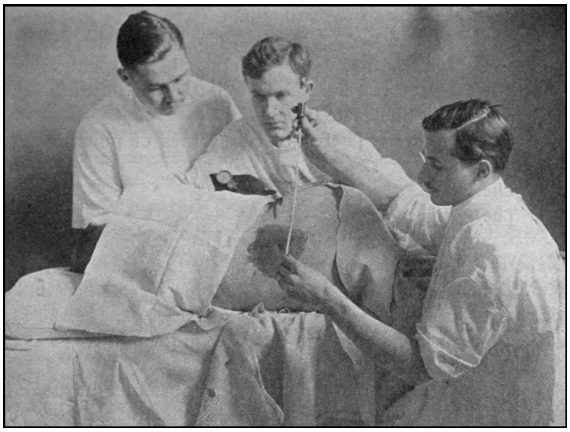
2011 The Year in Review

Dr. David Carr
University Health Network
February 19th 2012

University Health Network



BMJ

BMJ 2011;343:d4277 doi: 10.1136/bmj.d4277

RESEARCH

Sensitivity of computed tomography performed within six hours of onset of headache for diagnosis of subarachnoid haemorrhage: prospective cohort study

Jeffrey J Perry *associate professor of emergency medicine and of epidemiology and community*

Can CT alone rule out acute SAH?

- A 35 y.o male has a sudden onset HA (or HA with syncope) and is neurologically intact. Can a 3rd generation CT scan performed within 6 hours of the onset of the HA rule out a SAH?

Can CT alone rule out acute SAH?

- Prospective cohort study from 11 Canadian tertiary care ED's from 2000-2009
- Alert patients >15 non traumatic HA , GCS 15
  - Peak onset HA within 1 hr
  - Normal exam and had CT as part of work up
- Excluded patients with HA >14d ago, 3 or more similar HA's, focal neuro deficits or papilledema, transferred pts or hx sah or brain neoplasm

Can CT alone rule out acute SAH?

- Outcome measures: SAH defined by
  - SAH blood on CT read by qualified local radiologist
  - 3rd generation scanners, 4-320 slice
  - Xanthochromia in CSF (visual inspection)
  - RBC's > 5x10 6th/L in final CSF tube
- Follow up 6 months

Can CT alone rule out acute SAH?

- 3132 patients, 240 SAH (7.7%)
- 119/2179 SAH+ CT > 6 HR
- 121/953 SAH + CT <= 6 HR

Can CT alone rule out acute SAH?

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Table 3| Sensitivity of computed tomography for subarachnoid haemorrhage in patients with acute headache stratified by timing of scan

Time from headache onset to scan	No of patients	% Sensitivity (95% CI)	% Specificity (95% CI)	Likelihood ratio (95% CI)		Predictive value (95% CI)	
				Positive	Negative	Positive	Negative
All patients	3132	92.9 (89.0 to 95.5)	100 (99.9 to 100)	Infinity	0.07 (0.05 to 0.11)	100 (98.3 to 100)	99.4 (99.1 to 99.6)
≤6 hours	953	100 (97.0 to 100.0)	100 (99.5 to 100)	Infinity	0.00 (0.00 to 0.02)	100 (96.9 to 100)	100 (99.5 to 100)
>6 hours	2179	85.7 (78.3 to 90.9)	100 (99.8 to 100)	Infinity	0.14 (0.14 to 0.17)	100 (96.3 to 100)	99.2 (98.7 to 99.5)

Can CT alone rule out acute SAH? Concerns?

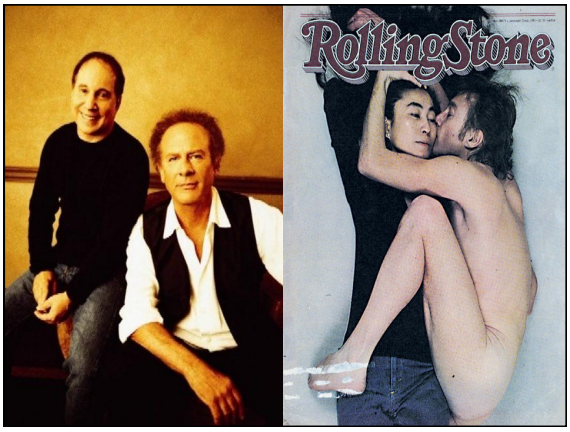
- SAH like HA's were considered up to 1 hr onset
  - Median time was 3.4 minutes
- Only 50% patients got LP's after negative CT
  - Tended to be older and longer onset HA and not worst HA
  - Less LP's in the < 6hr group
- Who came up with their LP cut-off of 5 X 10X6th RBC/L in final tube?

Can CT alone rule out acute SAH? Concerns?

- Must be a qualified radiologist
  - No resident interpretations
- 2 % lost to follow up @ 6/12
- Is f/u at "proxy for the gold standard evaluation"?
  - Does survival at 6/12 r/o pathology?
- Needs to be validated

Can CT alone rule out acute SAH? Conclusions

- Moving to the point where if done early the likelihood of false negative CT is equivalent to false positive LP's
- CODE SAH
  - Get your patient's in the scanner early
- LP not entirely dead yet:
  - alive for > 6hr group
  - Rules out/in other pathology



PAIN MANAGEMENT AND SEDATION/ORIGINAL RESEARCH

A Blinded, Randomized Controlled Trial to Evaluate Ketamine/Propofol Versus Ketamine Alone for Procedural Sedation in Children

Amit Shah, MD, Gregory Mosdossy, MD, Shelley McLeod, MSc, Kris Lehnhardt, MD, Michael Peddle, MD, Michael Rieder, MD, PhD

From the Division of Emergency Medicine, Schulich School of Medicine and Dentistry (Shah, Mosdossy, McLeod, Lehnhardt, Peddle) and the Division of Clinical Pharmacology (Rieder), The University of Western Ontario, London, Ontario, Canada.

Study Group: 136/217 healthy patients between the ages of 2-17 with Isolated extremity fractures for procedural sedation

Blindly randomized to Ketamine + Propofol vs Ketamine Alone

Primary Outcome: Total sedation time
Secondary Outcome: Time to recovery, Adverse events, efficacy and satisfaction scores

Tertiary care pediatric hospital in London Ontario June 2007-Aug 2008

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- Ketamine is emetogenic and leads to post procedure agitation
- Propofol→hypotension & respiratory depression
- Propofol lacks analgesic properties
- Combination will→ reduced doses of each agent

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- Two groups:
  - Ketamine group: 1mg/kg ketamine + 0.25mg/kg prn boluses q2min
  - Ketofol group: 0.5 mg/kg ketamine followed by 0.5 mg/kg propofol + 0.5 mg/kg boluses propofol q2min
  - Syringes are filled with intralipid or NS to blind MD's
  - Similar Table 1

Table 2. Outcome measures for 136 pediatric procedural sedations.

Outcome	Ketamine, n=69	Ketamine/Propofol, n=67	Effect Size (95% CI)
Median total sedation time, min (IQR)	16 (12 to 22)	13 (9 to 19)	−3 (−5 to −2)
Median time to recovery, min (IQR)	12 (9 to 18)	10 (8 to 14)	−2 (−4 to −1)
Number of adverse events (%)	34 (49)	17 (25)	−24 (−39 to −8)
Number completed procedures without additional non-study drugs (%)	69 (100)	64 (96)	−4 (−9 to 1)

Mean sedation time faster in ketofol with 13 vs 16 minutes

Faster median recovery time in ketofol group 10 vs 12 minutes

Much less adverse events in the ketofol group 49% VS 25%

Table 3. Adverse events and other events for 136 pediatric procedural sedations.

Adverse Events	Ketamine (%), n=69	Ketamine/Propofol (%), n=67	Effect Size (95% CI)
Muscle rigidity	2 (3)	0	−3 (−7 to 1)
Upper airway obstruction	4 (6)	5 (8)	2 (−5 to 8)
Oxygen desaturation	2 (3)	3 (5)	2 (−5 to 8)
Vomiting	8 (12)	1 (2)	−10 (−18 to −2)
Unpleasant recovery reaction (agitation, hallucinations, delirium)	9 (13)	5 (8)	−5 (−15 to 5)
Nausea without vomiting	3 (4)	0	−4 (−8 to 0)
Diplopia	0	2 (3)	3 (−1 to 7)
Hypersalivation	2 (3)	0	−3 (−7 to 1)
Rash	2 (3)	1 (1)	−2 (−6 to 3)
Pain on injection	2 (3)	0	−3 (−7 to 1)

NNT = 10

Table 5. Patient, nurse, and physician satisfaction scores.

	Ketamine, n=69	Ketamine/Propofol, n=67	Effect Size, % (95% CI)
Patient recall (%)			
No	44 (64)	51 (76)	12 (−3 to 27)
Somewhat	13 (19)	11 (16)	3 (−10 to 15)
Yes	12 (17)	5 (8)	9 (−1 to 21)
Extremely satisfied with sedation (%)			
Patient	48 (70)	57 (85)	15 (2 to 29)
Nurse	48 (70)	61 (91)	21 (8 to 34)
Physician	39 (57)	58 (87)	30 (15 to 43)
Extremely satisfied with procedure (%)			
Patient	51 (74)	57 (85)	11 (−2 to 25)
Nurse	50 (72)	58 (87)	14 (1 to 27)
Physician	48 (70)	56 (84)	14 (1 to 28)

Patients and health care providers report higher satisfaction scores when using ketofol

Discussion Points

- Recovery and total sedation times are significantly reduced in ketofol group
  - What is the clinical relevance of 3 & 2 min differences
  - Authors hoped for 10 min diff in recovery times
  - Maybe lower doses of ketamine used than usual
- Ketofol superior sfx profile: NNT of 10 for VX
- Trend in reduction in post procedure agitation
  - Maybe this would be relevant larger group or adults
- Everyone loves it

BMJ

BMJ 2011;343:d7506 doi: 10.1136/bmj.d7506 (Published 15 December 2011) Page 1 of 7

RESEARCH

CHRISTMAS 2011: SURGERY

Orthopaedic surgeons: as strong as an ox and almost twice as clever? Multicentre prospective comparative study

OPEN ACCESS

P Subramanian *trauma and orthopaedic specialist registrar*[1], S Kantharuban *core surgical trainee, Oxford Deanery*[2], V Subramanian *foundation year trainee, Mersey Deanery*[3], S A G Willis-Owen

Conclusions

- Male orthopedic surgeons are statistically stronger than male anaesthesiologists (grip strength)
- Mean IQ of ortho105.19 vs 98.38 anaesthesia
- Author conclusion: stop making fun of us
- According to Wikipedia
  - MDs, JDs, or PhDs 125+ (WAIS-R 1987)
- We can make fun of both of them!

CMAJ RESEARCH

Prospective validation of the ABCD2 score for patients in the emergency department with transient ischemic attack

Jeffrey J. Perry MD MSc, Mukul Sharma MD MSc, Marco L.A. Sivilotti MD MSc, Jane Sutherland MEd, Cheryl Symington RN, Andrew Worster MD MSc, Marcel Emond MD MSc, Grant Stotts MD, Albert Y. Jin MD, Weislaw J. Oczkowski MD, Demetrios J. Sahlas MD, Heather E. Murray MD MSc, Arlane MacKey MD, Steve Verreault MD, George A. Wells MSc PhD, Ian G. Stiell MD MSc

See related commentary by Hill and Coutts on page 1127 and at www.cmaj.ca/lookup/doi/10.1503/cmaj.110704.

Age is 60 years or older	1 point	
Blood pressure >140/90mmHg	1 point	
Clinical features:		
• Unilateral weakness	2 points	Note, maximum score of 2 points
• Speech disturbance without weakness	1 point	
• Other	0 points	
Duration:		
• > 60 mins	2 points	
• 10 – 60 mins	1 point	
• < 10 mins	0 points	
Diabetes	1 point	
ABCD² Score	_____ points	(Total score 0-7)

Note: High risk patients (six to seven points) have an 8.1% two-day recurrent stroke risk.

Validation of the ABCD2 score

- Estimates that risk of CVA after TIA is
  - 0.2-10% after 7 days
  - 1.2-12% at 90 days
- ABCD2 score has been widely implemented to predict CVA risk after TIA patients
- Original research states high risk defined as score > 5 yet AHA states score > 2 high risk
- Never been validated

Validation of the ABCD2 score

- Prospective cohort study from 8 Canadian ED's between 2007-2010
- Study group: 2056 pt's >18 who dx with TIA
- Exclusion: deficit >24 hr (CVA), GCS<15, alternate cause for deficit ie met/endo,sz or presentation to ER > 7 days after event
- Primary outcome: Accuracy of the ABCD2 score at predicting CVA at 7 and 90 days
- Secondary outcome: CVA or TIA within 90 days

Validation of the ABCD2 score

- Of the 2056 patients
  - Mean age 68
  - 96% underwent CT and 93% ECG
  - 45% sensory symptoms 44% motor, 38% speech
  - overall 10 % admit rate
- Stroke in the next 7 days in 1.8%
- Stroke in the next 90 days in 3.2%
- Recurrent TIA w/I 7 days in 2.7% & 7.1% at 90d

Validation of the ABCD2 score

Table 4: Performance of stratified, standardized, ABCD2 scores as a predictor of stroke at 7 and 90 days among 2032 patients with transient ischemic attack

ABCD2 threshold for high risk	Stroke at 7 d *n* = 38		Stroke at 90 d *n* = 65	
	Sensitivity, % (95%CI)	Specificity, % (95%CI)	Sensitivity, % (95%CI)	Specificity, % (95%CI)
> 0	100.0 (90.8–100)	0.7 (0.4–1.1)	100.0 (94.4–100)	0.7 (0.4–1.1)
> 1	100.0 (90.8–100)	4.0 (3.2–4.9)	100.0 (94.4–100)	4.0 (3.1–5.0)
> 2*	94.7 (82.7–98.5)	12.5 (11.2–14.1)	96.9 (89.3–99.1)	12.7 (11.3–14.3)
> 3	92.1 (79.2–97.3)	32.7 (30.6–34.7)	92.3 (83.2–96.8)	33.0 (30.9–35.1)
> 4	65.8 (49.9–78.8)	57.2 (55.0–59.3)	63.1 (50.9–73.8)	57.4 (55.2–59.6)
> 5†	31.6 (19.1–47.5)	86.9 (85.3–88.3)	29.2 (19.6–41.2)	79.7 (77.9–81.4)
> 6	10.5 (4.2–24.1)	97.3 (96.5–97.9)	10.8 (53.2–20.6)	97.4 (96.6–98.0)

Note: CI = confidence interval.
*Threshold for defining high risk as recommended by the American Heart Association.
†Threshold for defining high risk as recommended in the original publication of the ABCD2 score.

Validation of the ABCD2 score

- ABCD2 score is inaccurate at either cut point for high risk
  - AHA cut point > 2 is very sensitive yet not specific→ too many admissions
  - Cut point > 5 not very sensitive at predicting CVA's
- Be more accurate in recording scores and asking patients about resolved symptoms
- ABCD2 raised awareness and patients g0t treated aggressively

Validation of the ABCD2 score

- The ABCD2 score alone is not sensitive enough alone to identify high risk patients
- You have to use good clinical judgement
- Value the "C" of the ABCD2 score
  - Hard motor weaknesses should make you nervous
  - Score does not address post circ or amaurosis
- Know the resources of your local hospital

Stroke. 2012 Jan;43(1):205-10. Epub 2011 Nov 3.

Neuroprotective effect of acute ethanol administration in a rat with transient cerebral ischemia.

Wang F, Wang Y, Geng X, Asmaro K, Peng C, Sullivan JM, Ding JY, Ji X, Ding Y.
550 E Canfield, Detroit, MI. yding@med.wayne.edu; and Xunming Ji, MD, PhD, 45 Changchun, Beijing, China. Email jixm70@hotmail.com.

Abstract

BACKGROUND AND PURPOSE: Ethanol consumption is inversely associated with the risk of ischemic stroke, suggesting a neuroprotective effect. In a rat model of transient cerebral ischemia, we identified ethanol as a possible treatment for acute ischemic stroke.

METHODS: Sprague-Dawley rats were subjected to middle cerebral artery occlusion for 2 hours. Five sets of experiments were conducted: to determine the dose-response effect of ethanol on brain infarction and functional outcome; to determine whether combining ethanol and hypothermia produces synergistic neuroprotection; to determine the therapeutic windows of opportunity for ethanol in stroke; to test whether ethanol promotes intracerebral hemorrhage in a hemorrhagic or ischemic stroke or after administration of thrombolytics; and to test the affect of ethanol on hypoxia-inducible factor-1α protein expression.

RESULTS: Ethanol at 1.5 g/kg reduced infarct volume and behavioral dysfunction when administered at 2, 3, or 4 hours after middle cerebral artery occlusion. The protective effect of ethanol was not improved when paired with hypothermia. Ethanol did not promote cerebral hemorrhage in hemorrhagic or ischemic stroke in combination with recombinant tissue-type plasminogen activator or urokinase. Ethanol treatment (1.5 g/kg) increased protein levels of hypoxia-inducible factor-1α at 3 hours postreperfusion.

CONCLUSIONS: Ethanol exerts a strong neuroprotective effect when administered up to 4 hours after ischemia, increases expression of hypoxia-inducible factor-1α, and does not promote intracerebral hemorrhage when used with thrombolytics. Ethanol is a potential neuroprotectant for acute ischemic stroke.

Not Human data yet consider ……..
Acute administration of 6 beers or 1 bottle of wine in your code stroke patients who receive t-Pa reduces infarct volume
Can be given up to 4 hrs post stroke

Code stroke + Booze

You are working at the ER at Whistler……..

- 25 y.o male presents with vomiting for several years intermittently. Mildly dehydrated. Work up negative to date. IVF started by RN. Next?
- A) Gravol
- B) Maxeran
- C) Stemetil
- D) Zofran
- E) Send him home to take a hot bath

Review Article

Cannabinoid Hyperemesis Syndrome: Literature Review and Proposed Diagnosis and Treatment Algorithm

Erik A. Wallace, MD, Sarah E. Andrews, DO, MBA, Chad L. Garmany, MD, and Martina J. Jelley, MD, MSPH

Southern Medical Journal Volume 104, Number 9, September 2011

Cannabinoid Hyperemesis Syndrome

- Cyclic vomiting and compulsive bathing behaviours in chronic marijuana users
- First reported in 2004 in Australia
  - 31 cases in medical literature
- 43% US high school seniors have tried pot
- 5% use it daily
- CHS is likely to be extremely under recognized

Cannabinoid Hyperemesis Syndrome

- Of the 31 CHS cases reviewed in the article
  - Average age 32
  - Average age of regular use 15.9
  - Duration of daily use before cyclical vx 10.2 years
  - Compulsive bathing 29/31→pathognomonic
  - Mean bathing duration 5hr per day
  - Significant improvement within 24-48hrs in hospital
- All patients presented multiple times to healthcare facilities and underwent many tests

Cannabinoid Hyperemesis Syndrome

- Anti-emetics are not effective
- Possibly a paradoxical emetic effect from chronic stimulation of CB1 receptors CNS & Gut
- Ask your cyclical vomitters about chronic marijuana use
- If they come from the shower, the dx is clinched
- Can anyone think of a case they have seen…….

The NEW ENGLAND JOURNAL of MEDICINE
ESTABLISHED IN 1812 JANUARY 13, 2011 VOL. 364 NO. 2

Treatment of Acute Otitis Media in Children under 2 Years of Age

Alejandro Hoberman, M.D., Jack L. Paradise, M.D., Howard E. Rockette, Ph.D., Nader Shaikh, M.D., M.P.H.,

Study group: 291 kids aged 6-23 months with clinical and otoscopic dx of AOM from 2006-2009 Children's Hospital Pittsburgh and Private peds clinic

Eligible: 2 doses pneumococcal vaccine and dx of AOM by 3 criteria A) Acute onset of signs and symptoms B) Middle ear effusion C) Signs of middle ear inflammation

Intervention: Randomized 10 days amox-clav (90mg/kg) or placebo

Primary outcome: Time to resolution of symptoms and symptom burden
Secondary outcomes: Clinical efficacy, adverse events

Treating AOM < 2

Outcomes	Amoxicilllin-Clavulanate	Placebo	NNT
Initial Resolution by day 2	35%	28%	
Initial Resolution by day 4	61%	54%	
Initial Resolution by day 7	80%	74%	P= 0.14 for all
Sustained Resolution day 2	20%	14%	16
Sustained resolution day 4	41%	36%	20
Sustained Resolution day 7	67%	53%	7

Treating AOM < 2

Outcome	Amoxicillin/clavulanate	placebo	NNT
Clinical Failure at day 4/5	4%	23%	5
Clinical Failure at day 10/12	16%	51%	3
Mean symptom score at 7 days in non severe AOM	2.21	2.58	NS
Symptoms score at 7 days in severe AOM at baseline	3.59	4.50	P=0.02

Treating AOM < 2

Outcomes	Amoxicillin-clavulanate	Placebo	Comments
Rate of relapse	16%	19%	NS
Middle Ear Effusion	50%	65%	P = 0.05
Nasopharyngeal colonization	No change	No change	NS
Acetaminophen (number of doses/day)	0.37	0.43	NS
Use of Health care	No difference	No difference	NS

Treating AOM <2

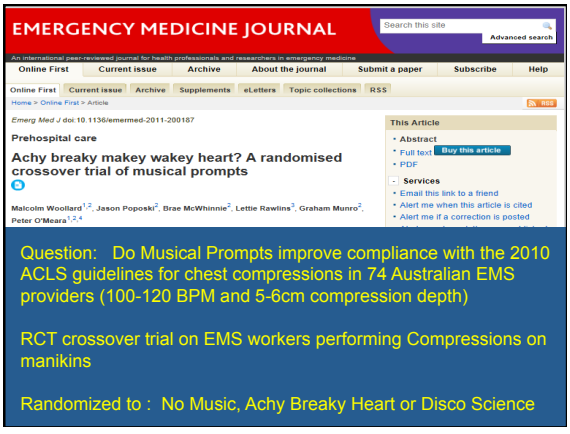
Adverse events	Amoxicillin-clavulanate	Placebo	Comments
Mastoiditis	0	1	
Diarrhea	25%	7%	NNH= 6
Diaper dermatitis	51%	16%	NNH = 3
Oral thrush	5%	1%	NNH = 20
Vomiting	8%	7%	NNH = 100

Treating AOM < 2: Discussion

- Several authors had ties to GSK
- All docs were certified "otoscopists"
- Multiple primary outcomes
- How to define treatment failure? Red ear?
  - Or improvement of symptoms?
  - 20% did not complete the abx

Treating AOM < 2: Clinical Implications

- Amoxicillin still is considered 1st line agent
- Certainty of diagnosis is key to management
  - If there is definite AOM and severe→ TREAT
  - If there is definite AOM but not severe→ ????
- Severe complications are rare in the developing world
- Code Brown!
- What would you do with your immunized two year old?



Question: Do Musical Prompts improve compliance with the 2010 ACLS guidelines for chest compressions in 74 Australian EMS providers (100-120 BPM and 5-6cm compression depth)

RCT crossover trial on EMS workers performing Compressions on manikins

Randomized to : No Music, Achy Breaky Heart or Disco Science

Musical Prompts for CPR

- Rates of 100-120 significantly higher in DS (82%) vs ABH 64% and NM 65% (P=0.007)
- Only ~40% of participants delivered to an adequate depth regardless of the group
- Alternative audible feedback mechanism's may be more effective
- Another one bites the dust?