Welcome back to Kotahitanga. Here we aim to share the collective wisdom from the journal clubs of numerous EDs across New Zealand.

Multiple separate groups of ED experts frequently review cutting edge literature in isolation from one another. Kotahitanga’s mission is to share that wisdom and accelerate the dissemination of locally beneficial new ideas in Emergency Medicine. Hopefully this will also reduce unnecessary duplication of work and serve as a forum for local and national discussions.

KOTAHITANGA: ISSUE 3

13 JULY 2020

WE HAVE A NEW HOST WEBSITE:
www.islanddocs.com.au

KOTAHITANGA

CONVEYS THE VALUE OF UNITY,
TOGETHERNESS,
SOLIDARITY & COLLECTIVE ACTION

NETWORKING OUR JOURNAL CLUBS

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CONNECTIONS & SYNERGY
Sharing Journal Club Summaries Across NZ

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GET IN TOUCH

Kotahitanga is proud to announce that we are now hosted on the FOAM education website islanddocs.com.au. Island Docs is an independent collaboration of health professionals from across rural and remote Australia and New Zealand. It aims to celebrate, share and learn from common experiences across the South Pacific. It values accessible free and open access medical education developed by rural doctors for rural doctors.

Feedback on any of Kotahitanga’s content or the general layout is actively encouraged. Please get in touch via our email address.

kotahitanga@edhermes.net

Currently we publish summaries from Nelson, Taranaki Base, Dunedin & Christchurch. We are very keen for more departments to get involved. If your ED has a regular journal club and is happy to share its findings, please get in touch.

Submissions can be in whatever format suits. Many of our current submissions are via powerpoint slides. Whilst we try to standardise the presented structure, our primary aim is to share the locally formulated conclusions. So please don’t be put off if your department does things slightly differently to what is presented here.

We also know that the external validity of conclusions drawn locally, might not be universally applicable. To help mitigate this factor, each summary will be clearly labelled to show where it was reviewed. This allows you to make your own conclusions regarding a summary’s relevance to your department.

The name for this newsletter was chosen with the help of our local Maori Health Service Team and aims to echo the ideas of unity, collaboration and sharing.

For now we will aim to publish monthly. Feel free to redistribute this newsletter to all interested ED staff. Email us at kotahitanga@edhermes.net if you would like to go directly onto our mailing list.

Thank you for your time. Noho ora mai.
Electrical versus pharmacological cardioversion for emergency department patients with acute atrial fibrillation (RAFF2): a partial factorial randomised trial.


Primary Question
To compare the conversion of AF to NSR using cardioversion with IV Procainamide (followed by electrical cardioversion if necessary), versus a placebo infusion followed by electrical cardioversion. The authors also compared AP versus AL pad placement during cardioversion.

Relevance to our Practice
• Academic interest.

Take Home Message
There was a high conversion rate in both the drug-shock & shock only groups, with very few adverse outcomes. In the drug-shock group infusion with procainamide alone was successful in cardioverting 52% of patients. There was no significant difference in conversion to sinus rhythm between pad placement locations.

Other Pertinent Comments
Study completed in North America with an aggressive approach and high rates of cardioversion. However in Christchurch ED we have a more conservative approach, with most patients discharged home with rate control +/- anticoagulation, as other trials show that up to 70% of patients will spontaneously cardiovert in the 48 hours following discharge. May be useful in subset of patients who are very symptomatic or unable to discharge home due to symptoms. For these patients there may be a possible role for trial of chemical cardioversion prior to DC cardioversion.
13 JULY 2020

**BACKGROUND**

Syncope is defined as a short duration loss of consciousness followed by spontaneous complete return to baseline and accounts for 1% of ED attendances. The large majority have non-life a threatening aetiology, unfortunately it can be difficult to differentiate these from life threatening events. Several risk tools exist but none are reliably sensitive enough to determine disposition on its own.

**METHODS**

Multi-centred prospective cohort of sequential syncope patients older than 16 years with syncope in the last 24 hours. Risk stratified according to a 9 component scoring system (CSRS) into very low, low, medium, high and very high risk groups. All had follow-up for 30 day events.

**RESULTS**

3,819 patient events 13 of whom died. 1,631 were considered low risk 3 of whom had a 30 day serious event. Of the 78 very high risk patients 40 had serious 30 day

**CONCLUSIONS**

The CSRS accurately determined risk for serious 30 day outcome.
Chest pain is the second most common complaint in EDs in the US, however only 15-20% of these are diagnosed as an ACS. While most MIs present with CP, up to 33% of MIs present without CP. Furthermore, the presentation of CP can also be indicative of other pathologies which have other therapeutic implications.

**METHODS**

1,282 patients evaluated from 12 centres in Europe, the USA, and Australia from 2011 to 2013. Multiple symptom variables (17) were prospectively obtained and evaluated for association with the final diagnosis of AMI. There were 213/1282 (17%) AMIs. Diagnosis of AMI was made by two independent cardiologists and a third if there was disagreement; this was based on TnT rise/fall pattern in a setting consistent with myocardial ischaemia (ischaemic symptoms, ECG changes, imaging evidence).

**RESULTS**

Four independent predictors for the diagnosis of AMI were identified: radiation to right arm or shoulder [OR = 3.0; confidence interval (CI): 1.8–5.0], chest pressure [OR = 2.5; CI: 1.3–4.6], worsened by physical activity [OR = 1.7; CI: 1.2–2.5], and radiation to left arm or shoulder [OR = 1.7; CI: 1.1–2.4]. In the entire group, 131 (10%) had radiation to right arm or shoulder, 897 (70%) had chest pressure, 385 (30%) worsened with physical activity, and 458 (35%) had radiation to left arm or shoulder. Duration of symptoms was not predictive of AMI. There were no symptoms predictive of non-AMI.

**Authors Conclusion**

Only 4 symptoms were associated with the diagnosis of AMI. There were no symptoms that were associated with a non-AMI diagnosis. Pulling CP, supramammillary right location and R arm/shoulder radiation were significantly more likely to occur in patients with larger MI size (based on the higher TnT rise).

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**Primary Question**

What symptoms, including quality of CP, are associated with acute myocardial infarction.

**Relevance to our Practice**

- Confirms current practice

**Take Home Message**

The four symptoms associated with ACS (highest to lowest) are: pain radiating to the right arm/shoulder, chest pressure, pain exacerbated by physical activity, pain radiating to left arm/shoulder. There were no symptoms that ruled out ACS. Features not predictive of MI included; intensity of pain, abrupt onset of pain, prior similar episodes.

**Other Pertinent Comments**

Limitations - Only patients with CP were included in the study. Important to remember that up to 33% of AMI patients do not have chest pain. Diaphoresis, syncope, nausea, change in sensorium were not recorded. Patients enrolled in the study had a high pre-test probability; atypical AMI presentations excluded. This is the first study to report how the size of MI may relate to certain symptoms. There is an assumption that larger Trop rise = larger infarct.

This was a sub-study of a larger prospective trial on utility of high sensitivity troponins testing for patients presenting with chest pain. It was not specified if this was an opportunistic use of data in hindsight or an originally planned use of the data study (which is important as if not designed to analysis significant character traits of chest pain in AMI then could be underpowered and high higher change of bias.)

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**BACKGROUND**

Symptoms Predictive of Acute Myocardial Infarction in the Troponin Era: Analysis From the TRAPID-AMI Study

McCord J et al.

Critical pathways in Cardiology. 2019;18(1):10-15
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Non-invasive ventilation use in status asthmaticus: 16 years of experience in tertiary intensive care.
Kirsten RL BOND, Carl AE HORSLEY, Anthony B WILLIAMS
MA. 2018; 30:187-192

Primary Question
Can non-invasive ventilation (NIV) be used in status asthmaticus in a safe and effective way.

Relevance to our Practice
• Confirms current practice.

Take Home Message
NIV can be safely and effectively used to treat status asthmaticus in ICU. Patients started on NIV have a low failure rate requiring Invasive mechanical ventilation (IMV).

Other Pertinent Comments
NZ based study. Suggestion of higher risk factors for failed NIV leading to IMV are older age, lower pH, higher hypercapnia. NIV in this cohort was CPAP in most cases with only 13% receiving BiPAP at some stage. This study does not clearly illustrate primary or secondary negative outcomes that were observed in the cohort, no reported deaths is the only outcome mentioned. Sample size too small to capture true risk of NIV vs IMV.

BACKGROUND
In severe asthma, hyperinflation of the lungs causes an increased intrinsic PEEP, which the patient must overcome. The inspiratory threshold load (ITL), is a major contributor to dyspnoea and increased work of breathing in patients with severe asthma. Non-invasive ventilation (NIV) is able to offset ITL by providing eternal positive end inspiratory pressure. NIV may also negate the need for intubation & bronchodilation.

METHODS
Retrospective review of all adult asthma admissions to Middlemore Hospital HDU/ICU between 2000-2015. 265 admissions. NIV was used in 186, IMV in 23, 58 medical care only. Eight of the NIV treatment group went on to require IMV.

Data points reviewed were: demographics (age, gender, ethnicity), clinical variables at triage or acute deterioration time (heart rate, oxygen saturations, respiratory rate, Glasgow Coma Score), patient’s ability to speak as marker of severity, type and timing of ventilation, arterial blood gases, and length of stay in hospital and HDU/ICU.

RESULTS
80% of admissions were speaking either single words per breath, or unable to speak. 176 admissions (66.4%) received NIV, with a median duration of 5 h. The median time initiation of NIV was 1.42 h (IQR 0.25-6.93). The median HDU/ICU and hospital length of stay (LOS) in NIV patients was 0.88 days (IQR 0.53-1.4) and 3.6 days (IQR 2.5-5.3) respectively. 31 admissions (11.7%) required invasive mechanical ventilation (IMV), with a median duration of 10 h (IQR 6.5-13). The median time to intubation was 0.35 h (IQR 0.02-1.82). The median HDU/ICU and hospital LOS in IMV patients was 0.92 days (IQR 0.51-1.7) and 4.1 days (IQR 2.6-5.2) respectively. 33% of patients had GCS <10 at presentation, 25 were managed with NIV and one of these needed intubation. Both NIV and IMV were shown to be effective in reducing the pCO2 over a 2 hour period. The average drop was 5.9 kPa for NIV (SD 4.6), and 3.4 kPa for IMV (SD 4.9). No serious complications were documented.

AUTHORS CONCLUSION
NIV was used in severely unwell patients including some high-risk patients with lowered GCS. Patients treated with NIV did not appear to have significant adverse effects. Length of stay was short and our IMV rates were lower than other studies.
Stroke risk after transient ischemic attack in a Norwegian prospective cohort
Ildstad F et al.

Primary Question
Does the ABCD2 score differentiate between high and low risk for stroke?

Relevance to our Practice
• Academic interest but watch this space

Take Home Message
ABCD2 scoring for Norwegian TIA patient population does not differentiate true risk for stroke. Timely access to carotid imaging appears to be the gold standard for stroke risk assessment in patients with TIA.

Other Pertinent Comments
Norwegian population appears to have a low stroke prevalence and ABCD2 seems a blunt risk assessment tool in this setting. There was a high admission rate for TIAs in this group which is likely to have altered overall risk. It is difficult to know how this translates to NZ demographic. Prompt imaging of the carotids gives best information about risk assessment.

BACKGROUND
TIA is a risk factor for stroke. Changing demographic risks and treatments in a population justifies new estimates for risk.

METHODS
A two year prospective study in eight hospitals in central Norway assessing for risk of stroke using ABCD2 risk and were followed up at one week, three months and one year

RESULTS
591 patients were enrolled, 14 either withdrew or were removed due to protocol breaches. Of the remaining 577 recruited patients with TIA, 525 were examined by a stroke inpatient service within 48 hours. 520 had imaging of the neck, with 48 found to have a carotid stenosis. Cumulative stroke rates were 5 at a week, 19 at 3 months and 31 patients at one year. Stroke rates for high risk TIA patients by ABCD2 was the same as for low risk.

CONCLUSIONS
A lower overall stroke rate in the reference population meant that ABCD2 did not reliably discriminate stroke risk in TIA patients.
Conservative versus Interventional Treatment for Spontaneous Pneumothorax.

S.G.A. Brown et al.

**Primary Question**
Whether conservative management is an acceptable alternative to interventional management of moderate to large primary spontaneous pneumothorax.

**Relevance to our Practice**
- Potentially practice changing
- Academic interest.

**Take Home Message**
Most moderate to large spontaneous primary pneumothoraces can be managed conservatively with analgesia and observation. A small percentage of them will go on to require interventional treatment.

**BACKGROUND**
Is conservative management an acceptable alternative to interventional management for uncomplicated, moderate-to-large primary spontaneous pneumothorax is unknown.

**METHODS**
Open-label, multicenter, non-inferiority trial. Patients were 14 to 50 years of age with a first-known, unilateral, moderate-to-large primary spontaneous pneumothorax. Patients were randomly assigned to immediate interventional management of the PTX (intervention group) or a conservative observational approach (conservative-management group) and were followed for 12 months. The primary outcome was lung re-expansion within 8 weeks.

**RESULTS**
A total of 316 patients underwent randomisation (154 patients to the intervention group and 162 to the conservative-management group). In the conservative management group, 25 patients (15.4%) underwent interventions to manage the PTX, for reasons prespecified in the protocol, and 137 (84.6%) did not undergo interventions. In a complete-case analysis in which data were not available for 23 patients in the intervention group and 37 in the conservative management group, reexpansion within 8 weeks occurred in 129 of 131 patients (98.5%) with interventional management and in 118 of 125 (94.4%) with conservative management (risk difference, -4.1 percentage points; 95% confidence interval [CI], -8.6 to 0.5; P=0.02 for non-inferiority); the lower boundary of the 95% confidence interval was within the prespecified non-inferiority margin of -9 percentage points. In a sensitivity analysis in which all missing data after 56 days were imputed as treatment failure (with reexpansion in 129 of 138 patients [93.5%] in the intervention group and in 118 of 143 [82.5%] in the conservative-management group), the risk difference of -11.0 percentage points (95% CI, -18.4 to -3.5) was outside the prespecified non-inferiority margin. Conservative management resulted in a lower risk of serious adverse events or PTX recurrence than interventional management.

**CONCLUSIONS**
Although the primary outcome was not statistically robust to conservative assumptions about missing data, the trial provides modest evidence that conservative management of primary spontaneous PTX was non-inferior to interventional management, with a lower risk of serious adverse events.
Can Emergency Physicians Accurately Rule out A Central Cause of Vertigo Using the HINTS Examination – A Systematic Review
R. Ohle et al.

Primary Question
Can ED physicians accurately and effectively use the HINTS test to rule out a central cause of AVS (acute vestibular syndrome)

Primary outcome: stroke as a cause of AVS.

Relevance to our Practice
• Academic interest.
• Confirms current practice.

Take Home Message
In the right setting, with trained physicians, the HINTS test can be used to rule out a central cause. There needs to be more research into the validation of HINTS testing in ED.

Other Pertinent Comments
In ED a lot of HINTS tests are conducted on patients without true acute vestibular syndrome so the results are void.
The patient must have current nystagmus and be symptomatic of it to conduct the HINTS test.

BACKGROUND
This meta analysis aimed to assess the diagnostic accuracy of the HINTS test to rule out a central cause of vertigo in an adult population presenting to the ED. The aim was to assess the accuracy when performed by emergency physicians vs neurologists.

METHODS
11 urban Canadian EDs, from We searched PubMed, Medline, Embase, the Cochrane database, and relevant conference abstracts from 2009 to September 2019 and performed hand searches. No restrictions for language or study type were imposed. Prospective studies with patients presenting with AVS using criterion standard of computed tomography and/or magnetic resonance imaging were selected for review. Two independent reviewers extracted data from relevant studies. Studies were combined if low clinical and statistical heterogeneity was present. Study quality was assessed using the QUADAS-2 tool. Random effects meta-analysis was performed using RevMan 5 and SAS 9.3.

RESULTS
A total of five studies with 617 participants met the inclusion criteria. The mean (SD) study length was 5.3 (3.3) years. Prevalence of vertebrobasilar stroke ranged 9.3% to 44% (mean SD = 39.1% 17.1%). The most common diagnoses were vertebrobasilar stroke (mean SD = 34.8% 17.1%), peripheral cause (mean SD = 30.9% 16%), and intracerebral haemorrhage (mean SD = 2.2% 0.5%). The HINTS examination, when performed by neurologists, had a sensitivity of 96.7% (95% CI = 93.1% to 98.5%, I2 = 0%) and specificity of 94.8% (95% CI = 91% to 97.1%, I2 = 0%). When performed by a cohort of physicians including both emergency physicians (board certified) and neurologists (fellowship trained in neurootology or vascular neurology) the sensitivity was 83% (95% CI = 63% to 95%) and specificity was 44% (95% CI = 36% to 51%).

AUTHORS’ CONCLUSION
The HINTS examination, when used in isolation by emergency physicians, has not been shown to be sufficiently accurate to rule out a stroke in those presenting with AVS.
Efficacy of low-dose nebulized epinephrine as treatment for croup: A randomized, placebo-controlled, double-blind trial.
Lee JH et al

**Primary Question**
Is low dose nebulised adrenaline (0.1mg/kg) inferior to conventional dosed adrenaline (0.5mg/kg) in children with moderate to severe croup?

**Relevance to our Practice**
- While not ready for prime time, lower dose treatment is not an unreasonable starting point in carefully monitored cases.

**Take Home Message**
Low dose nebulised adrenaline is as effective at symptom alleviation for children with moderate croup.

**Other Pertinent Comments**
Non-inferiority studies aim to demonstrate that a particular therapy is not worse than an existing one. This was a small study using levo-adrenaline. Overall mean initial Westley scores for both groups was moderate. Racemic adrenaline is mainstay therapy in Australasia- our starting point using lower conventional doses of L-adrenaline. The side effect profiles for both groups, as measured by BP and heart rate did not differ whilst severity reduction was similar.

**BACKGROUND**
Optimal dosing of nebulised adrenaline in the Tx of croup is unclear. In NZ racemic adrenaline is used at doses <5 mg. This study looked at use of levo-adrenaline, (commonly used in the USA).

**METHODS**
Randomised, blinded study, undertaken by 3 paediatric EDs. Children aged 6 months to 5 years with moderate to severe croup (as scored by the Westley Croup Score) were randomised nebulised levo-adrenaline of either 0.5mg/kg or 0.1mg/kg made to same 5ml volume with saline. Dexamethasone 0.6mg per kg was given to the entire group. Vital signs and a severity assessment were done at 30, 60, 90 and 120 minutes following initial nebulised adrenaline. An additional nebulised dose was delivered at the 30 minute ‘if needed’.

**RESULTS**
Of the 517 patients screened 86 were enrolled, with 84 available for analysis 47 were randomised to the low dose group, 36 in the conventional dose group mean baseline croup scores differed 3.68 vs 4.3 respectively, however the median scores did not. Mean scores at 30 minutes dropped 1.85 and 2.08 in respective groups.

Three of the low dose group and 6 of the conventional dose group were admitted.

**CONCLUSIONS**
Low dose nebulised levo-adrenaline was not inferior in reduction of croup score than conventional dosing. LP has a false positive, false negative and complication rates that preclude its utility.
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Consent is obtained in all cases of patient information discussion.

All opinions presented in this letter are the personal opinion of the writer of the piece and does not necessarily represent the policies or ideology of the departments or the editorial staff.

Contact: Kotahitanga@EDHermes.net

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