Optimizing Treatment of Pediatric ARTIs

A UF Health Initiative

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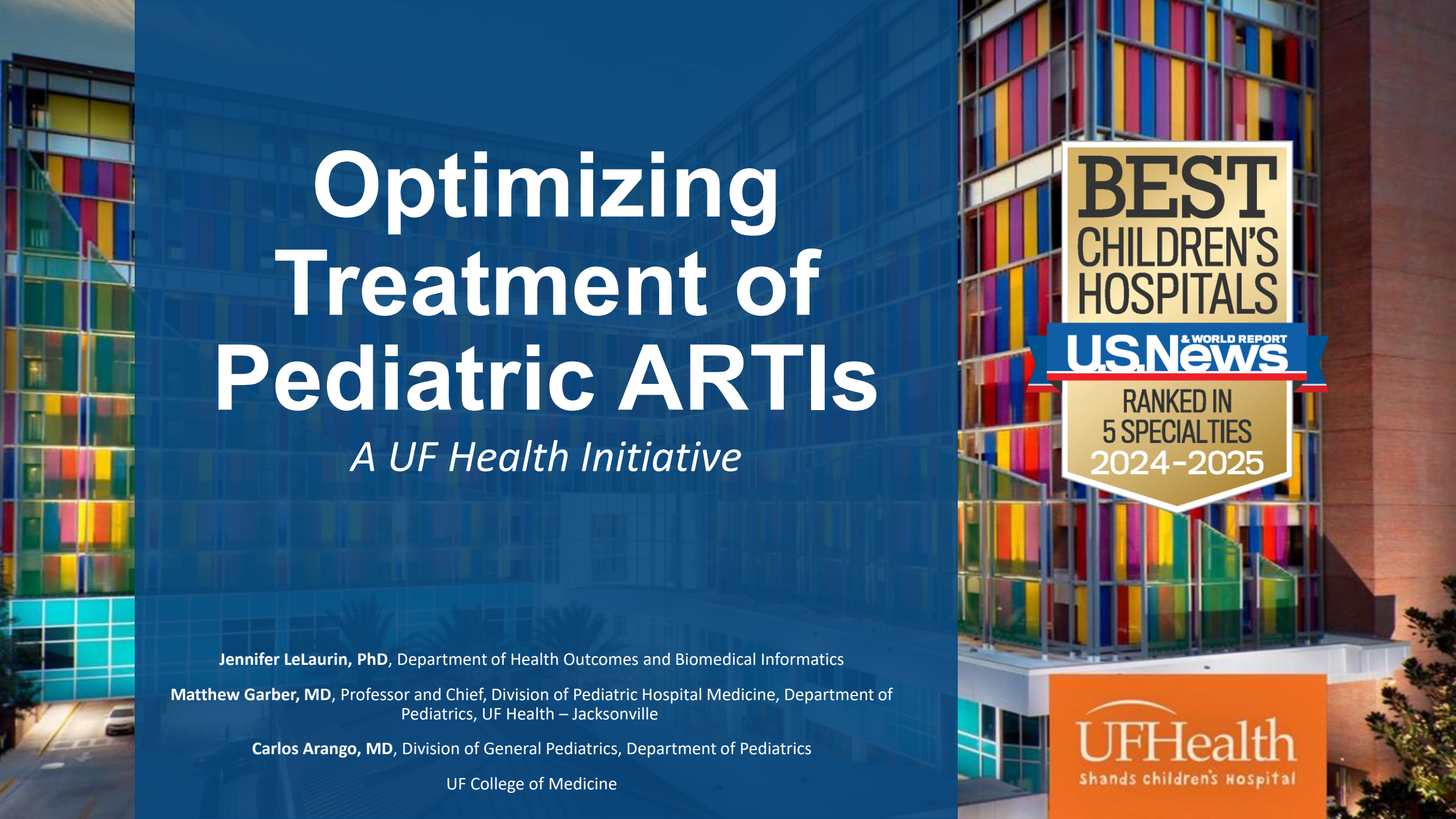

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John Hollingsworth, MD, MSc

Professor & Chief Quality Officer for UF Health

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Learning Objectives

1. **Identify key risks** of inappropriate antibiotic use in children with acute respiratory tract infections (ARTIs)
2. **Summarize best practice guidelines** and recent comparative research findings on the use of broad- vs. narrow-spectrum antibiotics for pediatric ARTIs
3. **Learn about ambulatory-based strategies**, including EPIC tools and clinical decision support, to improve antibiotic prescribing practices
4. **Develop and implement** viable strategies to advance the adoption of new evidence in health care.
5. **Promote uptake of findings** from PCORI-funded research through implementation projects.

PCORI Health Systems Implementation Initiative (HSII)

Goals

- **Develop and implement viable strategies** to advance the adoption of new evidence in health care delivery
- **Promote uptake of findings** from PCORI-funded research through implementation projects
- **Leverage on-the-ground experience** to facilitate change
- **Lay groundwork** for further scale-up

Master Funding Agreement

- Implementation projects
- Learning Network

UF Health Team:

- PI: John Hollingsworth, MD (Chief Quality Officer)
- CTSI Learning Health System Program, informatics, care delivery teams

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HSII ARTI Implementation Project Goals

Objective: Improve antibiotic stewardship in the ambulatory setting among children aged 6 months to 12 years with ARTIs by promoting adherence to evidence-based practices for antibiotic prescribing

Goal	JAX Peds CY24	System Target
1. Increase the proportion of viral ARTIs **with no antibiotic prescribed**	**87%**	**95%**
2. Increase the rate of **narrow-spectrum (first line) antibiotics** prescribed as a proportion of all antibiotics prescribed for:	**72%**	**75%**
Acute otitis media	***57%***	***80%***
Group A streptococcal pharyngitis	***89%***	***95%***
Acute sinusitis	***52%***	***80%***
Pneumonia	***42%***	***80%***

Scope: 26 clinics – GNV/JAX Pediatric Primary Care, Family Medicine, and Pediatric ED

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Our Patient: 11-year-old with cough & right ear pain

- **CC:** Cough & Ear Pain
- **HPI:** Arti Test two is a previously healthy 11-year-old male who presents to the clinic today with worsening cough and new onset right ear pain over the past two days, but no problems with his breathing. Of note, his sister had similar symptoms last week and was diagnosed with Influenza A. He had a runny nose and body aches earlier this week, but both symptoms have improved.
- **PMHx:** 1-2 ear infections as a toddler, but has not had additional infections, ear or other, in the past 2 years requiring any antibiotics.
- **Allergies:** NKDA

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Antibiotic use in ARTIs

Antibiotics are the most common medication class prescribed for children

Treatment of ARTIs accounts for the majority of antibiotic use

Professional guidelines recommend narrow-spectrum antibiotics as first line for otitis media, sinusitis, GAS pharyngitis and pneumonia

Yet first line recommended antibiotics are only prescribed about 50-67% of the time in children

Overuse of broad-spectrum antibiotics can lead to antibiotic resistance, drug-related adverse events and increased cost

Chai et al, *Pediatrics.* 2012
Hersh et al, *Pediatrics*. 2011
Hersh et al, *JAMA Intern Med*. 2016

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Broad-spectrum antibiotics are not more effective than narrow-spectrum antibiotics in children with ARTI

Table 2. Clinical Outcomes Among 30 086 Children in the Retrospective Cohort

	No. (%)		Stratified Analysis[a]		Full Matched Analysis[b]	
	Broad-Spectrum Antibiotics (n = 4296)	Narrow-Spectrum Antibiotics (n = 25 790)	Risk Difference (95% CI), %[c]	*P* Value	Risk Difference (95% CI), %[c]	*P* Value
Primary Outcomes at 14 d						
Treatment failure[d]	147 (3.4)	809 (3.1)	0 (−0.6 to 0.7)	.88	0.3 (−0.4 to 0.9)	.39
Adverse events[e]	157 (3.7)	695 (2.7)	0.9 (0.3 to 1.6)	.001	1.1 (0.4 to 1.8)	<.001
Secondary Outcomes at 30 d						
Treatment failure[d]	372 (8.7)	2082 (8.1)	0.3 (2.6 to 2.8)	.51	0.6 (−0.4 to 1.6)	.22
Adverse events[e]	189 (4.4)	849 (3.3)	1.1 (0.4 to 1.8)	.001	1.2 (0.5 to 1.9)	<.001

Gerber et al, *JAMA*. 2017

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Broad-spectrum antibiotics not associated with better patient-centered outcomes in children with ARTI

Table 4. Patient-Centered Outcomes in the Prospective Cohort

Outcome	No./Total (%)[a]		Stratified Analysis[b]		Full Matched Analysis[c]	
	Broad-Spectrum Antibiotics	Narrow-Spectrum Antibiotics	Risk Difference (95% CI), %[d]	*P* Value	Risk Difference (95% CI), %[e]	*P* Value
Missed school or day care	305/702 (43.4)	503/1199 (42.0)	2.5 (−3.9 to 9.0)	.45	2.4 (−3.1 to 7.9)	.39
Required additional childcare	220/701 (31.4)	390/1190 (32.8)	−0.2 (−5.7 to 5.2)	.94	1.5 (−3.9 to 6.8)	.59
Experienced adverse events	258/725 (35.6)	341/1360 (25.1)	11.6 (6.0 to 17.2)	<.001	12.2 (7.3 to 17.2)	<.001
Symptoms present on day 3[f]	267/647 (41.3)	427/1128 (37.9)	2.3 (−4.5 to 9.1)	.50	4.9 (−0.8 to 10.6)	.09
Sleep disturbance	378/860 (44.0)	582/1570 (37.1)	4.6 (−0.5 to 9.6)	.08	4.6 (−0.3 to 9.6)	.07
Pediatric Quality of Life Inventory score[g]	(n = 860) 90.2 (10.5)[h]	(n = 1570) 91.5 (9.4)[h]	−1.6 (−2.8 to −0.5)[i]	.006	−1.4 (−2.4 to −0.4)[j]	.008

Gerber et al, *JAMA*. 2017

UF Health Pediatric Antibiotic Stewardship Project

UF HEALTH PEDIATRIC ANTIBIOTIC STEWARDSHIP PROJECT

Overview

In this PCORI-funded project, UF Health will put in place a program to improve antibiotic prescribing for children with acute respiratory tract infections (ARTIs) in outpatient settings in two states, drawing on findings from PCORI-funded research comparing the use of broad-spectrum and narrow-spectrum antibiotics in this population.

EDUCATION & RESOURCES

DEMO: SMARTSETS & EXPRESS LANES

Clinician Education & Resources

CLINICIAN RESOURCE

Clinical Pathway Protocols

The Clinical Pathway Protocols developed for the ARTI project served as the foundation for the Clinical Decision Support tools developed in Epic. The pathways were reviewed and approved by the UF Shands' Antimicrobial Stewardship Committee and can be found on the Antimicrobial Management Program's UF Health Bridge website (requires UFH VPN login). Individual links are provided below:

- Pediatric – Acute Bacterial Rhinosinusitis
- Pediatric – Antibiotic Treatment of Acute Otitis Media
- Pediatric – Community-Acquired Pneumonia
- Pediatric – Group A Streptococcal Infection
- Pediatric – Viral Upper Respiratory Tract Infection

CLINICIAN TRAINING AND EDUCATION

Pediatric Grand Rounds Presentations

The main takeaway of this teaching session is that appropriate antibiotic prescribing for pediatric ARTIs is critical to reducing unnecessary broad-spectrum use and preventing antibiotic resistance. Clinicians will learn best practice guidelines and become familiar with EHR tools that support consistent, evidence-based decision making to maximize prescribing success. The ultimate goal is to optimize antibiotic selection for pediatric ARTIs while ensuring safe, effective, and high-value care.

- UF Health Gainesville Grand Rounds Recording – 10/9/2025 (requires UFH VPN login)
- Grand Rounds Presentation Slide Deck

Demo Videos: SmartSets & Express Lanes

DEMO – SMARTSETS & EXPRESS LANES

Test Case One: 7yo with chief complaint of fever

- **Chief Complaint (CC):** Fever
- **History of Present Illness (HPI):** Previously healthy 7-year-old female presents to the clinic with a fever up to 39°C for the past two days. She also has a one-day history of severe left ear pain that is significant enough to interfere with her sleep, and her symptoms have kept her out of school. She had a runny nose and cough earlier this week, but they have both improved.
- **Past Medical History (PMHx):** 1-2 ear infections as a toddler, but has not had additional infections, ear or other, in the past 2 years requiring antibiotics.
- **Allergies:** No Known Drug Allergies (NKDA)

DEMO – SMARTSETS & EXPRESS LANES

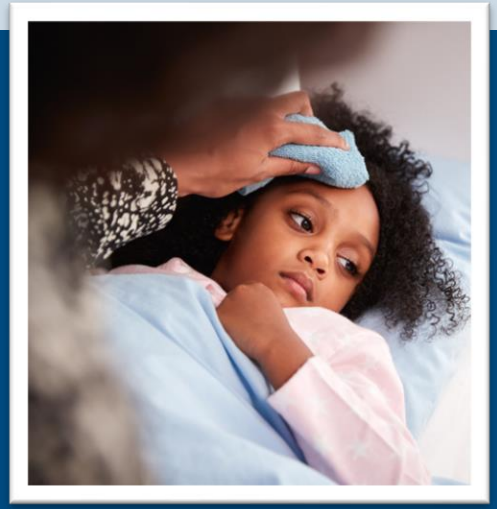
Test Case Two: 11yo with chief complaint of cough and ear pain

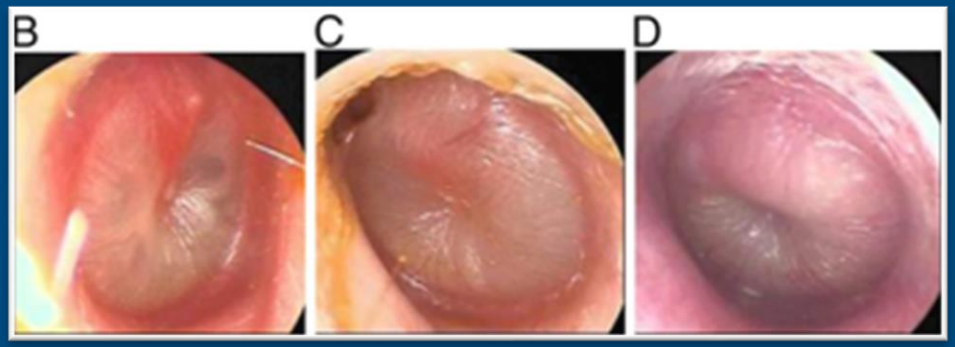
- **CC:** Cough and Ear Pain
- **HPI:** Previously healthy 11-year-old male who presents to the clinic today with worsening cough and new onset right ear pain over the past two days, but no problems with his breathing. Of note, his sister had similar symptoms last week and was diagnosed with Influenza A. He had a runny nose and body aches earlier this week, but both symptoms have improved.
- **PMHx:** 1-2 ear infections as a toddler, but has not had additional infections, ear or other, in the past 2 years requiring any antibiotics.
- **Allergies:** NKDA

Acute Otitis Media (AOM)

Eligibility Criteria:

- **Inclusion:** children aged 6 mos - 12 y with AOM in the ambulatory setting
- **Exclusion:** children without middle ear effusion or children with tympanostomy tube otorrhea





Diagnosis:

- Moderate to severe bulging of the tympanic membrane (TM)
- New onset of otorrhea not caused by acute otitis externa, or
- Mild bulging of the TM with recent (< 48 hours) otalgia or intense erythema of TM

Image: Figure 2. AAP Clinical Practice Guideline: The Diagnosis and Management of Acute Otitis Media. *Pediatrics*. 2013

APPENDIX A: TREATMENT OF ACUTE OTITIS MEDIA (AOM) IN CHILDREN

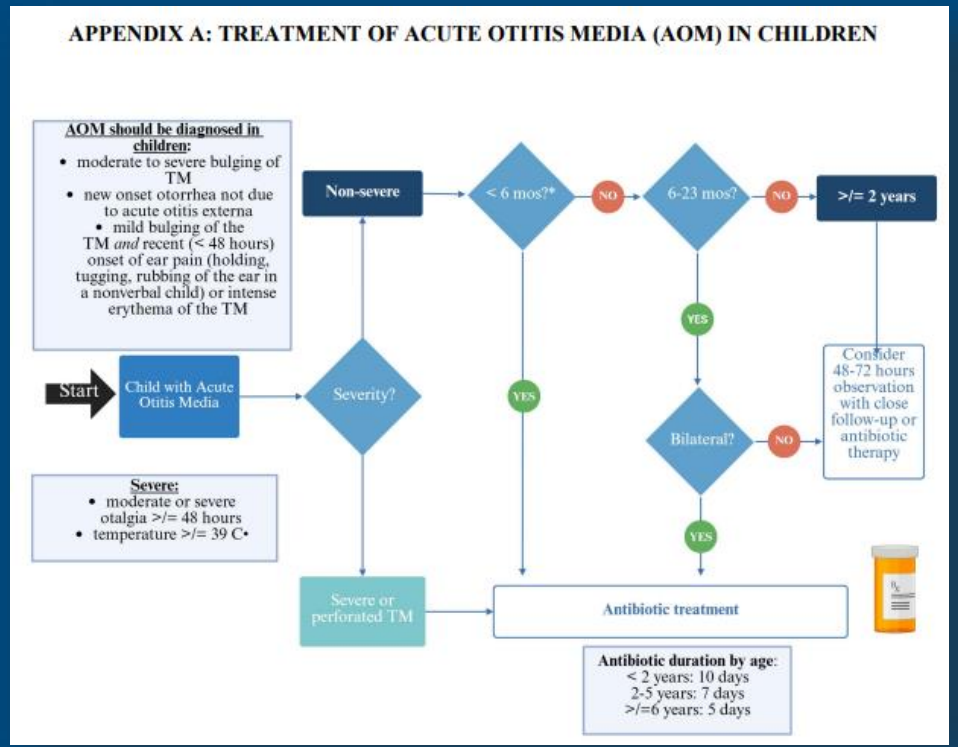
AOM treatment indications

Immediate Antibiotic Therapy:

- Children ≥ 6 months with severe signs or symptoms
  - Moderate to severe otalgia
  - Otalgia lasting 48 hours or more
  - Temperature ≥ 39°C/102.2°F
- Bilateral AOM in children aged 6-23 months without severe signs or symptoms

Antibiotic therapy or observation with close follow-up:

- Unilateral AOM in children aged 6–23 months without severe signs or symptoms.
- Children aged 24 months or older without severe signs or symptoms (e.g., mild otalgia for <48 hours, temperature <39°C [102.2°F])



AOM Antibiotic Therapy

First line therapy

Amoxicillin is preferred choice if:

- No amoxicillin received in the past 30 days
- No concurrent purulent conjunctivitis

Alternative Therapy

Prescribe amoxicillin-clavulanate if:

- Amoxicillin received in the last 30 days
- Concurrent purulent conjunctivitis
- History of recurrent AOM unresponsive to amoxicillin

Penicillin Allergies

Non-severe (Non-Type I) allergy:

- Third-generation oral cephalosporin

Severe (Type I) hypersensitivity:

- Use azithromycin, clindamycin, or a respiratory fluoroquinolone (levofloxacin)

AAP Clinical Practice Guideline: The Diagnosis and Management of Acute Otitis Media. *Pediatrics*. 2013
AAP Red Book: 2024–2027
CDC Antibiotic Prescribing and Use for Pediatric Outpatients

AOM Antibiotic Therapy

AOM	First-line treatment of AOM	Alternative therapy for Beta-lactam allergy
Initial therapy if no amoxicillin in the prior 30 days	**Amoxicillin, PO** < 3 months*: 30 mg/kg/day in 2 divided doses ≥ 3 months*: 90 mg/kg/day in 2 divided doses (max 2,000 mg/dose)	**NON-SEVERE PCN ALLERGY:** **Cefdinir, PO** ≥ 6 months: 14 mg/kg/ day divided twice daily for 5-10 day duration **or** 14 mg/kg/dose daily for 10 day durations (max 600 mg/day) **Cefpodoxime, PO** ≥ 2 months: 10 mg/kg/day in 2 divided doses (max 200 mg/dose) **SEVERE PCN ALLERGY:** **Clindamycin, PO** 30 mg/kg/day divided 3 times a day (max 600 mg/dose) **Azithromycin, PO** 10 mg/kg once on day 1 (max 500 mg/dose), then 5 mg/kg once per day on days 2 through 5 (max 250 mg/dose)
Initial therapy if Amoxicillin received in the preceding 30 days or has concurrent conjunctivitis (suggests beta-lactamase producer)	**Amoxicillin-Clavulanate, PO** < 3 months*: 30 mg/kg/day of amoxicillin component in 2 divided doses ≥ 3 months*: 90 mg/kg/day of amoxicillin component in 2 divided doses Max: 2,000 mg/dose For oral of Amoxicillin-Clavulanate suspension, use ES formulation and for tablet, use ER formulation	
Amoxicillin failure	**As above for Amoxicillin-Clavulanate**	N/A
Amoxicillin-clavulanate or oral cephalosporin failure	**Ceftriaxone, IV or IM:** 50 mg/kg daily for 3 days (max 1,000 mg/dose)	**Levofloxacin, PO:** ≥ 6 months and < 5 years: 20 mg/kg/day divided twice daily (max 375 mg/dose) ≥ 5 years: 10 mg/kg/dose daily (max 750 mg/dose)

*Infants < 6 months are excluded from pathway, but dosing guidance is provided for young infants, as clinically indicated

Group A Strep (GAS) pharyngitis

Eligibility Criteria:

- **Inclusion:** children aged 6 mos - 12 y in the ambulatory setting
- **Exclusion:** peritonsillar abscess or deep space neck infection (e.g., parapharyngeal or retropharyngeal abscess)

Clinical Criteria:

Routinely consider testing in children with acute onset sore throat and clinical features such as:

- Fever
- Headache
- Emesis
- Abdominal pain
- Rash
- Pharyngeal exudate
- Enlarged tonsils
- Tender cervical adenopathy

CDC Clinical Guidance for Group A Streptococcal Pharyngitis

GAS pharyngitis diagnosis

Diagnosis:

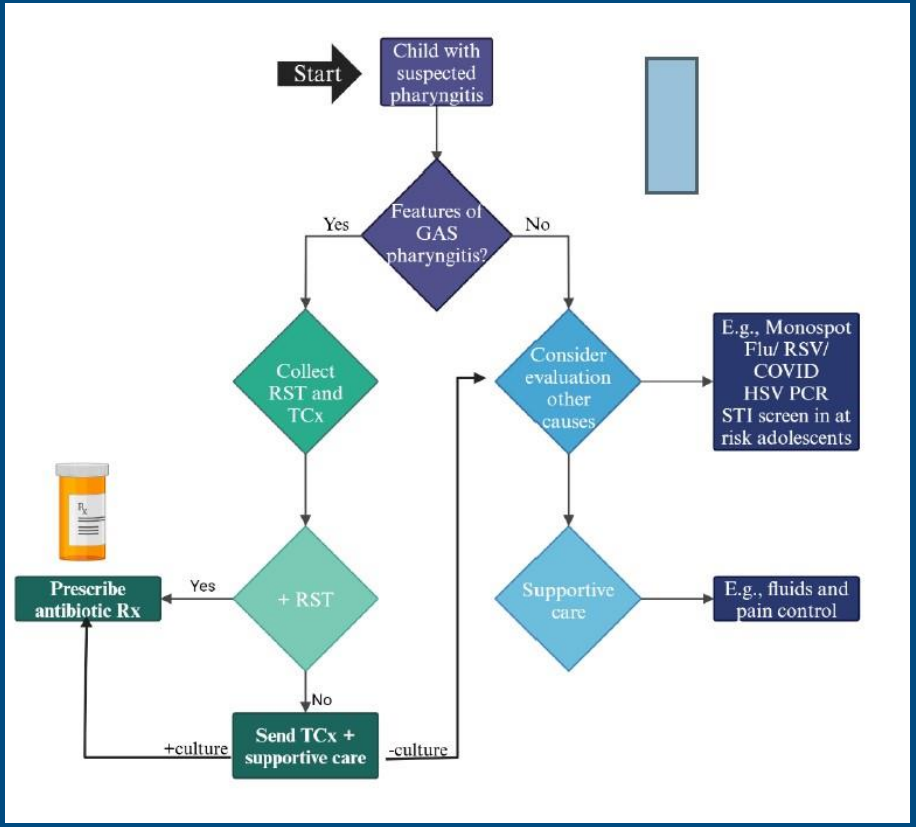
- Laboratory confirmation is needed to diagnosis GAS before initiating treatment, clinical features alone do not reliably distinguish between GAS and viral pharyngitis)

DO NOT:

- Do not routinely test children under 3 years unless there is a household member with GAS infection
- Do not routinely test children with obvious viral features

Backup culture:

- A throat culture should be sent in children with a negative rapid Streptococcal test



https://www.ctsi.ufl.edu/wordpress/files/2025/11/HSII_ARTI_GAS_CPP_V1.0_13JUN2025.pdf

GAS pharyngitis antibiotic therapy

First-line treatment of GAS infection:	Alternative therapy for Beta-lactam allergy:
Amoxicillin, PO 50 mg/kg/day divided once or twice daily (max 1,000 mg/day) x 10 days **Penicillin VK, PO** Children ≤ 27 kg: 250 mg two times daily x 10 days Children > 27 kg, adolescents, and adults: 500 mg two times daily <u>Children who cannot tolerate enteral therapy:</u> **Benzathine Penicillin G, IM** Children < 27 kg: 0.6 million units as a single dose Children ≥ 27 kg, adolescents, and adults: 1.2 million units as a single dose	<u>Non-type 1 hypersensitivity to penicillin</u>: **Cephalexin, PO** 20 mg/kg/dose twice daily (max =500 mg/dose) x 10 days <u>Type I hypersensitivity to penicillin:</u> **Clindamycin, PO** 21 mg/kg/day divided 3 times daily (max = 300 mg/dose) x 10 days **Azithromycin, PO** 12 mg/kg once daily (max = 500 mg) x 5 days

Update by the Infectious Diseases Society of America. *CID,* 2012
CDC Antibiotic Prescribing and Use for Pediatric Outpatients

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Acute Bacterial Rhinosinusitis

Eligibility Criteria:

- **Inclusion:** 6 mos - 12 yrs in the ambulatory setting
- **Exclusion:** Toxic-appearing children, anatomic facial abnormalities or trauma, immunocompromised children, impaired airway clearance, preseptal/orbital cellulitis, or chronic sinusitis

Diagnosis:

- **Persistent Illness:** Nasal discharge and/or daytime cough for ≥ 10 days without improvement
- **Worsening Course:** New onset or worsening nasal discharge, cough, or fever after initial improvement
- **Abrupt Onset:** Concurrent fever and purulent nasal discharge for ≥ 3 days

ABRS treatment

APPENDIX C: TREATMENT OF ACUTE BACTERIAL RHINOSINUSITIS (ABRS) IN CHILDREN

Consider acute bacterial sinusitis when a child with an acute upper respiratory infection presents with:

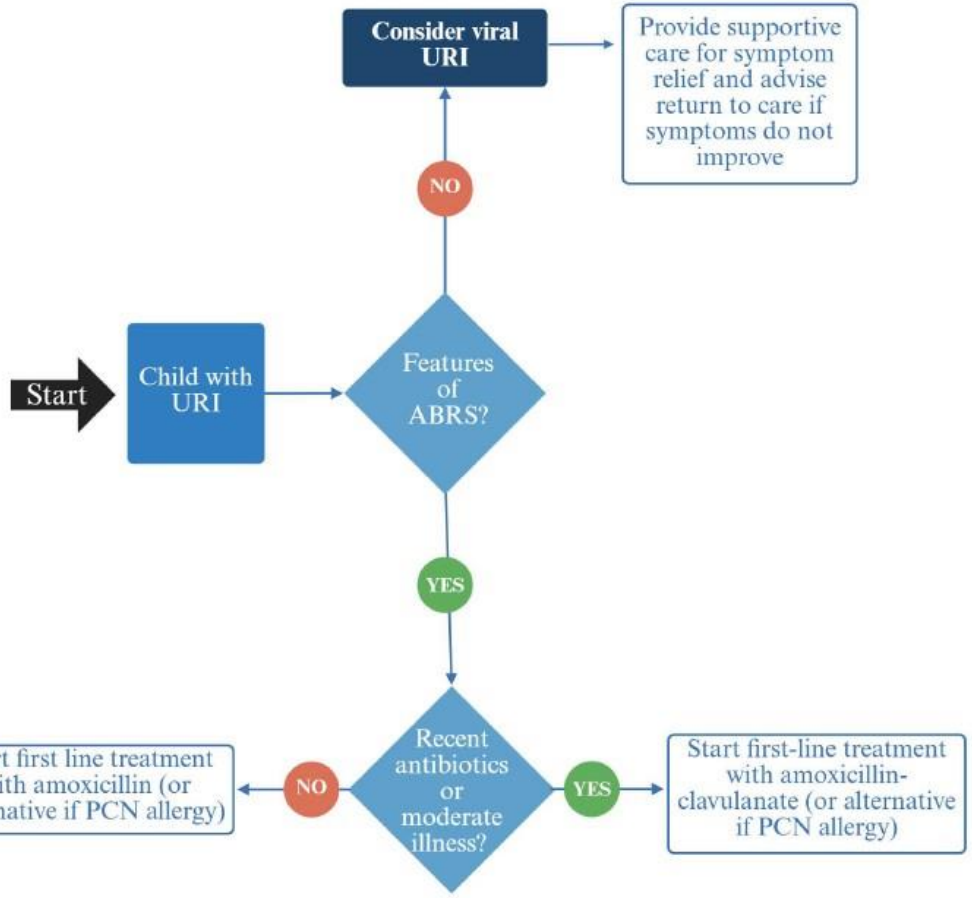
Persistent Illness: i.e. nasal discharge (of any quality) or cough or both lasting more than 10 days without improvement

OR

Worsening Course: i.e. worsening or new onset of nasal discharge, cough, or fever after initial improvement

OR

Abrupt Onset: i.e. concurrent fever (temp. > 39C/102.2F) and purulent nasal discharge for at least 3 consecutive days



Severe/ Alarm symptoms

Refer patients to the ED:

- toxic appearance
- peri/orbital edema
- frontal swelling
- proptosis
- severe headache
- ophthalmoplegia, double vision
- altered mental status
- meningeal signs

For clinical worsening or failure to improve after 72 hours of antibiotics:

- Broaden to amoxicillin-clavulanate or second line therapy
- Refer patients with refractory symptoms or recurrent disease

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ABRS treatment

First line therapy

- Amoxicillin if non-severe + no abx the past 30 d
- Amoxicillin-clavulanate for moderate illness or recent antibiotic exposure

Penicillin Allergies

- **Non-severe (Non-Type I) allergy:** Third-generation oral cephalosporin (e.g. cefdinir or cefpodoxime). For moderate illness, consider adding clindamycin
- **Severe (Type I) hypersensitivity:** Use a respiratory fluoroquinolone (levofloxacin)

Treatment Duration

- Standard: 10 days
- Shorter course: Consider 5 to 7 days for milder cases

ABRS antibiotic therapy

First-line treatment of non-severe ARBS	Alternative therapy for Beta-lactam allergy**:
Amoxicillin, PO 90 mg/kg/day divided twice daily (max 2,000 mg/day) x 5-10 days*	**NON-SEVERE PENICILLIN ALLERGY** **Cefdinir, PO** 14 mg/kg/day in one or two divided doses (max 600 mg/day) x 5-10 days*, OR **Cefpodoxime, PO** 10 mg/kg/day PO in two divided doses (max 400 mg/day) x 5-10 days* For moderate illness, consider combination therapy with a third-generation cephalosporin (as above) plus clindamycin: **Clindamycin, PO** 30 mg/kg/day PO in three divided doses x 10 days* SEVERE PENICILLIN ALLERGY **Levofloxacin, PO** 10-20 mg/kg/day (max 500 mg/day) in one or two divided doses x 10 days*
Moderate illness, recently treated with an antimicrobial or failure to improve: **Amoxicillin-clavulanate [14:1]#, PO** 90 mg/kg (max 2000 mg/dose) per day in 2 divided doses x 5-10 days* (max 4g/ day)	
Vomiting or unable to tolerate oral medication: **Ceftriaxone, IM/ IV** 50 mg/kg x 5-7 days (max 4 g/day) can be used and then can be switched to oral antibiotics once improving	

IDSA Guidelines, *CID,* 2012
AAP Clinical practice Guideline. *Pediatrics*, 2013
CDC Antibiotic Prescribing and Use for Pediatric Outpatients

Community Acquired Pneumonia (CAP)

Eligibility Criteria:

- **Inclusion:** children aged 6 mos - 12 yrs in the ambulatory setting
- **Exclusion:** pneumonia onset ≥ 48 hours after hospital admission, aspiration pneumonia, immunocompromised children, chronic lung disease, tracheostomy presence, or complicated pneumonia (e.g. lung abscess or parapneumonic effusion)

Diagnosis:

- Consider in children with fever, cough, and abnormal clinical examination findings of lower airway disease

Image: Durbin et al, PIR, 2008

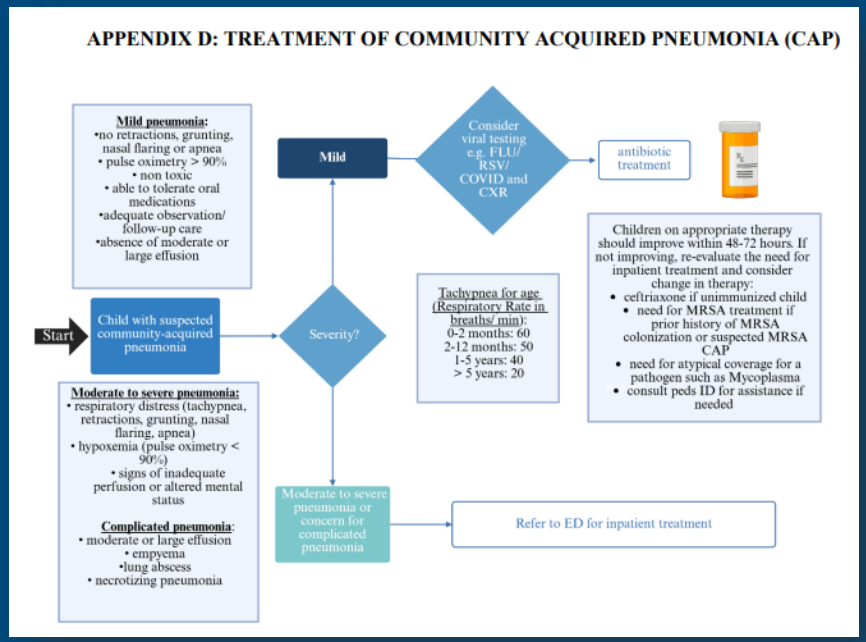
CAP treatment

First Line Treatment

- High-dose amoxicillin

Penicillin Allergies:

- **Non-severe (Non-Type I) allergy:** Second or third-generation oral cephalosporin (e.g., cefdinir or cefpodoxime)
- **Severe (Type I) hypersensitivity:** Use clindamycin or levofloxacin



CAP antibiotic therapy

First-line treatment of mild CAP:	Alternative therapy for Beta-lactam allergy:
Amoxicillin, PO 90 mg/kg/day divided twice or three times daily (max 4,000 mg/day) x 5 days	**NON-SEVERE PCN ALLERGY** **Cefpodoxime, PO** 10 mg/kg/day divided q12hrs (max 200 mg/dose)
Atypical pneumonia **Azithromycin, PO** 10 mg/kg/dose on day one (max 500 mg/day) followed by 5 mg/kg/dose once daily on days 2-5 (max 250 mg/day) **Levofloxacin, PO** < 50 kg: 16 mg/kg in 2 doses, max 500 mg per day >/= 50 kg: 500 mg per dose, once daily	**Cefdinir, PO*** 14 mg/kg per day in 2 divided doses (max 600 mg/day) **SEVERE PCN ALLERGY** **Clindamycin, PO** 30 mg/kg/day divided 3 times daily (max = 600 mg/dose) x 10 days **Levofloxacin, PO** < 50 kg: 16 mg/kg in 2 doses, max 500 mg per day >/= 50 kg: 500 mg per dose, once daily

*Cefdinir has decreased bioavailability, higher protein binding and shorter half-life than cefpodoxime

IDSA Guidelines, *CID,* 2011
Williams et al. *JAMA*, 2021

Viral upper respiratory infection

Eligibility Criteria:

- **Inclusion:** children aged 6 mos - 12 yrs within the ambulatory setting
- **Exclusion:** toxic-appearing children, children with bacterial URIs

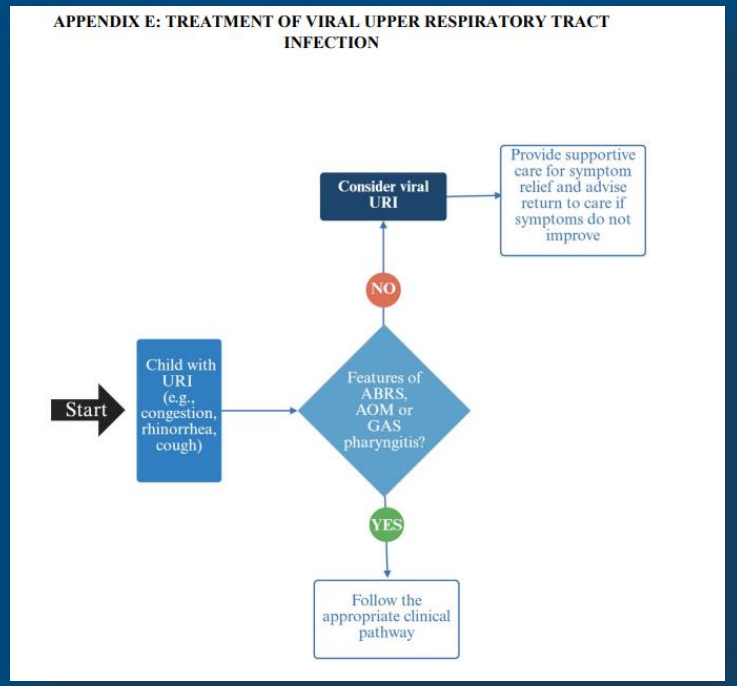
Course of Illness:

- Typically lasts 5 to 7 days
- Often present with nasal discharge, congestion, and cough
- Fever, if present, typically occurs early in the illness

Viral upper respiratory infection treatment

Management:

- **Do not** prescribe antibiotics for uncomplicated viral URIs
- **Focus on supportive care**
- **For prolonged cough, consider testing** for *Bordetella pertussis*, *Bordetella parapertussis*, *Mycoplasma pneumoniae*, and/or *Chlamydia pneumoniae*, and initiate appropriate antimicrobial therapy if indicated



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Clinical Practice Pathways

- Clinical Practice Pathway: Viral Upper Respiratory Tract Infection (URI)
- Clinical Practice Pathway: Group A Streptococcal (GAS) Infection
- Clinical Practice Pathway: Community-Acquired Pneumonia (CAP)
- Clinical Practice Pathway: Acute Bacterial Rhinosinusitis (ABRS)
- Clinical Practice Pathway: Antibiotic Treatment of Acute Otitis Media

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Carlos A. Arango, MD

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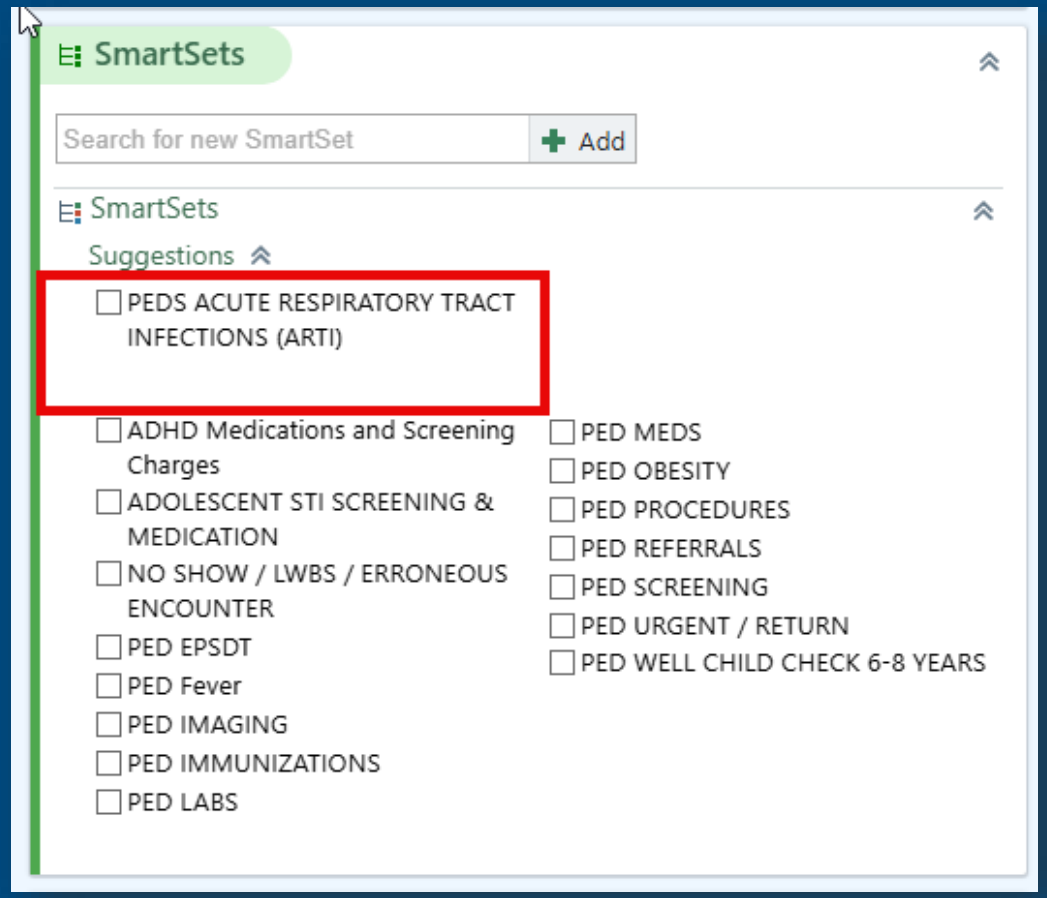
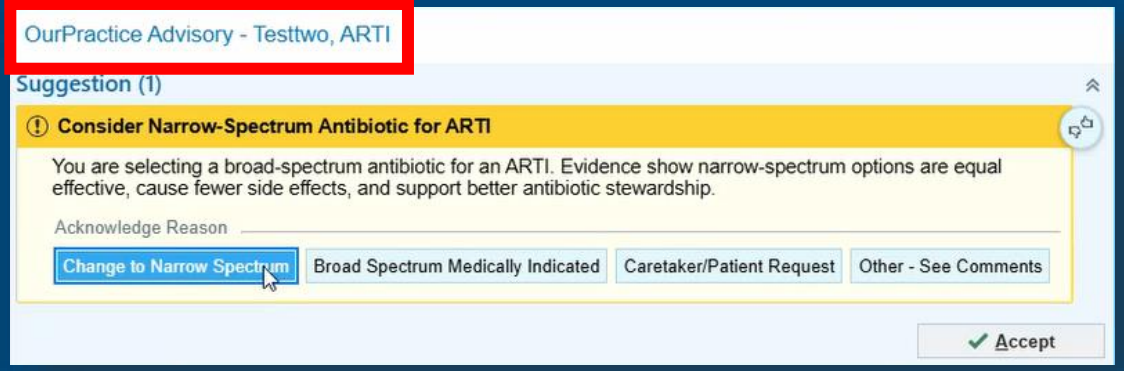
Leveraging EPIC to Help: Smart Set

EPIC Smart Set



EPIC Our Practice Advisory (OPA)



11-year-old with a CC: Ear pain

EPIC Smart Set

SmartSets

Search for new SmartSet + Add

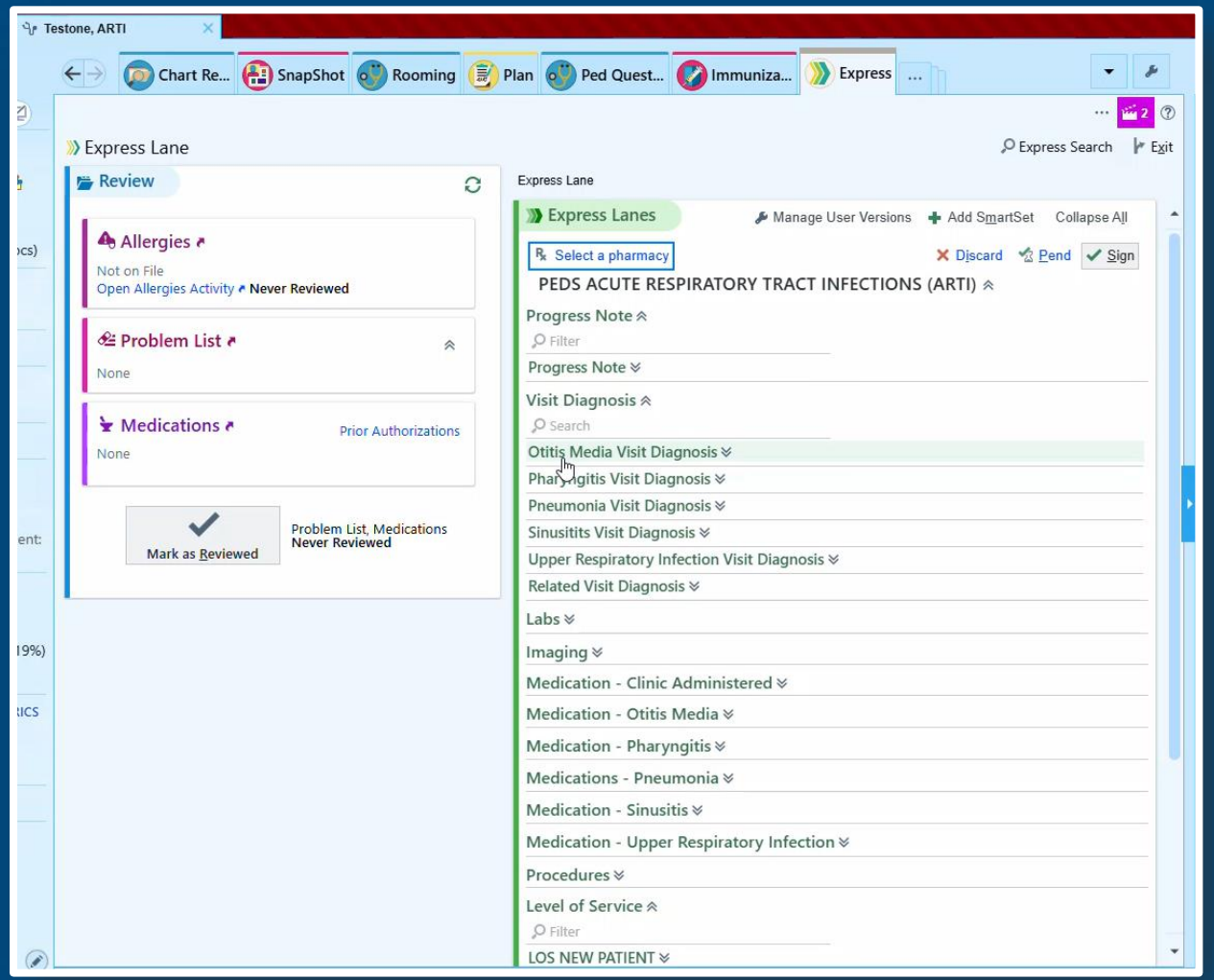
SmartSets

Suggestions

- [ ] PEDS ACUTE RESPIRATORY TRACT INFECTIONS (ARTI)
- [ ] ADHD Medications and Screening Charges
- [ ] ADOLESCENT STI SCREENING & MEDICATION
- [ ] NO SHOW / LWBS / ERRONEOUS ENCOUNTER
- [ ] PED EPSDT
- [ ] PED Fever
- [ ] PED IMAGING
- [ ] PED IMMUNIZATIONS
- [ ] PED LABS
- [ ] PED MEDS
- [ ] PED OBESITY
- [ ] PED PROCEDURES
- [ ] PED REFERRALS
- [ ] PED SCREENING
- [ ] PED URGENT / RETURN
- [ ] PED WELL CHILD CHECK 6-8 YEARS

Peds ARTI Smart Set & Express Lane: A "One Stop Shop"

- **Note Template**
- **Visit Diagnosis**
  - High-Yield information & link to Clinical Pathway
- **Labs**
- **Imaging**
- **Medications**
  - High-Yield information & link to Clinical Pathway
- **Procedures**
- **LOS**
- **Follow-up**
- **Patient Instructions**



UFHealth
Shands Children's Hospital

11-year-old with a CC: Ear pain

SmartSets

Associate | Edit Multiple | Phase of Care | Patient Estimate | Providers | Select a pharmacy | Remove | Pend | Sign

PEDS ACUTE RESPIRATORY TRACT INFECTIONS (ARTI)

Manage User Versions

- Progress Note
  - Progress Note
    - [x] Blank Note
    - [ ] Pediatric Urgent Template
    - [ ] Peds Dax Urgent/Return
- Visit Diagnosis
  - Otitis Media Visit Diagnosis

- AOM is diagnosed by moderate to severe bulging of the tympanic membrane (TM) or new onset of otorrhea not caused by acute otitis externa; OR mild bulging of the tympanic membrane with recent (less than 48 hours) onset of ear pain or intense erythema of the TM.
- Immediate antibiotic therapy is recommended for children < 6 months of age or children > 6 months with severe AOM (e.g., moderate or severe otalgia, otalgia > 48 hours, temperature > 39C (102.2F), perforation, and/or bilateral presentation).
- Observation without antibiotics and close follow-up can be considered if age > 6 months with non-severe, unilateral AOM (e.g., mild otalgia for < 48 hours, temperature < 39C, 102.2).
- Amoxicillin (90mg/kg/d) is the first-line antibiotic when the child has not taken it in the past 30 days, has no concurrent purulent conjunctivitis, and is not penicillin allergic.
- Antibiotic duration by age: < 2 years of age: 10 days, 2-5 years: 7 days, ≥6 years: 5 days

Clinical Practice Pathway: Antibiotic Treatment of Acute Otitis Media

- [ ] Acute otitis media in pediatric patient, right [H66.91]
- [ ] Acute otitis media in pediatric patient, left [H66.92]
- [ ] Acute otitis media in pediatric patient, bilateral [H66.93]
- [ ] Myringitis bullosa, right [H73.011]
- [ ] Myringitis, bullous, left [H73.012]
- [ ] Myringitis bullosa, bilateral [H73.013]
- [ ] Acute non-suppurative otitis media [H65.199]

Subjective:

History was provided by the relatives - child .(historian)
Allyson Test is a 13 y.o. White female here for the following:

***
No other symptoms, rest of review of system negative

Past Medical History
Past Surgical History
Family History
Social History
No current outpatient medications on file prior to visit.

No current facility-administered medications on file prior to visit.

Allergies

There is no immunization history on file for this patient.

Review of system	Normal	Abnormal	Comments
Constitutional			
Eyes			
ENT			
CV			
Respiratory			
GI			
GU			
Neuro			

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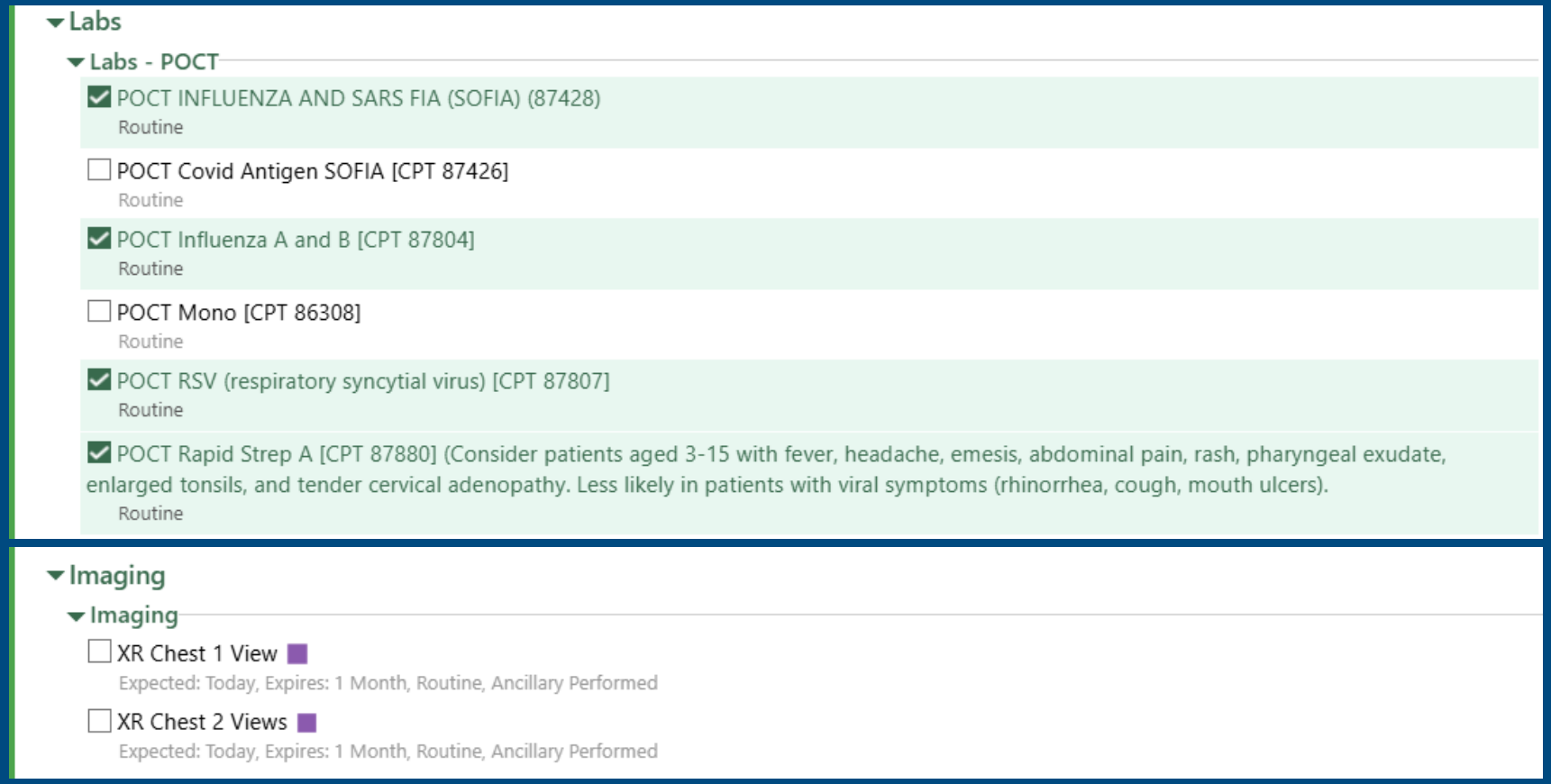

11-year-old with a CC: Ear pain

- Visit Diagnosis
  - Otitis Media Visit Diagnosis — Click for more
  - Pharyngitis Visit Diagnosis — Click for more
  - Pneumonia Visit Diagnosis — Click for more
  - Sinusitits Visit Diagnosis — Click for more
  - Upper Respiratory Infection (URI) Visit Diagnosis — Click for more
  - Related Visit Diagnosis — Click for more
- Labs
- Imaging
- Medication - Clinic Administered
- Medication - Otitis Media
  - Clinical Practice Pathway: Antibiotic Treatment of Acute Otitis Media
  - Antibiotic Therapy: No Penicillin Allergy
    - [x] First-line therapy if the child has not received amoxicillin in the prior 30 days
      - [ ] amoxicillin (AMOXIL) 400 MG/5ML Oral Suspension Reconstituted (<3 months of age): Goal 30mg/kg/day in 2 divided doses x 10 days
        E-Prescribing
      - [ ] amoxicillin (AMOXIL) 400 MG/5ML Oral Suspension Reconstituted (> 3 months of age): Goal 90 mg/kg/day in 2 divided doses x 10 days *May 2,000 mg/dose
        E-Prescribing
      - [ ] Amoxicillin 250 MG PO Tablet Chewable (> 3 months of age): Goal 90mg/kg/day in 2 divided doses x 10 days *Max 2,000 mg/dose
        E-Prescribing
      - [ ] Amoxicillin 875 MG Oral Tablet (> 3 months of age): Goal 90mg/kg/day in 2 divided doses x 10 days *Max 2,000 mg/dose
        E-Prescribing
    - [ ] First-line therapy if recieved Amoxil in the prior 30 days, amoxil failure, or has purulent conjunctivits (*beta-lactamase producer)
    - [ ] Amoxicillin-clavulanate or oral cephalosporin failure in the prior 30 days
  - Alternative Antibiotic Therapy: Penicillin Allergy — Click for more

OurPractice Advisory - Test, Cider

Suggestion (1)

Consider Narrow-Spectrum Antibiotic for ARTI

You are selecting a broad-spectrum antibiotic for an ARTI. Evidence show narrow-spectrum options are equal effective, cause fewer side effects, and support better antibiotic stewardship.

Acknowledge Reason

Change to Narrow Spectrum | Broad Spectrum Medically Indicated | Caretaker/Patient Request | Other - See Comments

Accept

11-year-old with a CC: Ear pain

- Level of Service
  - LOS NEW PATIENT — Click for more
  - LOS ESTABLISHED PATIENT
    - ○ Office / outpatient visit, established patient, level 2 [99212]
    - ○ Office / outpatient visit, established patient, level 3 [99213]
    - ○ Office / outpatient visit, established patient, level 4 [99214]
    - ○ Office / outpatient visit, established patient, level 5 [99215]

- Follow-Up
  - Follow-up
    - ○ PRN
    - ○ 1 Week
    - ○ 4 Weeks
    - ○ 2 Months
    - ○ 3 Months
    - ○ 6 Months

- Patient Instructions
  - ARTI Specific
    - ☐ OTITIS MEDIA PEDIATRIC (ENGLISH)
    - ☐ OTITIS MEDIA PEDIATRIC (SPANISH)
    - ☐ SINUS INFECTION PEDIATRIC (ENGLISH)
    - ☐ SINUS INFECTION PEDIATRIC (SPANISH)
    - ☐ SCARLET FEVER PEDIATRIC (ENGLISH)
    - ☐ SCARLET FEVER PEDIATRIC (SPANISH)
    - ☐ SORE THROAT: PEDIATRIC (ENGLISH) (AKA PHARYNGITIS)
    - ☐ SORE THROAT: PEDIATRIC (SPANISH) (AKA PHARYNGITIS)
    - ☐ PNEUMONIA (ENGLISH)
    - ☐ PNEUMONIA (SPANISH)
    - ☐ UPPER RESPIRATORY INFECTION PEDIATRIC (ENGLISH)
    - ☐ UPPER RESPIRATORY INFECTION PEDIATRIC (SPANISH)
  - Other — Click for more
    - ☑ BE ANTIBIOTICS AWARE - CDC (ENGLISH)

Antibiotics Aren't Always The Answer

To learn more about the CDC's national antibiotic use effort, visit www.cdc.gov/antibiotic-use.

Antibiotics aren't always the answer.

Antibiotics save lives. Improving the way healthcare professionals prescribe antibiotics, and the way we take antibiotics, helps keep us healthy now, helps fight antibiotic resistance, and ensures that these life-saving drugs will be available for future generations.

The facts:

When a patient needs antibiotics, the benefits outweigh the risks of side effects or antibiotic resistance.

When antibiotics aren't needed, they won't help you, and the side effects could still hurt you.

Common side effects of antibiotics can include rash, dizziness, nausea, diarrhea, or yeast infections. More serious side effects include *Clostridioides difficile* infection (also called *C. difficile* or *C. diff*), which causes diarrhea that can lead to severe colon damage and death. People can also have severe and life-threatening allergic reactions.

Antibiotics do not work on viruses, such as colds and flu, or runny noses, even if the mucus is thick, yellow, or green.

Antibiotics are only needed for treating certain infections caused by bacteria. Antibiotics also won't help for some common bacterial infections including most cases of bronchitis, many sinus infections, and some ear infections.

✔ Accept ✘ Cancel

11-year-old with a CC: Ear pain

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✔ Accept ✘ Cancel

Patient Instructions

ARTI Specific — Click for more

Other

- ☐ ACETAMINOPHEN DOSAGE CHART PEDIATRIC (ENGLISH)
- ☐ ACETAMINOPHEN DOSAGE CHART PEDIATRIC (SPANISH)
- ☐ IBUPROFEN DOSAGE CHART PEDIATRIC (ENGLISH)
- ☐ IBUPROFEN DOSAGE CHART PEDIATRIC (SPANISH)
- ☐ BE ANTIBIOTICS AWARE - CDC (ENGLISH)
- ☐ BE ANTIBIOTICS AWARE - CDC (SPANISH)
- ☐ ACUTE BRONCHITIS PEDIATRIC (ENGLISH)
- ☐ ACUTE BRONCHITIS PEDIATRIC (SPANISH)
- ☐ COUGH PEDIATRIC (ENGLISH)
- ☐ COUGH PEDIATRIC (SPANISH)
- ☐ EARACHE PEDIATRIC (ENGLISH)
- ☐ EARACHE PEDIATRIC (SPANISH)
- ☐ FEVER PEDIATRIC (ENGLISH)
- ☐ FEVER PEDIATRIC (SPANISH)
- ☐ HOW TO USE A BULB SYRINGE PEDIATRIC (ENGLISH)
- ☐ HOW TO USE A BULB SYRINGE PEDIATRIC (SPANISH)

Clinician Performance: Monthly Dashboards

VIRGINIA APGAR

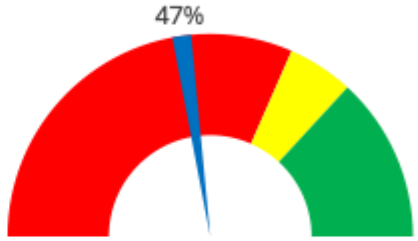
UF Health Pediatrics - Tioga

Jan/Feb 2026

% of Viral ARTIs with NO Antibiotic Prescribed

Clinic Average: 97%
Target >95%

% of Bacterial ARTIs Narrow-Spectrum Antibiotic Prescribed



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Current performance

	Feature Usage	
	Jan/Feb	FY25
SmartSet	4	-
OPA		-

Components

Provider Name & Clinic

Overall Performance

- Viral ARTIs (no antibiotic)
- Bacterial ARTIs (narrow-spectrum)

Individual ARTI Performance, Comparisons, and Targets

- Current Performance (CY 26)
- Past Performance (FY 25)
- Patient Numbers (FY 25 & CY26)
- Clinic Peer Performance (%)
- Department Performance (%)
- System Performance (%)
- Target (Goal)
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Clinician Performance: Monthly Dashboards

VIRGINIA APGAR

UF Health Pediatrics - Tioga

Jan/Feb 2026

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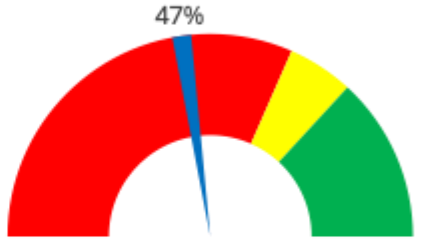

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Past performance

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OPA		-

Components

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Clinician Performance: Monthly Dashboards

VIRGINIA APGAR

UF Health Pediatrics - Tioga

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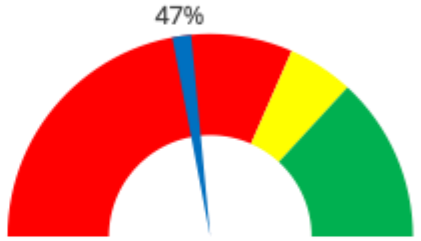

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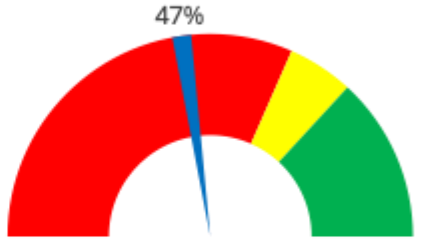

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OPA		-

Clinic Numbers

Components

Provider Name & Clinic

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Individual ARTI Performance, Comparisons, and Targets

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Clinician Performance: Monthly Dashboards

VIRGINIA APGAR

UF Health Pediatrics - Tioga | **Jan/Feb 2026**

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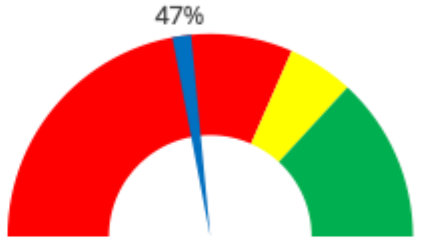

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SmartSet	4	-
OPA		-

Department Numbers

Components

Provider Name & Clinic

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- Bacterial ARTIs (narrow-spectrum)

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Clinician Performance: Monthly Dashboards

VIRGINIA APGAR

UF Health Pediatrics - Tioga

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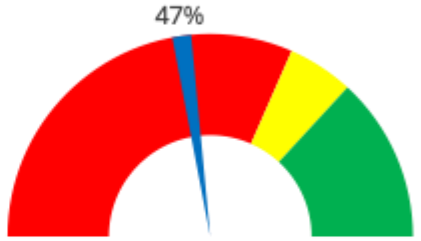

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System Performance

Components

Provider Name & Clinic

Overall Performance

- Viral ARTIs (no antibiotic)
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Individual ARTI Performance, Comparisons, and Targets

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Clinician Performance: Monthly Dashboards

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UF Health Pediatrics - Tioga

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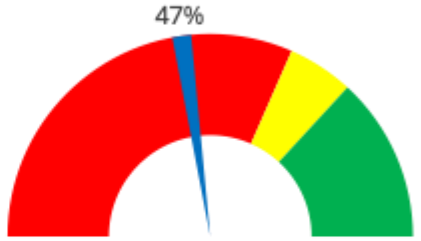

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System Targe Goal

Components

Provider Name & Clinic

Overall Performance

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Clinician Performance: Monthly Dashboards

VIRGINIA APGAR

UF Health Pediatrics - Tioga | **Jan/Feb 2026**

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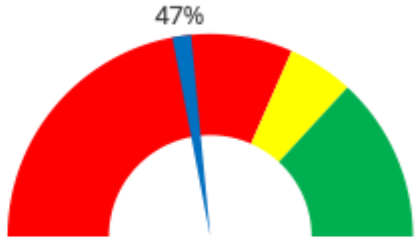

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Smart Set & OPA usage →

	Feature Usage	
	Jan/Feb	FY25
SmartSet	4	-
OPA		-

Components

Provider Name & Clinic

Overall Performance

- Viral ARTIs (no antibiotic)
- Bacterial ARTIs (narrow-spectrum)

Individual ARTI Performance, Comparisons, and Targets

- Current Performance (FY 26)
- Past Performance (FY 25)
- Patient Numbers (FY 25 & 26)
- Clinic Peer Performance (%)
- Department Performance (%)
- System Performance (%)
- Target (Goal)
- Feature Usage (SmartSet & OPA)

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Susmita Pati, MD, MPH

Professor & Chair, Department of Pediatrics

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MOC Opportunity

Each of the 4 Clinical Pathways counts as one intervention

- Acute Otitis Media
- Community-Acquired Pneumonia
- Acute Bacterial Rhinosinusitis
- Group A Streptococcal (GAS) pharyngitis

Pediatrics (ABP):
25 Improvement in Medical Practice Points

Family Medicine (ABFM): ONE Improvement in Medical Practice Module

National Commission on Certification of Physical Assistants (NCCPA):
30 PI-CME Credits

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MOC Opportunity

Certifying Body	General Improving Health in Health Care Requirements	What do diplomates receive for documented participation in an ABMS Portfolio Program project?	Does completion of a project through the ABMS Portfolio Program completely fulfill the IMP/Part IV requirement?	Do QI/PI leaders receive additional credit? If so, how much?	How do diplomates know completion data has been received and recorded?	According to what date is credit awarded?	Does the board award credit for continued engagement for the same QI/PI work?	Can resident QI/PS work be submitted through the ABMS Portfolio Program?
Family Medicine (ABFM)	**ONE** Improvement in Medical Practice Module every **THREE** years	ONE Improvement in Medical Practice Module	Yes	No	Credits reflected in their ABFM Portfolio	According to diplomate participation end date	Yes, with additional new/additional interventions	Yes - PI credit is applied to resident portfolio
Pediatrics (ABP)	Obtaining a minimum of 50 Improvement in Medical Practice points every FIVE years	**25** Improvement in Medical Practice Points	No - ABP requires 50 points	No	ABP emails the diplomate and reflects credit in their online portfolio	According to diplomate participation end date	Yes, with additional new/additional interventions	Yes - QI points will be applied towards first MOC cycle
National Commission on Certification of Physician Assistants (NCCPA)	100 CME credits per two-year cycle, including at least 50 Category I CME credits	30 PI-CME Credits (NCCPA doubles the first 20 PI-CME credits earned for each PA per CME logging cycle)	No - PAs must earn and report 100 credits per CME logging cycle	N/A	NCCPA emails the PA and reflects credit in PAs online CME record	According to diplomate participation end date	No	N/A

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Main Takeaway

- Overuse of antibiotics in children with ARTIs can lead to drug-related and other adverse effects.
- Best practice guidelines recommend the use of narrow-spectrum antibiotics as first line for outpatient treatment of children with AOM, GAS pharyngitis, ABRS, and CAP.
- Ambulatory-based strategies, including EPIC support tools, can help to improve antibiotic prescribing practices.
- The ultimate goal is to optimize antibiotic selection for pediatric ARTIs while ensuring safe, effective, and high-value care.

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Thank you
Questions
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