The Clinical Pearls of Naturopathic Pediatrics

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Started a Primary Care Practice in Seattle area in 2005.

Joined colleague in 2007 to host Seattle’s largest Naturopathic Pediatric Clinic with 6 N.D.’s.

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Outline

• Common Pediatric Complaints
  • EENT
    • Conjunctivitis: Allergic, Bacterial, and Viral
    • Acute Otitis Media
  • RESP
    • Acute Cough
    • Bronchiolitis
    • Croup
  • GI
    • Abdominal Pain
    • Colic
    • Constipation

• DERM
  • Diaper rashes: Contact, Candida, Staph, Seborrheic, and Atopic Dermatitis
  • Eczema

• NEURO
  • Headache
  • Migraine

• Pediatric Dosing Guidelines
  • How to get children to take their supplements
  • How to perform PE on the uncooperative child
EENT – Allergic Conjunctivitis

Conjunctivitis

- Allergic
  - S/Sx: ITCHING, bilateral eye involvement, tearing, discharge, conjunctival edema and injection, eyelid edema
  - DDx: bacterial or viral conjunctivitis
  - Treatment:
    - Conventional: Artificial tears, ocular mast cell stabilizers, ocular antihistamines, ocular corticosteroids, oral antihistamines
      - Ocular Mast Cell Stabilizers (Preferred DOC, sometimes Rx with ocular corticosteroids)
        - Cromolyn sodium (Crolom): i gtt QID-6x/d until sx’s resolve (1-6 wks) OR
        - Olopatadine 0.1% (Patanol): i-ii gtt o.u. (both eyes) BID until sx’s resolve OR
        - Ketotifen 0.025% (Alaway OTC, Zaditror): i-ii gtt o.u. BID (OTC and less expensive)
      - Ocular Corticosteroids
        - Loteprednol etabonate 0.2% (Alrex): I gtt QID x 7d OR
        - Lotenprednol etabonate 0.5% (Lotemax): i-ii gtt into conjunctival sac of affected eye QID x 7d
EENT – Allergic Conjunctivitis
Naturopathic Tx

Naturopathic Tx:
- COLD wet compresses to help reduce inflammation
- Homeopathic Allergy Eye Drops
- Chamomile wet tea bags over eyes
- Calendula tea compresses
- Black tea bag compresses
- Naturopathic systemic antihistamines
  - Quercetin
  - Nettles
  - Butterbur

**NOTE:** 2% of the population may have a contact sensitivity/IgE allergy to chamomile thus if sx’s worsen, D/C. Mills and Bone. Essential Guide to Herbal Safety. 2006.


EENT – Allergic Conjunctivitis
EENT – Bacterial Conjunctivitis

Bacterial

- **S/Sx:** Sudden onset, starts as unilateral, *mucopurulent* discharge (gray, yellow, or green), matting of lashes in am, eyelid edema, significant irritation/foreign body sensation, conjunctival injections

- **Causes:**
  - Newborns: Chlamydia, Gonorrhea, HSV
  - Children: Strep pneumonia, Hib, Staph, Moraxella
  - Adults: Staph, Strep, E. coli, Pseudomonas, Moraxella, Chlamydia, Gonorrhea

- **DDx:** Allergic or Viral conjunctivitis

- **Prognosis:**
  - Self Limited. Usually resolves in 2 wks w/o treatment (65% improves in 2-5 days)
  - Clears in 48-72 hrs w/ tx, however infectious during the 1st 48 hrs of tx
  - Serious complications are rare
EENT – Bacterial Conjunctivitis
Conventional Tx

Treatment: (Treat both eyes at the same time)

◦ REFER: Refer to ophthalmologist immediately in Gonorrhea, Chlamydia, HSV, or tx resistant conjunctivitis (7d)

◦ Conventional:
  ◦ Ocular Antibiotics
    ◦ (DOC) Trimethoprim-Polymyxin B (Polytrim) solution: ii gtt QID x 5-7d OR
    ◦ Erythromycin 0.5% ointment (Ilotycin): apply a ribbon ~ 1cm in length across the inside of the lower lid QID x 5-7d
EENT – Bacterial Conjunctivitis
Naturopathic Tx

Naturopathic:
- Warm wet compresses
- Breast milk drops into both eyes QID
- Homeopathic Eye Drops
- Acute Homeopathic Euphrasia 30c po
- Chamomile wet tea bags over eyes
- Calendula tea compresses
- Black tea bag compresses

Note: REFER immediately to ophthalmologist in Gonorrhea and Chlamydia infections

Note: I usually recommend Naturopathic Tx 1st and if it does not improve after a few days, I advise filling the “safety net” Rx I gave them in the office.
EENT – Bacterial Conjunctivitis
EENT – Viral Conjunctivitis

Viral

◦ S/Sx: Unilateral at first then spreads to other eye in 1-2 d, watery ocular discharge, mild ocular itching, conjunctival erythema, preauricular LAD, assc. URI Sx’s.
◦ Causes: Adenovirus (most common), Enterovirus, Coxsackievirus, Varicella, EBV, HSV, Influenza
◦ DDx: Bacterial OR allergic conjunctivitis
◦ Treatment:
  ◦ Conventional: Supportive. Ocular lubricants (artificial tears) for comfort.
    ◦ Artificial tears (Refresh, Akwa, Bion, Murine): 4-8x/d x 1-3 wks
EENT – Viral Conjunctivitis
Naturopathic Tx

- Naturopathic
  - Cold wet compresses to affected eye
  - Breast milk drops into both eyes QID
  - Homeopathic Eye Drops
  - Homeopathic Euphrasia 30c po
- Chamomile wet tea bags over eyes
- Calendula tea compresses
- Black tea bag compresses

NOTE: REFER immediately to ophthalmologist in HSV infections.
EENT – Viral Conjunctivitis
EENT – Conjunctivitis
Comparison of Discharge

<table>
<thead>
<tr>
<th>Etiology</th>
<th>Serous</th>
<th>Mucoid</th>
<th>Mucopurulent</th>
<th>Purulent</th>
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<tr>
<td>Viral</td>
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<td>Chlamydial</td>
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<td>Bacterial</td>
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<td>Allergic</td>
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EENT – Acute Otitis Media

Otitis Media
• Acute Otitis Media
  • Sx: Vary. Irritability (60-80%), difficulty sleeping (35-50%), feeding difficulties (60-80%), fever (22-69%), rhinitis (90%), otalgia (40-60%), cough (78%), ill child (60-80%), ear tugging
  • Signs:
    • TM
      • Color: Erythematous (DDX: fever, crying, viral), Injected
      • Position: Normal vs Bulging (and note the severity – mild, moderate, severe). Landmarks are distorted.
      • Mobility: Pneumoscopy - immobile TM suggests AOM
  • Causes: Strep pneumoniae, Hib, Moraxella, Group A Strep, Staph aureus
  • DDx: External OM (swimmer’s ear, etc.), Teething
  • Complications: TM perforation, mastoiditis, Meningitis, brain abscess, hearing loss
    • Common complications (persists beyond duration of therapy):
      • Middle ear effusion- up to 70% of children after 14 days, 50% at 1 mo., 20% at 2 mos., 10% after 3 mos..
      • Conductive hearing loss
EENT – Acute Otitis Media
Conservative Approach

  - 4860 children ages 2-12 yrs. with clinical dx of AOM
  - 90% experienced cessation of sx’s w/in 3-4 d w/o tx
  - 2.7% experienced severe sx’s and thus ears were tapped:
    - <1% were H. flu
    - 25% were GAS
    - Remainder were pneumococcal or no growth
  - Only 2 cases of “mastoiditis” that were treated successfully as outpatients with Amox po.
EENT – Acute Otitis Media
Conventional Tx

Treatment:
- Conventional: Antibiotics
  - Antibiotics: No Penicillin Allergy:
    - (DOC) Amoxicillin (duration of Tx: <2 yrs. – 10d course, >2yrs – 5-7d course).
    - > 3 mos.. And <40 kg: 80-90 mg/kg/d po divided q 8-12 hrs
    - >40 kg: 500 mg po q 12 hr or 250 mg po q 8 hr
  - Augmentin (duration of Tx: <2 yrs. – 10d course, >2yrs – 5-7d course)
    - Dosage is based on Amoxicillin
  - Antibiotics: Penicillin Allergy:
    - Cefuroxime (Ceftin, Zinacef)
    - 3 mos.. – 12 yrs..: 30 mg/kg/d suspension po divided q 12 hrs x 10 d
    - >12 yrs.: 250-500 mg tablet po q 12 hrs. x 10 d
  - Antibiotics: Penicillin AND Cephalosporin Allergy:
    - Azithromycin (Zithromax, Zmax)
    - >6 mos.: 30mg/kg of oral suspension once OR 10 mg/kg po qd x 3d OR 10 mg/kg once on day 1 followed by 5 mg/kg on days 2-5
EENT – Acute Otitis Media
Naturopathic Tx

Naturopathic Tx:
- Avoid mucus forming foods (dairy, citrus, bananas, sugar)
- Garlic/mullein ear drop oil (7 days max) (R/O TM PERFORATION)
- Onion ear muffs
- Lymphatic cervical drainage massage


EENT – Acute Otitis Media
Naturopathic Tx

Naturopathic Tx:
- Oral antimicrobial/mucolytic/respiratory/immune supportive (10d): garlic, goldenseal/Oregon grape, calendula, mullein, cleavers, elecampane, yerba santa, licorice
- Probiotics
- Guaifenesin (14d) OR
- NAC OR
- Bromelain to thin the mucus x 14 days OR
- Sinupret (Bionorica)


EENT – Acute Otitis Media

AOM with purulent effusion
Respiratory – Acute Cough

Acute Cough

- History: Get all 8 attributes. Your history should be able to narrow down your diagnosis significantly.
- PE: 2nd most important component of making an accurate diagnosis. Please see the following slides for links to respiratory sounds. Listen to and Learn these sounds.
- DDx: Adenovirus infection (common cold), asthma, bronchiolitis, bronchitis, croup, foreign body aspiration, GERD, influenza, pertussis, pharyngitis, post-nasal drip (Upper Airway Cough Syndrome), pneumonia, rhinovirus infection, sinusitis
Respiratory – Acute Cough
Auscultation • Wheezing

http://www.easyauscultation.com/cases?coursecaseorder=4&courseid=201

DDx: Asthma, bronchiolitis (fine wheezing), bronchitis, croup (mild expiratory), foreign body aspiration (fixed or focal wheeze), pneumonia.
Respiratory – Acute Cough
Auscultation • Fine Rales (Crackles)

http://www.easyauscultation.com/cases?coursecaseorder=2&courseid=201

DDx: Bronchiolitis, bronchitis, Pertussis, Pneumonia.
Respiratory – Acute Cough
Auscultation • Coarse Rales (Crackles)

http://www.easyauscultation.com/cases?coursecaseorder=3&courseid=201

DDx: Asthma, bronchiolitis, bronchitis, Pneumonia.
Respiratory – Acute Cough Auscultation • Rhonchi

http://www.easyauscultation.com/cases?coursecaseorder=5&courseid=201

DDx: Bronchitis, Pneumonia, rhinovirus infection
Respiratory - Bronchiolitis

Most common cause of hospitalization among infants younger than 1 year

AAP updated Guidelines on Pediatric Bronchiolitis in November 2014

  - Children aged 1-23 mos.. no longer requires testing for specific viruses
  - Routine radiographic or laboratory studies are unnecessary
  - During assessment and management of children with bronchiolitis, the clinician should evaluate risk factors for severe disease, such as age less than 12 weeks, prematurity, underlying cardiopulmonary disease, or immunodeficiency
  - No longer requires a trial dose of a bronchodilator nor should epinephrine be given
  - Only supportive care should be offered such as oxygen and hydration
  - Immunization with Palivizumab to prevent RSV should not be given to otherwise-healthy infants with a gestational age of 29 wks or more, however, infants with significant heart disease or chronic lung disease of prematurity should receive Palivizumab during their first year
Respiratory - Bronchiolitis

Epidemiology:
- Infants < 1 yrs. old: 75% of cases
- Children < 2 yrs. old: 95% of cases
- Peak incidence: 2-8 mos. of age
- **Note:** the younger the patient, the more severe the infection (<6 mos. of age)

S/Sx:
- Initial (1st 48hrs): Fussy, difficulty feeding, fever (low-grade, <101.5), coryza, nasal congestion
- Following Initial: cough, dyspnea, wheezing, feeding difficulties
- Severe cases (**MEDICAL EMERGENCY**): respiratory distress with tachypnea, nasal flaring, retractions, irritability and possibly cyanosis
- **NOTE:** If fever is high and patient is stable, consider pneumonia as diagnosis and get X-ray immediately

Causes: RSV (44% of cases in children <2 yrs.), parainfluenza (10-30%), adenovirus (10-20%), Mycoplasma pneumonia (5-15%)

DDx: See Acute Cough DDx
Respiratory – Bronchiolitis
Admission Criteria

Persistent resting Oxygen sat < 92% in room air before β-agonist trial
Markedly elevated respiratory rate (>70-80 breaths/min)
Dyspnea and intercostal retractions
Chronic lung disease
Congenital heart disease
Prematurity
Age < 3 mos..
Inability to maintain oral hydration in pts < 6 mos..
Difficulty in feeding as a consequence of respiratory distress
Parent unable to care for child at home
Respiratory – Bronchiolitis
Conventional Tx

Conventional
- Supplemental Oxygen: If Oxygen saturation is <90% on pulse ox.
- Maintenance of hydration via oral rehydration therapy
Respiratory – Bronchiolitis
Naturopathic Tx

Naturopathic
- Same as Conventional
- Humidified air in bedroom
- Steam shower treatments (sitting in bathroom with baby x 15 min bid-tid)
- Acute homeopathics for cough
- Immune Support: Zinc, Vitamin D
- Botanicals
  - 2 weeks +: DGL powder, ulmus powder, probiotics.
  - > 6 mos.: Tea or glycerite made of Echinacea, elderberries, eyebright, plantain, fenugreek, thyme, anise seed, licorice, marshmallow, yerba santa, wild black cherry, elecampane, goldenseal, mullein, osha, ginger.
  - >12 mos.: Pelargonium sidoides
  - > 2 yrs.: English ivy
- Chest Rub (applied to chest, back)
  - Herbal: Lavender, eucalyptus, thyme, peppermint, yarrow
  - Lobelia Tincture and Olive oil: Mix equal parts and apply to chest
- Consider treating mom too if baby is breastfed
Respiratory – Croup

Epidemiology
- < 6 yrs. old: 6/100 children
- Ages: average 6-36 mos. (peaks between 12 and 24 mos.). Rare <3 mos.
- Hospitalizations: 1-8% of US cases (20,000 children)
  - Intubation: 1-5% of cases hospitalized
  - Timing: typically fall to early winter but can be year round

S/Sx: low-grade fever, prodrome (nasal congestion, rhinorrhea) followed by hoarseness, “barking or seal-like” cough, inspiratory stridor, expiratory wheeze, dyspnea

Causes: Parainfluenza (50-75%), adenovirus, RSV, Influenza, rhinovirus, enterovirus, Bocavirus

DDx: angioedema, epiglottitis, bacterial tracheitis, peritonsillar abscess, Diphtheria, foreign body aspiration, GERD

**NOTE:** Mild-Moderate respiratory distress you will see nasal flaring, respiratory retractions, inspiratory stridor. This is a **MEDICAL EMERGENCY** and must be appropriately triaged.
Respiratory – Croup
Conventional Tx

Treatment

- Conventional:
  - Humidify bedroom air
  - Take child into hot steamy bathroom x 20 minutes. If sx’s do not improve after 20 minutes, bundle child warmly and take outside into cool night air OR stand in front of refrigerator x 5 minutes if night air is not cool. If not improving, must contact Doctor immediately.
  - Corticosteroids (indicated for moderate severity croup). Clinical improvement onset in 6 hrs lasting up to 72 hrs.
    - (DOC) Dexamethasone:
      - Mild croup: 0.15 mg/kg po
      - Moderate to severe croup: 0.6 mg/kg po
Respiratory – Croup
Naturopathic Tx

Naturopathic Tx:
◦ Same as conventional
◦ Important Advice: Keep parent calm and try to console child so child calms. Reassure parent that it is croup which is a common childhood illness.
◦ Offer warm sips of 100% fruit juice (apple, pear): can soothe irritated throat
  ◦ > 3 mos.: can place syringe with warm juice in cheek pocket and slowly administer 1 tsp QID
◦ Home cough remedies (middle of the night) – can thin secretions and loosen cough
  ◦ Infant > 2 mos.: ½ tsp Agave syrup PRN
  ◦ Children > 12 mos..: ½-1 tsp Honey PRN (If honey is not available, you can use corn syrup)

Naturopathic Tx:

- **Herbal Teas/Glycerites**
  - > 6 mos. of age: (mucilaginous, antimicrobial, anti-inflammatory)
    - elderberry, marshmallow, calendula, licorice, cinnamon, wild cherry bark, plantain, slippery elm, thyme, peppermint

- **Acute homeopathics:**
  - Aconitum, Drosera, Hepar sulph, Spongia, etc.

- **Chest Rub (applied to chest, back)**
  - Herbal: Lavender, eucalyptus, thyme, peppermint, yarrow

**NOTE:** NEVER place chest rub OR other essential oils under the nose of an infant < 18 mos. due to risk of nasal collapse.
Abdominal Pain

- Causes
  - Neonatal
    - *Colic
    - *GERD
    - Milk Protein Allergy
    - Intestinal malrotation or Volvulus
    - Necrotizing Enterocolitis
    - Hirschprung’s Enterocolitis
    - Testicular Torsion (undescended testes)
    - Incarcerated Hernia

*Most common causes I see in my office*
<table>
<thead>
<tr>
<th>Abdominal Pain Causes • Infant</th>
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<tbody>
<tr>
<td><strong>Infant</strong></td>
</tr>
<tr>
<td>- *Constipation</td>
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<tr>
<td>- *Colic</td>
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<tr>
<td>- Intestinal malrotation or Volvulus</td>
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<tr>
<td>- Bowel Obstruction</td>
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<tr>
<td>- Pyloric Stenosis</td>
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<tr>
<td>- Incarcerated Hernia</td>
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<tr>
<td>- Internal Hernia</td>
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<tr>
<td>- Omphalomesenteric band</td>
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<tr>
<td>- Hirschprung’s disease</td>
</tr>
<tr>
<td><strong>• Infant</strong></td>
</tr>
<tr>
<td>- Non-accidental trauma</td>
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<tr>
<td>- Duodenal hematoma</td>
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<tr>
<td>- Jejunum perforation</td>
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<tr>
<td>- Duodenal transection</td>
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<tr>
<td>- Gastroenteritis</td>
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<tr>
<td>- Intussusception</td>
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<tr>
<td>- UTI</td>
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</tbody>
</table>

*Most common causes I see in my office*
GI – Abdominal Pain
Causes • Child

Abdominal Pain

• Child
  • Functional Abdominal Pain
  • in Children (IBS)
  • *Constipation
  • Lactose Intolerance
  • Lead Poisoning
  • H. pylori
  • *UTI
  • Pneumonia
  • Pancreatitis
  • Appendicitis
  • Mesenteric Lymphadenitis
  • *Gastroenteritis
  • Intussusception or Volvulus (< 6 yo)
  • Abdominal Trauma
  • Abdominal Migraine
  • Pharyngitis
  • Sickle cell Crisis
  • Henoch-Schonlein Purpura
  • Hernia
    • Inguinal hernia (5% of pediatric pts)
    • Ovary Herniate
  • Bowel obstruction
    • Prior abdominal surgery
    • Abdominal masses (Wilm’s tumor, neuroblastoma)
  • Gall Bladder disorder
    • TPN Cholestasis
    • Sickle cell anemia
    • Morbid obesity
  • Psychogenic

*Most common causes I see in my office
GI – Abdominal Pain
Causes – Adolescent (12-18 yrs.)

Abdominal Pain
- Adolescent
  - Appendicitis
  - *Gastroenteritis
  - *Constipation
  - Gynecologic Causes
    - Pregnancy
    - Mittelschmerz
    - *Dysmenorrhea
  - Pelvic Inflammatory Disease
  - Ovarian Torsion
  - Imperforate hymen
  - Testicular Torsion

- Drug and alcohol use
- Sexual abuse
- Gallbladder disease
- Neoplasm
- Inflammatory Bowel Disease
- Nephrolithiasis
- UTI
- Psychogenic

*Most common causes I see in my office
GI – Abdominal Pain
Red Flags

Vomiting
Localized pain away from midline
Altered bowel habits
Growth disturbance
Nocturnal episodes
Radiation of pain
Incontinence
Systemic systems
FmHx
  ◦ Peptic ulcer disease
  ◦ Inflammatory bowel disease
GI - Colic

Onset: As early as 2 weeks, peaks around 6 weeks

Resolves by 5-6 months

Epidemiology: 10-30% of infants (average 25%)

S/Sx: Inconsolable crying (high pitched) usually in early evening, facial flushing, drawing legs to abdomen, clenched fists

Diagnostic Criteria: s/sx above, >3 hrs crying, >3d/wk, > 3 wks

Causes: Unknown, GERD, over- or underfeeding, milk-protein allergy (10-15%), lactose intolerance, not burping after feeds, food allergy/intolerance
GI – Colic
Conventional Tx

Treatment
- Conventional
  - Maternal low-allergen diet (low in dairy, soy, egg, peanut, wheat, shellfish, nuts)
  - Lactobacillus reuteri
  - Oral hypertonic glucose and sterile water (Sweet-Ease)
  - Eliminate cow’s milk protein in suspected intolerance
    - Can replace with a protein hydrolysate formula (Nutramigen, Alimentum)
    - Consider Amino Acid Formula if suspected cow’s milk allergy (Neocate, Elecare)
    - Avoid recommendation of Soy Formula due to increased risk of developing soy allergy if preexisting dairy allergy (up to 30%)
  - Soothing Measures (5 S’s)
    - Swaddling
    - Side or stomach position
    - Shushing sounds
    - Swinging
    - Sucking (Breast feeding, bottle, pacifier)
GI – Colic
Naturopathic Tx

Naturopathic Tx:
- Breastfed Infant
  - Identify potential food allergy/intolerance in mom’s diet (dairy, gluten, eggs, soy, nuts, fish, corn, citrus)
  - Identify potential gas/GI irritating food in mom’s diet (brassica foods, beans, acidic foods like tomatoes/vinegar, caffeine in tea/coffee/chocolate, garlic/onions, alcohol, excessive fruit intake.
  - Treat mom with carminative herbal teas (fennel, catnip, chamomile, cinnamon, dill, lemon balm)
    - Baby: diluted tea and administer via syringe in cheek pocket PRN
  - Probiotics: Lactobacillus reuteri, Lactobacillus, bifido
  - Gripe water
  - Warm bath with parent. Can add a few drops of Lavender oil or calming herbs (chamomile, lemon balm, catnip, oats) to water
  - Lavender oil drops in humidifier
  - Homeopathic colic remedies
GI – Colic
Naturopathic Tx, Cont.

Naturopathic Tx:

- Formula fed infant
  - Switch formula to protein hydrolysate
    - If no help, consider Corn Syrup Free protein hydrolysate formula (Ready to Feed Alimentum)
    - If still no help, consider ORGANIC Non-GMO Soy Formula (counsel family on avoiding xenoestrogens – BPA, microwaving in plastic)
    - If still no help, then consider Amino Acid Formula
GI - Constipation

Definition: Infrequent defecation, painful defecation, or both.


- Breastfed infant < 3mos.: 2.9 stools/d (may go days w/o)
- Formula fed infant < 3 mos..: 2 stools/d
- 6-12 mos..: 1.8 stools/d
- 1-3 yrs..: 1.4 stools/d
- > 3yrs.: 1.0 stools/d
GI – Constipation
Causes • Newborns

Causes
- Newborns
  - Neurologic
    - Hirschsprung’s (delayed passage of meconium at birth x 48hrs)
    - Spinal dysraphism (spina bifida)
    - Encephalopathy
  - Endocrine
    - Hypothyroid
    - Hypokalemia
    - Diabetes insipidus
    - Hypercalcemia
  - Misc.
    - Congenital anorectal malformation
    - Heavy-metal poisoning
    - Cystic fibrosis
GI – Constipation
Causes • Children

Causes
◦ Children
  ◦ Diet
    ◦ Excessive cow’s milk
    ◦ Cow’s milk protein intolerance
    ◦ Transition from breast to formula
    ◦ Transition from strained to table foods
    ◦ Lack of privacy (starting daycare, school, etc.)
    ◦ Lack of bulk fiber in diet
    ◦ Under-nutrition
    ◦ Dehydration
    ◦ Celiac Disease
    ◦ Medications/Supplements
GI – Constipation
Causes • Children

Causes

- Structural defects
  - Anal stenosis
  - Intussusception
  - Volvulus
  - Malrotation
  - Inflammatory Bowel Disease
  - Imperforate anus
  - Anteriorly displaced anus
  - Anal fissure
  - Many, many more
GI – Constipation
Causes • Children

Causes
- Muscle Diseases
  - Scleroderma
  - Dermatomyositis
  - Lupus
  - Absence of abdominal musculature
- Abnormal myenteric Ganglion cells
  - Hirschsprung’s Disease
  - Chagas' Disease
  - Von Recklinghausen's Disease
  - Multiple Endocrine Neoplasm (MEN) Type 2
GI – Constipation
Causes • Children

Causes
- Spinal Cord defects
  - Spinal dysraphism
  - Spina bifida
  - Myelomeningocele
  - Meningocele
  - Cerebral palsy
  - Many, many more
- Metabolic and endocrine disorders
  - Hypothyroidism
  - Hypoparathyroidism
  - Renal tubular acidosis
  - Diabetes insipidus
  - Vitamin D intoxication
  - Hypercalcemia
  - Hypokalemia
  - CF
  - Uremia
GI – Constipation
Causes • Children

Causes

- Infectious
  - Infant botulism
  - Necrotizing Enterocolitis

- Neurologic OR Psychiatric
  - Myotonic dystrophy
  - Amyotonia congenital
  - Mental retardation
  - Psychosis
  - Prune-Belly syndrome
  - Pseudo-obstruction syndrome
GI - Constipation

Differentiate cause as to functional (95%) or organic (5% - usually in infancy)

- Functional causes
  - Painful defecation (large stools, hard stools)
  - Diet
  - Toilet training fears

Get thorough history and PE

Thorough diet and liquids history is very helpful

Address the cause(s)
GI – Constipation
Conventional Tx

Conventional
- Colon Evacuation (Evidence of fecal impaction: hard mass palpated in rectum, ↑ stool on X-ray)
  - Osmotic Laxatives
    - Polyethylene glycol (MiraLax, Dulcolax Balance): > 6 mos..: 0.5-1.5mg/kg po qd
    - Magnesium hydroxide (Philip's Milk of Magnesia, Fleet Pedia-Lax):
      - 2-6 yrs.: 5-15 mL/d hs OR divided
      - 6-12 yrs.: 15-30 mL/d (400 mg/5mL) or 7.5-15 mL/d (800 mg/5mL) hs OR divided
      - >12 yrs.: 30-60 mL/d (400 mg/5mL) or 15-30 mL/d (800 mg/5mL) hs OR divided
    - Glycerin Suppositories: < 1yr: ½ to 1 infant suppository per rectum/d. Retain x 15 min.
  - Lubricants
    - Mineral oil (Kondremul):
      - <6 yrs.: 15-30 mL/yr. of age po, not to exceed 240 mL/d
      - 6-12 yrs.: 5-15 mL/d po once or divided
      - >12 yrs.: 15-45 mL/d po, single or divided
  - Stimulant Laxatives
    - Senna (Ex-Lax, Senokot, Little Tummys): not for use > 1 week
      - 2-6 yrs.: 4.3-17.2 mg/d po, not to exceed 17.2 mg/d
      - 6-12 yrs.: 6-50 mg/d po, not to exceed 50 mg/d
      - >12 yrs.: 12-100 mg/d po, not to exceed 100 mg/d
GI – Constipation
Conventional Tx, Cont.

Conventional Tx:
- Stool Softeners
  - Docusate sodium (Colace, Docu-Soft, Diocto, DSS):
    - <3 yrs.: 10-40 mg/d po hs or divided q 6 hrs
    - 3-6 yrs.: 20-60 mg/d po hs or divided q 6 hrs
    - 6-12 yrs.: 40-150 mg/d po hs or divided q 6 hrs
    - > 12 yrs.: 50-500 mg/d po hs or divided q 6 hrs
- Removal of Pain-Associated Defecation
  - Once the colon has been evacuated, chronic laxative therapy x several mos. is required
  - If child has fissures, use Xylocaine ointment or hydrocortisone suppositories for a limited time to provide symptomatic relief
- Establishing Regular Bowel Habits
  - Child should attend toilet bid x 5-10 minutes, preferably p-bkfst and supper
  - Once child has passed BM’s regularly x weeks/mos. w/o apparent pain, fear, or excessive straining, attempt to d/c laxative therapy.
- Diet
  - Increase fluid intake
  - Increase carbohydrate/fiber intake
  - Consider temporary removal of cow’s milk protein from the diet. May substitute soy milk
GI – Constipation
Naturopathic Tx

Naturopathic Tx:
- Similar approach to Conventional Tx:
  - Identify the cause!!!
  - Evacuate the colon
  - Soften the stool
  - Re-establish regular bowel habits
  - Diet
GI – Constipation
Naturopathic Tx, Cont.

- Evacuate the colon:
  - See Conventional Tx
  - Breastfed Infants
    - Mom:
      - 1 cup Warm prune juice
      - Tea: Catnip, Chamomile, Melissa, Marshmallow, Fennel, Peppermint (caution in GERD)
      - Increase water consumption
    - Baby:
      - Warm prune, apple, and/or pear juice
      - Puree stewed prunes
      - Diluted tea: Catnip, Chamomile, Melissa, Marshmallow, Fennel, Peppermint (caution in GERD)
      - Slipper elm gruel: Add ½-1 tsp of slippery elm powder to 1 tbsp. water and a pinch of cinnamon and mix 3-4 x/d
      - Abdominal massage in clockwise fashion over large colon
  - Formula Fed Infants
    - See Baby Tx above
Naturopathic Tx:
- Evacuate the colon:
  - Magnesium citrate: 290 mg/30 mL
    - 2-6 yrs.: 60-90 mL po hs OR divided with full glass of water
    - >12 yrs.: 195-300 mL po hs OR divided with full glass of water
- Soften the Stool
  - Flax Oil OR Fish Oil
    - 6-12 mos.: ½ -1 tsp/day
    - 1-6 yrs.: 1-2 tsp/d
    - 6-12 yrs.: 2-3 tsp/d
    - >12 yrs.: 1-2 tbsp/d
  - Magnesium citrate
  - Pumpkin Puree
- Re-establish Regular Bowel Habits: See Conventional Tx
Naturopathic Tx:

- Diet
  - Breast fed infant
    - Remove dairy from mom’s diet
  - Formula fed infant
    - Switch formulas from cow’s milk based formula to casein hydrolysate formula (Alimentum, Nutramigen, etc.). If no improvement, switch to Organic Non-GMO soy. If still no improvement, consider switching to Amino Acid Formula (Elecare, Neocate, etc.).

- Water Intake
  - > 12 mos.: 1/3 of body weight in ounces/day

- Microbiota
  - Re-establish healthy flora environment
    - Lactobacillus acidophilus
    - Bifidobacterium animalis
    - Lactobacillus reuteri
GI - Constipation
Naturopathic Tx, Cont.

Naturopathic Tx:
  ◦ Diet
    ◦ Digestive Enzymes
    ◦ Consider eliminating other potential constipating foods (gluten, bananas, rice, apples, processed foods, etc.)
    ◦ “Constipation Jam”: 1 tbsp. BID followed by 1 c water
      ◦ 1.5 c applesauce
      ◦ ½ c chopped prunes
      ◦ 2 tbsp. slippery elm powder
      ◦ Enough prune juice to make paste consistency
DERM – Diaper Rash

Diaper Rashes
- Contact Dermatitis (Irritant)
- Candida
- Staph
- Seborrheic Dermatitis
- Atopic Dermatitis
DERM – Diaper Rash
Contact (Irritant) Dermatitis

S/Sx: convex surfaces (spares folds), erythematous, papules may be present at periphery, red ring around the anus

Causes: prolonged contact with urine or feces, diarrhea, sensitivity to formula or food in mom’s diet if breastfed, acidic foods in mom’s diet, sensitivity to body soap/laundry detergent/fabric softener/dryer sheets.

Treatment
- Conventional:
  - Barrier Creams
  - Hydrocortisone Ointment 1% OTC: Apply to affected area BID x 7 d
- Naturopathic:
  - Identify Cause
  - Consider switching from cloth to disposable or vice versa
  - Avoid wipes and use warm water rinses
  - Diaper free time
  - Barrier ointment: Vaseline, Aquaphor, Un-petroleum
  - Zinc oxide cream to help heal and repair skin
  - Salve/Cream: calendula, chickweed, comfrey, chamomile, lavender, etc.
DERM – Diaper Rash
Contact (Irritant) Dermatitis

Pattern of Contact (Irritant) Dermatitis
DERM – Diaper Rash Candida

S/Sx: Intense erythema in skin folds extending out with satellite (erythematous papules) lesions present at the periphery, painful.

Assc S/Sx: R/o Thrush

Causes: Vaginal delivery where mom had vaginitis at time of delivery, antibiotic use, secondary to contact/irritant dermatitis

Treatment:
· Conventional:
  · Nystatin diaper cream (100,000 units/g): Apply cream liberally to affected area BID after q diaper change x 14 d
  · Clotrimazole 1%: Apply cream liberally to affected area BID after q diaper change x 14 d
DERM – Diaper Rash Candida

Treatment
- Naturopathic:
  - Apple Cider Vinegar Rinses for diaper area (1 tbsp. vinegar/cup warm water)
  - Calendula cream (1 oz.) with several drops of thyme, oregano, or tea tree oil
  - Calendula cream (1 oz.) with Hydrastis powder
  - Diaper free time
  - Switch diapers from cloth to disposable or vice versa
  - Probiotics po OR topically
  - Sunlight
DERM – Diaper Rash Candida
DERM – Diaper Rash
Staph

S/Sx: Vesicles, pustules, bullae, or crusted lesions. Painful. Abscesses may be noted.

Causes: Staph aureus

Workup: Consider skin culture swab for sensitivity report in severe rashes that may need oral Abx Tx (especially with high incidence of MRSA).

Treatment:
- Conventional
  - Mild-Moderate Infection: Topical
    - Mupirocin 2%: Apply ointment to affected area TID after q diaper change x 10 d
  - Severe Infection +/- systemic signs: Oral
    - Augmentin: dosage based on amoxicillin content
      - < 3 mos.: 30 mg/kg/d po divided q 12 hrs.
      - > 3 mos.: 20 - 40 mg/kg/d po divided TID
DERM – Diaper Rash
Staph

Treatment:

- **Naturopathic:**
  - See Conventional Tx
  - Calendula cream + Zinc oxide cream with Hydrastis powder: Apply to affected area after q diaper change up to QID.
  - Drawing Agents (If abscess is present):
    - Hydrastis powder, Slippery elm powder + Bentonite Clay paste: Mix equal parts and add enough warm water to form a paste and apply to abscess x until paste is dry TID.
    - Potato Poultice: Pierce potato with fork and microwave x 5-10 min until cooked. Peel skin off and scoop out flesh and place in gauze. Place warm poultice over abscess until cool TID.
    - Homeopathic Silica 30c po
    - Warm wet compresses alternatively can have pt sit in warm Epsom salt bath assisted by parent BID-TID.
  - Immune Support: Vitamin D, probiotics, Herbal tea (Echinacea, elderberry, licorice)
  - Sunlight
  - Switch to disposable until diaper rash resolves
  - Diaper free time
DERM – Diaper Rash
Staph

Figure – The superficial, red-based ulcerations on the left buttock of a 3-year-old girl are characteristic of bullous impetigo. (Photo courtesy of Robert P. Blerau, MD.)
DERM – Diaper Rash
Seborrheic Dermatitis

Usually seen in infant aged 2 wks to 3 mos..

S/Sx: yellow, greasy scaling rash starting in the folds extending to convex surfaces

Assc. S/Sx: Cradle cap

Treatment:
- Formula Fed: Switch formulas
  - EFA’s to baby
- Breast Fed: Address potential food allergens in mom’s diet
  - EFA’s to mom
- Salve/Cream: calendula, chickweed, comfrey, chamomile, lavender, etc.
- Wash area with baby shampoo daily if not irritated
DERM – Diaper Rash
Seborrheic Dermatitis

FIGURE 87.3. Salmon-pink patches with greasy scale involve the creases and convexities in seborrheic dermatitis.

AAP. Pediatric Dermatology. 2007.
DERM – Diaper Rash
Atopic Dermatitis

Most often is eczema elsewhere on the body
Fmhx of allergies, eczema, or asthma
Not usually seen in the diaper area
If present, there may be signs of frequent scratching
S/Sx: Erythematous, scaly, weepy, crusty lesions. Usually seen along where the diaper gathers (waist, thighs).
Assc. S/Sx: Eczema

Treatment:
- Conventional:
  - Barrier Creams
  - Hydrocortisone Ointment 1% OTC: Apply to affected area BID x 7 d
DERM – Diaper Rash
Atopic Dermatitis

Treatment:

- Naturopathic:
  - Identify Cause:
    - Formula Fed infant: Switch formulas
    - Breast Fed infant: Address mom’s diet
  - EFA’s for mom and baby
  - Probiotics for mom and baby
  - Zinc for baby
  - R/o sensitivity to soap, lotion, laundry dtgt, fabric softener, dryer sheets.
  - R/o pet allergy, sensitivity to down feathers, dust mite
DERM – Diaper Rash
Atopic Dermatitis

- Naturopathic Tx, Cont.
  - Trial of switching from cloth or disposable to the other diaper
  - Avoid wipes and use warm water rinses
  - Diaper free time
  - Barrier ointment: Vaseline, Aquaphor, Un-petroleum
  - Zinc oxide cream to help heal and repair skin
  - Salve/Cream: calendula, chickweed, comfrey, chamomile, yarrow, lavender, etc.
  - Licorice gel topically
  - Coconut oil topically
DERM – Diaper Rash
All Purpose Diaper Ointment

For rashes that are difficult to identify (may have a little yeast, bacteria, irritation, etc.)

Can be prepared at home, all ingredients OTC

Apply to affected area after q diaper change up to QID until sx’s resolve or up to 7 d.

◦ 1.5 oz. Zinc oxide cream
◦ 0.5 oz. Hydrocortisone 1%
◦ 0.5 oz. Clotrimazole 1%
◦ 0.5 oz. Neosporin

If sx’s worsen, consider MRSA, obtain skin culture and Rx Mupirocin 2% Ointment
DERM - Eczema

S/Sx:
- Acute: weeping, crusting lesions with overlying vesicles
- Subacute: dry, scaling, erythematous papules and plaques or pityriasis alba
- Chronic: lichenification

Locations:
- Non-mobile infant: face and scalp
- Crawling infant: Extensor surfaces of extremities, trunk, face, and neck
- Older child and adolescent: Wrists, ankles, antecubital fossae, popliteal fossae, and neck

DDx: Contact derm, seborrheic derm, dermatitis herpetiformis, impetigo, nummular eczema, psoriasis, scabies, urticarial

Assc. S/Sx: **Impetigo**, allergies, asthma
DERM – Eczema
Conventional Tx

Lukewarm baths x 10-20 min
Mild, unscented soaps
Hydrophobic lotions and creams
Occlusive emollient applied after baths
Bleach baths to reduce incidence of skin infections
  ◦ Add 2 tsp bleach to bathtub full of water
  ◦ Can add 1 c table salt during acute AD to ameliorate stinging during bathing
Wet dressings for both wet and dry eczema
Clip nails to keep short to decrease risk of secondary bacterial infections
OTC Antihistamines to help control the itching
DERM – Eczema
Conventional Tx, Cont.

Medications

- **Topical corticosteroids (Ointment is preferred)**
  - Mild exacerbation: use low potency Hydrocortisone 1% BID x 3-4 d
  - Moderate exacerbation:
    - For face and groin: Hydrocortisone (0.5%, 1%, 2.5%) BID x 7 d then qd x 7 d.
    - For body: Hydrocortisone valerate 0.2% BID x 7 d then qd x 7 d OR
      - Triamcinolone 0.1% BID x 7 d then qd x 7 d
  - Severe exacerbation: Fluticasone 0.005% BID x 7 d then qd x 7 d OR
    - Systemic corticosteroids (if topical high potency steroid doesn’t work)
      - Prednisone/Prednisolone: 0.14-2 mg/kg/d po divided TID x 3-10 d. Taper dosage to prevent exacerbation upon treatment discontinuation.
    - Immunosuppressant (> 2 yrs. old, refractory to topical steroids)
      - Calcineurin Inhibitors: Tacrolimus Ointment 0.03% - Apply thin layer to affected area BID until sx’s resolve not to exceed 6 wks.
DERM – Eczema Naturopathic Tx

Identify the cause: Food allergy/sensitivity/intolerance; environmental allergies; sensitivity to soap, lotion, laundry dtgt, fabric softener, dryer sheets, wool, latex, nylon); dry skin; stress.

Nutritional Recommendations
- Zinc
- EFA’s
- Vitamin D

Antihistamines
- Quercetin
- Butterbur
- Vitamin C

Probiotics
DERM – Eczema
Naturopathic Tx, Cont.

Topicals
- Shea butter
- Coconut oil
- Emu oil
- Salve: calendula, chickweed, comfrey, chamomile, yarrow, lavender, etc.
- Licorice gel

Evaluate and treat for stress

Humidifier in bedroom during the winter months
DERM – Eczema
Prevalence

- Headaches
  - Elementary School: 37-51%
  - High School: 57-82%

  - 2% by ages 3-7yo
  - 7% by ages 7-11yo
  - 20% by ages 11-15yo
NEURO – Headache


- 55% - URI with fever
- 18% - Migraine or Tension HA
- 7% - Viral Meningitis
- 2.5% - Brain Tumor
- 2% - Post-ictal HA following Seizure
- 2% - Post concussive
- 2% - Ventricular shunt malfunction
- 7% - Undetermined cause
NEURO – Headache Causes

Causes:
- Primary Headaches
  - Migraine HA
  - Tension HA: 10-25% of school age kids
- Secondary Headaches
  - URI
  - Acute sinusitis
  - Pharyngitis
  - Dental infections
  - Meningitis
  - Encephalitis
  - Intracranial abscess
  - Intracranial causes
    - Hydrocephalus
    - Cavernous sinus thrombosis
    - Intracranial tumor
    - Nontraumatic Intracranial Hemorrhage

Secondary Headaches
- Food and Diet Causes
  - Alcohol
  - MSG
  - Tyramine-Vasoactive Amines
    - Etoh
    - Cola drinks
    - Bananas
    - Grapes, raisins
    - Plums, prunes, or figs
    - Pineapple
    - Avocado
    - Bean pods
    - Dairy
    - Chocolate
    - Nitrites
    - Soy sauce
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NEURO – Headache Red Flags

Red Flags
- Predictors of space occupying lesion
  - HA worse with lying down or on awakening
  - No Fmhx of migraine HA
  - No visual sx's
  - HA duration < 6 mos..
  - Vomiting
  - Confusion
  - Neuro exam abnormalities

HA’s are present in 62% of children with intracranial mass and 99% have accompanying neuro findings:
- Vomiting (>72%)
- Personality or speech problems, or problems in school (>77%)
- Weight loss (>66%)
- Difficulty walking for age >2 yrs. (77%)
- Upper extremity weakness (>63%)
- Seizures (>6%)
- Diplopia in > 4yo (>60%)
NEURO – Pediatric Migraine

S/Sx:
- Infants: Episodic “head banging”
- Preschool children: ill appearance, abdominal pn, vomiting, need to go to sleep, irritability, crying, rocking, seeking dark room.
- Children aged 5-10: bifrontal, bitemporal, or retro-orbital HA; nausea; abdominal cramping; vomiting; photophobia; phonophobia; need to sleep; migraine facies; tearing; swollen nasal passages; thirst; edema; excessive sweating; increased urination; or diarrhea.
- Older children: increasing HA intensity and duration; pulsating or throbbing character to the HA; and a shift to a unilateral, temporal location.

Duration: 30 minutes to 48 hrs but are usually less than 4 hrs
Conventional Treatment
- Identify migraine triggers
- Decrease caffeine intake
- Medications
  - First Line
    - (Preferred) Ibuprofen – 10 mg/kg q 6 hrs OR
    - Tylenol – 15 mg/kg q 6 hrs
  - Second Line (Combine Ibuprofen with Tylenol) – (Goldstein et al. Headache. 2005;45:973)
  - Third Line
    - Triptans (> 6yrs of age – should consult/refer patients < 12 yo with migraines)
      - Imitrex nasal spray 10 mg (weight 44-85#)
      - Imitrex nasal spray 20 mg (weight > 85#)
NEURO – Pediatric Migraine
Conventional Tx

- Conventional Tx, Cont.:
  - Medications
    - Anti-emetics
    - Prophylaxis: in patients with 1-2 attacks/wk OR (4 or more HA days/mo.)
      - Cyprohepatadine (Periactin): Antihistamine – 0.25 mg/kg and titrate up to 2 mg/kg BID (83% efficacy) (Lewis et al. 2004. Headache 44:230)
      - Amitriptyline
      - Propranolol
      - SSRI
      - Anticonvulsants (Topomax)
      - Riboflavin
      - Tricyclic Antidepressants
NEURO – Pediatric Migraine
Naturopathic Tx

Naturopathic Treatment:

- See Conventional Tx
- Referral to optometrist for routine eye care
- Identify potential food/environmental causes
- R/o nutritional deficiencies and consider therapeutic trial
  - B-12
  - Mg
  - B6
  - CoQ10
  - Riboflavin
- Increase water intake
- Evaluate and Tx for digestive issues (low Hcl, digestive enzymes, etc.)
NEURO – Pediatric Migraine Naturopathic Tx, Cont.

Naturopathic Treatment:
- Evaluate and Tx for Stress
- Balance hormones in teen population
- Melatonin: 0.3 mg/kg q hs. (Fallah et al. Safety and Efficacy of Melatonin in Pediatric Migraine Prophylaxis. Curr Drug Saf. 2014 Jun 5.)
  - 97 children with migraine compared to 96 healthy children
  - SOD and CAT genetic variant was significantly higher in study group than controls
  - Further studies on neural antioxidant capacity and the use of antioxidant modulators for migraine tx are warranted
Naturopathic Treatment

- Botanicals:
  - Antihistamine/Antispasmodic:
    - Butterbur (>6yo): 25-100 mg standardized extract BID qd x 4-6 mos. Then taper until migraine incidence begins to increase. (Pothmann et al. Migraine prevention and adolescents: results of an open study with a special butterbur root extract. Headache. 2005 Mar 4;45(3):196-203.)
    - Feverfew (>2yo): 50-100 mg/d (adult dosage). No studies in children. Do NOT use in ragweed allergy.
  - Relaxants: chamomile, cramp bark, lavender, lemon balm, lobelia (small amounts)
  - Nervines: chamomile, hops, lavender, lemon balm, linden flower, oats, passionflower, skullcap

- Botanical Constituents:

- Botanical Headache Rub: Lavender, Peppermint, Eucalyptus, Calendula, Lobelia, St. John’s wort
  - Rub on forehead, temples, back of neck PRN
Pediatric Dosing Guidelines

Fried’s Rule (Infants up to 2 yrs.): Assuming child is AVERAGE Wt. for age
  ◦ Adult dose x (Child’s Age in Months / 150 #) = Infant’s dose

*Clark’s Rule: More accurate than Fried’s Rule
  ◦ Adult dose x (Child’s Weight in # / 150 #) = Child’s dose

Young’s Rule (1-12 yrs. of age)
  ◦ Adult dose x (Child’s Age / Child’s Age + 12) = Child’s dose

*This is the dosing calculation I prefer to use since weight is a more accurate way to calculate dosage
How to get children to take their supplements

Reward system
- Offering a “gummy vitamin”, sticker, after taking not so good tasting medicine

Preparation and Delivery System
- Use children’s medication cups
- Use infant syringe and syringe into cheek pocket
- Place medicine under the tongue

Adding powders to applesauce/fruit pouch contents/jam/nut or seed butters
- I often will add a little sweetener such as licorice root powder to applesauce to sweeten it a little more

Mixing liquids (tinctures or glycerites) with honey in children > 1yr OR agave in children < 1yr.

Making frozen fruit pops

Choose medicines that don’t taste so bad but if you have to...
- Ex. Andrographis – Crush tablet into a powder and mix with honey. Extremely bitter herb that does not hide well in applesauce

Compounding supplement at the compounding pharmacy
- Ex. L-Tryptophan: pt refused to take no matter how mom prepared it so I called compounding pharmacy and they were able to compound Tryptophan in cherry syrup which pt loved.
How to Perform PE on the Uncooperative Child

Pick up on cues during visit
- Clingy to parents
- Pointing to door
- Irritable

Ask parents how they usually do during Doctor’s visit
- Anxious?
- Nervous?

Have child sit on parent’s lap on the exam table OR if really anxious have them sit on parent’s lap on chair

Offer child a toy/exam glove/tongue depressor to play with during exam

Start with examining parent 1st to show child how easy and noninvasive PE is

May need to start with body system that is chief complaint

Always allow child to search for treasure in treasure box as reward for cooperative behavior