Pediatric Literature Review

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Advanced Life Support

Rapid Fluid Resuscitation
- 2002 Amer College Critical Care Medicine
- Sepsis - 20cc/kg IVF, up to 60/kg within 15 mins
- 57 kids, >1yo, needing IVF, randomized
  - Gravity, pressure bag, pull-push
  - Gravity method did not meet goal
  - Pressure bag 58% met goal
  - Pull-push 68% met goal
  - Smaller kids more likely successful - fatigue?
Family Presence

Family Presence...Resuscitation

- Dingeman, Pediatrics Oct 2007
- Reviewed literature re: family presence
- 15 studies - most were staff perspectives
- Most parents want to be present and don’t regret their decision
- Most supporters are nurses
- Most doctors support less invasive procedures and not life-threatening conditions

Parents are supportive and not disruptive
- Clinicians felt family was not disruptive
- Limited studies on benefits to patient
  - Adults felt less alone, more content
- Positive experience for parents
  - Less anxiety, depression, fewer disturbing memories, eased grief
- Mixed opinion among physicians

Adults felt less alone, more content
Less anxiety, depression, fewer disturbing memories, eased grief
Mixed opinion among physicians
Family Presence...Resuscitation

- Tinsley Pediatrics Oct 2008
  - Loma Linda University
  - 41 family members, child died in ICU after CPR
  - 20 of 41 not present during CPR
    - 17 of 20 in hospital, not invited to be present
    - More than half wanted to, thought it would have helped, and would recommend it
  - 21 were present
    - Half outside room, 1/3 near bed
    - Most felt contact was helpful
    - Most not frightened
    - Helped coping with death
    - Some unprofessional behavior, need updates

PEDIATRIC FEVER

- Well-appearing
  - Do everything!
  - Febrile
    - What Do I See?
      - Age?
        - Fluids
        - Cultures
        - Antibiotics
        - Antivirals?
        - Steroids?
        - Admit
      - 0-4 weeks:
        - Cultures + LP
        - Chest Xray
        - Antibiotics Admit or Discharge (depend on results)
      - 4-8 weeks:
        - Cultures + LP
        - Chest Xray
        - Antibiotics Admit or Discharge (depend on results)
      - Bwks-24mo's:
        - Source?
        - Urine?
        - Chest xray?
        - Blood culture?

- Ill-appearing
  - Do everything!

- What Do I See?
  - Age?
    - Fluids
    - Cultures
    - Antibiotics
    - Antivirals?
    - Steroids?
    - Admit
Fever and Viral Testing

- Doan J Pediatrics 2009
  - 200 febrile kids, 3-36 months with resp illness
  - Randomized to multi-viral rapid testing or not
  - Looked at outcomes
  - Found decrease in antibiotics written after discharge from ED

Viral Testing

- Fewer serious bacterial infections
  - Melendez Ped Inf Dis J December 2003
  - Smitherman Pediatrics May 2005

- Fewer workups performed, less antibiotics given
  - Abanses Ped Emerg Care March 2006
  - Benito Fernandez Ped Inf Dis J Dec 2006
  - Iyer Acad Emerg Med Dec 2006
  - Poehing Arch Peds Adol Med July 2006
  - Doan J Pediatrics 2009

Occult Bacteremia

- Waddle Arch Dis Child 2009
  - Duke Univ, 3-36 mo, FWOS, pre and post-Prevnar PCV7
  - 1997-1999: 148 pts, 10 pathogens, 7 false
  - 2001-2004: 275 pts, 1 pathogen (enterococcus), 13 false pathogens
    - 94% decrease
    - 100% decrease for S.pneumo
    - Overall bacteremia rate 0.4%
  - British 2007 NICE Fever guidelines - urine only!
Occult Bacteremia

  - Phoenix, 3-36 mo, FWOS, blood culture, discharged
  - 2004-2007, 8,400+ kids
    - 21 true positive (0.25%, CI 0.37%)
    - 14 of 21 S.pneumoniae (0.17%, CI 0.27%)
    - 159 contaminants (1.89%, CI 2.19%)

Emerging Resistance?

- MMWR - CDC. Feb 2008
  - PCV-7 vaccine (Prevnar) covers serotypes responsible for 80% of invasive disease
  - CDC-P followed population and lab data, 2005
  - Kids <5 yrs old: overall invasive disease decreased 77%
  - PCV-7 serotypes declined through 2005
  - Overall invasive disease plateaued in 2002 because of increased non-vaccine serotypes

Emerging Pneumococcus...

- Increase in non-vaccine serotypes??
  - Benito-Fernandez Ped Inf Dis J Aug 2007
  - Black Ped Inf Dis J Sept 2007
  - Hicks J Inf Dis Nov 2007
  - Munoz-Almagro Clin Inf Dis Jan 2008
  - MMWR - CDC Feb 2008
New Pneumococcal Vaccine

- Blazek Pediatric Annals 2009
  - New 13-valent pneumococcal vaccine
  - Current 7-valent PLUS 6 more strains
  - Will provide more protection
  - FDA fast-track

Fever Management 2009

- Ishimine Emerg Med Clinics North America Nov 2007
- Harwood-Nuss Clinical Practice in Emergency Medicine
  - Updated 2008
- Sharieff & McCollough Neonatal and Infant Emergencies
- Baraff Pediatric Annals Feb 2009

FEBRILE SEIZURES
Prophylaxis for Febrile Seizures

- AAP Long-term Management, Clinical Practice Guideline June 2008
  - Phenobarb, valproate, primidone decrease recurrence
  - Dilantin does not work
  - Intermittent diazepam works
  - Antipyretics do not decrease recurrence
  - SIMPLE FEBRILE SEIZURES ARE BENIGN!
  - Long-term therapy has risks, therefore not recommended

MENINGITIS

Steroids and Meningitis

- Mongelluzzo JAMA May 2008
  - 2001-2006, 2700+ kids with bacterial meningitis
  - 27 hospitals in U.S. and Canada
  - Mean age 9 months
  - Strep pneumo most common
  - 8.9% received steroids
  - Overall mortality 4.2%
  - Steroids did not reduce mortality regardless of age
  - Steroids did not change time to discharge
URINARY TRACT DISEASE

UTI and Ultrasound
  - 93 kids, <36 months
  - Success: UTZ 92% vs 67%
  - Longer time: 28 mins vs 12 mins
- Witt Acad Emerg Med April 2005
- Chen Pediatrics Jan 2005

Prevalence of UTIs
- Shaikh Ped Inf Dis J April 2008
  - Meta-analysis of UTI studies
  - Higher rates
    - uncircumcised boys <3 months
    - girls <12 months
    - Caucasian infants
Occult Pneumonia?

- Rutman Pediatric Emergency Care 2009
  - 1200 kids, less than 5yo, FWOS (39C)
  - WBC >20K
  - Occult pneumonia less with Prevnar?
  - Radiograph pneumonia:
    - Pre-prevnar 21% vs post-Prevnar 18%
  - Occult pneumonia:
    - Pre-Prevnar 15% vs post-Prevnar 9%

Upper Respiratory Infections
Honey!!

- Paul, Arch Peds Adolesc Med Dec 2007
- 105 kids, 2-18 yrs, URI, night symptoms
- Honey vs. honey-flavored DM vs. no treatment
- Asked frequency of cough, severity, bothersome, affect sleep, parents sleep
- Night before and then night of treatment
- Significant, but not huge, difference with honey compared to DM and no treatment

Cough and Cold Meds Banned

- Schaefer Pediatrics April 2008
- CDC-P
- Electronic Injury Surveillance + Adverse Drug Event Surveillance
- Adverse drug reaction, <12 years old
- 63 hospitals, 2004-2005
- Each year, 7000+ kids, adverse drug events
  - 64% 2-5 yo, most unsupervised
  - Supervised, <2 yo, medication error
  - 7% admitted

OTITIS MEDIA
Acute Otitis Media and Pain

- Bolt Arch Dis Child Jan 2008
  - Australian, double-blind randomized study
  - 63 kids, 3-12 yrs, acute OM with no perf
  - 2% lignocaine or saline (placebo) drops
  - Primary outcome was reduction in pain by 50%
  - Similar proportions of pain meds given within 4 hours prior to the randomization
  - Lignocaine significantly reduced pain at 10 mins and 30 mins with no significant side effects

Mastoiditis

- Ho Arch Otolaryng Head Neck Surg Jan 2008
  - Australian retrospective chart review
  - 129 cases acute mastoiditis, 1996-2005
  - Antibiotics prior to admission:
    - 1996 64% vs 2005 27%
  - Stable number of acute mastoiditis cases
  - Subperiosteal abscess in 35%
  - No sig diff in antibiotic use between those with and without abscess

Mastoiditis

- Thompson Pediatrics Feb 2009
  - UK General Practice Research Database
  - Decline in antibiotics prescribed to children
  - 3yrs-15yrs, 1990-2006
  - 2,600,000+ kids
  - 854 cases of mastoiditis
  - Risk of mastoiditis:
    - OM, with antibiotics, 1.8 / 10,000
    - OM, without antibiotics, 3.8 / 10,000
  - NNT 4,800 cases of OM to prevent mastoiditis
  - 225 extra cases per year if no treatment but 738,000 fewer antibiotic prescriptions
Asthma and End-tidal CO2
- Guthrie Acad Emerg Med Dec 2007
  - 100 kids, 3-17 yrs, asthma exacerbation
  - ETCO2 measured, asthma severity, peak exp flow
  - MD blinded to ETCO2 result
  - Patient dispo’d by MD
  - Mean ETCO2 at presentation - admitted 32.9 vs discharged 35.6 - stat sig
  - Mean ETCO2 at disposition - admitted 31.6 vs discharged 33.9 - not stat sig
  - No diff mean ETCO2 for mild, mod, severe

Asthma and Aminophylline
- Silveira D’Avila Resp Med Jan 2008
  - Brazil, 1 year study, 60 kids, 2-5yr old
  - Acute episode 3 nebs + oral steroid
  - Randomized to IV aminophylline or saline
    - Repeated in 6 hrs
  - No sig diff found in # nebulized treatments, need for oxygen supplement, length of hospital stay
**Asthma and Steroids**

- Chang Med J Australia Sept 2008
  - 201 kids, mean age 5 yrs
  - Randomized to 5-days prednisolone (1mg/kg) vs 3-days prednisolone + 2 days placebo
  - 82% followed up
  - No diff in % kids symptom-free by day #7
  - Admits: 1 3-day
  - Additional prednisolone: 8% 3-day vs 5% 5-day
  - Adverse events: 3 3-day vs 2 5-day
  - Similar results for mild, moderate, severe

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**BRONCHIOLITIS**

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**Bronchiolitis and Epi**

- Walsh Academic Emerg Med April 2008
  - Double-blind, RCT, 700+ kids <18 mo, bronchiolitis
  - 3 albuterol vs racemic epi plus saline nebs
  - Dispo decision after 2 hours
    - No more drugs, no admit within 72 hours
    - More in albuterol group discharged home
    - True for 1st time wheezers
    - True for those <12 months old
**Bronchiolitis and Hypertonic Saline**

- Kuzik J Peds Sept 2007
  - Canada, United Arab Emirates
  - 96 children, <18mo, hospitalized
  - Randomized to nebulized 3% or 0.9% saline every 2-6 hours
  - Hospital stay was shorter, 2.6d vs 3.5d
  - Similar additional meds, albuterol and epi
  - No sig side effects...2 in HS and 3 in NS withdrawn


**Bronchiolitis and CPAP**

- Martinon-Torres Pediatrics May 2008
  - Spain, 12 kids, 1mo-2yrs, ICU (severe)
  - Neb epi, heliox, non-rebreather
  - 30 minutes nasal CPAP with heliox or air-O2
  - Baseline clinical scores then after tx
  - Clinical scores improved:
    - heliox >> air-O2 >> baseline

- Thia Arch Dis Child Jan 2008
  - British study
  - 31 kids, <1yr old, bronchiolitis
  - pCO2 >45mmHg
  - Randomized to IVF, O2, +/- CPAP x 12 hours, then crossed-over
  - 29 kids finished
  - CPAP first had greatest decrease in pCO2
  - 9 with CPAP needed sedation
  - No diff in LOS
**CROUP**

- Reviewed differences between viral + bacterial croup, spasmodic croup, diphtheria
- Supports simple assessment of severity:
  - Mild
  - Moderate
  - Severe
- No support for humidified air
- Definite support for steroids (dex 0.6mg/kg)
- Definite support for epi (racemic or L)
- Heliox is no better than inhaled epinephrine
- No role for decongestants
- No evidence for antivirals

**GASTROINTESTINAL**
AGE and Dehydration

- ACEP Peds Committee - pending policy 2008
- Utility of physical exam and laboratory tests
- Encourages the use of oral rehydration
- Supports the use of antiemetics
  - Concerns regarding extrapyramidal effects, sedation, masking more serious illness
  - Used quite a lot among Peds, Peds EM, EM docs
  - Side effects lower than previously thought
  - Zofran - Less vomiting, less need for IVF, fewer admissions

AGE and Antiemetics

- Roslund  Annals Emergency Medicine  July 2008
  - 106 kids, 1-10yo, mild-mod dehydration
  - Failed oral rehydration
  - Randomized to Ondansetron 2-6mg or placebo (DBRC)
  - Oral rehydration then reattempted
  - IVF needed: Ondansetron 22%, placebo 55%
  - Hosp admission: Ondansetron 6%, placebo 13%
  - No diff in later vomiting, diarrhea, return visits
  - 4mg tabs: Zofran $24, generic $18

AGE and Antiemetics

- DeCamp  Arch Peds Adol Med  2008
  - Meta-analysis, review of literature
  - 11 articles
    - 6 ondansetron, 2 domperidone, 2 trimethobenzamide, 2 pyrilamine-pentobarbital, 2 metoclopramide, 2 dexamethasone, 1 promethazine
    - 6 ondansetron
      - decr risk of vomiting, NNT 5
      - decr risk of hospitalization, NNT 14
      - Some diarrhea
Diarrhea and Probiotics
  - Italian study, 571 kids, 3-36 months, acute diarrhea
  - No severe dehydration, or chronic disease
  - Randomized to oral rehydration or 1 of 5 probiotics for 5 days
  - Duration of diarrhea: Oral 115 hours, Lactobacillus 78 hrs, combo 70 hrs
  - Daily stool output also sig reduced

Diarrhea and Probiotics
- Eur J Peds July 2007
  - Meta-analysis
  - Regarded as safe, clinically moderate benefit
- Aliment Pharm Ther 2008
  - Antibiotic-assoc diarrhea
  - Probiotics are effective
- Med J Australia 2008 - effective

Appy’s and Pain Meds
- Bailey Annals Emergency Medicine 2007
  - Univ Montreal, 90 kids, 8-18yo, RLQ pain
  - Randomized IV morphine 0.1mg/kg (max 5, over 20 mins) or placebo
  - 100 mm VAS
  - No diff in decrease in pain by 30 mins
  - Slightly faster surgical dispo with MS
  - No diff in surgical intervention (73%, 76%), negative appy (9%, 6%), perf’d (21%, 28%)
  - No diff in involuntary guarding, rebound
  - 4 MS had itch, vomit, dizzy
**Intussusception**

Herwig, Pediatric Emerg Care, Feb 2009
- 1995-2006, 124 pts with intussusception
  - 43 managed surgically
  - 14 not intussusception, 10 spontaneous
  - 45 air-enemas, reduced, admitted
    - Mean age 19 mo’s, 44 ileocolic
    - 3 had recurrence (2, 7, 45 months later)
    - No recurrence while hospitalized
    - No bowel perf, sepsis
  - 6 reduced, discharged
  - No recurrence

**METABOLIC**

Hom, Annals Emergency Medicine, July 2008
- Reviewed literature, 3 case-control studies
- 492 kids, DKA and cerebral edema
- 1,000’s control kids
- No RCTs
- Edema = AMS (+/- CT) or ICP treatment
- None blinded data abstractors
- 2 studies - IVF, cc/kg/time 
edema
- 1 study - did not correct for body weight
Congenital Heart Disease and BNP

- Maher Pediatrics June 2008
- 33 kids, newly diagnosed congenital heart or acquired heart disease
- 70 kids with resp or infectious complaint
- All had BNP ordered in ED
- Cardiomyopathy 14, left-side obstruct 12, anomalous left coronary artery from pulm artery 4, TAPVR 2, patent ductus 1
- Mean BNP: cardiac 3290, non-cardiac 17
Refractory Seizures

- Mehta J Child Neurology 2007
- Indian study, 40 kids, 5mo-12yrs
- Refractory status - Diazepam bolus, 2 phenytoin
- Randomized to diazepam drip vs IV valproate 30mg/kg then 10mg/kg then infusion 5mg/kg/hr
- Control <30 mins: valproate 80%, diazepam 85%
- Mean time: valproate 9 mins vs diazepam 27 mins
- Resp depress: valproate 0%, diazepam 60%
- Hypotension: valproate 0%, diazepam 50%
- ICU admit: valproate 55%, diazepam 95%
- Bad outcome: 4 in each group

Value of LP for Seizures

- 141 afebrile infants, 1-6 mo's old, "spells" probable seizures
- 76 got LPs (54%)
  - 17 (22%) had abnormal CSF (incr WBC, incr protein)
  - 0 of 17 had positive bacter culture or herpes PCR
  - Seizures diagnosed in half
  - No relationship b/w CSF and seizures
- 65 got no LP
  - 8 had abnormal neuro exam with reason (bleed, metabolic or genetic syndrome, toxin)

VP Shunt Failure

- Piatt Pediatric Emergency Care 2008
- 647 kids, followed up to 3 years, after VP shunt placed
- Failure 38%, due to infection 8.5%
  - Fever, peritonitis, N/V, abd pain (LR 10-14)
  - Fluid along shunt, CSF leak, decr LOC (LR 20-26)
  - Bulging fontanelle (LR 44)
  - Headache LR 4, incr head growth LR 6
  - Fever, signs of infxn, hx comp, young age
  - Infxn less likely if no irritability, no N/V, age >2 mo's, more than 6 mo's since placed
Mucomyst palatable?

- Crouch, Am J Health Syst Pharm, 2007
  - N-acetylcysteine - sulfuric odor, bad taste
  - Univ Utah, 42 pharmacy students
  - Rate smell and taste (1-10, 10 worst)
  - 20% n-acetylcystein diluted to 5% with H2O, Fresca, Coke, cranberry juice, chocolate milk
  - Smell: Fresca 1.2, Coke 2.6, cranberry juice 4.0, choc milk 4.1
  - Taste: Fresca 4.3, others 7.3-8.1
**IV Placement**

- Injected lidocaine with TB needle
- Vapocoolant spray
  - Vapocoolant spray
- Warm lidocaine/tetracaine patch
- Needle-free jet lidocaine
  - Singer Annals Emerg Med 2008
- Communication

**Intraosseous Needle Drivers**

- Horton Ped Emerg Care June 2008
  - EZ-IO IO Insertion device
  - 95 kids, 5 days to 17 yo
  - Tibia or proximal humerus
  - MDs, paramedics, nurses
  - Successful in 89 of 95 (94%)
    - 72 of 89 with only one attempt
    - Contact time <10 secs in 80%
    - Failure mostly due to not deep enough
    - Alert kids rated pain, 2.3 out of scale of 10
    - Ease of insertion, 1.4 out of scale of 5

**Absorbable Sutures**

- Luck Ped Emerg Care March 2008
  - 88 kids, 1-18yo, facial lacs, 1-5cm, <8 hours old
  - Randomized to 5-0, 6-0 nylon OR fast-abs gut
  - Subcut sutures in 21% and 22%
  - 74 of 88 had followup in 5-7 days, 47 of 74 at 3 mos
  - 16 of gut had 1 intact, unravel suture
  - 2 of 39 gut had wound dehiscence
  - 1 of nylon had keloid scar
  - Cosmetic score: 92 gut, 93 nylon
    - Parents’ score: 86 gut, 91 nylon
    - Parents: more convenient, more likely to be requested
**Dermabond for Nail Beds**

- Strauss J Hand Surg Feb 2008
- Patients, 2-92yo, nail bed lac
- 2-octylcyanoacrylate or 6-0 chromic
- Irrigate, nail placed back, antibiotics
- 40% had a fracture
- Repair time: Glue 9.5 mins, Chromic 28 mins
- No diff in cosmetic outcome by clinician
- No diff in cosmetic outcome by patient
- No diff in pain, function

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**CT Scans and Radiation**

- Brenner NEJM Nov 2007
- # CT scans performed:
  - 1980 3 million, 2006 62 million
  - Pediatric patients, asymptomatic adults
  - Based on Atom bomb survivors
- Typical CT study (2-3 scans) = 40mSv, similar to low radiation from Atom bomb
- CTs and risk of cancer:
  - infant, head CT, 7.5 per 10,000
  - infant, abd CT, 14 per 10,000
- Up to 2% of cancers may be related to CT scanning

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**PAIN CONTROL and SEDATION**
Intranasal Versed

- Lane  Pediatric Emerg Care  2008
  - Retro chart review
  - 205 kids, 1mo-5yrs, received atomized Versed
  - Mean dose 0.4mg/kg
  - Median sedation score 2.0 (anxiolysis)
  - 5.4% required other sedatives
  - No adverse events

Barriers to Propofol Use

  - Addresses issues and criticisms
    - JCAHO "monitored by Dept of Anesthesia"
    - Respiratory Depression
    - Aspiration
    - Product Labeling
    - ASA and AANA Joint Statement
    - Technical difficulty
    - Oversedation
    - No reversal agent
    - Safety

Ketamine Facts

- Atropine is optional
  - Brown  Academic Emergency Medicine  2008

- Ketamine makes kids vomit but has less respiratory depression
  - Roback  Academic Emerg Medicine  2005

- Vomiting associated with very high doses and older children
  - Thorp  Pediatric Emergency Care  2009

- Zofran (Ondansetron) can decrease vomiting
Ketamine Facts

- Aspiration is extremely rare
  - Green, Annals Emergency Medicine, 1990

- Laryngospasm is transient
  - Green, Annals Emergency Medicine, 1990

- Overdosing is not problematic
  - Green, Academic Emergency Medicine, 1999

- Benzodiazepines do not affect emergence reactions
  - Wathen, Annals Emergency Medicine, 2000

- Minimizing disturbances upon awakening does not affect emergence reactions
  - Sherwin, Annals Emergency Medicine, 2000

- Jury is out on "Ketafol"
  - Willman, Annals Emergency Medicine, 2007

- Nebulized ketamine might be an option
  - Hoffman, ACEP Scientific Assembly Abstracts, Oct 2008

Supplemental Oxygen?

  - Randomized, 80 pts, 2-77 yrs old
  - Fentanyl and midazolam for procedures
  - Supplemental O2 or room air at 2L NC, blinded by tanks "A" or "B"
  - Resp depression = O2 sat <90%, CO2 >50, abs ↑ CO2 by 10, loss of CO2
  - Looking for a 20% difference in hypoxia
  - Stopped study early
Supplemental Oxygen?

- Deitch (cont)
  - Overall hypoxia rate 13% (6 O2, 5 RA)
  - 0% effect (CI -15 to 15%)
  - 1+ resp depress criteria 45% O2, 52% RA
  - 7% effect (-29 to 15%)
  - Hypoxic events: avg 60 secs (max 4mins)
  - Resp depress: avg 7 mins O2 vs 3 mins RA

- Keidan Pediatrics August 2008
  - Simulation, apnea, time to BVM

TRAUMA

Limping Young Child and Hip Xrays

- Baskett Pediatric Emerg Care Feb 2009
  - New Zealand, 2-ya, hip pain < 2weeks
  - 99% got plain films = 310 pts
  - 3% abnormal
    - Transient synovitis 86%
    - osteomyelitis or other musculoskeletal infection 8% (no septic arthritis)
    - SCFE 1%
  - Kids >9yo more likely to have positive xray
  - Fever, inability to bear weight, age
Pediatric Head Trauma

- Atabaki, Arch Peds Adol Med May 2008
  - 1000 kids, <21 yrs, minor head trauma (GCS 13-15), needing CT
  - Data collected from MD prior to CT
  - Mean age 9 yrs old
  - 6.5% had positive CT scans (65 pts)
    - 9% (6 pts) of those needed neurosurgery
  - Decision rule:
    - Dizzy, sensory deficit, GCS <15, mental status change, bicycle-related, age <2 yrs, skull defect, basilar skull fracture
    - Sensitivity of 95% (62 of 65 identified)

- Palchak, Pediatric Emerg Care Feb 2009
  - 1168 kids, head trauma, all got CT
    - Faculty MD said "low, intermed, high" suspicion for brain injury
    - Decision rule: abn MS, skull fxr, vomit, scalp hematoma (<2yo), headache
    - 7.6% had brain injury on CT
      - Decision rule sensitivity 98.9%
      - MD judgment sensitivity 94.4%
      - MD judgment had slight better specificity
      - Decision rule 24% fewer CTs

Buckle Fractures

- Cochrane Database April 2008
  - 1/3 of peds fractures at the wrist
  - Removable splint vs plaster cast for undisplaced buckle fractures
  - 10 trials, 827 kids
  - No difference in outcome
  - More comfortable, better daily activities, parents liked it, cheaper