

# FARINGOTONSILLITE

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Società Italiana di Farmacologia,  
Società Italiana di Medicina Generale  
Società Italiana Infermieristica Pediatrica  
Movimento Italiano Genitori

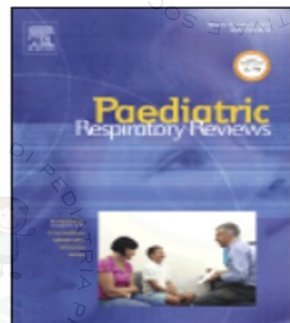
## Nota per gli utilizzatori

Il presente documento costituisce una  
visione integrale della Consensus che  
può essere scaricato nella  
versione integrale della Consensus dal  
sito web della Società  
Italiana di Pediatra Preventiva e  
Sociale (SIPPS) su [www.sipps.it](http://www.sipps.it) sezione  
"documenti"

## Referenze esterne

Teresa Mazzi, Firenze  
Andrea Novelli, Firenze  
Alberto Vierucci, FirenzeLe spese della riunione  
sono state sostenute grazie  
all'incoraggiamento di GiUN.Nessun componente è  
dichiarato alcun conflitto  
relativo all'argomento.

## CONSENSUS 2013

Impiego giudizioso della terapia antibiotica  
nelle infezioni delle vie aeree in età pediatrica

**Choosing Wisely: The Top-5  
Recommendations from the  
Italian Panel of the National  
Guidelines for the Management  
of Acute Pharyngitis in Children.**

Chiappini E, Bortone B, Di Mauro  
G, Esposito S, Galli L, Landi M,  
Novelli A, Marchisio P, Marseglia  
GL, Principi N, de Martino M;  
Italian Panel on the Management  
of Pharyngitis in Children.

Clin Ther 2017;39:646-649

**Management of acute pharyngitis  
in children: summary of the Italian  
National Institute of Health  
guidelines.**

Chiappini E, Principi N, Mansi N,  
Serra A, De Masi S, Camaioni A,  
Esposito S, Felisati G, Galli L, Landi  
M, Speciale AM, Bonsignori F,  
Marchisio P, de Martino M; Italian  
Panel on the Management of  
Pharyngitis in Children.

Clin Ther 2012;34:1442-1458.

**L'utilizzo giudizioso della terapia antibiotica  
nel trattamento delle patologie infettive  
in età evolutiva**

Documenti analoghi

L UTILIZZO GIUDIZIOSO DELLA  
TERAPIA ANTIBIOTICA NEL  
TRATTAMENTO DELLE

L UTILIZZO GIUDIZIOSO DELLA  
TERAPIA ANTIBIOTICA NEL  
TRATTAMENTO DELLE PATOLOGIE  
INFETTIVE IN ETÀ EVOLUTIVA  
Consensus - Conferenza della  
Pediatra delle Cure Primarie Responsabile del  
Progetto: Giuseppe Di

- 45 Razionale, Obiettivi, Metodi
- 48 Infezioni delle vie respiratorie
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- 79 Polmoniti acquisite in comunità
- 84 Infezioni della cute e dei tessuti molli
- 93 Infezioni vie urinarie
- 103 Bronchiolite



SIPPS



**WORK IN  
PROGRESS**



The silent pandemic of drug-resistant infections is here and getting worse

What can be learned from COVID-19?

## Antimicrobial Resistance Collaborators. Lancet. 2022 Feb 12;399(10325):629-655

in 2019, the global burden associated with antimicrobial resistance was the direct cause of at least 1.27 million deaths.



The direction of travel is not downwards, with COVID-19 further fuelling the issue of AMR, leaving us on the course of 10 million deaths per year by 2050.

*23 biopharma companies has as its target to develop 2 to 4 new antibiotics by 2030*

the number of deaths attributable to a lack of access to antibiotics, as the majority of the world's annual 5.7 million antibiotic-treatable deaths occur in low- and middle-income countries .

## 2021 AWaRe classification

WHO access, watch, reserve, classification of antibiotics for evaluation and monitoring of use

30 September 2021 | Guidance (normative)

2021 AWaRe classification

Download (110.1 KB)

### Overview

The AWaRe Classification of antibiotics was developed in 2017 by the WHO Expert Committee on Selection and Use of Essential Medicines as a tool to support antibiotic stewardship efforts at local, national and global levels. Antibiotics are classified into three groups, Access, Watch and Reserve, taking into account the impact of different antibiotics and antibiotic classes on antimicrobial resistance, to emphasize the importance of their appropriate use. The 2021 update of the AWaRe classification includes an additional 78 antibiotics not previously classified, bringing the total to 258.

It is a useful tool for monitoring antibiotic consumption, defining targets and monitoring the effects of stewardship policies that aim to optimize antibiotic use and curb antimicrobial resistance. The WHO 13<sup>th</sup> General Programme of Work 2019–2023 includes a country-level target of at least 60% of total antibiotic consumption being Access group antibiotics.

### WHO TEAM

Medicines Selection, IP and Affordability, WHO Headquarters (HQ)

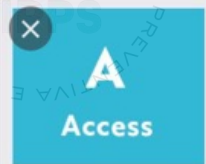
### REFERENCE NUMBERS

WHO REFERENCE NUMBER:  
WHO/HMP/HPS/EMU/2021.04

### COPYRIGHT



<b>Access</b>		<b>48</b>	<b>First-line antibiotics</b> Low resistance potential e.g. Amoxicillin, Nitrofurantoin etc.
<b>WA</b> ch		<b>110</b>	<b>Critically important antibiotics</b> High resistance potential e.g. Quinolones, Macrolides etc.
<b>RE</b> serve		<b>22</b>	<b>Antibiotics for MDR organisms</b> 'Last-resort antibiotics' e.g. Polymyxin, Tigecycline etc.



which indicates the antibiotic of choice for each of the 25 most common infections. These antibiotics should be available at all times, affordable and quality-assured



which includes most of the "highest-priority critically important antimicrobials" for human medicine and veterinary use. These antibiotics are recommended only for specific, limited indications



antibiotics that should only be used as a last resort when all other antibiotics have failed

Access	Watch	Reserve
<ul style="list-style-type: none"> <li>Antibiotics available at all times</li> <li>Amoxicillin is a widely used antibiotic to treat common infection like pneumonia</li> </ul>	<ul style="list-style-type: none"> <li>Antibiotics are recommended as first or second-choice treatments for a small number of infections</li> <li>Use of ciprofloxacin to treat cystitis and upper respiratory tract infections</li> </ul>	<ul style="list-style-type: none"> <li>Antibiotics that should be considered last-resort options</li> <li>Antibiotics such as colistin and cephalosporins should be considered last-resort options</li> </ul>



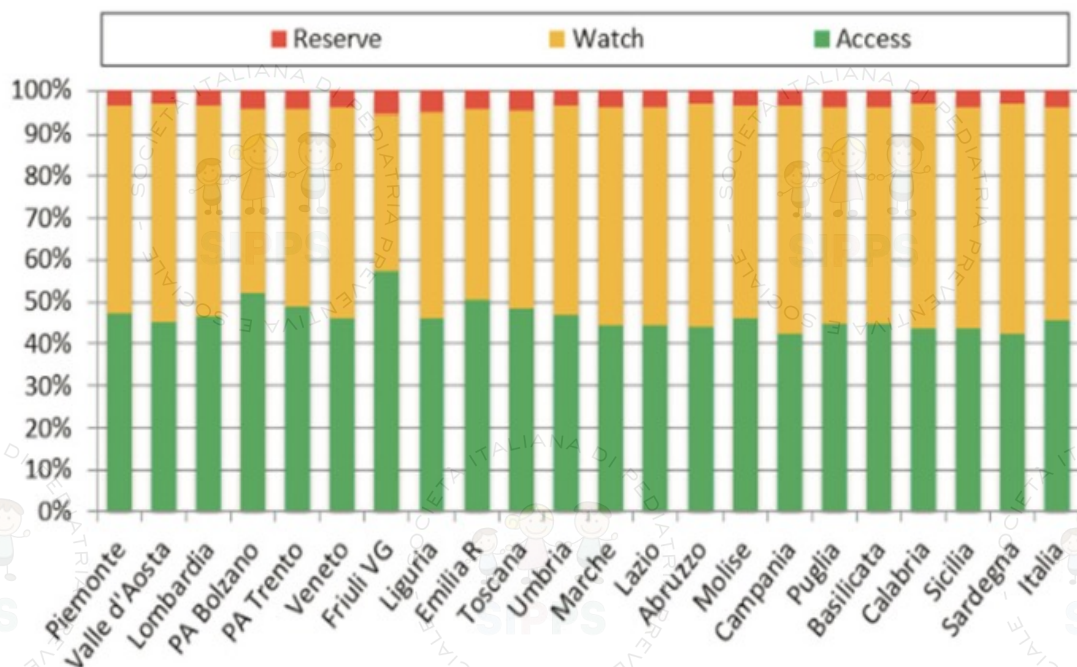
World Health Organization

- <https://www.who.int/home/search?indexCatalogue=genericsearchindex1&searchQuery=AWaRE&wordsMode=AnyWord>



ΕΥΛΑΑΑΑ ΠΑΥΐδU UÆZZUŹĀĀĒ ĒΤΑΐĀ ĀUŹΑΤU

Nel 2020 le prescrizioni di antibiotici hanno riguardato per oltre il 50% farmaci appartenenti alla categoria *Watch e Reserve* (Figura 1), ovvero molecole identificate dall'OMS come quelle a rischio di indurre maggiormente resistenze.



# degli ntici a azionale 2020

L'emerg  
un incre  
antibioti  
possibile  
resistent

Il 10 marzo 2022 AIFA ha presentato il Rapporto nazionale "L'uso degli antibiotici in Italia - Anno 2020"

Figura 1 - Variabilità regionale del consumo (DDD/1000 ab die) degli antibiotici sistemici (J01) per classificazione AWARe dell'OMS nel 2020 (convenzionata e acquisti strutture sanitarie pubbliche)

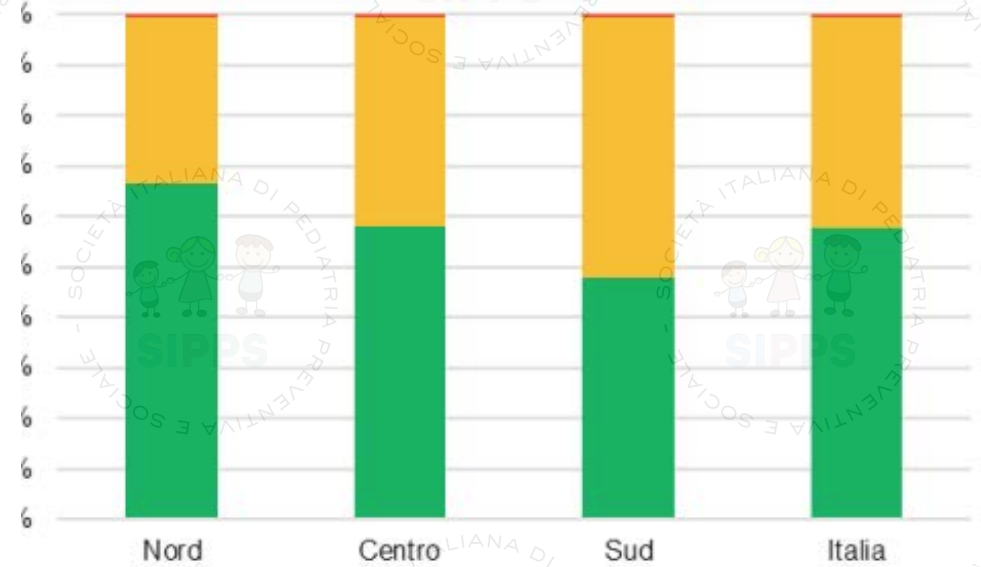
del 2020 non sono diminuiti rispetto al 2019.



- Nel bambino gli antibiotici ad ampio spettro considerati di seconda scelta per il trattamento delle infezioni pediatriche più comuni, sono i più utilizzati rispetto ad amoxicillina (penicilline protette, cefalosporine, macrolidi)



**2.19** Distribuzione per area geografica delle confezioni di antibiotici sistemici per la popolazione pediatrica in base alla classificazione AWaRe dell'OMS nel 2020



- Nel 2020 il 26,2% (nel 2019 era il 40,9%) della popolazione italiana fino ai 13 anni di età ha ricevuto almeno una prescrizione di antibiotici sistemici, con una media di 2 confezioni per ogni bambino trattato; dati in marcata diminuzione rispetto al 2019.



La faringotonsillite acuta (FT) è una condizione di frequente riscontro nella pratica clinica, essa comporta circa il 2-5% delle visite pediatriche e **rappresenta una delle principali cause di prescrizione di terapia antibiotica in età pediatrica in Italia.**

(Barbieri et al., 2019; Dona et al., 2018; Sykes et al., 2020)



#### DEFINIZIONE FARINGOTONSILLITE

• Processo infiammatorio a carico di faringe e/o delle tonsille, nella maggior parte dei casi riconducibile a eziologia infettiva. (Sykes et al, 2020)

#### DEFINIZIONE FARINGOTONSILLITE RICORRENTE

• Presenza di almeno 3 episodi di faringotonsillite in un anno. (Ng et al, 2015)

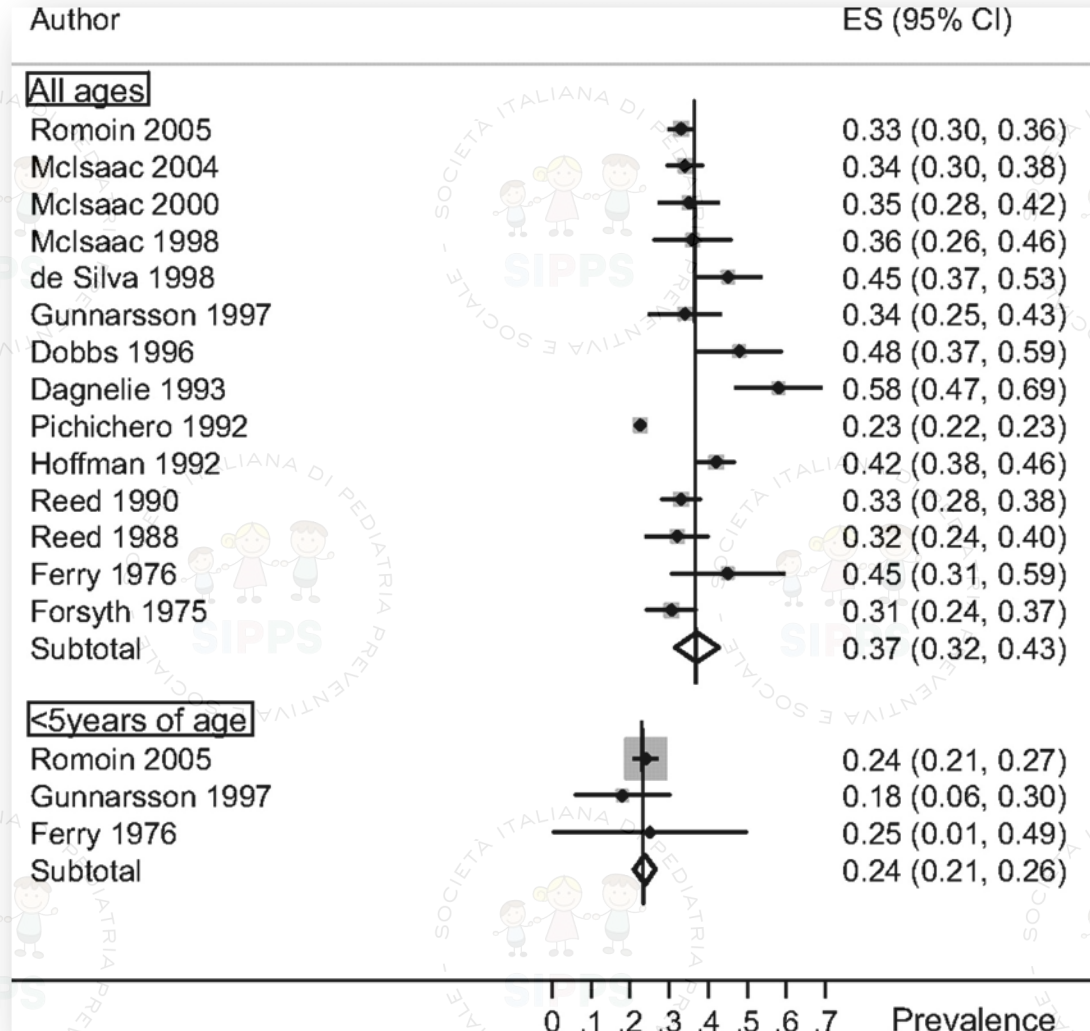
#### DEFINIZIONE STATO DI PORTATORE DI BATTERIO COCCO BETA EMOLITICO GRUPPO A

• Presenza di SBEA a livello del faringe, testimoniato da un tampone faringeo positivo, in assenza di infezione, flogosi concomitante e di una risposta immunologica all'agente stesso. (Gerber et al. 2009)



# Prevalence of Streptococcal Pharyngitis and Streptococcal Carriage in Children: A Meta-analysis.

Shaikh N. *Pediatrics* 2010;3e557-e564



**29 articoli**

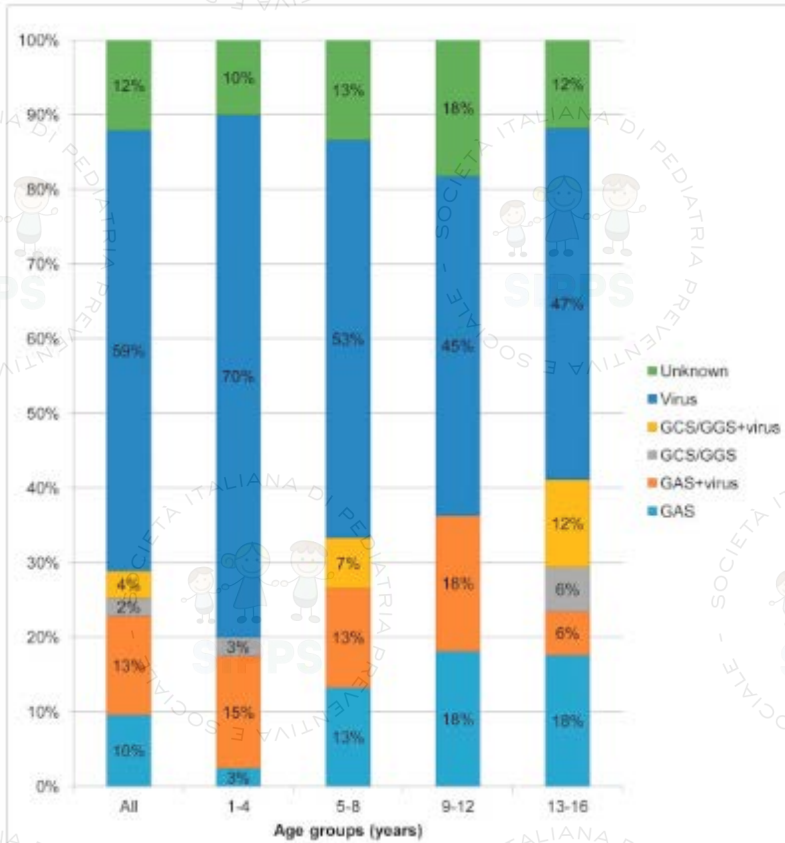
**Fra i bambini di tutte le età con faringite quelle da SBEGA sono il 37% (95% CI: 32%–43%).**

**Fra i bambini sotto i 5 anni il 24% (95% CI: 21%–26%)**

**La prevalenza di portatori è 12% (95% CI: 9%–14%).**







Journal of Infection

Available online 7 January 2017

In Press, Corrected Proof — Note to users



## Aetiology of febrile pharyngitis in children: Potential of myxovirus resistance protein A (MxA) as a biomarker of viral infection

Lauri Ivaska<sup>a,b</sup>, Jussi Niemelä<sup>a,b</sup>, Johanna Lempainen<sup>a,c</sup>, Riikka Österback<sup>d</sup>, Matti Waris<sup>d</sup>, Tytti Vuorinen<sup>d</sup>, Jukka Hytönen<sup>e,f</sup>, Kaisu Rantakokko-Jalava<sup>f</sup>, Ville Peltola<sup>a</sup>

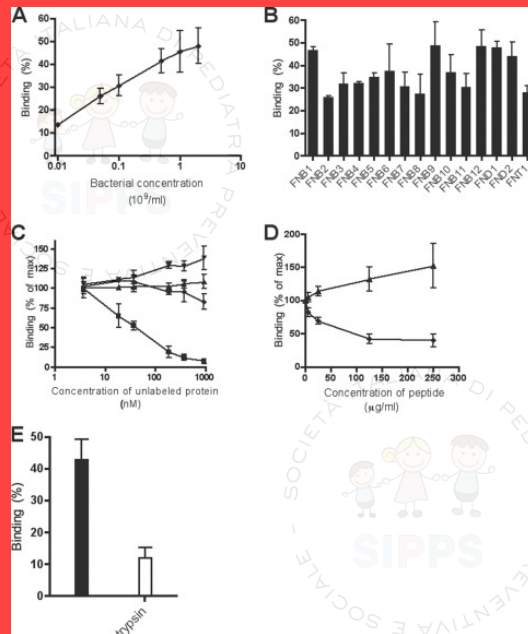


AMERICAN SOCIETY FOR MICROBIOLOGY

Infection and Immunity

Activation of the contact system at the surface of *Fusobacterium necrophorum* represents a possible virulence mechanism in Lemierre's syndrome.

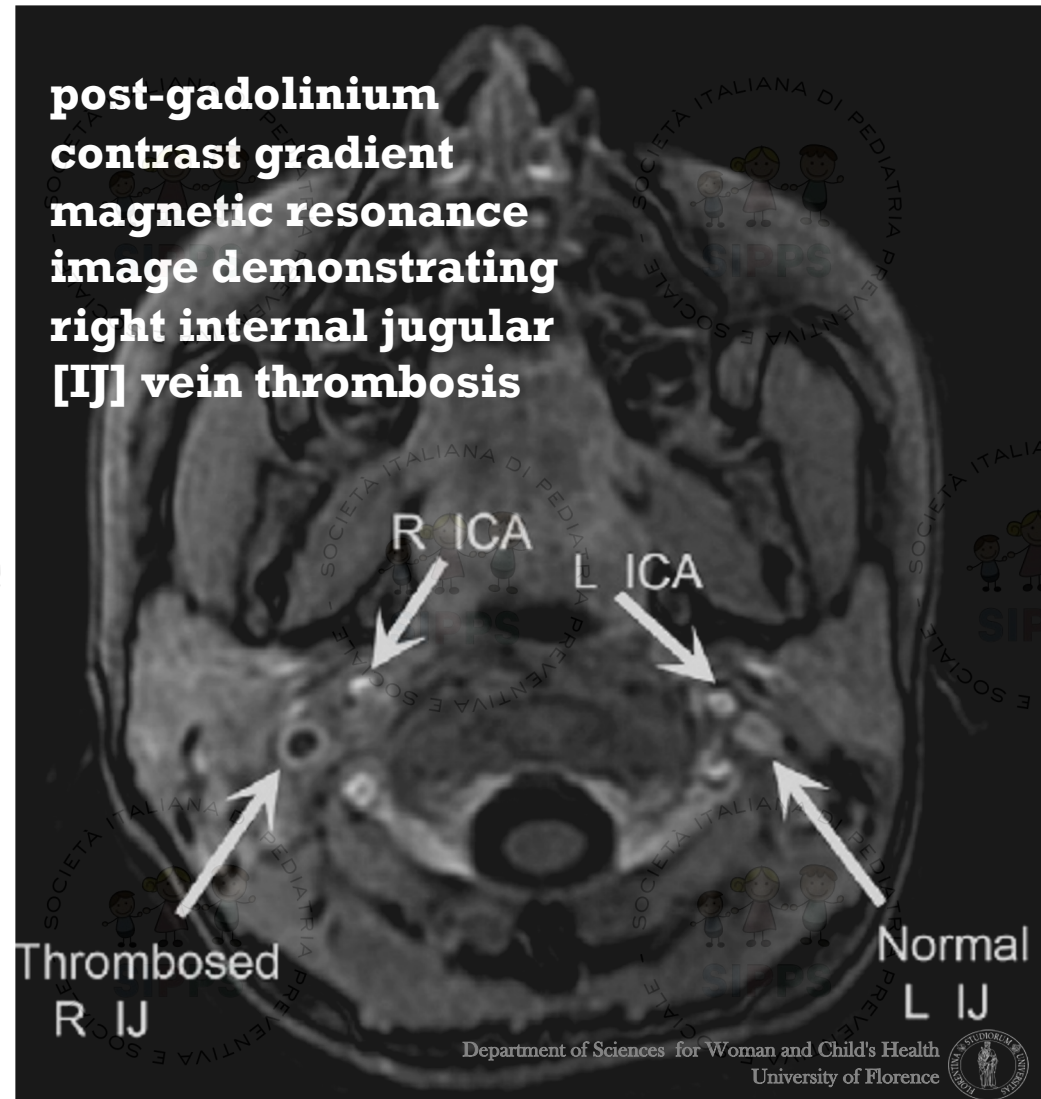
Holm K et al. Infect Immun 2011;79:3284-90



# Lamierre's Syndrome: How a Sore Throat Can End in Disaster

Karkos PD et al. Eur J Emerg Med 2004; 11: 228-230

post-gadolinium contrast gradient magnetic resonance image demonstrating right internal jugular [IJ] vein thrombosis







Non alterazioni densitometriche focali parenchimali né iperdensità di significato emorragico acuto-subacuto.  
Riconoscibile differenziazione cerebrale cortico-sottocorticale.  
Strutture della linea mediana in asse.  
Normorappresentato il sistema ventricolare. Spazi liquorali pericefalici nei limiti; regolare pervietà della cisterna della base.  
Dopo mdc non si osservano focoli impregnazioni del parenchima cerebrale.

Si segnala mancata opacizzazione come per trombosi a carico della v. giugulare interna di sinistra con estensione al bulbo della giugulare e al seno sigmoideo fino al passaggio seno sigmoideo-trasverso omolaterale. Concomita asimmetrica rappresentazione delle tonsille palatine a vantaggio della sinistra nel cui contesto si osservano due minute areole (circa mm 4) ipodense con rim enhancement sospette per iniziali minute raccolte ascessuali. Numerosi linfonodi in sede LTC bilaterale, di numero maggiore a sinistra con dimensioni massime di mm 17x13; aumentato di dimensioni anche un linfonodo retrofaringeo

# Avoiding sore throat morbidity and mortality: when is it not "just a sore throat?".

Centor RM, Samlowski R. *Am Fam Physician* 2011;83:26-8

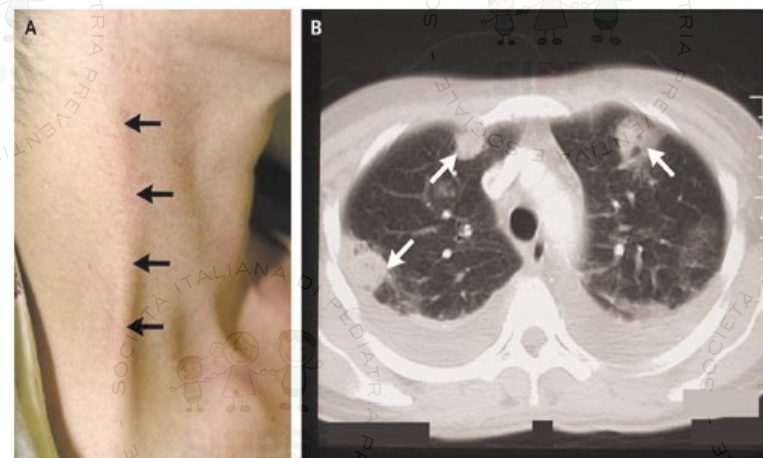
**How should this information change your practice?**

**Physicians do not need to change their approach to acute pharyngitis.**

**However, we urge all physicians to reconsider their approach to patients who have persistent or worsening symptoms.**

**We should pay special attention to the following red flags: rigors, shaking chills, high fever ( $> 39^{\circ}\text{C}$ ), night sweats, and unilateral neck swelling.**

**When these patients appear bacteremic, we have an obligation to admit the patient, start intravenous antibiotics, and obtain imaging of the jugular vein or soft tissues of the neck (usually with computed tomography).**



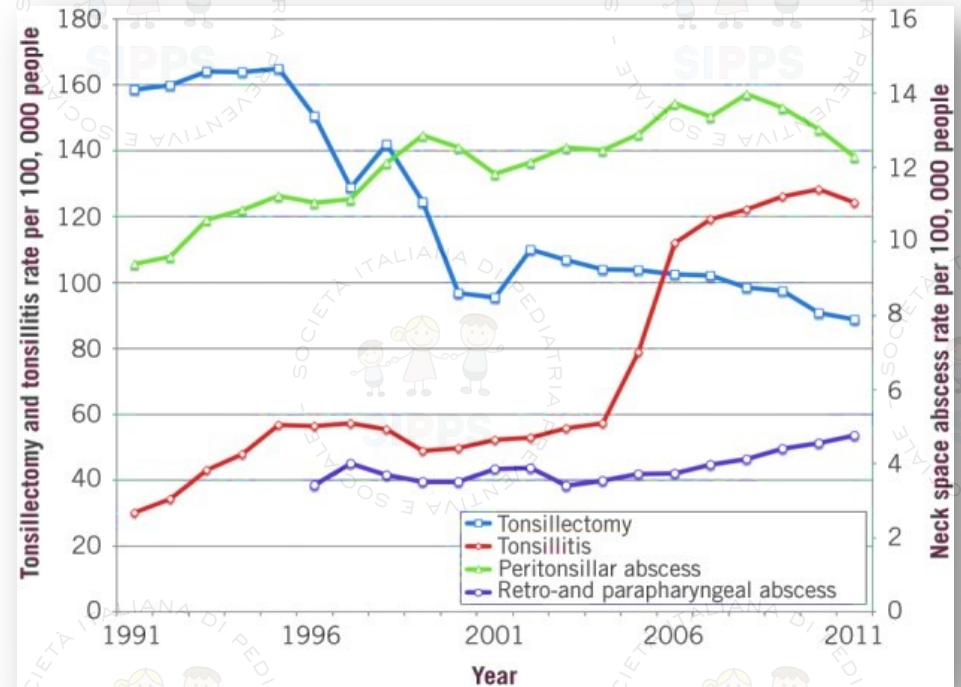


## The rising rate of admissions for tonsillitis and neck space abscesses in England, 1991–2011.

*Lau AS. Ann R Coll Surg Engl 2014;96:307–10*

Between 1991 and 2011, the peritonsillar abscess admission rate rose **by 31%** ( $r=-0.79$ ,  $p<0.01$ ).

In the United Kingdom, **a reduction in prescribing antibiotics may have been a contributing factor for increased admissions for peritonsillar and retropharyngeal abscesses**





# Antibiotics for treatment of sore throat in children and adults

Anneliese Spinks <sup>1</sup>, Paul P Glasziou <sup>2</sup>, Chris B Del Mar <sup>2</sup>

Affiliations + expand

PMID: 34881426 PMCID: PMC8655103 (available on 2022-12-09)

DOI: 10.1002/14651858.CD000023.pub5

We included 29 trials with 15,337 cases of sore throat. The majority of included studies were conducted in the 1950s, during which time the rates of serious complications (especially acute rheumatic fever) were much higher than today.

## Suppurative complications

**antibiotics reduced the incidence of acute otitis media within 14 days** (Peto odds ratio (OR) 0.21, 95% CI 0.11 to 0.40; 10 studies, 3646 participants; high-certainty evidence) **and quinsy within two months** (Peto OR 0.16, 95% CI 0.07 to 0.35; 8 studies, 2433 participants; high-certainty evidence) **but not acute sinusitis within 14 days** (Peto OR 0.46, 95% CI 0.10 to 2.05; 8 studies, 2387 participants; high-certainty evidence).

## Non-suppurative complications

**There were too few cases of acute glomerulonephritis**

**Antibiotics reduced acute rheumatic fever within two months when compared to the control group (OR 0.36, 95% CI 0.26 to 0.50; 18 studies, 12,249 participants; moderate-certainty evidence).** It should be noted that the overall prevalence of acute rheumatic fever was very low, particularly in the later studies.

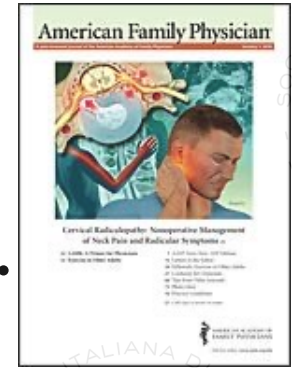
“ Cite

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# Uso razionale di antibiotici

**Choby BA. Am Fam Physician. 2009;79:383-90.**  
**Centor RM. JGIM 2007;22:127-130**



- Prevenire la malattia reumatica

- Prevenire complicanze suppurative (es. ascesso peritonsillare)

- Ridurre la durata della malattia (16 ore?)

- Ridurre la diffusione di SBEGA

- Considerare la diffusione di resistenze

- Possibili reazioni avverse ai farmaci e anafilassi

- L'Aumento dei costi

- La terapia antibiotica non si associa ad un'umentata soddisfazione da parte dei genitori/tutori



2021



2009



2013



2016



2012



2017



2014



2018



2010



2020



2011



2020



2012



2020



2019

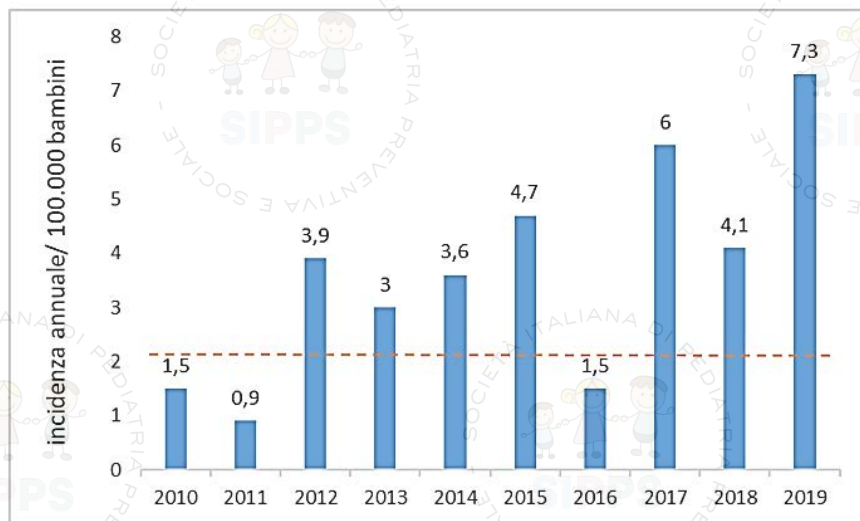


2020





Figura 1- incidenza annuale per 100.000 bambini in Toscana (Alberio et al., 2021)  
la linea tratteggiata indica il limite che permette di distinguere le popolazioni a basso rischio da quelle ad alto rischio



Per tutti i pazienti con almeno un episodio di infezione da SBEA documentato\*

DIAGNOSI

**MR acuta:** 2 criteri maggiori o 1 criterio maggiore più 2 minori

**MR ricorrente:** 2 maggiore o 1 maggiore e 2 minori o 3 minori

	CRITERI MAGGIORI	CRITERI MINORI
<b>Popolazione a basso rischio:</b> Incidenza MR $\leq$ per 100 000 bambini in età scolare oppure prevalenza cardiopatia reumatica $\leq$ 1 per 1000 per anno	Cardite (clinica e/o subclinica§) Poliartrite Corea Eritema marginato Noduli sottocutanei	Poliartralgia Febbre ( $\geq$ 38.5°C) VES $\geq$ 60 mm/h e/o PCR $\geq$ 3.0 mg/dL Intervallo PR prolungato
<b>Popolazione a rischio moderato-alto</b>	Cardite (clinica e/o subclinica) Monoartrite o Poliartrite Poliartralgia Corea Eritema marginato Noduli sottocutanei	Monoartralgia Febbre ( $\geq$ 38°C) VES $\geq$ 30 mm/h e/o PCR $\geq$ 3.0 mg/dL Intervallo PR prolungato

per 100.000 soggetti in età pediatrica

Paese	Incidenza annuale (per 100.000 persone)
<b>Italia</b>	
Abruzzo (Breda et al., 2012)	4.1
Lombardia (Marino et al., 2021)	5.7*
Toscana (Alberio et al., 2021)	0.9-7.33*
Stati Uniti (Bradley-Hewitt et al., 2019)	0.61
Galles (Saunders et al., n.d.)	0.81
Israele (Tal et al., 2022)	0.54 per 1000 ospedalizzazioni
Turchia (Gürses et al., 2021)	3.3-14.4
Uganda (Okello et al., 2021)	13-25
India (Kumar et al., 2014)	8.7
Australia (Katzenellenbogen et al., 2020)	Indigeni 71.9 non-Indigeni 0.6
Nuova Zelanda (Bennett et al., 2021)	Non indigeni 1.6 Maori 35.9 Isole del Pacifico 79.6

Tabella 3- Criteri di Jones 2015 (Gewitz et al., 2015)

\*almeno uno tra RADT (Rapid Antigen Detection Tests) positivo con clinica appropriata oppure colturale faringeo positivo per SBEA oppure TAS o AntiDNasi B elevati o con trend in aumento in due determinazioni. (Schoenfuss, 2022) § riscontro di valvulite all'ecocolor-doppler: insufficienza mitralica patologica se rilevata in almeno 2 occasioni, jet  $\geq$  2cm in almeno una occasione, velocità di picco  $>$  3 m/s, jet aterosistolico in almeno una proiezione; insufficienza aortica patologica se rilevata in almeno 2 occasioni, lunghezza del jet  $\geq$  1 cm in almeno una occasione, velocità di picco  $>$  3 m/s, jet pandiastolico in almeno una proiezione

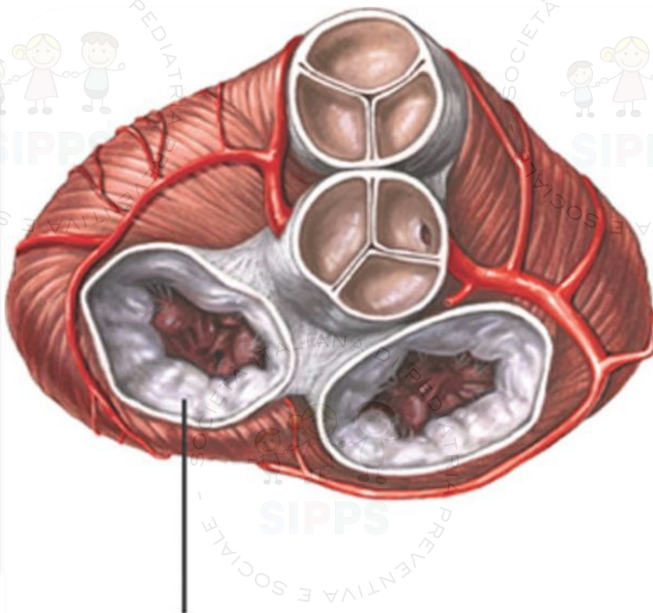




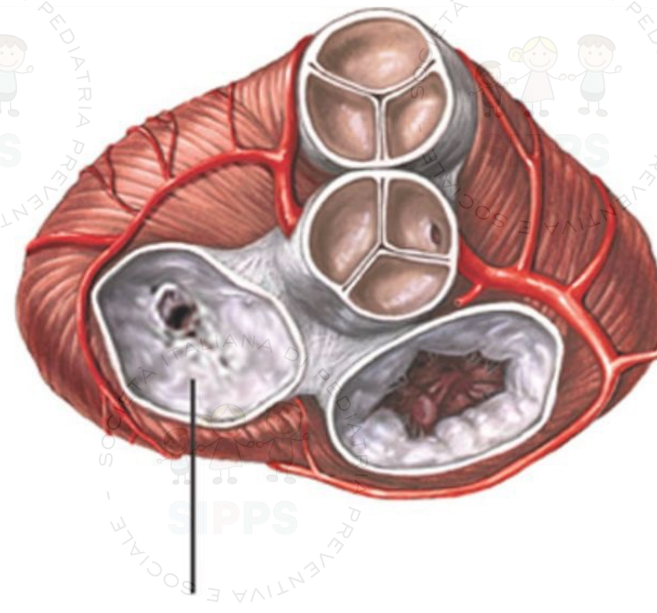
**Recent estimates suggest that disability related to RHD alone equals more than a quarter of all cancers put together**

**Mariana Mirabel et al. Circulation. 2014;130:e35-e37**

**Globally, RHD remains the leading cause of heart failure in children and young adults, accounting for at least 250 000 deaths annually**



**Normal mitral valve**



**Rheumatic mitral valve (with stenosis)**



**Il trattamento antibiotico riduce circa del 70% il rischio di malattia reumatica**

**Del Mar CB et al. Cochrane Database Syst Rev 2005: CD000023  
Spinks A. Cochrane Database Syst Rev 2013; Nov 5;(11):CD000023.**





# Antibiotics for treatment of sore throat in children and adults

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We included 29 trials with 15,337 cases of sore throat. The majority of included studies were conducted in the 1950s, during which time the rates of serious complications (especially acute rheumatic fever) were much higher than today.

**Hostage to History: The Duration of Antimicrobial Treatment for Acute Streptococcal Pharyngitis.**

*Radetsky M. Pediatr Infect Dis J 2017 ;36:507-512.*

FULL TEXT LINKS



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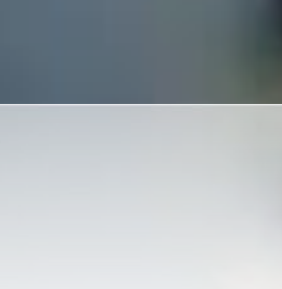
## Non-suppurative complications

**There were too few cases of acute glomerulonephritis**

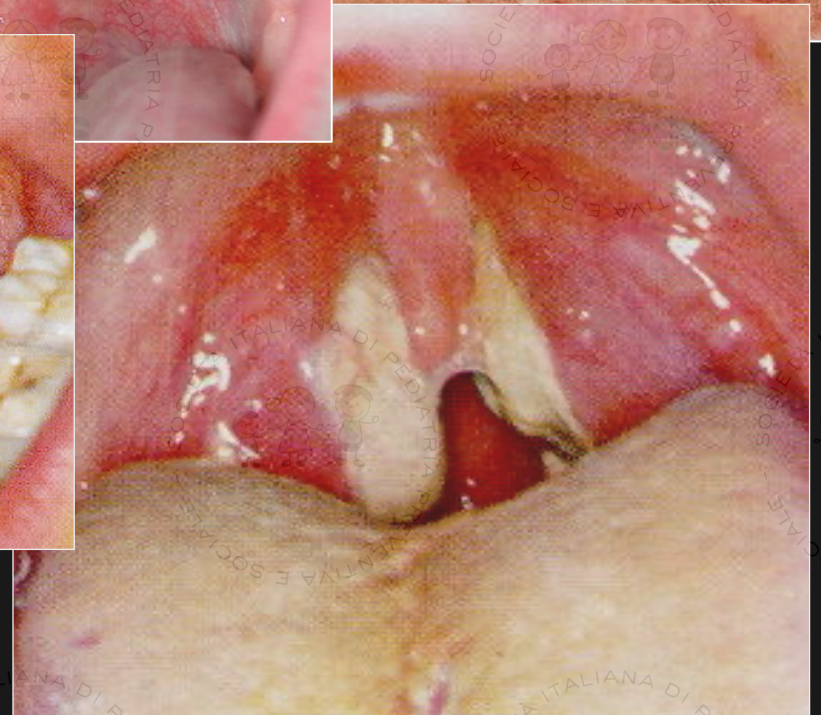
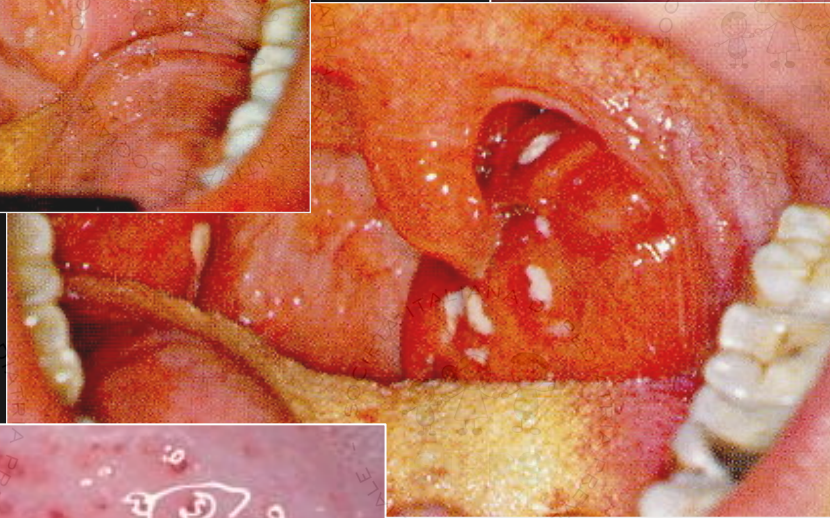
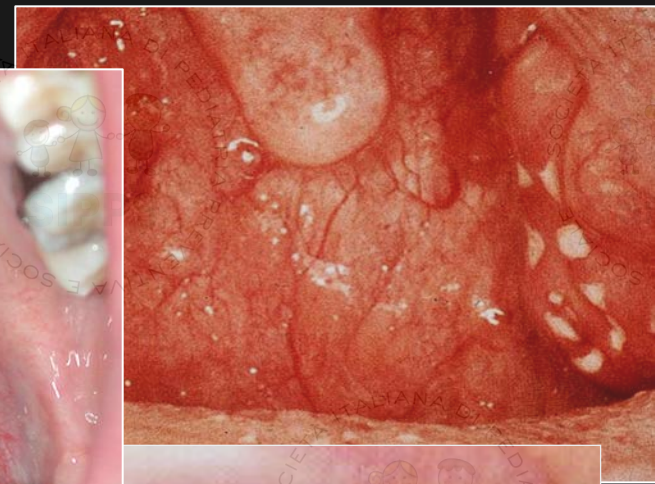
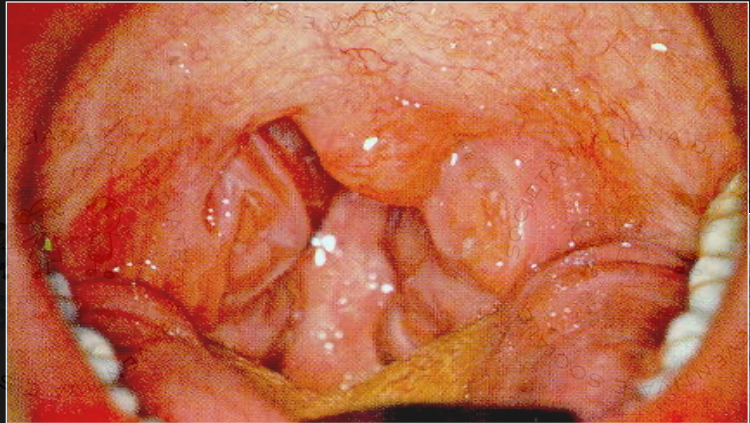
**Antibiotics reduced acute rheumatic fever within two months when compared to the control group (OR 0.36, 95% CI 0.26 to 0.50; 18 studies, 12,249 participants; moderate-certainty evidence).** It should be noted that the overall prevalence of acute rheumatic fever was very low, particularly in the later studies.







qual'è da streptococco  
 $\beta$ -emolitico di gruppo A?



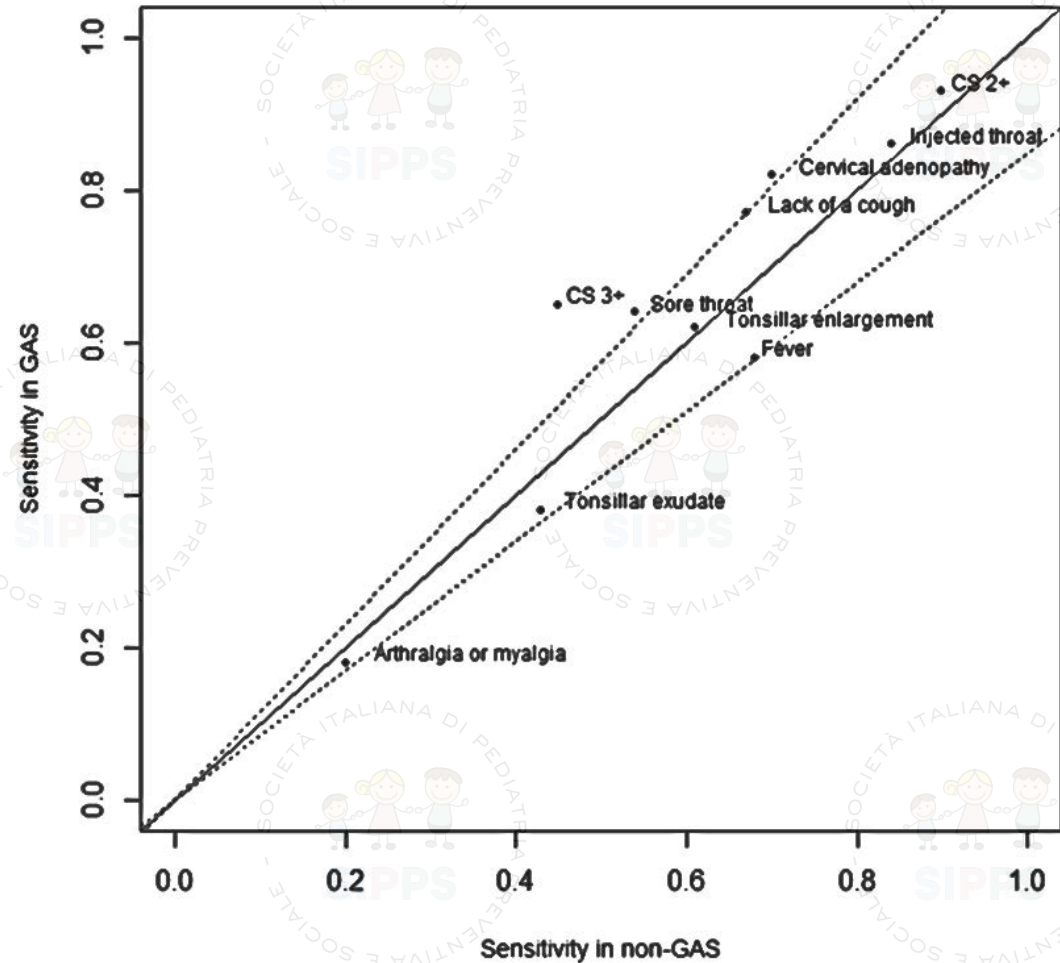


Signs and symptoms of Group A versus Non-Group A strep throat: A meta-analysis.

Thai TN1. Fam Pract 2017 Oct 13. [Epub ahead of print]

Eight studies.

tonsillar exudate had the highest LR+ for both GAS and non-GAS pharyngitis (1.53 versus 1.71). The confidence intervals of sensitivity, LR+, LR-, and DOR for all signs, symptoms, and the Centor score between two groups overlapped, **with the relative difference between sensitivities within 15%** for arthralgia or myalgia, fever, injected throat, tonsillar enlargement, and tonsillar exudate





**Poiché i segni e sintomi di faringotonsillite streptococcica si sovrappongono in modo estensivo con altre cause infettive, si raccomanda di non formulare una diagnosi eziologica basata sui dati clinici (I-E)**

# “Centor” Score Modificato

( McIsaac - JAMA 2004 )

**Criterio**

**Punteggio**

• <b>Temperatura &gt;38 C</b>	<b>1</b>
• <b>Assenza di tosse</b>	<b>1</b>
• <b>Linfoadenite cervicale</b>	<b>1</b>
• <b>Essudato/ipertrofia tonsillare</b>	<b>1</b>
• <b>Età: 3 - 14 anni</b>	<b>1</b>
<b>15 - 44 anni</b>	<b>0</b>
<b>45 anni o oltre</b>	<b>-1</b>
<b>Totale ( )</b>	

**Probabilità di Infezione streptotoccica**

<b>&lt;1</b>	<b>1-2,5%</b>
<b>1</b>	<b>5-10%</b>
<b>2</b>	<b>11-17%</b>
<b>3</b>	<b>28-35%</b>
<b>≥4</b>	<b>51-53%</b>



# PEDIATRICS

Tanz RR. Pediatrics 2009;123:437-44

---

Una ulteriore valutazione dello score di McIsaac in bambini (3-18 anni) con faringite visti in ambulatorio è stata effettuata da Tanz e collaboratori nel 2009:

- il valore predittivo positivo è risultato basso (38%) anche per score più elevati (oltre 2)
- mentre il valore predittivo negativo è risultato elevato (83%) per score bassi (zero o 1).

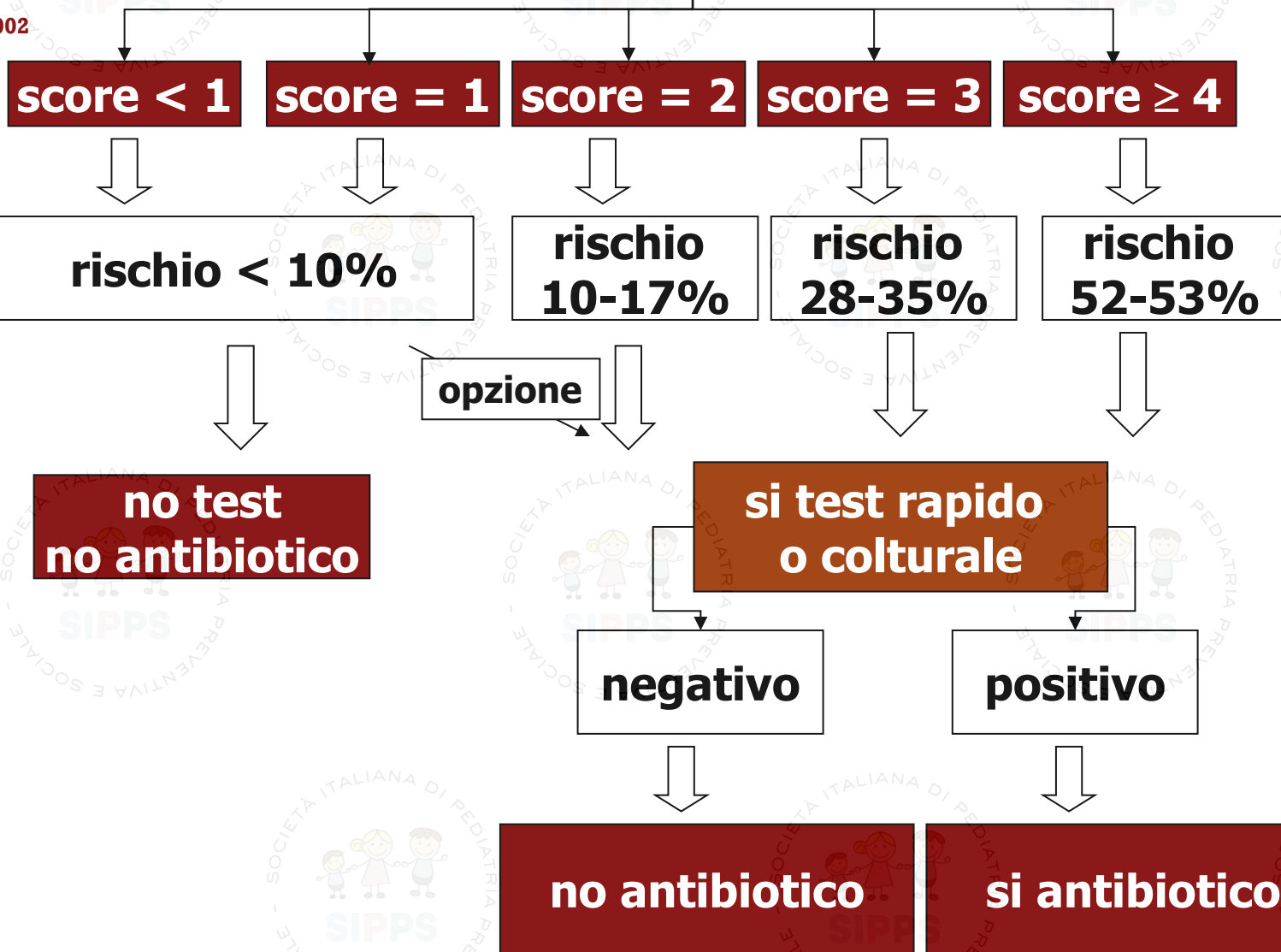


AMERICAN ASSOCIATION FOR  
INFECTIOUS DISEASES

Bisno AL et al.  
Clin Infect Dis 2002  
35: 113-125

# Centor SCORE modificato

Centor RR. J Gen Intern Med 2007; 22: 127-130











## FeverPAIN criteria

- Fever (during previous 24 hours)
- Purulence (pus on tonsils)
- Attend rapidly (within 3 days after onset of symptoms)
- Severely Inflamed tonsils
- No cough or coryza (inflammation of mucus membranes in the nose)

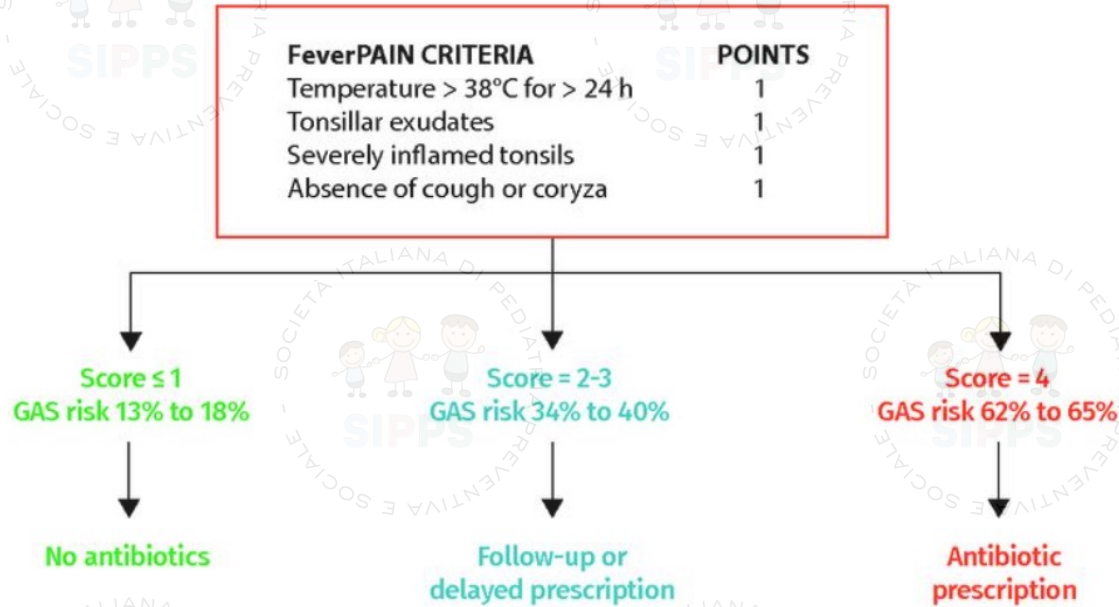
Each of the FeverPAIN criteria score 1 point (maximum score of 5). Higher scores suggest more severe symptoms and likely bacterial (streptococcal) cause. A score of 0 or 1 is thought to be associated with a 13 to 18% likelihood of isolating streptococcus. A score of 2 or 3 is thought to be associated with a 34 to 40% likelihood of isolating streptococcus. A score of 4 or 5 is thought to be associated with a 62 to 65% likelihood of isolating streptococcus.

**Pharyngitis**

Approach to diagnosis and treatment

Edward A. Sykes, MD PhD

**Figure 3. FeverPAIN scoring system:** Developed in the United Kingdom for calculating the risk of streptococcal pharyngitis in patients presenting with sore throat. Scores can be further used to decide when antimicrobial therapy versus follow-up is warranted.



GAS—group A streptococcus.  
Values from Little et al.<sup>19</sup>





*Choen JF. Cochrane Database Syst Rev. 2016 Jul 4;7:CD010502.  
Ganti L.. Ann Emerg Med. 2017 Aug 31*

Summary of rapid antigen detection test performance

Test	No. of Studies	No. of Participants	Sensitivity (95% CI), %	Specificity (95%CI), %
EIA	86	48.808	85.4 (82.7-87.8)	95.8 (94.8-96.6)
OIA	19	9.436	86.2 (82.7-89.2)	93.7 (91.5-95.4)

CI, Confidence interval, EIA, enzyme immunoassay, OIA, optical immunoassay.

A total of 58,244 patients from 105 studies were included, with sensitivities ranging from 82.7% to 89.2% and specificity ranging from 91.5% to 96.6% (Table).

We can use a prevalence of 25% to obtain a negative likelihood ratio of 0.15 (posttest probability 4.7%) and a positive likelihood ratio of 16.5 (posttest probability 84.6%).

**Therefore, if a rapid antigen detection test result for streptococcus is negative, the chance that a streptococcal infection will be missed is less than 5%, or 1 in 20.**



Meta-Analysis > Cochrane Database Syst Rev. 2020 Jun 4;6(6):CD012431.  
doi: 10.1002/14651858.CD012431.pub2.

## Efficacy and safety of rapid tests to guide antibiotic prescriptions for sore throat

Jérémie F Cohen<sup>1,2</sup>, Jean-Yves Pauchard<sup>3</sup>, Nils Hjelm<sup>4</sup>, Robert Cohen<sup>5</sup>, Martin Chalumeau<sup>1,2</sup>

Affiliations + expand

PMID: 32497279 PMCID: PMC7271976 (available on 2021-06-04)

DOI: 10.1002/14651858.CD012431.pub2

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Little 2013a  
Little 2013b  
Llor 2011a  
Malteizou 2008  
Worrall 2007a

	Randor	Allocat	Blindin	Blindin	Incomf	Selectr	Other t
Little 2013a	+	+	-	-	?	+	+
Little 2013b	+	+	-	-	?	+	+
Llor 2011a	+	?	-	-	?	-	+
Malteizou 2008	?	?	-	-	?	+	+
Worrall 2007a	?	?	-	-	+	+	+

Figure 1. Type of interventions: Rapid tests can be used alone or in combination with a clinical scoring system.

**Non-selective strategy**

Rapid test for all

**Clinical decision rule  
combined with rapid test**

Rapid test in selected patients  
based on a scoring system

**Clinical decision rule  
without rapid test**

Clinical scoring system only





# Efficacy and safety of rapid tests to guide antibiotic prescriptions for sore throat

Jérémie F Cohen<sup>1, 2</sup>, Jean-Yves Pauchard<sup>3</sup>, Nils Hjelm<sup>4</sup>, Robert Cohen<sup>5</sup>, Martin Chalumeau<sup>1, 2</sup>

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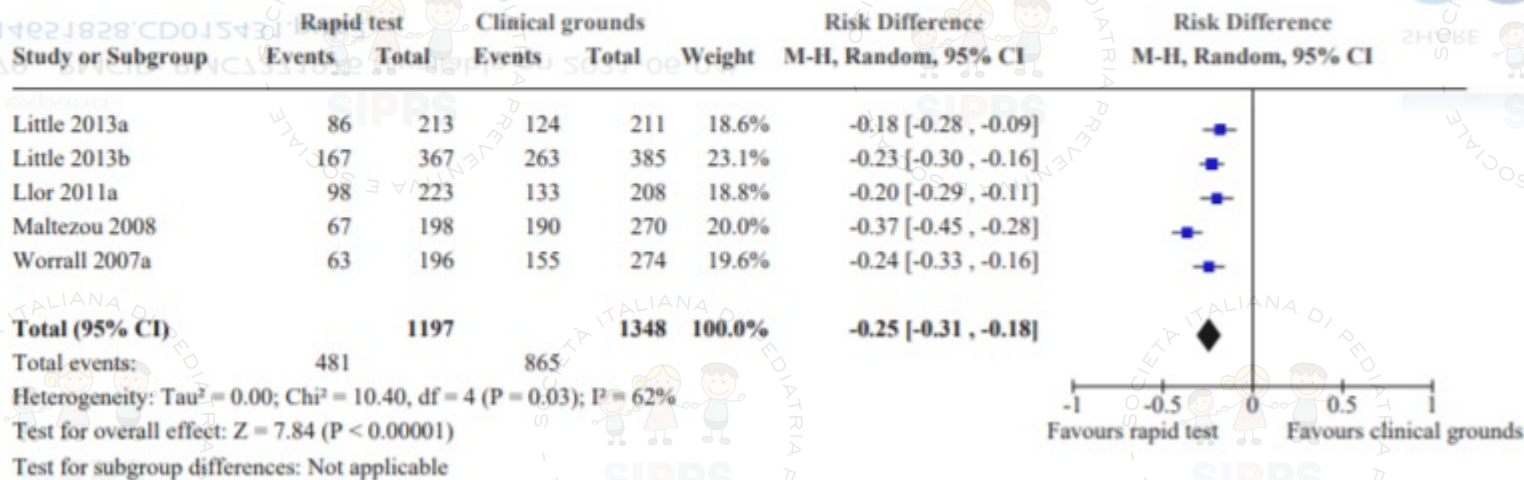


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sources of heterogeneity. **AUTHORS' CONCLUSIONS:** Rapid testing to guide antibiotic treatment for sore throat in primary care probably reduces antibiotic prescription rates by 25% (absolute risk difference), but may have little or no impact on antibiotic dispensing. More studies are needed to assess the efficacy and safety of rapid test-guided antibiotic prescribing, notably to evaluate centred outcomes and variability across subgroups (e.g. adults versus children).








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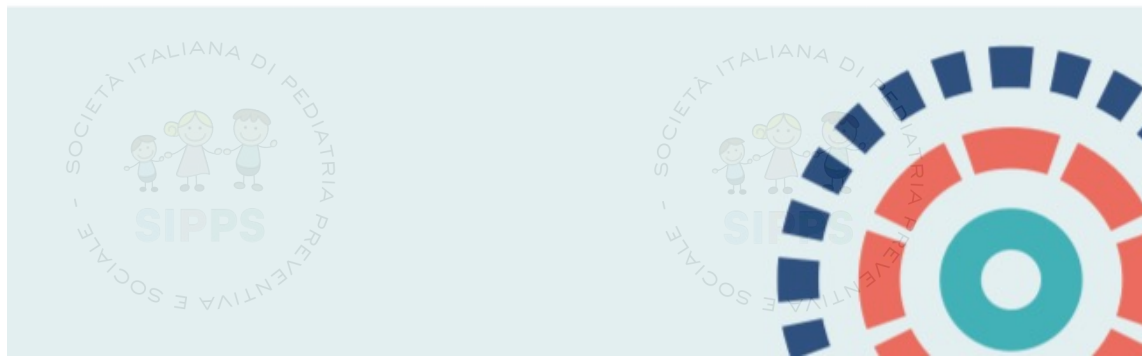
Volume 24 • Issue 31 • June 2020

ISSN 1366-5278

# Rapid antigen detection and molecular tests for group A streptococcal infections for acute sore throat: systematic reviews and economic evaluation

Hannah Fraser, Daniel Gallacher, Felix Achana, Rachel Court, Sian Taylor-Phillips, Chidozie Nduka, Chris Stinton, Rebecca Willans, Paramjit Gill and Hema Mistry

**Objective:** Systematically review the evidence for 21 point-of-care tests for detecting group A *Streptococcus* bacteria and develop a de novo economic model to compare the cost-effectiveness of point-of-care tests alongside clinical scoring tools with the cost-effectiveness of clinical scoring tools alone for patients managed in primary care and hospital settings.



Dipartimento di Scienze della Salute  
Università di Firenze



## Rapid antigen detection and molecular tests for group A streptococcal infections for acute sore throat: systematic reviews and economic evaluation

Hannah Fraser<sup>1</sup>, Daniel Gallacher<sup>1</sup>, Felix Achana<sup>1</sup>, Rachel Court<sup>1</sup>, Sian Taylor-Phillips<sup>1</sup>, Chidozie Nduka<sup>1</sup>, Chris Stinton<sup>1</sup>, Rebecca Willans<sup>1</sup>, Paramjit Gill<sup>1</sup>, Hema Mistry<sup>1</sup>

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**Review methods:** Eligible studies included those of people aged  $\geq 5$  years presenting with sore throat symptoms, studies comparing point-of-care testing with antibiotic-prescribing decisions, studies of test accuracy and studies of cost-effectiveness. Quality assessment of eligible studies was undertaken. Meta-analysis of sensitivity and specificity was carried out for tests with sufficient data. A decision tree model estimated costs and quality-adjusted life-years from an NHS and Personal Social Services perspective.

## Results

The searches identified 38 studies of clinical effectiveness and three studies of cost-effectiveness. Twenty-six full-text articles and abstracts reported on the test accuracy of point-of-care tests and/or clinical scores with biological culture as a reference standard. In the population of interest (patients with Centor/McIsaac scores of  $\geq 3$  points or FeverPAIN scores of  $\geq 4$  points), point estimates were 0.829 to 0.946 for sensitivity and 0.849 to 0.991 for specificity. There was considerable heterogeneity, even for studies using the same point-of-care test, suggesting that it is unlikely that any single study will have accurately captured a test's true performance. There is some randomised controlled trial evidence to suggest that the use of rapid antigen detection tests may help to reduce antibiotic-prescribing rates. Sensitivity and specificity estimates for each test in each age group and care setting combination were obtained using meta-analyses where appropriate. Any apparent differences in test accuracy may not be attributable to the tests, and may have been caused by known differences in the studies, latent characteristics or chance. Fourteen of the 21 tests reviewed were included in the economic modelling, and these tests were not cost-effective within the current National Institute for Health and Care Excellence's cost-effectiveness thresholds. Uncertainties in the cost-effectiveness estimates included model parameter inputs and assumptions that increase the cost of testing, and the penalty for antibiotic overprescriptions.



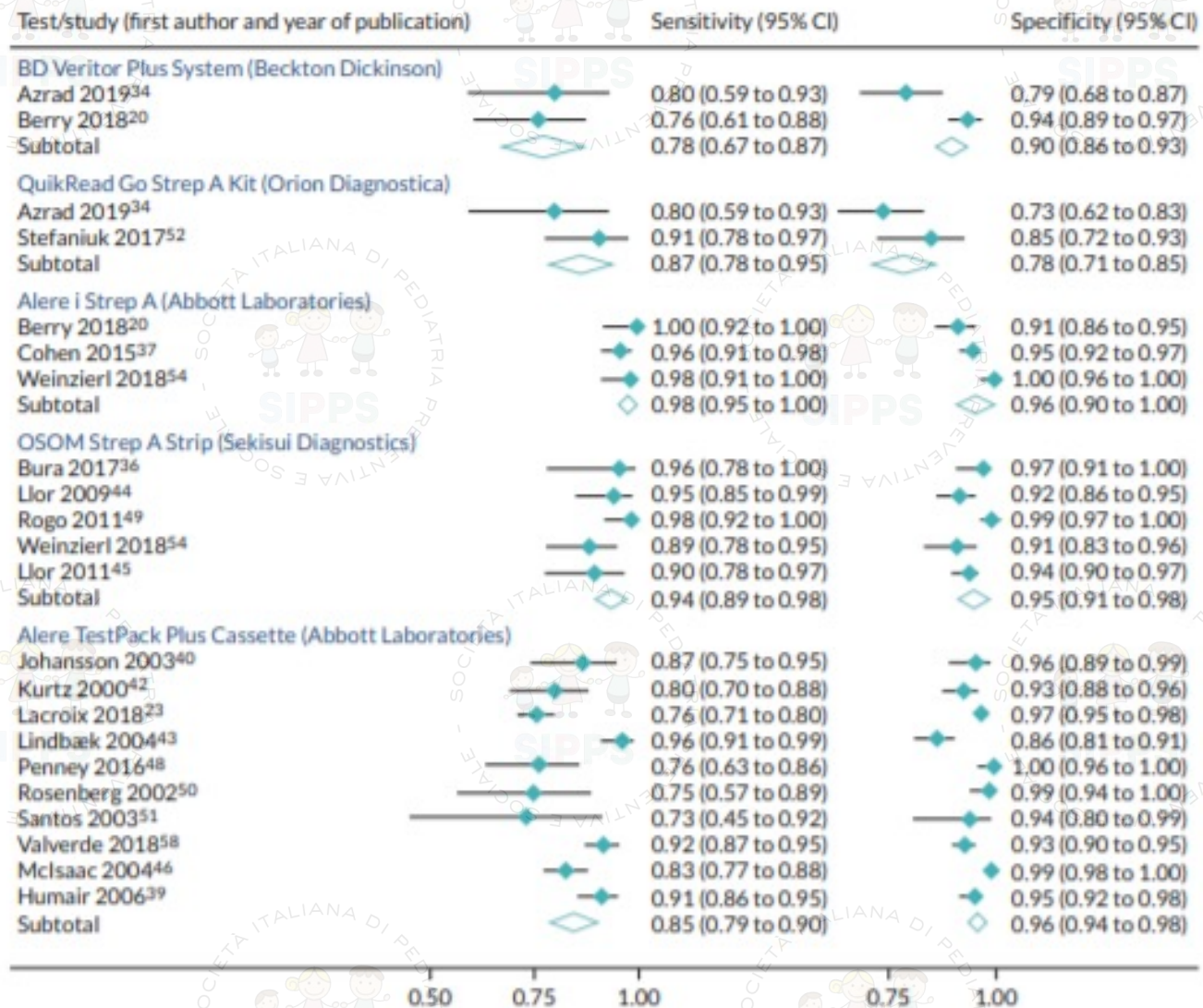


FIGURE 8 Summary of meta analyses carried out on tests with multiple studies excluding manufacturer responses and FDA reports.





Il tampone per l'esecuzione del test rapido deve essere effettuato **sfregando energicamente il tampone sull'orofaringe e sulla superficie di entrambe le tonsille**, evitando di toccare altre parti della cavità orale e di contaminarlo di saliva (III-A).

E' sufficiente eseguire il test rapido **una sola volta e con un solo tampone** (III-A).

Il test rapido dovrebbe essere eseguito **da personale abituato a farlo** (III-A).

Il bambino deve essere **collaborante o immobilizzato** con l'aiuto di una seconda persona (es. genitore). Il faringe deve essere adeguatamente illuminato con luce elettrica e la lingua deve essere tenuta abbassata con un apposito abbassalingua (VI-A).

Prima dell'esecuzione del test rapido **non devono essere utilizzati disinfettanti del cavo orale** (VI-D).

**Quesito n°7: E' indicato richiede l'esame culturale  
in caso di test rapido negativo?**

---



[www.HelloCrazy.com](http://www.HelloCrazy.com)

- ✓ **soddisfacente sensibilità e specificità dei test rapidi attualmente in uso**
- ✓ **necessità di prelevare 2 tamponi**
- ✓ **necessità di inviare ad un laboratorio di microbiologia il tampone per l'esame colturale**
- ✓ **costo di un esame colturale**
- ✓ **tempi per ottenere una risposta (24-48 ore)**



# Quesito n° 6: Come e quando effettuare l'esame colturale e come devono essere interpretati i risultati?

## RACCOMANDAZIONE

L'esame colturale **non è necessario per la diagnosi di routine** di una faringotonsillite acuta da SBEA in considerazione dell'elevata concordanza del test rapido con l'esame colturale. (VI-D)

## RACCOMANDAZIONE

A scopo epidemiologico, l'esame colturale, poiché consente l'antibiogramma, può essere effettuato per **monitorizzare la sensibilità di SBEA** ai diversi antibiotici e controllare **l'eventuale comparsa di nuove resistenze**. (VI-B)

## RACCOMANDAZIONE

Nel bambino con risoluzione dei sintomi a fine terapia, **la ripetizione del test alla fine del trattamento non è raccomandata** (VI-D).

# Hanno un significato gli esami ematologici?

**I titoli anticorpali anti-streptococcici riflettono una situazione immunologica passata e non presente e non sono di nessun valore nella diagnosi di faringotonsillite acuta.**

**Possono essere utilizzati per confermare una infezione streptococcica pregressa in pazienti in cui si sospetti una malattia reumatica o una glomerulo nefrite post-streptococcica (III-B).**



# linee guida dell'Istituto Superiore di Sanità per la gestione del bambino con faringotonsillite

coordinatori: M de Martino, N Mansi, N Principi, A Serra  
Chiappini E et al. Clin Ther 2012;34:1442-1458

## **RACCOMANDAZIONE N° 24**

**la terapia di scelta per la faringotonsillite streptococcica è rappresentata dalla penicillina V o, in mancanza di questa, dall'amoxicillina somministrata a 50 mg/kg/die in 2 o 3 dosi giornaliere per via orale per 10 giorni (I-A)**

## RACCOMANDAZIONE N° 27

in considerazione dell'elevata prevalenza di resistenza di *Streptococcus pyogenes* ai macrolidi, l'utilizzo di questa classe di farmaci va limitato ai soggetti con dimostrata allergia IgE-mediata ai betalattamici, se possibile dopo aver dimostrato la sensibilità dello streptococco a questa classe di antibiotici (II-C)





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New search

## Different antibiotic treatments for group A streptococcal pharyngitis

✉ Mieke L van Driel, An IM De Sutter, Sarah Thorning, Thierry Christiaens Authors' declarations of interest

Version published: 17 March 2021 Version history

We included **19 trials reported in 18 publications (5839 randomised participants)**: All participants had confirmed acute GABHS tonsillopharyngitis, and ages ranged from one month to 80 years.

**Nine trials included only, or predominantly, children.**

six trials compared penicillin with cephalosporins;

six compared penicillin with macrolides;

three compared penicillin with carbacephem;

one compared penicillin with sulphonamides;

one compared clindamycin with ampicillin;

and one compared azithromycin with amoxicillin in children

Reporting of randomisation, allocation concealment, and blinding was **poor in all trials. We downgraded the certainty of the evidence mainly due to lack of (or poor reporting of) randomisation or blinding, or both; heterogeneity; and wide confidence intervals.**

Different antibiotic treatments for group A streptococcal pharyngitis

Mieke L van Driel, An IM De Sutter, Sarah Thorning, Thierry Christiaens Authors' declarations of interest

Version published: 17 March 2021 Version history

https://doi.org/10.1002/14651858.CD004406.pub5

Collapse all Expand all

Cephalosporins versus penicillin

We are uncertain if there is a difference in symptom resolution (at 2 to 15 days) for cephalosporins versus penicillin (odds ratio (OR) for absence of symptom resolution 0.79, 95% confidence interval (CI) 0.55 to 1.12; 5 trials; 2018 participants; low-certainty evidence). Results of the sensitivity analysis of evaluable participants differed (OR 0.51, 95% CI 0.27 to 0.97; 5 trials; 1660 participants; very low-certainty evidence). We are uncertain if clinical relapse may be lower for cephalosporins compared to penicillin (OR 0.55, 95% CI 0.30 to 0.99; number needed to treat for an additional beneficial outcome 4.5; 5 trials; 1660 participants; low-certainty evidence). Very low-certainty evidence showed no difference in relapse between groups (OR 0.88, 95% CI 0.43 to 1.82; 1 trial; 422 participants; very low-certainty evidence). Adverse events were more common with azithromycin compared to amoxicillin (OR 2.67, 95% CI 1.76 to 3.99; 1 trial; 673 participants; very low-certainty evidence).

Macrolides versus penicillin

We are uncertain if there is a difference in symptom resolution when comparing cephalosporins and macrolides with penicillin in the treatment of GABHS tonsillopharyngitis. Low-certainty evidence in children suggests that carbacephem may be more effective than penicillin for symptom resolution. There is insufficient evidence to draw conclusions regarding the other comparisons in this review. Data on complications were too scarce to draw conclusions. These results do not demonstrate that other antibiotics are more effective than penicillin in the treatment of GABHS pharyngitis. All studies were conducted in high-income countries with a low risk of streptococcal complications, so there is a need for trials in low-income countries and Aboriginal communities, where the risk of complications remains high.

Authors' conclusions



**E' possibile accorciare la durata della  
terapia antibiotica?**





# Short versus standard duration antibiotic treatment for acute streptococcal pharyngitis in children

Cochrane Database Syst Rev 2009;21:CD004872

Cochrane Database Syst Rev 2012;8:CD004872

**20 studi inclusi**

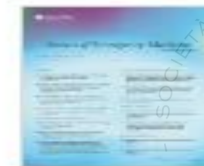
**13102 pazienti con FA da SBEGA**

**Trattamento breve (3-6 giorni) con qualsiasi antibiotico vs. penicillina V orale per 10 giorni**

- **Ridotta durata della febbre** -0.30 giorni (IC95%: -0.45 to -0.14)
- **Ridotta durata faringodinia** -0.50 giorni (IC95%: -0.78 to -0.22)
- **Ridotto rischio di fallimento a breve termine** OR: 0.80 (IC95%:0.67-0.94)
- **Rischio di ricorrenza a lungo termine** OR : 1.06 (IC95%:0.92-1.22)

**che non persiste eliminando gli studi con azitromicina a basso dosaggio (10 mg/kg)**





Pediatrics

## Are Short-Term Late-Generation Antibiotics Equivalent to Standard Penicillin Therapy in the Resolution of Symptoms in Acute Strep Throat in Children?

Anand Swaminathan, MD, MPH (EBEM Commentator)

Jeffrey Hom, MD, MPH (EBEM Commentator)

[Altamimi S. Coch rane Database Syst Rev. 2012:CD004872.](#)

**Short-term late-generation antibiotics versus longer term penicillin for acute streptococcal pharyngitis in children.**

The authors identified 20 original studies meeting inclusion criteria, though substantial heterogeneity was apparent across studies.

Despite 20 included studies of 13,102 cases of group A  $\beta$ -hemolytic streptococcus throat infections, **fever resolution was recorded in only 2 studies (n=487) and sore throat resolution in just 1 (n=308).**

Both outcomes were reduced in the short treatment group

Table 1.  
Short (3 days) versus standard (7 days) antibiotic course.

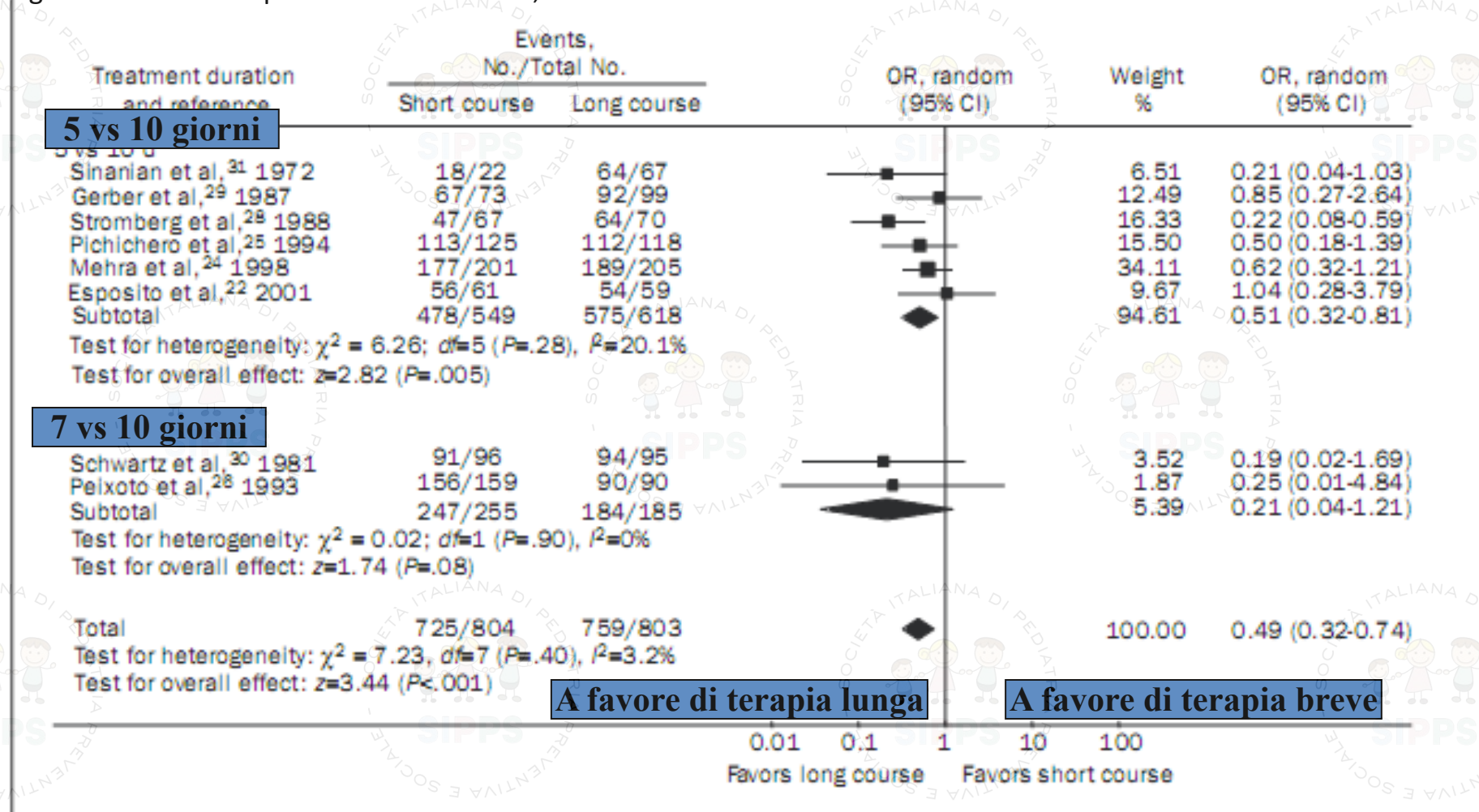
Symptom	Number of Subjects	Difference in Days (95% CI)
Fever	487	-0.30 (-0.5 to -0.1)
Sore throat	308	-0.50 (-0.8 to -0.2)

CI, Confidence interval.

# Effectiveness and safety of short-course vs long-course antibiotic therapy for group a beta hemolytic streptococcal tonsillopharyngitis: a meta-analysis of randomized trials

Falagas ME. Mayo Clin Proc 2008;82:880-89

Ogni antibiotico comparato verso se stesso, con diversa durata del trattamento





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Open Access Review

# Short- vs. Long-Course Antibiotic Treatment for Acute Streptococcal Pharyngitis: Systematic Review and Meta-Analysis of Randomized Controlled Trials

by Anna Engell Holm, Carl Llor, Lars Bjerrum and Gloria Cordoba

Research Unit for General Practice and Section of General Practice, Department of Public Health, Øster Farimagsgade 5, 1014 Copenhagen, Denmark

\* Author to whom correspondence should be addressed.

Antibiotics 2020, 9(11), 733; <https://doi.org/10.3390/antibiotics9110733>

Received: 9 September 2020 / Revised: 17 October 2020 / Accepted: 21 October 2020 / Published: 26 October 2020

(This article belongs to the Special Issue Antibiotics Use in Primary Care)

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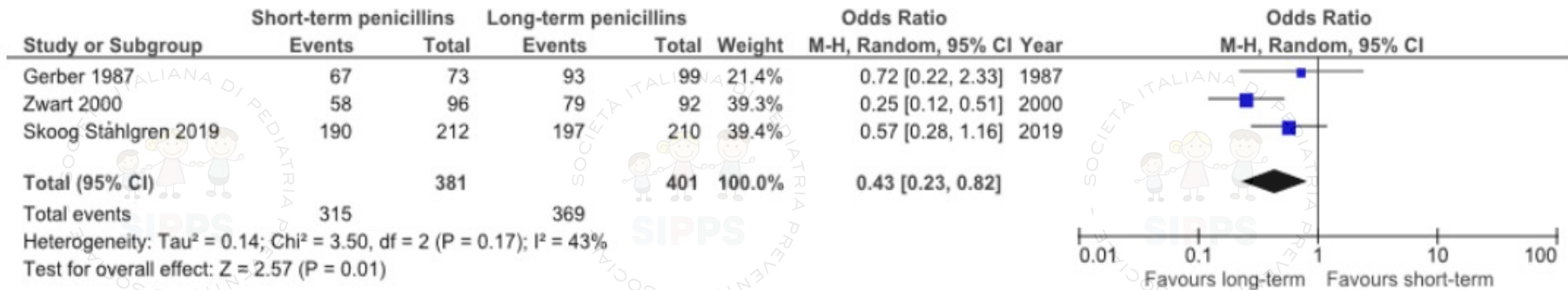
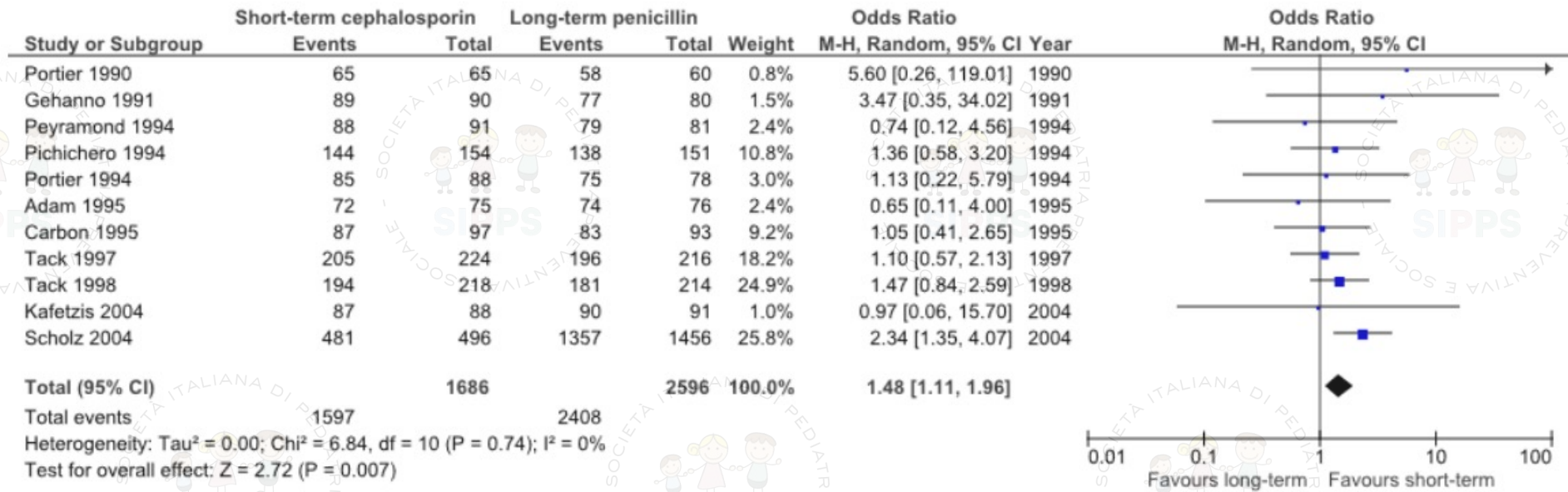


Fig. 1. Early clinical cure of short-term penicillins compared to long-term penicillin therapy

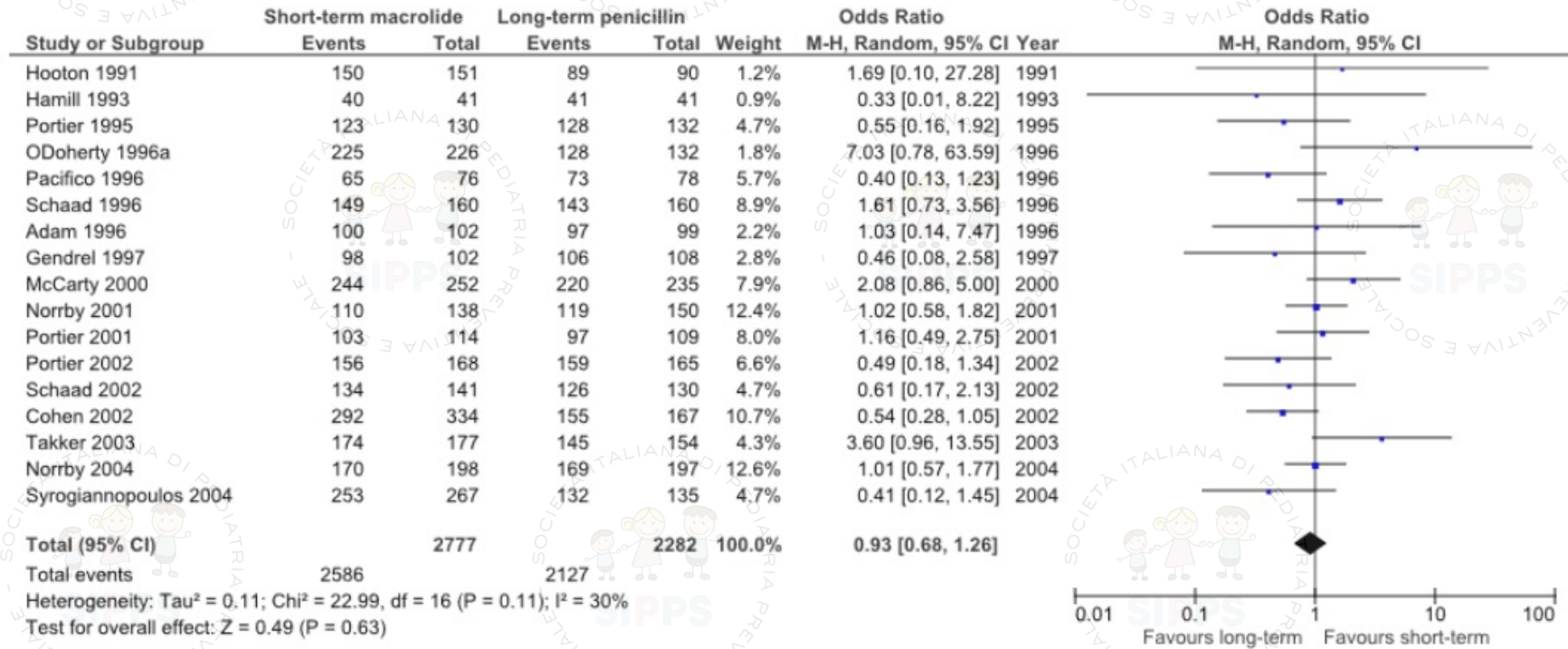
Figure S1. Early clinical cure of short-term penicillins compared to long-term penicillin therapy.





**Fig. 3. Early clinical cure of short-term cephalosporins compared to long-term penicillin therapy**

**Figure S3. Early clinical cure of short-term cephalosporins compared to long-term penicillin therapy.**



**Fig. 2. Early clinical cure of short-term macrolides compared to long-term penicillin therapy**

**Figure S2. Early clinical cure of short-term macrolides compared to long-term penicillin therapy.**



Meta-Analysis

> [Cochrane Database Syst Rev. 2020 May 1;5\(5\):CD008268.](#)

doi: [10.1002/14651858.CD008268.pub3](https://doi.org/10.1002/14651858.CD008268.pub3).

# Corticosteroids as standalone or add-on treatment for sore throat

Simone de Cassan<sup>1</sup>, Matthew J Thompson<sup>2</sup>, Rafael Perera<sup>3</sup>, Paul P Glasziou<sup>4</sup>, Chris B Del Mar<sup>4</sup>, Carl J Heneghan<sup>3</sup>, Gail Hayward<sup>3</sup>

Affiliations + expand

PMID: 32356360 PMID: PMC7193118 (available on 2021-05-01)

DOI: [10.1002/14651858.CD008268.pub3](https://doi.org/10.1002/14651858.CD008268.pub3)

**Authors' conclusions:** Oral or intramuscular corticosteroids, in addition to antibiotics, moderately increased the likelihood of both resolution and improvement of pain in participants with sore throat. Given the limited benefit, further research into the harms and benefits of short courses of steroids is needed to permit informed decision-making.

*Pediatr Emerg Care.* 2012 Aug;28(8):807-9. doi: 10.1097/PEC.0b013e31826288e5.

## Adverse effects of steroid therapy in children with pharyngitis with unsuspected malignancy.

Sadowitz PD<sup>1</sup>, Page NE, Crowley K.

### Author information

### Abstract

Pharyngitis is a common clinical complaint for children and accounts for 3.1% of all visits to selected ambulatory care settings. Most children with pharyngitis have benign, self-limited disease with infrequent complications such as peritonsillar abscess, mastoiditis, or lymphadenitis. Recent studies have touted the benefits of steroids in the treatment of children with pharyngitis for pain control. These studies do not address the potential life-threatening complication of steroids in patients with pharyngitis or lymphadenopathy in the setting of undiagnosed acute lymphocytic leukemia (ALL) or lymphoma. We report 4 cases of children treated with steroids for pharyngitis or adenitis that subsequently were diagnosed with ALL or lymphoma. If steroids are to be used in children with pharyngitis or adenitis, the following recommendations should be strongly considered: Careful history and physical examination should be obtained. Presence of hepatosplenomegaly or lymphadenopathy outside the cervical region should raise suspicions regarding an underlying malignancy. Normal results of complete blood cell count in the setting of clear cut pharyngitis with exudates and a lack of significant adenopathy essentially rules out the diagnosis of ALL. Because traditional analgesics are available, which do not affect the curability of ALL or lymphoma, the routine use of steroids in pharyngitis in children should be considered only in rare circumstances.

PMID: 22863823 [PubMed - indexed for MEDLINE]

- ✓ E' improbabile che la ricerca scientifica sia in grado nei prossimi anni di produrre RCT in grado di comparare l'efficacia di diversi regimi antibiotici rispetto all'outcome « prevenzione della malattia reumatica » nei paesi occidentali
- ✓ Dobbiamo necessariamente affidarci ai dati raccolti in anni passati tramite studi di qualità metodologica non ottimale ma i cui risultati chiaramente dimostravano come il trattamento antibiotico della faringite streptococcica si associasse ad una riduzione del rischio del 70% oltre che delle complicanze suppurative
- ✓ I diversi approcci utilizzati dalle varie linee guida in US così come in UK sono risultati fallimentari sul campo → scarsa *compliance* dei medici alle linee guida
- ✓ **L'impiego del test rapido ed il trattamento selezionato dei casi confermati di faringite streptococcica permette di selezionare i casi da trattare e, quindi, un uso razionale della terapia antibiotica**



