Top 10 recommendations for physicians

Jankauskaitė L, Wyder C, Del Torso S, Mamenko ME, Trapani S, Grossman Z, et al. Over-investigation and overtreatment in pediatrics: a survey from the European Academy of Paediatrics and Japan Pediatric Society. Frontiers in Pediatrics 2024;12. PMID: 38455393

Top 10 Recommendations for Physicians

European Academy of Paediatrics
Paediatric Section of U.E.M.S

1. **#Cough Medication**: Do not recommend, prescribe or use cough medicines in children.
2. **#Bronchiolitis**: Do not routinely use steroids and bronchodilators in infants presenting with bronchiolitis.
3. **#IV-Antibiotic Duration**: Do not routinely prolong IV antibiotics to treat severe infections, but consider switching to the oral form as soon as the clinical condition has improved.
4. **#Acute Otitis Media & Antibiotics**: Do not routinely use antibiotics in children with acute otitis media when self-resolution is expected.
5. **#Antibiotics in Neonates**: Do not prescribe antibiotics for neonates without clinical signs of sepsis.
6. **#Hospitalization of Febrile Infants**: Do not routinely continue hospitalization in well-appearing febrile infants once bacterial cultures have been confirmed negative for 24 to 36 hours if adequate outpatient follow-up can be assured.
7. **#Duration of Neonatal Antibiotics**: Do not continue antibiotic therapy for suspected neonatal sepsis >36-48 hours without clear suspicion of bacterial infection.
8. **#IgE Testing**: Do not perform screening panels (IgE tests) for food allergies without a history consistent with a specific food allergy.
9. **#Urine Culture**: Do not request urine culture in febrile children older than 2 months with respiratory tract infection.
10. **#Gastroesophageal Reflux**: Do not routinely prescribe acid blockers and motility agents in infants with GER.

Recommendations by the European Academy of Pediatrics, Choosing Wisely
www.eapaediatrics.eu/advisory-groups/choose-wisely/
Released on 1 December 2023

Top 10 Recommendations for Physicians

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Paediatric Section of U.E.M.S

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Released on 1 December 2023

Top 10 recommendations for physicians

postcards with explanations and tips for talking with parents

#Cough Medication - front

Do not recommend, prescribe or use cough medicines in children

Coughing is generally a normal defense mechanism of the body and is mostly related to acute respiratory infections in children.

What is known about cough medicine:

- Cough medicines have not been proven to be effective and can have potentially serious side effects.
- Many products have more than one ingredient, increasing the risk of accidental overdose, particularly when combined with other medications.

How to talk with patients and parents about cough medicine:

- Coughing is generally a normal defense mechanism of the body.
- Research shows that cough medications for common colds – both chemically formulated or plant-based - are not effective and can have potentially serious side effects.
- Many cough medicine products have more than one ingredient, increasing the risk of accidental overdose, particularly when combined with other medications.
- You can give the following advice:
  - Do not expose the child to cigarette smoke.
  - Provide a good indoor environment with a humidity of 50—60 % and a room temperature of 18°C.
  - Elevate the child's upper body.
  - Nasal irrigation with normal saline in case of post-nasal drip coughing.
  - Offer honey to children aged 12 months and older, with a teaspoon or melted in tea.
- Try a wait-and-see approach, reassess clinical state in a few weeks.

European Academy of Paediatrics
Paediatric Section of U.E.M.S

EAP Choosing Wisely

#Cough Medication

#Cough Medication - back

Do not recommend, prescribe or use cough medicines in children

This EAP recommendation is in accordance with Choosing Wisely recommendations of:

- Switzerland: www.paediatrieschweiz.ch/choosingwisely
- Canada: cps.ca/en/tools-outils/choosing-wisely-canada,
- USA AAP/FDA: www.fda.gov/consumers/consumer-updates/should-you-give-kids-medicine-coughs-and-colds#,
- Finland: www.kaypahoito.fi/en/?s=respiratory+infection

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- Palmu S, Heikkilä P, Kivistö JE, Poutanen R, Korppi M, Renko M, Csonka P. Cough medicine prescriptions for children were significantly reduced by a systematic intervention that reinforced national recommendations. Acta Paediatr. 2022 Jun;111(6):1248-1249. PMID: 35143072
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EAP Choosing Wisely

European Academy of Paediatrics
Paediatric Section of U.E.M.S

#Cough Medication

Eur J Pediatr. 2022; 181(4): 1531–1539.
Published online 2021 Dec 15. doi: 10.1007/s00431-021-04344-0
PMCID: PMC8673918
PMID: 34913111

Cough and cold medicine prescription rates can be significantly reduced by active intervention

Péter Csonka,[✉#1,2] Paula Heikkilä,[1] Sonja Koskela,[3] Sauli Palmu,[1] Noora Lajunen,[3] Sari Riihijärvi,[3] Heini Huhtala,[4] and Matti Korppi[#1]

largest private healthcare service company in Finland with a centralised electronic health record system allowing for real-time, doctor-specific practice monitoring

- **Aim:** Construct and test an intervention programme to eradicate cough and cold medicine (CCM) prescriptions for children

- **Methods:** The step-by-step intervention consisted of
  - company-level dissemination of educational materials to doctors and families,
  - educational staff meetings,
  - continuous monitoring of prescriptions, and
  - targeted feedback.
  - Outreach visits were held in noncompliant units.
  - Physicians who most often prescribed CCM were directly contacted.

Csonka P, Heikkilä P, Koskela S, Palmu S, Lajunen N, Riihijärvi S, et al. Cough and cold medicine prescription rates can be significantly reduced by active intervention. Eur J Pediatr. 2022 Apr 1;181(4):1531–9.

Eur J Pediatr. 2022; 181(4): 1531–1539.
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- During the intervention period (2017–2020):
  - > 1 million paediatric visits
  - Prescriptions of CCMs to children were completely eradicated in 41% of units
  - total number of CCM prescriptions decreased from 6738 to 744 (89%)

- During the fourth intervention year:
  - CCMs containing opioid derivatives were prescribed for only 0.2% of children aged < 2 years
  - Decrease in prescriptions was greatest in general practitioners (5.2 to 1.1%)
  - In paediatricians, the prescription rates decreased from 1.5 to 0.2%
  - Annual costs of CCMs decreased from €183,996 to €18,899 (89.7%).

Csonka P, Heikkilä P, Koskela S, Palmu S, Lajunen N, Riihijärvi S, et al. Cough and cold medicine prescription rates can be significantly reduced by active intervention. Eur J Pediatr. 2022 Apr 1;181(4):1531–9.

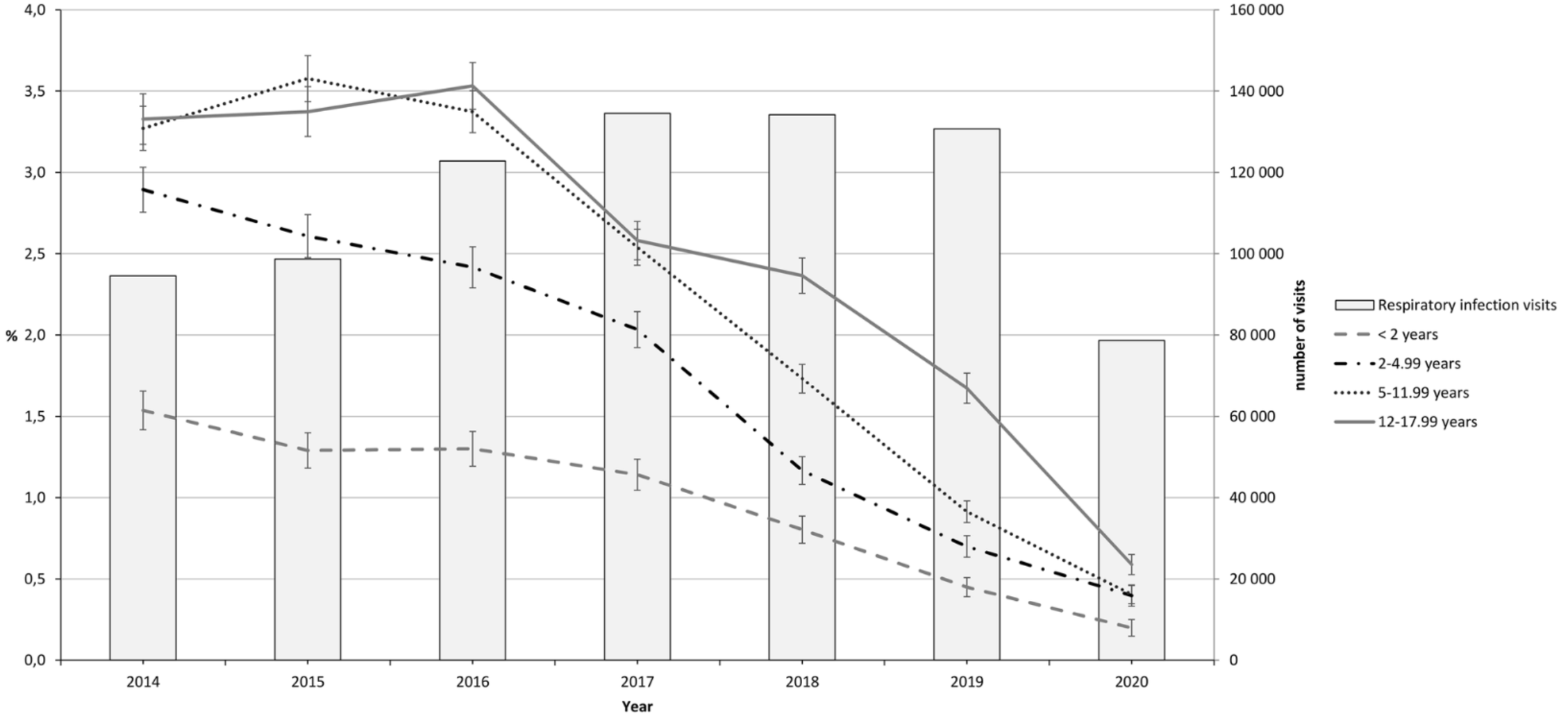

Fig. 1 Proportion (%) of children receiving cough and cold medicine prescriptions each year in four age groups. Error bars indicate 95% confidence intervals (95% CI). Lines represent age groups. Bars represent numbers of visits due to respiratory infections. Total number of visits during 2014–2020: $n = 1{,}629{,}187$

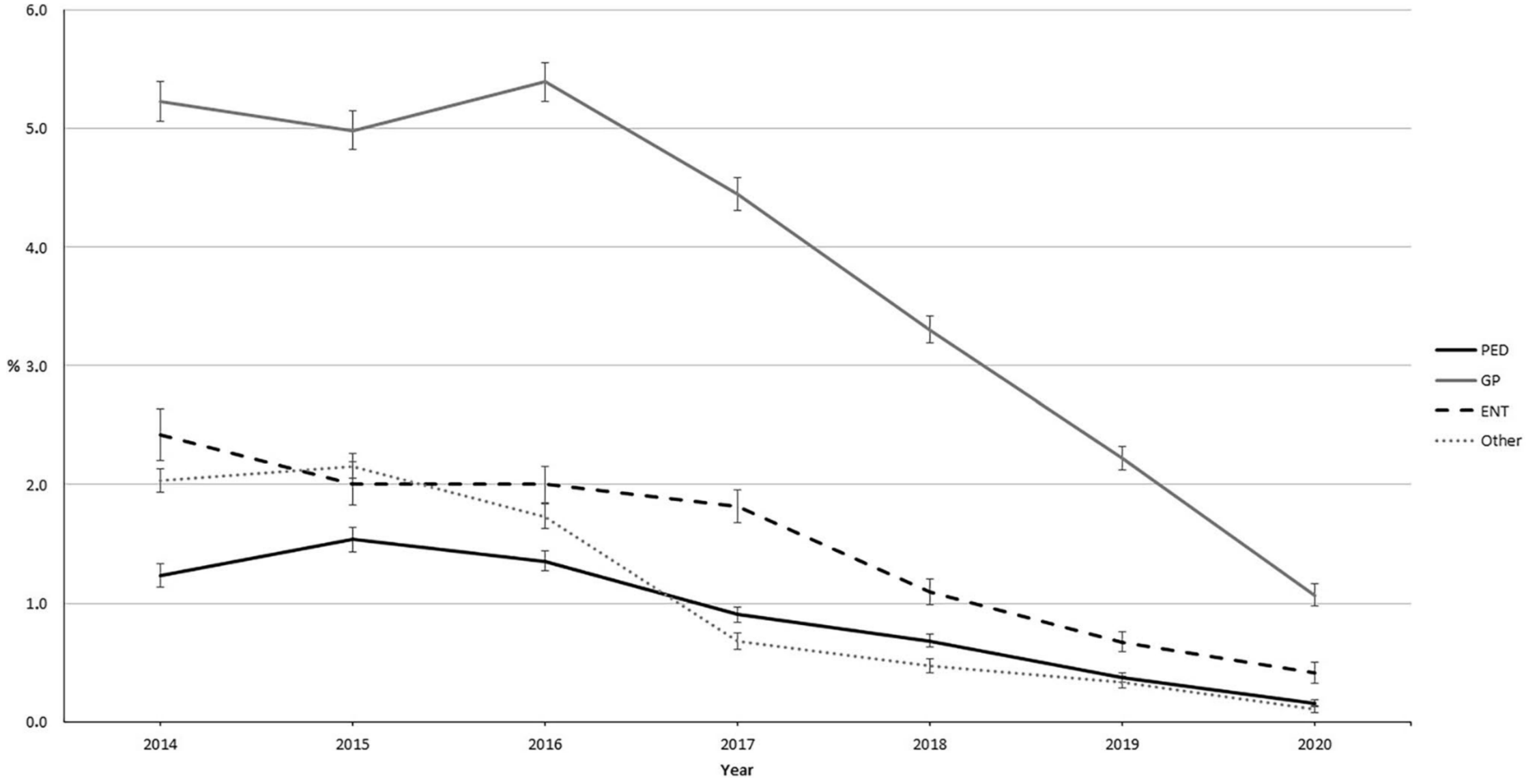

Fig. 3 Proportion (%) of children receiving cough and cold medicine prescriptions by specialty each year. Error bars indicate 95% confidence intervals (95% CI). PED, paediatrician; GP, general practitioner; ENT, ear, nose, and throat specialist; Other, all other specialties. Total number of visits during 2014–2020: $n = 1{,}629{,}187$

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- **Costs f**or the 4-year intervention:
  - 343 hours for developers
  - attended doctors = 684 h of work time

Table 1 The costs of intervention were evaluated as work time multiplied by the mean salaries of intervention developers or missed mean invoicing of participants during December 2016 and February 2021

	Time (hours)	Costs (€)
The intervention's development, implementation, reporting, and evaluation*	307	15,884
The communication offices' work	3	63
The data management	33	863
Participants†	684	142,897
Total	**1,027**	**159,707**

*Developers' work time was divided between the years 2016 and 2021

†Each participant used less than an hour of work time during intervention; each one read material and emails, and some of them participated in the meetings. Only a minority of them received personal guidance via phone calls or emails. Fifteen participants, who were chief physicians, used one more hour of work time compared to others

Csonka P, Heikkilä P, Koskela S, Palmu S, Lajunen N, Riihijärvi S, et al. Cough and cold medicine prescription rates can be significantly reduced by active intervention. Eur J Pediatr. 2022 Apr 1;181(4):1531–9.

#Bronchiolitis
- front

Do not routinely use steroids and bronchodilators in infants presenting with bronchiolitis

The use of bronchodilators and glucocorticoids did not prove to have any benefits with respect to rates of hospitalization and readmission, duration of the disease and overall disease outcome.

What is known about acute bronchiolitis:

- Acute bronchiolitis is an acute episode of respiratory distress caused by a viral inflammation of the lower respiratory tract mostly in children under the age of two years.
- Management of bronchiolitis should focus on supportive care, hydration, oxygenation, and respiratory support if needed.
- The evidence shows that bronchodilators like salbutamol or adrenalin and/or steroids do not improve oxygen saturation, reduce hospital admissions or shorten the duration of hospitalization and time to resolution of illness in infants with bronchiolitis. Salbutamol is associated with adverse events such as tachycardia, oxygen desaturation and tremors.

How to talk with patients and parents about acute bronchiolitis:

- Inform parents that it is a common disease and usually self-limiting respiratory infection in children. RSV goes away on its own, but it may take a week or two to get completely well.
- You can give the following advice:
  - Irrigate your child's nose with an isotonic saline solution.
  - Allow your child to drink small portions frequently.
  - Provide your child with the necessary recovery time.
  - Do not expose the child to cigarette smoke.
  - Encourage breastfeeding.
  - Re-seek medical advice when the child's general and respiratory status deteriorates like difficulties breathing, problems with feeding and drinking, blue looking lips or unusual pale skin, fewer wet diapers.

#Bronchiolitis

European Academy of Paediatrics
Paediatric Section of U.E.M.S

EAP Choosing Wisely

#Bronchiolitis
- back

Do not routinely use steroids and bronchodilators in infants presenting with bronchiolitis

This EAP recommendation is in accordance with Choosing Wisely recommendations of:

- Australia: https://www.choosingwisely.org.au/recommendations/racp2
- Switzerland: https://www.paediatrieschweiz.ch/choosingwisely/
- Italy: https://choosingwiselyitaly.org/en/raccomandazione-prof/do-not-prescribe-any-drug-nebulized-and-or-by-systemic-route-for-treatment-of-bronchiolitis/
- Norway: https://www.legeforeningen.no/kloke-valg/til-helsepersonell/legeforeningens-anbefalinger/norsk-barnelegeforening/unnga-rutinemessig-inhalasjonsbehandling-ved-bronkitt/
- American Academy of Family Physicians (AFP): https://www.aafp.org/pubs/afp/collections/choosing-wisely/70.html

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#Bronchiolitis

European Academy of Paediatrics
Paediatric Section of U.E.M.S

EAP Choosing Wisely

#IV-Antibiotic Duration - front

Do not routinely prolong IV antibiotics to treat severe infections, but consider switching to the oral form as soon as the clinical condition has improved

Most patients with severe infections (i.e., pyelonephritis, osteomyelitis, and uncomplicated severe pneumonia) can be safely transitioned from intravenous (IV) to oral antibiotics:

- If there are no signs of complications.
- Once clinical improvement is obtained: the child is afebrile, pain is well controlled, blood cultures have sterilized (when available) and oral medications are tolerated.
- C-reactive protein should be monitored and demonstrate a downward trend.
- After 48 to 72 hours of empiric antibiotic initiation, consider a formal reassessment of the appropriateness of antibiotic selection, when more clinical and laboratory data become available (including culture results).

What is known about IV antibiotics duration and oral switch timing:

- Antibiotics should be administered for the minimum effective length to reduce antibiotic resistance, patient harms, and cost, and preserve drug availability.
- Numerous prospective controlled studies demonstrate that oral antibiotics are as effective and safer, and lead to shorter hospitalisations and fewer adverse events than IV-only therapy, which is better for patients and hospitals.

How to talk with patients and parents about IV antibiotics duration and oral switch timing:

- A rapid switch to oral antimicrobial therapy, when clinically allowed, is equally effective to IV therapy.
- It has many benefits such as reducing IV-correlated side effects, shorter hospital stay and reducing patient discomfort.

#IV-Antibiotic Duration

European Academy of Paediatrics
Paediatric Section of U.E.M.S

EAP Choosing Wisely

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This EAP recommendation is in accordance with Choosing Wisely recommendations of:

- American Family Physicians (AFP): https://www.aafp.org/pubs/afp/collections/choosing-wisely/461.html
- Australia: https://www.choosingwisely.org.au/recommendations/cicm5

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#IV-Antibiotic Duration - back

European Academy of Paediatrics
Paediatric Section of U.E.M.S

EAP Choosing Wisely

#IV-Antibiotic Duration

#Acute Otitis Media & Antibiotics - front

Do not routinely use antibiotics in children with acute otitis media when self-resolution is expected

Acute otitis media (AOM) is a very common and usually self-limiting infection in children. Watchful waiting strategy should be discussed with parents and follow-up after 48-72 hours is arranged, if symptoms persist.

What is known about prescribing antibiotics:

- Inappropriate use of antibiotics lead to adverse effects such as allergic reactions and gastrointestinal symptoms and enhance the risk of antimicrobial resistance.
- It is recommended to prescribe antibiotics in accordance with national guidelines.

How to talk with patients and parents about antibiotics:

- Acute otitis media is a self-resolving illness in the vast majority of cases.
- Antibiotics are not efficient in viral infections.
- Inappropriate use of antibiotics can lead to serious adverse effects and promotes antimicrobial resistance.
- Give your child painkillers to make him/her more comfortable. Antibiotics do not relieve pain in the first 24 hours and have only a small effect on pain after that.
- Vaccinate against S.pneumoniae.

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#Acute Otitis Media & Antibiotics - back

Do not routinely use antibiotics in children with acute otitis media when self-resolution is expected

This EAP recommendation is in accordance with Choosing Wisely recommendations of:

- Australia: https://www.choosingwisely.org.au/recommendations/racgp9
- Norway https://www.legeforeningen.no/kloke-valg/til-helsepersonell/legeforeningens-anbefalinger/norsk-barnelegeforening/unnga-rutinemessig-antibiotikabehandling-ved-akutt-orebetennelse-hos-barn-over-1-ar/
- Switzerland: https://cdn.paediatrieschweiz.ch/production/uploads/2022/03/PS_Choosingwisely_PDF_A3_EN_220314.pdf
- Canada: https://choosingwiselycanada.org/primary-care/antibiotics/#practice-statement
- USA: https://www.aafp.org/family-physician/patient-care/clinical-recommendations/all-clinical-recommendations/cw-otitis-media.html

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EAP Choosing Wisely

#Acute Otitis Media & Antibiotics

#Antibiotics in Neonates
- front

Do not prescribe antibiotics for neonates without clinical signs of sepsis

In asymptomatic term and late-preterm infants with risk factors, close clinical monitoring is the safer option, allowing for adequate and timely sepsis detection while reducing unnecessary antibiotic-related harm.

What is known about antibiotics in neonates:

- Neonatal early-onset sepsis is a rare but life-threatening condition and is therefore at risk of being overdiagnosed and overtreated. Antibiotics are the most commonly prescribed medication in neonatal units.
- Early-life antibiotic exposure disrupts the developing microbiome, which may contribute to numerous diseases later in life, including diabetes, obesity, inflammatory bowel disease, asthma, and allergy and is also associated with mother-newborn separation, longer duration of hospital stay, and reduced breastfeeding rates.
- Unnecessary antibiotic use has also been associated with adverse patient outcomes and emergence of multi-resistant organisms.

How to talk with patients and parents about antibiotics in newborns:

- Avoiding unnecessary antibiotics is safe and has many advantages for your baby such as:
  - More time spent close to the parents.
  - Better development of bacterial flora.
  - More freedom of movement and motor exploration.
- Close monitoring ensures that signs of severe infection are not missed.

European Academy of Paediatrics
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EAP Choosing Wisely

Do not prescribe antibiotics for neonates without clinical signs of sepsis

This EAP recommendation is in accordance with Choosing Wisely recommendations of:

- USA: https://www.aafp.org/pubs/afp/collections/choosing-wisely/465.html

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#Antibiotics in Neonates - back

European Academy of Paediatrics
Paediatric Section of U.E.M.S

EAP Choosing Wisely

#Antibiotics in Neonates

#Hospitalization of Febrile Infants - front

Do not routinely continue hospitalization in well-appearing febrile infants once bacterial cultures have been confirmed negative for 24 to 36 hours if adequate outpatient follow-up can be assured

Culture clear- Outpatient near!

What is known about bacterial blood culture results after 24-36 hours:

- For infants from 1 to 12 months of age admitted to the hospital due to concerns about a potentially serious bacterial infection, particularly those who appear to be well, extending their hospital stay beyond 24 hours solely to confirm negative cultures offers little benefit and can have harmful side effects such as secondary infections.
- In a multicenter retrospective cross-sectional study, the mean time to positive blood culture results was found to be 15.41 hours, with over 90% of these blood cultures testing positive within the initial 24 hours. Another study demonstrated that only 0.5% of cases experienced notification times exceeding 24 hours.
- Stopping antibiotic treatment in well-appearing children within 24-36 hours means shorter hospital stays, less medication, and fewer complications.

How to talk with patients and parents about bacterial blood culture results after 24-36 hours:

- We know that your baby is safe by the result of the preliminary tests and the observation.
- Babies and parents thrive at home, and that's better than being at the hospital for sleep, privacy and comfort, and it also means less exposition to other germs.
- We have a safety net (emergency room visits, phone checks, direct information of the family doctor etc...) if the parents need to have a follow-up.

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EAP Choosing Wisely

#Hospitalization of Febrile Infants

#Hospitalization of Febrile Infants - back

Do not routinely continue hospitalization in well-appearing febrile infants once bacterial cultures have been confirmed negative for 24 to 36 hours if adequate outpatient follow-up can be assured

This EAP recommendation is in accordance with Choosing Wisely recommendations of:

- ABIM Foundation, Society of Hospital Medicine, American Academy of Pediatrics, and the American Pediatric Association: https://downloads.aap.org/AAP/PDF/Choosing%20Wisely/CWHospitalmedicine.pdf

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European Academy of Paediatrics
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EAP Choosing Wisely

#Hospitalization of Febrile Infants

#Duration of Neonatal Antibiotics - front

Do not continue antibiotic therapy for suspected neonatal sepsis >36-48 hours without clear suspicion of bacterial infection

The gold standard for diagnosing neonatal sepsis is blood culture.

What is known about neonatal antibiotics:

- Empiric antibiotics are continued until the confirmation of negative blood culture.
- Since neonatal sepsis evaluation and antibiotics are often initiated for subtle indications, prompt identification of negative blood culture and subsequent discontinuation of antibiotic treatment in infants with short-lasting symptoms is imperative.
- Recent guidelines recommend limiting antibiotic administration to 36 hours if the blood culture remains negative and the infant is asymptomatic.
- In addition to increasing rates of antimicrobial resistance, early-life antibiotic exposure disrupts the developing microbiome, which may contribute to numerous diseases later in life, including diabetes, obesity, inflammatory bowel disease, asthma and allergy.
- Neonatal antibiotic treatments are associated with mother-newborn separation, longer duration of hospital stay, and reduced breastfeeding rates.

How to talk with patients and parents about using antibiotics in newborns:

- Avoiding unnecessary antibiotics is safe and has advantages for your baby:
  - More time spent close to the parents.
  - Better development of bacterial flora.
  - Absence of catheter means more freedom of movement and allows for better motor exploration.
- Unless we are certain there is a bacterial infection, the risks of using an IV access outweigh the potential benefit. Risks include skin damage due to catheter-related complications or bacterial resistance.

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Do not continue antibiotic therapy for suspected neonatal sepsis >36-48 hours without clear suspicion of bacterial infection

This EAP recommendation is in accordance with Choosing Wisely recommendations of:

- Norway: www.legeforeningen.no/kloke-valg/til-helsepersonell/legeforeningens-anbefalinger/norsk-barnelegeforening/1.antibiotika-til-nyfodte-bor-avsluttes-etter-36-48-timer-dersom-ingen-vekst-i-blodkultur-og-fredelig-klinikk/
- USA: https://downloads.aap.org/AAP/PDF/Choosing%20Wisely/CWNeonatalPerinatal.pdf
- USA: https://www.aafp.org/pubs/afp/collections/choosing-wisely/277.html
- Germany: https://register.awmf.org/assets/guidelines/024-008l_S2k_Bakterielle_Infektionen_Neugeborene_2021-03.pdf

References:

- Esaiassen E, et al. Antibiotic exposure in neonates and early adverse outcomes: a systematic review and meta-analysis. J Antimicrob Chemother. 2017 Jul 1;72(7):1858-1870. PMID: 28369594
- Giannoni E, Dimopoulou V, Klingenberg C, Navér L, Nordberg V, Berardi A, et al. Analysis of Antibiotic Exposure and Early-Onset Neonatal Sepsis in Europe, North America, and Australia. JAMA Netw Open. 2022 Nov 23;5(11):e2243691. PMID: 36416819
- Stocker M, Klingenberg C, Navér L, Nordberg V, Berardi A, El Helou S, et al. Less is more: Antibiotics at the beginning of life. Nat Commun. 2023 Apr 27;14(1):2423. PMID: 37105958
- Ur Rehman Durrani N, Rochow N, Alghamdi J, Pelc A, Fusch C, Dutta S. Minimum Duration of Antibiotic Treatment Based on Blood Culture in Rule Out Neonatal Sepsis. Pediatr Infect Dis J. 2019 May;38(5): 528–32. PMID: 30169482

#Duration of Neonatal Antibiotics - back

#Duration of Neonatal Antibiotics

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EAP Choosing Wisely

#IgE Testing - front

Do not perform screening panels (IgE tests) for food allergies without a history consistent with a specific food allergy

Specific IgE levels can be raised without being clinically relevant or even be false-positive.

What is known about IgE tests:

- Interpretation without relating clinical symptoms may lead to unnecessary and potentially harmful dietary restrictions, with nutritional implications for children - and unnecessary fear and anxiety for the family or carers.
- Testing should be selected based on the medical history and should not include large screening panels.

How to talk with patients and parents about IgE tests:

- Explain the possibility of raised IgE levels without a food allergy (especially in children with eczema).
- Remind that there is no evidence to support empirical dietary exclusions in patients with eczema without a history of immediate food allergy.
- Highlight the risks associated with imposing restrictive diets on children.
- Educate about symptoms of an allergic reaction like rash, vomiting etc. occurring within minutes to hours of eating the specific food.
- If necessary, take an allergy-focused clinical history.

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EAP Choosing Wisely

#IgE Testing - back

Do not perform screening panels (IgE tests) for food allergies without a history consistent with a specific food allergy

This EAP recommendation is in accordance with Choosing Wisely recommendations of:

- Australia: https://www.choosingwisely.org.au/recommendations/ascia4
- Canada: https://choosingwiselycanada.org/wp-content/uploads/2017/02/Paediatrics.pdf
- Germany: https://register.awmf.org/de/leitlinien/detail/061-031
- Switzerland: https://www.paediatrieschweiz.ch/choosingwisely/
- UK: https://www.bsaci.org/wp-content/uploads/2020/02/Choosing-Wisely-on-IgE-request-in-eczema.pdf
- USA: https://education.aaaai.org/pipro/choosingwisely_fa
- Norway: https://www.legeforeningen.no/kloke-valg/til-helsepersonell/legeforeningens-anbefalinger/norsk-barnelegeforening/allergitesting/

References:

- ASCIA. Position Paper: Evidence-Based Versus Non Evidence- Based Allergy Tests and Treatments [Internet]. 2021. Available from: https://www.allergy.org.au/images/stories/pospapers/ASCIA_HP_Evidence-Based_Vs_Non_Evidence-Based_Allergy_Tests_Treatments_2021.pdf
- Burks W. UpToDate: Diagnostic evaluation of IgE-mediated food allergy [Internet]. 2023. Available from: https://www.uptodate.com/contents/diagnostic-evaluation-of-ige-mediated-food-allergy
- Muraro A, Werfel T, Hoffmann-Sommergruber K, Roberts G, Beyer K, Bindslev-Jensen C, et al. EAACI food allergy and anaphylaxis guidelines: diagnosis and management of food allergy. Allergy. 2014 Aug;69(8):1008–25. PMID: 24909706
- NICE guidelines. Recommendations | Food allergy in under 19s: assessment and diagnosis | Guidance | NICE [Internet]. NICE; 2011 [cited 2024 Feb 27]. Available from: https://www.nice.org.uk/guidance/cg116/chapter/Recommendations#ige-mediated-food-allergy

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EAP Choosing Wisely

#IgE Testing

#Urine Culture - front

Do not request urine culture in febrile children older than 2 months with respiratory tract infection

The likelihood of simultaneous respiratory and urinary tract infections in healthy pediatric patients beyond the neonatal period is notably low.

What is known about urine tests:

- False-positive outcomes in urine tests frequently stem from asymptomatic bacteriuria and urine sample contamination, potentially resulting in unnecessary antibiotic administration. This thereby imposes an additional burden for both patients and caregivers.
- Current guidelines discourage antibiotic prescription for asymptomatic bacteriuria in children, further advising against urine culture when the risk of false-positive results is substantial.
- Clinical judgment is warranted when requesting urine culture for children with risk factors for urinary tract infection or toxic appearance.

How to talk with patients and parents about urine tests:

- We know the source of the fever and, as professionals, we feel safe and confident about the diagnosis.
- Every test has a risk of error, meaning we could detect an infection that doesn't exist and impose unnecessary antibiotic treatment on the child, with all the side effects that this would entail.
- We are open to reassessing the child in case the parents still have a doubt about the diagnosis in the following days.

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#Urine Culture

#Urine Culture - back

Do not request urine culture in febrile children older than 2 months with respiratory tract infection

There are no Choosing Wisely recommendations about this topic. Two national guidelines outside of the CW-group endorse this recommendation:

- https://www.nice.org.uk/guidance/ng224/chapter/Recommendations
- https://www.legeforeningen.no/kloke-valg/til-helsepersonell/legeforeningens-anbefalinger/norsk-barnelegeforening/unnga-a-ta-urinprove-av-barn-2-mnd-med/

References:

- Almojali AI, Alshareef MS, Aljadoa OF, Alotaibi FF, Masuadi EM, Hameed TK. The prevalence of serious bacterial infections in infants 90 days and younger with viral respiratory tract infections. Saudi Med J. 2022 Sep;43(9):1007-1012. PMID: 36104056
- Dahiya A, Goldman RD. Management of asymptomatic bacteriuria in children. Can Fam Physician. 2018 Nov;64(11):821-824. PMID: 30429177
- Nicolle LE, Gupta K, Bradley SF, Colgan R, DeMuri GP, Drekonja D, Eckert LO, Geerlings SE, Köves B, Hooton TM, Juthani-Mehta M, Knight SL, Saint S, Schaeffer AJ, Trautner B, Wullt B, Siemieniuk R. Clinical Practice Guideline for the Management of Asymptomatic Bacteriuria: 2019 Update by the Infectious Diseases Society of America. Clin Infect Dis. 2019 May 2;68(10):e83-e110. PMID: 30895288
- Patel N, Al-Sayyed B, Gladfelter T, Tripathi S. Epidemiology and Outcomes of Bacterial Coinfection in Hospitalized Children With Respiratory Viral Infections: A Single Center Retrospective Chart Review. J Pediatr Pharmacol Ther. 2022;27(6):529-536. PMID: 36042958
- Purcell K, Fergie J. Concurrent serious bacterial infections in 2396 infants and children hospitalized with respiratory syncytial virus lower respiratory tract infections. Arch Pediatr Adolesc Med. 2002 Apr;156(4):322-4. PMID: 11929363

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EAP Choosing Wisely

#Urine Culture

#Gastroesophageal Reflux
- front

Do not routinely prescribe acid blockers and motility agents in infants with GER

Physiological gastroesophageal reflux (GER) is very common in infants, as 70-85% of infants have daily regurgitations within the first two months of life. In 95% of infants, regurgitation resolves without intervention before they reach one year of age.

What is known about acid blockers and motility agents:

- *Proton pump inhibitors (PPI):*
  - Change acidic GER to non-acidic GER, without proven benefit on symptoms like discomfort, crying duration or feeding refusal.
  - Are associated with a significant increase in severe infections.
  - Have an impact on the gut microbiome development.
- *Motility agents:*
  - Lack evidence supporting a benefit on symptoms of GER in infants.
  - Have side effects on the heart and nervous system.
- Non-pharmacological measures may be used to reduce physiological regurgitation if perceived as a problem.

How to talk with patients and parents about acid blockers and motility agents/GER:

- Reflux is not a common cause of unexplained crying, irritability or distressed behavior in otherwise healthy infants. We will look for causes we can treat to help your child.
- When we can exclude other causes, the best course of action is to undergo a trial with a formula tailored to be the most easily tolerated by the infant's digestive tract.
- Suppressing the natural acidity of the stomach is suppressing a natural defense mechanism of the body and is not free of harm.

#Gastroesophageal Reflux

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EAP Choosing Wisely

#Gastroesophageal Reflux
- back

Do not routinely prescribe acid blockers and motility agents in infants with GER

This EAP recommendation is in accordance with the Choosing Wisely recommendations of:

- Switzerland: www.paediatrieschweiz.ch/choosingwisely
- Canada: https://choosingwiselycanada.org/recommendation/paediatrics/.
- Norway: https://www.legeforeningen.no/kloke-valg/til-helsepersonell/legeforeningens-anbefalinger/norsk-barnelegeforening/allergitesting/
- Australia: https://www.choosingwisely.org.au/recommendations/racp4.
- American Family Physicians Choosing Wisely: https://www.aafp.org/pubs/afp/collections/choosing-wisely/19.html
- Italy: https://choosingwiselyitaly.org/raccomandazione-prof/non-prescrivere-farmaci-anti-h2-inibitori-di-pompa-protonica-e-procinetici-nel-reflusso-gastroesofageo-rge-fisiologico-che-non-compromette-la-crescita-e-non-si-associa-a-segni-o-sintomi-sospetti/

References:

- Gieruszczak-Białek D, Konarska Z, Skórka A, Vandenplas Y, Szajewska H. No effect of proton pump inhibitors on crying and irritability in infants: systematic review of randomized controlled trials. J Pediatr. 2015 Mar;166(3):767-770.e3. PMID: 25556017
- Lassalle M, Zureik M, Dray-Spira R. Proton Pump Inhibitor Use and Risk of Serious Infections in Young Children. JAMA Pediatr. 2023 Oct 1;177(10):1028. PMID: 37578761
- Rosen R, Vandenplas Y, Singendonk M, Cabana M, DiLorenzo C, Gottrand F, et al. Pediatric Gastroesophageal Reflux Clinical Practice Guidelines: Joint Recommendations of the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition and the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition. J pediatr gastroenterol nutr. 2018 Mar;66(3):516–54. PMID: 29470322
- NICE guidelines. Gastro-oesophageal reflux disease in children and young people: diagnosis and management [Internet]. London: National Institute for Health and Care Excellence (NICE); 2019 [cited 2024 Mar 11]. PMID: 31944641
- Turk H, Hauser B, Brecelj J, Vandenplas Y, Orel R. Effect of proton pump inhibition on acid, weakly acid and weakly alkaline gastro-esophageal reflux in children. World J Pediatr. 2013 Feb;9(1):36–41. PMID: 23389331

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EAP Choosing Wisely

#Gastroesophageal Reflux

So what can we do regarding smarter medicine?

Early Trends Among Seven Recommendations From the Choosing Wisely Campaign

Alan Rosenberg, MD[1]; Abiy Agiro, PhD[2]; Marc Gottlieb, MPA[1]; et al

» Author Affiliations | Article Information

JAMA Intern Med. 2015;175(12):1913-1920. doi:10.1001/jamainternmed.2015.5441

Purpose: Quantify the frequency and trends of some of the earliest Choosing Wisely recommendations using nationwide commercial health plan population-level data.

- **Methods**:
  - Retrospective analysis of claims data for members of Anthem-affiliated commercial health plans.
  - The low-value services selected were **(1)** imaging tests for uncomplicated headache; **(2)** cardiac imaging without history of cardiac conditions; **(3)** low back pain imaging without red-flag conditions**; (4)** preoperative chest x-rays with unremarkable history and physical examination results; **(5)** human papillomavirus testing for women younger than 30 years; **(6)** use of antibiotics for acute sinusitis; and **(7)** use of prescription nonsteroidal anti-inflammatory drugs (NSAIDs) for members with hypertension, heart failure, or chronic kidney disease.

Rosenberg A, Agiro A, Gottlieb M, Barron J, Brady P, Liu Y, et al. Early Trends Among Seven Recommendations From the Choosing Wisely Campaign. JAMA Intern Med. 2015 Dec;175(12):1913–20.

Example of 1 of the 7 CW recommendations

Table 1. Choosing Wisely Recommendation Details

Description	Rationale	Denominator and Numerator
Diagnostic Imaging		
Headache imaging		
Do not do imaging for uncomplicated headache (American College of Radiology)	Imaging patients with headache absent specific risk factors for structural disease is not likely to change management or improve outcome. Those patients with a significant likelihood of structural disease requiring immediate attention are detected by clinical screens that have been validated in many settings. Many studies and clinical practice guidelines concur. Also, incidental findings lead to additional medical procedures and expense that do not improve patient well-being.	Denominator: Age ≥18 y and ≤50 y and has current member eligibility. At least 1 outpatient visit for uncomplicated headache during the past 90 d (index event). Index date is earliest (first) date with uncomplicated headache diagnosis during the quarter. Numerator: Members in denominator with ≥1 head computed tomographic scan or ≥1 head magnetic resonance image from index date to index date +30 d.

Early Trends Among Seven Recommendations From the Choosing Wisely Campaign

Alan Rosenberg, MD[1]; Abiy Agiro, PhD[2]; Marc Gottlieb, MPA[1]; et al

» Author Affiliations | Article Information

JAMA Intern Med. 2015;175(12):1913-1920. doi:10.1001/jamainternmed.2015.5441

Purpose: Quantify the frequency and trends of some of the earliest Choosing Wisely recommendations using nationwide commercial health plan population-level data.

- **Results**:
  - Changes were modest but showed a desirable decrease for 2 of the 7 recommendations
    - **imaging for headache, cardiac imaging for low-risk patients**
  - The effect sizes were marginal, however, and although 4 of the 7 lists had statistically significant changes—unsurprising given the large sample size—the clinical significance is uncertain.
  - These results suggest that additional interventions are necessary for wider implementation of Choosing Wisely recommendations.

Rosenberg A, Agiro A, Gottlieb M, Barron J, Brady P, Liu Y, et al. Early Trends Among Seven Recommendations From the Choosing Wisely Campaign. JAMA Intern Med. 2015 Dec;175(12):1913–20.

Top 10 recommendations for parents coming soon

Engaging patients in de-implementation interventions to reduce low-value clinical care: a systematic review and meta-analysis

Emma E. Sypes, Chloe de Grood, Liam Whalen-Browne, Fiona M. Clement, Jeanna Parsons Leigh, Daniel J. Niven ✉ & Henry T. Stelfox

BMC Medicine **18**, Article number: 116 (2020) | Cite this article

Objective: Determine the effect of de-implementation interventions that engage patients within the patient-clinician interaction on use of low-value care.

- **Data:**
  - From 6,736 unique citations, 9 RCTs and 13 quasi-experimental studies were included in the systematic review.
  - Studies mostly originated from the USA (*n* = 13.59%), targeted treatments (*n* = 17.77%), and took place in primary care (*n* = 10.45%).

- **Findings:**
  - The most common intervention was patient-oriented educational material (*n* = 18.82%), followed by tools for shared decision-making (*n* = 5.23%).
  - Random effects meta-analysis demonstrated that **de-implementation interventions that engage patients within the patient-clinician interaction led to a significant reduction in low-value care in both RCTs (RR 0.74; 95% CI 0.66–0.84) and quasi-experimental studies (RR 0.61; 95% CI 0.43–0.87).**

Sypes EE, et al. Engaging patients in de-implementation interventions to reduce low-value clinical care: a systematic review and meta-analysis. BMC Med. 2020 May 8;18(1):116.

Milbank Q. 2021 Dec;99(4):1024-1058. doi: 10.1111/1468-0009.12531. Epub 2021 Aug 17.

The Impact of Choosing Wisely Interventions on Low-Value Medical Services: A Systematic Review

Betsy Q Cliff [1], Anton L V Avanceña [2], Richard A Hirth [2], Shoou-Yih Daniel Lee [3]

Affiliations + expand

PMID: 34402553 PMCID: PMC8718584 DOI: 10.1111/1468-0009.12531

Purpose: Synthesizes literature on interventions designed to reduce medical care identified as low value by Choosing Wisely and evaluates which intervention characteristics are most effective.

- **Methods**: Peer-reviewed and gray literature from the inception of Choosing Wisely in 2012 through June 2019 to identify interventions in the United States motivated by or using Choosing Wisely recommendations. included studies measuring the impact of Choosing Wisely on its own, without interventions.

- **Results:**
  - 131 articles: 88% of interventions focused on clinicians only; 48% included multiple components
  - Compared with dissemination of CW recommendations only, **active interventions** were more likely to generate intended results and, among those, **interventions with multiple components were more successful than those with one component.**
    - The type of services targeted did not matter for success.
  - **Clinician-based interventions were more effective than consumer-based,** though there is a dearth of studies on consumerbased interventions.
- **Conclusion:**
  - Interventions built on the Choosing Wisely recommendations can be effective at changing practice patterns to reduce the use of low-value care. Interventions are more effective when targeting clinicians and using more than one component.

Cliff BQ, Avanceña AL v., Hirth RA, Lee SYD. The Impact of Choosing Wisely Interventions on Low-Value Medical Services: A Systematic Review. The Milbank Quarterly. 2021;99(4):1024–58.

Talking with parents and patients: Evidence from communication about vaccinations

The way in which HCPs recommend vaccines impacts acceptance, delay, and refusal

Lessons from Vaccination communication

The way in which HCPs recommend vaccines impacts acceptance, delay, and refusal

image source: https://depositphotos.com/stock-photos/

Participatory

Assume parents have questions and invite them to ask

Presumptive

Presume yes to vaccines and prescribe them

participatory

Opel DJ et al. Pediatrics. 2013 Dec;132(6):1037-46.

presumptive

What do you want to do about shots?

approach

We have to do some shots.

Participatory
26%

Presumptive
74%

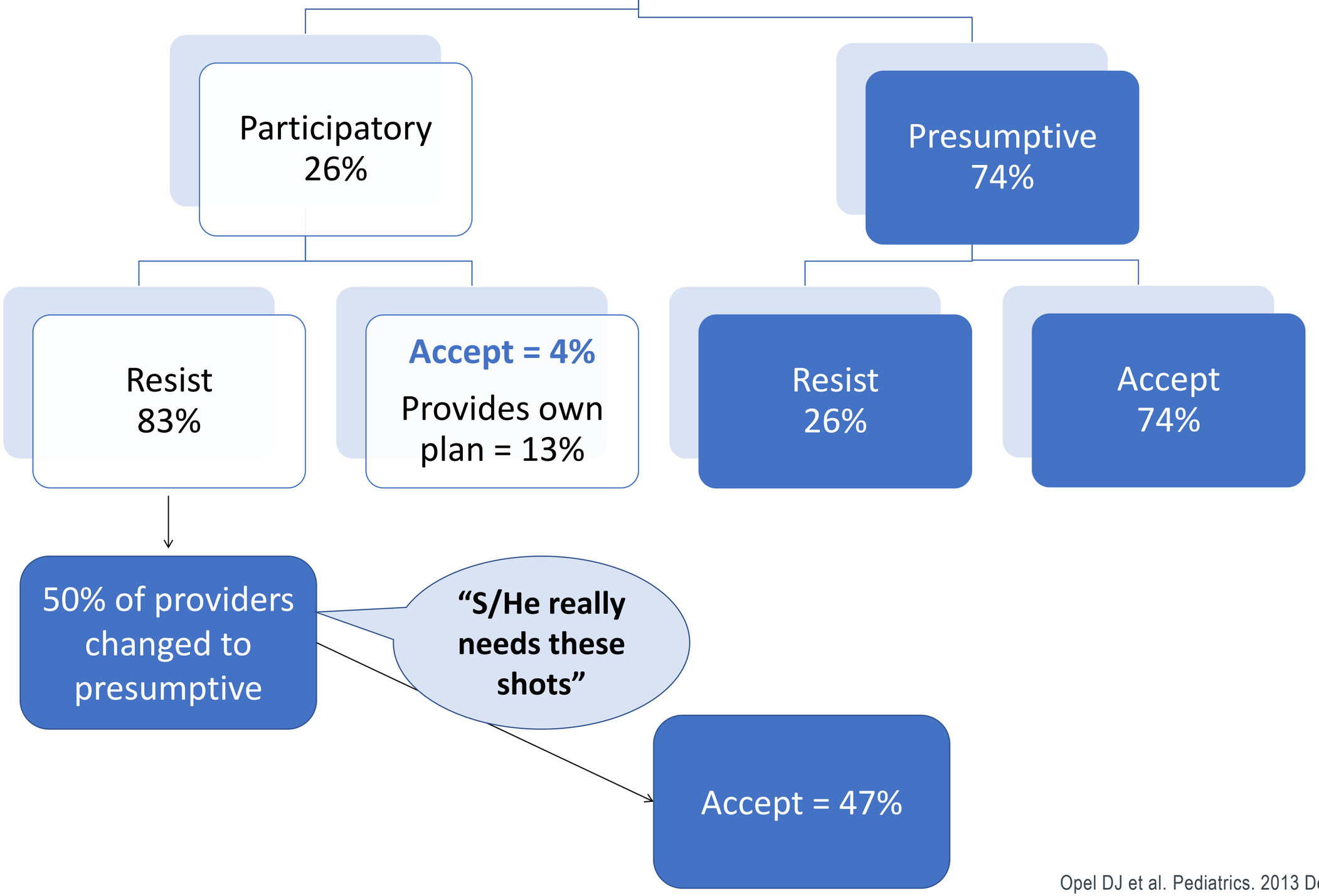
Resist
83%

Accept = 4%

Provides own plan = 13%

Resist
26%

Accept
74%



Opel DJ et al. Pediatrics. 2013 Dec;132(6):1037-46.

CA CANCER J CLIN 2022;0:1–9

Clinician communication strategies associated with increased uptake of the human papillomavirus (HPV) vaccine: A systematic review

Catherine Constable, MD [1,2]; Kyle Ferguson, PhD [2]; Joey Nicholson, MLIS, MPH [3]; Gwendolyn P. Quinn, PhD [2,4]

- 46 studies
- 24 investigated clinic-based samples of parents of adolescent patients
- Patients: 9 – 26 yrs, but most were minors with parents consenting for vaccination
- 11 underserved populations, 3 immigrant communities
- 12 conducted surveys that drew from nationally representative samples
- Most included parents of both male and female adolescents

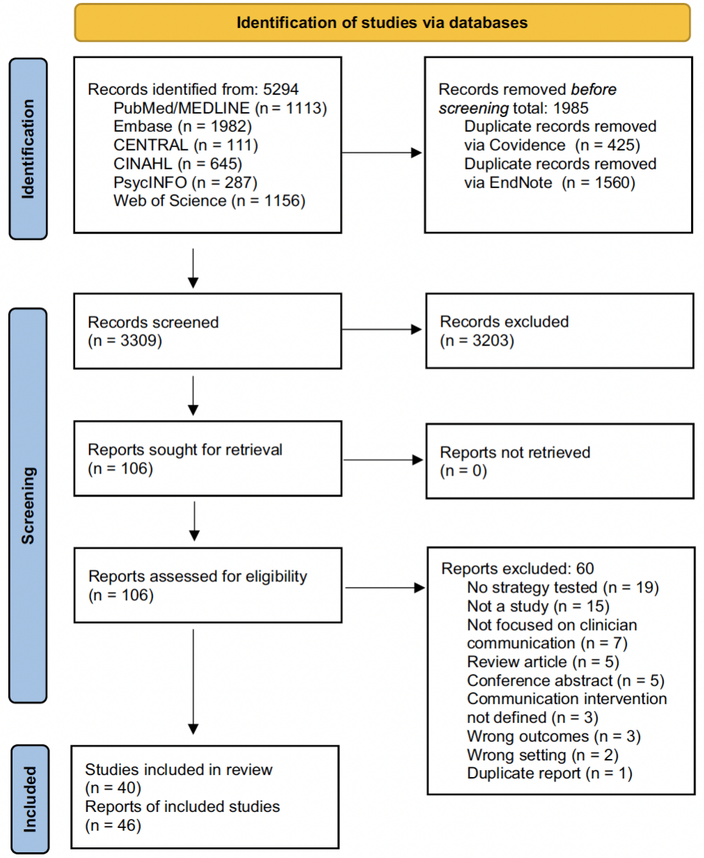


TABLE 2. Categories of Communication Strategies With Strong and Weak Evidence

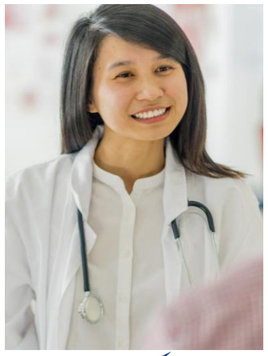
Strategy	Definition	Studies
Strong evidence		
Strong recommendation	Strong language in favor of vaccination and/or persistence	Ariyo 2018,[19] Brown 2017,[20] Clark 2016,[21] Dempsey 2016,[62] Dempsey 2019,[22a] Donahue 2015,[23] Fu 2017,[24] Garbutt 2018,[25] Gilkey 2016,[16] Greenfield 2015,[26] Gunn 2020,[27] Kempe 2019,[28] Kornides 2018,[29] Rosenthal 2011,[30] Shay 2018,[31] Shay 2016,[32] Shay 2018,[31a] Staras 2014,[33] Sturm 2017,[34] Vielot 2020,[35] Vu 2021,[36] Wilson 2016[37]
Presumptive recommendation	Presumptive/paternalistic; bundling with other adolescent vaccines and discussing in the same manner	Bernstein 2022,[38] Brewer 2017,[39] Brewer 2021,[40] Chuang 2017,[41] Dempsey 2018,[17] Dempsey 2019,[22a] Fenton 2018,[42] Fenton 2021,[43] Garbutt 2018,[25] Gunn 2020,[27] Hughes 2011,[44] Kempe 2019,[28] Moss 2016,[45] Rand 2018,[46] Sturm 2017,[34] Szilagyi 2021,[47] Wallace-Brodeur 2020[48]
Weak evidence		
Motivational interviewing	Partnering with the parents to identify their concerns and address them	Brewer 2017,[39] Dempsey 2018,[17] Perkins 2015,[49] Reno 2019,[50a] Reno 2018, [51,52a] Wermers 2021[53]
In-depth discussion	Longer duration and/or greater complexity of discussion	Clark 2016,[54] Goff 2011,[55] Kornides 2018,[56] Rand 2011,[57] Smith 2016[58]
Emphasizing favorable risk/benefit profile	Citing cancer prevention and/or STI prevention; citing safety	Alexander 2012,[59] Ariyo 2018,[19] Chuang 2017,[41] Dailey 2017,[60] Fenton 2018,[42] Gilkey 2016,[16] Kornides 2018,[39] Pierre-Victor 2017,[61] Shay 2018,[31] Vu 2022[36]
Personal recommendation	Citing personal examples, e.g., about vaccinating one's own children	Ariyo 2018,[19] Garbutt 2018,[25] Sturm 2017[34]

Abbreviation: STI, sexually transmitted infection.
[a]These are reports of the included studies.

Constable C, et al. (2022). Clinician communication strategies associated with increased uptake of the human papillomavirus (HPV) vaccine: A systematic review. *CA A Cancer J Clinicians*. doi:10.3322/caac.21753

Strong recommendation

- Forceful in tone but often also included a rationale (Constable et al., 2022)
- Be confident (Gunn et al., 2020)
- Use of the first-person voice (Sturm et al., 2017)



"hey, I noticed that you are due for this shot, and we recommend that all of our patients get it because of X, Y, Z," *(Ariyo, 2017)*

"I do, however, recommend it completely between now and being 18" (Sturm et al., 2017)

"they do recommend it for boys" (Sturm et al., 2017)

Presumptive

The presumptive strategies most c mmonly used by clinicians in the included studies entailed:

- presenting the recommendatio statement not requiring a response

- bundling the nded adolescer cy for the HPV vac
  - *(Garbu Hughes, et al., 2011; Re*

"Got a couple of shots today. The ones you're getting are X, Y and Z."

(Sturm et al., 2017)

Presumptive announcement

- “I see that Aya just turned 9”
- “At this age she is due for X, Y and Z vaccines”
- “We’ll give those at the end of today’s visit”

If the parent is hesitant

Connect:

- Ask the parent for their main concern
- Show the parent you are listening

Counsel:

- Address their concern
- Give a reason to vaccinate
- Clearly recommend getting vaccine(s) today.

Review > Acad Pediatr. 2020 Aug;20(6):729-730. doi: 10.1016/j.acap.2020.02.007. Epub 2020 Feb 10.

Progress in Evidence-Based Communication About Childhood Vaccines

Douglas J Opel [1], Nora B Henrikson [2], Katherine Lepere [3], Jeffrey D Robinson [4]

> Vaccine. 2021 Feb 5;39(6):1018-1023. doi: 10.1016/j.vaccine.2020.11.015. Epub 2021 Jan 12.

Effect of provider recommendation style on the length of adolescent vaccine discussions

Anny T H R Fenton [1], Chelsea Orefice [2], Terresa J Eun [3], Dea Biancarelli [4], Amresh Hanchate [5], Mari-Lynn Drainoni [6], Rebecca B Perkins [7]

Affiliations + expand

PMID: 33446387 PMCID: PMC8970605 DOI: 10.1016/j.vaccine.2020.11.015

Presumptive approach:

- increase parental acceptance of vaccines and are
- time-saving and
- easy to implement

- shortened discussion by 41 seconds while simultaneously improving vaccine uptake compared with more elective style.
- style used less often for HPV vaccine than for other adolescent vaccines

Opel DJ, et al, 2020. *Acad Pediatr*. 20(6):729-730.

Fenton A, et al. 2021. Vaccine. 2021;39(6):1018–1023

Example: Cough Medicine

#Cough Medication - front

Do not recommend, prescribe or use cough medicines in children

Coughing is generally a normal defense mechanism of the body and is mostly related to acute respiratory infections in children.

What is known about cough medicine:

- Cough medicines have not been proven to be effective and can have potentially serious side effects.
- Many products have more than one ingredient, increasing the risk of accidental overdose, particularly when combined with other medications.

How to talk with patients and parents about cough medicine:

- Coughing is generally a normal defense mechanism of the body.
- Research shows that cough medications for common colds – both chemically formulated or plant-based - are not effective and can have potentially serious side effects.
- Many cough medicine products have more than one ingredient, increasing the risk of accidental overdose, particularly when combined with other medications.
- You can give the following advice:
  - Do not expose the child to cigarette smoke.
  - Provide a good indoor environment with a humidity of 50—60 % and a room temperature of 18°C.
  - Elevate the child's upper body.
  - Nasal irrigation with normal saline in case of post-nasal drip coughing.
  - Offer honey to children aged 12 months and older, with a teaspoon or melted in tea.
- Try a wait-and-see approach, reassess clinical state in a few weeks.

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EAP Choosing Wisely

#Cough Medication

#Cough Medication - back

Do not recommend, prescribe or use cough medicines in children

This EAP recommendation is in accordance with Choosing Wisely recommendations of:

- Switzerland: www.paediatrieschweiz.ch/choosingwisely
- Canada: cps.ca/en/tools-outils/choosing-wisely-canada,
- USA AAP/FDA: www.fda.gov/consumers/consumer-updates/should-you-give-kids-medicine-coughs-and-colds#,
- Finland: www.kaypahoito.fi/en/?s=respiratory+infection

References:

- Korppi M. Cough and cold medicines should not be recommended for children. Acta Paediatr. 2021 Aug;110(8):2301-2302. PMID: 33811382
- Palmu S, Heikkilä P, Kivistö JE, Poutanen R, Korppi M, Renko M, Csonka P. Cough medicine prescriptions for children were significantly reduced by a systematic intervention that reinforced national recommendations. Acta Paediatr. 2022 Jun;111(6):1248-1249. PMID: 35143072
- Smith SM, Schroeder K, Fahey T. Over-the-counter (OTC) medications for acute cough in children and adults in community settings. Cochrane Database Syst Rev. 2014 Nov 24;2014(11):CD001831. PMID: 25420096

EAP Choosing Wisely

European Academy of Paediatrics
Paediatric Section of U.E.M.S

#Cough Medication

Eur J Pediatr. 2022; 181(4): 1531–1539.
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PMID: 34913111

Cough and cold medicine prescription rates can be significantly reduced by active intervention

Péter Csonka,[✉#1,2] Paula Heikkilä,[1] Sonja Koskela,[3] Sauli Palmu,[1] Noora Lajunen,[3] Sari Riihijärvi,[3] Heini Huhtala,[4] and Matti Korppi[#1]

largest private healthcare service company in Finland with a centralised electronic health record system allowing for real-time, doctor-specific practice monitoring

- **Aim:** Construct and test an intervention programme to eradicate cough and cold medicine (CCM) prescriptions for children

- **Methods:** The step-by-step intervention consisted of
  - company-level dissemination of educational materials to doctors and families,
  - educational staff meetings,
  - continuous monitoring of prescriptions,
  - targeted feedback.
  - Outreach visits were held in noncompliant units.
  - Physicians who most often prescribed CCM were directly contacted.

Csonka P, Heikkilä P, Koskela S, Palmu S, Lajunen N, Riihijärvi S, et al. Cough and cold medicine prescription rates can be significantly reduced by active intervention. Eur J Pediatr. 2022 Apr 1;181(4):1531–9.

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- During the intervention period (2017–2020):
  - > 1 million paediatric visits
  - Prescriptions of CCMs to children were completely eradicated in 41% of units
  - total number of CCM prescriptions decreased from 6738 to 744 (89%)

- During the fourth intervention year:
  - CCMs containing opioid derivatives were prescribed for only 0.2% of children aged < 2 years
  - Decrease in prescriptions was greatest in general practitioners (5.2 to 1.1%)
  - In paediatricians, the prescription rates decreased from 1.5 to 0.2%
  - Annual costs of CCMs decreased from €183,996 to €18,899 (89.7%).

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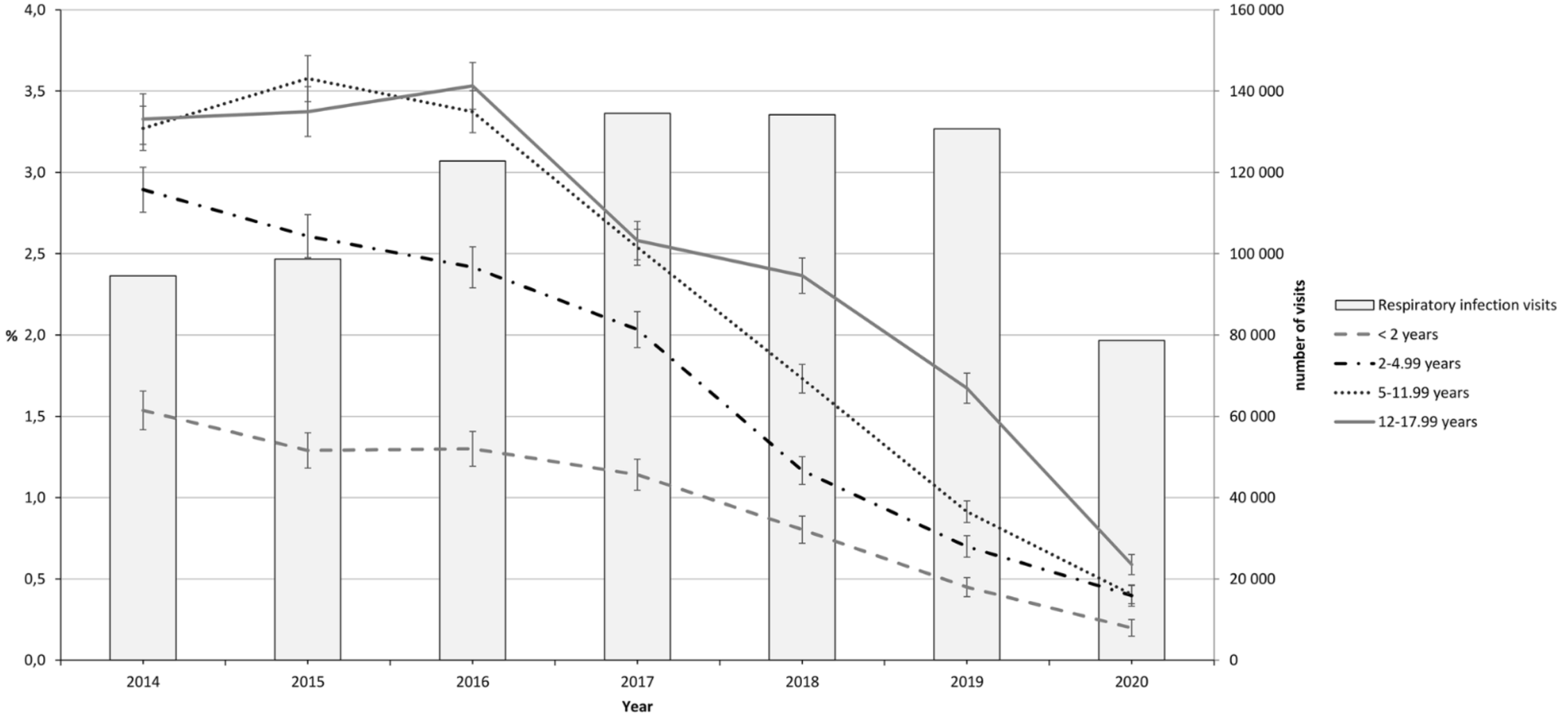

Fig. 1 Proportion (%) of children receiving cough and cold medicine prescriptions each year in four age groups. Error bars indicate 95% confidence intervals (95% CI). Lines represent age groups. Bars represent numbers of visits due to respiratory infections. Total number of visits during 2014–2020: $n = 1{,}629{,}187$

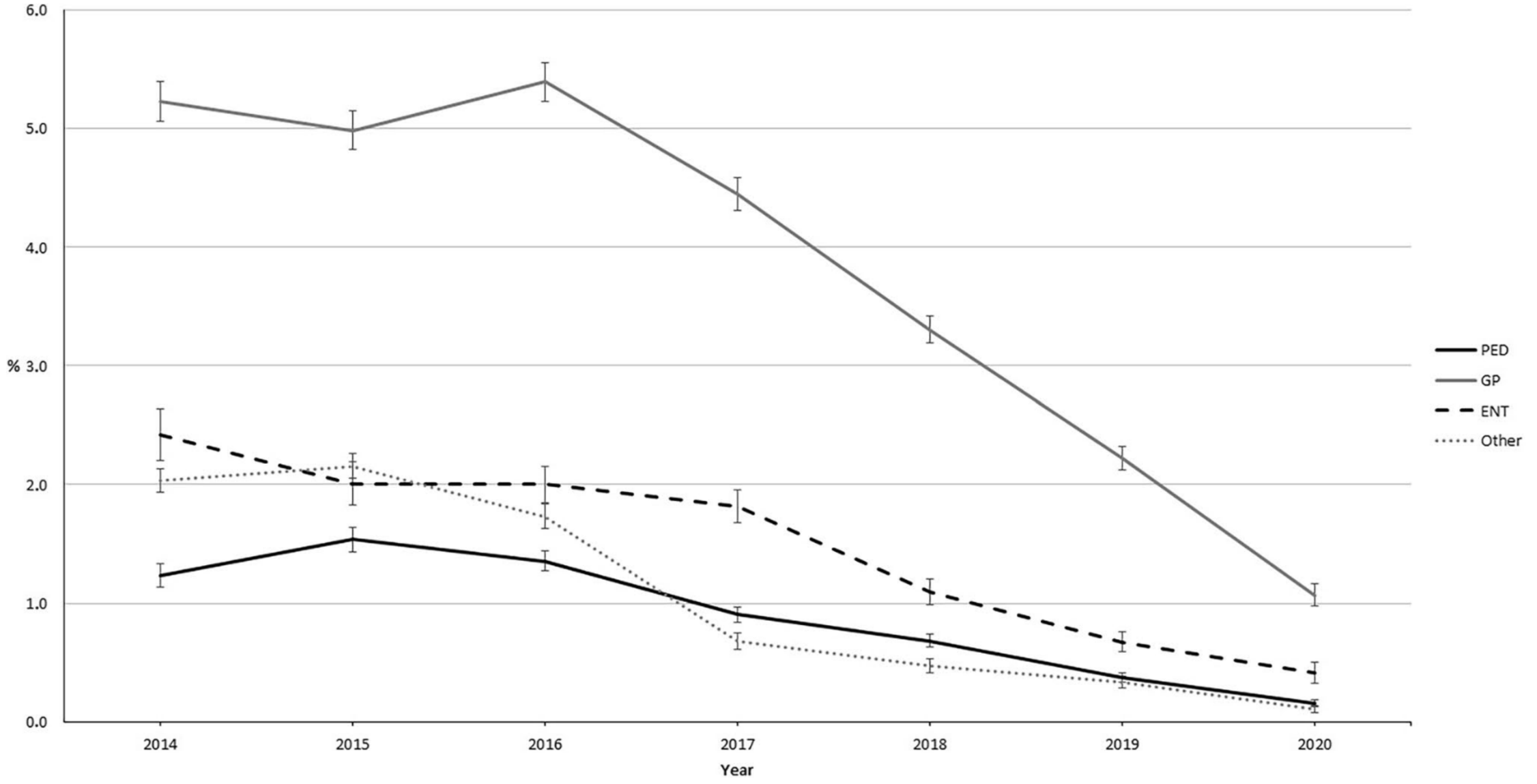

Fig. 3 Proportion (%) of children receiving cough and cold medicine prescriptions by specialty each year. Error bars indicate 95% confidence intervals (95% CI). PED, paediatrician; GP, general practitioner; ENT, ear, nose, and throat specialist; Other, all other specialties. Total number of visits during 2014–2020: $n = 1{,}629{,}187$

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- **Costs f**or the 4-year intervention:
  - 343 hours for developers
  - attended doctors = 684 h of work time

Table 1 The costs of intervention were evaluated as work time multiplied by the mean salaries of intervention developers or missed mean invoicing of participants during December 2016 and February 2021

	Time (hours)	Costs (€)
The intervention's development, implementation, reporting, and evaluation*	307	15,884
The communication offices' work	3	63
The data management	33	863
Participants†	684	142,897
Total	**1,027**	**159,707**

*Developers' work time was divided between the years 2016 and 2021

†Each participant used less than an hour of work time during intervention; each one read material and emails, and some of them participated in the meetings. Only a minority of them received personal guidance via phone calls or emails. Fifteen participants, who were chief physicians, used one more hour of work time compared to others

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Top 10 Recommendations for Physicians

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1. **#Cough Medication**: Do not recommend, prescribe or use cough medicines in children.
2. **#Bronchiolitis**: Do not routinely use steroids and bronchodilators in infants presenting with bronchiolitis.
3. **#IV-Antibiotic Duration**: Do not routinely prolong IV antibiotics to treat severe infections, but consider switching to the oral form as soon as the clinical condition has improved.
4. **#Acute Otitis Media & Antibiotics**: Do not routinely use antibiotics in children with acute otitis media when self-resolution is expected.
5. **#Antibiotics in Neonates**: Do not prescribe antibiotics for neonates without clinical signs of sepsis.
6. **#Hospitalization of Febrile Infants**: Do not routinely continue hospitalization in well-appearing febrile infants once bacterial cultures have been confirmed negative for 24 to 36 hours if adequate outpatient follow-up can be assured.
7. **#Duration of Neonatal Antibiotics**: Do not continue antibiotic therapy for suspected neonatal sepsis >36-48 hours without clear suspicion of bacterial infection.
8. **#IgE Testing**: Do not perform screening panels (IgE tests) for food allergies without a history consistent with a specific food allergy.
9. **#Urine Culture**: Do not request urine culture in febrile children older than 2 months with respiratory tract infection.
10. **#Gastroesophageal Reflux**: Do not routinely prescribe acid blockers and motility agents in infants with GER.

Recommendations by the European Academy of Pediatrics, Choosing Wisely
www.eapaediatrics.eu/advisory-groups/choose-wisely/
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Jankauskaitė L, Wyder C, Del Torso S, Mamenko ME, Trapani S, Grossman Z, et al. Over-investigation and overtreatment in pediatrics: a survey from the European Academy of Paediatrics and Japan Pediatric Society. Frontiers in Pediatrics 2024;12. PMID: 38455393