Viral Üst Solunum Yolu İnfeksiyonlarında Antibiyotik Kullanımı Nasıl Engellenebilir?

Dr. Özlem Kurt Azap

Başkent Üniversitesi Tıp Fakültesi

Enfeksiyon Hastalıkları ve Klinik Mikrobiyoloji AD

Como evitar o uso inadequado de antibióticos nas infecções de vias aéreas superiores? Posição de um painel de especialistas ☆,

Otávio Bejzman Piltcher [a], Eduardo Macoto Kosugi [b], Eulalia Sakano [c], Olavo Mion [d], José Ricardo Gurgel Testa [b], Fabrizio Ricci Romano [e f], Marco Cesar Jorge Santos [g], Renata Cantisani Di Francesco [d], Edson Ibrahim Mitre [h], Thiago Freire Pinto Bezerra [i], Renato Roithmann [j], Francini Greco Padua [k l], Fabiana Cardoso Pereira Valera [m], José Faibes Lubianca Neto [n], Leonardo Conrado Barbosa Sá [o], Shirley Shizue Nagata Pignatari [b], Melissa Ameloti Gomes Avelino [p q], Juliana Alves de Souza Caixeta [r], Wilma Terezinha Anselmo-Lima [m], Edwin Tamashiro [m]

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«ÜSYE'de uygunsuz antibiyotik kullanımından nasıl kaçınılabilir?»

Brazilian Journal of Otorhinolaryngology
Volume 84, Issue 3, May–June 2018, Pages 265-279

Special article

How to avoid the inappropriate use of antibiotics in upper respiratory tract infections? A position statement from an expert panel

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SPECIAL ARTICLE

How to avoid the inappropriate use of antibiotics in upper respiratory tract infections? A position statement from an expert panel☆

Otávio Bejzman Piltcher[a], Eduardo Macoto Kosugi[b], Eulalia Sakano[c], Olavo Mion[d], José Ricardo Gurgel Testa[b], Fabrizio Ricci Romano[e,f], Marco Cesar Jorge Santos[g], Renata Cantisani Di Francesco[d], Edson Ibrahim Mitre[h], Thiago Freire Pinto Bezerra[i], Renato Roithmann[j], Francini Greco Padua[k,l], Fabiana Cardoso Pereira Valera[m], José Faibes Lubianca Neto[n], Leonardo Conrado Barbosa Sá[o], Shirley Shizue Nagata Pignatari[b], Melissa Ameloti Gomes Avelino[p,q], Juliana Alves de Souza Caixeta[r], Wilma Terezinha Anselmo-Lima[m], Edwin Tamashiro[m,*]

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ÜSYE'lerde Antibiyotik Kullanımını Azaltma Stratejileri

- Doğru Tanı: Viral ve bakteriyel ÜSYE'leri ayırt etmek
- Klinik Rehberler: Uluslararası/ulusal rehberlerin uygulanması
- Antibiyotik Yönetim Programları: Hastane ve kliniklerde uygulama
- Antibiyotik kullanımı konusunda hasta ve toplum eğitimi

Sinüzite Yaklaşım

Braz J Otorhinolaryngol. 2018;84(3):265–279

Brazilian Journal of
OTORHINOLARYNGOLOGY
www.bjorl.org

SPECIAL ARTICLE

How to avoid the inappropriate use of antibiotics in upper respiratory tract infections? A position statement from an expert panel☆

Akut bakteriyel sinüzit, sinüzit olgularının çok küçük bir bölümünü oluşturuyor!

Figure 2 Evolution of acute bacterial rhinosinusitis after a viral illness.
Adapted from the American Guidelines for Rhinosinusitis, 2015.

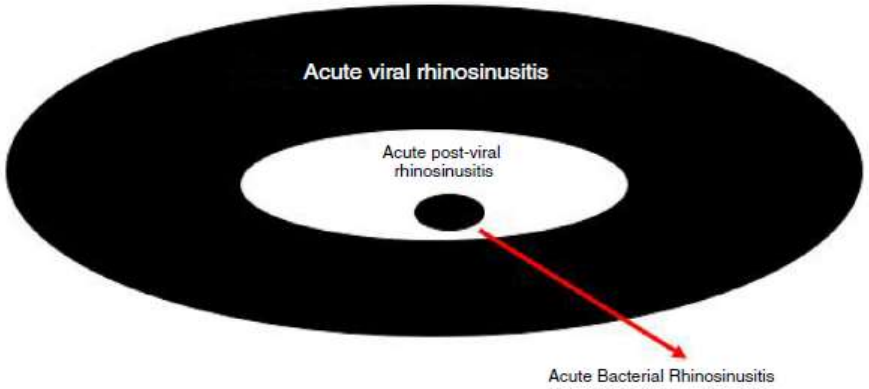


Figure 3 Representativeness of acute viral rhinosinusitis developing into acute post-viral rhinosinusitis or, eventually, acute bacterial rhinosinusitis, according to EPOS (2012).

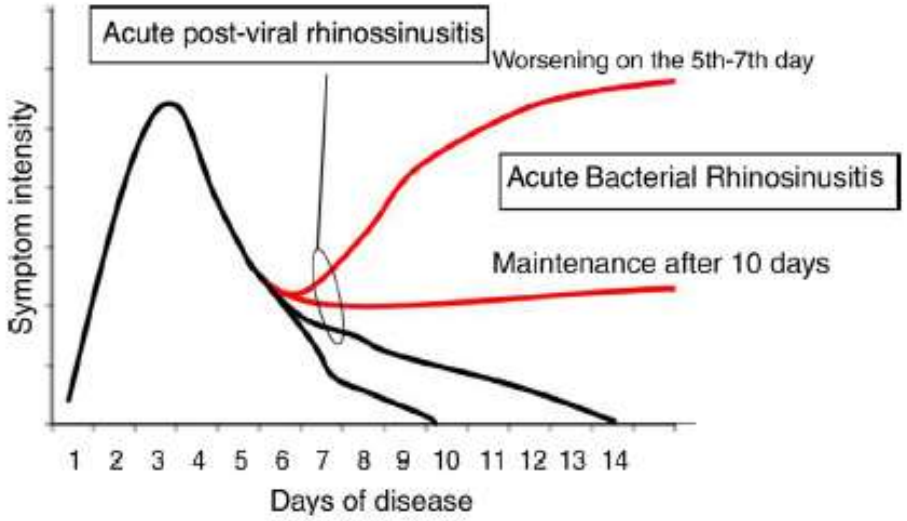
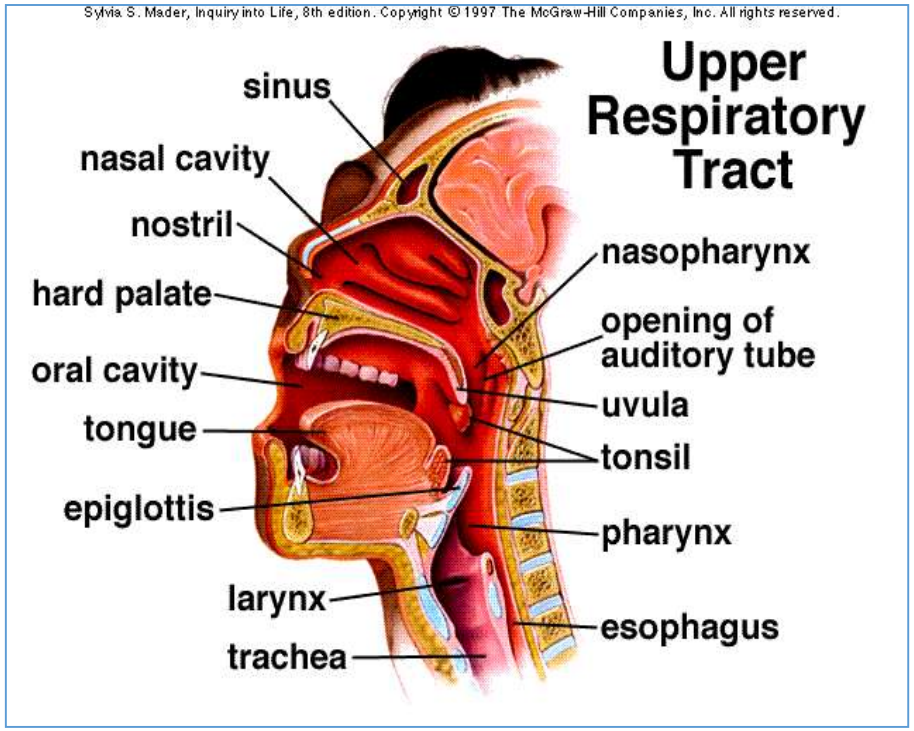


Figure 4 Evolution of acute rhinosinusitis.


Ateşim var, boğazım ağrıyor, çok halsizim
Oğlum 19 yaşında, 2 haftadır ateşi var ve halsizliği nedeniyle okula gidemiyor
Ateşim var, öksürüyorum, geniz akıntım var
Sesimin kısık olması dışında gayet iyiyim
Ateşim var, öksürüyorum çok halsizim
Ateşim ve halsizliğim yok ama burnumu çekmekten ders çalışamıyorum

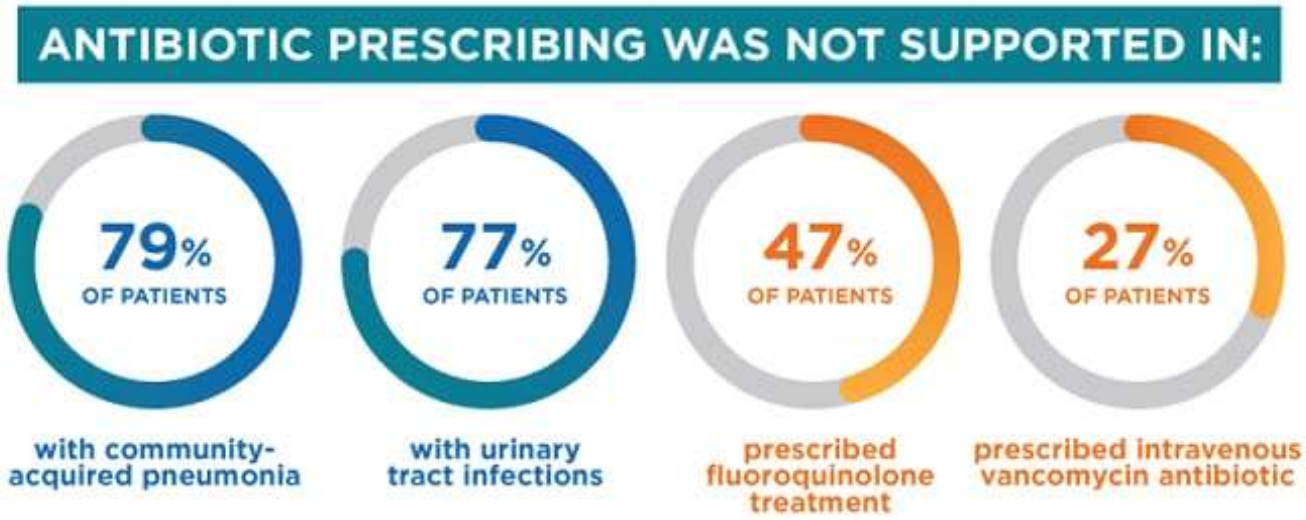
Üst Solunum Yolu Enfeksiyonları



- Sinüzit/rinosinüzit
- Tonsillofarenjit
- Soğuk algınlığı/Nezle
- Larenjit
- ……

Antibiyotik Kullanmak **vs** Kullanmamak

Antibiyotikler uygun kullanılmıyor!



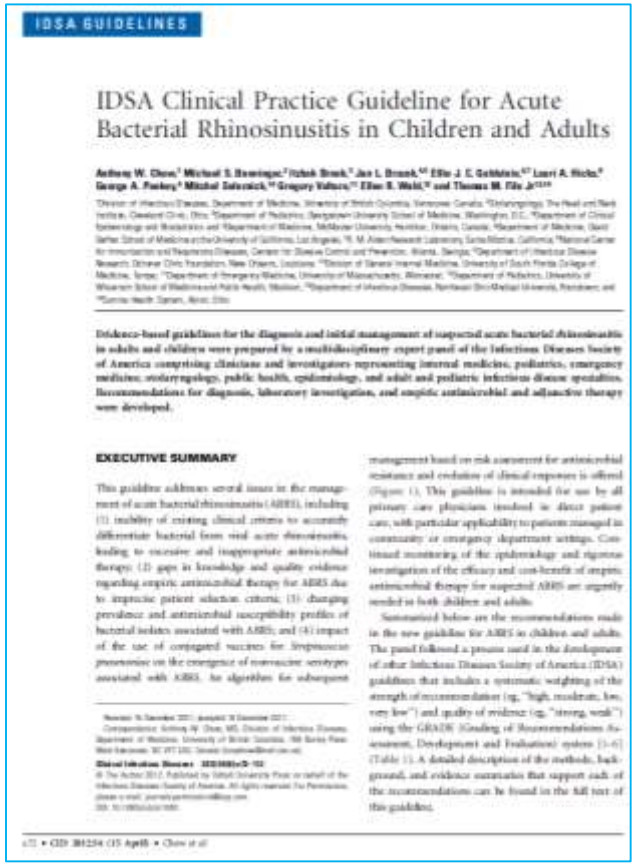
Unsupported prescribing included the use of antimicrobials:

- To which the pathogen was not susceptible
- In the absence of documented infection signs or symptoms
- Without supporting microbiologic data
- Deviating from recommended guidelines
- Exceeding the recommended duration

Bilgi Kaynakları

- Kitaplar
- Makaleler, derlemeler
- Rehberler, uzlaşı raporları; ulusal/uluslararası
- Algoritmalar, uygulamalar
- Tıbbi web sayfaları
- …

Akut Bakteriyel Sinüzit Rehberi- IDSA 2012



IDSA GUIDELINES

IDSA Clinical Practice Guideline for Acute Bacterial Rhinosinusitis in Children and Adults

EXECUTIVE SUMMARY

INTRODUCTION

Throughout this guideline, the term *rhinosinusitis* is used interchangeably with *sinusitis*. Because the nasal mucosa is contiguous with that of the paranasal sinuses, any inflammation of the sinuses is almost always accompanied by inflammation of the nasal cavity [7, 8]. Rhinosinusitis is an extremely common condition. In a national health survey conducted during 2008, nearly 1 in 7 (13.4%) of all noninstitutionalized adults aged ≥18 years were diagnosed with rhinosinusitis within the previous 12 months [9]. Incidence rates among adults are higher for women than men (~1.9-fold), and adults between 45 and 74 years are most commonly affected [9].

ABD'de 2008 yılında 7 erişkinden biri son 1 yıl içinde sinüzit tanısı almış

Yakınmalar

- Ateş
- Geniz akıntısı
- Öksürük
- Baş ağrısı
- Öne eğilmekle artan yüzde basınç ve ağrı hissi
- Burun tıkanıklığı
- Pürülan burun akıntısı
- Üst çenede, dişlerde ağrı
- Ağız kokusu

Fizik Muayene

- Ateş
- Yüzde hassasiyet ?
- Postnazal akıntı ?

Laboratuvar

- Tam kan, CRP ?

- Mikrobiylojik tetkikler ??
  - Kültür
  - Gram boyama
- Radyolojik tetkikler ??
  - Direkt grafi
  - BT
  - MR

Sinüzit Tanımı

Supplement to
THE JOURNAL OF
Allergy AND Clinical Immunology

VOLUME 114 NUMBER

Rhinosinusitis: Establishing definitions for clinical research and patient care

Eli O. Meltzer, MD,[a] Daniel L. Hamilos, MD,[b] James A. Hadley, MD,[c] Donald C. Lanza, MD,[d] Bradley F. Marple, MD,[e] Richard A. Nicklas, MD,[f] Claus Bachert, MD, PhD,[g] James Baraniuk, MD,[h] Fuad M. Baroody, MD,[i] Michael S. Benninger, MD,[j] Itzhak Brook, MD,[k] Badrul A. Chowdhury, MD, PhD,[l] Howard M. Druce, MD,[m] Stephen Durham, MD,[n] Berrylin Ferguson, MD,[o] Jack M. Gwaltney, Jr, MD,[p] Michael Kaliner, MD,[q] David W. Kennedy, MD,[r] Valerie Lund, MD,[s] Robert Naclerio, MD,[t] Ruby Pawankar, MD, PhD,[u] Jay F. Piccirillo, MD,[v] Patricia Rohane, MD,[w] Ronald Simon, MD,[x] Raymond G. Slavin, MD, MS,[y] Alkis Togias, MD,[z] Ellen R. Wald, MD,[aa] and S. James Zinreich, MD[bb]

San Diego and La Jolla, Calif, Boston, Mass, Rochester, NY, St. Petersburg, Fla, Dallas, Tex, Washington, DC, Ghent, Belgium, Chicago, Ill, Detroit, Mich, Wheaton and Baltimore, Md, Newark and Warren, NJ, London, United Kingdom, Pittsburgh and Philadelphia, Pa, Charlottesville, Va, Tokyo, Japan, and St Louis, Mo

TABLE X. Presenting symptoms of CRS: Percentage of patients with symptom

Major symptoms	% of patients	Minor symptoms	% of patients
Nasal discharge	82	Headache	83
Nasal obstruction	94	Ear pain-pressure	68
Facial congestion	85	Halitosis	53
Facial pain-pressure-fullness	83	Dental pain	50
Loss of smell	68	Cough	65
		Fever	33
		Fatigue	84

TABLE VIII. Acute bacterial rhinosinusitis*

Major symptoms	Minor symptoms
. Purulent anterior nasal drainage	. Headache
. Purulent posterior nasal drainage	. Facial pain
. Cough	. Periorbital edema
	. Earache
	. Halitosis
	. Tooth pain
	. Sore throat
	. Increased wheeze
	. Fever

*Acute bacterial rhinosinusitis probable if 2 or more major symptoms or 1 major symptom and 2 or more minor symptoms are present.

TABLE IX. Symptoms associated with the diagnosis of rhinosinusitis*

Major symptoms	Minor symptoms
. Purulent anterior nasal drainage	. Headache
. Purulent-discolored posterior nasal drainage	. Ear pain-pressure-fullness
. Nasal obstruction-blockage	. Halitosis
. Facial congestion-fullness	. Dental pain
. Facial pain-pressure-fullness	. Cough
. Hyposmia-anosmia	. Fever (all nonacute)
. Fever (acute only)	. Fatigue

*A diagnosis of rhinosinusitis is probable if 2 or more major symptoms or 1 major symptom and 2 or more minor symptoms are present. Facial pain-pressure-fullness alone does not constitute a suggestive history in the absence of another major nasal symptom or sign. Fever alone in acute sinusitis does not constitute a strongly suggestive history in the absence of another major nasal symptom or sign.

J Allergy Clin Immunol 2004; 114:155–212.

Akut Bakteriyel Sinüzit Tanısı

Majör Semptomlar	Minör Semptomlar
Pürülan burun akıntısı	Baş ağrısı
Pürülan post nazal akıntı	Kulak ağrısı, basınç veya dolgunluk hissi
Burun tıkanıklığı	Ağız kokusu (halitoz)
Yüzde dolgunluk veya basınç hissi	Diş ağrısı
Yüzde ağrı veya basınç hissi	Öksürük
Hiposmi (koku duyusunda azalma) veya anosmi (koku duyusu kaybı)	Ateş (akut olmayan)
Ateş (akut)	Yorgunluk

- En az 2 majör ya da
- 1 majör ve en az 2 minör semptomun varlığı

Etkenler

Table 6. Prevalence (Mean Percentage of Positive Specimens) of Various Respiratory Pathogens From Sinus Aspirates in Patients With Acute Bacterial Rhinosinusitis

	Publications Before 2000		Publications in 2010	
Microbial Agent	Adults[a] (%)	Children[b] (%)	Adults[c] (%)	Children[d] (%)
Streptococcus pneumoniae	30–43	44	38	21–33
Haemophilus influenzae	31–35	30	36	31–32
Moraxella catarrhalis	2–10	30	16	8–11
Streptococcus pyogenes	2–7	2	4	…
Staphylococcus aureus	2–3	…	13	1
Gram-negative bacilli (includes *Enterobacteriaceae* spp)	0–24	2	…	…
Anaerobes (*Bacteroides*, *Fusobacterium*, *Peptostreptococcus*)[e]	0–12	2	…	…
Respiratory viruses	3–15	…	…	…
No growth	40–50	30	36	29

Pnömokolarda Direnç Sorunu

Open Forum Infectious Diseases
MAJOR ARTICLE

Trends in *Streptococcus pneumoniae* Antimicrobial Resistance in US Children: A Multicenter Evaluation

Selini Mohanty,[1] Kristen Feemster,[1] Kelvin C. Yu,[2] Janet A. Watts,[2] and Vikas Gupta[2,3]
[1]Center for Observational and Real World Evidence (CORE), Merck & Co. Inc, Rahway, New Jersey, USA, and [2]Becton, Dickinson & Company, Franklin Lakes, New Jersey, USA

Background. Antimicrobial resistance (AMR) poses a significant challenge for treating pneumococcal disease. This study assessed AMR trends in *Streptococcus pneumoniae* from US children.

Methods. We evaluated antibiotic resistance, defined as facility antimicrobial susceptibility reports of intermediate/resistant, in 30-day nonduplicate *S pneumoniae* isolates from children (<18 years of age) with invasive (blood or cerebrospinal fluid/neurological) or noninvasive (respiratory or ear/nose/throat) isolates at 219 US hospital inpatient/outpatient settings in the BD Insights Research Database (January 2011–February 2020). We used descriptive statistics to characterize the percentage of antimicrobial-resistant isolates and generalized estimating equations to assess variations in resistance over time.

Results. Of 7605 *S pneumoniae* isolates analyzed, 6641 (87.3%) were from noninvasive sources. Resistance rates were higher in noninvasive versus invasive isolates. Isolates showed high observed rates of resistance to ≥1 drug class (56.8%), ≥2 drug classes (30.7%), macrolides (39.9%), and penicillin (39.6%) and significant annual increases in resistance to ≥1 drug class (+0.9%), ≥2 drug classes (+1.8%), and macrolides (+5.0%).

Conclusions. Among US children over the last decade, *S pneumoniae* isolates showed persistently high rates of resistance to antibiotics and significant increases in ≥1 drug class, ≥2 drug classes, and macrolide resistance rates. Efforts to address AMR in *S pneumoniae* may require vaccines targeting resistant serotypes and antimicrobial stewardship efforts.

Keywords. antibiotic resistance; children; pneumococcal disease; invasive pneumococcal vaccines; *Streptococcus pneumoniae*.

The introduction of pneumococcal conjugate vaccines (PCVs) against *Streptococcus pneumoniae* infections transformed the epidemiology of pneumococcal disease (PD) and associated health outcomes in both children and adults [1, 2]. Initial decreases in PD rates following introduction of PCVs were accompanied by reductions in cases of antimicrobial-resistant invasive pneumococcal disease (IPD) in children in the United States (US) and globally [3–7]. PCVs can reduce antimicrobial resistance (AMR) directly by reducing the incidence of resistant pneumococcal infections as well as indirectly by reducing antibiotic use, thereby relieving selective pressure on antibiotic-resistant strains [8, 9]. However, increased AMR over time has been observed in nonvaccine serotypes in pediatric IPD [10] and in both vaccine and nonvaccine serotypes in noninvasive PD pediatric samples [11].

Currently, the Centers for Disease Control and Prevention (CDC) estimates that approximately 30% of IPD cases are caused by *S pneumoniae* isolates resistant to 1 or more clinically relevant antibiotics. Drug-resistant *S pneumoniae* isolates caused an estimated 900 000 infections and 3600 deaths per year in all age groups in 2014 and has been designated a serious threat by the CDC [12]. Worldwide, *S pneumoniae* is the fourth leading pathogen in terms of deaths associated with or attributable to resistance [13]. Current data on AMR in *S pneumoniae* are essential not only for clinical management, but also to assess evolutionary AMR trends in this important pathogen and prioritize efforts to reduce resistance. However, there is a lack of information on *S pneumoniae* resistance in the pediatric population, which does not have as many treatment options as adult patients [14]. In particular, there is a dearth of information on resistance in pediatric noninvasive PD infections, which constitute the majority of PD cases [2]. We therefore evaluated AMR in *S pneumoniae* isolates obtained from children with invasive or noninvasive PD.

METHODS

Study Design

This was a retrospective study of antibiotic susceptibility of specified nonduplicate *S pneumoniae* isolates (first noncontaminant *S pneumoniae* isolate within 30 days) collected from hospitalized and ambulatory pediatric patients (aged <18 years at time of

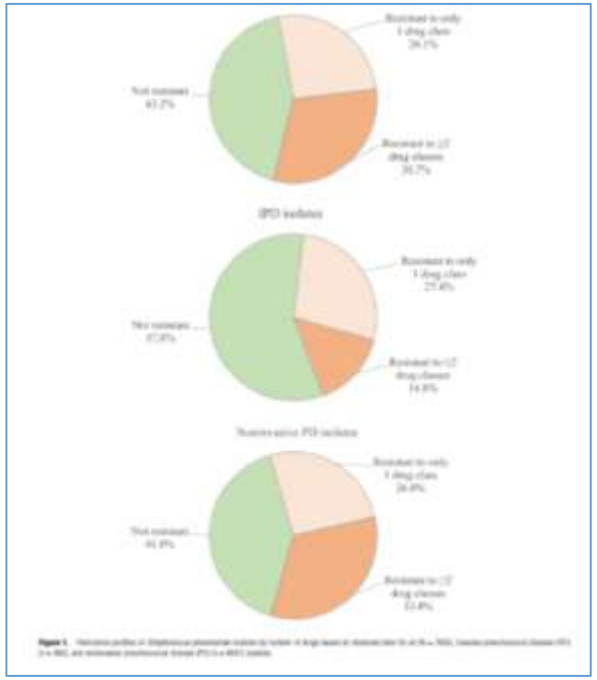


Table 2. Observed Antimicrobial Resistance in *Streptococcus pneumoniae* Isolates in Children (January 2011–February 2020)

Antibiotic	Invasive PD (n = 964)	Noninvasive PD (n = 6641)	Total (N = 7605)
Resistance to ≥1 drug class	407 (42.2)	3915 (59.0)	4322 (56.8)
Resistance to ≥2 drug classes	143 (14.8)	2193 (33.0)	2336 (30.7)
Resistance by antibiotic class			
Macrolide	306 (31.7)	2731 (41.1)	3037 (39.9)
Penicillin	199 (20.6)	2813 (42.4)	3012 (39.6)
Tetracycline	72 (7.5)	761 (11.5)	833 (11.0)
ESC	34 (3.5)	483 (7.3)	517 (6.8)
Fluoroquinolone	4 (0.4)	29 (0.4)	33 (0.4)

Data are presented as No. (%). Totals may not equal 100% due to rounding.
Abbreviations: ESC, extended-spectrum cephalosporins; PD, pneumococcal disease.

Akut Bakteriyel Sinüzite Yaklaşım Algoritması

IDSA GUIDELINES

IDSA Clinical Practice Guideline for Acute Bacterial Rhinosinusitis in Children and Adults

Anthony W. Chow,[1] Michael S. Benninger,[2] Itzhak Brook,[3] Jan L. Brozek,[4,5] Ellie J. C. Goldstein,[6,7] Lauri A. Hicks,[8] George A. Pankey,[9] Mitchel Seleznick,[10] Gregory Volturo,[11] Ellen R. Wald,[12] and Thomas M. File Jr[13,14]

Figure 1. Algorithm for the management of acute bacterial rhinosinusitis. Abbreviations: CT, computed tomography; MRI, magnetic resonance imaging.

Kimlere tedavi verilecek?

- Sinüzit yakınmaları ve ateşi olup yakınmaları 48-72 saat içinde aynı şiddette devam eden vay daha da artan hastalara
- Sinüzit yakınmaları 10 günden uzun sürenlere
- Sinüzit yakınmaları 5.-6. gün civarında düzelir iken yakınmaları birden tekrar kötüleşen hastalara

Erişkinde Akut Sinüzite Yaklaşım

Open Forum Infectious Diseases

MAJOR ARTICLE

Opportunities to Improve Antibiotic Prescribing for Adults With Acute Sinusitis, United States, 2016–2020

Axel A. Vazquez Deida,[1,2,0] Destani J. Bizune,[2] Christine Kim,[2] John M. Sahrmann,[3] Guillermo V. Sanchez,[2] Adam L. Hersh,[4] Anne M. Butler,[3,5] Lauri A. Hicks,[2] and Sarah Kabbani[2]

[1]Epidemic Intelligence Service, Centers for Disease Control and Prevention, Atlanta, Georgia, USA, [2]Division of Healthcare Quality Promotion, National Center for Emerging and Zoonotic Infectious Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia, USA, [3]Division of Infectious Diseases, Department of Medicine, Washington University School of Medicine, St Louis, Missouri, USA, [4]Division of Infectious Diseases, Department of Pediatrics, School of Medicine, University of Utah, Salt Lake City, Utah, USA, and [5]Division of Public Health Sciences, Department of Surgery, Washington University School of Medicine, St Louis, Missouri, USA

Background. Better understanding differences associated with antibiotic prescribing for acute sinusitis can help inform antibiotic stewardship strategies. We characterized antibiotic prescribing patterns for acute sinusitis among commercially insured adults and explored differences by patient- and prescriber-level factors.

Methods. Outpatient encounters among adults aged 18 to 64 years diagnosed with sinusitis between 2016 and 2020 were identified by national administrative claims data. We classified antibiotic agents—first-line (amoxicillin-clavulanate or amoxicillin) and second-line (doxycycline, levofloxacin, or moxifloxacin)—and ≤7-day durations as guideline concordant based on clinical practice guidelines. Modified Poisson regression was used to examine the association between patient- and prescriber-level factors and guideline-concordant antibiotic prescribing.

Results. Among 4 689 850 sinusitis encounters, 53% resulted in a guideline-concordant agent, 30% in a guideline-discordant agent, and 17% in no antibiotic prescription. About 75% of first-line agents and 63% of second-line agents were prescribed for >7 days, exceeding the length of therapy recommended by clinical guidelines. Adults with sinusitis living in a rural area were less likely to receive a prescription with guideline-concordant antibiotic selection (adjusted risk ratio [aRR], 0.92; 95% CI, .92–.92) and duration (aRR, 0.77; 95% CI, .76–.77). When compared with encounters in an office setting, urgent care encounters were less likely to result in a prescription with a guideline-concordant duration (aRR, 0.76; 95% CI, .75–.76).

Conclusions. Opportunities still exist to optimize antibiotic agent selection and treatment duration for adults with acute sinusitis, especially in rural areas and urgent care settings. Recognizing specific patient- and prescriber-level factors associated with antibiotic prescribing can help inform antibiotic stewardship interventions.

Keywords. acute rhinosinusitis; acute bacterial rhinosinusitis; acute sinusitis; antibiotic stewardship; outpatient antibiotic prescribing.

Antibiotic use is a driver of antimicrobial resistance and can lead to adverse event–related emergency department visits and *Clostridioides difficile* infections [1–5]. Reducing inappropriate of therapy for adult patients with an uncomplicated infection and a favorable initial response (ie, improvement or no worsen- ing of symptoms after 3–5 days) [6]. However, in 2016, about

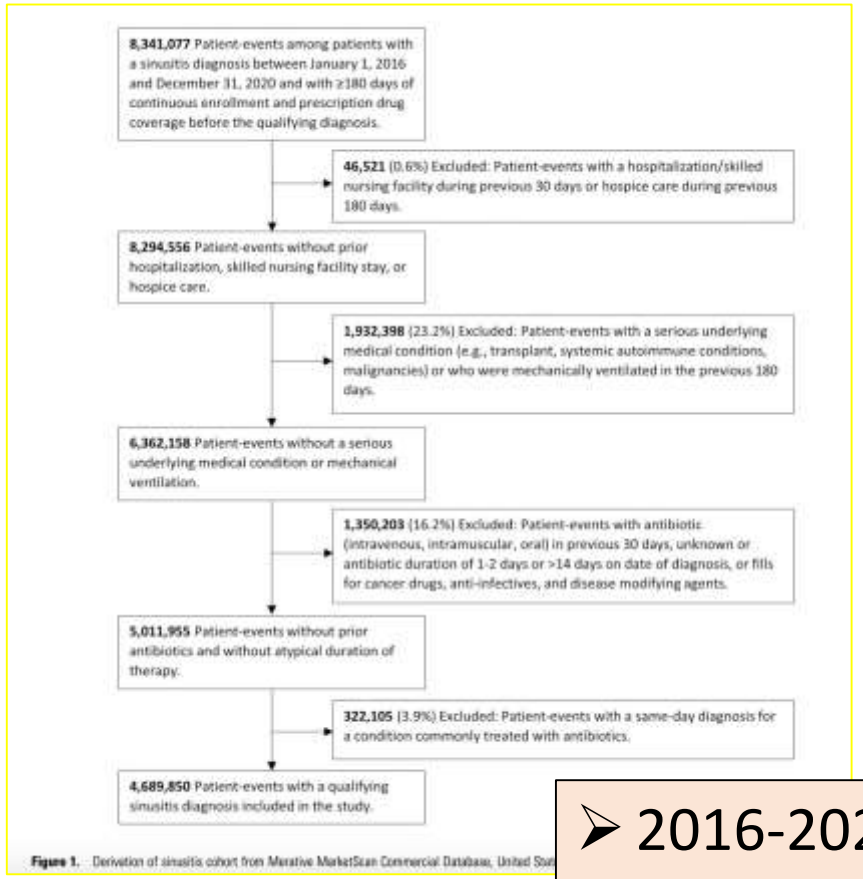


Figure 1. Derivation of sinusitis cohort from Merative MarketScan Commercial Database, United Stat

- 2016-2020 yılları
- ABD
- 4 milyon 600 bin sinüzit olgusu

Erişkinde Akut Sinüzite Yaklaşım

Open Forum Infectious Diseases

MAJOR ARTICLE

Opportunities to Improve Antibiotic Prescribing for Adults With Acute Sinusitis, United States, 2016–2020

Axel A. Vazquez Deida,[1,2,0] Destani J. Bizune,[2] Christine Kim,[2] John M. Sahrmann,[3] Guillermo V. Sanchez,[2] Adam L. Hersh,[4] Anne M. Butler,[3,5] Lauri A. Hicks,[2] and Sarah Kabbani[2]

[1]Epidemic Intelligence Service, Centers for Disease Control and Prevention, Atlanta, Georgia, USA, [2]Division of Healthcare Quality Promotion, National Center for Emerging and Zoonotic Infectious Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia, USA, [3]Division of Infectious Diseases, Department of Medicine, Washington University School of Medicine, St Louis, Missouri, USA, [4]Division of Infectious Diseases, Department of Pediatrics, School of Medicine, University of Utah, Salt Lake City, Utah, USA, and [5]Division of Public Health Sciences, Department of Surgery, Washington University School of Medicine, St Louis, Missouri, USA

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Results. Among 4 689 850 sinusitis encounters, 53% resulted in a guideline-concordant agent, 30% in a guideline-discordant agent, and 17% in no antibiotic prescription. About 75% of first-line agents and 63% of second-line agents were prescribed for >7 days, exceeding the length of therapy recommended by clinical guidelines. Adults with sinusitis living in a rural area were less likely to receive a prescription with guideline-concordant antibiotic selection (adjusted risk ratio [aRR], 0.92; 95% CI, .92–.92) a
(aRR, 0.77; 95% CI, .76–.77). When compared with encounters in an office setting, urgent care encounters were less lik
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Conclusions. Opportunities still exist to optimize antibiotic agent selection and treatment duration for adults with ac
especially in rural areas and urgent care settings. Recognizing specific patient- and prescriber-level factors associated wi
prescribing can help inform antibiotic stewardship interventions.

Keywords. acute rhinosinusitis; acute bacterial rhinosinusitis; acute sinusitis; antibiotic stewardship; outpatien
prescribing.

Antibiotic use is a driver of antimicrobial resistance and can lead to adverse event–related emergency department visits and *Clostridioides difficile* infections [1–5]. Reducing inappropriate

of therapy for adult patients with an uncomplicated infection and a favorable initial response (ie, improvement or no worsening of symptoms after 3–5 days) [9]. However, in 2016, about

In conclusion, this study demonstrates that specific patient- and prescriber-level factors are associated with the guideline-concordant management of acute sinusitis among commercially insured adults. Specifically, our results indicate that rural areas and urgent care settings had lower guideline-concordant antibiotic prescribing for acute sinusitis. Antibiotic stewardship activities should be tailored to the patient population, prescriber type/specialty, and type of outpatient setting where they are being implemented. Opportunities exist to optimize antibiotic prescribing, especially to reduce unnecessary prescribing and duration of therapy for acute sinusitis.

AMY programları,
hasta grubunun ve
hekimlerin gereksinimlerine göre oluşturulmalı

Sinüzite Yaklaşım

Braz J Otorhinolaryngol. 2018;84(3):265–279

Brazilian Journal of
OTORHINOLARYNGOLOGY
www.bjorl.org

SPECIAL ARTICLE

How to avoid the inappropriate use of antibiotics in upper respiratory tract infections? A position statement from an expert panel☆

Akut bakteriyel sinüzit, sinüzit olgularının çok küçük bir bölümünü oluşturuyor!

Figure 2 Evolution of acute bacterial rhinosinusitis after a viral illness.
Adapted from the American Guidelines for Rhinosinusitis, 2015.

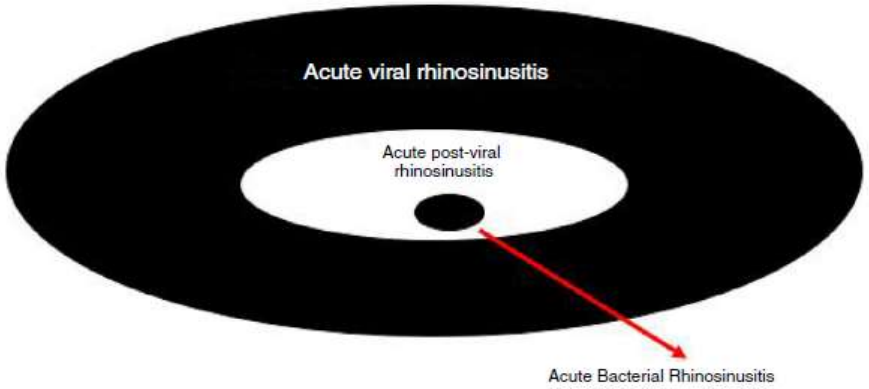

Figure 3 Representativeness of acute viral rhinosinusitis developing into acute post-viral rhinosinusitis or, eventually, acute bacterial rhinosinusitis, according to EPOS (2012).

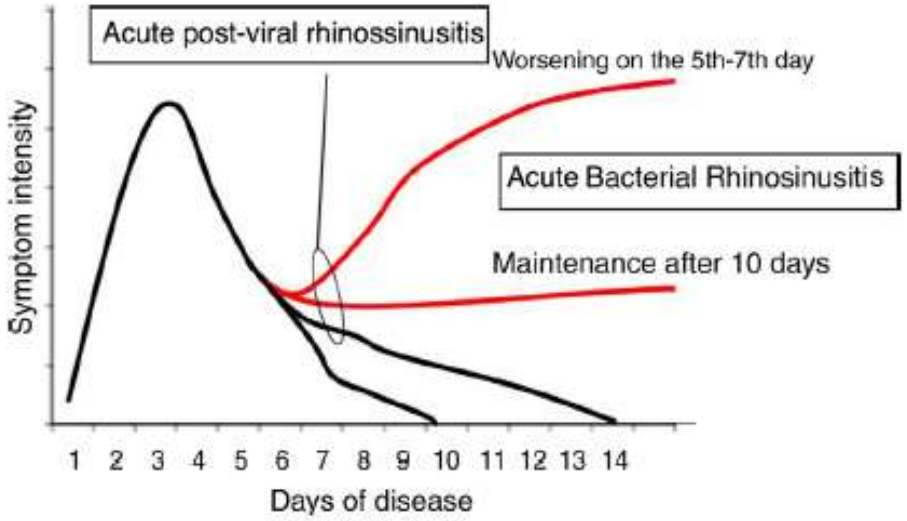

Figure 4 Evolution of acute rhinosinusitis.

Sinüzite Yaklaşım

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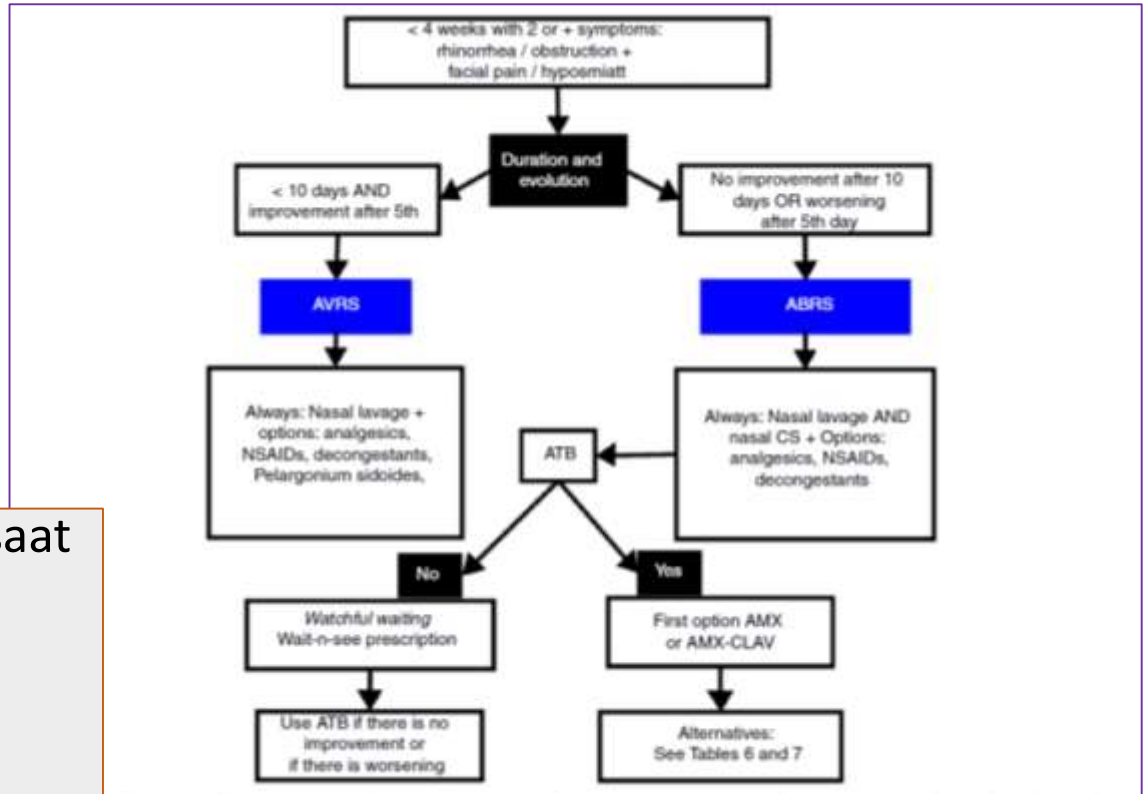


Evaluation flow chart according to the presence of signs and symptoms, aimed to elucidate the probable etiological and its treatment.

- Sinüzit yakınmaları ve ateşi olup yakınmaları 48-72 saat içinde aynı şiddette devam eden vay daha da artan hastalara
- Sinüzit yakınmaları 10 günden uzun sürenlere
- Sinüzit yakınmaları 5.-6. gün civarında düzelir iken yakınmaları birden tekrar kötüleşen hastalara

Ateşim var, boğazım ağrıyor, çok halsizim

Akut Tonsillofarenjit Neden Önemli?

- ÜSYE geçirme sıklığı
  - Erişkinler yılda 2-4 kez
  - Çocuklar yılda 6-8 kez

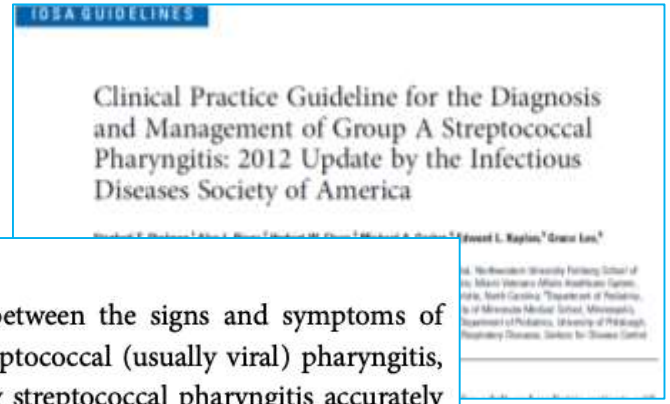
- Grup A beta hemolitik stretokoka bağlı tonsillit
  - Çocuklarda ÜSYE ataklarının **%20-30**'unda
  - Erişkinlerde ÜSYE ataklarının **%5-15**'inde
  - En sık 5-15 yaş arasında

- Non-süpüratif komplikasyon riski
  (Akut romatizmal ateş, poststreptokokal glomerülonefrit)
  5-15 yaş arasında en yüksek

Tonsillofrenjite Yaklaşım

GAS is the most common bacterial cause of acute pharyngitis, responsible for 5%–15% of sore throat visits in adults and 20%–30% in children [9, 10]. Accurate diagnosis of st cal pharyngitis followed by appropriate antimicrobial t important for the prevention of acute rheumatic feve prevention of suppurative complications (eg, pe abscess, cervical lymphadenitis, mastoiditis, and, possi invasive infections); to improve clinical symptoms a for the rapid decrease in contagiousness; for the red transmission of GAS to family members, classmates, close contacts of the patient [11]; to allow for the rapid tion of usual activities; and for the minimization of

Although acute pharyngitis is one of the most fre


IDSA GUIDELINES

Clinical Practice Guideline for the Diagnosis and Management of Group A Streptococcal Pharyngitis: 2012 Update by the Infectious Diseases Society of America

Clinical Diagnosis

There is broad overlap between the signs and symptoms of streptococcal and nonstreptococcal (usually viral) pharyngitis, and the ability to identify streptococcal pharyngitis accurately on the basis of clinical grounds alone is generally poor [12, 19–21]. Therefore, except when obvious viral clinical and epidemiological features are present, a laboratory test should be performed to determine whether GAS is present in the pharynx [9, 21]. Efforts have been made to incorporate the clinical and epidemiological features of acute pharyngitis into scoring systems that attempt to predict the probability that a particular illness is caused by GAS pharyngitis [19, 20, 22]. These clinical scoring systems are helpful in identifying patients who are at such low risk of streptococcal infection that performance of a throat culture or an RADT is usually unnecessary. However, the signs and symptoms of streptococcal and nonstreptococcal pharyngitis overlap too broadly for diagnosis to be made with the requisite diagnostic precision on the basis of clinical grounds alone. Even subjects with all clinical features in a particular scoring system can be confirmed to have

ty even by the most experienced physicians, and bacteriologic confirmation is required.

Klinik belirti ve bulgular tanı koymada yeterli değil; hızlı tanı testleri önemli

«Diagnostic Stewardship»

SHEA

SHEA Position Paper

Principles of diagnostic stewardship: A practical guide from the Society for Healthcare Epidemiology of America Diagnostic Stewardship Task Force

Valeria Fabre MD[1], Angelina Davis PharmD[2], Daniel J. Diekema MD[3], Bruno Granwehr MD[4], Mary K. Hayden MD[5], Christopher F. Lowe MD[6], Christopher D. Pfeiffer MD[7], Anna C. Sick-Samuels MD[8], Kaede V. Sullivan MD[9], Trevor C. Van Schooneveld MD[10] and Daniel J. Morgan MD[11]

Executive summary

We provide an overview of diagnostic stewardship with key concepts that include the diagnostic pathway and the multiple points where interventions can be implemented, strategies for interventions, the importance of multidisciplinary collaboration, and key microbiologic diagnostic tests that should be considered for diagnostic stewardship. The document focuses on microbiologic laboratory testing for adult and pediatric patients and is intended for a target audience of healthcare workers involved in diagnostic stewardship interventions and all workers affected by any step of the diagnostic pathway (ie, ordering, collecting, processing, reporting, and interpreting results of a diagnostic test). This document was developed by the Society for Healthcare Epidemiology of America Diagnostic Stewardship Taskforce.

(Received 19 December 2022; accepted 20 December 2022)

Diagnostic stewardship refers to the process of modifying the ordering, performing, or reporting of diagnostic tests to improve the diagnosis of and treatment of infections and other conditions.[1,2] Diagnostic stewardship can be described as interventions prioritizing the *right* test, for the *right* patient, to prompt the *right* action. By doing so, diagnostic stewardship seeks to improve antimicrobial use, to reduce antimicrobial resistance, and to better use healthcare resources to improve patient outcomes (Fig. 1).[1,3] Historically, diagnostic stewardship was a laboratory activity that focused on optimizing specimen collection, processing, and reporting to ensure accurate test results and interpretation.[4] More recently there has been increasing understanding that test results can strongly influence antimicrobial utilization (eg, up to 80% of hospitalized patients with asymptomatic bacteriuria are inappropriately treated with antibiotics).[5] Diagnostic professionals, including physicians, pharmacists, nurses, and infection preventionists, can play a role in optimizing test use and these stakeholders should be involved in the development and implementation of diagnostic stewardship initiatives.[1,3] Diagnostic stewardship has traditionally focused on inpatients; however, it has expanded to other healthcare settings including ambulatory and long-term care settings. The tests targeted for diagnostic stewardship vary depending on the patient population served in these different settings (eg, optimizing testing for group A *Streptococcus* may be a priority for ambulatory settings, whereas urine cultures and *C. difficile* testing may be more relevant for nursing homes).[6–11]

An awareness and understanding of pretest probability of infection is essential for designing diagnostic stewardship interventions that improve the usefulness of tests.[12] Many diagnostic stewardship

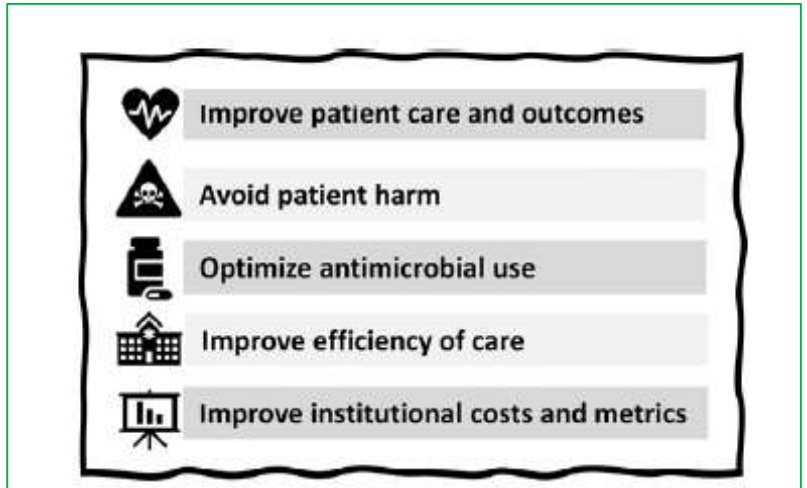


Fig. 1. Objectives of diagnostic stewardship beginning with the highest-priority objectives.

«Diagnostic vs Antimicrobial Stewardship»

Important Terminology

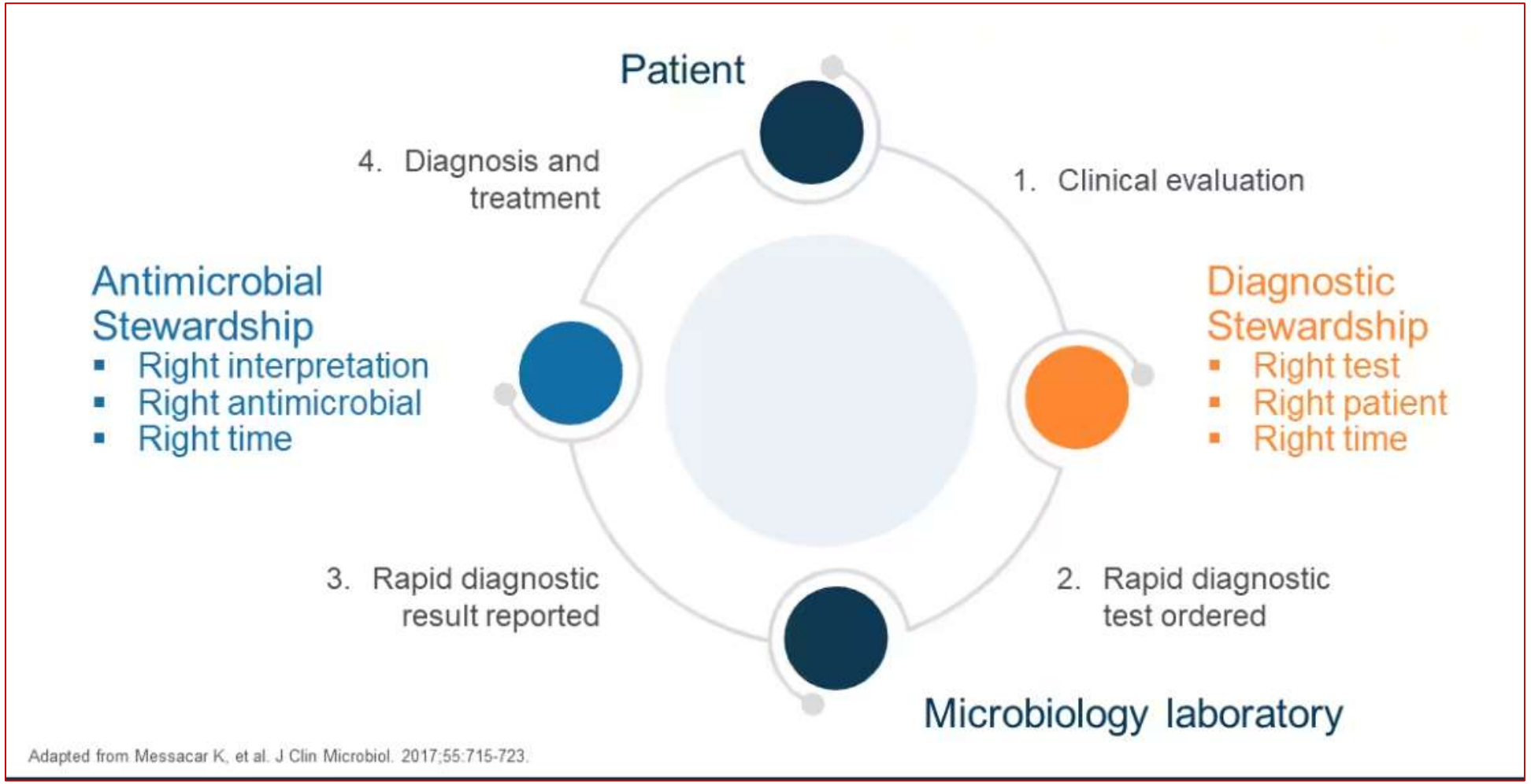
Goals of diagnostic stewardship

- Select the right test for the right patient
- Generate accurate, clinically relevant results at the right time
- Impact clinical care
- Conserve healthcare resources

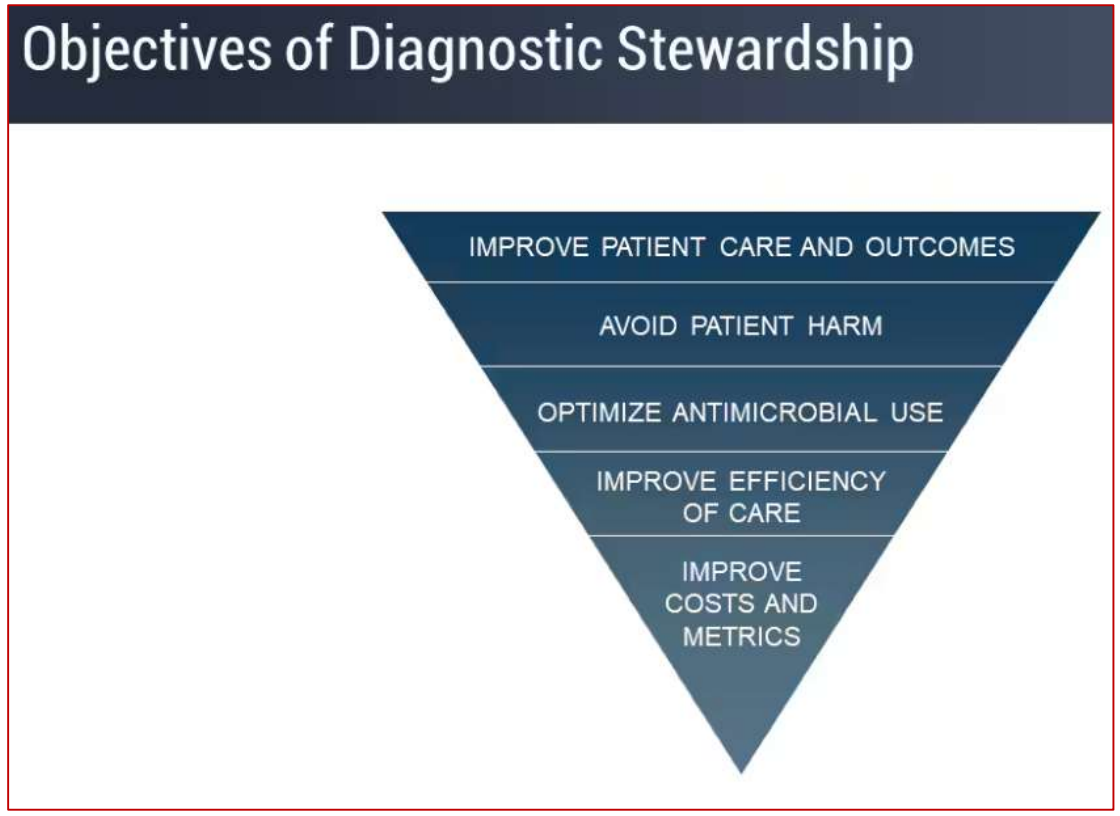
Goals of antimicrobial stewardship

- Ensure the right interpretation leads to the right antimicrobial therapy at the right time
- Improve clinical outcomes
- Reduce unnecessary antimicrobial use

Diagnostic vs Antimicrobial Stewardship



«Diagnostic Stewardship»



- Diagnostic stewardship helps implement new and existing tests to their full potential
- Can be paired with antibiotic stewardship to ensure optimal testing, appropriate antimicrobial use, and improved patient care
- Diagnostic stewards are not the "test police"!
  - Avoids unnecessary testing
  - Promotes testing that can improve care
- **Right test - Right patient - Right time - Right interpretation - Right treatment**

Infection Control & Hospital Epidemiology (2023), 44, 178–185
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Table 2. Strategies and Concepts Used in Diagnostic Stewardship

Strategy	Description
Improving knowledge and decreasing cognitive bias	Strengthen understanding of testing principles as well as result interpretation across roles and disciplines
Diagnostic/risk assessment tools	Clinical decision support tools or algorithms for selection of patients to be tested. Best if available at point of care (eg, criteria for ordering urine cultures or criteria to defer)
Nudges (comments)	Behavioral interventions to guide decision making in a predictable way without forbidding options (eg, "respiratory flora, no MRSA" for respiratory cultures to encourage stopping anti-MRSA antibiotics)
Framing	Intervention to guide decision making by highlighting information in a positive or a negative way (eg, 75% of *Pseudomonas* spp are susceptible to ciprofloxacin and 25% of *Pseudomonas* spp are resistant to ciprofloxacin).
Best practice alerts	Reminders that a test is likely not indicated (eg, an alert to evaluate for symptoms of UTI when ordering urine cultures)
Ease of ordering	Changing ease of access to specific tests in the electronic health record to encourage or discourage use (eg removing urine cultures from preoperative order sets or requiring expert consultation for complex diagnostic tests)
Removal of test	Removing a low-value test from routine use in the electronic health record (eg, West Nile virus nucleic acid amplification test in cerebrospinal fluid,)
Inclusion of test	Including a test in an order set (eg, blood cultures in sepsis order sets)
Stops	Not allowing testing (eg, stopping *Clostridioides difficile* test for patients on laxatives). Can be soft stops (allow clinician override) or hard stops (do not allow)
Reflex testing	Strategy in which tests are only performed after prespecified criteria are met. For example, urine cultures are only performed if urinalysis indicates the presence of pyuria or bacteriuria.
Selective testing	Antimicrobial susceptibility for a particular bug-drug combination is not tested on bacteria suspected of being contaminant, eg, "mixed flora, no further work-up" in urine cultures.
Selective reporting	Only reporting some part of results (eg, suppressing daptomycin susceptibility for respiratory culture).
Cascade reporting	Antibiotic susceptibility is reported in a stepwise fashion; antibiotic susceptibility results for a particular pathogen–drug combination are obtained but suppressed for broader-spectrum agents (eg, meropenem) unless the bug is resistant to narrow-spectrum agents (eg, ceftriaxone).
Results suppression	Strategies of reporting only some (or none) of the available result information. For example, not releasing organism identification if multiple organisms present in a urine culture
Monitoring adherence to best practices	Monitor utilization rates, quality indicators (eg, blood culture contamination rates)
Provide feedback	Report utilization rates to clinicians either as aggregate unit or individual performance.

Testler ulaşılabilir olmalı!

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Testler gereksiz yere kullanılmamalı!

Table 1. Examples of Inappropriate Test Use That Can Be Improved Through Diagnostic Stewardship and Potential Consequences of Inappropriate Use

Inappropriate Test Use	Potential Consequences of Inappropriate Testing
Routine ordering of microbiologic tests when specimens are obtained for non-infectious indications	*Overdiagnosis*. Treatment of contaminant or colonizing organisms, Excess cost. Increased length of stay. Increased test utilization to confirm negative.
Unnecessary pre-operative urine cultures	*Overdiagnosis*. Unnecessary antibiotic prescribing
Urine and respiratory cultures for test of cure or asymptomatic patients	*Overdiagnosis*. Unnecessary antibiotic prescribing
Urine cultures for change in mental status or nonspecific symptoms	*Missed diagnosis*. Missing true reason for presenting symptom
	Overdiagnosis. Unnecessary antibiotic prescribing, additional catheter-associated urinary tract infection (CAUTI) events
C. difficile testing in patients on laxatives or previously positive	*Overdiagnosis*. Unnecessary antibiotic prescribing, additional *C. difficile* lab ID events
β-D-glucan to exclude mucormycosis	*Missed diagnosis*. Inadequate antimicrobial management
Recurring blood cultures in patient with known cause of fever	*Overdiagnosis*. Unnecessary antibiotics.
	Patient comfort. Unnecessary procedures. Healthcare-associated anemia
Single blood cultures in adults	*Missed diagnosis*. Inadequate antimicrobial management.
	Overdiagnosis. Treatment of contaminants.
Superficial wound swabs for culture	*Missed diagnosis*. Missing the true pathogen
	Overdiagnosis. Unnecessary antibiotic prescribing
Routine use of SARS-CoV-2 PCR to determine duration of isolation	*Overdiagnosis*. Unnecessary prolonged isolation

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Uygun testler uygun endikasyonlarda istenmeli

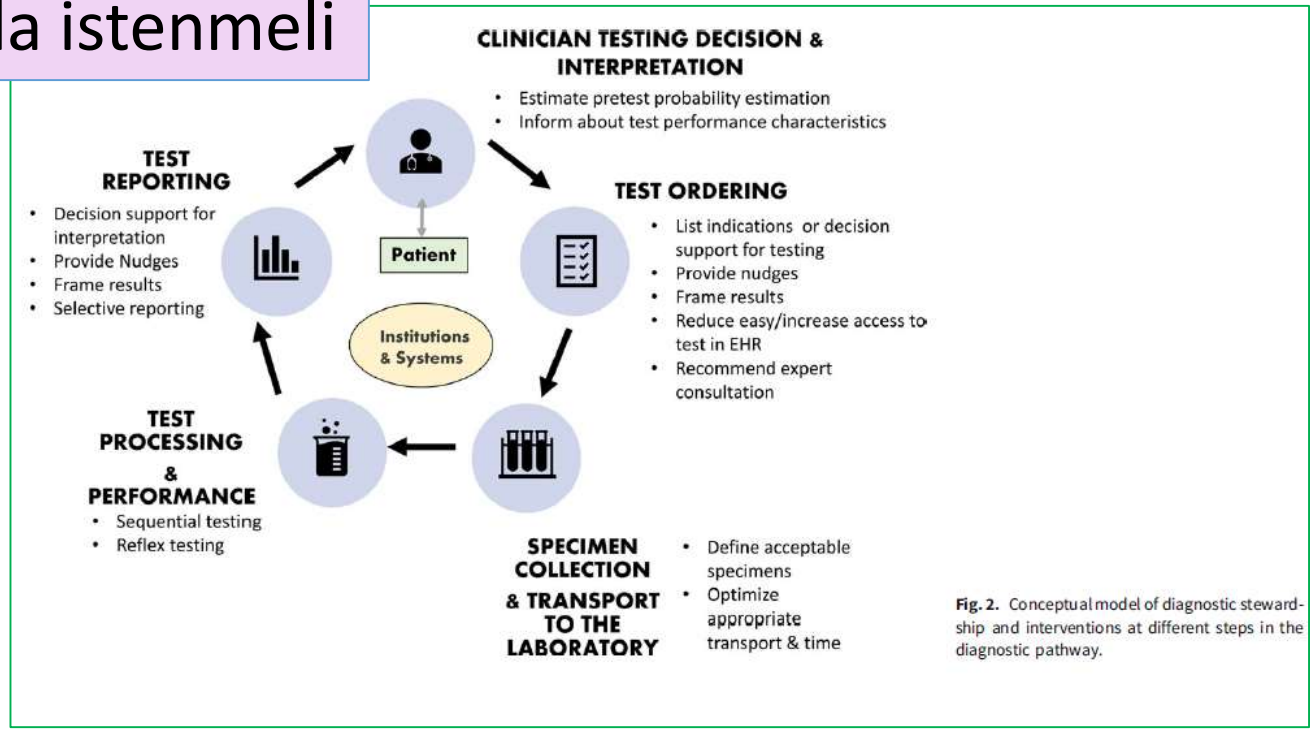

Fig. 2. Conceptual model of diagnostic stewardship and interventions at different steps in the diagnostic pathway.

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Uygun test uygun örnekten uygun zamanda istenmeli!

Table 3. Targets for Diagnostic Stewardship for Common Microbiologic Tests

Test	Ordering	Collection and Processing[a]	Reporting
Blood cultures	Avoid routine use for nonseptic patients with low risk of bacteremia (eg, isolated fever in hospitalized patient, nonsevere CAP, cellulitis, etc). Avoid daily blood cultures for febrile patients with negative blood cultures and no new clinical changes. Develop guidance on appropriate use of blood cultures for conditions including evaluation of fever or leukocytosis	Decontaminate skin prior to blood draw. Ensure optimal volume and number of blood cultures. Avoid central line blood cultures. Implement rapid pathogen identification. Selective susceptibility testing.	Report gram-stain results Specify common skin contaminants. Provide link to antibiogram with pathogen ID. Highlight resistant organisms. Selectively report antibiotic susceptibility. Implement audit–feedback on blood-culture contamination rates.
Respiratory cultures	Do not order for test for cure. Do not order for nonsevere CAP. Do not order without clinical evidence of pneumonia (eg, for failure of weaning trials, non-diagnostic bronchoscopies). Do not order for isolated clinical changes (eg, isolated fever, change in secretions, elevated inflammatory marker).	Do not process sputum for cultures if >10 squamous epithelial cells per low-power field Use a suction catheter to obtain endotracheal aspirates Do not collect expectorated sputum if patients unable	Do not routinely report *Candida* spp in respiratory tract specimens.[b] Add comments to interpret results (eg, usual respiratory flora, no *S. aureus* or *P. aeruginosa* identified).
Pneumonia multiplex panel	Develop criteria for testing and restict to these conditions. Restrict repeat ordering based on time since last test.	Do not process if there are >10 squamous epithelial cells per low-power field corresponding with semiquantitative result	Add structured comments to help interpret results. Implement audit–feedback for results.
C. difficile	Limit testing to those with symptoms of CDI	Do not collect or accept formed stools. *ficile* toxin multistep algorithm nucleic acid amplification test and test	Report indications for treatment. Add a comment regarding interpretation of results of multiplex molecular test methods not distinguishing *C. difficile* colonization from infection.
Skin and soft-tissue and wound cultures	Education/guidance on when and how to obtain cultures	Do not collect superficial swabs. Collect deep cultures and/or from the operating theater.	Add comment to help interpret results (eg, skin commensal likely contamination).
Urine cultures	Avoid testing in nonspecific clinical syndromes (eg, leukocytosis, isolated fever, fatigue, and fall). Do not order based on color or smell. Educate on prevalence of asymptomatic bacteriuria and lack of treatment benefit.	Do not collect from catheter bag. Only culture urine if pyuria present on urinalysis.	Selective and cascade reporting to help tailor antibiotic choices. Comments to nudge toward only using antibiotics with true symptoms of UTI
Central nervous system (CNS) multiplex panel	Prevent duplicative testing unless there is high clinical suspicion (eg human simplex virus PCR + CNS multiplex panel). Avoid anaerobic cultures unless specific risk factors (eg, Omaya reservoir).	Collect before antibiotic therapy.	Add comments to help interpret results (eg, HHV6 can reflect latent virus and requires clinical interpretation).
Fungal diagnostics	Avoid routine use of non–culture-based fungal diagnostics (β-D-glucan, galactomannan) outside high-risk populations. Avoid routine use of fungal serologies (consider consulting with infectious disease physicians and/or clinical microbiologists).	Ensure reasonable turnaround time.	Provide common reasons for false-positive results (eg, intravenous immunoglobulin). Inform regarding which relevant fungal infections are not expected to produce a positive result (eg, mucormycosis and β-D-glucan). Add comment regarding possible colonization and the need to correlate with clinical findings.

Note. PCR, polymerase chain reaction.
[a]Microbiology laboratories include recommendations on specimen collection and transport (eg, transport device, preservative or not, transport temperature, time from specimen collection to test) in their procedure manuals, which are available to medical personnel.
[b]CDC recommends reporting of *Candida auris* in suspected cases. *C. auris* screening is recommended for patients with overnight stay in a hospital outside of teh United States in the previous 1 year.

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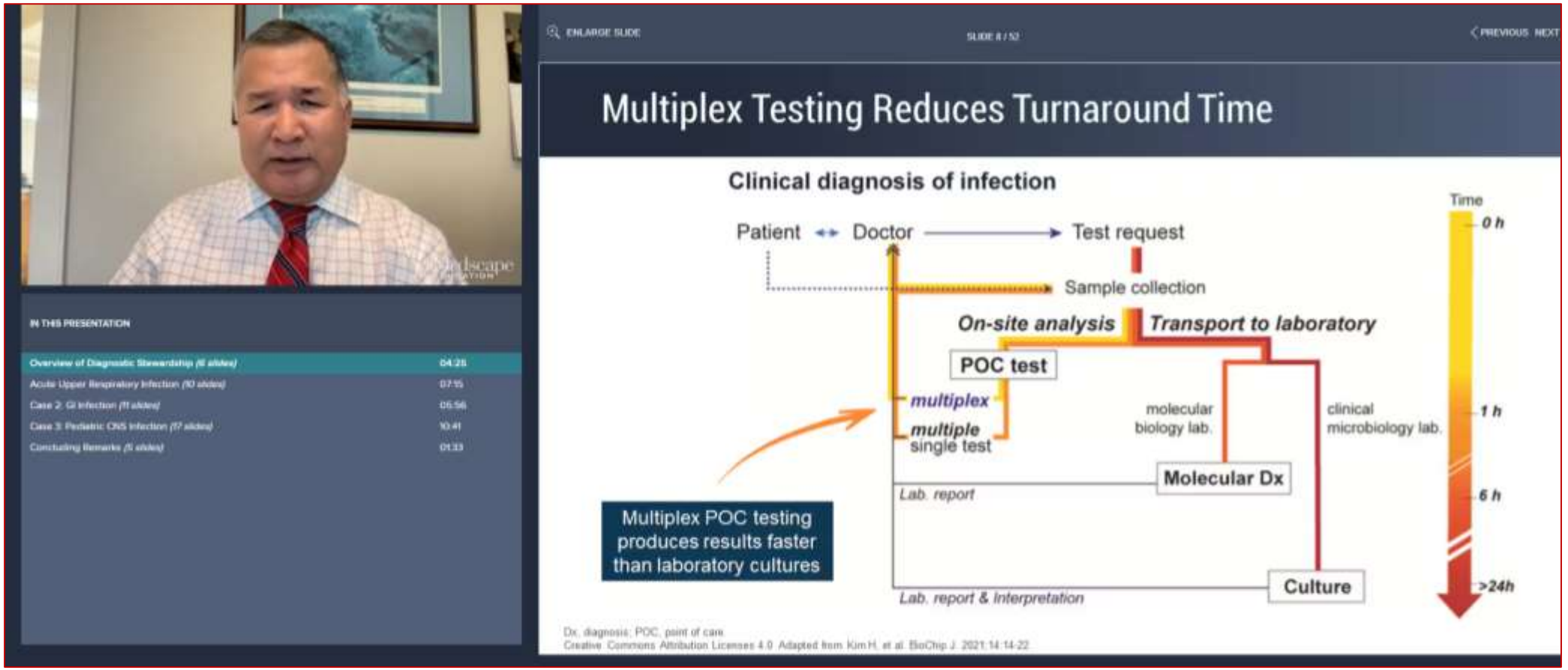
İşbirliği önemli!

Box 2. Necessary Elements to Implement a Diagnostic Stewardship Intervention

1. Define a clear goal.
2. Ensure relevant stakeholders are involved.
   - Microbiology
   - Antimicrobial stewardship and infection control expertise
   - Information and Technology
   - Hospital leadership
   - End users (e.g. clinicians and nurses)
3. Ensure unit/hospital leadership support.
4. Define measures to track positive or negative impact of the intervention.

Multiplex PCR testleri hızlı sonuç veriyor!

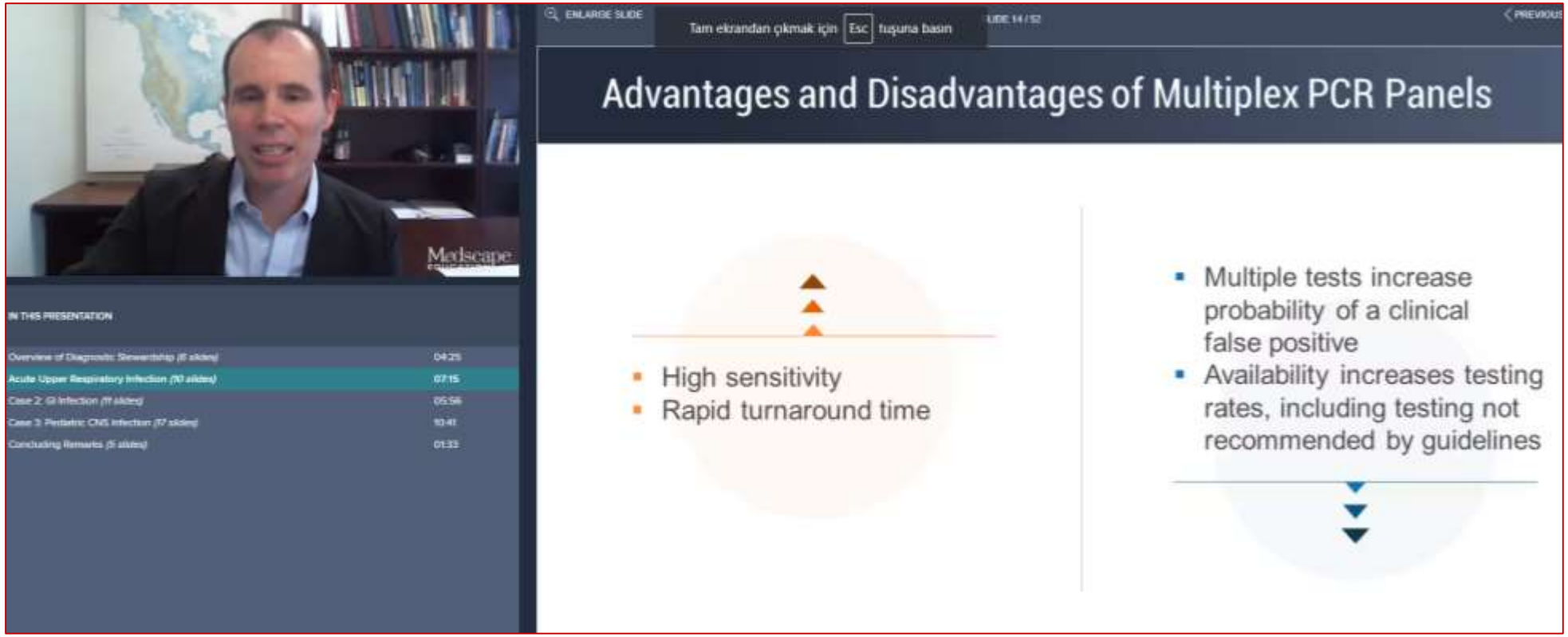


Hangi test kiti? Hangi panel?

Pathogens	FilmArray RP2.1-EZ	FilmArray RP2.1	ePlex RP/RP2	Verigene RP Flex	NxTAG RP + SARS-CoV-2
Bacteria					
Bordetella pertussis	✓	✓		✓	
Bordetella parapertussis	✓	✓			
Bordetella parapertussis/B bronchiseptica				✓	
Bordetella holmesii				✓	
Chlamydophila pneumoniae	✓	✓	✓		✓
Mycoplasma pneumoniae	✓	✓	✓		✓
Viruses					
Adenovirus	✓	✓	✓	✓	✓
Coronavirus SARS-Cov-2	✓	✓	✓		✓
Coronavirus HKU1, NL63, 229E, OC43	✓	✓	✓		✓
Human bocavirus					✓
Human metapneumovirus	✓	✓	✓	✓	✓
Human rhinovirus				✓	
Human rhinovirus/enterovirus	✓	✓	✓		✓
Influenza A, A/H1, A/H3				✓	✓
Influenza A, A/H1, A/H3, A/H1-2009	✓	✓	✓		
Influenza B	✓	✓	✓	✓	✓
Parainfluenza virus	✓				
Parainfluenza virus 1, 2, 3					
Parainfluenza virus 1, 2, 3, and 4		✓	✓	✓	✓
Respiratory syncytial virus A and B			✓	✓	✓
Respiratory syncytial virus	✓	✓			

FDA website. Accessed June 8, 2023. https://www.fda.gov/medical-devices/in-vitro-diagnostics/nucleic-acid-based-tests.

Multiplex PCR testlerinin avantaj ve dezavantajlarını iyi bilmeliyiz!



Özet

- Eğilimimiz :) antibiyotik yazmak yönünde değil de **yazmamak** yönünde olmalı
- Antibiyotik yazmak için somut/geçerli/bilimsel **gerekçelerimiz** olmalı
- Hastalıklara doğru tanı koyabilmeliyiz; klinik belirti ve bulguların yanısıra **tanı testlerinin** kullanılması önemli
- **Etkenler**i iyi bilmeliyiz
- Sadece enfeksiyoncular değil aile hekimleri, pediatristler, kulak burun boğazcılar da **bilgili** olmalı