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**Literature search results**

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**Search details**

Minor injuries streaming. Impact on patient satisfaction, staff satisfaction, efficiency, safer systems, cost savings and on major injuries.

**Resources searched**

NHS Evidence; TRIP Database; Cochrane Library; AMED; BNI; EMBASE; HMIC; MEDLINE; PsychINFO; Google Scholar

**Database search terms:** ambulatory adj2 care; AMBULATORY CARE; urgent adj2 care; minor adj2 inju*; (walk-in OR "walk in") adj0 (center OR centre); (minor adj2 (emergenc* OR trauma OR illness*)); "walking wounded"; stream*; triag*; TRIAGE; queu*; satisfaction; SATISFACTION; JOB SATISFACTION; PATIENT SATISFACTION; efficien*; PRODUCTIVITY, cost*; exp COST; "length of stay"; LOS; LENGTH OF STAY; waiting; admission; admitted; non-admission; "not admitted"; HOSPITAL ADMISSION; PATIENT ADMISSION; saving*; COST CONTROL; “quality of care”; “care quality”; HEALTH CARE QUALITY; HEALTH CARE DELIVERY; hospital”; “acute care”; “emergency care”; “accident and emergency”; “A & E”; differentiation; separate*; sort*; divid* category*; split*

**Evidence search string(s):** ("minor inju"* OR "minor trauma" OR "minor illness"* OR walk-in OR "ambulatory emergency care") (stream* OR queu* OR triag*)

**Google search string(s):** (~"minor injuries" OR ~"minor trauma" OR "minor injury"* OR walk-in OR ~"ambulatory emergency care") (~streaming OR ~queuing OR ~triage)

**Summary**

There is a considerable amount of research into improving emergency care, part of which involves separating out minor from major injuries. Streaming is not a frequently used term so have included triage. Sometimes triage is done online or by telephone outside hospital, and patients are referred to walk-in or urgent care centres. Otherwise it is done in A & E by
nurses, physicians or in combination who either deal with them in-house or refer them on to urgent care. I have tried to be as broad as possible in my search, but if you want me to narrow it down to a particular aspect, such as streaming within emergency care, please let me know.

### Guidelines

**College of Emergency Medicine**

*Emergency Medicine Operational Handbook: the way ahead* 2010

**NICE**

*Triage, assessment, investigation and early management of head injury in infants, children and adults* 2007

**Royal College of Nursing**

*Maximising nursing skills in caring for children in emergency departments*

### Evidence-based reviews

**Canadian Agency for Drugs and Technologies in Health - Rapid Review**

*Triaging Patients from the Emergency Department to Other Medical Centres: A Review of the Clinical Evidence and Guidelines* 2012

No clinical evidence or evidence-based guidelines were identified regarding the triage of low urgency adult patients from the emergency department to other medical centres.

**Database of Abstracts of Reviews of Effects**

*The clinical effectiveness of nurse practitioners' management of minor injuries in an adult emergency department: a systematic review* 2009

There were no statistically significant differences between effectiveness of care by emergency nurse practitioners and junior doctors. Findings emphasised the need for high-quality research using appropriate outcome measures in the area of clinical effectiveness of nurse practitioners.

**National Institute for Health Research (NIHR)**

*The impact of changing workforce patterns in emergency and urgent out-of-hours care on patient experience, staff practice and health system performance* 2010

*Reducing attendances and waits in emergency departments: a systematic review of present innovations* 2004

### Published research


**Author(s)** Miyamichi R., Mayumi T., Asaoka M., Matsuda N.

**Citation:** Emergency Medicine Journal, July 2012, vol./is. 29/7(570-575), 1472-0205;1472-0213 (July 2012)
Background: Emergency departments deal with large patient loads on a day-to-day basis. The importance of patient self-assessment in the triage process has not been fully considered when determining the need for hospital admission. Objective: To determine the validity of a series of self-administered triage questions in determining the need for hospitalisation in the emergency setting. Design: Prospective cohort study. Setting: Emergency department in a tertiary-care, municipal hospital in Japan. Participants: 5380 consecutive walk-in patients visiting the emergency department of Okazaki City Hospital were asked to self-evaluate the urgency and severity of their condition and their perceived need for hospital admission. These patients were then assessed by emergency physicians blinded to the results from each patient's self-assessment. Main outcome measures: Sensitivity, specificity and likelihood ratios were calculated for each self-assessment by comparing these with findings from assessments made by emergency physicians. Results: Patient-perceived need for hospitalisation had a sensitivity of 0.79 (95% CI 0.76 to 0.82) and a specificity of 0.93 (95% CI 0.92 to 0.93) in determining hospital admission. The positive and negative likelihood ratios for self-assessments were 10.68 (95% CI 9.59 to 11.90) and 0.22 (95% CI 0.19 to 0.26), respectively, in the diagnosis of hospital admission (p<0.01). Conclusions: The patient self-triage questions concerning condition with five categories (medication only to life threatening) seem to supplement the triage process for hospital admission in emergency departments.

Source: EMBASE
Available in print at
Available in fulltext from Emergency Medicine Journal at Highwire Press

3. Using ambulatory A&E care to cut admissions

Author(s) Hattrick G., Bentham C.
Citation: Nursing times, April 2012, vol./is. 108/14-15(14-15), 0954-7762 (2012 Apr 3-16)
Publication Date: April 2012
Abstract: Evidence shows many conditions can be effectively managed out of hospital, with greater patient satisfaction and fewer hospital admissions. South Tyneside Foundation Trust ran a pilot project in which an ambulatory emergency care (AEC) department saw patients admitted to hospital via their GP, producing the benefits stated above.

Source: EMBASE
Available in print at
Available in print at
Available in fulltext from Nursing Times at the ULHT Library and Knowledge Services’ eJournal collection
Available in print at
Available in print at


Author(s) Bickerton J, Davies J, Davies H, Apau D, Procter S
Citation: Primary Health Care Research & Development, April 2012, vol./is. 13/2(142-52), 1463-4236;1477-1128 (2012 Apr)
Publication Date: April 2012
Abstract: AIM: To identify the appropriate service provider attendees of emergency departments (EDs) and walk-in centres (WiCs) in North East London and to match this to local service provision and patient choice.DESIGN: An anonymous patient survey and a retrospective analysis of a random sample of patient records were performed. A nurse consultant, general practitioner (GP) and pharmacist used the presenting complaints in the patients' records to independently stream the patient to primary care services, non-National Health Services or ED. Statistical analysis of level of agreement was undertaken. A
stakeholder focus group reviewed the results.

SUBJECTS AND SETTING: Adult health consumers attending ED and urgent care services in North East London.

RESULTS: The health user survey identified younger rather than older users (mean age of 35.6 years -- SD 15.5), where 50% had not seen a health professional about their concern, with over 40% unable to obtain a convenient or emergency appointment with their GP. Over a third of the attendees were already receiving treatment and over 40% of these saw their complaint as an emergency. Over half of respondents expected to see a doctor, one-quarter expected to see a nurse and only 1% expected to see a pharmacist across both services, although WiCs are nurse-led services. More respondents expected a prescription from a visit to a WiC, whereas in the ED a third of respondents sought health advice or reassurance.

CONCLUSION: A number of unscheduled care strategies are, or have just been, developed with the emphasis on moving demand into community-based services. Plurality of services provides service users with a range of alternative access points but can cause duplication of services and repeat attendance. Managing continued increase in emergency and unscheduled care is a challenge. The uncertainties in prospective decision making could be used to inform service development and delivery.

Source: Medline

5. Unscheduled care following attendance at Minor Illness and Injury Units (MIU): cross-sectional survey.

Author(s) Rubin G

Citation: Journal of Evaluation in Clinical Practice, February 2012, vol./is. 18/1(100-3), 1356-1294;1365-2753 (2012 Feb)

Publication Date: February 2012

Abstract: RATIONALE, AIMS AND OBJECTIVES: Minor Illness and Injury Units (MIUs) are becoming a key element in the Urgent Care strategies of Primary Care Trusts. They are intended to both improve access to primary care and to reduce the workload of hospital emergency departments. Their efficiency in resolving patients' needs for health care has been questioned. We sought to describe subsequent health care utilisation among people attending two MIUs in Sunderland, UK.

METHOD: Audit of all patients who attended the MIUs during two separate week-long blocks with General Practitioner (GP) case note review of those who had been either treated and discharged or referred to their GP.

RESULTS: A total of 1995 patients from 38 practices attended during the study period. 1262 (63.3%) were treated and discharged and 281 (14.1%) referred to the GP. In the subsequent 7 days 336 (21.8%) attended their GP, 37 (2.4%) attended an emergency department and 18 (1.2%) reattended the MIU. Overall, 855 (42.9%) of all attenders required further care, and in 265 (29.9%) this was unscheduled.

CONCLUSION: Although most people attending Minor Illness and Injury Units are treated and discharged, subsequent use of health care services is common and in a third of cases is unscheduled. This calls into question the effectiveness of MIUs as an alternative to general practice but may reflect a need for better signposting of patients to the service best suited to their needs. Copyright 2010 Blackwell Publishing Ltd.

Source: Medline

Available in print at


Author(s) Meer A, Gwerder T, Duembgen L, Zumbrunnen N, Zimmermann H

Citation: Emergency Medicine Journal, February 2012, vol./is. 29/2(124-8), 1472-0205;1472-0213 (2012 Feb)

Publication Date: February 2012

Abstract: BACKGROUND: Patients often establish initial contact with healthcare institutions by telephone. During this process they are frequently medically triaged. PURPOSE: To investigate the safety of computer-assisted telephone triage for walk-in patients with non-life-threatening medical conditions at an emergency unit of a
Swiss university hospital. METHODS: This prospective surveillance study compared the urgency assessments of three different types of personnel (call centre nurses, hospital physicians, primary care physicians) who were involved in the patients' care process. Based on the urgency recommendations of the hospital and primary care physicians, cases which could potentially have resulted in an avoidable hazardous situation (AHS) were identified. Subsequently, the records of patients with a potential AHS were assessed for risk to health or life by an expert panel. RESULTS: 208 patients were enrolled in the study, of whom 153 were assessed by all three types of personnel. Congruence between the three assessments was low. The weighted kappa values were 0.115 (95% CI 0.038 to 0.192) (hospital physicians vs call centre), 0.159 (95% CI 0.073 to 0.242) (primary care physicians vs call centre) and 0.377 (95% CI 0.279 to 0.480) (hospital vs primary care physicians). Seven of 153 cases (4.57%; 95% CI 1.85% to 9.20%) were classified as a potentially AHS. A risk to health or life was adjudged in one case (0.65%; 95% CI 0.02% to 3.58%). CONCLUSION: Medical telephone counselling is a demanding task requiring competent specialists with dedicated training in communication supported by suitable computer technology. Provided these conditions are in place, computer-assisted telephone triage can be considered to be a safe method of assessing the potential clinical risks of patients' medical conditions.

Source: Medline
Available in print at
Available in fulltext from Emergency Medicine Journal at Highwire Press

7. A baseline audit of referral and treatment delivered to patients in the intermediate minor oral surgery service in Croydon PCT

Author(s) O’Neill E., Gallagher J.E., Kendall N.
Citation: Primary dental care : journal of the Faculty of General Dental Practitioners (UK), January 2012, vol./is. 19/1(23-28), 1355-7610 (Jan 2012)
Publication Date: January 2012

Abstract: Patients attending for primary dental care may require oral surgery procedures beyond the capability of a generalist and thus need to be treated by a dentist with greater expertise. In the United Kingdom, it is increasingly accepted that such care may be provided in primary care settings by specialists or dentists with a special interest. In response to local pressures, an intermediate minor oral surgery (IMOS) service has been established in Croydon, south west London, to provide oral surgery treatment for non-urgent patients on referral. To audit the appropriateness and quality of oral surgery referrals after triage to an IMOS service in Croydon and to set standards for future audits on this topic. An audit tool was developed in line with the local referral guidelines and agreed with local stakeholders. Information on 501 (10%) triaged referrals to IMOS practices over a 24-month period was obtained through the referral management centre. A 10% sample of referrals per month to each practice was calculated and IMOS providers randomly selected the relevant patient records. Using an agreed audit pro forma, information on the indications for referral, treatment provided, and dates relating to patient management, in addition to the age and sex of patients, was collected from the IMOS providers by one investigator. Descriptive analysis of the data was performed. Of the 501 patient records that were examined, 99% of patients were treated in IMOS practices, with only three (less than 1%) patients being referred on to hospital consultant services. The largest proportion (237; 40%) of referrals was for the extraction of teeth considered to have special difficulty, followed by lower third molars (154; 26%). Almost one-third (159; 32%) of patients were referred for more than one procedure. One in eight (72; 13%) teeth removed by the IMOS providers were recorded as a simple extraction without medical complications. In general, patients were referred appropriately to the primary care oral surgery service in Croydon, with only a minority recorded as receiving simple care that should not have required referral. The clinician-led triage process using a referral management system worked well in selecting appropriate patients for treatment by IMOS providers in primary care and reduced referrals to hospital. Suggested standards for future audits of IMOS referrals have been set.

Source: EMBASE

**Author(s)** Chadha, Rajeev, Singh, Amita, Kalra, Jay

**Citation:** Clinical Governance, 2012, vol./is. 17/3(191-199), 1477-7274

**Publication Date:** 2012

**Abstract:** PURPOSE: Patient satisfaction and quality care are important indicators for the success of any health care enterprise. The critical nature of health care operations entails that some excess capacity is stored in the system to provide the necessary flexibility of response. To prepare health care organizations to deliver high quality services at lower costs, this paper aims to report a lean health care (LEAN-HC) transformation model that integrates queuing theory and lean methodology to improve the dynamic performance of the health care system. DESIGN/METHODOLOGY/APPRAOCH: This paper reviews and evaluates an emergency department health care system that adopts a system dynamic model, redesigned the process using value stream mapping to eliminate non-value-added activities to achieve just-in-time (JIT) services. This study was conducted at SD Mission Hospital, India. The LEAN-HC model includes three steps. First, the patient arrival flow is assessed and adjusted, using physicians at the front of the queue to separate patients at triage into major, medium, and minor injury classes. Second, a cross-functional team consisting of process, information and clinical experts maps the hospital's current state to identify and eliminate wasteful non-value-added activities. Third, the process is continually de-bottlenecked using a variety of lean techniques, such as 5S visual management, one-piece-flow to reduce service lead time, and adoption of standard operating procedures. FINDINGS: The authors' results reveal that a lean integration to queuing methodology frees up capacity in the health care system, providing necessary flexibility of response. The implementation of the LEAN-HC model resulted in the following improvement. First, an improved process flow and increased capacity. Second, emergency department length of stay for all patient classes decreased. Third, value stream mapping was found to be useful in detecting opportunities to decrease patient turnaround. Fourth, the service bottleneck could be identified and shifted to where it could be most easily controlled, adhering to the principle of one piece flow. No changes in resource availability and safety or quality issues occurred during the implementation of lean methodology. ORIGINALITY/VALUE: This study demonstrates how to apply lean methodology in conjunction with the queuing modeling in the health care industry, particularly with regards to the patient wait time and reduction in medical errors. The LEAN-HC model delivers more efficient service by increasing hospital capacity while reducing non-value-added times and overhead costs.

[Abstract]

**Source:** HMIC

Available in print at


**Author(s)** Bickerton, Jane, Davies, Jacqueline, Davies, Helen

**Citation:** Primary Health Care Research and Development, 2012, vol./is. 13/2(142-152), 1463-4236

**Publication Date:** 2012

**Abstract:** AIM: To identify the appropriate service provider attendees of emergency departments (EDs) and walk-in centres (WiCs) in North East London and to match this to local service provision and patient choice. DESIGN: An anonymous patient survey and a retrospective analysis of a random sample of patient records were performed. A nurse consultant, general practitioner (GP) and pharmacist used the presenting complaints in the patients' records to independently stream the patient to primary care services, non-National Health Services or ED. Statistical analysis of level of agreement was undertaken. A stakeholder focus group reviewed the results. SUBJECTS AND SETTING: Adult health consumers attending ED and urgent care services in North East London. RESULTS: The health user survey identified younger rather than older users (mean age of 35.6 years - SD
15.5), where 50 per cent had not seen a health professional about their concern, with over 40 per cent unable to obtain a convenient or emergency appointment with their GP. Over a third of the attendees were already receiving treatment and over 40 per cent of these saw their complaint as an emergency. Over half of respondents expected to see a doctor, one-quarter expected to see a nurse and only 1 per cent expected to see a pharmacist across both services, although WICs are nurse-led services. More respondents expected a prescription from a visit to a WIC, whereas in the ED a third of respondents sought health advice or reassurance. CONCLUSION: A number of unscheduled care strategies are, or have just been, developed with the emphasis on moving demand into community-based services. Plurality of services provides service users with a range of alternative access points but can cause duplication of services and repeat attendance. Managing continued increase in emergency and unscheduled care is a challenge. The uncertainties in prospective decision making could be used to inform service development and delivery.

[Abstract]

Source: HMIC

10. An overview of triage in the emergency department

Author(s) Ganley L., Gloster A.S.

Citation: Nursing standard (Royal College of Nursing (Great Britain) : 1987), November 2011, vol./is. 26/12(49-56; quiz 58), 0029-6570 (2011 Nov 23-29)

Publication Date: November 2011

Abstract: Emergency care services in the UK are receiving increasing numbers of patients presenting with a wide range of problems, from life-threatening conditions to minor injury or illness. All patients seeking emergency care need to be assessed and classified to prioritise those who have the most urgent problems and are in need of immediate care. This article provides an overview of triage within an emergency care setting. It explores the development of triage and describes the nationally recognised Manchester Triage System. The professional and legal responsibilities of the triage nurse are also discussed.

Source: EMBASE

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Available in print at

11. Reorganisation of hospital emergency services: A business case for quality improvement

Author(s) Eichler K., Senn O., Ruthemann I., Bogli K., Sidler P., Brugger U.

Citation: Value in Health, November 2011, vol./is. 14/7(A344-A345), 1098-3015 (November 2011)

Publication Date: November 2011

Abstract: OBJECTIVES: In Switzerland, emergency care has no gatekeeping system and emergency wards are increasingly overcrowded by walk-in patients. This leads to inefficient use of specialised resources. Treatment costs are paid by public sources and, beyond some co-payment, reimbursed by health care insurances via tariffs. Given the problems above, a public hospital (Stadtspital Waid; Zurich; catchment population 180'000 people) reorganised its emergency service in 2008. A nurse led triage system and a General Practitioner-led emergency service was implemented beside the conventional emergency ward. To better understand the impact, we assessed quality of service provision and total treatment costs. METHODS: From the public payer perspective, we compared annual treatment costs for ambulatory emergency care in 2007 with 2009. In a pre-post study, all consecutive ambulatory emergency patients were included during one month in each year.
Treatment costs (CHF) were calculated (e.g. nursing time multiplied with wages) and extrapolated to one year. Waiting times and patient satisfaction were used as indicators for service quality. Clinical outcome was not directly measured. RESULTS: The annual number of ambulatory patients increased from n=10'440 (2007) to n=16'035 (2009). Service provision improved with reduced waiting times (mean: 120 min vs. 60 min), persistently high patient satisfaction and more efficient resource use (additional diagnostic testing: 71% vs. 56%). Comparison of the annual local budget spent for treatment of 16,035 patients in 2009 (7,150,000 CHF; new service) with 2007 (7,184,000 CHF; old service, adjusted to 16,035 patients) showed slightly reduced costs (-34,000 CHF; 95%-CI:+60,000 to -127,000). CONCLUSIONS: The cost reduction of 0.5% is a conservative estimate as wages have increased since 2007. The reorganisation has the potential to be a dominant intervention: While quality of service provision improved, treatment costs slightly decreased against the secular trend of increase. Data has to be confirmed in follow-up measurements for decision makers.

Source: EMBASE

12. Mandatory triage does not identify high-acuity patients within recommended time frames

Author(s) Weber E.J., McAlpine I., Grimes B.

Citation: Annals of Emergency Medicine, August 2011, vol./is. 58/2(137-142), 0196-0644;1097-6760 (August 2011)

Publication Date: August 2011

Abstract: Study objective: We determine whether mandatory formal triage of walk-in emergency department (ED) patients provides timely recognition of the most acutely ill. Methods: This retrospective cross-sectional study was conducted at a US urban academic ED, annual census 39,000, which uses Emergency Severity Index-5 triage (ESI-5) for all arriving patients. ESI-5 recommends that level 1 and 2 patients be treated by a physician immediately or within 10 minutes, respectively. For all high-acuity (ESI 1 or 2) patients presenting between January 1 and December 31, 2008, data from electronic medical records and registration and tracking systems were used to determine elapsed time from arrival to completion of triage (median, range, 95th percentile), proportion of these intervals that met ESI-5 recommendations, and whether triage throughput differed during peak arrival hours. Results: For 3,932 high-acuity walk-in visits (ESI 1=63; ESI 2=3,869), median time from arrival to triage completion was 12.3 minutes, range 0 to 128 minutes. Twenty-seven percent (95% confidence interval [CI] 26% to 29%) of high-acuity patients were taken to rooms on arrival; 41% (95% CI 40%, 43%), including those roomed immediately, completed triage within 10 minutes. Twenty-five percent (95% CI 24% to 26%) completed triage in greater than 20 minutes and 10% (95% CI 9% to 11%) greater than 30 minutes after arrival. Between 10 am and 10 pm (peak arrival hours), triage took longer for level 2 patients, and fewer met ESI recommendations. Conclusion: Less than half of high-acuity patients in this urban ED completed triage within time frames recommended by the ESI-5, resulting in potentially unsafe delays. Although mandatory formal triage theoretically identifies patients who should be treated most quickly, the value and safety of this process should be reassessed. 2011 American College of Emergency Physicians.

Source: EMBASE

Available in fulltext from Annals of Emergency Medicine at the ULHT Library and Knowledge Services’ eJournal collection

Available in print at


Author(s) Widgren BR, Jourak M

Citation: Journal of Emergency Medicine, June 2011, vol./is. 40/6(623-8), 0736-4679;0736-4679 (2011 Jun)

Publication Date: June 2011
**Abstract:** BACKGROUND: In many Emergency Department (ED) triage scoring systems, vital signs are not included as an assessment parameter. OBJECTIVES: To evaluate the validity of a new protocol for Emergency Medicine in a large cohort of patients referred to in-hospital care. METHODS: From January 1 to June 30, 2006, 22,934 patients were admitted to the ED at Sahlgrenska University Hospital. Of those, 8695 were referred to in-hospital care and included in the study. A new five-level triage tool, combining vital signs, symptoms, and signs in the triage decision, was used. A small control of the inter-rater disagreement was also performed in 132 parallel, single-blinded observations. RESULTS: Fifty percent of the patients were admitted by ambulance and the other 50% by walk-in. Hospital stay was significantly (p < 0.001) longer in those admitted by ambulance (9.3 +/- 14 days) as compared with walk-in patients (6.2 +/- 10 days). In-hospital mortality incidence was higher (8.1%) in patients admitted by ambulance, as compared with walk-in patients (2.4%). Hospital stay and in-hospital mortality increased with higher level of priority. In the highest priority groups, 32-53% of the patients were downgraded to a lower priority level after primary treatment. CONCLUSION: In the present study, the METTS protocol was shown to be a reliable triage method and a sensitive tool for secondary re-evaluation of the patient in the ED. Copyright Copyright 2011 Elsevier Inc. All rights reserved.

Source: Medline

Available in print at

14. Medical Emergency Triage and Treatment System (METTS): A new protocol in primary triage and secondary priority decision in emergency medicine

Author(s) Widgren B.R., Jourak M.

Citation: Journal of Emergency Medicine, June 2011, vol./is. 40/6(623-628), 0736-4679:0736-4679 (June 2011)

Publication Date: June 2011

Abstract: Background: In many Emergency Department (ED) triage scoring systems, vital signs are not included as an assessment parameter. Objectives: To evaluate the validity of a new protocol for Emergency Medicine in a large cohort of patients referred to in-hospital care. Methods: From January 1 to June 30, 2006, 22,934 patients were admitted to the ED at Sahlgrenska University Hospital. Of those, 8695 were referred to in-hospital care and included in the study. A new five-level triage tool, combining vital signs, symptoms, and signs in the triage decision, was used. A small control of the inter-rater disagreement was also performed in 132 parallel, single-blinded observations. Results: Fifty percent of the patients were admitted by ambulance and the other 50% by walk-in. Hospital stay was significantly (p < 0.001) longer in those admitted by ambulance (9.3 +/- 14 days) as compared with walk-in patients (6.2 +/- 10 days). In-hospital mortality incidence was higher (8.1%) in patients admitted by ambulance, as compared with walk-in patients (2.4%). Hospital stay and in-hospital mortality increased with higher level of priority. In the highest priority groups, 32-53% of the patients were downgraded to a lower priority level after primary treatment. Conclusion: In the present study, the METTS protocol was shown to be a reliable triage method and a sensitive tool for secondary re-evaluation of the patient in the ED. 2011 Elsevier Inc.

Source: EMBASE

Available in print at

15. Refining a triage system for use in emergency departments

Author(s) van der Linden C., Lindboom R., van der Linden N., Lucas C.

Citation: Emergency nurse : the journal of the RCN Accident and Emergency Nursing Association, May 2011, vol./is. 19/2(22-24), 1354-5752 (May 2011)

Publication Date: May 2011

Abstract: This article reports on the implementation of an adapted version of the Manchester triage system (Mackway-Jones et al 1997) in a Dutch hospital to allow trained nurse practitioners to treat patients with minor injuries or illnesses, and to assess, treat and discharge patients autonomously. The project has helped to prevent long waits in
emergency departments for patients with less urgent conditions.

**Source:** EMBASE

Available in fulltext from Emergency Nurse at EBSCOhost

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Available in print at

16. An overview of triage in the emergency department

**Author(s)** Ganley, L, Gloster, A S

**Citation:** Nursing Standard, 2011, vol./is. 26/12, 0029-6570

**Publication Date:** 2011

**Abstract:** Emergency care services in the UK are receiving increasing numbers of patients presenting with a wide range of problems, from life-threatening conditions to minor injury or illness. All patients seeking emergency care need to be assessed and classified to prioritise those who have the most urgent problems and are in need of immediate care. This article provides an overview of triage within an emergency care setting. It explores the development of triage and describes the nationally recognised Manchester Triage System. The professional and legal responsibilities of the triage nurse are also discussed. Cites numerous references. [Journal abstract]

**Source:** HMIC

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Available in fulltext from Nursing Standard at EBSCOhost

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17. Service improvement and delivery

**Author(s)** Crisp, Nigel

**Citation:** , 2011

**Publication Date:** 2011

**Abstract:** Service improvement and delivery are the subjects of chapter four in Nigel Crisp's '24 hours to save the NHS' sub-divided into 12 topic areas. Problems caused by long waiting times are discussed and the efforts to ameliorate them. Securing delivery and raising standards and expectations are the first topics with a two part delivery process and examples of the approaches used. The hospital star rating system and its implications follows. Quality improvement and service redesign is the next topic, including the work of the Modernisation Agency with an example. There is also best practice in A and E departments and the PDSA cycle, plan, do, study, act. The fifth and sixth topics explore the two handed approach, and targets. A review of these identified too many being set with the subsequent results. The changes in NHS services are then described with increasing activity levels, a wider range of services and quality improvement. New services included NHS Direct, Walk in Centres and Treatment Centres, albeit more popular with the public than the professionals. An account of primary care follows with approximately 300m GP consultations annually or an average of six visits for everyone in the population. The severe problem of MRSA infection is discussed and how it was approached. There are details on reductions in premature mortality, followed by external validation of improvement. The last topic, the introduction of system reform, is followed by a summary of conclusions and key points. Cites 17 references.

**Source:** HMIC
Diagnostic accuracy of emergency nurse practitioners versus physicians related to minor illnesses and injuries

**Author(s)** van der Linden C., Reijnen R., de Vos R.

**Citation:** Journal of Emergency Nursing, July 2010, vol./is. 36/4(311-316), 0099-1767;1527-2966 (July 2010)

**Publication Date:** July 2010

**Abstract:** Introduction: Our objectives were to determine the incidence of missed injuries and inappropriately managed cases in patients with minor injuries and illnesses and to evaluate diagnostic accuracy of the emergency nurse practitioners (ENPs) compared with junior doctors/senior house officers (SHOs). Methods: In a descriptive cohort study, 741 patients treated by ENPs were compared with a random sample of 741 patients treated by junior doctors/SHOs. Groups were compared regarding incidence and severity of missed injuries and inappropriately managed cases, waiting times, and length of stay. Results: Within the total group, 29 of the 1,482 patients (1.9%) had a missed injury or were inappropriately managed. No statistically significant difference was found between the ENP and physician groups in terms of missed injuries or inappropriate management, with 9 errors (1.2%) by junior doctors/SHOs and 20 errors (2.7%) by ENPs. The most common reason for missed injuries was misinterpretation of radiographs (13 of 17 missed injuries). There was no significant difference in waiting time for treatment by junior doctors/SHOs versus ENPs (20 minutes vs 19 minutes). The mean length of stay was significantly longer for junior doctors/SHOs (65 minutes for ENPs and 85 minutes for junior doctors/SHOs; P < .001; 95% confidence interval, 72.32-77.41). Discussion: ENPs showed high diagnostic accuracy, with 97.3% of the patients being correctly diagnosed and managed. No significant differences between nurse practitioners and physicians related to missed injuries and inappropriate management were detected. 2010 Emergency Nurses Association.

**Source:** EMBASE

Available in *print* at

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How many emergency department visits could be managed at urgent care centers or retail clinics?

**Author(s)** Mehrotra A., Weinick R., Burns R.

**Citation:** Journal of General Internal Medicine, June 2010, vol./is. 25/(S298), 0884-8734 (June 2010)

**Publication Date:** June 2010

**Abstract:** BACKGROUND: The number of emergency department (ED) visits per capita in the US continues to rise and previous research suggests that a large fraction of these visits are non-emergent. In an effort to deter these non-emergent visits, health plans are creating incentives for patients to use retail clinics and urgent care centers as alternatives to the ED. Like EDs, retail clinics and urgent care centers are open extended hours and allow walk-in care. The limited evidence to date suggests that compared to care at EDs, care at retail clinics and urgent care centers costs less and is of comparable quality. What fraction of ED visits could be managed in a retail clinic or urgent care center and associated potential costs savings are unknown. METHODS: We conducted descriptive analyses of three different data sets: for retail clinics we used administrative data from 74% of retail clinics in the US, for urgent care centers we used chart abstracted data from a random sample of visits to urgent care centers in 35 states, for ED visits we used the National Hospital Ambulatory Medical Care Survey. Based on observed care patterns, we identified a set of commonly treated conditions at retail clinics and urgent care centers. In prior research by Billings and colleagues emergency room physicians estimated what fraction of visits for various conditions were nonemergent. We used these estimates to determine what fraction of ED visits were both non-emergent and that could be managed in the two other care settings. RESULTS: We estimate that 13.3 percent of all ED visits could be seen in a retail clinic - that is, 13.3 percent of ED visits are for conditions that are commonly seen at retail clinics and can be safely managed outside the ED. Further, we estimate that an additional 13.4 percent of ED visits could be seen at an urgent care center, for a total of 26.7 percent of all ED visits that could be managed at an urgent care center or a retail clinic. Sensitivity analyses using different assumptions had only a moderate impact on the overall estimate.
Using cost estimates from other papers, shifting these 26.7 percent of ED visits to these alternative settings could save the health care system approximately $7 billion annually. CONCLUSIONS: A substantial minority of ED visits could be managed at retail clinics or urgent care centers and such a shift in care setting would result in substantial cost savings. A number of issues need to be addressed before implementing policies to increase the use of retail clinics and urgent care centers as alternatives to the ED including the impact on continuity of care with primary care, whether patients can appropriately self-triage to the best care site, and whether such policies will result in increased utilization for care (e.g. patients will visit a retail clinic instead of staying at home) and cancel out any cost savings.

Source: EMBASE
Available in fulltext from JGIM: Journal of General Internal Medicine at EBSCOhost
Available in print at
Available in fulltext from Journal of General Internal Medicine at National Library of Medicine

20. Prospective evaluation of a two-tiered trauma activation protocol in an Australian major trauma referral hospital
Author(s) Davis T., Dinh M., Roncal S., Byrne C., Petchell J., Leonard E., Stack A.
Citation: Injury, May 2010, vol./is. 41/5(470-474), 0020-1383 (May 2010)
Publication Date: May 2010
Abstract: Objective: To evaluate a two-tiered trauma activation protocol in a major trauma referral hospital in Australia. Methods: A prospective study performed over a 12-month period of all consecutive trauma activations in a major trauma referral hospital. The triage tool assigned patients into two tiers of trauma activation. The full trauma activation was initiated where physiological or anatomical criteria were present. These patients were assessed by a multispecialty trauma team. A consult trauma activation was initiated where only mechanism of injury criteria was present. These patients were assessed by the Emergency Department Registrar and Surgical Registrar. The primary endpoint was major trauma outcome defined as either injury severity score (ISS) greater than 15, requirement for High Dependency Unit or Intensive Care Unit (HDU/ICU) admission, need for urgent operative intervention, or in hospital mortality. Results: Of 1144 trauma activations, 468 (41%) were full trauma and 676 (59%) were consult trauma activations. The full trauma activation group had a significantly higher proportion of the major trauma outcome (34% vs. 5%, p < 0.01) and all 18 patients (2%) who died were in the full trauma activation group. Sensitivity of the triage tool for the major trauma outcome was 83%, specificity was 68%, undertriage was 3% and overtriage was 27%. Conclusions: The two-tiered trauma activation protocol is effective in identifying patients with major trauma from those with minor trauma. There were no deaths in undertriaged patients. Crown Copyright 2010.
Source: EMBASE
Available in fulltext from Injury - International Journal for the Care of the Injured at the ULHT Library and Knowledge Services' eJournal collection
Available in print at

21. The efficacy of a two-tiered trauma activation system at a level i trauma center
Author(s) Kouzminova N., Shatney C., Palm E., McCullough M., Sherck J.
Citation: Journal of Trauma - Injury, Infection and Critical Care, October 2009, vol./is. 67/4(829-833), 0022-5282;1529-8809 (October 2009)
Publication Date: October 2009
Abstract: Background: By using current American College of Surgeons trauma center triage criteria, 52% of patients transported to our level I trauma center are discharged home from the emergency department (ED). Because the majority of our trauma transports were based solely on mechanism of injury, we instituted, in 1990, a two-tiered trauma team activation system. Patients are triaged into major and minor trauma alert categories based
on prehospital provider information. For minor trauma patients, respiratory therapy, operating room staff, and blood bank do not respond. The current study evaluated this triage system. Methods: Trauma registry data on all trauma activations from 1998 to 2007 were analyzed. Results: There were 20,332 trauma activations: 5,881 were major trauma, 14,451 minor trauma. The mean Injury Severity Score in major versus minor patients was significantly different (11.7 vs. 3.6, p < 0.0001). Significant differences (p < 0.0001) were also noted for all other markers of serious injury: Injury Severity Score >16, ED blood pressure <90, Glasgow Coma Score <=12, ED intubation, disposition directly to the operating room or the intensive care unit, and death. There were 19 deaths (0.13%) in the minor trauma group, all occurring after hospital admission. All these patients were seen in the ED by the attending trauma surgeon. Two patients were mistriaged. The remaining 17 deaths were due to progression of brain injury in 10 patients, preexisting medical conditions in 4, delayed diagnosis of blunt intestinal injury in 1, delayed aortic rupture in 1, and papillary muscle rupture in 1. Conclusion: A two-tiered trauma activation system identifies patients who require a full trauma team response and may result in a more effective use of trauma center resources. Copyright 2009 by Lippincott Williams & Wilkins.

Source: EMBASE
Available in fulltext from Journal of Trauma, Infection & Critical Care at the ULHT Library and Knowledge Services' eJournal collection

22. The efficacy of a two-tiered trauma activation system at a level I trauma center.
Author(s) Kouzminova N, Shatney C, Palm E, McCullough M, Sherck J
Citation: Journal of Trauma, 01 October 2009, vol./is. 67/4(829-833), 00225282
Publication Date: 01 October 2009
Abstract: BACKGROUND: By using current American College of Surgeons trauma center triage criteria, 52% of patients transported to our level I trauma center are discharged home from the emergency department (ED). Because the majority of our trauma transports were based solely on mechanism of injury, we instituted, in 1990, a two-tiered trauma team activation system. Patients are triaged into major and minor trauma alert categories based on prehospital provider information. For minor trauma patients, respiratory therapy, operating room staff, and blood bank do not respond. The current study evaluated this triage system. METHODS: Trauma registry data on all trauma activations from 1998 to 2007 were analyzed. RESULTS: There were 20,332 trauma activations: 5,881 were major trauma, 14,451 minor trauma. The mean Injury Severity Score in major versus minor patients was significantly different (11.7 vs. 3.6, p < 0.0001). Significant differences (p < 0.0001) were also noted for all other markers of serious injury: Injury Severity Score >16, ED blood pressure <90, Glasgow Coma Score <=12, ED intubation, disposition directly to the operating room or the intensive care unit, and death. There were 19 deaths (0.13%) in the minor trauma group, all occurring after hospital admission. All these patients were seen in the ED by the attending trauma surgeon. Two patients were mistriaged. The remaining 17 deaths were due to progression of brain injury in 10 patients, preexisting medical conditions in 4, delayed diagnosis of blunt intestinal injury in 1, delayed aortic rupture in 1, and papillary muscle rupture in 1. CONCLUSION: A two-tiered trauma activation system identifies patients who require a full trauma team response and may result in a more effective use of trauma center resources.
Source: CINAHL
Available in fulltext from Journal of Trauma, Infection & Critical Care at the ULHT Library and Knowledge Services' eJournal collection

23. Effects of a nonsurgical hospitalist service on trauma patient outcomes
Author(s) Salottolo K., Slone D.S., Howell P., Settell A., Bar-Or R., Craun M., Bar-Or D.
Citation: Surgery, April 2009, vol./is. 145/4(355-361), 0039-6060 (April 2009)
Publication Date: April 2009
Abstract: Background: The American College of Surgeons criteria for Level I trauma centers calls for >90% of trauma patients to be admitted directly by a trauma surgeon or
surgical subspecialist; however, the efficiency of the trauma system may be increased if patients presenting with comorbid conditions and minor injuries are treated by a hospitalist team (nonsurgical Trauma MEDical [TMED] service). We hypothesized outcomes would be equivalent for patients treated under TMED versus a surgical service. Methods: This retrospective review compared mortality, hospital length of stay (LOS), Emergency Department (ED) LOS, placement to rehabilitation facilities, and complication rates for patients who could have been treated by TMED as identified by an algorithm. The study population for 2003 (pre-TMED) was compared with the study population for 2006 (post-TMED). Univariate analyses and multivariate logistic and linear regression were used to identify outcomes that were different for patients treated in 2003 versus 2006. Sensitivity, specificity, and percent agreement were calculated for patients who were treated by the TMED team in 2006 versus patients in 2006 who were identified using the algorithm. Results: The algorithm had reasonable sensitivity (78%) and specificity (90%); the agreement was excellent (0.88). No differences were found in mortality (P = .31), rate of complications (P = .08), ED LOS (P = .77), or placement to rehabilitation facilities (P = .29) for patients identified in 2003 versus 2006. Hospital LOS was increased in 2006 (3.7 vs 4.1 days; P = .02). Conclusion: These data support admission of trauma patients with nonsevere, single-system injuries to a nonsurgical hospitalist service. We hypothesize that overall system efficiency may be improved by applying this alternative model in other trauma centers. 2009 Mosby, Inc. All rights reserved.

Source: EMBASE

Available in print at

24. Prehospital identification of major trauma patients

Author(s) Ocak G., Sturms L.M., Hoogeveen J.M., Le Cessie S., Jukema G.N.

Citation: Langenbeck's Archives of Surgery, March 2009, vol./is. 394/2(285-292), 1435-2443 (March 2009)

Publication Date: March 2009

Abstract: Background and aims: Prehospital triage is aimed at getting the right patient to the right hospital. Evaluations on the performance of prehospital triage tools are scarce. This study examines the ability of the American College of Surgeons' Committee on Trauma (ACSCOT) triage guidelines to identify major trauma patients in a European trauma system. Furthermore, this study evaluates the predictive power of other prehospital measurements. Materials and methods: Prehospital data of 151 minor (Injury Severity Score (ISS) 1-15) and 151 major trauma patients, (ISS>15) treated at a Dutch trauma center, were collected. Logistic regression analysis was used to identify predictors of major trauma patients. Results: The major trauma patients particularly incurred severe head injuries (45.7%) and severe thorax injuries (21.9%). The ACSCOT guidelines had a sensitivity of 84.1% and a specificity of 77.5%. A new prehospital trauma triage model was constructed including nine predictors of major trauma patients. This model identified more major trauma patients than the ACSCOT (sensitivity 92.1%, p=0.023) and resulted in a comparable specificity (79.5%; p=0.711). Conclusion: The new triage model outperforms the ACSCOT triage guidelines in identifying major trauma patients in the prehospital setting. The new triage guidelines may improve patient outcomes but needs to be validated in a prospective study.

Source: EMBASE

Available in print at

Available in fulltext from Langenbeck's Archives of Surgery at EBSCOhost

25. Access block can be management

Author(s) Cameron, Peter A, Joseph, Anthony P, McCarthy, Sally M

Citation: Medical Journal of Australia, 2009, vol./is. 190/7, 0025-729X

Publication Date: 2009

Abstract: Hospitals cannot manage their emergency patients when there is significant
access block. There are solutions that should be implemented but require national leadership to be effective. These solutions include an immediate increase in the number of acute hospital beds, improved coordination and increased community capacity to manage medical patients with complex conditions outside acute public hospitals, improved hospital processes, and better standardisation of treatment within emergency departments. There is little evidence that telephone triage, ambulatory care clinics or disaster management techniques, including ambulance diversion, reduce access block. Cites 31 references. [Journal abstract]

Source: HMIC
Available in print at

26. Effect of self-triage on waiting times at a walk-in sexual health clinic

Author(s) Hitchings, Samantha, Barter, Janet

Citation: Journal of Family Planning and Reproductive Health Care, 2009, vol./is. 35/4, 1471-1893

Publication Date: 2009

Abstract: Record in progressLengthy waiting times can be a major problem in walk-in sexual health clinics. They are stressful for both patients and staff and may lead to clients with significant health issues leaving the department before being seen by a clinician. A self-triage system may help reduce waiting times and duplication of work, improve patient pathways and decrease wasted visits. This paper describes implementation of a self-triage system in two busy sexual and reproductive health clinics. Patients were asked to complete a self-assessment form on registration to determine the reason for attendance. This then enabled patients to be directed to the most appropriate specialist or clinical service. The benefits of this approach were determined by measuring patient waiting times, reduction in unnecessary specialist review together with patient acceptability as tested by a patient satisfaction survey. The ease of comprehension of the triage form was also assessed by an independent readers' panel. The results were a total of 193 patients were recruited over a four-month period from November 2004 to February 2005. Patients from the November and December clinics were assigned to the 'traditional treatment' arm, with patients at subsequent clinics being assigned to the 'self-triage' system. Waiting times were collected by the receptionist and clinic staff. Ninety six patients followed the traditional route, 97 the new self-triage system. Sixty-nine (35.8%) patients completed the satisfaction survey. The self-triage system significantly reduced waiting time from 40 (22, 60) to 23 (10, 40) minutes (results expressed as median (interquartile range)). There was a non-significant reduction in the proportion of patients seeing two clinicians from 21% to 13% (p = 0.17). Satisfaction levels were not significantly altered (95% compared to 97% satisfied, p = 0.64). The readers' panel found the triage form both easy to understand and to complete. The conclusions were self-triage can effectively reduce clinic waiting times and allow better organisation of resources. Urgent cases can be prioritised. This process appears to be acceptable to and understandable by patients. Cites 14 references. [Journal abstract]

Source: HMIC
Available in print at

27. Evaluating use of telemedicine within a minor injury unit

Author(s) Paynter M.

Citation: Nursing times, October 2008, vol./is. 104/42(30-31), 0954-7762 (2008 Oct 21-27)

Publication Date: October 2008

Abstract: This article outlines a pilot study using telemedicine to assess chest pain in a minor injury unit. It discusses how the pilot was set up and the benefits of telemedicine for both patients and staff. Bridgwater Community Hospital has recently won an award from the Community Hospitals Association for its use of cardiology telemedicine in its unit.

Source: EMBASE
A prospective randomised comparison of minor surgery in primary and secondary care. The MiSTIC trial.


Citation: Health Technology Assessment (Winchester, England), May 2008, vol./is. 12/23(iii-iv, ix-38), 1366-5278;1366-5278 (2008 May)

Publication Date: May 2008

Abstract: OBJECTIVE: To determine whether there is equivalence in the competence of GPs and hospital doctors to perform a range of elective minor surgical procedures, in terms of the safety, quality and cost of care.

DESIGN: A prospective randomised controlled equivalence trial was undertaken in consenting patients presenting at general practices and needing minor surgery.

SETTING: The study was conducted in the south of England.

PARTICIPANTS: Consenting patients presenting at general practices who needed minor surgery in specified categories for whom the recruiting doctor felt able to offer treatment or to be able to refer to a colleague in primary care.

INTERVENTIONS: On presentation to their GP, patients were randomised to either treatment within primary care or treatment at their local hospital. Evaluation was by assessment of clinical quality and safety of outcome, supplemented by examination of patient satisfaction and cost-effectiveness.

MAIN OUTCOME MEASURES: Two independent observers assessed surgical quality by blinded assessment of wound appearance, between 6 and 8 weeks postsurgery, from photographs of wounds. Other measures included satisfaction with care, safety of surgery in terms of recognition of and appropriate treatment of skin malignancies, and resource use and implications.

RESULTS: The 568 patients recruited (284 primary care, 284 hospital) were randomised by 82 GPs. In total, 637 skin procedures plus 17 ingrowing toenail procedures were performed (313 primary care, 341 hospital) by 65 GPs and 60 hospital doctors. Surgical quality was assessed for 273 (87%) primary care and 316 (93%) hospital lesions. Mean visual analogue scale score in hospital was significantly higher than that in primary care [mean difference=5.46 on 100-point scale; 95% confidence interval (CI) 0.925 to 9.99], but the clinical importance of the difference was uncertain. Hospital doctors were better at achieving complete excision of malignancies, with a difference that approached statistical significance [7/16 GP (44%) versus 15/20 hospital (75%), chi(2)=3.65, p=0.056]. The proportion of patients with post-operative complications was similar in both groups. The mean cost for hospital-based minor surgery was 1222.24 pounds and for primary care 449.74 pounds. Using postoperative complications as an outcome, both effectiveness and costs of the alternative interventions are uncertain. Using completeness of excision of malignancy as an outcome, hospital minor surgery becomes more cost-effective. The 705 skin procedures undertaken in this trial generated 491 lesions with a traceable histology report: 36 lesions (7%) from 33 individuals were malignant or premalignant. Chance-corrected agreement (kappa) between GP diagnosis of malignancy and histology was 0.45 (95% CI 0.36 to 0.54) for lesions and 0.41 (95% CI 0.32 to 0.51) for individuals affected by malignancy. Sensitivity of GPs for detection of malignant lesions was 66.7% (95% CI 50.3 to 79.8) for lesions and 63.6% (95% CI 46.7 to 77.8) for individuals affected by malignancy.

CONCLUSIONS: The quality of minor surgery carried out in general practice is not as high as that carried out in hospital, using surgical quality as the primary outcome, although the difference is not large. Patients are more satisfied if their procedure is performed in primary care, largely because of convenience. However, there are clear deficiencies in GPs’ ability to recognise malignant lesions, and there may be differences in completeness of excision when compared with hospital doctors. The safety of patients is of paramount importance and this study does not demonstrate that minor surgery carried out in primary care is safe as it is currently practised. There are several alternative models of minor surgery provision worthy of consideration, including ones based in primary care that require all excised tissue to be sent for histological examination, or that require further training of GPs to undertake the necessary work. The results of this study...
suggest that a hospital-based service is more cost-effective. It must be concluded that it is unsafe to leave minor surgery in the hands of doctors who have never been trained to do it. Further work is required to determine GPs' management of a range of skin conditions (including potentially life-threatening malignancies), rather than just their recognition of them. Further economic modelling work is required to look at the potential costs of training sufficient numbers of GPs and GPs with special interests to meet the demand for minor surgery safely in primary care, and of the alternative of transferring minor surgery large-scale to the hospital sector. Different models of provision need thorough testing before widespread introduction.

Source: Medline
Available in print at

29. More patients with minor injuries could be seen by telemedicine

Author(s) Mair F., Ferguson J.
Citation: Journal of telemedicine and telecare, 2008, vol./is. 14/3(132-134), 1357-633X (2008)
Publication Date: 2008
Abstract: The Grampian Minor Injuries Telemedicine Service has been operating since 2001 supporting 15 minor injury units (MIUs) in community hospitals. Currently over 120 new patients are seen each month. We conducted a retrospective review to estimate the number of patients who were sent to the main hospital emergency department (ED) who would have been suitable for telemedicine treatment instead. All attendances at three MIUs and onward referrals to the ED during the months January and July 2006 were identified from a database. A total of 112 patients were referred from the three MIUs during the study period. MIU C, which utilized teleconsultations the most, referred the lowest proportion of its patients (2%). MIU B, which had all X-rays reviewed by a general practitioner, referred the most (85%). At MIU B, 80-85% of patients referred to the ED without having a teleconsultation could have been managed by telemedicine. Telemedicine for MIUs has been repeatedly reported in the medical literature as being successful, but widespread usage of this technique remains to be achieved.

Source: EMBASE
Available in fulltext from Journal of Telemedicine and Telecare at EBSCOhost
Available in print at

30. Secondary Overtriage: A Consequence of an Immature Trauma System

Author(s) Ciesla D.J., Sava J.A., Street III J.H., Jordan M.H.
Citation: Journal of the American College of Surgeons, January 2008, vol./is. 206/1(131-137), 1072-7515 (January 2008)
Publication Date: January 2008
Abstract: Background: Trauma systems are designed to bring the injured patient to definitive care in the shortest practical time. This depends on prehospital destination criteria (primary triage) and interfacility transfer guidelines (secondary triage). Although primary undertriage is associated with increased costs and worse outcomes for selected injuries, secondary overtriage can overwhelm system resources and delay definitive care. The purpose of this study was to determine the incidence of secondary overtriage in a region without a formal trauma system. Study Design: Retrospective cohort study of trauma registry data at an American College of Surgeons Committee on Trauma-verified Level I trauma center and regional referral center. Secondary overtriage was defined as patients transferred from another hospital emergency department to our trauma receiving unit who had an injury severity score < 10, did not require an operation, and who were discharged to home within 48 hours of admission. Results: Data on 9,064 patients were reviewed; 6,875 (76%) arrived directly from the scene and 2,189 (24%) were transferred. Although the transferred group was more severely injured, the majority (64%) had minor injuries and 824 (39%) met secondary overtriage criteria. The degree of secondary overtriage and injury
pattern varied with respect to referring facility. Peak admission day and times for overtriage patients coincided with scene admissions trauma receiving unit closure events. Patient payor mix and facility cost and reimbursement profiles did not differ between scene and transfer overtriage patients. Conclusions: A substantial proportion of transferred trauma patients require only brief diagnostic or observational care. Excessive overtriage calls for development of a regional inclusive trauma system with established primary and secondary triage guidelines to improve access to care and trauma system efficiency. 2008 American College of Surgeons.

Source: EMBASE
Available in print at
Available in print at

31. The impact of managing moderately injured pediatric trauma patients without immediate surgeon presence.

Author(s) Groner JI, Covert J, Lowell WL, Hayes JR, Nwomeh BC, Caniano DA
Citation: Journal of Pediatric Surgery, June 2007, vol./is. 42/6(1026-9; discussion 1029-30), 0022-3468;1531-5037 (2007 Jun)
Publication Date: June 2007
Abstract: PURPOSE: The purpose of this study was to determine the outcome of "minor resuscitation" trauma patients managed without the immediate presence of a surgeon.METHODS: In 2003, our hospital replaced surgeons with pediatric emergency medicine physicians for level 2 (minor resuscitation) trauma alerts, whereas the level 1 (major resuscitation) alerts remained surgeon directed. We compared patients treated in the 3 years before (period 1) and after (period 2) this change. Patient records were analyzed for discharges, alert upgrades, Injury Severity Score (ISS), time to destination, and mortality.RESULTS: There were 918 admissions and 93 discharges in period 1 compared with 815 admissions and 652 discharges in period 2. In period 1, 3% were upgraded to level 1 status compared with 9% in period 2 (P < .0001). The mean ISS of admitted patients and the percentage of critical (ISS >15) patients were greater in period 2 (P < .001). The time to inpatient floor was longer in period 2, but the elapsed times to operating room and to pediatric intensive care unit were not significantly different.CONCLUSION: Pediatric emergency medicine physicians discharged more patients than the surgeons, but also upgraded more to level 1 status. Level 2 trauma patients can be safely managed without immediate surgeon presence.

Source: Medline
Available in print at

32. 'We have better networks and continuity of care'

Author(s) Hoban, Victoria
Citation: Health Service Journal, 2007, 0952-2271
Publication Date: 2007
Abstract: Nurse-led walk-in centres across the UK have played a crucial role in appropriately streaming patients to primary care, alleviating the pressure on the A & E four-hour wait target and developing the skills of nurses, writes the author. But, as new services, they can also highlight gaps in patient care that may have been previously overlooked. [Journal abstract]

Source: HMIC
Available in print at
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33. Avoiding prolonged waiting time during busy periods in the emergency department: Is there a role for the senior emergency physician in triage?

**Author(s)** Travers J.P., Lee F.C.Y.

**Citation:** European Journal of Emergency Medicine, December 2006, vol./is. 13/6(342-348), 0969-9546 (December 2006)

**Publication Date:** December 2006

**Abstract:** STUDY OBJECTIVE: Patient satisfaction at emergency departments can be improved by reductions in waiting time. Traditional methods require registration and triage before seeing the doctor with senior emergency physicians mainly engaged in treating serious cases. We examine a radical change in workflow pattern on waiting time by placing a senior emergency physician with the triage nurse and examining the impact of treating simple cases upfront with discharge on the waiting times for stretcher cases. METHODS: A senior emergency physician was placed with the triage nurse in the Department of Emergency Medicine at Alexandra Hospital during peak busy periods of patient attendance over a period of 2 months. Measures were made of waiting time (registration to doctor consult) of PACS 3 and PACS 2 (Patient Activity Score) cases accordingly. RESULTS: Ten days were chosen for the changed workflow practice and 10 days for controls in which normal traditional working practice followed. On all days, there was the same number of medical staff. The average waiting time for walk-in patients (PACS 3) was 19 min on experimental days as compared with 35.5 min on control days, with 78% being seen within 30 min in the experimental group compared with 48% on control days (P<0.05). The PACS 2 waiting time was also significantly decreased on experimental days (P<0.05). CONCLUSIONS: Placing a senior emergency physician with the triage nurse reduced waiting times for walk-in cases. One third of attendances were treated and discharged quickly, allowing the consulting room and PACS 1/PACS 2 doctors to act more efficiently.

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**Source:** EMBASE

Available in print at

34. A qualitative study of choosing and using an NHS Walk-in Centre

**Author(s)** Jackson C.J., Dixon-Woods M., Hsu R., Kurinczuk J.J.

**Citation:** Family Practice, June 2005, vol./is. 22/3(269-274), 0263-2136 (June 2005)

**Publication Date:** June 2005

**Abstract:** Background. NHS Walk-in Centres have been introduced to improve access to healthcare in the UK. Little is understood about why people choose Walk-in Centres from among the range of options available to them. Objectives. To explore users' accounts of choosing and using an NHS Walk-in Centre. Methods. Semi-structured interviews with 23 users who had recently attended an NHS Walk-in Centre were conducted. Analysis was based on the constant comparative method. Results. Participants' accounts revealed two types of service use: those who knew what was wrong with them and had a clear idea of what treatment was required, and those seeking professional advice. Users reported "solidarity" with the NHS and other NHS users, and were highly sensitive to the demands on both Accident and Emergency and GP services in their choice of services. The Walk-in Centre appeared to function as a means of overcoming the barriers to healthcare associated with other healthcare services, although there was some lack of clarity about the purpose of the Walk-in Centre. Conclusions. Users' accounts suggest that NHS Walk-in Centres improve access to healthcare by opening up an alternative means of seeking a professional opinion or treatment. It is especially important in allowing people to use the NHS without feeling that they are increasing the burden on general practice and A&E facilities, and to feel that they are behaving responsibly while still meeting their own needs. The Author (2005). Published by Oxford University Press. All rights reserved.

**Source:** EMBASE

Available in print at
35. Ways to reduce patient turnaround time and improve service quality in emergency departments.

**Author(s)** Sinreich, David, Marmor, Yariv

**Citation:** Journal of Health Organization and Management, 2005, vol./is. 19/2(88-105), 1477-7266

**Publication Date:** 2005

**Abstract:** PURPOSE: Recent years have witnessed a fundamental change in the function of emergency departments (EDs). The emphasis of the ED shifts from triage to saving the lives of shock-trauma rooms equipped with state-of-the-art equipment. At the same time walk-in clinics are being set up to treat ambulatory type patients. Simultaneously ED overcrowding has become a common sight in many large urban hospitals. This paper recognises that in order to provide quality treatment to all these patient types, ED process operations have to be flexible and efficient. The paper aims to examine one major benchmark for measuring service quality - patient turnaround time, claiming that in order to provide the quality treatment to which EDs aspire, this time needs to be reduced.

**DESIGN/METHODOLOGY/APPRAOCH:** This study starts by separating the process each patient type goes through when treated at the ED into unique components. Next, using a simple model, the impact each of these components has on the total patient turnaround time is determined. This in turn, identifies the components that need to be addressed if patient turnaround time is to be streamlined. **FINDINGS:** The model was tested using data that were gathered through a comprehensive time study in six major hospitals. The analysis reveals that waiting time comprises 51-63 per cent of total patient turnaround time in the ED. Its major components are: time away for an x-ray examination; waiting time for the first physician's examination; and waiting time for blood work. **ORIGINALITY/VALUE:** The study covers several hospitals and analyses over 20,000 process components; as such the common findings may serve as guidelines to other hospitals when addressing this issue. 1 fig. 13 tables 18 refs. [Abstract]

**Source:** HMIC

Available in print at

36. Managing minor injuries

**Author(s)** Megahy A., Lloyd M.

**Citation:** Emergency nurse : the journal of the RCN Accident and Emergency Nursing Association, September 2004, vol./is. 12/5(14-16), 1354-5752 (Sep 2004)

**Publication Date:** September 2004

**Source:** EMBASE

Available in fulltext from Emergency Nurse at EBSCOhost

Available in print at

Available in print at

37. Team triage improves emergency department efficiency

**Author(s)** Subash F., Dunn F., McNicholl B., Marlow J.

**Citation:** Emergency Medicine Journal, September 2004, vol./is. 21/5(542-544), 1472-0205 (September 2004)

**Publication Date:** September 2004

**Abstract:** Objective: To see whether three hours of combined doctor and nurse triage would lead to earlier medical assessment and treatment and whether this benefit would carry on for the rest of the day when normal triage had resumed. **Method:** Eight days were randomly selected; four for team triage and four for the normal nurse led triage. Team
Triage was coordinated by a middle grade or consultant from 9 am to 12 noon. Times to triage, to see a doctor, radiology, admission, and discharge were recorded. No additional medical or nursing staff were used and staffing levels were similar each day. All patients including blue light emergencies and minor injuries were included. Results: Median times were significantly reduced (p<0.05) during the intervention to triage (2 min v 7 min, p = 0.029), to see a doctor (2 min v 32 min, p = 0.029), and to radiology (11.5 min v 44.5 min, p = 0.029). Waiting times at midday were longer for patients in the non-intervention group. More patients were seen and discharged within 20 minutes in the intervention group (18 of 95 (19%) v 2 of 69 (3%) p = 0.0043). No significant knock on effect was demonstrable for the remaining 21 hours after the intervention ceased. Conclusion: Three hours of combined doctor and nurse triage significantly reduces the time to medical assessment, radiology, and to discharge during the intervention period. Waiting times at midday were shorter in the triage group. There was no significant knock on effect the rest of the day.

Source: EMBASE
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Available in fulltext from Emergency Medicine Journal at Highwire Press
Available in fulltext from Emergency Medicine Journal at Highwire Press

38. The safety and effectiveness of minor injuries telemedicine.

Author(s) Benger JR, Noble SM, Coast J, Kendall JM

Citation: Emergency Medicine Journal, July 2004, vol./is. 21/4(438-45), 1472-0205;1472-0213 (2004 Jul)

Publication Date: July 2004

Abstract: OBJECTIVES: To determine the safety of minor injuries telemedicine compared with on-site specialist care, current practice, and a robust gold standard, and to assess the clinical effectiveness of this new technique.METHODS: Patients presenting to a peripheral hospital within 10 days of injury were separately assessed by each of: an emergency medicine specialist based at a district general hospital using telemedicine, a second on-site emergency medicine specialist, and an on-site general practitioner (representing current practice). The primary outcome measure was discrepancies between these three medical assessments and a gold standard. All patients were subsequently randomised to follow one of the independent treatment plans generated by the above assessments. Secondary outcomes were recovery and further use of healthcare services measured seven days after recruitment, and consultation duration.RESULTS: 600 patients were recruited over a 12 month period. Overall, 73 discrepancies were identified, with 12 important over-treatments and 11 important under-treatments. No consultation modality was clearly superior to any other, and there were no statistically significant differences in the secondary outcomes of clinical effectiveness measured at seven days. The mean duration of a telemedicine consultation (6.0 min) was almost twice as long as an on-site specialist (3.1 min) or on-site general practitioner consultation (3.4 min) (p<0.0001 in both cases).CONCLUSIONS: Minor injuries telemedicine is safe and clinically effective, providing care that is equivalent to specialist on-site assessment and the current practice of treatment by a general practitioner. There is no evidence that telemedicine provides superior care, and there are a number of process issues that may impede successful implementation of this new technique.

Source: Medline
Available in print at
Available in fulltext from Emergency Medicine Journal : EMJ at National Library of Medicine
Available in fulltext from Emergency Medicine Journal at Highwire Press
Available in fulltext from Emergency Medicine Journal at Highwire Press

39. Walk-in centres could help ease pressures on over-stretched A&E departments
40. Results of an evaluation of the effectiveness of triage and direct transportation to minor injuries units by ambulance crews

Author(s) Snooks H., Foster T., Nicholl J.

Citation: Emergency Medicine Journal, January 2004, vol./is. 21/1(105-111), 1472-0205 (January 2004)

Publication Date: January 2004

Abstract: Objective: To evaluate triage and transportation to a minor injury unit (MIU) by emergency ambulance crews. Methods: Ambulance crews in two services were asked to transport appropriate patients to MIU during randomly selected weeks of one year. During all other weeks they were to treat such patients according to normal practice. Patients were followed up through ambulance service, hospital and/or MIU records, and by postal questionnaire. Semi-structured interviews were undertaken with crews (n = 15). Cases transferred from MIU to accident and emergency (A&E) were reviewed. Results: 41 intervention cluster patients attended MIU, 303 attended A&E, 65 were not conveyed. Thirty seven control cluster patients attended MIU, 327 attended A&E, 61 stayed at scene. Because of low study design compliance, outcomes of patients taken to MIU were compared with those taken to A&E, adjusted for case mix. MIU patients were 7.2 times as likely to rate their care as excellent (95% CI 1.99 to 25.8). Ambulance service job-cycle time and time in unit were shorter for MIU patients (-7.8, 95% CI -11.5 to -4.1); (-222.7, 95%CI -331.9 to -123.5). Crews cited patient and operational factors as inhibiting MIU use; and location, service, patient choice, job-cycle time, and handover as encouraging their use. Of seven patients transferred by ambulance from MIU to A&E, medical reviewers judged that three had not met the protocol for conveyance to MIU. No patients were judged to have suffered adverse consequences. Conclusions: MIUs were only used for a small proportion of eligible patients. When they were used, patients and the ambulance service benefited.

Source: EMBASE

Available in fulltext from Emergency Medicine Journal : EMJ at National Library of Medicine
Available in fulltext from Emergency Medicine Journal at Highwire Press
Available in fulltext from Emergency Medicine Journal at Highwire Press

41. Emergency nurse practitioners: A three part study in clinical and cost effectivess

Author(s) Sakr M., Rendall R., Angus J., Saunders A., Nicholl J., Wardrope J.

Citation: Emergency Medicine Journal, March 2003, vol./is. 20/2(158-163), 1351-0622 (March 2003)

Publication Date: March 2003

Abstract: Aims: To compare the clinical effectiveness and costs of minor injury services provided by nurse practitioners with minor injury care provided by an accident and
emergency (A&E) department. Methods: A three part prospective study in a city where an A&E department was closing and being replaced by a nurse led minor injury unit (MIU). The first part of the study took a sample of patients attending the A&E department. The second part of the study was a sample of patients from a nurse led MIU that had replaced the A&E department. In each of these samples the clinical effectiveness was judged by comparing the "gold standard" of a research assessment with the clinical assessment. Primary outcome measures were the number of errors in clinical assessment, treatment, and disposal. The third part of the study used routine data whose collection had been prospectively configured to assess the costs and cost consequences of both models of care. Results: The minor injury unit produced a safe service where the total package of care was equal to or in some cases better than the A&E care. Significant process errors were made in 191 of 1447 (13.2%) patients treated by medical staff in the A&E department and 126 of 1313 (9.6%) of patients treated by nurse practitioners in the MIU. Very significant errors were rare (one error). Waiting times were much better at the MIU (mean MIU 19 minutes, A&E department 56.4 minutes). The revenue costs were greater in the MIU (MIU 41.1, A&E department 40.01) and there was a great difference in the rates of follow up and with the nurses referring 47% of patients for follow up and the A&E department referring only 27%. Thus the costs and cost consequences were greater for MIU care compared with A&E care (MIU 12.7 per minor injury case, A&E department 9.66 per minor injury case). Conclusion: A nurse practitioner minor injury service can provide a safe and effective service for the treatment of minor injury. However, the costs of such a service are greater and there seems to be an increased use of outpatient services.

Source: EMBASE
Available in print at

42. Impact of NHS walk-in centres on the workload of other local healthcare providers: Time series analysis

Author(s) Chalder M., Sharp D., Moore L., Salisbury C.

Citation: British Medical Journal, March 2003, vol./is. 326/7388(532-534), 0959-8146 (08 Mar 2003)

Publication Date: March 2003

Abstract: Objectives: To assess the impact of NHS walk-in centres on the workload of local accident and emergency departments, general practices, and out of hours services. Design: Time series analysis in walk-in centre sites with no-treatment control series in matched sites. Setting: Walk-in centres and matched control towns without walk-in centres in England. Participants: 20 accident and emergency departments, 40 general practices, and 14 out of hours services within 3 km of a walk-in centre or the centre of a control town. Main outcome measures: Mean number (accident and emergency departments) or rate (general practices and out of hours services) of consultations per month in the 12 month periods before and after an index date. Results: A reduction in consultations at emergency departments (-175 (95% confidence interval -387 to 36) consultations per department per month) and general practices (-19.8 (-53.3 to 13.8) consultations per 1000 patients per month) close to walk-in centres became apparent, although these reductions were not statistically significant. Walk-in centres did not have any impact on consultations on out of hours services. Conclusion: It will be necessary to assess the impact of walk-in centres in a larger number of sites and over a prolonged period, to determine whether they reduce the demand on other local NHS providers.

Source: EMBASE

43. Effect of NHS walk-in centre on local primary healthcare services: Before and after observational study

Author(s) Hsu R.T., Lambert P.C., Dixon-Woods M., Kurinczuk J.J.

Citation: British Medical Journal, March 2003, vol./is. 326/7388(530-532), 0959-8146 (08 Mar 2003)
Publication Date: March 2003

Abstract: Objective: To assess the effect of an NHS walk-in centre on local primary and emergency healthcare services. Design: Before and after observational study. Setting: Loughborough, which had an NHS walk-in centre, and Market Harborough, the control town. Participants: 12 general practices. Main outcome measures: Mean daily rate of emergency general practitioner consultations, mean number of half days to the sixth bookable routine appointment, and attendance rates at out of hours services, minor injuries units, and accident and emergency departments. Results: The change between the before and after study periods was not significantly different in the two towns for daily rate of emergency general practice consultations (mean difference -0.02/1000 population, 95% confidence interval -0.75 to 0.71), the time to the sixth bookable routine appointment (-0.24 half-days, -1.85 to 1.37), and daily rate of attendances at out of hours services (0.07/1000 population, -0.06 to 0.19). However, attendance at the local minor injuries unit was significantly higher in Loughborough than Market Harborough (rate ratio 1.22, 1.12 to 1.33). Non-ambulance attendances at accident and emergency departments fell less in Loughborough than Market Harborough (rate ratio 1.17, 1.03 to 1.33). Conclusions: The NHS walk-in centre did not greatly affect the workload of local general practitioners. However, the workload of the local minor injuries unit increased significantly, probably because it was in the same building as the walk-in centre.

Source: EMBASE


44. [Prior use of a telephone-nursing triage service by patients of emergency services]. [French] Le recours préalable a un service de triage téléphonique infirmier chez les usagers des services d'urgence.

Author(s) Lafrance M, Leduc N

Citation: Revue d Epidemiologie et de Sante Publique, December 2002, vol./is. 50/6(561-70), 0398-7620;0398-7620 (2002 Dec)

Publication Date: December 2002

Abstract: OBJECTIVES: A province-wide telephone-nursing triage service was implemented in Quebec, Canada, in order, among other objectives, to decrease overcrowding in hospital emergency rooms. This study analyses prior use of Info-Sante CLSC telephone service by patients of emergency services.METHODS: Structured interviews were conducted with 850 patients of a general hospital emergency room and of walk-in medical clinics. Patients were recruited while waiting to see the physician between 8h and 23 h, 7 days a week, from November 1997 to June 1998. Information was collected on knowledge and use of the telephone-nursing triage service, health problem and perceived health status, information-seeking behaviour on health services, utilisation habits, social support, and socio-demographic characteristics. Interval estimates and multiple logistic regressions were performed.RESULTS: Of the patients who were aware of this service, 17.4% (CI(95)=0.14 - 0.20) had used it prior to their medical visit. Among these, 85.1% had received a recommendation to consult a doctor. Among the users who were at the hospital emergency room at the time of the study, 56.4% were advised to consult a walk-in clinic or a CLSC, 28.2% their family doctor and only 12.8% a hospital emergency room. The probability of prior recourse to the telephone nursing service is influenced significantly by the duration of the health problem (2-4 days versus<2 days: OR(adjusted)=2.03), new health problem (OR(adjusted)=1.98) and by the frequenting of walk-in clinics rather than hospital emergency rooms (OR(adjusted)=0.31).CONCLUSION: Despite a heightened awareness of the telephone-nursing triage service, few users of emergency services make use of it and, when they do, follow rather loosely the recommendation towards the type of service judged appropriate for their needs.

Source: Medline

Available in print at
45. Emergency medicine. Ambulatory alternatives exist
Author(s) Wilson S.F., Collins N.
Citation: BMJ (Clinical research ed.), August 2002, vol./is. 325/7360(389; author reply 389), 1468-5833 (17 Aug 2002)
Publication Date: August 2002
Source: EMBASE

46. An advance triage system
Author(s) Cheung W.W., Heeney L., Pound J.L.
Citation: Accident and emergency nursing, January 2002, vol./is. 10/1(10-16), 0965-2302 (Jan 2002)
Publication Date: January 2002
Abstract: This paper describes the redesign of the triage process in an Emergency Department with the purpose of improving the patient flow and thus increasing patient satisfaction through the reduction of the overall length of stay. The process, Advance Triage, allows the triage nurse to initiate diagnostic protocols for frequently occurring medical problems based on physician-approved algorithms. With staff and physician involvement and medical specialist approval, nine Advance Triage algorithms were developed—abdominal pain, eye trauma, chest pain, gynaecological symptoms, substance abuse, orthopaedic trauma, minor trauma, paediatric fever and paediatric emergent. A comprehensive educational program was provided to the triage nurses and Advance Triage was initiated. A process was established at one year to evaluate the effectiveness of the Advance Triage System. The average length of stay was found to be 46 min less for all patients who were advance triaged with the greatest time-saving of 76 min for patients in the 'Urgent' category. The most significant saving was realized in the patient's length of stay (LOS) after the Emergency Physician assessed them because diagnostic results, available during the initial patient assessment, allowed treatment decisions to be made at that time. Advance Triage utilizes patient waiting time efficiently and increases the nurses' and physicians' job satisfaction.
Source: EMBASE

47. The effect of a separate stream for minor injuries on accident and emergency department waiting times.
Author(s) Cooke MW, Wilson S, Pearson S
INTRODUCTION: To decrease waiting times within accident and emergency (A&E) departments, various initiatives have been suggested including the use of a separate stream of care for minor injuries ("fast track"). This study aimed to assess whether a separate stream of minor injuries care in a UK A&E department decreases the waiting time, without delaying the care of those with more serious injury.

INTERVENTION: A doctor saw any ambulant patients with injuries not requiring an examination couch or an urgent intervention. Any patients requiring further treatment were returned to the sub-wait area until a nurse could see them in another cubicle.

METHOD: Data were retrospectively extracted from the routine hospital information systems for all patients attending the A&E department for five weeks before the institution of the separate stream system and for five weeks after.

RESULTS: 13,918 new patients were seen during the 10 week study period; 7,117 (51.1%) in the first five week period and 6,801 (49.9%) in the second five week period when a separate stream was operational. Recorded time to see a doctor ranged from 0-850 minutes. Comparison of the two five week periods demonstrated that the proportion of patients waiting less than 30 and less than 60 minutes both improved (p<0.0001). The relative risk of waiting more than one hour decreased by 32%. The improvements in waiting times were not at the expense of patients with more urgent needs.

CONCLUSIONS: The introduction of a separate stream for minor injuries can produce an improvement in the number of trauma patients waiting over an hour of about 30%. If this is associated with an increase in consultant presence on the shop floor it may be possible to achieve a 50% improvement. It is recommended that departments use a separate stream for minor injuries to decrease the number of patients enduring long waits in A&E departments.
placing nonacute patients in fast track before all higher-acuity patients were seen gained acceptance. The percentage of higher-acuity patients sent to fast track decreased from 17 per cent of all patients seen in fast track in January 1998 to 8.5 per cent by February 1999. Patients with minor illnesses and injuries no longer had to wait behind higher-acuity patients just to be registered. The average wait for registration decreased from 42 minutes in January 1998 to 14 minutes in February 1999. Physician's assistant, nursing, and technician staff all report improved working relationships and feeling a team spirit.

**DISCUSSION:** The offline component of the integrated model helped to improve organizational relationships and dialogue among team members, thereby facilitating the effectiveness of online efforts to improve processes. This model has also been applied to improve patient registration (revenue recovery) and the emergency transfer and admissions process. 4 figs. 2 tables 10 refs. [Abstract]

**Source:** HMIC

Available in *print* at

49. The effect of a separate stream for minor injuries on accident and emergency department waiting times

**Author(s)** Cooke, M W, Wilson, S, Pearson, S

**Citation:** Emergency Medicine Journal, 2002, vol./is. 19/1, 1351-0622

**Publication Date:** 2002

**Abstract:** To decrease waiting times within accident and emergency (A&E) departments, various initiatives have been suggested including the use of a separate stream of care for minor injuries ('fast track'). This study aimed to assess whether a separate stream of minor injuries care in a UK A&E department decreases the waiting time, without delaying the care of those with more serious injury. A doctor saw any ambulant patients with injuries not requiring an examination couch or an urgent intervention. Any patients requiring further treatment were returned to the sub-wait area until a nurse could see them in another cubicle. Data were retrospectively extracted from the routine hospital information systems for all patients attending the A&E department for five weeks before the institution of the separate stream system and for five weeks after. Thirteen thousand nine hundred and eighteen new patients were seen during the 10 week study period; 7,117 (51.1%) in the first five week period and 6,801 (49.9%) in the second five week period when a separate stream was operational. Recorded time to see a doctor ranged from nought-850 minutes. Comparison of the two five week periods demonstrated that the proportion of patients waiting less than 30 and less than 60 minutes both improved (p<0.0001). The relative risk of waiting more than one hour decreased by 32%. The improvements in waiting times were not at the expense of patients with more urgent needs. The introduction of a separate stream for minor injuries can produce an improvement in the number of trauma patients waiting over an hour of about 30%. If this is associated with an increase in consultant presence on the shop floor it may be possible to achieve a 50% improvement. It is recommended that departments use a separate stream for minor injuries to decrease the number of patients enduring long waits in A&E departments. Cites 11 references. [Journal abstract]

**Source:** HMIC

Available in *print* at

**Some additional results**

1. **The reduce (reducing emergency department utilisation and crowding efforts) study**

**Author(s)** Gilligan P., Winder S., O'Kelly P.

**Citation:** Academic Emergency Medicine, June 2012, vol./is. 19/6(756), 1069-6563 (June 2012)

**Publication Date:** June 2012

**Source:** EMBASE
| **2. A decision tree algorithm to assist pre-ordering diagnostics on emergency department patients during triage** |
| Author(s) | Maddalozzo G., Neyman G., Sorkin G., Calabro J. |
| Citation | Academic Emergency Medicine, April 2012, vol./is. 19/(S27), 1069-6563 (April 2012) |
| Publication Date | April 2012 |
| Source | EMBASE |

| **3. Streaming primary urgent care: a prospective approach** |
| Author(s) | Bickerton J., Davies J., Davies H., Apau D., Procter S. |
| Citation | Primary health care research & development, April 2012, vol./is. 13/2(142-152), 1477-1128 (Apr 2012) |
| Publication Date | April 2012 |
| Source | EMBASE |

| **4. Impact of the ABCDE triage in primary care emergency department on the number of patient visits to different parts of the health care system in Espoo City** |
| Author(s) | Kantonen J., Menezes R., Heinanen T., Mattila J., Mattila K.J., Kauppila T. |
| Citation | BMC Emergency Medicine, January 2012, vol./is. 12/, 1471-227X (04 Jan 2012) |
| Publication Date | January 2012 |
| Source | EMBASE |

| **5. Reorganisation of hospital emergency services: A business case for quality improvement** |
| Author(s) | Eichler K., Senn O., Ruthemann I., Bogli K., Sidler P., Brugger U. |
| Citation | Value in Health, November 2011, vol./is. 14/7(A344-A345), 1098-3015 (November 2011) |
| Publication Date | November 2011 |
| Source | EMBASE |

| **6. Emergency department discharge facilitator team: A method for improving front-end flow in an academic urban medical center** |
| Author(s) | Sharma R., Mulcare M.R., Graetz R., Greenwald P.W., Mustalish A.C., Miluszusky B., Flomenbaum N.E. |
| Citation | Annals of Emergency Medicine, October 2011, vol./is. 58/4 SUPPL. 1(S297), 0196-0644 (October 2011) |
| Publication Date | October 2011 |
| Source | EMBASE |

7. Acute Medicine: Triage, timing and teaching in the context of medical emergency admissions

Author(s) Subbe C.P., Bottle R.A., Bell D.
Citation: European Journal of Internal Medicine, August 2011, vol./is. 22/4(339-343), 0953-6205;1879-0828 (August 2011)
Publication Date: August 2011
Source: EMBASE
Available in print at http://www.hello.nhs.uk/journal_articles.asp

8. Promoting safe care in ambulatory headache centers with a telephone triage tool

Author(s) Moriarty M.A.
Citation: Headache, June 2011, vol./is. 51/(26), 0017-8748 (June 2011)
Publication Date: June 2011
Source: EMBASE
Available in fulltext from Headache: The Journal of Head and Face Pain at EBSCOhost
Available in print at http://www.hello.nhs.uk/journal_articles.asp
Available in fulltext from Headache: The Journal of Head and Face Pain at EBSCOhost

9. Refining a triage system for use in emergency departments

Author(s) van der Linden C., Lindeboom R., van der Linden N., Lucas C.
Citation: Emergency nurse : the journal of the RCN Accident and Emergency Nursing Association, May 2011, vol./is. 19/2(22-24), 1354-5752 (May 2011)
Publication Date: May 2011
Source: EMBASE
Available in fulltext from Emergency Nurse at EBSCOhost
Available in print at http://www.hello.nhs.uk/journal_articles.asp
Available in print at http://www.hello.nhs.uk/journal_articles.asp

10. An integrated intake and rapid assessment zone initiative improves throughput for lower-acuity patients

Author(s) Taylor K., Koonar H., Mercuur L., Wang D., Dowling S., Innes G., Lang E.
Citation: Academic Emergency Medicine, May 2011, vol./is. 18/5 SUPPL. 1(S182-S183), 1069-6563 (May 2011)
Publication Date: May 2011
Source: EMBASE
Available in print at http://www.hello.nhs.uk/journal_articles.asp
Available in fulltext from Academic Emergency Medicine at EBSCOhost

11. Rapid assessment medical unit at box hill hospital

Author(s) Ghaly R., Gilfillan C.
Citation: Internal Medicine Journal, March 2010, vol./is. 40/(18), 1444-0903 (March 2010)
12. Impact of the ABCDE triage on the number of patient visits to the emergency department

Author(s) Kantonen J., Kaartinen J., Mattila J., Menezes R., Malmila M., Castren M., Kauppila T.

Citation: BMC Emergency Medicine, June 2009, vol./is. 10/, 1471-227X (03 Jun 2010)

Source: EMBASE

Available in fulltext from BMC Emergency Medicine at BioMedCentral
Available in fulltext from BMC Emergency Medicine at National Library of Medicine

13. A queueing network model to analyze the impact of parallelization of care on patient cycle time

Author(s) Jiang L., Giachetti R.E.

Citation: Health Care Management Science, September 2008, vol./is. 11/3(248-261), 1386-9620 (September 2008)

Source: EMBASE

Available in print at http://www.hello.nhs.uk/journal_articles.asp
Available in fulltext from Health Care Management Science at EBSCOhost

15. Convenient care clinics: The future of accessible health care

Author(s) Hansen-Turton T., Ryan S., Miller K., Counts M., Nash D.B.

Citation: Disease Management, April 2007, vol./is. 10/2(61-73), 1093-507X (April 2007)

Source: EMBASE

Available in print at http://www.hello.nhs.uk/journal_articles.asp
Available in fulltext from Disease Management at EBSCOhost


Author(s) Smith K., Clark A., Dyson K., Kruger E., Lejmanoski L., Russell A., Tennant M.

Citation: Australian Dental Journal, March 2006, vol./is. 51/1(11-15), 0045-0421 (March 2006)

Publication Date: March 2006

Source: EMBASE

Available in print at http://www.hello.nhs.uk/journal_articles.asp

17. Impact of rapid entry and accelerated care at triage on reducing emergency department patient wait times, lengths of stay, and rate of left without being seen
19. Patients who leave the emergency department without being seen by a physician: A control-matched study
Author(s) Monzon J., Friedman S.M., Clarke C., Arenovich T.
Citation: Canadian Journal of Emergency Medicine, March 2005, vol./is. 7/2(107-113), 1481-8035;1481-8035 (March 2005)
Publication Date: March 2005
Source: EMBASE
Available in print at http://www.hello.nhs.uk/journal_articles.asp

20. Ways to reduce patient turnaround time and improve service quality in emergency departments
Author(s) Sinreich D., Marmor Y.
Citation: Journal of Health, Organisation and Management, 2005, vol./is. 19/2(88-105), 1477-7266 (2005)
Publication Date: 2005
Source: EMBASE
Available in print at http://www.hello.nhs.uk/journal_articles.asp

21. Team triage improves emergency department efficiency
Author(s) Subash F., Dunn F., McNicholl B., Marlow J.
Citation: Emergency Medicine Journal, September 2004, vol./is. 21/5(542-544), 1472-0205 (September 2004)
Publication Date: September 2004
Source: EMBASE
Available in print at http://www.hello.nhs.uk/journal_articles.asp
Available in fulltext from Emergency Medicine Journal : EMJ at National Library of Medicine
Available in fulltext from Emergency Medicine Journal at Highwire Press

22. Attitude of emergency department patients with minor problems to being treated by a nurse practitioner
Author(s) Moser M.S., Abu-Laban R.B., Van Beek C.A.
Citation: Canadian Journal of Emergency Medicine, 2004, vol./is. 6/4(246-252), 1481-8035 (2004)
23. Emergency department visits for ambulatory care sensitive conditions: insights into preventable hospitalizations

**Author(s)** Oster A., Bindman A.B.

**Citation:** Medical care, February 2003, vol./is. 41/2(198-207), 0025-7079 (Feb 2003)

**Publication Date:** February 2003

**Source:** EMBASE


**Abstract:** This study aimed to investigate the effectiveness of nurse practitioner services for minor injuries in an adult emergency department and to ascertain consumers’ satisfaction with the care received. Nurse practitioner roles in Australia have been progressively developing since a pilot project in 1990 examined their feasibility. Currently, nurse practitioners in Australia practise in a variety of specialist areas including coronary care cardiology, adult and paediatric palliative care, emergency, diabetics, aged care and perinatal care. The reported study used a retrospective design that conducted case-note audits and explored patient satisfaction with after-care questionnaires. One hundred case notes of patients treated by the nurse practitioner were audited and 57 patients completed questionnaires exploring their satisfaction and perception of the care received. Analysis of the case-note data indicated that the majority of presenting complaints were minor injuries. Of these injuries, 96.3% of presentations triaged level 4 and 94.4% of those triaged level 5 were seen within the time frame recommended by the Australasian Triage Scale. Forty-six percent of patients required X-rays and 2% required pathology tests during their emergency department stay. The majority of patients were satisfied with the treatment received from the nurse practitioner. Patients are satisfied with management of small injury presentations by nurse practitioners in the emergency department. Incidentally, it was noted that the flow of patients through the department was improved, resulting in medical resources concentrated to higher priority presentations.

**Source:** Medline

5. An overview of triage in the emergency department.

**Author(s)** Ganley, Lorraine, Gloster, Annabella

**Citation:** Nursing Standard, 23 November 2011, vol./is. 26/12(49-56), 00296570

**Publication Date:** 23 November 2011

**Abstract:** Emergency care services in the UK are receiving increasing numbers of patients presenting with a wide range of problems, from life-threatening conditions to minor injury or illness. All patients seeking emergency care need to be assessed and classified to prioritise those who have the most urgent problems and are in need of immediate care. This article provides overview of triage within an emergency care setting. It explores the development of triage and describes the nationally recognised Manchester Triage System. The professional and legal responsibilities of the triage nurse are also discussed.

**Source:** CINAHL

Available in print at
Available in fulltext from Nursing Standard at EBSCOhost

6. Attitude of emergency department patients with minor problems to being treated by a nurse practitioner.

**Author(s)** Moser MS, Abu-Laban RB, van Beek CA

**Citation:** Canadian Journal of Emergency Medicine, 01 July 2004, vol./is. 6/4(246-252), 14818035

**Publication Date:** 01 July 2004

**Abstract:** Introduction: It may be appropriate for nurse practitioners (NPs) to provide care for a subset of emergency department (ED) patients with non-urgent problems. Our objective was to determine the attitude of ED patients with minor problems to being treated by an NP.

**Source:** CINAHL

Available in print at

7. Best course of action.

**Author(s)** Chell P

**Citation:** Emergency Nurse, 01 February 2010, vol./is. 17/9(38-38), 13545752

**Publication Date:** 01 February 2010

**Abstract:** Former paediatric nurse, health visitor and bank nurse Paula Chell is now the manager of an urgent care unit in Stoke-on-Trent, where she has developed a ‘nurse navigator’ system to ensure that nurse practitioners and emergency care triage nurses can identify the appropriate forms of treatment for a wide range of patients.

**Source:** CINAHL

Available in fulltext from Emergency Nurse at EBSCOhost

Available in print at

**Author(s)**: Stiell I, Clement C, O'Connor A, Davies B, Leclaire C, Mackenzie T, Beland C, Peck T, Sheehan P, Gee A, Perry J  
**Citation**: Academic Emergency Medicine, 01 May 2007, vol./is. 14/5(0-0), 10696563  
**Publication Date**: 01 May 2007  
**Source**: CINAHL  
Available in *print* at...


**Author(s)**: Wilson, Julie, Taylor, Kate  
**Citation**: Nursing Management - UK, 01 March 2011, vol./is. 17/10(26-30), 13545760  
**Publication Date**: 01 March 2011  
**Abstract**: The role of primary care nurses has expanded in recent years, and many now work for urgent care service providers. With role expansion comes increased professional autonomy, but this, in turn, carries a greater risk of error and, consequently, a greater need for medicolegal protection. This article considers some of the risks associated with out-of-hours care delivery, particularly in relation to telephone triage.  
**Source**: CINAHL  
Available in *print* at...  
Available in *fulltext* from *Nursing Management - UK* at EBSCOhost  
Available in *fulltext* from *Nursing Management - UK* at EBSCOhost

10. E-referral and e-triage as mechanisms for enhancing and monitoring patient care across the primary-secondary provider interface.

**Author(s)**: Gatley S, Grace A, Lopes V  
**Citation**: Journal of Telemedicine & Telecare, 2003, vol./is. 9/6(350-2), 1357-633X;1357-633X (2003)  
**Publication Date**: 2003  
**Source**: Medline  
Available in *fulltext* from *Journal of Telemedicine and Telecare* at EBSCOhost  
Available in *print* at...

12. Multidisciplinary development of a "fast track" module utilized during triage in an urgent care setting.

**Author(s)**: Vega R, McNulty E, Kennedy J  
**Citation**: Oncology Nursing Forum, 01 May 2009, vol./is. 36/3(73-73), 0190535X  
**Publication Date**: 01 May 2009  
**Source**: CINAHL  
Available in *fulltext* from *Oncology Nursing Forum* at EBSCOhost  
Available in *print* at...

13. Patients and GPs praise nurse-led triage scheme.
14. Primary care professionals providing non-urgent care in hospital emergency departments.

**Author(s)** Khangura JK, Flodgren G, Perera R, Rowe BH, Shepperd S

**Citation:** Cochrane Database of Systematic Reviews, 2012, vol./is. 11/(CD002097), 1361-6137;1469-493X (2012)

**Publication Date:** 2012

**Abstract:** BACKGROUND: In many countries emergency departments (EDs) are facing an increase in demand for services, long-waits and severe crowding. One response to mitigate overcrowding has been to provide primary care services alongside or within hospital EDs for patients with non-urgent problems. It is not known, however, how this impacts the quality of patient care, the utilisation of hospital resources, or if it is cost-effective.

OBJECTIVES: To assess the effects of locating primary care professionals in the hospital ED to provide care for patients with non-urgent problems, compared with care provided by regular Emergency Physicians (EPs).

SEARCH METHODS: We searched the Cochrane Effective Practice and Organisation of Care (EPOC) Group Specialized register; Cochrane Central Register of Controlled Trials (The Cochrane library, 2011, Issue 4), MEDLINE (1950 to March 21 2012); EMBASE (1980 to April 28 2011); CINAHL (1980 to April 28 2011); PsychINFO (1967 to April 28 2011); Sociological Abstracts (1952 to April 28 2011); ASSIA (1987 to April 28 2011); SSSCI (1945 to April 28 2011); HMIC (1979 to April 28 2011), sources of unpublished literature, reference lists of included papers and relevant systematic reviews. We contacted experts in the field for any published or unpublished studies, and hand searched ED conference abstracts from the last three years.

SELECTION CRITERIA: Randomised controlled trials, non-randomised studies, controlled before and after studies and interrupted time series studies that evaluated the effectiveness of introducing primary care professionals to hospital EDs to attend to non-urgent patients, as compared to the care provided by regular EPs.

DATA COLLECTION AND ANALYSIS: Two reviewers independently extracted data and assessed the risk of bias for each included study. Dichotomous outcomes are presented as risk ratios (RR) with 95% confidence intervals (CIs) and continuous outcomes are presented as mean differences (MD) with 95% CIs. Pooling was not possible due to heterogeneity.

MAIN RESULTS: Three non randomised controlled studies involving a total of 11 203 patients, 16 General Practioners (GPs), and 52 EPs, were included. These studies evaluated the effects of introducing GPs to provide care to patients with non-urgent problems in the ED, as compared to EPs for outcomes such as resource use. The quality of evidence for all outcomes in this review was low, primarily due to the non-randomised design of included studies. The outcomes investigated were similar across studies; however there was high heterogeneity (I²)>86%. Differences across studies included the triage system used, the level of expertise and experience of the medical practitioners and type of hospital (urban teaching, suburban community hospital). Two of the included studies report that GPs used significantly fewer healthcare resources than EPs, with fewer blood tests (RR 0.22; 95%CI 0.14 to 0.33; N=4641; RR 0.35; 95%CI 0.29 to 0.42; N=4684), x-rays (RR 0.47; 95% CI 0.41 to 0.54; N=4641; RR 0.77 95% CI 0.72 to 0.83; N=4684), admissions to hospital (RR 0.33; 95% CI 0.19 to 0.58; N=4641; RR 0.45; 95% CI 0.36 to 0.56; N=4684) and referrals to specialists (RR 0.50; 95% CI 0.39 to 0.63; N=4641; RR 0.66; 95% CI 0.60 to 0.73; N=4684). One of the two studies reported no statistically
significant difference in the number of prescriptions made by GPs compared with EPs, (RR 0.95 95% CI 0.88 to 1.03; N=4641), while the other showed that GPs prescribed significantly more medications than EPs (RR 1.45 95% CI 1.35 to 1.56; N=4684). The results from these two studies showed marginal cost savings from introducing GPs in hospital EDs. The third study (N=1878) failed to identify a significant difference in the number of blood tests ordered (RR 0.96; 95% CI 0.76 to 1.2), x-rays (RR 1.07; 95% CI 0.99 to 1.15), or admissions to hospital (RR 1.11; 95% CI 0.70 to 1.76), but reported a significantly greater number of referrals to specialists (RR 1.21; 95% CI 1.09 to 1.33) and prescriptions (RR 1.12; 95% CI 1.01 to 1.23) made by GPs as compared with EPs. No data were reported on patient wait-times, length of hospital stay, or patient outcomes, including adverse effects or mortality. AUTHORS' CONCLUSIONS: Overall, the evidence from the three included studies is weak, as results are disparate and neither safety nor patient outcomes have been examined. There is insufficient evidence upon which to draw conclusions for practice or policy regarding the effectiveness and safety of care provided to non-urgent patients by GPs versus EPs in the ED to mitigate problems of overcrowding, wait-times and patient flow.

Source: Medline
Available in fulltext from Cochrane Library, The at Wiley

15. Reconfiguring the emergency and urgent care workforce: mixed methods study of skills and the everyday work of non-clinical call-handlers in the NHS.

Author(s) Turnbull J, Prichard J, Halford S, Pope C, Salisbury C

Citation: Journal of Health Services & Research Policy, October 2012, vol./is. 17/4(233-40), 1355-8196;1758-1060 (2012 Oct)

Publication Date: October 2012

Abstract: OBJECTIVES: To examine the skills and expertise required and used by non-clinical call-handlers doing telephone triage and assessment, supported by a computer decision support system (CDSS) in urgent and emergency care services. METHODS: Comparative case study of three different English emergency and urgent care services. Data consisted of nearly 500 hours of non-participant observation, 61 semi-structured interviews with health service staff, documentary analysis, and a survey of 106 call-handlers. RESULTS: Communication skills and ‘allowing the CDSS to drive the assessment’ are viewed by the CDSS developers and staff as key competencies for call-handling. Call-handlers demonstrated high levels of experience, skills and expertise in using the CDSS. These workers are often portrayed simply as ‘trained users’ of technology, but they used a broader set of skills including team work, flexibility and ‘translation’. Call-handlers develop a ‘pseudo-clinical’ expertise and draw upon their experiential knowledge to bring the CDSS into everyday use. CONCLUSIONS: Clinical assessment and triage by non-clinical staff supported by a CDSS represents a major change in urgent and emergency care delivery, warranting a detailed examination of call-handlers’ skills and expertise. We found that this work appears to have more in common with clinical work and expertise than with other call-centre work that it superficially resembles. Recognizing the range of skills call-handlers demonstrate and developing a better understanding of this should be incorporated into the training for, and management of, emergency and urgent care call-handling.

Source: Medline
Available in print at

16. Redesigning triage to reduce waiting times.

Author(s) Shrimpling M

Citation: Emergency Nurse, 01 May 2002, vol./is. 10/2(34-37), 13545752

Publication Date: 01 May 2002

Abstract: Marisa Shrimpling describes how the redesign in the traditional practice of triage have been applied to the treatment of minor injury/ailment patients.

Source: CINAHL
18. Results of an evaluation of the effectiveness of triage and direct transportation to minor injuries units by ambulance crews.

**Author(s)** Snooks H, Foster T, Nicholl J

**Citation:** Emergency Medicine Journal, January 2004, vol./is. 21/1(105-11), 1472-0205;1472-0213 (2004 Jan)

**Publication Date:** January 2004

**Abstract:**

OBJECTIVE: To evaluate triage and transportation to a minor injury unit (MIU) by emergency ambulance crews.

METHODS: Ambulance crews in two services were asked to transport appropriate patients to MIU during randomly selected weeks of one year. During all other weeks they were to treat such patients according to normal practice. Patients were followed up through ambulance service, hospital and/or MIU records, and by postal questionnaire. Semi-structured interviews were undertaken with crews (n = 15). Cases transferred from MIU to accident and emergency (A&E) were reviewed.

RESULTS: 41 intervention cluster patients attended MIU, 303 attended A&E, 65 were not conveyed. Thirty seven control cluster patients attended MIU, 327 attended A&E, 61 stayed at scene. Because of low study design compliance, outcomes of patients taken to MIU were compared with those taken to A&E, adjusted for case mix. MIU patients were 7.2 times as likely to rate their care as excellent (95% CI 1.99 to 25.8). Ambulance service job-cycle time and time in unit were shorter for MIU patients (-7.8, 95% CI -11.5 to -4.1); (-222.7, 95%CI -331.9 to -123.5). Crews cited patient and operational factors as inhibiting MIU use; and location, service, patient choice, job-cycle time, and handover as encouraging their use. Of seven patients transferred by ambulance from MIU to A&E, medical reviewers judged that three had not met the protocol for conveyance to MIU. No patients were judged to have suffered adverse consequences.

CONCLUSIONS: MIUs were only used for a small proportion of eligible patients. When they were used, patients and the ambulance service benefited.

**Source:** Medline

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Available in **fulltext from Emergency Medicine Journal** at **Highwire Press**

Available in **fulltext from Emergency Medicine Journal** at **Highwire Press**

19. Should radiographers triage minor musculoskeletal trauma?

**Author(s)** Littlefair S

**Citation:** Synergy: Imaging & Therapy Practice, 01 January 2007, vol./is. /(26-29), 13605518

**Publication Date:** 01 January 2007

**Source:** CINAHL

Available in **print** at

Available in **fulltext from Emergency Medicine Journal : EMJ at National Library of Medicine**

Available in **fulltext from Emergency Medicine Journal at Highwire Press**

Available in **fulltext from Emergency Medicine Journal at Highwire Press**

20. Streaming A&E patients to walk-in centre services.

**Author(s)** Bickerton J, Coats T, Dewan V, Procter S, Allan T

**Citation:** Emergency Nurse, 01 June 2005, vol./is. 13/3(20-23), 13545752

**Publication Date:** 01 June 2005

**Abstract:** Jane Bickerton and colleagues discuss whether walk-in centres can help in the
21. Teaching residents to communicate: the use of a telephone triage system in an academic ambulatory clinic.

**Author(s)** Caralis P

**Citation:** Patient Education & Counseling, September 2010, vol./is. 80/3(351-3), 0738-3991;1873-5134 (2010 Sep)

**Publication Date:** September 2010

**Abstract:** OBJECTIVE: This study evaluated the use of a telephone triage system in an academic primary care clinic and its impact on communication, patient management and satisfaction.

**METHODS:** A "telephone clinic" was created using a triage nurse to answer patients' calls to an academic primary care clinic, staffed by house staff physicians. Chart reviews were conducted of all medical records of patients who called and were referred to the telephone clinic during a six month period. A total of 1135 patient calls were monitored. Using a random selection process, 366 patient calls were studied and 42% of these patients were called back two weeks after the initial call and were interviewed.

**RESULTS:** Of the 336 calls, 68% of the calls were serious enough to be referred to a house staff physician. Symptom complaints accounted for 64% of the telephone calls; 4% of patients were sent to the emergency room or admitted to the hospital directly based on the information from the call. Telephone calls enhanced patients' access to specialty care consultative services and 14% of patients who called received a new medication prescription. Patients' satisfaction with the communication and the overall care provided by the "telephone clinic" was highly rated.

**CONCLUSION:** The telephone contact initiated by the patients resulted in expedited access for patients whose symptoms were serious enough to require immediate referral to the emergency room or direct hospital admission.

**PRACTICE IMPLICATIONS:** In a primary care practice, the telephone can be a major source of communication for practitioners, office staff and patients. The creation of a "telephone clinic" which utilizes nurses and house staff physicians trained and dedicated to telephone communication directly with patients resulted in more efficient management and greater satisfaction for patients. Published by Elsevier Ireland Ltd.

**Source:** Medline

Available in print at

24. The effect of a triage pain management protocol for minor musculoskeletal injury patients in a Hong Kong emergency department.

**Author(s)** Wong EML, Chan HMS, Rainer TH, Ying CS

**Citation:** Australasian Emergency Nursing Journal, 01 May 2007, vol./is. 10/2(64-72), 15746267

**Publication Date:** 01 May 2007

**Abstract:** Background

**Source:** CINAHL

Available in print at

25. The Kaiser Permanente Electronic Health Record: transforming and streamlining modalities of care.

**Author(s)** Chen C, Garrido T, Chock D, Okawa G, Liang L

**Citation:** Health Affairs, March 2009, vol./is. 28/2(323-33), 0278-2715;1544-5208 (2009
Abstract: We examined the impact of implementing a comprehensive electronic health record (EHR) system on ambulatory care use in an integrated health care delivery system with more than 225,000 members. Between 2004 and 2007, the annual age/sex-adjusted total office visit rate decreased 26.2 percent, the adjusted primary care office visit rate decreased 25.3 percent, and the adjusted specialty care office visit rate decreased 21.5 percent. Scheduled telephone visits increased more than eightfold, and secure e-mail messaging, which began in late 2005, increased nearly sixfold by 2007. Introducing an EHR creates operational efficiencies by offering nontraditional, patient-centered ways of providing care.

Source: Medline
Available in fulltext from Health Affairs at EBSCOhost
Available in fulltext from Health Affairs at EBSCOhost
Available in print at
Available in fulltext from Health Affairs at Highwire Press

26. 'Urgent care' after triage not easy decision to make: use these criteria, expert advises.

Author(s)

Citation: Case Management Advisor, 01 March 2007, vol./is. 18/3(31-32), 10535500
Publication Date: 01 March 2007
Source: CINAHL
Available in print at
Available in fulltext from Case Management Advisor at EBSCOhost

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MA Purtill, K Benedict. - The Journal of ..., 2008 - journals.lww.com
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RE O'Connor - Prehospital Emergency Care, 2006 - informahealthcare.com

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CR Wilder - American Journal of Health Sciences (AJHS), 2012 - cluteonline.com

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KE Harding, NF Taylor, SG Leggat - Australian Health Review, 2011 - CSIRO

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