REFERRAL GUIDELINE

PEDIATRIC PULMONOLOGY	CHRONIC COUGH

Background	Chronic cough is one of the most common pediatric symptom prompting medical attention. Cough is most often a benign symptom/condition that requires reassurance. Cough exceeding 4 weeks (the longest most acute respiratory infections in children take to resolve) *may* require further investigation and therapy as outlined below. Cough in combination with other "red flags" require further investigation and therapy as outlined below.
Initial Evaluation	Reassurance vs further investigation is based on history and exam. **History:** Fever, Onset, Duration, Quality/Type, Relieving factors, Exacerbating Factors, Timing, Association, Prior Hx of prolonged cough, Medication trials, Family hx of chronic disease assoc with cough. **Physical Exam:** Temp, RR, Saturations, Cough, Work of Breathing, FB in ear canal, Dennie's lines, Allergic Shiners, Transverse Crease, Pale or erythematous nasal mucosa, post nasal drip, adventitious breath sounds, asymmetric breath sounds, heart sounds, eczema, clubbing, digital cyanosis, edema. **Diagnostic Tests:** (See "Management" and "Pre-visit Work Up" below:) Low threshold to obtain a 2-view CXR and spirometry if available on site. **Disease Entity:** Typical History | Typical Physical Exam Findings **URI or Post Infectious cough:** Particularly with high exposure such as day care and/or school-aged siblings | assoc with coryza | rhinorrhea ect. **ASTHMA:** worse in middle of night and with activity | polyphonic, end-expiratory wheeze. **Protracted Bacterial Bronchitis:** wet cough | chest congestion/rhonchi. **Allergic/Chronic Rhinitis with Post Nasal Drip:** nasal symptoms, allergic salute, symptoms while supine | boggy or pale nasal mucosa, post pharyngeal drainage. **Habit Cough** or **Psychogenic Cough:** Forced, brassy, sometimes honking cough, abolished with sleep and distraction | benign exam and/or slightly inflamed posterior pharyngeal wall. **GERD:** Post prandial heartburn, regurgitation, emesis | benign exam. **Tracheomalacia/Bronchomalacia:** Frequent or recurrent brassy or honking cough | normal or monophonic wheeze. **Pertusis:** Prolonged cough, paroxysms or cough spasms, whoop can be present, apnea in newborns | cough as described above. **Mycoplasma "Walking" Pneumonia:** Fever, chest pain | focal findings on auscultation. **Chronic Rhinosinusitis:** Nasal symptoms, frontal headache in older children| boggy, obstructed nasal mucosa, sinus tenderness. **CF:** Abnormal newborn screen <IRT>, failure to thrive, steatorrhea, meconium ileus | thin, digital clubbing. **Immunodeficiency:** Recurrent sinopulmonary disease | scarred TM's, PE tubes. **Foreign Body:** Sudden onset chocking, coughing spells | asymmetric exam. **Primary Ciliary Dyskinesia:** Previously called **Immotile Cilia Syndrome:** Recurrent OM | scared TM's, PE tubes, Boggy Turbinates, rhonchi or rales, dextrocardia when part of Kartagener Syndrome. **Aspiration:** from swallow dysfunction or congenital malformation such as a laryngeal cleft or H-type tracheoesophageal fistula: Assoc with feeds | focal lung exam (R>L) **OTHER INFECTONS (TB, MYCOSES)** Fever/Chills/Sweats, weight loss | focal lung exam. **Interstitial Lung disease:** Exercise limitation | rales **Tic:** Throat clearing cough while awake, resolves with sleep, other Tics | benign exam

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Initial Management	**URI or Post Infectious cough:** SUPPORTIVE MEASURES. OTC preparations often provide little benefit and pose risks to younger children **Asthma:** consider bronchodialator +/- burst of systemic steroids, (?asthma controller Rx if indicated (ie for "persistent" disease.) **Protracted Bacterial Bronchitis:** Antibiotic trial (eg Augmentin) **Allergic/Chronic Rhinitis with PND:** Nasal Steroid and/or antihistamine. (+/- nasal decongestant ≤ 3 days) Consider allergy referral. **Habit Cough** or **Psychogenic Cough:** Soothe the throat, local anesthetics, counseling. **GERD**: Trial of H2 blocker (e.g. ranitidine) or PPI (e.g. omeprazole) **Tracheomalacia/Bronchomalacia:** Reassurance vs referral for possible airway endoscopy **Pertusis**: Consider PCR, consider macrolide antibiotic. **Mycoplasma "Walking" Pneumonia:** Macrolide antibiotic **Chronic Rhinosinusitis:** Antibiotic trial. **CF:** Sweat test **Immunodeficiency:** Referral (ID or pedi pulm) and/or screening labs such as quantitative immunoglobulins, CBC, post vaccination titers. **Foreign Body:** CXR. If there is a high index of suspicion for foreign body then patient should be directed to ED (if stable) for eval with "airway team" for possible rigid bronchoscopy. **Primary Ciliary Dyskinesia:** Previously called **Immotile Cilia Syn:** Referral to ped pulm. **Aspiration:** Modified barium swallow study vs esophagram vs referral to peds GI vs referral to pedi pulm) **Other Infections (TB, mycoses:)** Antimicrobial Therapy; consider referral to ID vs ped pulm. **Interstitial Lung disease:** Referral for further evaluation & consideration of CT scan. **Tic:** Referral to Pedi Neuro vs Referral to Child Psych	
Pre-Visit Work Up	**When indicated consider the following;** - **Labs:** CBC, CRP, Gold interferon, Mycoplasma titers, IgE, Immune w/u (eg. Quant Ig's, Td/Pn titers, CH50, C3/C4) - **CXR:** Low threshold to obtain PA & lateral. If referral is imminent/pending/in-process can defer to pedi pulm as part of initial consult. (Decubitus or exp films for hyper-expansion in the context of foreign body. - **Spirometry:** If clinic proficient in pediatric testing. - **Other:** PPD (especially if three is exposure.) Sputum culture, Cocci titers, Sweat test - **Sinus xrays** (high false positives)	
When to Refer	– Cough > 4 weeks without improvement or response to therapy. – Neonatal onset – Severe Symptoms. – FTT/Growth Retardation – Persistent Purulent Sputum – Hypoxemia – Persistent Chest Pain – Cough with feeding (Pulm vs GI vs SLP) – Sudden onset cough – Associated night sweats/weight loss	– Continuous unremitting or worsening cough – Signs of chronic lung disease. – Persistent or recurring infiltrate on CXR – Apparent need for airway endoscopy – High index of suspicion for foreign body - Refer immediately (see comments in 'Initial Management' above.) * Consider referral to GI for hx c/w GERD unresponsive to Rx * Consider referral to ALLERGY for s/s c/w allergic rhinitis assoc with PND

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Co-management Strategy (as appropriate)	**Specialist scope of care** Further diagnostic testing and intervention as indicated.	**Primary care scope of care** Re-evaluate for emergence of specific etiologic pointers.
Return to Primary Care Endpoint	Resolution of cough in the absence of a chronic condition requiring ongoing pedi pulm care.	
Guidelines Referenced	Chang AB, Glomb WB. Guidelines for evaluating chronic cough in pediatrics: ACCP evidence-based clinical practice guidelines. Chest 2006; 129:260S. http://journal.chestnet.org/article/S0012-3692(15)52858-4/pdf Shields MD, Bush A, Everard ML, et al. BTS guidelines: Recommendations for the assessment and management of cough in children. Thorax 2008; 63 Suppl 3:iii1. http://thorax.bmj.com/content/thoraxjnl/63/Suppl_3/iii1.full.pdf	