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Benefits and risks of emergency departments with or without a co-located primary care driven urgent care center

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Benefits and risks of emergency departments with or without a co-located primary care driven urgent care center

[Nytta och risker av akutmottagningar med jämfört med akutmottagningar utan ansluten primärvårdsdriven närakut]

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1. Abstract

Background

Emergency department (ED) crowding is a significant challenge – i.e., the demand for emergency services surpasses the available resources for patient care within a reasonable time frame. Crowding is associated with negative outcomes such as higher mortality rates, delays in critical treatment, increased length of stay (LOS) at the ED, increased complication rates, as well as inadequate use of hospital resources. A significant number of patients seek care at the ED although their condition can be addressed by primary care. Urgent care centers (UCC) co-located and sharing triage with the ED, have been considered to reduce ED crowding and improve patient outcomes. UCCs offer care to patients with health issues that could be managed in a primary care setting.

Question at issue

For adults and children contacting an ED, what are the patient benefits and risks of EDs having versus not having a co-located primary care driven UCC with shared triage? The following outcomes were considered: mortality, serious adverse event (misdiagnosis of a time-critical condition), time to physician, LOS, time to disposition decision, patient satisfaction (including communication), unplanned revisits within 72 hours, crowding, resource usage, and distribution to different care levels.

Methods

Database searches in Medline, Embase, the Cochrane Library, Cinahl and Web of Science were performed in December 2023 and January 2024. Titles and abstracts, and subsequently full text articles, were independently screened by at least two authors, and final inclusion was decided in consensus amongst all authors. Included studies were critically appraised, and data was extracted. For outcomes for which comparative data was available, certainty of evidence was assessed using the Grading of recommendations assessment, development and evaluation (GRADE) approach.

Results

The literature search identified a total of 4,435 records of which one retrospective study provided data regarding the question at issue.

The included retrospective cross-sectional study had some limitations in directness as it was limited to a pediatric population, and some study limitations as information on possibly confounding factors was lacking. The study provided data on LOS, showing significantly shorter LOS for the ED with UCC compared to the ED without UCC. For critical outcomes (mortality, and serious adverse events (misdiagnosis of time-critical condition)), as well as for important outcomes (time to physician, time to disposition decision, patient satisfaction, unplanned revisits, crowding, resource usage, and distribution to different care levels) no data were found.

Economic aspects

This report revealed a scarcity of relevant clinical studies regarding the question at issue. Therefore, detailed analyses of costs were not considered relevant in the scope of this Health technology assessment report.

Conclusion

Research on patient benefits and risks when comparing EDs with and without a co-located primary care driven UCC respectively is limited. Based on one retrospective study with some concerns regarding directness and study limitations, it is uncertain whether ED with UCC compared with ED without UCC leads to a difference in LOS for patients contacting the ED (GRADE ⊕◯◯◯).

No other data regarding the question at issue was found.

2. Populärvetenskaplig sammanfattning – Plain language summary in Swedish

Frågeställning

I denna rapport har vi utvärderat frågeställningen om etablering av en primärvårdsdriven närakut i anslutning till och med gemensam triage med en akutmottagning medför risker och/eller nytta i jämförelse med att akutintaget drivs utan en närakut för barn och vuxna som söker akut vård.

Bakgrund

Överbelastning av akutmottagningar utgör en betydande utmaning inom svensk sjukvård och har förknippats med flera olika negativa utfall, däribland ökad risk för död, ökad risk för komplikationer, försenad vård och suboptimalt nyttjande av vårdens resurser. I syfte att minska överbelastning och effektivisera vården har så kallade närakuter etablerats i anslutning till akutmottagningar. Närakuter är primärvårdsinrättningar som delar triagesystem med akutintagen och antas kunna avlasta dessa genom att patienter som kan handläggas på primärvårdsnivå sorteras till närakuten där de kan handläggas snabbare och mer resurseffektivt eftersom man här, till skillnad från akutintaget, har denna patientgrupp som sitt primära fokus. Det är dock oklart om det finns vetenskapligt stöd för detta antagande.

Metod

Databassökningar gjordes i december 2023 samt januari 2024. Urval av artiklar gjordes av minst två författare och projektgruppen beslöt gemensamt vilka artiklar som var relevanta för frågeställningen och skulle inkluderas i rapporten. De ingående studiernas kvalitet granskades och data extraherades i tabeller. Resultatens tillförlitlighet bedömdes enligt GRADE för de utfall där jämförande data fanns tillgängliga.

Resultat

Litteratursökningen identifierade inga relevanta studier som undersökte utfallsmått som är kritiska (dödlighet eller allvarliga komplikationer) eller viktiga (tid till läkare, tid till beslut om inläggning, patientnöjdhet, oplanerade återbesök, trängsel, resursutnyttjande och vårdnivå) för beslutsfattande. En retrospektiv studie som redovisade genomloppstid identifierades. Denna studie har vissa begränsningar i att den enbart gällde en pediatrisk population, och att störfaktorer som kan påverka resultaten inte är beskrivna. Studien fann att genomloppstiden var signifikant kortare vid en akutmottagning som hade en närakut i anslutning jämfört med en akutmottagning som saknade närakut.

Kostnader

Hälsoekonomisk analys bedömdes inte vara möjlig eller meningsfull i avsaknad av relevanta kliniska studier.

Konklusion

Forskning som undersöker positiva och negativa effekter av en etablering av en närakut i anslutning till en akutmottagning är mycket begränsad. Baserat på en enda icke-randomiserad studie med vissa begräsningar i studiekvalitet och överförbarhet är slutsatsen av vår litteraturgenomgång att det är osäkert om akutmottagningar med närakut leder till kortare genomloppstid än akutintag utan en

närakut för patienter som söker akut vård. Inga studier som undersöker utfallsmått som är kritiska eller viktiga för beslutsfattande, såsom dödlighet och medicinska komplikationer, identifierades.

The above summaries were written by representatives from the HTA-centrum. The HTA report was approved by the regional board for quality assurance of activity-based HTA. The abstract is a concise summary of the results of the systematic review. The plain language summary in Swedish is intended for decision makers.

Ylva Carlsson, MD, Associate professor

Head of HTA-centrum of Region Västra Götaland, Sweden, 2024-12-10

Regional board for quality assurance of activity-based HTA

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Wartenberg, Constanze	Psychologist, PhD
Wide, Ulla	Psychologist, Professor

DDS Doctor of dental surgery
MD Medical doctor
PhD Doctor of Philosophy
RN Registered Nurse

3. Summary of findings

Outcomes	Study design Number of studies	Absolute effect	Certainty of evidence GRADE[1]
For the **critical outcomes** mortality and serious adverse event (misdiagnosis of time-critical condition) no studies providing data were identified.			
Outcomes important for decision-making			
LOS	1 Retrospective cross-sectional study	Mean (SD) Monday to Friday out-of office hours ED with UCC (n=1644):1.2 (1.6) h, ED without UCC (n=683): 2.1 (1.4) h Between group comparison: p<0.001 Saturday and Sunday ED with UCC (n=1672): 1.3 (1.4) h, ED without UCC (n=784): 2.0 (1.5) h, Between group comparison: p<0.001	⊕◯◯◯ [2] very low
For the following **outcomes - important for decision making** - no studies providing data were identified: time to physician, time to decision on hospitalization or discharge, patient satisfaction, unplanned revisit (within 72 hours), crowding, resource usage			
ED=Emergency Department, GRADE= Grading of Recommendations Assessment, Development and Evaluation, LOS= Length of stay, SD=Standard Deviation, UCC=Urgent Care Center			

[2]Starting from ⊕⊕◯◯ based on one retrospective cross-sectional study, downgraded because of some indirectness (one step), and some study limitations (one step).

[1] Certainty of evidence

High certainty ⊕⊕⊕⊕	We are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty ⊕⊕⊕◯	We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty ⊕⊕◯◯	Confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.
Very low certainty ⊕◯◯◯	We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

4. Abbreviations/Acronyms

ED Emergency department

EPs Emergency physicians

GRADE Grading of Recommendations Assessment, Development and Evaluation

GP General Practitioner

HTA Health Technology Assessment

LOS Length of stay

UCC Urgent Care Centers

PICO Patient, Intervention, Comparison and Outcomes

PROSPERO International prospective register of systematic reviews

SBU Swedish Agency for Health Technology Assessment and Assessment of Social Services

SD Standard Deviation

5. Background

ED crowding has evolved over recent decades into a significant global public health issue and is now a major challenge for healthcare professionals in developed nations (Boyle et al., 2012). The term "crowding" refers to the scenario where the demand for emergency services surpasses the available resources for patient care within a reasonable time frame (Morley et al., 2018). The surge in ED visits and the inadequate use of hospital resources has led to crowding. The issue is a global challenge, with studies showing that it negatively impacts patients by delaying care and with an increased mortality rate. Several publications have described that patients suffer in crowded EDs due to strained resources, which delay triage, physician assessment, treatment, and ultimately discharge (Morley et al., 2018, Hong et al., 2020). Notably, there is a significant correlation between high ED crowding levels and elevated 30-day mortality rates (Af Ugglas et al., 2020). Sweden has experienced an increase in both the number of ED visits and ED LOS over the last decade, with a decrease observed in 2020 during to the COVID pandemic. The ED LOS increased again in 2021, and this rising trend has continued through 2022 and into 2023 (Socialstyrelsen, 2024).

EDs assess a wide range of medical conditions daily, from life-threatening emergencies to minor complaints. Research indicates that crowding is not solely a result of population growth. Factors contributing to crowding can be categorized into input, throughput, and output (Morley et al., 2018, Asplin et al., 2003). Input factors include any elements that affect the number of patients an ED receives, such as triage procedures, the number of critically ill patients, and lack of primary care resources. Throughput factors influence the flow of patients through the ED, encompassing time to triage, physician assessment, diagnostic testing, and treatment. Output factors impact patient discharge and the transition from the ED to inpatient facilities, often cited as primary reasons for reduced flow in EDs.

The specific causes of crowding can vary dynamically based on the hospital, country, and time of year (Morley et al., 2018). Access to primary care is a fundamental component of a robust healthcare system and is crucial for achieving better health outcomes. However, despite its importance, many developed countries face significant challenges in providing equitable and efficient primary care to their populations. A survey revealed that only 35% of the Swedish population found it easy or somewhat easy to access after-hours primary care. Globally, 20% to

40% of ED visits are considered inappropriate, involving health issues that could be managed in a primary care setting (Carret et al., 2009). This misuse of EDs may contribute to crowding. However, previous reports argue that low-priority patients in the ED have limited effect on the reason behind crowding (Salway et al., 2017, Rabin et al., 2012). Further, ED care may be more expensive than care provided in primary care organization, and patients with non-emergent conditions might undergo unnecessary diagnostic tests and treatments in an ED setting, increasing the risk of complications, healthcare costs and reduced continuity of care. If adequate, treating patients in primary care rather than EDs can significantly lower costs. Furthermore, inadequate continuity of care may lead to increased utilization of health services over time (Hong et al., 2020). A recent nationwide cross-sectional study in Sweden indicates that 34 % of patients in the EDs are self-referred walk-ins (Henricson et al., 2022). By redirecting more patients from the ED to the appropriate level of care, effective triage could help optimize ED resources and reduce crowding.

Briefly, in VGR, there are approximately 200 primary care centers, evenly split between public and private providers. During regular working hours, primary care centers offer acute visits. Outside these hours, during evenings and weekends, primary care on-call centers are available for urgent health issues that cannot wait until the next day. For advice and guidance, the patients can contact a medical helpline “1177”. The medical helpline provides healthcare advice 24/7. By calling 1177, patients can receive medical assessments and self-care advice. If necessary, the medical helpline refers the patient to the appropriate healthcare facility, such as a primary on-call center or an ED. At the on-call centers, patients can receive help if they become ill or injured when the primary care center is closed. Appointments are reserved for medical conditions that cannot wait until the next working day.

In the early 1980s, the rise in emergency cases internationally led to the creation of UCCs. These centers are staffed by primary care physicians and equipped to handle emergency conditions not requiring the specialized facilities of an ED (Weinick et al., 2009). It is suggested that UCCs could be ideal for managing non-life-threatening conditions, freeing up ED resources. Care at an UCC could be less expensive than ED care and could be a cost-effective option for the healthcare system. Patients in UCCs could experience shorter wait times compared to those in the ED, leading to faster access to care for less severe conditions. According to a national report from the U.S, UCCs can reduce the overuse of EDs by up to 48% (Yee et al., 2013).

Despite the theoretical potential benefits of co-localization of a UCC with an ED, research on risks and benefits of this organisational model has been scarce and there is an ongoing debate in Sweden whether UCCs constitute an effective and beneficial form of healthcare or not (Stuart-Beck and Faxén, 2023, Region Stockholm, 2022, Isacson and Sandström, 2023).

6. Health technology at issue: ED co-located with a primary care driven UCC

The intervention at issue is an ED co-located with a primary care driven UCC. Patients contact a shared triage point (physical visit) deciding whether the patient is initially referred to the ED or the UCC. An UCC is defined as a primary care unit staffed with general practitioners (GP) and with limited diagnostic and therapeutic resources compared to ED. UCC patients are those who cannot wait until the next day for an assessment but do not require the resources of an ED. However, in some cases access to the hospital's diagnostic tools may be needed. UCCs offer a promising alternative to reduce ED crowding and improve patient outcomes. However, the optimal integration and effectiveness of UCCs within the healthcare system remain uncertain. Therefore, a systematic assessment of the benefits and risks of co-location of a primary care driven UCC with an ED is warranted.

7. Focused question

Are there patient benefits when EDs are, versus are not co-located with a primary care driven UCC with shared triage with the ED, and is it safe?

PICO: P= Patients, I= Intervention, C= Comparison, O=Outcome

P	Adults and children contacting emergency care
I	ED with a co-located primary care driven UCC*
C	ED without co-located primary care driven UCC
O	Critical for decision making • Mortality • Serious adverse event (misdiagnosis of time-critical condition) Important for decision making • Time to physician, • LOS, • Time to decision on hospitalization or discharge, • Patient satisfaction (including communication), • Unplanned revisit (within 72 hours), • Crowding, • Resource usage, • Distribution to different care levels
	Restriction to: Randomized controlled trials, non-randomized controlled studies (including before- after studies) Publications from 2000 onwards in English, Swedish, Danish, or Norwegian
	Planned subgroup analyses: Sub-group analyses may be done for the following patient groups: children and adults, UCC that only see patients that enter through a shared triage point vs UCCs that also receive patients without triage

* Patients contact a shared triage point (physical visit) deciding whether they are initially referred to the ED or the UCC. A UCC is defined as a primary care unit staffed with GPs and with limited diagnostic and therapeutic resources as compared to the ED.

The relevance of outcomes included in the PICO was confirmed by a patient representative.

8. Methods

Systematic literature search (Appendix 1)

During December 2023 and January 2024 two authors (TS, IS) performed systematic searches in Medline, Embase, the Cochrane Library, Cinahl and Web of Science Core collection. Websites of Scandinavian national and regional HTA-organizations were visited. Reference lists of relevant reports were also scrutinized for additional references. Search strategies, eligibility criteria and a graphic presentation of the selection process are presented in Appendix 1. These authors conducted the literature searches, and independently of one another screened the obtained abstracts to decide eligibility for full-text retrieval. All abstracts were screened using the Covidence systematic review software. Any disagreements were resolved in consensus. All full-text reports were read by at least two authors, independently of one another, and it was finally decided in a consensus meeting which reports should be included in the assessment.

The HTA was registered in International prospective register of systematic reviews (PROSPERO) on 29th April 2024 (number CRD42024532610) prior to data extraction.

Critical appraisal and certainty of evidence

Included studies were critically appraised using an adjusted checklist from the Swedish Agency for Health Technology Assessment and assessment of social services (SBU). The results were summarised per outcome and if applicable were to be pooled by meta-analysis. Certainty of evidence for each outcome for which results were available was assessed using the GRADE approach (Atkins et al., 2004; GRADE Work group).

Sub-group analyses according to patient population (pediatric and adult) as well as location (geographical distance between UCC and ED) were prespecified.

Ongoing research

A search in Clinicaltrials.gov (15 April 2024) using the search terms *((urgent OR walk-in OR walk-in) AND (clinic OR department OR centre OR center OR collaboration OR utilisation OR unit OR facility OR facilities)) OR ((minor injury) AND unit) OR ((out-of-hour OR after-hour) AND (care OR healthcare))* in the **Title** field identified 61 trials. The same search terms in the **Condition** field identified 498 trials, resulting in a total of 499 trials after de-duplication.

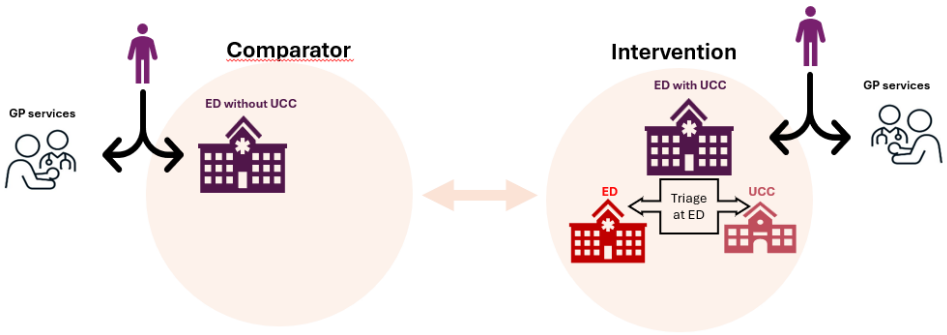
9. Results

Search results and study selection (Appendix 1)

The literature search identified a total of 4,435 records after removal of duplicates. After reading the abstracts 4,359 records were excluded. 76 articles were sought for retrieval. 35 of these publications were excluded by two authors after reading them in full text. The remaining 41 publications were sent to all participants of the project group. Of these, 40 publications were excluded after full-text reading and discussion in the project's consensus meetings. One publication was finally included in the assessment (Appendix 2).

This report concerns the intervention - ED with co-located primary care driven UCC – and the comparator - an ED without UCC (illustrated by pink areas in Figure 1). Only one study (Ellbrant et al., 2020) presented data on this comparison.

Figure 1: Illustration of the comparison of interest according to the PICO



Pink areas indicate comparison of interest

The remaining studies were excluded mainly for the following reasons:

- Several studies presented a different comparison:
    - comparing an *unselected* comparator group contacting an ED without UCC with a *selected* intervention group limited to patients who at triage at an ED with UCC are allocated to the ED (e.g. Fuhrmann et al., 2021, Platter et al., 2020; Thijssen et al., 2013; Thijssen et al., 2016; and Van der Baaren et al., 2023)
    - Comparing an *unselected* comparator group contacting an ED without UCC with a *selected* intervention group limited to patients who at the triage at an ED with UCC are allocated to the UCC (e.g. Raidla et al., 2020; Wang et al., 2014).
    - Comparisons including not only patients contacting an ED but also patients seeking GP services or the UCC directly (Bessert et al., 2023, Wackers et al.,2023).
- Wrong intervention – according to the predefined PICO-question, the ED and the co-located primary care driven UCC should share the triage unit. Several studies were excluded as they described different approaches to collaboration between ED and GPs and primary care. E.g. several publications were excluded as they described models where a GP was employed and worked at the ED.
- Wrong outcome- some studies lacked data on the outcome measures specified in our PICO (see section 7)
- Limited/wrong population- some studies were limited to patients with minor orthopedic injuries only.

Included studies

One study (Ellbrant et al., 2020) was included in this HTA report. This was a retrospective, cross-sectional study carried out at a pediatric ED at the university hospital in Malmö, Sweden. The study compared patient visits to the ED in 2012 prior to implementation of an UCC with patient visits to the ED in 2015 after implementation of the UCC. The UCC was available outside office hours (Monday-Friday 17:00-22:00, Saturday-Sunday 10:00-22:00). The comparison comprised 1 467 patient visits to the ED prior to implementation of the UCC and 3 316 patient visits to the ED when the UCC had opened.

The study was considered to have some limitations regarding directness since the population was limited to pediatric patients and concerned ED visits during out-of-hour times only. Further, for each year, only two months (March and September) were included in the analysis. These months were chosen to reflect seasonal changes in patient visits from children with symptoms caused by seasonal viruses. The study was considered to have some study limitations since there was no information on the number of patients per personnel which is considered an important confounder for the reported outcome – length of stay.

Results per outcome

Outcomes, critical for decision-making

No data relevant for the outcomes critical for decision-making i.e., mortality, and serious adverse events (misdiagnosis of time-critical condition), were found.

Outcomes, important for decision-making

LOS (Appendix 4.1)

In the retrospective, cross sectional study by Ellbrant et al., 2020, the mean LOS (SD) Monday to Friday out-of office hours at the ED without UCC (n=683) was 2.1 (1.4) h compared to 1.2 (1.6) h, at the ED with UCC (n=1644) ($p<0.001$).
The mean LOS (SD) Saturday and Sunday at the ED without UCC (n=784) was 2.0 (1.5) h compared to corresponding times at the ED with UCC (n=1672) of 1.3 (1.4) h, ($p<0.001$).
These results reflect the LOS for all patients who contacted the ED with, respectively without UCC during the study period – irrespective of triage level.

Given some concern regarding directness and study limitations, it is uncertain whether ED with UCC compared with ED without UCC affects the LOS for patients contacting the ED (GRADE ⊕◯◯◯).

No data relevant for the other outcomes important for decision-making – time to physician, time to decision on hospitalization or discharge, patient satisfaction (including communication), unplanned revisit (within 72 hours), crowding, resource usage, or distribution to different care levels – were found.

10. Organisational aspects

The size and intended staffing of a UCC depend on the area it is located in, and the patient flow it is meant to handle. For instance, if an ED at a hospital has a high proportion and number of lower-priority cases, a larger UCC will be required than for an ED with a smaller corresponding patient flow.

Time frame for the putative introduction of the new health technology
The existing UCC at Östra Sjukhuset could be used as a model and organizational support if a UCC was to be established in connection with the ED Sahlgrenska. Given that there already are suitable facilities in place, and with a combination of existing staff and simultaneous recruitment of additional personnel, it is estimated that it would take approximately three months to fully implement and launch a new UCC.

Present use of the technology in other hospitals in Region Västra Götaland
In Västra Götaland there is one existing UCC at Östra Sjukhuset that is open every day from 8 am to 10 pm. This UCC handles approximately 60–80 patients per day from both the adult and the paediatric ED. Around 50% of the patients arriving at the ED can be referred to a lower level of care, with the UCC receiving about two-thirds of these referrals. Key characteristics of the UCC at Östra Sjukhuset include a common triage line located in the ED to determine whether patients should initially be referred to the ED or the UCC, clear procedures for referrals, proximity to the hospital's facilities, and the ease of directing patients who need a different level of care.

Previously, there have been three additional UCCs in Västra Götaland, none of which had a common triage line with the hospital ED; these three UCCs were closed due to lower-than-expected patient volumes.

Consequences of the new health technology for personnel
The UCC and the ED at Östra Sjukhuset are separate organizational units with separate personnel. The units collaborate closely in daily work. A new UCC unit at Sahlgrenska would most probably be organized in a similar manner.

Consequences for other clinics or supporting functions at the hospital or in the Region Västra Götaland

A potential opening of additional UCCs is not expected to increase the workload on primary care services; rather, the UCC will help ensure that patients are directed to the appropriate level of care from the outset. However, establishing further UCCs may indirectly put strain on primary care units if staffing or costs are taken from the same budget.

Another aspect that needs to be taken into account is the impact on the continuity of care when care is provided at an UCC instead of the original primary healthcare facility. Patient behavior might change, with some opting for the ED or UCC instead of the on-call center. However, this is managed through the shared triage system, which directs patients appropriately regardless of available care options.

11. Economic aspects

Since the health technology at issue concerns an organizational change rather than a medical product or treatment, the economic implications are complex. As described above the proposed intervention of establishing an ED with a co-located primary care driven UCC implies that patients contact a shared triage point deciding whether they are initially referred to the ED or the UCC. The UCC would be staffed with GPs and with limited diagnostic and therapeutic resources compared to ED. The hospital management at Sahlgrenska University Hospital funds the UCC at Östra sjukhuset, covering the costs of personnel and diagnostics required. For 2023, the costs including staff, premises, costs for radiological imaging, laboratory testing, material etc. per patient visit at

the Sahlgrenska ED was 3 800 SEK per patient, while the cost per patient visit at the UCC at Östra sjukhuset was 1 400 SEK. However, these costs per patient visit at the ED and the UCC are difficult to interpret for several reasons. Firstly, the per patient cost at Sahlgrenska ED is an average for patients with highly differing complexity ranging from low to very complicated cases. It is reasonable to assume that the cost for visits that could be managed at the UCC is lower than the average per patient visit cost at Sahlgrenska ED. Secondly, establishing an UCC implies both fixed and variable costs and the per patient visit costs may, e.g. increase in case of lower-than-expected patient volumes at an UCC. Thirdly, establishment of an ED with UCC may increase the patients' tendency to seek care at this care facility. In addition, the distribution and impact of costs for the UCC to be covered by primary care and hospital would need to be considered. These aspects prohibit simple conclusions based on the cost per visit at the Sahlgrenska ED and at the UCC at Östra sjukhuset.

We did not identify any relevant data for health economic analyses in our identified literature.

12. Ethical aspects

Since 1997, Sweden has had an ethical platform on priorities in health and social care with the following three principles that are also incorporated into the Health and Medical Services Act (Socialutskottet 1996/1997 and (Hälso- och sjukvårdslag, 2017 [SFS 2017:30])) - the principle of human dignity, the principle of need and solidarity, and the principle of cost and efficiency. These principles govern how resources are allocated in public healthcare.

The literature does not provide substantial evidence on the question at issue. Detailed ethical considerations may evolve as evidence becomes available, meanwhile the following aspects can be noted. Patients who present to the ED may have a time-sensitive condition, and the process of triage, whereby some patients are redirected to an UCC may raise ethical concerns regarding patient safety. Accurate triage is essential to ensure that undiagnosed serious conditions are carefully considered to prevent adverse outcomes. The decision to direct patients to a UCC rather than the ED can have implications for equity in access to care. There is a need to ensure that this system does not inadvertently create disparities in healthcare based on factors such as socio-economic status, language barriers, or health literacy. The approach to allocate patients according to triage level to UCC and ED respectively corresponds to the principle of need and solidarity. The intention is to reduce crowding such that work at ED is focused on patients in need of emergency care whilst patients who can be managed at primary care level are cared for at the UCC. As an UCC would be co-located with a hospital, some further inequity in access to care in town compared to countryside has to be considered. A key driver for suggesting the implementation of UCC is improved resource use which – if shown possible - is in line with the principle of cost and efficiency.

13. Discussion

Summary of main results

This report addresses the question - are there patient benefits when EDs are, versus are not co-located with a primary care driven UCC with shared triage with the ED, and is it safe? Research on this question is limited. Although the literature search identified 4 435 records, only one study provided data regarding the question at issue and was limited to only one of the outcomes of interest - LOS. Based on this study, it remains uncertain whether implementation of an UCC leads to shorter LOS. No data relevant for the outcomes critical for decision-making i.e., mortality, and serious adverse

events (misdiagnosis of time-critical condition), nor for any other outcomes relevant for our analysis were found.

Overall completeness and applicability of evidence

Healthcare systems vary significantly across countries, which complicated the screening of the identified articles for relevance. The terminology in the field is heterogeneous, with many terms used in different ways to describe the same or similar concepts. For example, "UCC" has been described as “walk in centres”, “hospital-integrated general practice”, “GP cooperative”, “hospital-integrated primary care unit”, “urgent care collaboration”, and so on. Some studies were excluded due to a lack of clarity or different approaches for the co-operation between the ED and the so called UCC.

Despite numerous studies on different primary care driven UCCs found in the literature, the certainty of evidence on the efficacy of UCC in our report remains very low. This is mainly due to the fact that different interventions are described in the publications. For example, some studies had a primary care physician allocated to the ED and some had a special unit for low acuity symptoms, called UCC but staffed by the same physicians working at the ED. Out of 41 studies read in full-text and discussed in project’s consensus meetings with the clinical experts, only one was included (Ellbrant et al., 2020) and the only outcome included was LOS. The other studies were excluded as they did not correspond to our defined PICO. This raises the question whether we should have defined our PICO less specifically to broaden our perspective. The population ("P") in our PICO was adults and children visiting an ED. This choice was made to include all patients seeking emergency care, regardless of the reason, and did not lead to any exclusion of publications. The intervention ("I") in our PICO was an ED with a co-located primary care-driven UCC including specific characteristics of shared triage, and the comparator (“C”) was ED without co-located primary care driven UCC. We wanted to study the entity of UCC rather than its actual geographical co-location. To study UCCs, a common definition is necessary. The focus of our analysis was on UCCs which are part of a primary care organization to reduce the burden on EDs, to decrease the waiting times, and to improve patient safety. We did not define any specific criteria regarding geographical co-location, and this was not a reason for exclusion of any publication. A key feature in the UCC concept considered in Västra Götaland and in use at Östra Sjukhuset is that there is a shared triage system and area for patients contacting the ED. After triage the patient is directed to the ED or the UCC. Several publications described interventions without a shared triage. Some publications used the term “UCC” for units operated as entirely separate organizations (e.g. minor injury units managed by independent providers) thus not corresponding to primary care driven UCC that we investigated. We planned to consider approaches in which patients could contact the UCC directly without prior triage, yet this would require a distinction between the different patient pathways and their respective outcomes. None of the publications provided this type of description.

If we had defined the intervention differently (not requiring co-location with a shared triage in the ED), we could have included more studies. We aimed to maintain strict control over the intervention and comparator to ensure they were clearly defined and aligned with the model considered in Västra Götaland. This was crucial to ensure that any included study was relevant to the Västra Götaland model and to our understanding of the comparisons made..

The outcomes ("O") considered in our PICO reflect what we considered most important patient benefits and risks as well as decision-making; the relevance of these was confirmed by a patient representative. Two publications were excluded as they did not report relevant outcomes – none of these articles reported any clinical data.

According to the Healthcare administration in Region Stockholm the number of visits to EDs has decreased over the period 2017 to 2021, with a significant decline following the opening of UCCs (Region Stockholm, 2022). Also, patients attending an UCC have shorter wait times for physician assessment compared with regular care at the hospital ED for the same injury or illness. Furthermore, for similar healthcare needs reimbursement rates are higher for hospital EDs compared to UCCs and primary care clinics (Region Stockholm, 2022). In summary, although healthcare administrative data from Region Stockholm show promising results, our analysis did not identify published scientific studies to provide evidence regarding patient benefits and risks. Given the lack of scientific studies in the field further collection of benchmarking information and experience from other regions may be of value.

One might consider that there is a risk of reduced continuity of care with an UCC since this introduces another form of healthcare that patients can seek. However, the alternative for these patients – being managed in the ED - also implies reduced continuity.

Healthcare systems vary significantly across countries, even though the Scandinavian countries have similar systems. Only few studies in this field have been conducted in Scandinavia and as described above, only one published study was relevant for our question. It is noted that the question at issue is highly complex and requires consideration of a context with many contributing factors (eg. availability of primary care, patient population with conditions ranging from minor complaints to live threatening emergencies, resources, and staff experience, staffing in relation to patient numbers at the different care levels, geographical location). This complexity is difficult to address in scientific controlled studies and other sources of information as described above may be of value.

Agreements and disagreements with other studies and reviews

The search identified six systematic reviews, two of which were related to the research question in the present HTA.

Table 2: Other published systematic reviews in the field

Systematic review	Research question	Snabbstar level (rational)	Included studies (N, study design, number of patients)	Conclusion	Comment
Crawford et al., 2017	"For ED patient presentations [the Population], what is the impact of the alternative models of care 'GP cooperatives' and 'walk-in' clinics' [Interventions] for less urgent patient attendances [Comparison] on the change in number of ED presentations? [Outcome]"	2 (only study design is described without any risk of bias assessment)	7 studies (6 of which were also identified in the search in the present HTA.)	"GP cooperatives with nurse-led triage of medical emergency care (as in The Netherlands do receive and reduce a proportion of ED presentations in less urgent patient categories. More evidence is required to be confident of the efficacy of these care pathways as an alternative to ED treatment, particularly regarding patients' medical outcomes."	Note: This publication does not explicitly state which comparator is considered. Focus is on the number of visits only.
Gonçalves-Bradley et al., 2018	"[] to assess the effects of locating primary care professionals in hospital EDs to provide care for patients with non-urgent health problems, compared with care provided by regularly scheduled emergency physicians (EPs)."	6	4 studies (1 RCT with randomisation to different personnel), no overlap with the studies identified in the present HTA.	"It is uncertain whether the intervention reduces time from arrival to clinical assessment and treatment, total length of ED stay (1 study; 260 participants), admissions to hospital, diagnostic tests, treatments given, or consultations or referrals to hospital-based specialist (3 studies; 11,203 participants; very low-certainty evidence), as well as costs (2 studies; 9325 participants; very low certainty evidence). No data were available on mortality or adverse events. Results were inconsistent across studies."	Note: other than the present HTA, this publication focused on the population with non-urgent health problems only. Also, the intervention of locating primary care professionals in the ED differs from the intervention considered in the present HTA.

ED= Emergency department, EPs= Emergency physicians, GP= General practicioner, HTA= Health technology assessment, RCT= Randomized Controlled Trials,

The following systematic reviews were identified in the search but were not considered relevant for our project as the question was unclear (Fry, 2011), or too broad compared to our research question (Hong et al., 2020, Jeyaraman et al., 2021 and Leibowitz et al., 2003).

Implications for research

This review showed that many studies in the field describe interventions which do not correspond to the UCC model considered in VGR. Furthermore, several studies report on comparisons where an unselected study population (irrespective triage level) contacting an ED without UCC is compared to a selected population which after triage is allocated to the ED or those who after triage are allocated to the UCC. These comparisons imply substantial bias as outcomes as e.g., mortality, adverse events, LOS etc. in an unselected population are compared with outcomes in a population which based on triage level is considered to have a more critical condition (thus allocated to the ED) or a less critical condition (thus allocated to the UCC).

Further research with unbiased comparison of all patients seeking care at an ED with and ED without UCC is warranted. Alternatively, comparisons in which the triage level is considered when comparing a patient group at an ED with UCC and corresponding patients at an ED without UCC may be valuable, yet none of the publications identified in our search used this approach. It must be acknowledged that the complexity of the question at issue where many contributing factors would have to be controlled or adjusted for, is difficult to address in traditional scientific studies.

14. Future perspectives

Scientific knowledge gaps

Further controlled studies to investigate the issue at question in this report are needed. Given the lack of scientific studies in the field and the promising healthcare administrative data from Region Stockholm further collection of benchmarking information and experience from other regions may be of value. In case an UCC is implemented, predefined follow up of clinical results as well as costs may be considered for increased knowledge.

Ongoing research

The search for ongoing clinical studies in Clinicaltrials.gov identified 500 studies. The relevance of each of these was assessed by at least two project members. None of the identified ongoing studies was considered relevant for the question at issue in this report.

15. Participants in the project

The question was nominated by

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Declaration of interests

Ingela Wennman is first author of a publication identified in the literature search. She has not participated in decisions regarding the use of this publication in this report. No conflict of interest was reported for the other authors or reviewers in relation to this report.

Project time

The HTA was accomplished during the period of 15 November 2023 and 23 October 2024.

Literature searches were performed during the period December 2023 and January 2024.

Appendix 1: PICO, study selection, search strategies, and references

Question(s) at issue:

Are there patient risks or benefits when comparing emergency departments with and without a co-located primary care driven urgent care center?

PICO: (*P=Patient I=Intervention C=Comparison O=Outcome*)

P	Adults and children contacting emergency care
I	Emergency department with a co-located primary care driven urgent care
C	Emergency department without co-located primary care driven urgent care center
O	Critical for decision making • Mortality • Serious adverse event (misdiagnosis of time-critical condition) Important for decision making • Time to physician, • Length of stay, • Time to decision on hospitalization or discharge, • Patient satisfaction (including communication) • Unplanned revisit (within 72 hours), • Crowding • Resource usage • Distribution to different care levels
	Restriction to: Randomized controlled studies, non-randomized controlled studies (including before-after studies) Publications from 2000 onwards in English, Swedish, Danish or Norwegian
	Planned subgroup analyses: sub-group analyses may be done for the following patient groups: children and adults, urgent care center that only see patients that enter through a shared triage point vs urgent care centers that also receive patients without triage.

<u>Eligibility criteria</u>

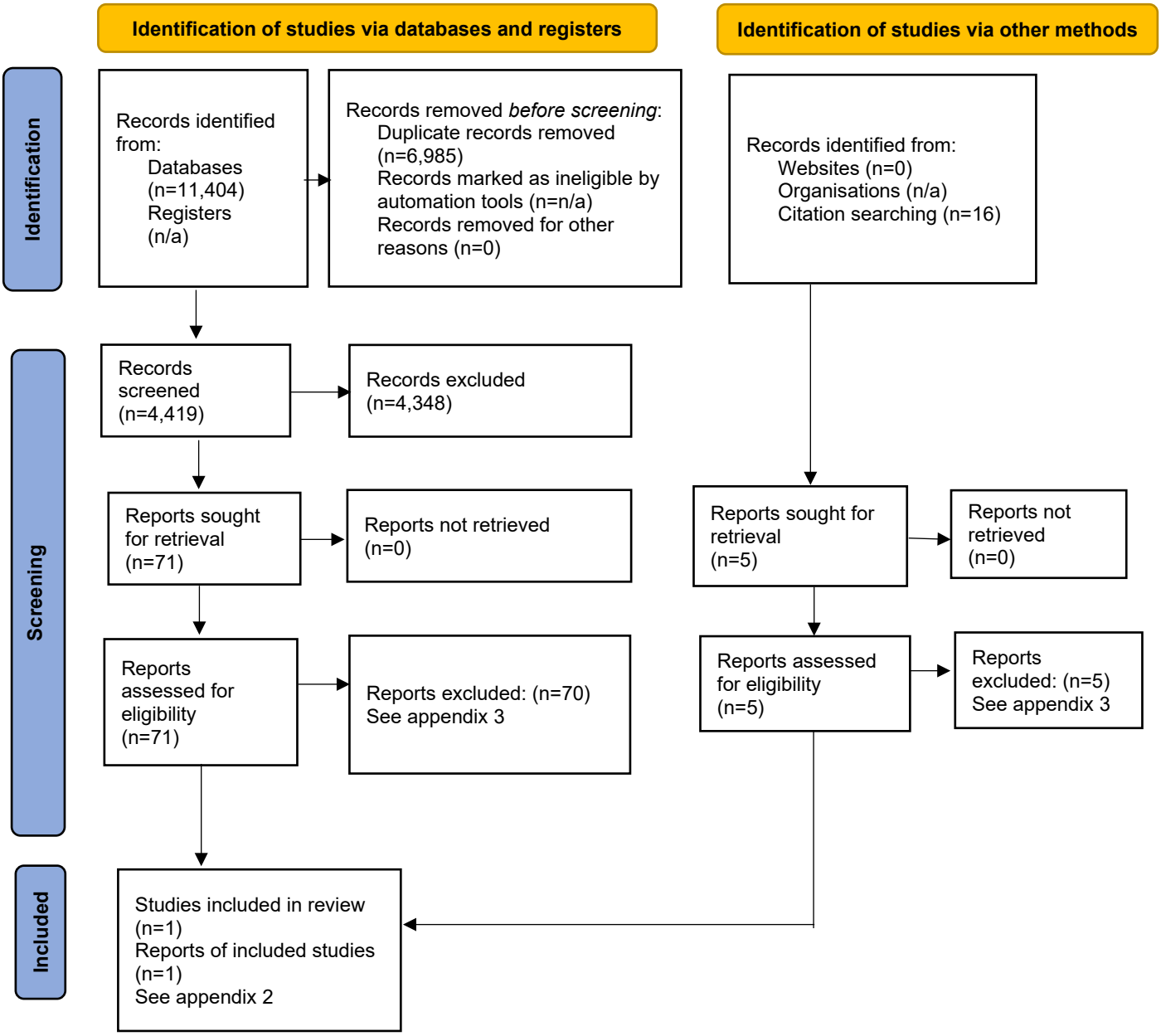
Study design:
Randomised controlled trials
Non-randomised controlled studies
Case series etc. if ≥ 100 patients

Language:
English, Swedish, Norwegian, Danish

Publication date: 2000-

Selection process – flow diagram

PRISMA 2020 flow diagram for new systematic reviews which included searches of databases, registers and other sources



From: Page et al., 2021

Search strategies

Database: Ovid MEDLINE(R) ALL (OvidSP)
Date: 18 Dec 2023
No. of results: 3,125

#	Searches	Results
1	(urgent adj3 (clinic$1 or department$1 or centre$1 or center$1 or collaboration$1 or utili#ation or unit$1 or facility or facilities)).ab,kf,ti.	2218
2	(treatment or care).ab,kf,ti.	6803569
3	1 and 2	1958
4	((walk-in or walkin) adj3 (clinic$1 or department$1 or centre$1 or center$1 or collaboration$1 or utili#ation or unit$1 or facility or facilities)).ab,kf,ti.	805
5	(minor injur* adj3 unit$1).ab,kf,ti.	148
6	(out-of-hour* or outofhour* or after-hour* or afterhour*).ab,kf,ti.	4364
7	(primary adj3 (care or healthcare)).ab,kf,ti.	192338
8	6 and 7	1051
9	3 or 4 or 5 or 8	3866
10	limit 9 to yr="2000 -Current"	3386
11	limit 10 to (danish or english or norwegian or swedish)	3287
12	(case reports or comment or editorial or published erratum).pt.	3997793
13	11 not 12	3125

Database: Embase 1974 to 2023 December 15 (OvidSP)
Date: 18 Dec 2023
No. of results: 3,077

#	Searches	Results
1	(urgent adj3 (clinic$1 or department$1 or centre$1 or center$1 or collaboration$1 or utili#ation or unit$1 or facility or facilities)).ab,kf,ti.	3743
2	(treatment or care).ab,kf,ti.	9302342
3	1 and 2	3275
4	((walk-in or walkin) adj3 (clinic$1 or department$1 or centre$1 or center$1 or collaboration$1 or utili#ation or unit$1 or facility or facilities)).ab,kf,ti.	1124
5	(minor injur* adj3 unit$1).ab,kf,ti.	166
6	(out-of-hour* or outofhour* or after-hour* or afterhour*).ab,kf,ti.	7456
7	(primary adj3 (care or healthcare)).ab,kf,ti.	256577
8	6 and 7	1277
9	3 or 4 or 5 or 8	5723
10	limit 9 to yr="2000 -Current"	5223
11	limit 10 to (danish or english or norwegian or swedish)	5112
12	limit 11 to (article or article in press or conference paper or "review")	3089
13	limit 12 to (embase or medline)	3077

Database: The Cochrane Library
Date: 18 Dec 2023
No of results: 207 ref
Cochrane reviews: 9
Cochrane protocols: 0
Trials: 198
Editorials: 0
Special collections: 0
Clinical answers: 0

ID	Search	Hits
#1	((urgent NEAR/2 (clinic? or department? or centre? or center? or collaboration? or utili?ation or unit? or facility or facilities))):ti,ab,kw (Word variations have been searched)	353
#2	(treatment or care):ti,ab,kw (Word variations have been searched)	1100946
#3	#1 AND #2	333
#4	(((walk-in or walkin) NEAR/2 (clinic? or department? or centre? or center? or collaboration? or utili?ation or unit? or facility or facilities))):ti,ab,kw (Word variations have been searched)	65
#5	(((minor NEXT injur*) NEAR/2 unit?)):ti,ab,kw (Word variations have been searched)	9
#6	((out NEXT of NEXT hour*) or outofhour* or (after NEXT hour*) or afterhour*):ti,ab,kw (Word variations have been searched)	389
#7	((primary NEAR/2 (care or healthcare))):ti,ab,kw (Word variations have been searched)	29191
#8	#6 AND #7	99
#9	#3 or #4 or #5 or #8	498
#10	(clinicaltrials OR trialsearch):so	490964
#11	(conference proceeding):pt	232480
#12	#10 OR #11	723444
#13	#9 NOT #12	244
Limit to publication year 2000-		**207**

Database: CINAHL via EBSCOhost Research Databases
Date: 18 Dec 2023
No. of results: 2,146

#	Query	Limiters/Expanders	Results
S11	S3 OR S4 OR S5 OR S8	Limiters – Academic journals Publication Date: 20000101-20231231; Language: Danish, English, Norwegian, Swedish Expanders - Apply related words; Apply equivalent subjects Search modes - Find all my search terms	2,146
S11	S3 OR S4 OR S5 OR S8	Limiters - Publication Date: 20000101-20231231; Language: Danish, English, Norwegian, Swedish Expanders - Apply related words; Apply equivalent subjects	2,429

		Search modes - Find all my search terms	
S10	S3 OR S4 OR S5 OR S8	Limiters - Publication Date: 20000101-20231231 Expanders - Apply related words; Apply equivalent subjects Search modes - Find all my search terms	2,456
S9	S3 OR S4 OR S5 OR S8	Expanders - Apply related words; Apply equivalent subjects Search modes - Find all my search terms	2,601
S8	S6 AND S7	Expanders - Apply related words; Apply equivalent subjects Search modes - Find all my search terms	577
S7	TI ((primary N2 (care or healthcare))) OR AB ((primary N2 (care or healthcare)))	Expanders - Apply related words; Apply equivalent subjects Search modes - Find all my search terms	106,663
S6	TI ((out W1 hour*) or outofhour* or (after W0 hour*) or afterhour*) OR AB ((out W1 hour*) or outofhour* or (after W0 hour*) or afterhour*)	Expanders - Apply related words; Apply equivalent subjects Search modes - Find all my search terms	2,416
S5	TI (((minor W0 injur*) N2 (unit or units))) OR AB (((minor W0 injur*) N2 (unit or units)))	Expanders - Apply related words; Apply equivalent subjects Search modes - Find all my search terms	159
S4	TI (((walk-in or walkin) N2 (clinic* or department* or centre* or center* or collaboration* or utili?ation or unit or units or facility or facilities))) OR AB (((walk-in or walkin) N2 (clinic* or department* or centre* or center* or collaboration* or utili?ation or unit or units or facility or facilities)))	Expanders - Apply related words; Apply equivalent subjects Search modes - Find all my search terms	514
S3	S1 AND S2	Expanders - Apply related words; Apply equivalent subjects Search modes - Find all my search terms	1,418
S2	TI (treatment or care) OR AB (treatment or care)	Expanders - Apply related words; Apply equivalent subjects Search modes - Find all my search terms	1,935,191
S1	TI (((urgent) N2 (clinic* or department* or centre* or center* or collaboration* or utili?ation or unit or units or facility or facilities))) OR AB (((urgent) N2 (clinic* or department* or centre* or center* or collaboration* or utili?ation or unit or units or facility or facilities)))	Expanders - Apply related words; Apply equivalent subjects Search modes - Find all my search terms	1,664

Database: Web of Science Core Collection
Entitlements: - WOS.SCI: 1970 to 2024, - WOS.AHCI: 1975 to 2024, - WOS.BHCI: 2005 to 2024, - WOS.BSCI: 2005 to 2024, - WOS.ESCI: 2019 to 2024, - WOS.ISTP: 1990 to 2024, - WOS.SSCI: 1970 to 2024, - WOS.ISSHP: 1990 to 2024
Date: 24 Jan 2024
No. of results: 2,849

#	Search Query	Results
1	((urgent NEAR/2 (clinic$ or department$ or centre$ or center$ or collaboration$ or utili?ation or unit$ or facility or facilities))) (Topic)	2129
2	treatment or care (Topic)	7867771
3	#2 AND #1	1780

4	(((walk-in or walkin) NEAR/2 (clinic$ or department$ or centre$ or center$ or collaboration$ or utili?ation or unit$ or facility or facilities))) (Topic)	739
5	"minor injur*" NEAR/2 unit$ (Topic)	99
6	"out-of-hour*" or outofhour* or "after hour*" or afterhour* (Topic)	4259
7	primary NEAR/2 (care or healthcare) (Topic)	209898
8	#6 AND #7	1006
9	#3 OR #4 OR #5 OR #8	3531
10	#3 OR #4 OR #5 OR #8 Timespan: 2000-01-01 to 2024-01-30	3218
11	#3 OR #4 OR #5 OR #8 and English (Languages) Timespan: 2000-01-01 to 2024-01-30	3148
12	**#3 OR #4 OR #5 OR #8 and English (Languages) and Article or Review Article (Document Types) Timespan: 2000-01-01 to 2024-01-30**	**2849**

The websites listed below were visited 29 Jan 2024.
Nothing relevant to the question at issue was found

Source	Search terms/Browsing	No. of results	No. of relevant results
SBU www.sbu.se	Närakut Akutmottagning Akuten Akutsjukvård Akutvård Snabbspår Triage	0 15 156 11 5 2 7	0 0 0 0 0 0 0
Folkehelseinstituttet (Norge) https://www.fhi.no/ku/metodevurdering/	Browsat kategori Metodevurdering - Rapporter		0
Behandlingsrådet (Danmark) https://behandlingsraadet.dk/	Browsat		0
Nationale Kliniske Anbefalinger og Retningslinjer (Danmark) https://www.sst.dk/da/Fagperson/Retningslinjer-og-procedurer/NKA-og-NKR/NKR-og-NKA-efter-omraade	Browsat		0
CAMTÖ https://www.regionorebrolan.se/sv/forskning/kontakt-och-organisation/hta-enheten-camto/	Browsat		0
HTA Region Stockholm https://www.chis.regionstockholm.se/hta/rapporter/	Browsat		0
Regional samverkansgrupp HTA (tidigare Metodrådet) i Sydöstra sjukvårdsregionen https://sydostrasjukvardsregionen.se/samverkansgrupper/hta/genomforda-bedomningar/	Browsat		0
HTA Syd https://vardgivare.skane.se/kompetens-utveckling/sakkunniggrupper/hta-skane/#110365	Browsat		0
Medicinska rådet, Region Dalarna https://www.regiondalarna.se/plus/vard/ovrig-halso--och-sjukvard/medicinska-radet/	Browsat		0

Reference lists
A comprehensive review of reference lists brought 16 new records.

Reference lists

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Appendix 2 – Characteristics of included studies

Author Year Country	Study Design	Study Groups; Intervention vs control	Patients (n)	Mean Age (years)	Men (%)	Outcome variables
Ellbrandt, 2020 Sweden	Retrospective Cross-sectional study	I: Pediatric ED after implementation of HPCU (open Monday to Friday 17 – 22 and Saturday and Sunday 10 – 22). C: Pediatric ED prior to implementation of HPCU	I: 3316 patient visits at ED with UCC (during opening hours of HPCU) C: 1467 patient visits at ED without UCC (during times corresponding to HPCU opening hours)	0 to 17 years (Mean age for the sub-group used for our report not reported)	53% (Proportion in the sub-group used for our report not reported)	Length of Stay

ED: Emergency Department, HPCU: hospital-integrated primary care unit

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Appendix 3.
Excluded articles

Author, year	Reason for exclusion
Anderson 2016	Wrong intervention (UCC not connected to emergency department)
Arain 2015	Wrong intervention (UCC not connected to emergency department)
Bessert 2023a	Wrong comparison (intervention includes walk in patients to UCC)
Bessert 2023b	Duplicate
Boeke 2010	Wrong intervention (general practitioner working at ED)
Bosmans 2012	Wrong intervention (general practitioner working at ED)
Broekman 2017	Wrong comparator (no data on patients contacting the ED)
Buckley 2010	Wrong intervention (UCC not connected to emergency department)
Byrne 2000	Wrong intervention (nurse led unit)
Chacko 2020	Wrong comparison (patients referred from UCC to ED vs self-referred ED patients)
Chalder 2007	Wrong intervention (personnel moves between walk in center and ED)
Chmiel 2016	Wrong O
Colliers 2017	Wrong intervention (no shared triage)
Cowling 2016	Wrong study design (no comparison, focus on patient characteristics by referral from UCC to different departments)
Coyle 2013	Wrong study design (no comparison, description of two oncology urgent care centers)
Crawford 2017	Systematic review on different question
Dolton 2016	Wrong intervention (general practitioner practices with extended hours)
Eason 2022	Wrong comparison (transfers from pediatric UCC to pediatric ED vs transfers from general UCC to pediatric ED)
Flores-Mateo 2012	Wrong intervention (no UCC, focus on organizational interventions to reduce ED utilization)
Foster 2020	Wrong focus (systematic scoping review focusing on primary care out-of-hours services)
Freeman 2010	Wrong I (nurse led unit)
Fry 2011	Systematic review
Fuhrmann 2021	Wrong comparison (intervention includes only patients after triage to ED)
Galloway 2023	Wrong intervention (self-referral or referral from oncology team or primary care)
Gaughan 2020	Wrong intervention (unit for specific conditions)
Ghaleb 2020	Wrong intervention with different parallel paths
Gonçalves-Bradley 2018	Systematic review
Gould Rothberg 2022	Wrong intervention (self-referral or referral from oncology team)
Ho 2017	Wrong intervention (UCC not connected to emergency department)
Hong 2020	Systematic review
Hsu 2003	Wrong intervention (no triage and nurse led)
Hutchison 2003	Wrong intervention (UCC not connected to emergency department)
Jeyaraman 2021	Systematic review
Kool 2008	Wrong comparator (including patients who contact general practitioner)
Kurian 2023	Wrong intervention (UCC not connected to emergency department)

Project: Urgent Care Center
Appendix 3.
Excluded articles

Author, year	Reason for exclusion
Leibowitz 2003	Systematic review
Leigh 2021	Wrong intervention (general practitioner involvement at ED)
MacKenchnie 2020	Wrong intervention
Maqbul 2021	Wrong intervention (no information on triage)
Marx 2023	Wrong intervention (UCC not connected to emergency department)
Mason 2012	Wrong intervention (emergency care practitioners, UCC not in focus)
Morreel 2022	Wrong intervention (redirecting to primary care)
Morreel 2021	Wrong intervention (redirecting to primary care)
New 2000	Wrong study design (no comparison, focus on clinical decision support tool)
O'Keeffe 2008	Wrong intervention (UCC not connected to emergency department)
O'Keeffe 2011	Wrong intervention (emergency care practitioners, UCC not in focus)
O'Kelly 2010	Wrong intervention (no shared triage)
Pacheco 2019	Wrong intervention (UCC not connected to emergency department)
Philips 2010	Wrong intervention (UCC not connected to emergency department)
Platter 2020	Wrong comparison (intervention includes only patients after triage to ED)
Raidla 2020	Wrong comparison (intervention group limited to patients triage to UCC)
Russell 2022	Wrong publication type (poster session)
Rutten 2017	Wrong study design (case series)
Rutten 2021	Wrong comparison (general practitioner cooperatives with vs without access to radiology)
Rutten 2018	Wrong comparison (general practitioner cooperatives with vs without access to radiology)
Salisbury 2007	Wrong intervention (personnel moves between walk in center and ED)
Smits 2012	Wrong intervention (most patients call the general practitioner cooperative prior to arrival), wrong comparison (general practitioner cooperatives in two time periods)
Tan 2014	Wrong focus (systematic review listing all initiatives to improve access to primary and urgent care in England, no results of specific interventions)
Thijssen 2013	Wrong comparison (intervention includes only patients after triage to ED)
Thijssen 2015	Wrong comparator
Thijssen 2016	Wrong comparison (intervention includes only patients after triage to ED)
van der Baaren 2023	Wrong comparison (intervention includes only patients after triage to ED)
van Gils-van Rooij 2015	Wrong comparator (lack of information on patients contacting ED)
van Gils-van Rooij 2018a	Wrong outcome (staff satisfaction)
van Gils-van Rooij 2018b	Wrong comparator (lack of information on patients contacting ED)
van Uden 2004	Wrong intervention (UCC not connected to emergency department)
van Uden 2005	Wrong intervention (unclear triage at primary care level)
van Uden 2006	Wrong intervention (unclear triage at primary care level)

Project: Urgent Care Center
Appendix 3.
Excluded articles

Author, year	Reason for exclusion
Virji 2022	Wrong intervention/comparison (c-spine x-ray in UCC vs CT-scan in ED)
Wackers 2023	Wrong comparator (including patients not contacting ED)
Wackers 2022	Duplicate to Wackers 2023
Wang 2014	Wrong comparison (intervention group limited to patients triage to UCC)
Wennman 2019	Wrong study design
Ylä-Mattila 2023	Wrong intervention (normal triage at an ED, no UCC)
Zakharevich 2022	Wrong focus (antibiotic prescription)

ED: Emergency department, UCC: Urgent care center,

Project: Urgent Care Center

* + No or minor problems
? Some problems
- Major problems

Appendix 4.1
Outcome variable: Length of stay

Author year country	Study design	Withdrawals - dropouts	Results		Comments	Directness *	Study limitations *	Precision *
			Intervention	Control				
Ellbrandt, 2020 Sweden	Retro-spective cross-sectional study	NA	**ED with HPCU** Monday to Friday out-of office hours (n=1644): 1.2 (1.6) h, Between group comparison: p<0.001 Saturday and Sunday (n=1672): 1.3 (1.4) h, Between group comparison: p<0.001	**ED without HPCU** Monday to Friday out-of office hours (n=683): 2.1 (1.4) h Saturday and Sunday (n=784): 2.0 (1.5) h	Results provided by the first author of the publication	?	?	+

ED: Emergency Department, HPCU: hospital-integrated primary care unit

Innehållsdeklaration

Denna HTA-rapport är baserad på följande moment:

- [x] Metodbeskrivning
- [x] PICO
- [x] Uttömmande litteratursökning
- [x] Flödesschema
- [x] Urval relevans
- [x] Kvalitetsgranskning
- [x] Tabelldata
- [x] Sammanvägning av resultat
- [ ] Metaanalys
- [x] Evidensgradering enligt GRADE
- [x] Sammanfattning
- [x] Ekonomi
- [x] Organisation
- [x] Etik
- [x] Pågående studier
- [x] Exkluderade artiklar
- [x] Expertgrupp deltar
- [x] Extern granskning
- [x] Kunskapsluckor identifierade
- [x] Jävsdeklaration inhämtad från projektdeltagarna