

**A SELECTION OF TEN CURRENT READINGS ON TOPICS RELATED TO EMERGENCY MEDICINE –
some available as free full-text and some requiring payment
Selection of readings made by A/Prof Goh Lee Gan**

READING 1 – CLINICAL PREDICTION MODEL FOR MANAGING FEBRILE CHILDREN

Nijman RG, Vergouwe Y, Thompson M, van Veen M, van Meurs AH, van der Lei J, Steyerberg EW, Moll HA, Oostenbrink R. Clinical prediction model to aid emergency doctors managing febrile children at risk of serious bacterial infections: diagnostic study. BMJ. 2013 Apr 2;346:f1706. doi: 10.1136/bmj.f1706. PubMed PMID: 23550046; PubMed Central PMCID: PMC3614186.

URL: <http://www.bmj.com/cgi/pmidlookup?view=long&cpmid=23550046> – Free full text

Department of General Paediatrics, Erasmus MC-Sophia Children's Hospital, 3015 GJ Rotterdam, Netherlands.

ABSTRACT

OBJECTIVE: To derive, cross validate, and externally validate a clinical prediction model that assesses the risks of different serious bacterial infections in children with fever at the emergency department.

DESIGN: Prospective observational diagnostic study.

SETTING: Three paediatric emergency care units: two in the Netherlands and one in the United Kingdom.

PARTICIPANTS: Children with fever, aged 1 month to 15 years, at three paediatric emergency care units: Rotterdam (n=1750) and the Hague (n=967), the Netherlands, and Coventry (n=487), United Kingdom. A prediction model was constructed using multivariable polytomous logistic regression analysis and included the predefined predictor variables age, duration of fever, tachycardia, temperature, tachypnoea, ill appearance, chest wall retractions, prolonged capillary refill time (>3 seconds), oxygen saturation <94%, and C reactive protein.

MAIN OUTCOME MEASURES: Pneumonia, other serious bacterial infections (SBIs, including septicaemia/meningitis, urinary tract infections, and others), and no SBIs. **RESULTS:** Oxygen saturation <94% and presence of tachypnoea were important predictors of pneumonia. A raised C reactive protein level predicted the presence of both pneumonia and other SBIs, whereas chest wall retractions and oxygen saturation <94% were useful to rule out the presence of other SBIs. Discriminative ability (C statistic) to predict pneumonia was 0.81 (95% confidence interval 0.73 to 0.88); for other SBIs this was even better: 0.86 (0.79 to 0.92). Risk thresholds of 10% or more were useful to identify children with serious bacterial infections; risk thresholds less than 2.5% were useful to rule out the presence of serious bacterial infections. External validation showed good discrimination for the prediction of pneumonia (0.81, 0.69 to 0.93); discriminative ability for the prediction of other SBIs was lower (0.69, 0.53 to 0.86).

CONCLUSION: A validated prediction model, including clinical signs, symptoms, and C reactive protein level, was useful for estimating the likelihood of pneumonia and other SBIs in children with fever, such as septicaemia/meningitis and urinary tract infections.

PMCID: PMC3614186 PMID: 23550046 [PubMed - indexed for MEDLINE]

READING 2 – SURVEY STUDY OF INDEX FOOD RELATED ALLERGIC REACTIONS & ANAPHYLAXIS

Jacobs TS, Greenhawt MJ, Hauswirth D, Mitchell L, Green TD. A survey study of index food-related allergic reactions and anaphylaxis management. Pediatr Allergy Immunol. 2012 Sep;23(6):582-9. PubMed PMID: 22625658.

URL: <http://dx.doi.org/10.1111/j.1399-3038.2012.01315.x> - Payment required

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ABSTRACT

BACKGROUND: Initial food-allergic reactions are often poorly recognized and under-treated.

METHODS: Parents of food-allergic children were invited to complete an online questionnaire, designed with Kids with Food Allergies Foundation, about their children's first food-allergic reactions resulting in urgent medical evaluation. **RESULTS:** Among 1361 reactions, 76% (95% CI 74-79%) were highly likely to represent anaphylaxis based on NIAID/FAAN criteria. Only 34% (95% CI 31-37%) of these were administered epinephrine. In 56% of these, epinephrine was administered by emergency departments; 20% by parents; 9% by paramedics; 8% by primary care physicians; and 6% by urgent care centers. In 26% of these, epinephrine was given within 15 min of the onset of symptoms; 54% within 30 min; 82% within 1 h; and 93% within 2 h. Factors associated with a decreased likelihood of receiving epinephrine for anaphylaxis included age <12 months, milk and egg triggers, and symptoms of abdominal pain and/or diarrhea. Epinephrine was more likely to be given to asthmatic children and children with peanut or tree nut ingestion prior to event. Post-treatment, 42% of reactions likely to represent anaphylaxis were referred to allergists, 34% prescribed and/or given epinephrine auto-injectors, 17% trained to use epinephrine auto-injectors, and 19% given emergency action plans. Of patients treated with epinephrine, only half (47%) were prescribed epinephrine auto-injectors. **CONCLUSIONS:** Only one-third of initial food-allergic reactions with symptoms of anaphylaxis were recognized and treated with epinephrine. Fewer than half of patients were referred to allergists. There is still a need to increase education and awareness about food-induced anaphylaxis. © 2012 John Wiley & Sons A/S. PMID: 22625658 [PubMed - indexed for MEDLINE]

READING 3 – EVALUATION OF FIRST NON-FRBRILE SEIZURES

Wilden JA, Cohen-Gadol AA. Evaluation of first nonfebrile seizures. Am Fam Physician. 2012 Aug 15;86(4):334-40. Review. PubMed PMID: 22963022.

URL: <http://www.aafp.org/afp/2012/0815/p334.html> - Free full text

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ABSTRACT

Nonfebrile seizures may indicate underlying disease or epilepsy. The patient history can often distinguish epileptic seizures from nonepileptic disorders by identifying the events directly preceding the convulsion, associated conditions, and details of the seizure, including triggers, length, and type of movements. Laboratory testing, lumbar puncture, and neuroimaging may be indicated depending on the presentation, suspected etiology, and patient's age. Electroencephalography should be performed 24 to 48 hours after a first seizure because of its substantial yield and ability to predict recurrence. Neuroimaging is recommended for adults, infants, and children who have cognitive or motor developmental delay or a focal seizure. Neuroimaging may be scheduled on an outpatient basis for patients with stable vital signs who are awake and have returned to neurologic baseline. Emergent neuroimaging should be performed in patients with persistent decreased mental status or a new focal neurologic abnormality. Although magnetic resonance imaging is generally preferred to head computed tomography because of its greater sensitivity for intracranial pathology, computed tomography should be performed if intracranial bleeding is suspected because of recent head trauma, coagulopathy, or severe headache. Treatment with an antiepileptic drug after a first seizure does not prevent epilepsy in the long term, but it decreases the short-term likelihood of a second seizure. Adults with an unremarkable neurologic examination, no comorbidities, and no known structural brain disease who have returned to neurologic baseline do not need to be started on antiepileptic therapy. Treatment decisions should weigh the benefit of decreased short-term risk of recurrence against the potential adverse effects of antiepileptic drugs. Copyright © 2012 American Academy of Family Physicians.

PMID: 22963022 [PubMed - indexed for MEDLINE]

READING 4 – CT IN DIAGNOSIS OF ACUTE APPENDICITIS

Nelson DW, Causey MW, Porta CR, McVay DP, Carnes AM, Johnson EK, Steele SR. Examining the relevance of the physician's clinical assessment and the reliance on computed tomography in diagnosing acute appendicitis. Am J Surg. 2013 Apr;205(4):452-6. PubMed PMID: 23388421

URL: [http://linkinghub.elsevier.com./retrieve/pii/S0002-9610\(13\)00037-8](http://linkinghub.elsevier.com./retrieve/pii/S0002-9610(13)00037-8) – Payment required

Department of Surgery, Madigan Army Medical Center, 9040 Fitzsimmons Drive, Fort Lewis, WA 98431, USA.

ABSTRACT

BACKGROUND: The aim of this study was to examine the relevance of clinical assessment in diagnosing appendicitis in the current medical environment, in which routine use of computed tomography (CT) has become the norm.

METHODS: A retrospective review was conducted, analyzing patient demographics, Alvarado clinical assessment scoring, and radiologic and pathologic results.

RESULTS: A total of 664 patients were identified. Higher Alvarado scores were significantly associated with pathologically confirmed appendicitis (low, 87%; moderate, 92%; high, 96%; $P = .05$). As clinical assessment scores increased, use of CT decreased significantly (low, 97%; moderate, 85%; high, 79%; $P = .01$). The negative appendectomy rate for patients with clinical assessments consistent with appendicitis was 4%, compared with 3% associated with CT. Regardless of assessment scores, 82% of the cohort underwent CT. From a random sample of 100 charts, 87% of initial emergency department plans stratified disposition on the basis of the results of CT.

CONCLUSIONS: Although physical examination remains crucial, CT has become the primary modality dictating care of patients with presumed appendicitis. Published by Elsevier Inc.

PMID: 23388421 [PubMed - indexed for MEDLINE]

READING 5 – SURVIVAL RADIOLOGY FOR GPs

Skinner S. Survival radiology for GPs. Aust Fam Physician. 2012 Jun;41(6):376-84. PubMed PMID: 22675676.

URL: <http://www.racgp.org.au/afp/201206/47071> - Free full text

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ABSTRACT

BACKGROUND: General practitioners in regional and rural areas may be required to interpret emergency imaging of their patients without the immediate assistance of a radiologist.

OBJECTIVE: To provide a structured approach to interpretation of X-rays performed as part of routine care of common emergency presentations.

DISCUSSION: X-rays are an important diagnostic tool and should follow a complete history and examination. A structured approach and awareness of potential pitfalls will enable the primary care doctor to confidently interpret plain X-rays in emergency situations.

PMID: 22675676 [PubMed - indexed for MEDLINE]

READING 6 – GOUT-RELATED HEALTH CARE UTILISATION IN US EMERGENCY DEPARTMENTS

Garg R, Sayles HR, Yu F, Michaud K, Singh J, Saag KG, Mikuls TR. Gout-related health care utilization in US emergency departments, 2006 through 2008. Arthritis Care Res (Hoboken). 2013 Apr;65(4):571-7. PubMed PMID: 22949176.

URL <http://dx.doi.org/10.1002/acr.21837> - Payment required

Creighton University, Omaha, Nebraska.

ABSTRACT

OBJECTIVE: To characterize gout-related emergency department (ED) utilization using a nationally representative sample and to examine factors associated with the frequency and charges of gout-related ED visits.

METHODS: Using the National Emergency Department Sample data from 2006-2008, the weighted national frequency of gout visits was calculated along with the median ED charge and total national ED-related charges. Associations of several patient- and facility-level factors were examined with the occurrence of gout visits using multivariable logistic regression and with ED-related charges using multivariable linear regression.

RESULTS: Gout was the primary indication for 168,410 ED visits in 2006, 171,743 visits in 2007, and 174,823 visits in 2008, accounting for ~0.2% of all visits annually and generating ED charges of more than \$128 million in 2006, \$144 million in 2007, and \$166 million in 2008. Age, male sex, household income <\$39,000, private insurance, and hospital locations in nonmetropolitan areas and the southern US were associated with an increased propensity for ED utilization in gout. Higher ED-related charges for gout were associated with female sex, age, a higher number of coded diagnoses, and a metropolitan residence.

CONCLUSION: Gout accounts for a substantial proportion of ED visits, leading to significant health care charges. Effective strategies to reduce gout burden in EDs could potentially benefit by targeting groups characterized by factors demonstrated to be related to a higher ED utilization in gout as identified by our study. Copyright © 2013 by the American College of Rheumatology.

PMID: 22949176 [PubMed - indexed for MEDLINE]

READING 7 – UPDATE ON ACUTE ANKLE SPRAINS

Tiemstra JD. Update on acute ankle sprains. Am Fam Physician. 2012 Jun 15;85(12):1170-6. Review. PubMed PMID: 22962897.

URL: <http://www.aafp.org/afp/2012/0615/p1170.html> - Free full text

Department of Family Medicine, University of Illinois College of Medicine, Chicago, IL 60607, USA. jtiemstr@uic.edu Summary for patients in Am Fam Physician. 2012 Jun 15;85(12):1.

ABSTRACT

Ankle sprains are a common problem seen by primary care physicians, especially among teenagers and young adults. Most ankle sprains are inversion injuries to the lateral ankle ligaments, although high sprains representing damage to the tibiofibular syndesmosis are becoming increasingly recognized. Physicians should apply the Ottawa ankle rules to determine whether radiography is needed. According to the Ottawa criteria, radiography is indicated if there is pain in the malleolar or midfoot zone, and either bone tenderness over an area of potential fracture (i.e., lateral malleolus, medial malleolus, base of fifth metatarsal, or navicular bone) or an inability to bear weight for four steps immediately after the injury and in the emergency department or physician's office. Patients with ankle sprain should use cryotherapy for the first three to seven days to reduce pain and improve recovery time. Patients should wear a lace-up ankle support or an air stirrup brace combined with an elastic compression wrap to reduce swelling and pain, speed recovery, and protect the injured ligaments as they become more mobile. Early mobilization speeds healing and reduces pain more effectively than prolonged rest. Pain control options for patients with ankle sprain include nonsteroidal anti-inflammatory drugs, acetaminophen, and mild opioids. Because a previous ankle sprain is the greatest risk factor for an acute ankle sprain, recovering patients should be counseled on prevention strategies. Ankle braces and supports, ankle taping, a focused neuromuscular training program, and regular sport-specific warm-up exercises can protect against ankle injuries, and should be considered for patients returning to sports or other high-risk activities.

PMID: 22962897 [PubMed - indexed for MEDLINE]

READING 8 – HEART FAILURE MANAGEMENT PROGRAMME IN SWEDISH PRIMARY HEALTHCARE

Agvall B, Alehagen U, Dahlström U. The benefits of using a heart failure management programme in Swedish primary healthcare. Eur J Heart Fail. 2013 Feb;15(2):228-36. PubMed PMID: 23109650.

URL: <http://eurjh.oxfordjournals.org/cgi/pmidlookup?view=long&pmid=23109650> – Payment required

County Council of Östergötland, Local Health Care Services in Central Östergötland, Primary Health Care Centres, Linköping University, Department of Medical and Health Sciences, Faculty of Health Sciences, Linköping, Sweden. Bjorn.Agvall@lio.se

ABSTRACT

AIM: Heart failure (HF) is a common condition with which high mortality, morbidity, and poor quality of life are associated. It has previously been shown that use of HF management programmes (HFMPs) in HF clinics can be beneficial. The purpose of this study was to evaluate if the use of HFMPs also has beneficial effects on HF patients in primary healthcare (PHC).

METHODS AND RESULTS: This is a randomized, prospective, open-label study including 160 patients from five PHC centres with systolic HF and a mean age of 75 years (standard deviation 7.8). In the intervention group, an intensive follow-up was performed by HF nurses and physicians providing information and education about HF and the optimization of HF treatment according to recognized guidelines. There was a significant improvement of composite endpoints in the intervention group. Significantly more patients with reduced N-terminal pro brain natriuretic peptide ($P = 0.012$), improved cardiac function ($P = 0.03$), fewer healthcare contacts ($P = 0.04$), and fewer emergency room visits and admittances ($P = 0.0002$ and $P = 0.03$, respectively) could be seen in the intervention group when compared with the control group.

CONCLUSIONS: The use of a HFMP in a PHC setting was found to have beneficial effects in terms of reducing the number of healthcare contacts and hospital admissions, and improving cardiac function in patients with systolic HF, even if the result should be interpreted with caution. It can therefore be recommended that HFMPs should be used in PHC.

PMID: 23109650 [PubMed - indexed for MEDLINE]

READING 9 – STRATEGIES TO REDUCE NONURGENT EMERGENCY DEPARTMENT USE

DeVries A, Li CH, Oza M. Strategies to reduce nonurgent emergency department use: experience of a Northern Virginia Employer Group. Med Care. 2013 Mar;51(3):224-30. PubMed PMID: 23222497.

URL: <http://meta.wkhealth.com/pt/pt-core/template-journal/lwwgateway/media/landingpage.htm?issn=0025-7079&volume=51&issue=3&spage=224> – Payment required

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ABSTRACT

BACKGROUND: This administrative claims analysis evaluated the impact of a health plan-sponsored Emergency Room Utilization Management Initiative (ERUMI), which combined increased patient copays for ED visits with educational outreach to reduce inappropriate ED use and encourage use of retail health clinics (RHCs) and other alternative treatment sites among a commercially insured population.

METHODS: Emergency department (ED) utilization rates for select acute but nonurgent conditions that could be treated appropriately in an RHC were compared for members of an employer group with (intervention group) and without (comparators) ERUMI. Utilization was compared for baseline period (January-June 2009) and ERUMI implementation period (January-June 2010).

RESULTS: A total of 56,896 members (14,224 intervention, 42,672 matched comparators) were included. ED utilization for conditions that could be treated appropriately by RHCs decreased by 10.39 visits/1000 members in the intervention group versus 6.29 visits in comparators. RHC visits rose for both the groups, with a greater increase in the intervention group (22.61 visits/1000 members, $P<0.001$) versus comparison (1.64/1000, $P=0.064$). After ERUMI implementation, intervention group members were nearly 5 times more likely than comparators to choose RHCs over ED for nonurgent care.

CONCLUSIONS: The health plan-sponsored ERUMI program, consisting of both financial and educational components, decreased nonurgent ED utilization while increasing the use of alternative treatment sites.

PMID: 23222497 [PubMed - indexed for MEDLINE]

READING 10 – WHAT ASPECTS OF PRIMARY CARE PREDICT EMERGENCY ADMISSION RATES

Gunther S, Taub N, Rogers S, Baker R. What aspects of primary care predict emergency admission rates? A cross sectional study. BMC Health Serv Res. 2013 Jan 7;13:11. PubMed PMID: 23294563; PubMed Central PMCID: PMC3547739.

URL: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3547739/> - Free full text

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ABSTRACT

BACKGROUND: From 2004 to 2009 there was almost a 12% rise in emergency admissions in England. This can be explained partly by an aging population and other socio-demographic characteristics, but much cannot be explained by these factors. We explored aspects of care, in addition to known demographic characteristics in general practice, that are associated with emergency admissions.

METHODS: A cross-sectional design employing hospital admission data from 76 general practices in Northamptonshire, England for 2006-08, including demographic data, quality and outcomes framework points and GP patient survey outcomes.

RESULTS: There were statistically significant associations between emergency admissions and age, gender, distance from hospital and proportion classified as white. There was also a statistically significant relationship between emergency admissions and being able to book an appointment with a preferred doctor; this relationship was stronger in less deprived communities.

CONCLUSIONS: Enabling patients to book with a preferred doctor, particularly those in less deprived communities could have an impact on reducing emergency admissions. It is possible that being able to consult a preferred GP gives patient's confidence to avoid an emergency admission or it facilitates consistent clinical management that helps prevent the need for admission. However the findings only explained some of the variation.

PMCID: PMC3547739 PMID: 23294563 [PubMed - indexed for MEDLINE]