative treatment due to organizational and communicative problems between sectors (6). This had also been described previously due to both ''practical issues'' and ''educational problems''. These findings from the study by Hoefler et. Al (7) could be interpreted as that insufficient training and practical issues may lead to healthcare personnel who feel incompetent and inadequate in palliative care (7). The aims of this study were to 1) determine if the staff at Emergency Departments experienced significant challenges related to EOL-care, 2) how often this led to unnecessary hospital admissions, and 3) if a new "Acute Palliation Concept" (APC) might alleviate some of the challenges identified above.

The Acute Palliation Concept is intended for individuals who have a life expectancy of days to a few weeks and wish to die in their own homes. Before a person can be sent home with the APC, it must be assessed that the patient has a basic palliative need that can be managed in the patient's own home. The concept is aimed at those who suddenly become very ill and are brought to a hospital. This applies, among other groups, to chronically ill individuals, where deterioration can occur rapidly. The APC contains instructions for doctors, for nurses, information for patients, checklists for the process as well as necessary medication (e.g. morphine, midazolam, etc.) (8).

Methods

The Regional Ethics Committee evaluated the project as not needing ethical approval within Danish law.

Design and Population

The Danish health care system is tax-financed which entails free palliative care for all citizens in Denmark. The basic palliative treatment is provided cross-sectoral by the municipality-based home care nurses, outpatient clinics, the Department of Emergency Medicine, and doctors specializing in General Medicine (3).

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This cross-sectional survey was conducted among healthcare professionals including doctors and nurses working in 1) the Department of Emergency Medicine and Trauma Center in the Academic Hospital in Aalborg, 2) the Department of Emergency Medicine at the non-Academic Hospital in the North Denmark Regional Hospital, and 3) doctors specializing in General Medicine in the North Denmark region (NDR). The questionnaire was set up and distributed with Research Electronic Data Capture tools (Redcap, Version 9.5.6, Vanderbilt University) (Harris et al., 2009, 2019). It was sent out via the department E-mail group at both hospital wards as well as to doctors specializing in General Medicine in the NDR in June 2022 and again, in January 2023. As the questionnaire was sent out using the department E-mail group, a response rate was not calculated. This list is not updated frequently and will include some staff that do not use their email anymore e.g., previous staff, substitute nurses, staff on maternity leave. The receivers were also asked to forward emails to other people within the department who were not on the list, thus relying on the snowball effect. The number of people who make up the total sample group is left unknown. During the redistribution, it was emphasized that personnel who had previously responded to the questionnaire were not allowed to answer again. After the first distribution in June 2022, the name of the APC was changed in the questionnaire before the redistribution. For this reason, bias cannot be ruled out, but it is important to accentuate that even though the name was changed, the questionnaires still contained a description of the concept as well as a description of the content.

Table 1: Descriptive data on questionnaire responders	Responders n = 128
The responder's profession§, % of all (n)	
Nurse	58 (74)
Doctor	42 (53)
Where do you primarily work? % of all (n)	
Emergency department	84 (107)
Other	16 (21)
How far are you in your education as a doctor? % of all (n)	
Residency	21 (11)
Specializing in emergency medicine	15 (8)
Attending in emergency medicine	13 (7)
Specializing in general medicine	30 (16)
Other	21 (11)
For how long have you been fully trained? § % of all (n)	
<1 year	13 (17)
1-5 years	40 (51)
>5 years	47 (59)

Abbreviations: n: number, EOL: End-of-life, APC: Acute Palliation Concept. # missing values between 1 and 11.

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Questionnaire

A 29-item questionnaire was developed for this survey. Questions 1-6 concerned the primary place of work, how long they had been practicing medicine/nursing, how far along the physicians were in their residency, and in what specialty. Questions 7-16 concerned their experience and challenges with providing palliative care, and the knowledge of a previous initiative in EOL care at home. Question 17 concerned the thoughts on the content of the new APC and questions 18-30 about its expected efficacy. A few of the questions are specifically directed towards employees in emergency departments. These questions start with "Employee in the emergency department". Initially, a few of the questions were also directed to the on-call GP's. All doctors regardless of their professional position or level of education had the same function regarding basic palliative care. The questionnaire can be seen in Supplemental Table 1. The questionnaire has not been validated owning to local conditions.

Statistics

Descriptive statistics were given as median and range (25-75% (IQR)) for continuous variables. For categorical variables counts and percentages were displayed.

A Chi2-test was used to determine whether there was an association between experience and how challenging doctors and nurses found EOL care. Health care personnel were categorized as "experienced" if they had been fully trained for >5 years and "inexperienced" if they had been fully trained for 0-5 years. Performing EOL care was categorized as "easy" if it was rated between 0-50 and "hard" if it was rated between 51-100 on a VAS scale of 0-100, where 0 = not challenging at all and 100 = very challenging. A significance level of 0.05 was chosen. Statistics and data management was done using:

IBM SPSS Statistics Version28.0.1.1(IBM Corp.,2021,Armonk,NY:IBMCorp).

Results

A total of 128 people filled out the questionnaire (n = 45 August 2022 and n = 83 January 2023). Of the respondents, 58% were nurses and 42% were doctors (Table 1). Out of the healthcare professionals 47% had been fully trained for >5 years while 53% had been fully trained for ≤5 years.

Logistics Were the Biggest Challenge Regarding End-Of-Life Care

When asked about what the responders perceived as their biggest challenge, 28% out of a total of 128 responders answered that they did not encounter any challenges, whereas 21% experienced time as the biggest challenge, and 14% found it professionally challenging. More than half of the responders viewed logistic issues as the biggest issue. A summary of the experience with EOL care among healthcare professionals can be seen in Supplemental Table 2.

Hospital Admission Was Often Easier than Discharging for End-Of-Life Care

Of the responders, 86% had rarely, sometimes, often, or always felt the need to admit/maintain admission/push to admit a dying patient because it was too challenging to start EOL care at home (Supplemental table 2 & Figure 1). Among the healthcare professionals, 28% had admitted >5 patients in the last year because it was too challenging to send them home (Supplemental table 2).

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Figure 1: Chart illustration of two questions from the questionnaire regarding hospitalization due to challenges of starting EOL care at home. A) Have you felt the need to admit / maintain admission / push to admit a dying patient to the hospital for "end-of-life care" because it has been too challenging to start this at home. B) How many patient processes in which you have been involved, have ended with the patient being admitted / not discharged on the basis that it is challenging to send them home for "end-of-life care" in the past year?

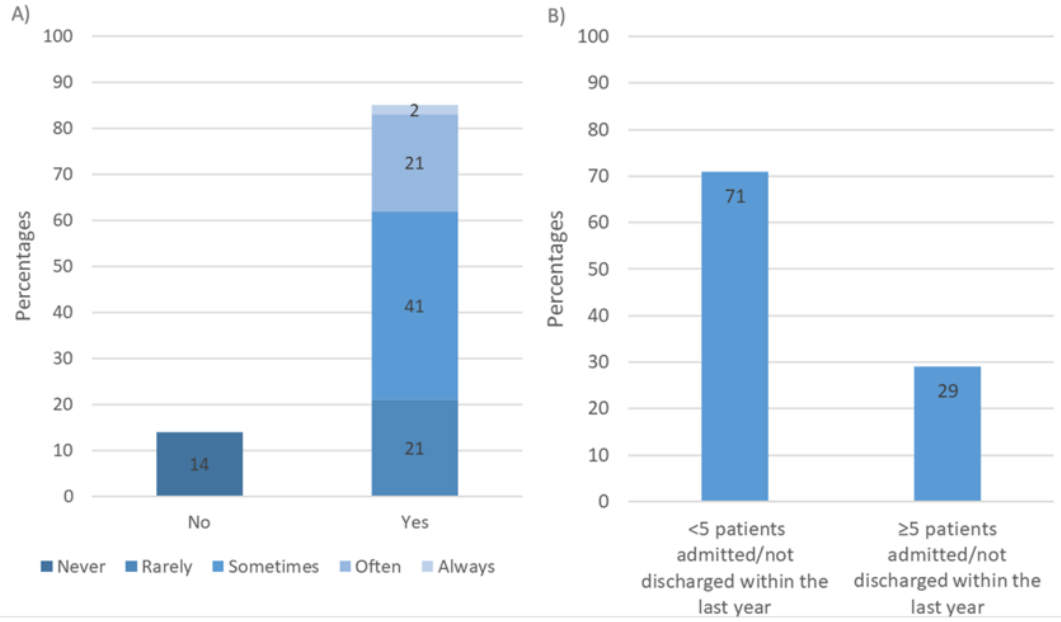
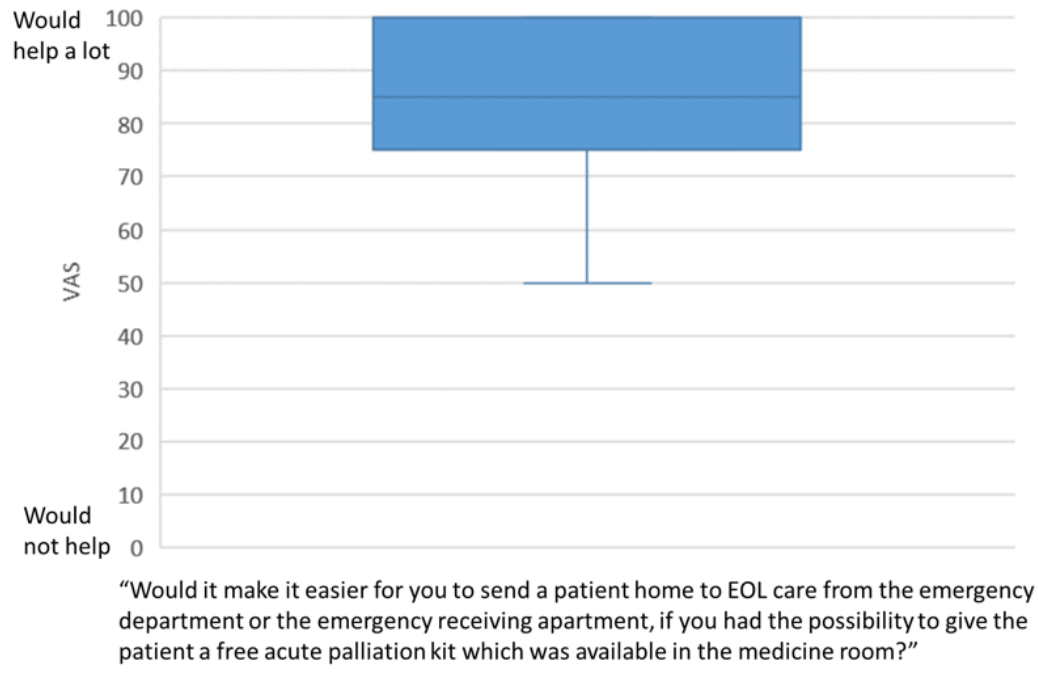


Figure 2: Boxplot illustrating the staff's expectations to a prepacked acute palliation concept on a VAS scale where 0 = would not help, 100 = would help a lot"



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There was no significant association between the responders' experience and how challenging they found the admission and care of EOL care patients (p=0.28).

The Healthcare Professionals Thought the Acute Palliation Concept Would Help

Out of 114 responders, 74% thought a palliation concept would save time when performing EOL care (Table 2). This was rated as a median of 85 (75;100) on a 1-100 VAS scale (Figure 2 & Table 2). When asked if an APC would result in better EOL care respectively for terminally ill patients, relatives, and municipality nurses, over 90% of the responders replied that they expected an improvement compared to today where it is not available.

Discussion

In this cross-sectional survey, answers from 128 healthcare professionals working in the Departments of Emergency Medicine were evaluated to determine challenges regarding End-of-life care (EOL). EOL care was found logistic challenging for 53% of the responders. Current EOL care was also perceived as time-consuming and professionally challenging. A total of 72% reported that they admitted dying patients due to these challenges. This might be the background of why above 90% of the responders believed that an accessible and pre-packed Acute Palliation Concept could improve EOL care.

Strengths and Limitations

A STROBE-checklist has been used to report this study. This survey was only conducted in the NDR, but the five regions have been shown to be highly comparable in other health aspects (9). Therefore, it was assumed that the regions are comparable. Methods of admission are assumed to be comparable across the regions. When a citizen is admitted to the hospital as an emergency, it happens based on a preadmission assessment. How this preadmission assessment is obtained, depends on the situation and time of day. This has been implemented based on Sundhedsstyrelsen in all regions with only small intra-regional differences (10). Furthermore, the survey was distributed among the two largest emergency departments in an Academic as well as a Non-Academic Hospital which is expected to improve external validity. As addressed in the method section, the questionnaire has not been validated and this can thus serve as a limiting factor for this study.

The study could have benefited from the participation of more GP's, who are the major players in EOL care in primary care. However, the number of GP doctors working in the ED was low, making this difficult. This survey was designed to explore this area and plan future research. In future studies, staff interviews may be useful for providing more in-depth and supplementary answers when describing the challenges with EOL care. Extending the survey to include a higher number of responders was also a possibility to enhance external validity. On the other hand, the responses in this study were very clear and a majority agreed on the challenges of EOL care in the ED. Hence, more responders were not expected to change results. The expectations of an APC were high, but the real-life efficacy remains to be examined in a study designed for that. At present time there are no studies of the wishes for the last days of their life when looking at patients dying within days without specialized palliative needs. Further studies are needed to explore this area as well.

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Table 2: The rated value of a palliation concept

Do you think a free APC for use at home would improve end of life care experienced by these groups compared to today where this offer is not available? # % of all (n)			
	Patients	Relatives	Municipality nurse
Yes, % (n)	79 (99)	74 (92)	79 (99)
Possibly % (n)	15 (19)	21 (26)	14 (18)
No % (n)	1 (1)	2 (2)	1 (1)
I don't have an opinion % (n)	6 (7)	4 (5)	6 (8)
How much time do you think you could save admitting a patient to EOL care at home or start the care in the home if you could have a free APC at hand to give to the patient immediately? # % of all (n)			
It would take longer			4 (5)
It would take the same amount of time			22 (26)
It would take less time			54 (63)
It would take much less time			20 (23)
How much less time? # % of all (n)			
< half an hour			22 (18)
Approximately half an hour			21 (17)
Approximately 1 hour			31 (15)
Approximately 1,5 hours			10 (8)
Approximately 2 hours			12 (10)
Approximately 3 hours			1 (1)
> 3 hours			2 (2)
Employee in the emergency department: Would it make it easier for you to send a patient home to EOL care from the emergency department or the emergency receiving apartment, if you had the possibility to give the patient a free APC which was available in the medicine room? Respond at a scale, 0 = would not help, 100 = would help a lot (pull the button to move around on the scale)			
Median (IQR)			85 (75;100)
Employee in the emergency department: if you had access to a free APC in the emergency department and emergency receiving department, do you think you would use it? # % of all (n)			
Yes, to all relevant patients			57 (59)
Yes, to some relevant patients			27 (28)
Yes, to a few patients			11 (11)
I am not sure			5 (5)
No			1 (1)

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End-Of-Life Care Was Challenging Primarily Due to Logistics

This study identified three main problems: logistics, time consumption, and lack of professional competency. This might partly explain the discrepancies between the patients' wishes of dying at home and actual events. In this study, it was found that about half of the healthcare professionals identified logistic issues as the greatest problem concerning EOL care. This resulted in many hospital admissions, where staff believed the patient could have been palliated in their own home. This happened despite knowing that patients often wished to die at home, which ties well with a previous study by Winthereik et al. The conditions in the hospital sector can be linked to those in the primary sector, where issues regarding EOL care also occur. The study showed that no more than 9% of GPs kept a register of patients with palliative needs and 19% had specific procedures for EOL care when asked in a study exploring GPs' self-reported competence concerning EOL care. This left the GPs unprepared for fulfilling their patients' EOL care needs and therefore the easier option was to admit patients when acute palliation was needed (11). Additionally, a group interview study by Neergaard et al. identified logistics as being one of the main categories of problems in basic palliative home care including the distribution of tasks, exchange of information, and availability (12). Another study by Gorlén et al., which was based on a group interview of nurses working in Danish nursing homes, found problems hindering good EOL care similar to this study. Several also pointed towards challenges with cooperation with other sectors, e.g., in emergency situations where important decisions had to be made. However, the nurses and nurse assistants who had received palliative education were more confident in EOL care (13). In continuation with the identified challenges regarding EOL care, one could consider if this was just indicative of a lack of experience among the health care professionals. This was not the case in this current study. However, another study by Winthereik et al. that aimed to examine EOL care among Danish GPs, demonstrated contradictory results (11). They found that the oldest GPs reported higher confidence regarding being a key worker compared to the younger GPs. The different results may be due to different settings. Doctors in the study by Winthereik et al. generally had a larger experience span compared to the staff at the Departments of Emergency Medicine (11). The study also found problems regarding professional competency in relation to EOL care. There was a variation in how confident the GPs felt across different palliative skills including medical treatment (11). A similar pattern of results was obtained in this current study

Hvad ved vi?

- Vi ved, at mange patienter ønsker at dø i eget hjem, men at det ikke er alle patienter, der får dette ønske opfyldt.

Hvordan kan det bruges i danske akutmodtagelser/perspektivering?

- Det bør undersøges om systematisering af udskrivelse til udelukkende lindrende behandling giver bedre lindring af døende i eget hjem dette ønske opfyldt.

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where 14% identified lack of professional competency as one of the biggest challenges.

Hospital Admission Was Easier than Discharging for End-Of-Life Care in Own Home

It was concerning, that 86% of the professionals in the study experienced the need to admit dying patients due to problems with establishing good EOL care at home. It was furthermore concerning, that this issue did not decrease with increased experience in the field. These findings fit in well with previous research showing that less than half of cancer patients in Denmark have their preference for place of death met (3). It is highly problematic that EOL care is regarded as a reason to admit patients who do not want to, especially when the costs are higher at hospitals. It highlights the need to simplify logistics for providing EOL care at the patient's own home.

The Healthcare Professionals Thought an Acute Palliation Concept Would Help

A study by Neergaard et al. showed that patients and relatives experienced insufficient palliative care mainly due to organizational and cultural problems among professionals (6). This was a known fact in the clinical field and was possibly one of the reasons that 96% of the responders in this study wanted to use a palliation concept if they had access. The willingness to use a pre-packed concept is consistent with results from another previous study by Perusse et al. In that study, the evaluation of a similar Symptom Management Kit (SMK) demonstrated a positive impact on patients, caregivers, and providers due to the advantages of improvement in timely access to medication and management of symptoms. Overall, the SMK reduced ED visits, hospital admissions, and increased patient deaths in their preferred location. This is in line with the results of this current study where healthcare professionals expected the APC to be timesaving concerning EOL care (14). As the proposed APC from the questionnaire in this study contains information material for nurses as well as all medication and utensils to administer it, there is a chance that the APC could yield similar results. However, a pre-packed kit may not be enough, as a study by Healy et al. found that the use of a palliation concept in a home required education and support of the health care professionals (15). The current study was the first step in understanding how the concept can help improve EOL care. Further research could investigate the opinions of GPs and

Hvad tilføjer denne artikel til vores viden?

- Mere end 8 ud af 10 ansatte i akutmodtagelserne i Region Nordjylland havde det seneste år indlagt uafvendeligt døende patienter til udelukkende lindrende behandling fordi det var for logistisk og tidsmæssigt udfordrende at lade patienterne komme hjem at dø.
- 1 ud af 3 af disse ansatte indlagde alle de uafvendeligt døende patienter de så i akutmodtagelserne
- Ansatte i akutmodtagelserne troede, at en systematisering af udskrivning til udelukkende lindrende behandling med en tjekliste, informationsmateriale og forud pakket plaster og medicin ville gøre det lettere for at udskrive døende til eget hjem

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municipality nurses on EOL care and APC and thereafter investigate the actual effect of the concept on patients in a dedicated study.

Conclusion

This study showed that healthcare professionals in the Departments of Emergency Medicine did experience noteworthy challenges related to providing EOL care and that these challenges led to hospital admissions instead of the patient being discharged to EOL in their home. This may be problematic as the literature suggests that it is against many patients' wishes besides being very expensive for a healthcare system currently under pressure. In the future, the logistics of EOL care would benefit from being simplified for hospital staff if fewer patients were to be admitted to die. A pre-packed EOL care concept might reduce logistics but needs evaluation in dedicated studies.

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DEMC 10 Abstracts

Association between multimorbidity and readmissions – a nationwide register-based study of patients with potentially preventable hospitalizations in the emergency department

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Background

Fractures, urinary tract infections, pneumonia, and dehydration are among conditions that should preferably be prevented or managed in primary care. Nevertheless, many patients are admitted to the emergency department due to these potentially preventable conditions. In Denmark, the authorities have defined 9 diagnosis groups in this category, but little is known about the patient characteristics and their risk of readmission. The proportion of patients with several chronic diseases – multimorbidity – is growing, and consequently, complications related to disease burden, reduced functional ability, frailty, decreased quality of life, and polypharmacy are present at the emergency department. This complexity may affect the risk of re-admissions, leading to suboptimal outcomes for the patients and increased expenses for the healthcare system. The aim of this study is to investigate the association between multimorbidity and readmissions in a population of patients admitted with a potentially preventable condition.

Methods

We are conducting a historical cohort study with routinely collected administrative healthcare data and other register-based data from the Danish National Patient Registry, the National Database of Reimbursed Prescriptions, the Documentation of Elderly, and the National Health Service Registry. All patients over 65 years acutely admitted with one of the 9 potentially preventable conditions from 2013-2018 are included.

Results and conclusion

More than 200,000 unique patients were included in the study. A thorough description of the study population characteristics and results from the statistical analysis of the association between multimorbidity and re-admissions will be presented at the DEMC10. This study will provide new knowledge about the characteristics and trajectories of potentially preventable hospitalizations. Furthermore, it will contribute to important considerations for the emergency department staff regarding the risk assessment of patients and for future quality improvements in primary care.

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Automatic ejection fraction agreement between handheld and midrange ultrasound devices

Background

To include artificial intelligence (AI) in a key cardiac function parameter such as left ventricular ejection fraction (LVEF) can hold important value for young clinicians, both in timesaving and in reducing interobserver variability, however, reproducibility between devices is unknown. The purpose of this study was to assess two ultrasound devices with their automated LVEF (auto-LVEF) calculations: the midrange GE venue (GEv), and the handheld Butterfly iQ (Bfi), relating to correlation in ejection fraction (EF), time consumption and image quality (IQ).

Methods

Adult emergency room patients were included and scanned with both machines by a novice operator. In each case, the aim was to obtain an apical four-chamber view (A4CV) and calculate the EF with each device's preinstalled AI software. Out of those, 12 patients were rescanned by an experienced physician. The agreement in EF measurement between the GEv and Bfi was evaluated by correlation coefficient and Bland-Altman analysis.

Results

We included 150 patients with a median age of 64 years, 51% females. Auto-EF was produced with GEv and Bfi in 73% and 52%, respectively. The inter-technique agreement in EF measurement between the GEv's real-time EF and the Bfi's Simpson monoplane method was r=0.70, 95% confidence interval (CI): 0.60-0.77, p<0.001. The Bland-Altman analysis showed a bias of 0,84 (95% upper and lower limits of agreement were 15.0 and -13.3, respectively). The median scanning time in both apparatuses was 2 minutes and the median IQ score was 4/5 in GEv whereas 3.5/5 in Bfi. The interuser agreement was described with a weighted Cohen's kappa (κ GEv =0.75 and κ Bfi=0.82).

Conclusion

Bfi had a lower success rate in calculating EF and a lower IQ than GEv, yet when auto-EF was successfully obtained, a high correlation between the machines was seen. In summary, these algorithms are insecure for clinical use and need further development before large-scale practical implementation.

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Biomarkers predicting outcome in COVID-19 patients

Background:

The COVID-19 pandemic has resulted in pressure on Emergency Departments (ED). This has led to an investigation of whether biomarkers could help physicians in decision making whether to discharge patients or admit them to the hospital. We investigated whether baseline clinical signs, suPAR, and routine biomarkers in patients with COVID-19 can predict the development of respiratory failure during a 14-days of follow-up.

Methods:

This study was conducted as a single-centre prospective cohort study carried out at Copenhagen University Hospital Hvidovre, Denmark. The study included ED patients presenting with symptoms of COVID-19 between 19th of March,2020 and 3rd of April, 2020, with follow-up until the 17th of April 2020. SARS-CoV-2 testing was performed using the RealStar® SARS-CoV-2 RT-PCR Kit RUO from Altona Diagnostics (Hamburg, Germany). C-reactive protein (CRP) and Lactate were measured using the Roche 8000 platform. Soluble urokinase plasminogen activator receptor (suPAR) was measured using a Point-of-care test, which provide quantitative results within 25 minutes after blood drawing (suPARnostic QT, ViroGates, Denmark). Data are presented as N (%) or median (interquartile range, IQR). The area under the curve (AUC) and 95% confidence intervals (CI) were calculated using C-statistics. The endpoint of the study was respiratory failure defined as patients intubated and mechanically ventilated.

Results:

A total of 117 patients tested positive for SARS-CoV-2 and were included in the present study. The mean age in the cohort was 71 years, with 68 (58%) being female. At first ED assessment, Early Warning Score was 3 (1-5), suPAR 5.3 (4.0-7.7) ng/ml and CRP 44 (18-99) ug/ml. A total of 87 patients (74%) were considered eligible to receive intensive care treatment. During the follow-up period, 25 (29%) patients experienced respiratory failure. The baseline predictors strongly associated with respiratory failure were suPAR (AUC of 0.86, CI95%:0.79-0.94), EWS 0.82 (CI 95% 0.72-0.91), lactate 0.81 (CI95% 0.69-0.92), and CRP 0.78 (CI95% 0.68-0.88).

Conclusion:

Our study revealed that the baseline suPAR value strongly predicts respiratory failure in ED patients with COVID-19, indicating potential in decision making by physicians.

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Bloodgas analysis- simple solutions, GREAT impact

Introduction:

North Zealand Hospital Denmark. A 500-bed university hospital. In the ED around 100 patients arrive every day. Most of them leave the hospital within 24 hours. To discharge patients, within 24 hours, fast identification of the patient's problems is essential. Often a blood gas analysis is one of the tests with the quickest results. The project was driven by 3 improvement advisors and a consultant from the department of quality improvement. The project was sponsored by the hospital CEO and other members of the team were from the simulation unit, the laboratory, and from the company producing the lab.

Problem:

Often reflection on where to get the sample and who is responsible for the results is missing. Several serious AE revealed problems with blood gas analysis and handling the results. When the results were complex, analyzing became troublesome, and important information was overlooked.

Methods:

Using the model for improvement (MFI) at the first huddle the first driver diagram (DD) was constructed. Workflow analyses illuminated all the steps and the culture surrounding the test process.

Results:

Mandatory course for all nurses performing the procedure. Reference values on the result strip. Venous tests are accepted to be the first choice.

Discussion:

Using the methods in the Model for improvement, it was possible to make changes that were accepted by all involved in the process. Leadership is essential when disagreement occurs.

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Characteristics and Prognosis of Adult Dyspneic Emergency Department Visits: A Population-Based Multicenter Cohort Study

Background: Acute dyspnea is a distressing symptom associated with cardiac and pulmonary conditions, often leading patients to seek emergency department (ED) care. This study aimed to describe the demographics and clinical characteristics of ED visits for dyspnea and investigate the association between risk factors and short-term mortality.

Methods: We conducted a population-based, multicenter cohort study involving non-trauma ED visits aged ≥18 years in the Region of Southern Denmark from January 1, 2016, to March 20, 2018. Associations between risk factors and 0–7- and 8–30-day mortality were analyzed using multivariable logistic regression.

Results: A total of 26,329 ED visits with dyspnea as the primary complaint were included. The median age was 72 years (IQR 61–91), with 52% being females. Chronic obstructive pulmonary disease (COPD, 46%) and hypertension (32%) were common comorbidities. Median vital signs were systolic blood pressure (SBP) 136 mmHg (IQR 120–153), diastolic blood pressure 77 mmHg (IQR 67–88), heart rate 91 beats/min (IQR 78–106), respiratory rate 22 breaths/min (IQR 18–26), oxygen saturation 95% (IQR 92–98), oxygen supply 2 l/min (IQR 0–4), temperature 37.1°C (IQR 36.6–37.6), and Glasgow Coma Score (GCS) 15 (IQR 15–15). Discharge diagnoses were COPD (22.5%), pneumonia (20.5%), dyspnea (13.4%), ED visits for observation (6.2%), and respiratory failure (6.1%). Overall, the 0–7 days mortality rate for the first visit was 4.2%, and the 8–30 days mortality rate was 3.7%. Age, SBP < 90, temperature < 34°C, and GCS < 13 were associated with 0-7 days mortality, while age alone remained strongly associated with 8–30 days mortality.

Conclusion: ED visits for dyspnea were characterized by patients presenting with normal vital signs. Age emerged as a significant and increasingly important predictor of mortality over time, while low SBP, temperature, and GCS were specifically associated with 0–7-day mortality. These findings emphasize age as a critical prognostic factor in dyspnea-related ED visits, underscoring the importance of early recognition and appropriate dyspnea management in the ED to improve outcomes.

Implementing timely, age-specific interventions can enhance patient care and optimize outcomes in this vulnerable population.

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Characteristics of digital capabilities and frailty in patients in an Emergency Department setting

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Background: Society is moving towards a digitalized future by integrating digital technologies into everyday life. Where all contact with public authorities, banks, and other services is digitized and one must have permission to remain without the use of digital communication. This trend is likewise seen in healthcare with the direct involvement of patients in digital solutions e.g., video-consultation, scheduling appointments, patient reported outcome data. However, little is known about digital capabilities of patients, and thus whether the chosen communication method by authorities is suited for the patients who are in contact with the healthcare system. The primary aim of this study was to examine digital capabilities of patients in an Emergency Department (EMD) setting, and assess if there's a correlation between digital capabilities, frailty, and age.

Methods: This study was performed at the EMD of North Zealand Hospital. Data was collected by nursing students. Measures were taken to ensure a representative sample during data collection. Inclusion criteria were age above 18, admitted for treatment of an internal medicine or surgical problem, and green, yellow, or orange triage. Patients answered a questionnaire regarding digital behavior, and 3 tests composed of ability to 1) send a text message, 2) open an app, 3) access a digital platform e.g. E-boks. Patients were stratified into three 'digital capability' groups based on test results.

Results: A total of 255 patients were recruited, of which 32 excluded. The mean age was 71[CI95% 68,5;72,8] years, 44% were women and mean frailty score was 3,3[CI95% 1,5;2,2]. A total of 21% replied having no smartphone, whilst 26% replied that they couldn't use a smartphone. A total of 119 (55%) patients had full digital capability, 29 (14%) patients had medium capability and 66 (31%) patients had no capability. Upon comparing different digital groups using ANOVA followed by a Tukey studentized range test procedure to locate possible differences it was shown that digital competence is inversely related to frailty ($p < 0.001$).

Conclusion: Thirty percent of the patients in the EMD have low digital capability, 26% are unable to use a smartphone and digital competence is inversely related to frailty. This study calls for public re-evaluation of digitally based communication between the healthcare system and patients.

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Decentralization of the triage function – when corporation between the nurses at the emergency department and the paramedics leads to shorter hand-over-time

Background:

The Emergency Department (ED) at Odense University Hospital has until June 2022 been organized such all patients attending the ED had an initial evaluation by a triage nurse at time of arrival. This ensured patients with urgent need for treatment were assessed before non-urgent. However, the workflow caused waiting time for the ambulances as they were in line for the triage evaluation. This led to a long hand-over time. Therefore, a new workflow was developed, and the triage function was decentralized. The paramedics phoned the acute visitation united in the ED, and together they determined the triage level and assigned the patient to the specialist zone before arrival. aim This study aimed to evaluate whether the ambulance hand-over time was reduced on behalf of the new workflow.

Methods:

This is a before and after study. Data derived from the pre-hospitals registration system five weeks before the new workflow (week 17-21 2022) and four weeks after (week 23-26 2022*).

Results:

Pre data were based on 2370 patients arriving in the ED by ambulance in the registered time period, and post data were based on 2034 patients. A measurement of the mean time from the ambulance arrived to the ED until it's departure was calculated. The average time in pre data was 34,8 minutes. The average time in post data was 29,5 minutes. A reduction of 5,3 minutes was identified.

Conclusion:

The wait time for the patient and the ambulance staff was reduced, which could indicate a more efficient workflow. At the same time information was passed directly from the paramedics to the care responsible person and could potentially have affected patient safety issues.

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Deep venous thrombosis and prediction of post thrombotic syndrome

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Background: Venous thromboembolism (VTE), consisting of deep vein thrombosis (DVT) or pulmonary embolism (PE), is a major clinical burden. Despite relevant treatment for DVT patients, almost 40-50% of patients experience the post-thrombotic syndrome (PTS). It has been estimated that PTS patients contribute to increased healthcare costs by 50-75% compared to DVT patients without PTS. The Scientific and Standardization Committee of the ISTH recommends assessing PTS with the Villalta scale. However, even though the Villalta score is adapted by some societies, the scales for PTS could be better developed.

Methods: A systematic review of all English-language and prospective studies of biomarkers and PTS published in PubMed and EMBASE was performed. Studies were included if they diagnosed DVT using diagnostic imaging and assessed PTS using clinical scales, specifically the Villalta scale.

Results: A total of 2234 articles were identified through search algorithms, and 15 prospective studies were included. The studies varied widely in study design and methods of data analysis. Forty-six different biomarkers were examined, with seven being measured in two or more studies. The most frequently studied biomarkers were D-dimer, CRP, and IL-6. Associations between PTS and D-dimer were predominantly significant, while results on CRP and IL-6 were inconsistent. ICAM-1 was consistently associated with PTS in all studies and at all time points. IL-10 was significantly related to PTS development in the largest study and at all time points.

Conclusion: Further research on biomarkers and PTS is clearly warranted. Significant differences in study designs made it difficult to draw reliable conclusions regarding individual biomarkers. We suggest the implementation of a standardized framework for the study of biomarkers and PTS to make future studies more comparable and to enable the prediction of PTS based on baseline DVT events. We are currently enrolling first-time lower extremity DVT patients and measuring inflammatory, anti-inflammatory, senescent, and immunological biomarkers at baseline, with a follow-up of 2 years. The primary endpoint is the prediction of PTS assessed by biomarkers (www.Clinicaltrials.gov, Protocol ID H-21061004/85280).

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Diagnostic Accuracy of a Point-of-Care High-Sensitive Cardiac Troponin Test for Early Rule-Out of NSTEMI in the Emergency Department: A prospective single-center study

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Background: The prompt and accurate diagnosis of acute myocardial infarction (MI) is crucial in reducing morbidity and mortality rates. Point-of-care high-sensitivity cardiac troponin (POC hs-cTn) assays offer rapid results and potential benefits in decision-making and emergency facility management. This study aimed to validate the diagnostic performance of a POC-hs-cTnI measurement for early rule-out of non-ST-segment MI (NSTEMI) and assess the assay's safety in relation to adverse cardiac events or death within 30 days.

Methods: A prospective study was conducted at the emergency department (ED) of Slagelse Hospital, Denmark, between October 2022 and January 2023. Eligible participants included patients aged ≥18 years with suspected NSTEMI and symptom onset > 3 hours prior to arrival. Alongside standard laboratory hsTnI measurements at arrival and after 3 hours, POC hs-cTnI testing using the Siemens Atellica® VTLi POC hs-cTnI immunoassay (8–10 min turnaround time) was performed. A POC-hs-cTnI cutoff level of < 4 ng/L was considered a rule-out result. The final diagnosis of MI was determined by journal audit by two independent physicians using the universal definition of MI. Sensitivity, specificity, negative predictive values, and positive predictive values were calculated for POC hs-cTnI.

Results: Out of 250 screened patients, 64 were included in the study. The prevalence of MI was 9.4% (6 cases). Using a POC hs-cTnI cutoff level of < 4 ng/L, three patients were classified as rule-out, and 61 as rule-in for acute MI. The rule-out group exhibited 100% sensitivity and negative predictive value for acute MI. In the rule-in group, the specificity and positive predictive value for acute MI were 5.2% and 9.8%, respectively. No adverse cardiac events or deaths occurred within 30 days among patients with a negative POC hs-cTnI result.

Conclusion: The POC hs-cTnI assay demonstrated the ability to safely rule out NSTEMI. However, a considerable number of false-positive results were observed, potentially leading to unnecessary patient concern and further investigations. Incorporating a second POC hs-cTnI test and analyzing troponin trajectories could enhance the ability to safely rule out more patients. Further research is needed to optimize the diagnostic algorithm and enhance the clinical utility of the POC hs-cTnI assay.

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Diagnostic accuracy of handheld ultrasound devices used by novice operators for pneumonia in emergency department – A diagnostic accuracy study

Background

The diagnostic accuracy of the new hand-held ultrasound (HHUS) devices operated by novice is unknown. The aim of this study is to investigate their diagnostic accuracy for pneumonia in the emergency department, where HHUS devices are increasingly being used by novice operators.

Methods

This multicenter diagnostic accuracy study prospectively included patients suspected of pneumonia from February 2021 to February 2022 in four emergency departments. The index test was a 14-zone focused lung ultrasound (FLUS) examination with consolidation with air broncogram as diagnostic criteria for pneumonia. FLUS examination was done by newly certified operators using the butterfly IQ+ HHUS device. The reference test was computer thermography (CT) and expert diagnosis using all medical records. The sensitivity and specificity of FLUS and chest x-ray (CXR) were compared using McNemar's test.

Results

Patients (n=324) were scanned; 212 (65%) had pneumonia according to the expert diagnosis. FLUS had a sensitivity of 31% (95%CI 26-36) and a specificity of 82% (95%CI 78-86) compared with experts' diagnosis. Compared with CT alone: sensitivity was 32% (95%CI 27-37); specificity, 81% (95%CI 77-85). CXR had a sensitivity of 66% (95%CI 61-72) and a specificity of 76% (95%CI 71-81) compared with experts' diagnosis. Compared with CT alone: sensitivity was 69% (95%CI 63-74); specificity, 68% (95%CI 62-73) Compared with CXR, FLUS with the butterfly IQ+ had a significant lower sensitivity for pneumonia (P<0.001).

Conclusion

Although HHUS is cheaper and more mobile than regular machines, when used by novice operators, it was found to be diagnostically inaccurate. In the future, the diagnostic accuracy of HHUS devices should be investigated before being introduced into the clinic.

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Early initiated vasopressor therapy vs. standard care of primarily fluid therapy in hypotensive patients in the emergency department – A protocol for a pragmatic, multi-center, superiority, randomized controlled trial (VASO-SHOCK)

Background: Shock and hypotension are critical conditions in the Emergency Department (ED) at risk of a high mortality. Current Danish practice for treatment is the use of fluid therapy, but fluid therapy alone might not stabilize the patient in shock and can lead to harm or worse outcomes if used excessively. Vasopressors have commonly been second line treatment, and recent evidence has suggested an earlier initiation of vasopressor therapy may result in better outcome. We describe the VASOSHOCK trial for early ED initiated peripheral noradrenaline, with the aim to improve shock control and reduce the need for intensive care unit (ICU) admittance.

Methods: VASOSHOCK is a pragmatic multi-center superiority randomized controlled trial. Patients ≥18 year who are hypotensive and ICU eligible, have received at least 500ml fluid prior to inclusion and with a p-lactate ≥2mmol/L will be eligible. Patients with hemorrhagic, anaphylactic, neurogenic, or cardiogenic shock, pregnancy, or breastfeeding will be excluded. Patients will be randomized using block-randomization stratified by site to either intervention or control. The intervention group will receive peripherally infused noradrenaline up to 0.15mcg/kg/min for up to 24 hours for shock control defined by either systolic blood pressure >100 mmHg, Mean Arterial Pressure >65mmHg or an individual physician defined treatment goal. The control group will receive the usual standard of care where ED initiated vasopressor therapy is not available. Following a pragmatic approach, no other treatment recommendations will be mandated outside noradrenaline treatment and handling of adverse events. A sample size of 320 patients will provide 90% power to demonstrate if early initiated peripheral noradrenaline will improve proportion of patients achieving shock control within 90 minutes. Secondary outcomes include ICU and ED length of stay.

Conclusion: If early initiated vasopressor therapy in the ED is shown to be a superior therapy to standard care, it can be quickly implemented in Danish ED's for patients with hypotension and shock.

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Enhancing Education Strategies to Retain and Develop Healthcare Professionals in the Emergency Department: A Survey-based Intervention Study

Background: The increasing demographic burden of elderly individuals requiring medical care, coupled with a shortage of healthcare professionals in Denmark, necessitates innovative approaches to attract, retain, and develop healthcare professionals in the emergency department (ED). A survey conducted at the ED at Slagelse Hospital revealed the need for a revised and enhanced introduction phase, improved transparency in the individual employee's education plan, and a more systematic approach to training and competency documentation. This study aimed to develop and implement a new education strategy in the ED, focusing on three key areas: 1) the introduction and utilization of competency cards, 2) systematic competency documentation, and 3) enhanced transparency in the education plan. The effectiveness of the strategy was evaluated through surveys.

Methods: The new education strategy was based on the Learning Pyramid from the National Training Laboratories, incorporating various learning methods such as self-studies, demonstrations, simulation training, and supervised daily practice. The onboarding period was extended from 4-6 weeks to one year. Implementation was supported by the department head and three specialty nurses, with continuous feedback from staff and teachers. The strategy was implemented on January 1, 2023.

Results: Questionnaires were administered at baseline, after the introduction period, and upon completion of two out of five competency cards. The results demonstrated an overall improvement in healthcare professionals' perceived competence in providing reception, care, and treatment to acute patients. They reported a greater understanding of their future competency development opportunities and the department's expectations. Furthermore, the staff expressed a long-term commitment to their employment in the department and a higher likelihood of recommending it to others.

Conclusion: To effectively retain healthcare personnel in emergency medicine, it is crucial to establish transparency in the long-term training plan for newly hired individuals, allowing them to further develop their competencies. Extending the onboarding period to one year and utilizing competency cards can facilitate the maintenance of a high level of professional quality in acute medical care. Additionally, instructors should possess not only subject-specific expertise but also pedagogical and didactic skills to optimize the educational process.

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Evaluating ultra-low-dose CT against chest x-ray for diagnosing pneumonia in the Emergency Department – A diagnostic accuracy study

Background:

Pneumonia diagnosis in the emergency department (ED) traditionally relies on chest X-ray (CXR). The emerging ultra-low-dose computed tomography (ULD-CT) might provide the precision of a CT scan while maintaining a radiation exposure equivalent to CXR.

Methods:

This multicenter study compared the diagnostic accuracy of ULD-CT and CXR in four EDs, from February 2021 to February 2022. Patients with suspected pneumonia underwent ULD-CT, concurrently with a standard CT. The diagnostic accuracy of ULD-CT for pneumonia was assessed using both expert consensus and CT alone as reference standards. The diagnostic accuracy of ULD-CT was compared to the diagnostic accuracy of CXR using Mcnermars test.

Results:

ULD-CT was performed on 325 patients suspected of pneumonia. Compared to CT diagnosis, ULD-CT had a sensitivity of 84% (80-88) and specificity of 83% (79-87). ULD-CT sensitivity was 70% (65-75), and specificity was 78% (73-82) for pneumonia compared to expert diagnosis. Compared to CT diagnosis, CXR had a sensitivity of 70% (64-75) and specificity of 69% (64-74). Compared to expert diagnosis, CXR had a sensitivity of 68% (62-73), and specificity of 78% (74-83) for pneumonia. ULD-CT showed significantly superior sensitivity and specificity for pneumonia compared to CXR, when CT was the reference standard ($p<0.001$).

Conclusion:

Despite potential logistical and clinical challenges, the results indicate that ULD-CT could potentially replace CXR as the primary imaging modality for suspected pneumonia in the ED. Specific groups, such as supine patients and those with COPD, may benefit the most from ULD-CT. Nonetheless, caution is advised as ULD-CT does not match traditional CT for detecting non-pneumonic conditions.

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Fast assessment track in the Emergency Department

Background: Acute patients, who are mainly self-reliant, stable and of low complexity, were hospitalized for a long time despite their low triage score. Telephone interviews showed that patients were frustrated and surprised over the waiting time and the length of stay at the Emergency Department (ED).

Purpose: 1) To give these patients a quick and efficient assessment and treatment, with the aim of reducing waiting time for patients while increasing patient safety and patient satisfaction, 2) To strengthen patient safety for all acute patients by ensuring available staff and examination rooms by quicker assessment of the patients with low triage score, 3) To increase flow.

Methods: In this improvement project we conducted 7 PDSA (Plan Do Study Act) combined with data, flow diagrams and time series charts. System of profound knowledge were used. The workflow was analyzed, and the staff was involved in this description. Improvements implemented: Decision making support tool based on DEPT triage. Inclusion via hospital referral center, flow coordinator, ED physician and ED nurse. Interdisciplinary reception at the ED around the clock, every day of the week. Action cards for ED physicians and ED nurses. Targeted documentation without double documentation. Digital questionnaires for patients to evaluate patient care.

Results: Performance goal 1: The patient is discharged within 4 hours. Baseline 6 hours. The average number of hours has been reduced to 2,5 hours. Due to the recent PDSA the average number of hours has increased to 6 hours.

Performance goal 2: Patients included increased to 4 patients a day. Baseline 1-2 patients a day. The number of patients in the fast assessment track is now 6 a day.

Performance goal 3: 90% of the patients are discharged from the track.

Baseline: 70%. The average discharged directly from the fast assessment track is now 100%.

Conclusion: The fast assessment track reduces waiting time for stable patients of low complexity and almost all the patients are discharged from the track. The organization experiences a more appropriate utilization of resources due to interdisciplinary reception and targeted documentation. Questionnaires indicate that these patients are more satisfied with waiting time, information and involvement compared to LUP (nationwide surveys of patient experiences).

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How to design new patient pathways for adolescents intoxicated by paracetamol

Background:

Adolescents attending the Emergency Department (ED) after self-harm actions acquire a higher health care cost. For many years it has been discussed how to develop interventions to strengthen these pathways. In Denmark adolescents intoxicated by paracetamol are admitted in the ED for a 20-hour medical antidot treatment. Afterwards they are sometimes offered transference to the psychiatric department (PD). An absence of psychiatric care exists in the acute setting.

Objective:

This study aimed to design a new patient pathway to support the adolescents (15-19 years old) intoxicated by paracetamol by rethinking the collaboration between the ED and PD.

Method:

The plan-do-study-act (PDSA) cycle was used to make improvements, involving six specialist nurses, doctors and managers from the ED and PD. PDSA was chosen as it allows continuous adjustments.

Results

The PDSA cycles formed the development of a new clinical guideline. One highlight was as soon as the treatment was initiated the ED nurses transferred the patient to the PD to continue the medical treatment supported by mental health care. The guideline was tested on a small clinical scale (n=6). Teaching sessions were completed to educate 16 mental health nurses in hands-on procedures to administrate and observe the medical procedure. Next PDSA cycle provided clinical adjustments elaborated by patient statements. Managerial support and common understanding competences were a key factor to succeed.

Conclusion:

We demonstrated how to organize a new patient pathway where the ED and PD collaborate closely to support the adolescent with the right health care competences from the beginning of their admission.

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Implementation of a framework for Optimizing Major EmerGency Abdominal surgery (OMEGA) in the ED reduces mortality

Background: Patient survival improves if major abdominal surgery is performed as soon as possible. Therefore, it is essential to identify patients with this time critical condition quickly and transport them to the operating theater. At Nykobing F. Hospital patients must be transported 100 km to another hospital. Therefore, the right decision is urgent. The OMEGA flow, developed by SUH, is shown to reduce mortality rates among these patients and might improve outcome for patients in Nykobing.

Methods: The improvement team involved several specialties including the ED and with mandate to involve other stakeholders. The improvement method, including data, was used in the implementation of OMEGA.

Interventions: The genuine OMEGA concept was adapted to the new context in Nykobing. The main changes were 1) ED nurses learned new skills to identify OMEGA patients at admission, 2) Changed collaboration between nurses and surgeons, where nurses needed confidence to contact the surgeon directly and controversially acceptance from the surgeons to be contacted, 3) A common agreement of all partners to prioritize OMEGA patients as a time critical group Clinical implementation of OMEGA contained: CT-scan of abdomen within an hour after prescribing the examination. Urgent assessment and eventually stabilization of an anesthesiologist before transportation. The anesthesiologist takes decisions about transportation and eventually accompaniment of staff to secure patient safety.

Results: Two years after implementation (N=358):

Result indicators: 30-days mortality reduced from 15,8% to 9,4%, 90-days mortality reduced from 22,3% to 10,4%. Process indicators: 92% was CT scanned within one hour, 94% started antibiotics within an hour and 85% was transported to the surgical department within three hours.

Conclusion: The implementation of OMEGA increased patient survival. The shared acceptance of the OMEGA concept, that patients were time critical and shared goals were essential to reach this important result.

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Helle Lerche Ipsen: Implementation of a framework for Optimizing Major EmerGency Abdominal surgery (OMEGA) in the ED reduces mortality
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Improving pneumonia diagnosis with a blood sample?

Background: Raising numbers of older patients with atypical clinical presentations of diseases or difficulties in expressing subjective symptoms challenges accurate diagnosis of pneumonia in acutely hospitalized patients. To support antimicrobial stewardship in hospitals, there is a need for improved, objective diagnostic tools. Blood samples to indicate acute pulmonary injury in pneumonia could serve as such an improvement. The primary aim of this study was to investigate a selection of pulmonary biomarkers' differentiation abilities in patients suspected of pneumonia.

Methods: We conducted a clinical, diagnostic cross-sectional study. We identified three potential biomarkers associated with pulmonary tissue: Clara cell 16 (CC16), Krebs von den Lungen-6 (KL6) and surfactant protein-D (SP-D). We analyzed the markers in blood samples from a population of acutely hospitalized adult patients with initial clinical suspicion of pneumonia. Most important, we excluded patients with positive SARS-CoV2-test prior to admission, mentally disabled patients, and immunocompromised patients. Clinical experts retrospectively assessed if the patients suffered from pneumonia at the time of admission. We compared biomarker values in patients with and without verified pneumonia by comparing medians and calculating area under the curve (AUC).

Results: We included 411 patients. Blood samples were available from 379 patients. Biomarker results were available from 367-374 patients. Most missing values were missing at random due to capacity limitations or technical issues. Few samples were missing due to poor blood flow at venepuncture. Prevalence of pneumonia by expert assessment was 59 %. Thirty patients (8%) diagnosed as infection-induced exacerbation of chronic obstructive pulmonary disease were considered as a separate group, not clearly fitting into the pneumonia/non-pneumonia grouping. In the preliminary analyses, we found similar serum values of SP-D, KL6 or CC16 in all groups. All AUC-measures were close to and not statistically different from 0.5.

Conclusion: We found that SP-D, KL6 and CC16 as single markers cannot help differentiate pneumonia/non-pneumonia cases in acutely hospitalized adults suspected for pneumonia. The diagnostic value of combining the investigated markers or combining them with other diagnostic markers of pneumonia or systemic inflammation needs further analyses. However, the very overlapping values between groups make the markers less likely to reach clinical significance in a simple way in the acute setting.

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Anne Heltborg: Improving pneumonia diagnosis with a blood sample?
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Mastering skills in minor traumas in an emergency department (Det lille skadestuekørekort)

Background:

Training plays a vital role in emergency departments (ED) given the ever-evolving nature of medical knowledge and procedures, ongoing training becomes essential to ensure that healthcare professionals remain up-to-date. Furthermore, training becomes even more crucial in the context of staff turnover in the EDs. The purpose of the study was to examine which minor trauma skills the nurses needed training in. This was investigated via a survey and based on the answers we developed and tested a training program in the selected skills.

Methods:

Based on the survey, 21 scenarios were selected to support minor trauma skills that a nurse should be able to handle in the ED. The scenarios were practiced through skill training supported by theory. Three of the selected skills are reported in this abstract; sterile wound wash, application of a dorsal splint, and bandaging of Achilles tendon rupture. From January to March 2023, 32 nurses from an ED in the Central Denmark Region, with different levels of competency, participated in an 8-hour training-day. The effect was assessed using surveys before and after the training, where nurses evaluated their competencies on an ordinal scale based on "how confident and competent do you feel"?

Results:

Response rates for the surveys were 81% and 72%. Sterile wound washing; prior to the training, 57% of the nurses felt completely confident in the procedure, 31% felt somewhat confident, and 12% felt insecure. After participating in the training, 87% reported feeling completely confident, and 13% felt somewhat confident. Dorsal splint; prior to the training, 77% felt completely confident, 12% felt somewhat confident, and 11% were insecure. However, after the training, 91% felt completely confident, and 9% felt somewhat confident. Achilles tendon rupture; before the training, 46% felt completely confident, 39% felt somewhat confident, and 15% were insecure. After the training, the percentages changed to 52% feeling completely confident, 31% feeling somewhat confident, and 17% feeling insecure.

Conclusion:

Training basic orthopedic surgical skills seems to enhance nurses' competencies in the ED. It is crucial to assess whether nurses feel more confident and competent after the training, as it may also introduce uncertainty about procedures.

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Helene Mikkelsen: Mastering skills in minor traumas in an emergency department (Det lille skadestuekørekort)
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Medical secretary to assist with nursing documentation

Background:

The acutely unwell patient needs fast and timely treatment and therefore often several interventions at the same time. Accurate documentation of all acute nursing care given to the acutely deteriorating patient can be challenging as the nurse is preoccupied providing lifesaving treatment. The experience gained from patient safety incidences shows that delayed documentation may compromise patient safety. By implementing a medical secretary (MS) to assist the nurse with real-time registration of interventions are ensured, the documentation can follow the patient in any intra- hospital transfers. We have explored and optimized a work process intended to maximize the documentation process in acute nursing care. The objective is to highlight the specific areas of focus to ensure the nurse can focus solely on patient care while the MS assists in the documentation.

Methods:

Structured observational studies were conducted and followed up by clinical documentation audits as well as trial-runs in the electronic health record system used.

Results and conclusion:

The implementation of a MS to assist with nursing documentation has been shown to improve patient safety as the data can be documented in real-time. The effect of this new work process showed that the times the nurse had to document an already completed acutely deteriorating patient retrospectively were decreased. This frees up the nurse to attend to the next patient shortly afterwards. This new work process also has a positive impact on the working culture in the "staff groups". There was an increase in the mutual understanding of each other's areas of work, which improves teamwork. There is, however, a challenge when documenting the administration of medication as the MS does not have the required access to do so. It is possible to change the system settings for the MS to register the medication administered although this must be co-signed afterwards by the nurse. Nevertheless, adaptations of the system will need to be made to avoid obstacles, time-consuming detours or demands of unnecessary documentation. With this access the MS will be well equipped to assist the nurse. This will in return increase patient safety particularly when transferring the patient intrahospital.

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Nurse Peripheral Ultrasound Guided Vascular Access (PUGVA) competence and learning study

Background:

Peripheral Ultrasound Guided Vascular Access (PUGVA) has demonstrated superiority over conventional approaches in terms of success rate, procedure time, and cannulation attempts in Difficult Intravenous Access (DIVA) Patients. The act of teaching others has shown to be an effective way of improving your own learning.

Methods:

This randomized, controlled, open-labeled trial aims to determine whether a supervising element will improve nurses' skills in the PUGVA procedure. The study involves 20 nurses at the Emergency Department of Aarhus University Hospital who have never previously performed or been trained in PUGVA. The nurses will complete a session of e-learning and then hands-on training before being supervised during four PUGVA procedures. Afterwards, nurses will be randomized into two groups for the fifth procedure: an intervention group that will supervise a PUGVA-instructor, and an active control group that will perform an additional supervised procedure. The sixth procedure will be video-recorded and assessed by blinded experts using a validated rating scale.

Results:

The primary outcome will be the mean PUGVA rating score on the video-recorded procedure, compared between the two groups. Secondary outcomes include the number of successful cannulations, continuous pass/fail scores, and number of additional procedures required to achieve certification after the video recording.

Conclusion:

As the study is still on-going, no conclusions can be made before sufficient data has been obtained.

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Rasmus Herløw: Nurse Peripheral Ultrasound Guided Vascular Access (PUGVA) competence and learning study
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Nurses' experiences of barriers and enablers in the use of Pediatric Early Warning Score (PEWS)

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Background: Studies have shown that the Pediatric Early Warning Score (PEWS) can assist health care professionals to detect clinical deterioration. Studies have documented issues with the implementation, and the purpose of this study was to identify nurses' experiences of barriers and enablers concerning the use of PEWS.

Methods: An Explorative qualitative study including semi-structured interviews with seven nurses from acute pediatric departments in two Hospitals in the Central Denmark Region to gain a greater understanding of the nurses' experiences and barriers and enablers. All the nurses except for two who had two years of experience or less. The interviews were guided by Theoretical Domains Framework (TDF) to identify barriers and enablers in PEWS. Data was organized and analyzed using the Qualitative Data Analysis Software NVIVO. Thematic analysis was used for analyzing the data.

Results: Barriers and enablers were identified within the TDF. Knowledge, skills, beliefs about consequences, social influences, motivation, and goals were identified. The nurses described the need for cooperation between nurses and doctors, a common understanding of PEWS and education and bedside-training in the process to increase knowledge of PEWS to make it a meaningful tool. The nurses had an individual approach to PEWS. Culture seemed to play a huge role and is an important factor to understand healthcare professionals use of PEWS.

Conclusion: Despite implementation of PEWS nurses still experience barriers such as missing cooperation with other clinicians and a lack of continued education. A common understanding of the importance of PEWS for early detection of critical illness can make PEWS among clinicians meaningful to use. Bedside-training and education can increase knowledge about PEWS, but also reinforce the individual approach.

Application to Practice:

The application to practice is to make healthcare professionals aware of the importance of using PEWS related to patient safety. The purpose of this study is also to make administrative management and healthcare professionals who work with implementation aware of identified areas lacking to fulfill a reimplementation of PEWS. Education, training, and teamwork among health care professionals are important to make it meaningful to use the tool which may lead to a successful implementation.

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Lisa Pedersen: Nurses' experiences of barriers and enablers in the use of Pediatric Early Warning Score (PEWS)
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Nursing staff psychological well-being in an emergency department

Background:

Worldwide there have been issues with in-hospital crowding and fast-paced admissions which have created an increasingly high workload. This has led to debates on nurses' work environment and mental well-being. On that behalf, we aimed to gain knowledge of the incidence of depression, anxiety, and stress, as well as insight into factors that influence the mental well-being of the nursing staff in a Danish emergency department.

Methods:

This is a mixed-methods study. An online survey, The Depression, Anxiety and Stress Scale - 21 Items (DASS-21) was sent to all nursing staff (n=146) from a larger emergency department in the Region of Southern Denmark. Afterwards they were invited to participate in semi-structured interviews. Quantitative data was analyzed using descriptive statistics, Mann–Whitney U-tests and a Chi-square test. In the qualitative part a thematic analysis was performed inspired by Braun and Clarke, which contributes to a deeper explanation of the quantitative results.

Results:

Completed surveys were received from 53.4 % of the nursing staff. Overall, the majority of the nursing staff had experienced severe to extremely severe levels of either depression (14.1), anxiety (23.1%), or stress (47.2%), within a week before they completed the survey. Higher levels of psychological distress were significantly associated with fewer years of clinical experience in the emergency department and having previously been sick or received treatment for depression, anxiety, or stress. The qualitative results formed three themes. 1) High work pace and massive responsibility. 2) Professional community and nursing identity. 3) Culture with an increased focus on mental well-being.

Conclusion:

Nursing staff in emergency departments experience a high mental strain, especially represented by a high level of stress and anxiety. The staff expressed that overcrowding, pressured work environment, and lack of resources, affected their mental health.

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Maria Raun: Nursing staff psychological well-being in an emergency department
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Patient satisfaction with an Emergency Department Fast Track model for medically or abdominally ill patients

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Background: Worldwide, emergency Departments (ED) report of increased activity following a risk of overcrowding. To increase the flow and reduce waiting time in an ED, patients referred to acute assessment with a presumable minimal need for diagnosing, care and treatment and a possible quick discharge home can benefit from being treated in a Fast track zone. We aimed to investigate patient characteristics and satisfaction in a Fast track zone in a rural hospital in Denmark.

Methods: This cross-sectional questionnaire survey was conducted from September 2022 – April 2023. Patients referred to the Fast Track Zone due to acute medically or abdominally symptoms were asked to complete the Danish version of the validated Emergency Department Consumer Assessment of Healthcare Providers and Systems Survey (ED CAPHS) right before leaving the ED using paper or iPad. The ED CAPHS survey contains 32 items on waiting time, communication with healthcare professionals (HCPs), information regarding medication, information about follow-up, two global questions on general satisfaction, and recommendation.

Results: Fully completed questionnaires were returned by 130 unique patients; median age 50 years (min 19; max 94), 48 % female, 42 % with abdominal symptoms, 75 % entering the ED one time in the past 6 months, 61 % with a new health problem and 31% rating their general health fair or poor. In total, 87% of the patients experienced being asked about their reason for entering the ED within 15 minutes and 77 % receiving care within 30 minutes after entering. Between 80% and 87 % of the patients expressed being treated with courtesy and respect, being listened to and receiving understandable explanations.

Concerning medication, 63% expressed being asked about their (daily) medicine and 99% informed about what the (new) medicine was for (at discharge). Concerning follow-up, 86% and 80% received information on follow-up care and symptoms to look out for at home, respectively. On a scale from 0-10, patients were generally very satisfied (median score 10) and 90% would recommend this ED to their friends and family.

Conclusion: Fast Track patients report short waiting time and are generally very satisfied. However, patient medication upon arrival needs further attention.

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Rapid infusion of ringer's lactate solution at different temperatures and the effects on circulation in healthy volunteers – a randomized crossover trial

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Background:

Intravenous fluids are routinely administered to treat hypotension. However, increases in blood pressure and other hemodynamic changes are both small-scaled and short-lived. This study explores how the temperature of intravenous fluids affect mean arterial pressure (MAP) and the release of catecholamines.

Methods:

Eighteen healthy volunteers were randomized to receive 30 ml/kg Ringer´s lactate at either cold (15°C) or warm (37°C) temperature over 30 minutes. For 120 minutes, we monitored blood pressure, cardiac output, and systemic vascular resistance continuously. We measured temperature, discomfort, and catecholamine concentration intermittently. Volunteers were crossed over after a minimum 24-hour washout period.

Results:

At 45 minutes, mean MAP increased more with cold fluids (+6.5 mmHg [95% CI, 4.8 – 8.2]) vs warm fluids (+0.6 mmHg [95% CI -1.6 – 2.8]; P<0.001) (figure 1). Moreover, MAP increase was more prolonged after cold fluids (81.7 minutes, 95% CI, 62.5-100.9 vs. 19.2, 95% CI, 3.4-35; p<0.001) (table1). While cardiac output did not show significant differences between groups, systemic vascular resistance increase was greater after cold fluids (159, 95% CI, 9.5-309) compared to warm fluids (-66, 95% CI, -191 to 57; p=0.012). Moreover, noradrenaline peaked at 246% of baseline concentration during cold fluids and decreased with warm fluids (p<0.001). Adrenaline, renin, and aldosterone did not differ significantly between groups.

Conclusion:

Intravenous fluid therapy at cold temperature leads to a greater and more prolonged increase in MAP compared with warm fluids. This increase in MAP is accompanied by a release of intrinsic noradrenaline and an increase in systemic vascular resistance. These findings suggest that the cooling effect, rather than fluid volume, increases MAP via peripheral vasoconstriction.

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Reduction of belt restraint use in the Emergency Department

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Background: Since 2016, the Emergency Department (ED) in Randers has been organized with integrated reception of patients with psychiatric symptoms. However, patients for compulsory admission are directly admitted to the psychiatric department (PD). Other patients with acute psychiatric symptoms are admitted and treated in the same way as patients with acute physical symptoms. In the years following, there has been an increasing number of belt restraints in the ED. Audits following belt restraints indicate a lack of knowledge and skills in the staff group. For example, seen as a lack of de-escalation behavior, lack of knowledge about approaches to psychopathological behavior in the patient group, and a need for rapid acute intervention in case of potential medication overdose.

Methods: Based on an audit as a method for quality development, the ED, in collaboration with the PD, decided to implement various measures aimed at reducing the use of belt restraints. Several interventions were initiated: 1) Learning meetings are held after cases involving belt restraint. (involved staff from both the PD and the ED reflect together and learn from the specific incidents), 2) Establishment of an Emergency Psychiatric Call (multidisciplinary team), 3) Strengthened collaboration with the PD regarding specific patient pathways, 4) Focus on network meetings (involvement of the municipal sector), 5) Documentation and shared overview. Action instructions presented in an easily accessible overview in the electronic patient record, so the staff can get quick access to guidance, 6) Focused content for education and simulation.

Results: Data show a decreasing number of belt restraints. In 2020, there were 44 belt restraints, in 2021, 42 belt restraints (preintervention), and in 2022 (postintervention), the number decreased to 13 belt restraints. The learning meetings and documentation show increased applied knowledge of preventive approaches instead of belt restraints.

Conclusion: It can be observed that there has been a reduction in belt restraints in line with the mentioned interventions. However, it is difficult to determine whether the mentioned interventions directly caused the decrease in the number of belt restraints. Further investigations and analyses are required.

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Tina Messerschimdt: Reduction of belt restraint use in the Emergency Department
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Reduction of Waiting Time for Patient Transfer from Emergency Department to Wards

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Background: The Emergency Department at Randers Regional Hospital faces challenges with crowding, where patient intake exceeds the number of discharges and transfers to the wards. This leads to patients being accommodated in the hallway, posing a risk to patient safety. Crowding occurs because the Emergency Department struggles to transfer patients once they have completed the acute phase of treatment and are ready for a ward. This puts a strain on the waiting wards, causing non-clinical delays for patients. The waiting time has been attributed to two factors. Firstly, nurses are occupied with other tasks and patients within the department. Secondly, delays occur during transport arrangements by the Service Department, such as the unavailability of service assistants or secretaries preoccupied with other duties. Previously, the waiting time from transfer approval to patient departure was 55 minutes. The goal is to ensure that 90% of patients with approved transfers are moved to their respective wards within 20 minutes.

Methods: The project has used the Improvement Method. Four PDSA cycles have been conducted on May 23, 2023.

Result indicator: Number of minutes from transfer approval to patient departure

Process indicator: Number of patients handled by the ADVIS team.

Data source: BI, handheld data, interviews.

Results: The Emergency Department has successfully reduced waiting time to 21 minutes testing an ADVIS team comprising an emergency nurse and a service assistant. The team took responsibility for completing patient tasks and facilitating their transfer out of the department. The primary nurses handed over patients to the ADVIS team. Valuable lessons from the trial included task allocation among the secretary, nurse, and service assistant, as well as minimizing the number of individuals involved in the process. The next step involves further testing of the ADVIS team over a 4-week period from June 19, 2023.

Conclusion: The Emergency Department at Randers Regional Hospital has achieved a significant reduction in waiting time for patient transfers from 55 to 21 minutes by implementing a dedicated team comprising a nurse and a service assistant to facilitate the transfers.

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Mette Faurskov: Reduction of Waiting Time for Patient Transfer from Emergency Department to Wards
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Review on the administration of intravenous isotonic dextrose in patients admitted to the emergency department with clinical dehydration

Background:

Adult patients admitted to the emergency department with clinical dehydration without severe electrolyte derangement are most often treated with intravenous isotonic saline. The administration of intravenous isotonic dextrose for this patient group is not an established practice in the emergency department setting due to the risk of severe hyponatremia, among other things. The aim of this abstract is to illuminate the evidence of or lack of so on the effects of intravenous isotonic dextrose in rehydration of patients admitted to the emergency department with clinical dehydration.

Methods:

Pubmed and Google scholar were searched from inception to June 2nd, 2023. Inclusion criteria were studies involving patients >18 years, admitted to the emergency department with clinical dehydration, administration of intravenous dextrose. Exclusion criteria were studies involving perioperative patients, patients with hyponatremia (P-Na<137), underling endocrinologic disorder, poising, liver failure, cerebral contusion, suspicion of CNS infection or increased intracranial pressure.

Results:

We found no published nor unpublished data which met our predefined requirements through our search strategy. Evidence on rehydration with intravenous isotonic dextrose was only found on pediatric patients.

Conclusion:

Scientific evidence illuminating this matter is severely lacking. However, evidence on rehydration with intravenous dextrose in patients<18 years is more abundant. Likewise, guidelines on rehydration with isotonic dextrose from The WHO only concern management of dehydration in children. The projection of results found in pediatric patients might not be the same in adult patients. Studies assessing the effects of intravenous isotonic dextrose versus intravenous isotonic saline in adult patients with clinical dehydrations are much needed.

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Jehad Barakji: Review on the administration of intravenous isotonic dextrose in patients admitted to the emergency department with clinical dehydration
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Speaking up

Background and objective:

The Speaking up concept is rooted in Patient Safety Leadership WalkRounds, introduced and implemented in the hospital in 2014. Today the emergency department has transformed the walkrounds into a Speaking Up concept. The aim is to support and advance healthcare professionals' opportunities to raise patient safety concerns, to train the skills of speaking up, actively promote and acknowledge patient safety behavior and demonstrate organizationally commitment to building a culture of safety.

Methods:

This abstract is a descriptive summary of reports from The Speaking Up concept. The concept is based on an informal meeting structure, where all healthcare providers are summoned to the conference room, twice a month, from 08.30-09.00 o'clock. The meeting is facilitated by the quality coordinator, with the participation of leaders and a key patient safety team, consisting of a senior doctor, a nurse, and a secretary, who are appointed to address unintentional events reported to the department. The facilitator invites staff to raise concerns or barriers to patient safety in the department, using suitable communication skills. At each meeting, the issues and proposed solutions raised are recorded and passed on to the person in charge, or in some cases passed on as a focal point for the individual staff themselves. All issues and solutions are followed up by the key patient safety team once a month a report is sent to all employees, so that everyone is informed about the patient safety work in the department. Participants An average of 15 employees attended per meeting. 22 meetings were held, with the participation of approximately 330 participants, both senior and junior doctors, nurses, physiotherapists, and assistants.

Results:

In total 100 subjects of safety concern were raised, of which top 5 included: 1) Violation of clinical protocols, 2) Inappropriate work processes, 3) Communication errors, 4) Bottlenecks, 5) Implementation challenges and failures.

Conclusion:

The Speaking Up concept seems to support the opportunities of the staff to articulate issues and therefore appears to be suitable for supporting the culture of patient safety in the department. Further investigation of the patient safety culture is required, and the next step would be to involve the patients.

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Lis Just Madsen: Speaking up
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Standard vs. Targeted Oxygen Therapy Prehospitally for Chronic Obstructive Pulmonary Disease (STOP-COPD); study protocol for a randomized controlled trial

Background:

A high concentration of inspired supplemental oxygen may possibly cause hypercapnia, acidosis and increase mortality in patients with acute exacerbation of chronic obstructive pulmonary disease (AECOPD). Even so, patients with AECOPD are being treated with high oxygen flow rates when receiving inhalation drugs in the prehospital setting. A cluster-randomized controlled trial found that reduced oxygen delivery by titrated treatment reduced mortality - a result supported by observational studies - but the results have never been reproduced. In the STOP-COPD trial, we investigate the effect of titrated oxygen delivery compared with usual care consisting of high flow oxygen delivery in patients with AECOPD in the prehospital setting.

Methods:

In this randomized controlled trial, patients will be blinded to allocation. Patients with suspected AECOPD (n = 1,888) attended by the emergency medical service (EMS) and aged > 40 years will be allocated randomly to either standard treatment or titrated oxygen, targeting a blood oxygen saturation of 88-92% during inhalation therapy. The trial will be conducted in the Central Denmark Region and include all ambulance units. The power to detect a 3% 30-day mortality risk difference is 80%. The trial is approved as an emergency trial. Hence, EMS providers will include patients without prior consent.

Discussion:

The results will provide evidence on whether titrated oxygen delivery outperforms standard high flow oxygen when used to nebulize inhaled bronchodilators in AECOPD treatment. The trial is designed to ensure unselected inclusion of patients with AECOPD needing nebulized bronchodilators – a group of patients that receives high oxygen fractions when treated in the prehospital setting where the only compressed gas is generally pure oxygen. Conducting this trial, we aim to improve treatment for people with AECOPD while reducing their 30-day mortality.

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Arne Sylvester Rønde Jensen: Standard vs. Targeted Oxygen Therapy Prehospitally for Chronic Obstructive Pulmonary Disease (STOP-COPD); study protocol for a randomized controlled trial
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Structured follow-up visits after starting treatment with antibiotics

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Background: The primary duty of the SHS Akutteam is to assess a patient's "emergent" condition and, on that basis, determine whether a patient is a candidate for hospital admission. Many such emergency assessments result in patients' starting treatment with antibiotics at home. However, SHS Akutteam experiences indicate that some patients are, nonetheless, admitted a few days after the emergency assessment and starting an antibiotic course.

The present project was prompted by curiosity as to whether the number of hospitalizations might be reduced if the emergency function offered structured, follow-up visits after starting treatment with antibiotics. The project was designed to determine both when follow-up visits should occur and if the emergency nurse's clinical assessment in the context of measuring the patient's vital signs and C-Reactive Protein (CRP) levels might provide indicators related to the course of treatment.

Methods: Selected data from 70 patients were collected during the emergency visit and the follow-up visit as well as from patient-record audits from when patients started antibiotics and 14 days onward.

Results: The project found that the overall clinical assessment and CRP measurement were good indicators for determining the patient's further course of treatment. Measuring vital signs were, by itself, unable to indicate whether patients were on proper track for treatment. For treatment changes to prevent unnecessary hospitalizations and deterioration of critical illness, the follow-up visit should primarily be performed on Day 2 after starting the antibiotics course. Patients and involved parties all indicated that the follow-up visits were greatly reassuring.

Conclusion: Follow-up visits can prevent a deterioration of critical illness. The nurse's clinical assessment and the determination of CRP levels can be attributed greater value than measuring only vital signs when performing an at-home assessment of patients' antibiotics treatment. In order for patients to receive proper care, we should re-assess which screening methods and workflows are most appropriate for pre-admission activities and for municipal offerings. For patients diagnosed with an illness, the process for early detection of incipient diseases should still be applied — but not as a separate screening tool

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Julia Tonning: Structured follow-up visits after starting treatment with antibiotics
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Systematic Qualification of nurses Individual Competencies in the emergency department (Systematisk Kvalificering af Individuelle Kompetencer, SKIK)

Background: Providing training and maintaining competencies among nurses in emergency departments can be challenging, given the high patient flow and limited nursing resources available. Inspired from an American nurse certification program designed to ensure high quality and individual competence advancement we developed and introduced an internal competence development initiative including dialogue-based skills training, aimed at promoting a consistent quality and evidence-based nursing practices. This study aimed to evaluate whether the nurses' participation in the initiative, known as SKIK, improved their confidence and competence in handling nursing procedures for specific patient categories.

Methods: SKIK was carried out over 1 day, and nurses with up to 1.5 years' employment in the ED participated in 5 stations of 1 hour each. At each station, the participants were received by a trainer introducing them to a case. The station was run through dialogue between participants and trainer, and the participants were asked to perform several procedures and answer questions related to the patient category (e.g. installation of gastric tube, ordering spinal tests, initiation of medical treatment for ketoacidosis on pumps etc.) The nurses reported the effect of their training by surveys on a nominal scale indicating their confidence and competence in handling procedures after the training. The procedures trained were beforehand requested by the nurses in a survey and included ketoacidosis, acute abdomen, acute myocardial infarction, alcohol poisoning and meningitis.

Results: In spring 2023, 16 nurses participated in SKIK and based on the survey they reported: Ketoacidosis (response rate 87.5%) – 100% reported feeling more confident and competent after participating. Acute abdomen (response rate 93.75%) – 80% reported feeling more confident and competent after participating. AKS (response rate 93.75%) – 93% reported feeling more confident and competent after participating. Alcohol poisoning (response rate 100%) - 87.5% reported feeling more confident and competent after participating. Meningitis (response rate 93.75%) – 93% reported feeling more confident and competent after participating.

Conclusion: SKIK seems to contribute to competency development initiatives that may improve nurses' individual competences and confidence in ED procedures, however, further research is needed to explore the effects hereof.

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Inge Bjerregaard: Systematic Qualification of nurses Individual Competencies in the emergency department (Systematisk Kvalificering af Individuelle Kompetencer, SKIK)
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Telemedicine interventions to reduce overcrowding at emergency departments

Background:

Overcrowding in emergency departments is a major healthcare concern as it increases the risk of adverse outcomes. Telemedicine may alleviate overcrowding. We aimed to investigate whether telephone consultations between hospital specialists and general practitioners could reduce the number of referrals to the emergency department.

Methods:

Every second week in a 14-week period calls from general practitioners (daytime 8-15, weekdays) were forwarded to a relevant specialist at Herlev-Gentofte Hospital. The general practitioners and the specialist decided the best course of action together; 1) advice, 2) ambulant consultation or 3) an urgent referral to the emergency department. 8 specialties were included: General surgery, medical gastroenterology, internal medicine, cardiology, nephrology, neurology, orthopedic surgeon, and urology. The primary outcome measure was the number of acute referrals to the emergency department. In this abstract we present preliminary data on patients included in the intervention period.

Results:

In the seven weeks of intervention, a total of 2065 calls from general practitioners were included. During intervention a total of 175 patients (8.5 %) were offered advice or an ambulant consultation at the emergency department while 1890 (91.5 %) were referred to the emergency department after consulting with a relevant specialist. There was considerable variation between the specialties and most calls went to internal medicine (n=489) and general surgery (n=426). An alternative solution was chosen most frequently for urological complaints (52 out of 363, 14 %) and cardiological 35 out of 275, 13 %) complaints. Overall, the doctors referred 4 % (n=91) to an ambulant consultation and of the eight included specialties, neurology (88%) most often utilized this solution.

Conclusion:

Consulting with a specialist resulted in several patients being offered an alternative option to admission. This was equally divided between advice or an ambulant consultation. However, it varied between the specialties which alternative was used.

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The association between defibrillation using LIFEPAK 15 or ZOLL X Series and Survival after Out-of-Hospital Cardiac Arrest: A cohort study

Background:

Defibrillation is essential to achieve return of spontaneous circulation (ROSC) following out-of-hospital cardiac arrest (OHCA) with shockable rhythms. Defibrillators commonly used in the Danish Emergency Medical Services (EMS) include the LIFEPAK 15 and the ZOLL X Series. These defibrillators use different biphasic waveforms and different maximal shock energies. This study aimed to investigate if the type of defibrillator used was associated with ROSC in OHCA.

Methods:

This nationwide, cohort study included data on Danish adult OHCA patients subjected to at least one defibrillation by the EMS from 2016 to 2021. The exposure of interest was defibrillation by either LIFEPAK or ZOLL and the primary outcome was ROSC. Data were extracted from the Danish Cardiac Arrest Registry and The National Patient Registry. Multivariable logistic regression adjusted for patient demographics (age, sex and comorbidities) and OHCA characteristics (initial rhythm, witnessed status, bystander cardiopulmonary resuscitation, use of AED prior to EMS arrival, EMS response time, location of arrest and prehospital physician involvement) was used to examine the association between defibrillator (LIFEPAK or ZOLL) and ROSC.

Results:

median (quartile 1; quartile 3) age was 70 (59; 79) and 3,976 (61%) had an initial shockable rhythm. ROSC was achieved in 3,712 (57%) patients. In total, 5,508 patients (85%) were defibrillated by the LIFEPAK, with 3,084 (56%) achieving ROSC while 997 patients (15%) were defibrillated by ZOLL, with 628 (63%) achieving ROSC. Patients defibrillated by ZOLL had an increased adjusted odds ratio (aOR) of ROSC compared to LIFEPAK (aOR 1.25; 95% CI: 1.08-1.46, p=0.003). There was no significant difference in 30-day mortality (aOR 1.01; 95% CI: 0.86-1.19, p=0.88).

Conclusion:

Defibrillation by ZOLL X Series was associated with increased odds for ROSC compared to defibrillation by LIFEPAK 15 for patients following OHCA.

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