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PROFILAXIS EN ENDOCARDITIS INFECCIOSA

Dr. Carlos Falces
Cardiólogo del equipo multidisciplinar de endocarditis
Hospital Clínic- Universidad de Barcelona

PREVENCIÓN DE ENDOCARDITIS INFECCIOSA

ESTRUCTURA DE LA PRESENTACIÓN

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1. Evolución de las recomendaciones sobre profilaxis antibiótica.
2. Recomendaciones actuales.
3. Estudios poblacionales tras la disminución de profilaxis: ¿ha aumentado la incidencia?
4. ¿Es realmente efectiva la profilaxis antibiótica?
5. Trabajos recientes que podrían cambiar las recomendaciones.
6. Conclusiones: ¿que mensajes me llevo a casa?

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PROFILAXIS ANTIBIÓTICA VISIÓN "CLÁSICA"

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- Recomendación ampliamente aceptada durante décadas ante muchas cardiopatías y procedimientos.
- Argumentos:
  - Elevada mortalidad.
  - Determinadas cardiopatías predisponen a la endocarditis.
  - Determinados procedimientos causan bacteriemias transitorias.
  - En modelo experimental animal, la profilaxis antibiótica puede prevenir la enfermedad.
- Conclusión: administrar antibióticos en humanos antes de procedimientos dentales, gastrointestinales o genitourinarios resulta útil para prevenir la endocarditis en pacientes con cardiopatías.
- Revisión de la evidencia: los "argumentos" son ciertos, pero no hay evidencia de que la conclusión sea correcta.

RECOMENDACIONES HISTÓRICAS

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INDICACIONS DE LA PROFILAXI DE L'ENDOCARDITIS INFECCIOSA

RECOMANADA
RISC ALT I MODERAT

NO RECOMANADA
RISC BAIX

HG
HOSPITAL GENERAL DE VIC

Medicina Interna / Cardiologia / Unitat de Qualitat
Any 2003

La profilaxi antibiòtica **es recomana** en els casos de **risc alt i moderat** i **no es recomana** en els casos de **risc baix**.

RISC ALT
- Pròtesi valvular
- Endocarditis bacteriana prèvia
- Cardiopaties congènites cianòtiques
- Ductus arteriós
- Insuficiència aòrtica
- Estenosi aòrtica
- Insuficiència mitral
- Doble lesió mitral
- CIV
- Coartació aòrtica
- Lesions intracardíaques intervingudes amb alteracions hemodinàmiques residuals
- Curtcircuits sistèmics o pulmonars corregits

RISC MODERAT
- Estenosi mitral pura
- Valvulopaties de la tricúspide
- Estenosi pulmonar
- Miocardiopatia hipertròfica
- Prolapse mitral amb insuficiència valvular o valves engruixides
- Aorta bicúspide amb afectació hemodinàmica lleugera
- Esclerosi aòrtica amb afectació hemodinàmica lleugera
- Lesions valvulars degeneratives en persones grans
- Lesions intracardíaques intervingudes, sense alteracions hemodinàmiques residuals, durant els primers 6 mesos

RISC BAIX
- CIA Ostium secundum
- Cirurgia coronària
- Prolapse mitral sense insuficiència mitral
- Bufs funcionals
- M. Kawasaki sense disfunció valvular
- Febre reumàtica prèvia sense lesió valvular
- Marcapassos i desfibril·lador
- Insuficiències valvulars lleus sense anomalies orgàniques

Díptico para pacientes y profesionales.
Hospital General de Vic 2003

RECOMENDACIONES HISTÓRICAS

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Procediments en els que està indicada la profilaxi

Tracte digestiu:
- Esclerosi de varices esofàgiques
- Dilatacions esofàgiques
- CREP amb obstrucció de via biliar
- Cirurgia de la via biliar
- Intervencions quirúrgiques que afectin a la mucosa digestiva
- Ecocardiografia transesofàgica *
- Endoscòpia digestiva (amb, o sense biòpsia) **

Procediments dentals:
- Tots aquells que facin sagnat de mucosa oral per cirurgia dental o periodòntica

Tracte respiratori:
- Adenoidectomia, amigdalectomia
- Broncoscòpia amb fibroscopi rígid.
- Cirurgia que afecti a la mucosa respiratòria

Tracte genitourinari:
- Cirurgia prostàtica i vies urinàries
- Citoscòpia o dilatació uretral
- Histerectomia vaginal **
- Part per via vaginal **

(*) Recomanada en cardiopatia de risc elevat, opcional en cardiopatia de risc moderat
(**) Només opcional en cardiopaties de risc elevat, no necessària en risc moderat.

Profilaxi antibiòtica en procediments dentals i sobre tracte respiratori i esòfag:

Profilaxi estàndard	Amoxicil·lina	2g 1hora abans vo.
Impossibilitat ti oral	Ampicil·lina	2g im o iv 30 min abans
Al·lèrgia a penicil·lina	Clindamicina o Azitromicina/Claritromicina o Cefalexina	600mg 1hora abans vo 500mg 1hora abans vo 2g 1 hora abans vo
Al·lèrgia a penicil·lina + intolerància a ti vo	Clindamicina Cefazolina	600mg iv 30min abans 1g ev/im 30 min abans

- Una dosi única d'amoxicil·lina no té efecte sobre els estreptococs resistents. Les resistències augmenten significativament després de la segona i tercera dosi i persisteixen durant 4-7 setmanes.
- En pacients de risc en els que s'han de fer procediments repetits dentals capaços de generar bacterièmia s'han d'utilitzar pautes d'antibiòtics diferents a cada procediment i programar els procediments en intervals de 4 setmanes.

Profilaxi antibiòtica genitourinària i digestiva (excepte esòfag)

Cardiopatia risc elevat	Ampicil·lina + Gentamicina	Ampicil·lina 2g im/iv + Gentamicina 1.5mg/kg (<120) 30 min abans. 6 hores després Ampicil·lina 1g im/iv o Amoxicil·lina 1g vo
Cardiopatia de risc elevat i al·lèrgia a penicil·lina	Vancomicina + Gentamicina	Vancomicina 1g (en 1-2h) + Gentamicina 1.5mg/kg (<120), completar la infusió 30 min abans.
Cardiopatia de risc moderat	Amoxicil·lina o Ampicil·lina	Amoxicil·lina 2g vo 1 hora abans o Ampicil·lina 2g im/iv 30 min abans.
Cardiopatia de risc moderat amb al·lèrgia a la penicil·lina	Vancomicina	Vancomicina 1g iv (en 1-2h) completar la infusió 30 min abans.

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ARGUMENTOS EN CONTRA DE LA PROFILAXIS ANTIBIÓTICA

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- Bacteriemia de “bajo grado” en las actividades de la vida diaria: cepillado de dientes o mascar chicle.
- Parece peor la bacteriemia repetida de bajo grado que bacteriemia ocasional en procedimientos.
- Algunos estudios caso-control no reportan asociación entre procedimientos dentales y endocarditis.
- El riesgo de endocarditis tras procedimientos dentales es muy bajo: 1/46.000.
- Riesgo de efectos adversos del antibiótico (aunque muy bajos).
- Mal uso de antibióticos induce resistencias.
- Eficacia sólo en modelo animal. No hay estudios concluyentes en humanos.
- No hay ensayos clínicos prospectivos, y es muy dificil hacerlos por el número de casos que se requeriría para obtener significación.

NHS
National Institute for Health and Clinical Excellence

Issue date: March 2008

Prophylaxis against infective endocarditis

Antimicrobial prophylaxis against infective endocarditis in adults and children undergoing interventional procedures

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Antibiotics for the prophylaxis of bacterial endocarditis in dentistry (Review)

Oliver R, Roberts GJ, Hooper L, Worthington HV

THE COCHRANE COLLABORATION®

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Circulation
JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Heart Association

Prevention of Infective Endocarditis : Guidelines From the American Heart Association: A Guideline From the American Heart Association Rheumatic Fever, Endocarditis, and Kawasaki Disease Committee, Council on Cardiovascular Disease in the Young, and the Council on Clinical Cardiology, Council on Cardiovascular Surgery and Anesthesia, and the Quality of Care and Outcomes Research Interdisciplinary Working Group

Walter Wilson, Kathryn A. Taubert, Michael Gewitz, Peter B. Lockhart, Larry M. Baddour, Matthew Levison, Ann Bolger, Christopher H. Cabell, Masato Takahashi, Robert S. Baltimore, Jane W. Newburger, Brian L. Strom, Lloyd Y. Tani, Michael Gerber, Robert O. Bonow, Thomas Pallasch, Stanford T. Shulman, Anne H. Rowley, Jane C. Burns, Patricia Ferrieri, Timothy Gardner, David Goff, David T. Durack and The Council on Scientific Affairs of the American Dental Association has approved the guideline as it relates to dentistry. In addition, this guideline has been endorsed by the American Academy of Pediatrics, Infectious Diseases Society of America, the International Society of Chemotherapy for Infection and Cancer, and the Pediatric Infectious Diseases Society.

Rev Esp Cardiol. 2012;65(12):1072–1074

Editorial

Prevención de la endocarditis infecciosa: entre el avance en los conocimientos científicos y la falta de ensayos aleatorizados

Prevention of Infective Endocarditis: Between Progress in Scientific Knowledge and the Lack of Randomized Trials

Carlos Falces[a] y José M. Miró[b,*]

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European Heart Journal
doi:10.1093/eurheartj/ehv319

ESC GUIDELINES

2015 ESC Guidelines for the management of infective endocarditis

The Task Force for the Management of Infective Endocarditis of the European Society of Cardiology (ESC)

Endorsed by: European Association for Cardio-Thoracic Surgery (EACTS), the European Association of Nuclear Medicine (EANM)

Authors/Task Force Members: Gilbert Habib* (Chairperson) (France), Patrizio Lancellotti* (co-Chairperson) (Belgium), Manuel J. Antunes (Portugal), Maria Grazia Bongiorni (Italy), Jean-Paul Casalta (France), Francesco Del Zotti (Italy), Raluca Dulgheru (Belgium), Gebrine El Khoury (Belgium), Paola Anna Erba[a] (Italy), Bernard Iung (France), Jose M. Miro[b] (Spain), Barbara J. Mulder (The Netherlands), Edyta Plonska-Gosciniak (Poland), Susanna Price (UK), Jolien Roos-Hesselink (The Netherlands), Ulrika Snygg-Martin (Sweden), Franck Thuny (France), Pilar Tornos Mas (Spain), Isidre Vilacosta (Spain), and Jose Luis Zamorano (Spain)

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RECOMENDACIONES ESC: ¿A QUIEN ADMINISTRAR PROFILAXIS?

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Table 3 Cardiac conditions at highest risk of infective endocarditis for which prophylaxis should be considered when a high-risk procedure is performed

Recommendations	Class[a]	Level[b]
Antibiotic prophylaxis should be considered for patients at highest risk for IE: (1) Patients with any prosthetic valve, including a transcatheter valve, or those in whom any prosthetic material was used for cardiac valve repair. (2) Patients with a previous episode of IE. (3) Patients with CHD: (a) Any type of cyanotic CHD. (b) Any type of CHD repaired with a prosthetic material, whether placed surgically or by percutaneous techniques, up to 6 months after the procedure or lifelong if residual shunt or valvular regurgitation remains.	IIa	C
Antibiotic prophylaxis is not recommended in other forms of valvular or CHD.	III	C

CHD = congenital heart disease; IE = infective endocarditis.

2015 ESC Guidelines for the management of infective endocarditis

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¿EN QUE PROCEDIMIENTOS HACER PROFILAXIS?

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Table 5 Recommendations for prophylaxis of infective endocarditis in the highest-risk patients according to the type of at-risk procedure

Recommendations	Class[a]	Level[b]
A. Dental procedures		
• Antibiotic prophylaxis should only be considered for dental procedures requiring manipulation of the gingival or periapical region of the teeth or perforation of the oral mucosa	IIa	C
• Antibiotic prophylaxis is not recommended for local anaesthetic injections in non-infected tissues, treatment of superficial caries, removal of sutures, dental X-rays, placement or adjustment of removable prosthodontic or orthodontic appliances or braces or following the shedding of deciduous teeth or trauma to the lips and oral mucosa	III	C
B. Respiratory tract procedures[c]		
• Antibiotic prophylaxis is not recommended for respiratory tract procedures, including bronchoscopy or laryngoscopy, or transnasal or endotracheal intubation	III	C
C. Gastrointestinal or urogenital procedures or TOE[c]		
• Antibiotic prophylaxis is not recommended for gastroscopy, colonoscopy, cystoscopy, vaginal or caesarean delivery or TOE	III	C
D. Skin and soft tissue procedures[c]		
• Antibiotic prophylaxis is not recommended for any procedure	III	C

TOE = transoesophageal echocardiography.

2015 ESC Guidelines for the management of infective endocarditis

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ANTIBIÓTICOS A ADMINISTRAR

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Table 6 Recommended prophylaxis for high-risk dental procedures in high-risk patients

Situation	Antibiotic	Single-dose 30–60 minutes before procedure	
		Adults	Children
No allergy to penicillin or ampicillin	Amoxicillin or ampicillin[a]	2 g orally or i.v.	50 mg/kg orally or i.v.
Allergy to penicillin or ampicillin	Clindamycin	600 mg orally or i.v.	20 mg/kg orally or i.v.

[a]Alternatively, cephalexin 2 g i.v. for adults or 50 mg/kg i.v. for children, cefazolin or ceftriaxone 1 g i.v. for adults or 50 mg/kg i.v. for children.
Cephalosporins should not be used in patients with anaphylaxis, angio-oedema, or urticaria after intake of penicillin or ampicillin due to cross-sensitivity.

2015 ESC Guidelines for the management of infective endocarditis

MEDIDAS DE PREVENCIÓN IMPORTANTES

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Table 4 Non-specific prevention measures to be followed in high-risk and intermediate-risk patients

These measures should ideally be applied to the general population and particularly reinforced in high-risk patients:
• Strict dental and cutaneous hygiene. Dental follow-up should be performed twice a year in high-risk patients and yearly in the others.
• Disinfection of wounds.
• Eradication or decrease of chronic bacterial carriage: skin, urine.
• Curative antibiotics for any focus of bacterial infection.
• No self-medication with antibiotics.
• Strict infection control measures for any at-risk procedure.
• Discourage piercing and tattooing.
• Limit the use of infusion catheters and invasive procedure when possible. Favour peripheral over central catheters, and systematic replacement of the peripheral catheter every 3–4 days. Strict adherence to care bundles for central and peripheral cannulae should be performed.

2015 ESC Guidelines for the management of infective endocarditis

Table 7 Recommendations for antibiotic prophylaxis for the prevention of local and systemic infections before cardiac or vascular interventions

Recommendations	Class[a]	Level[b]	Ref.[c]
Preoperative screening of nasal carriage of *Staphylococcus aureus* is recommended before elective cardiac surgery in order to treat carriers	I	A	46,47
Perioperative prophylaxis is recommended before placement of a pacemaker or implantable cardioverter defibrillator	I	B	45
Potential sources of sepsis should be eliminated ≥2 weeks before implantation of a prosthetic valve or other intracardiac or intravascular foreign material, except in urgent procedures	IIa	C	
Perioperative antibiotic prophylaxis should be considered in patients undergoing surgical or transcatheter implantation of a prosthetic valve, intravascular prosthetic or other foreign material	IIa	C	
Systematic local treatment without screening of *S. aureus* is not recommended	III	C	

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PROFILAXIS DE ENDOCARDITIS EN CARDIOLOGÍA CIRUGÍA CARDÍACA Y VASCULAR

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Impact of the NICE guideline recommending cessation of antibiotic prophylaxis for prevention of infective endocarditis: before and after study

Martin H Thornhill, professor of oral medicine,[1] Mark J Dayer, consultant cardiologist,[2] Jamie M Forde, information analyst,[3] G Ralph Corey, Gary Hock professor in global health,[4] Vivian H Chu, assistant professor,[4] David J Couper, deputy director,[5] Peter B Lockhart, chair[6]

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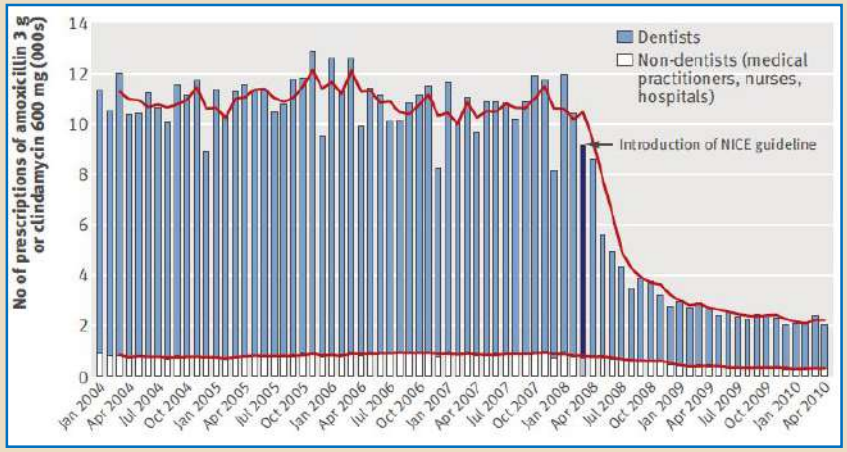


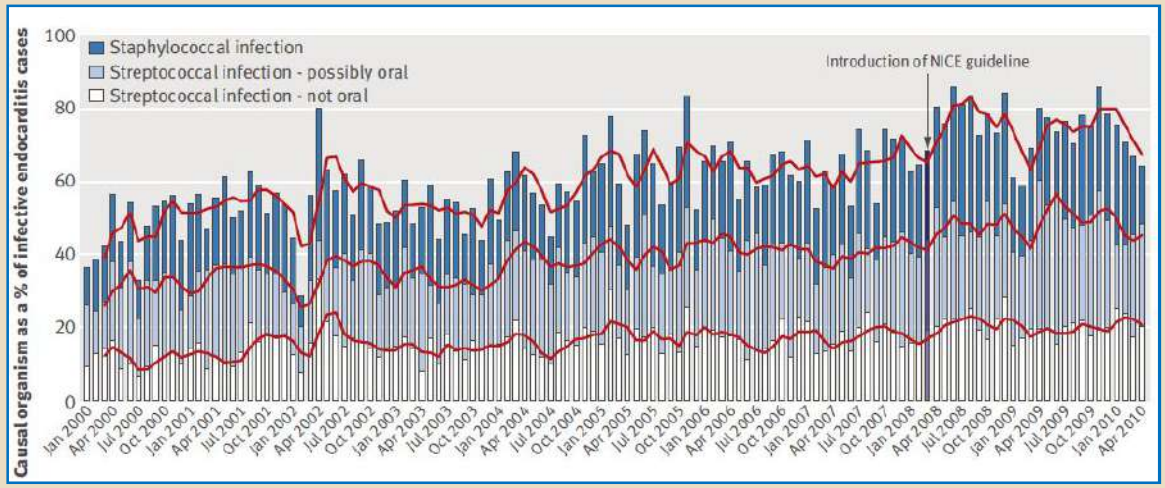
WHAT THIS STUDY ADDS

After the introduction of NICE clinical guideline No 64 a large (78.6%) and rapid decrease occurred in prescribing of antibiotic prophylaxis

Despite this reduction, no large increase occurred in the incidence of infective endocarditis cases or deaths in the two years after the guideline was introduced

The findings support the cessation of prescribing of antibiotic prophylaxis recommended by the guideline

Bases de datos NHS británico 2000-2010



Thornhill MH et al. BMJ 2011;342:d2392

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Temporal Trends in Infective Endocarditis in the Context of Prophylaxis Guideline Modifications

Three Successive Population-Based Surveys

Xavier Duval, MD, PHD,*†‡ François Delahaye, MD, PHD,§‖ François Alla, MD, PHD,¶#
Pierre Tattevin, MD, PHD,** Jean-François Obadia, MD, PHD,†† Vincent Le Moing, MD, PHD,‡‡§§
Thanh Doco-Lecompte, MD,¶ Marie Celard, MD,‖‖ Claire Poyart, MD, PHD,¶¶##***
Christophe Strady, MD, PHD,††† Catherine Chirouze, MD,‡‡‡ Michelle Bes, PHD,‖‖
Emmanuelle Cambau, MD, PHD,‡§§§ Bernard Iung, MD,‡‖‖‖ Christine Selton-Suty, MD,¶
Bruno Hoen, MD, PHD,‡‡‡¶¶¶ on behalf of the AEPEI Study Group
Paris, Lyon, Nancy, Rennes, Bron, Montpellier, and Besançon, France

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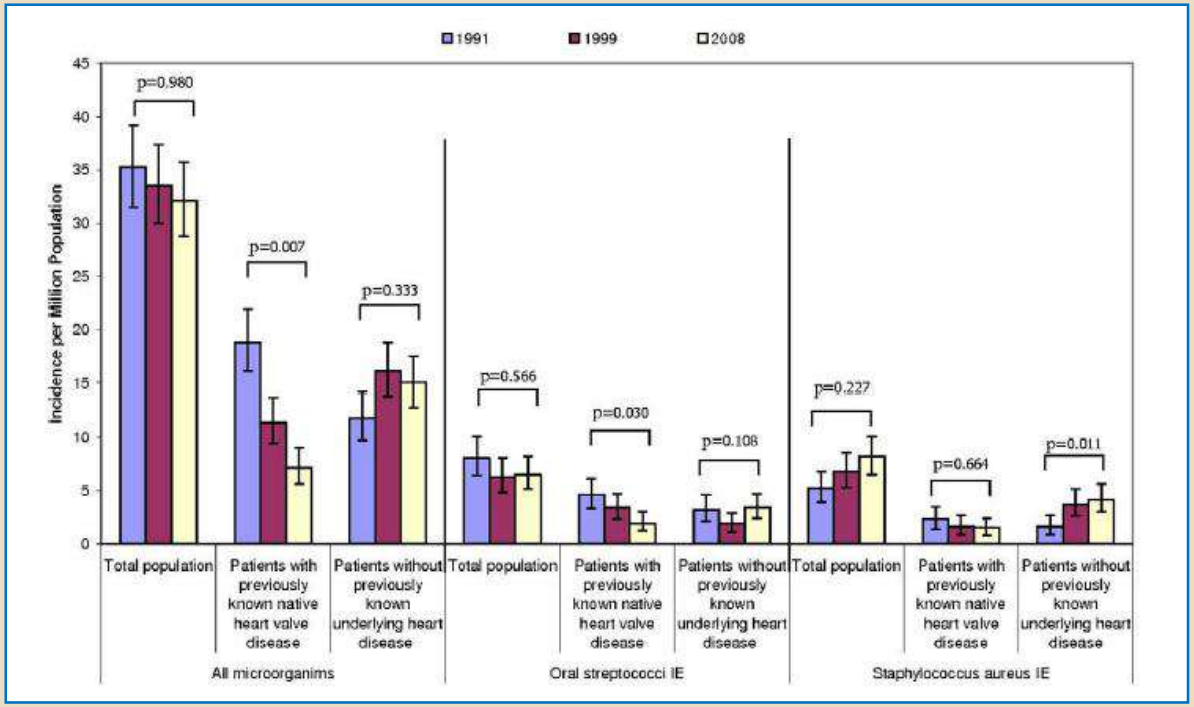

Tres cohortes con igual metodologia (1991, 1999 y 2008) en Paris, Lorraine y Rhône-Alpes (Francia)

Conclusions Scaling down antibiotic prophylaxis indications was not associated with an increased incidence of oral streptococcal IE. A focus on avoidance of *S. aureus* bacteremia in all patients, including those with no previously known valve disease, will be required to improve IE prevention. (J Am Coll Cardiol 2012;59:1968–76) © 2012 by the American College of Cardiology Foundation

Duval X et al. J Am Coll Cardiol 2012; 59: 1968-76

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Incidence of Infective Endocarditis Caused by Viridans Group Streptococci Before and After Publication of the 2007 American Heart Association's Endocarditis Prevention Guidelines

Daniel C. DeSimone, MD; Imad M. Tleyjeh, MD, MSc; Daniel D. Correa de Sa, MD; Nandan S. Anavekar, MBBCh; Brian D. Lahr, MS; Muhammad R. Sohail, MD; James M. Steckelberg, MD; Walter R. Wilson, MD; Larry M. Baddour, MD; for the Mayo Cardiovascular Infections Study Group

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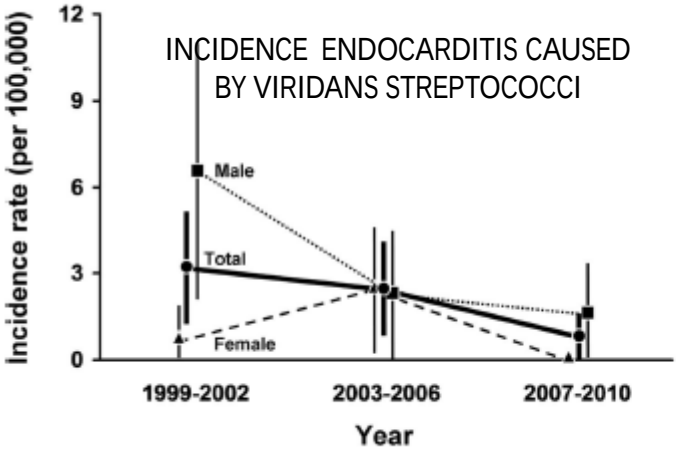

Time Era	VGS-IE cases			Incidence Rate (per 100,000 person-years) 95% Confidence Interval		
	F	M	T	F	M	T
1999-2002	1	9	**10**	0.64 (0.00 – 1.89)	6.63 (2.18 – 11.09)	**3.19 (1.20 – 5.17)**
2003-2006	5	4	**9**	2.43 (0.28 – 4.58)	2.26 (0.03 – 4.49)	**2.48 (0.85 – 4.10)**
2007-2010	0	3	**3**	0.0 (0.0 – 0.0)	1.59 (0.00 – 3.42)	**0.77 (0.00 – 1.64)**

Rochester Epidemiology Project of Olmsted Country, Minnesota, USA
Nationwide inpatient sample hospital discharge database

Conclusions—On the basis of data complete through 2010, there has been no perceivable increase in the incidence of VGS-IE in Olmsted County, Minnesota, since the publication of the 2007 American Heart Association endocarditis prevention guidelines. (*Circulation*. 2012;126:60-64.)

DeSimone DC et al. Circulation 2012;126:60-4

Trends in endocarditis hospitalizations at US children's hospitals: Impact of the 2007 American Heart Association Antibiotic Prophylaxis Guidelines

Sara K. Pasquali, MD, MHS,[a,b] Xia He, MS,[a] Zeinab Mohamad, MS,[c] Brian W. McCrindle, MD, MPH,[d] Jane W. Newburger, MD, MPH,[e] Jennifer S. Li, MD, MHS,[a,b] and Samir S. Shah, MD, MSCE[f] *Durham, NC; Philadelphia, PA; Ontario, Canada; Boston, MA; and Cincinnati, OH*

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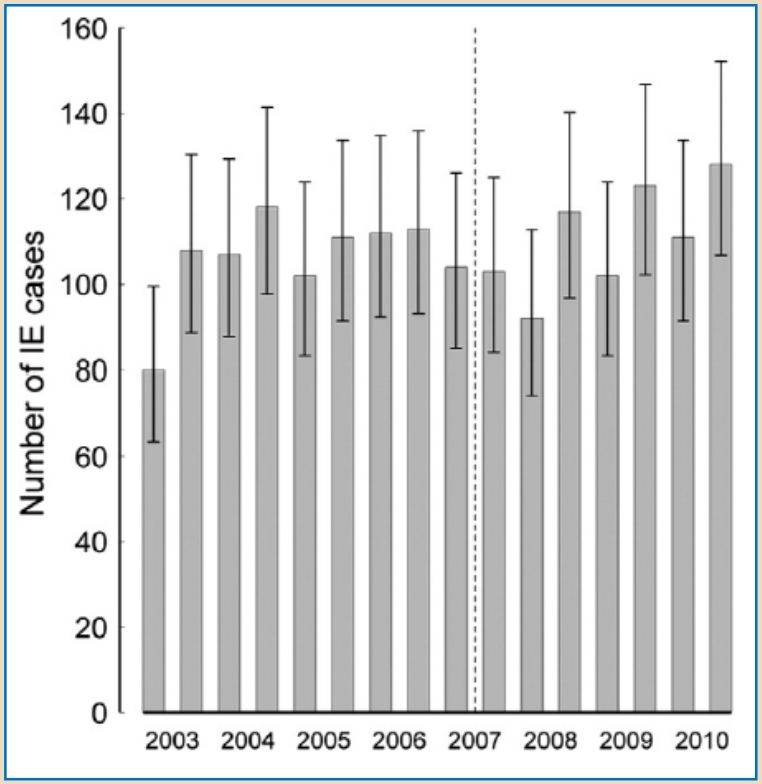

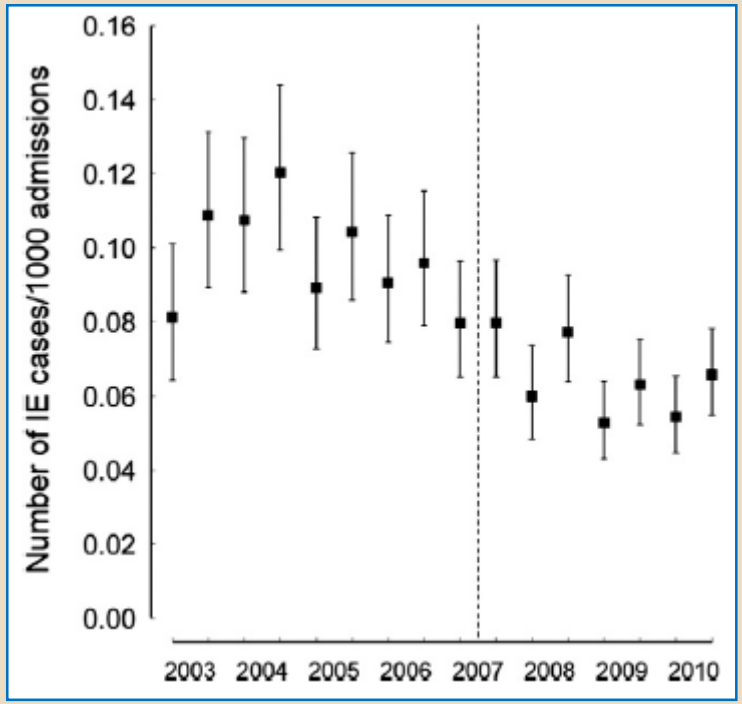

37 centros del *Pediatric Information Systems Database*, USA.

Conclusions We found no evidence that release of new antibiotic prophylaxis guidelines was associated with a significant change in IE admissions across 37 US children's hospitals. (Am Heart J 2012;163:894-9.)

Pasquali SK et al. Am Heart J 2012;163:894-9

Incidence of infective endocarditis in England, 2000–13: a secular trend, interrupted time-series analysis

Mark J Dayer, Simon Jones, Bernard Prendergast, Larry M Baddour, Peter B Lockhart, Martin H Thornhill

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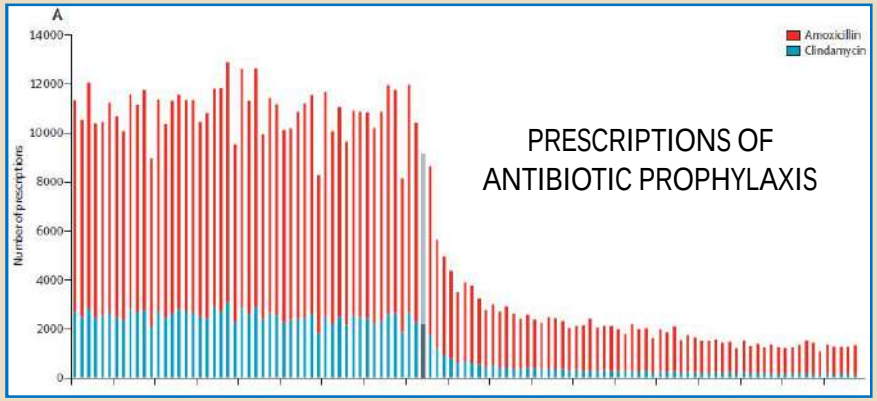

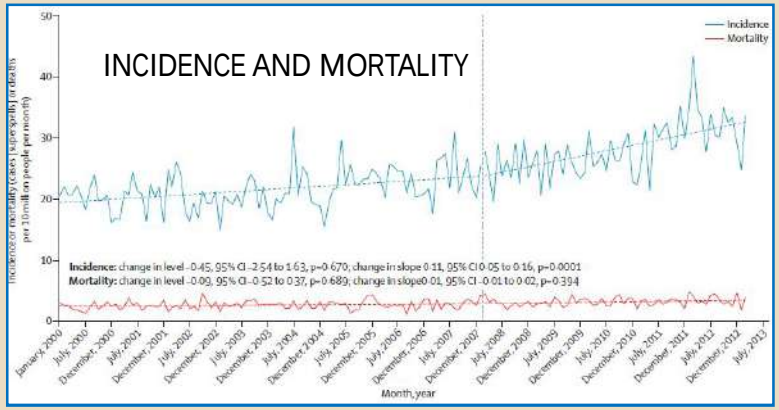

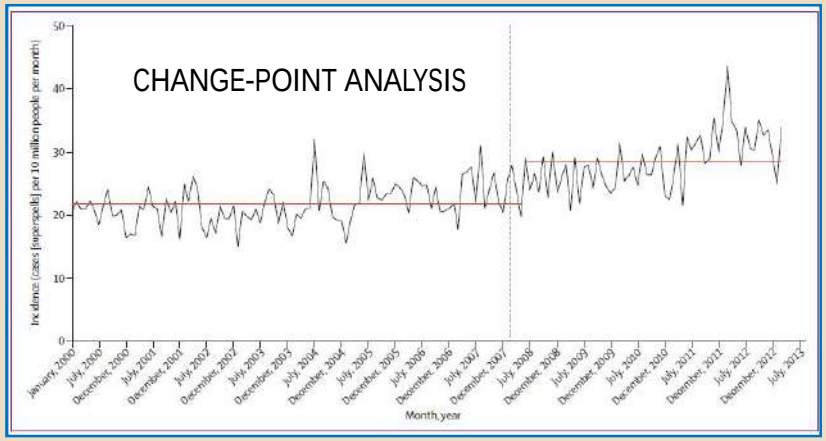

Bases de datos NHS británico 2000-2013

Interpretation Although our data do not establish a causal association, prescriptions of antibiotic prophylaxis have fallen substantially and the incidence of infective endocarditis has increased significantly in England since introduction of the 2008 NICE guidelines.

Dayer MJ et al. Lancet 2015;385:1219-28

VII CONGRESO SEICAV Sociedad Española de Infecciones Cardiovasculares
SEVILLA 16 Y 17 DE NOVIEMBRE DE 2018

Trends in Infective Endocarditis Incidence, Microbiology, and Valve Replacement in the United States From 2000 to 2011

Sadip Pant, MD,* Nileshkumar J. Patel, MD,† Abhishek Deshmukh, MD,‡ Harsh Golwala, MD,* Nilay Patel, MD,§ Apurva Badheka, MD,‖ Glenn A. Hirsch, MD, MHS,* Jawahar L. Mehta, MD, PhD¶

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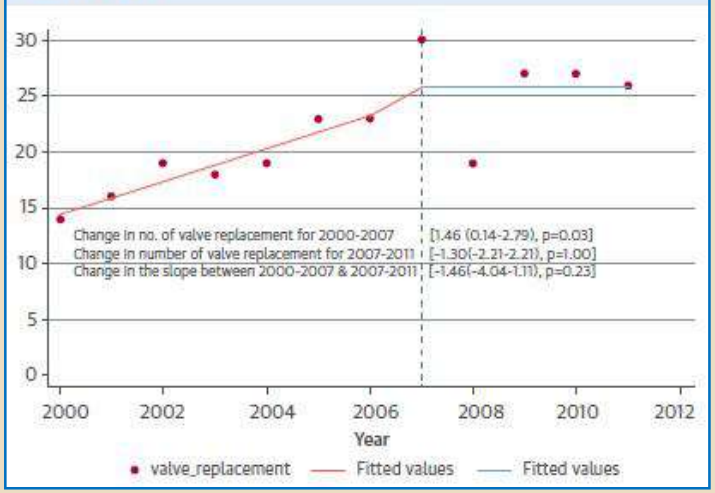
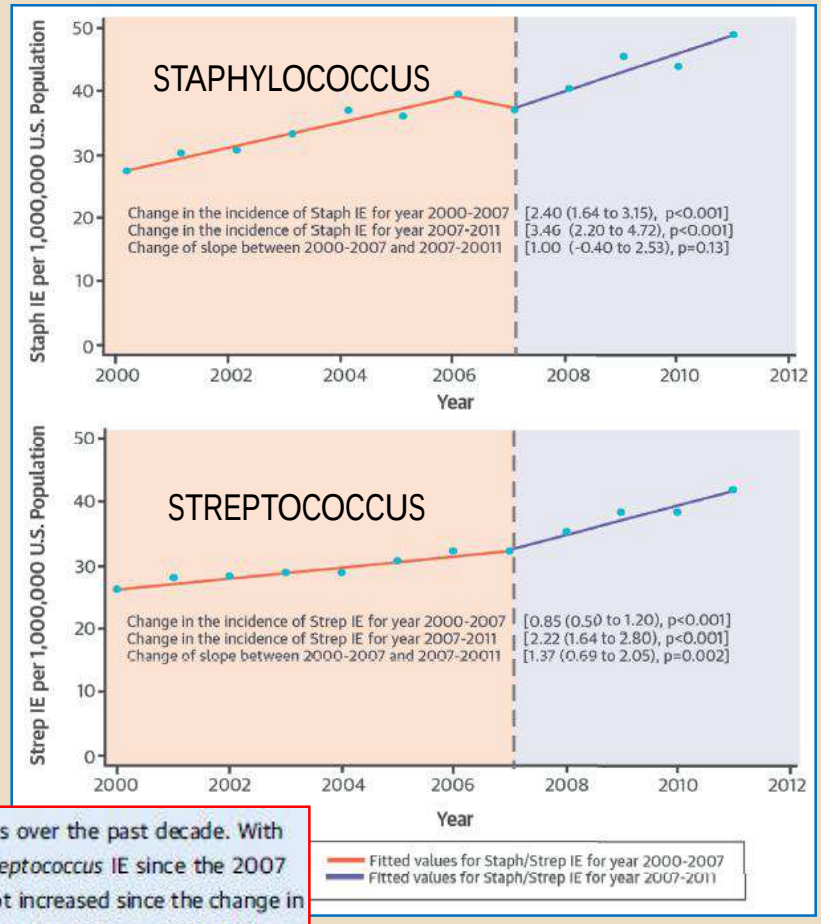
FIGURE 3 Valve Replacement Rates for IE (per 1,000 IE Cases) in the United States From 2000 to 2011





NIS (*Nationwide Inpatient Sample*) – *Medicare, Medicaid, private insurance and uninsured*. USA 2000-2012

CONCLUSIONS These results show that IE incidence has increased in the United States over the past decade. With regard to the microbiology of IE, there has been a significant rise in the incidence of *Streptococcus* IE since the 2007 guideline revisions. However, the rates of hospitalization and valve surgery for IE have not increased since the change in IE prophylaxis guideline in 2007. (J Am Coll Cardiol 2015;65:2070–6) © 2015 by the American College of Cardiology Foundation.

Pant S, et al. J Am Coll Cardiol 2015;65:2070-6

Infective Endocarditis Hospitalizations Before and After the 2007 American Heart Association Prophylaxis Guidelines

Andrew S. Mackie, MD, SM,[a,b] Wei Liu, MSc,[c] Anamaria Savu, PhD,[c]
Ariane J. Marelli, MD, MPH,[d] and Padma Kaul, PhD[b,c]

[a] Department of Pediatrics, University of Alberta, Edmonton, Alberta, Canada
[b] Department of Public Health Sciences, University of Alberta, Edmonton, Alberta, Canada
[c] Department of Medicine, University of Alberta, Edmonton, Alberta, Canada
[d] MAUDE Unit, McGill University, Montréal, Québec, Canada

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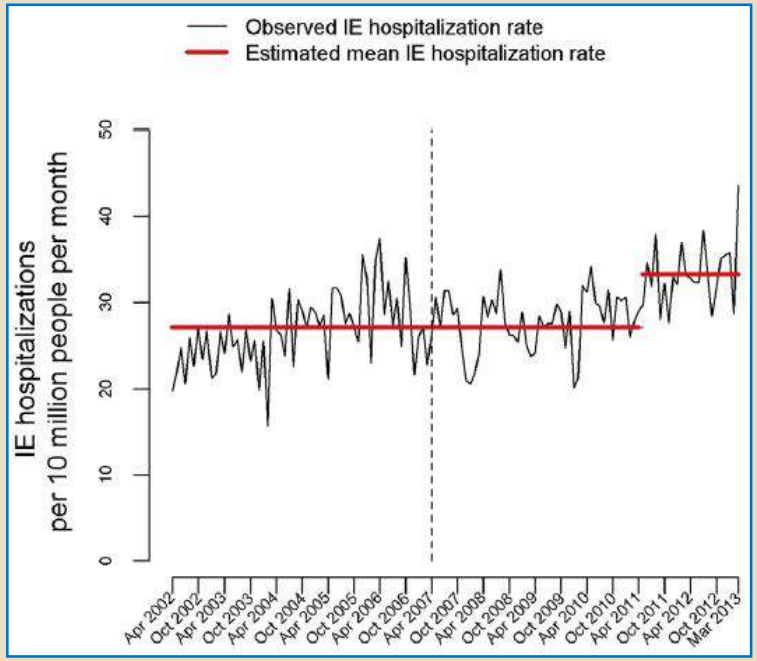

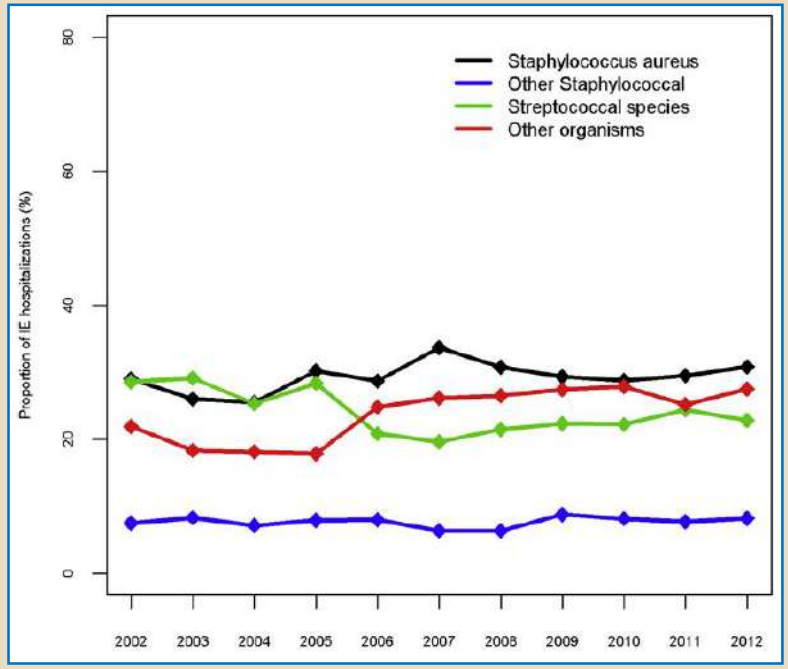

Conclusions: The rate of IE hospitalizations increased in Canada before and after the publication of the 2007 AHA guidelines, with no significant change in slope after 2007. These guidelines had no impact on the incidence of IE hospitalizations.

Canadian Institute for Health Information, Canadá 2002-2012

Mackie AS et al. Can J Cardiol 2016;32:942-8

Impact of AHA's 2007 guideline change on incidence of infective endocarditis in infants and children

Rie Sakai Bizmark, MD, MPH, PhD,[a,b,c] Ruey-Kang R. Chang, MD, MPH,[a,b] Yusuke Tsugawa, MD, MPH, PhD,[d] Kenneth M. Zangwill, MD,[a,b] and Ichiro Kawachi, MD, PhD[c] *Boston, MA and Los Angeles, CA*

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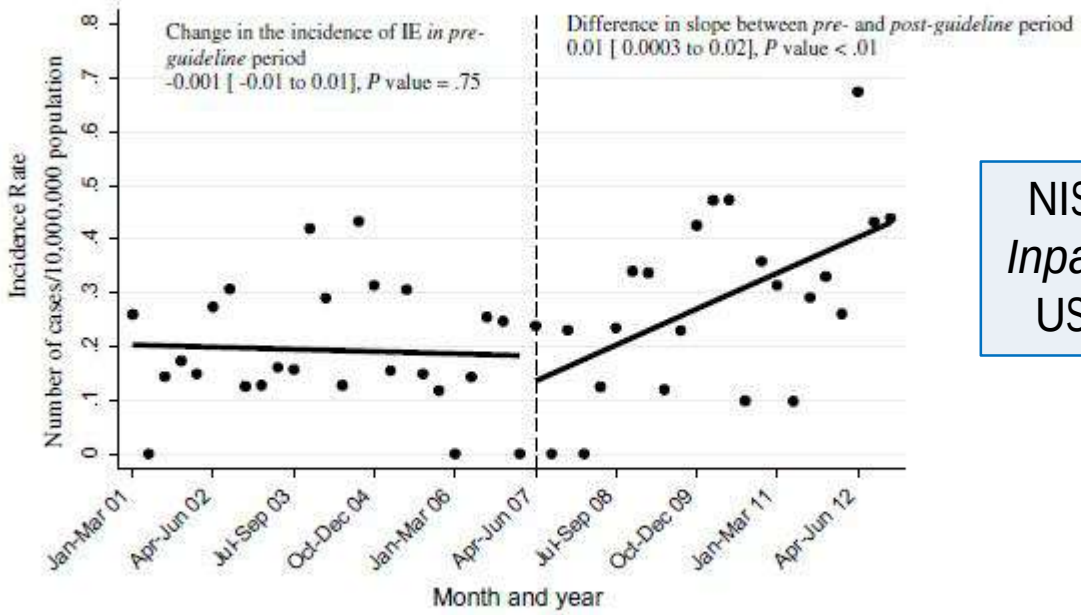

NIS (*Nationwide Inpatient Sample*), USA 2001-2012

Quarterly incidence rate of infective endocarditis due to viridans group Streptococcus in the older age group between 2001 and 2012. The Dashed line represents when the 2007 AHA guidelines were published.

Conclusions The data did not demonstrate an impact of the 2007 guideline changes on overall incidence of pediatric IE. However, a significant increase in disease incidence trend due to VGS was observed for the 10–17 year-old group, compared pre- and post-guideline. (Am Heart J 2017;189:110-9.)

Bizmark RS et al. Am Heart J 2017;189:110-9

Antibiotic Prophylaxis and Incidence of Endocarditis Before and After the 2007 AHA Recommendations

Martin H. Thornhill, MBBS, BDS, PhD,[a,b] Teresa B. Gibson, PhD,[c] Eli Cutler, PhD,[c] Mark J. Dayer, MBBS, PhD,[d] Vivian H. Chu, MD,[e] Peter B. Lockhart, DDS,[b] Patrick T. O'Gara, MD,[f] Larry M. Baddour, MD[g]

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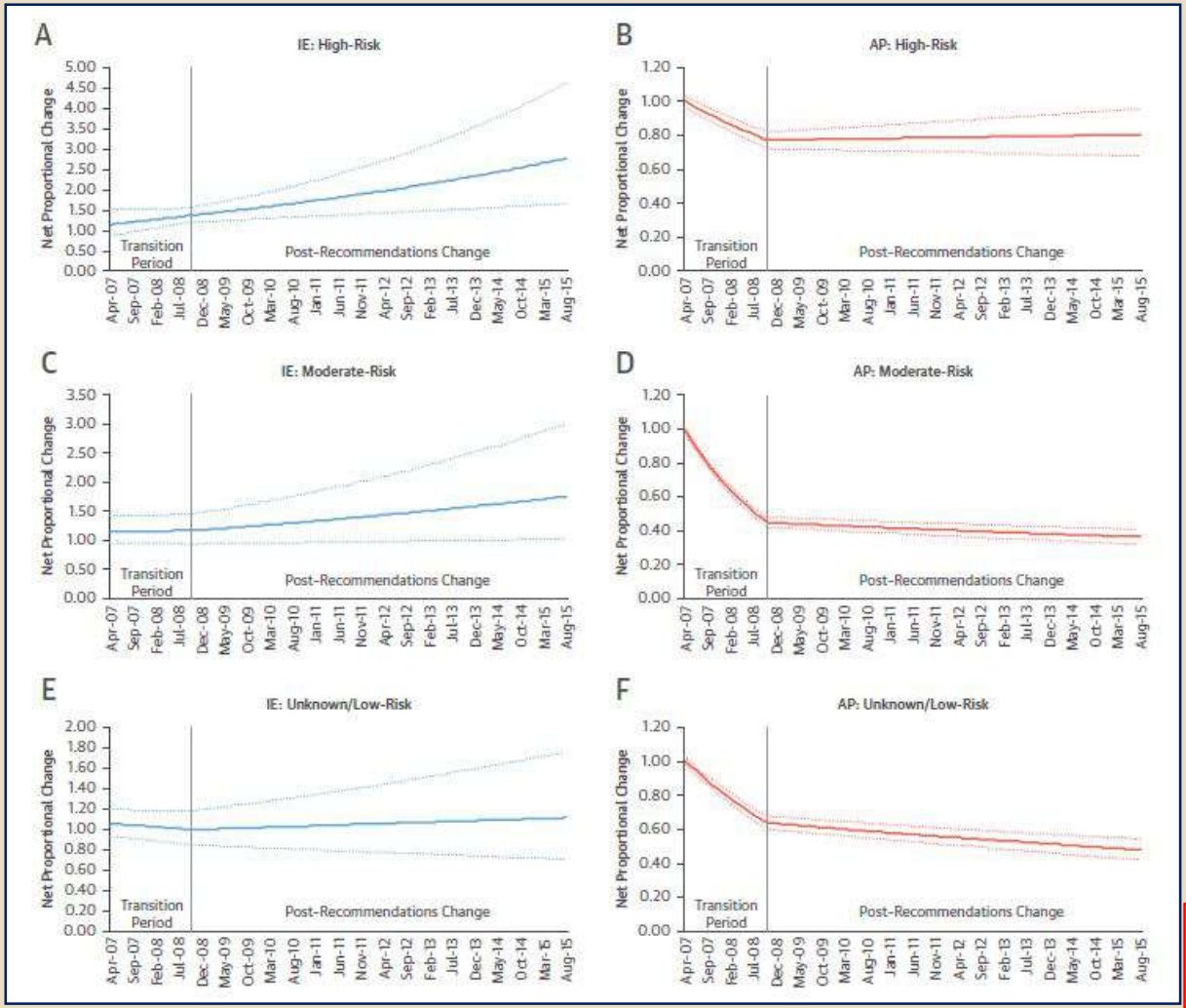

Medicare o Truven Health MarketScan Databases
USA 2003-2015
198.522.665 personas

1. Incremento incidencia en pacientes de riesgo moderado (75%) y de riesgo alto (177%)
2. No puede establecerse una relación causa efecto.

J Am Coll Cardiol 2018: in press

VII CONGRESO SEICAV Sociedad Española de Infecciones Cardiovasculares
SEVILLA 16 Y 17 DE NOVIEMBRE DE 2018

PREVENCIÓN DE ENDOCARDITIS INFECCIOSA

ESTRUCTURA DE LA PRESENTACIÓN

CLÍNIC BARCELONA Hospital Universitari

1. Evolución de las recomendaciones sobre profilaxis antibiótica.
2. Recomendaciones actuales.
3. Estudios poblacionales tras la disminución de profilaxis: ¿ha aumentado la incidencia?
4. **¿Es realmente efectiva la profilaxis antibiótica?**
5. Trabajos recientes que podrían cambiar las recomendaciones.
6. Conclusiones: ¿que mensajes me llevo a casa?

Predisposing cardiac conditions, interventional procedures, and antibiotic prophylaxis among patients with infective endocarditis

Fabio Chirillo, MD,[a] Pompilio Faggiano, MD,[b] Moreno Cecconi, MD,[c] Antonella Moreo, MD,[d] Angelo Squeri, MD,[e] Oscar Gaddi, MD,[f] and Enrico Cecchi, MD[g], for the Italian Registry on Infective Endocarditis (RIEI) Investigators
Treviso, Brescia, Ancona, Milan, Parma, Reggio Emilia, and Torino, Italy

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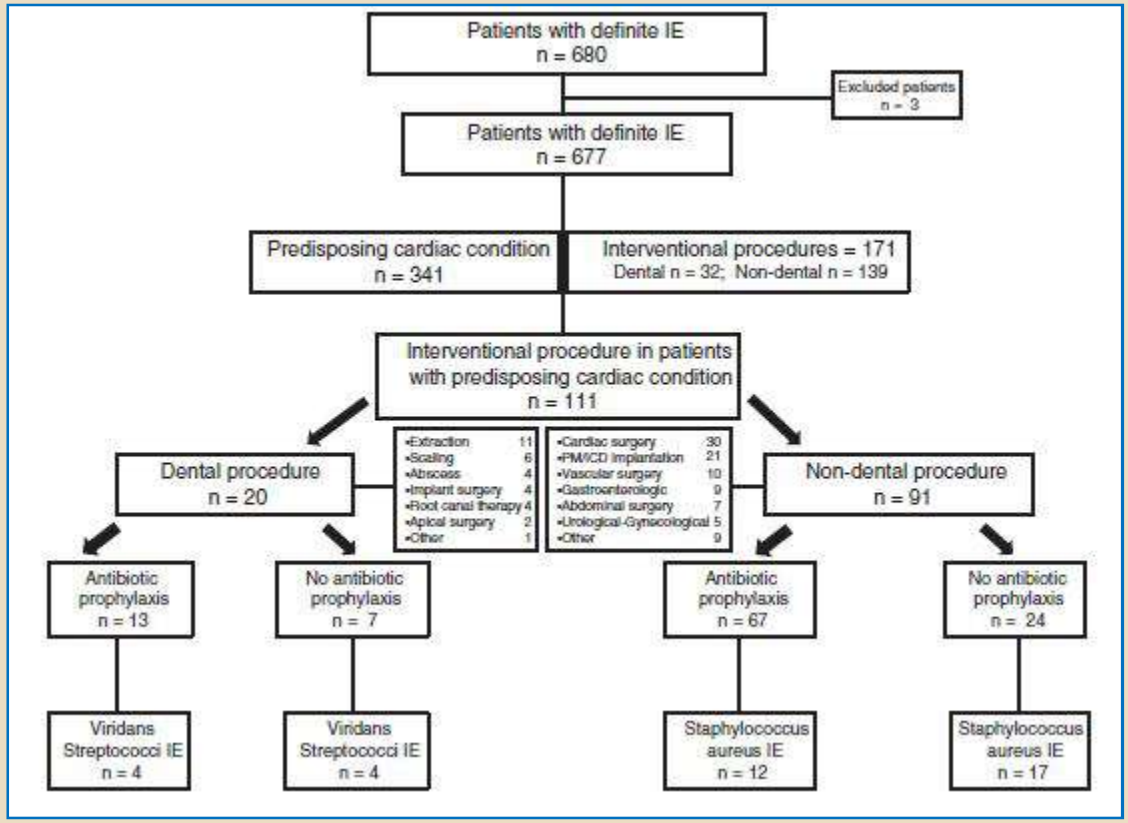

Registro Italiano della Endocardite Infettiva
(RIEI) 2007-2010
17 centros italianos

Conclusions In a large unselected cohort of patients with IE, the incidence of preceding dental procedures was minimal. The number of cases potentially preventable by means of AP was negligible. Nondental procedures were more frequent than dental procedures and were correlated with poorer prognosis. (Am Heart J 2016;179:42-50.)

Chirillo F et al. Am Heart J 2016;179:42-50

VII CONGRESO SEICAV Sociedad Española de Infecciones Cardiovasculares
SEVILLA 16 Y 17 DE NOVIEMBRE DE 2018

Antibiotic prophylaxis for infective endocarditis: a systematic review and meta-analysis

Thomas J Cahill,[1] James L Harrison,[2] Paul Jewell,[1] Igho Onakpoya,[3] John B Chambers,[2] Mark Dayer,[4] Peter Lockhart,[5] Nia Roberts,[6] David Shanson,[7] Martin Thornhill,[8] Carl J Heneghan,[9] Bernard D Prendergast[2]

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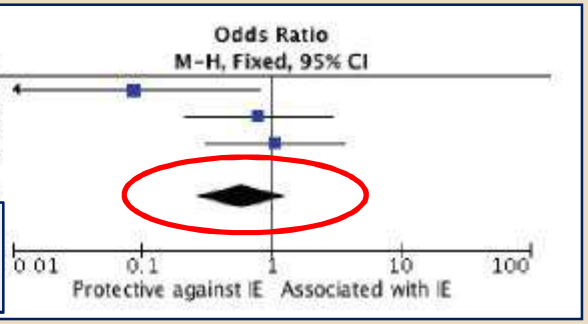
Study or Subgroup	Infective endocarditis Events	Total	No infective endocarditis Events	Total	Weight	Odds Ratio M-H, Fixed, 95% CI
Imperiale 1990	1	8	15	24	40.2%	0.09 [0.01, 0.82]
Lacassin 1995	6	26	6	22	30.6%	0.80 [0.22, 2.96]
Van der Meer 1992	5	25	8	42	29.2%	1.06 [0.31, 3.70]
Total (95% CI)		**59**		**88**	**100.0%**	**0.59 [0.27, 1.30]**
Total events	12		29			

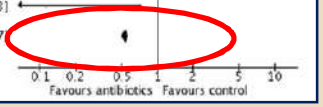
Heterogeneity: Chi² = 3.88, df = 2 (P = 0.14); I² = 48%
Test for overall effect: Z = 1.31 (P = 0.19)



PREVENCIÓN ENDOCARDITIS

Study or Subgroup	Antibiotic prophylaxis Events	Total	Control Events	Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Asi 2010	4	30	14	30	1.5%	0.29 [0.11, 0.77]
Baltch 1982	7	54	24	56	2.5%	0.30 [0.14, 0.64]
Baltch 1982 (2)	11	32	17	29	1.9%	0.59 [0.33, 1.03]
Baltch 1982 (2)b	17	36	17	29	2.0%	0.81 [0.51, 1.28]
Cannell 1991a	12	20	13	20	1.4%	0.92 [0.57, 1.49]
Cannell 1991b	14	20	13	20	1.4%	1.08 [0.70, 1.66]
Coulter 1990	9	26	20	32	1.9%	0.55 [0.31, 1.00]
Diz Dios 2006a	26	56	51	53	5.5%	0.48 [0.36, 0.64]
Diz Dios 2006b	46	54	51	53	5.4%	0.89 [0.78, 1.00]
Diz Dios 2006c	33	58	51	53	5.6%	0.59 [0.47, 0.74]
Duvall 2013	4	10	5	10	0.5%	0.80 [0.30, 2.13]
Hall 1993a	18	20	19	20	2.0%	0.95 [0.79, 1.12]
Hall 1993b	17	20	19	20	2.0%	0.89 [0.73, 1.10]
Hall 1996	15	19	17	20	1.7%	0.93 [0.69, 1.25]
Head 1984a	5	25	21	25	2.2%	0.24 [0.11, 0.53]
Head 1984b	13	25	21	25	2.2%	0.62 [0.41, 0.94]
Khairat 1966a	16	42	64	100	4.0%	0.60 [0.39, 0.90]
Khairat 1966b	3	100	64	100	6.7%	0.05 [0.02, 0.14]
Limeres Posse 2016a	0	52	53	55	5.5%	0.01 [0.00, 0.16]
Limeres Posse 2016b	25	50	53	55	5.3%	0.52 [0.39, 0.69]
Limeres Posse 2016c	45	52	53	55	5.4%	0.90 [0.80, 1.01]
Limeres Posse 2016d	46	57	53	55	5.7%	0.84 [0.73, 0.96]
Lockhart 2004	16	49	43	51	4.4%	0.39 [0.25, 0.59]
Lockhart 2008	50	89	67	84	7.3%	0.70 [0.57, 0.87]
Maharaj 2012a	3	40	14	40	1.5%	0.21 [0.07, 0.69]
Maharaj 2012b					1.5%	0.57 [0.27, 1.21]
Maskell 1986a					1.1%	0.62 [0.37, 1.03]
Maskell 1986b					1.1%	0.43 [0.21, 0.88]
Roberts 1987					1.9%	0.06 [0.01, 0.40]
Shanson 1978a					1.7%	0.31 [0.13, 0.77]
Shanson 1978b					1.7%	0.13 [0.03, 0.51]
Shanson 1985					1.9%	0.35 [0.15, 0.79]
Shanson 1987a	1	40	13	40	1.4%	0.08 [0.01, 0.56]
Shanson 1987b	10	40	13	40	1.4%	0.77 [0.38, 1.55]
Vergis 2001	1	10	8	9	0.8%	0.11 [0.02, 0.73]
Total (95% CI)		**1353**		**1408**	**100.0%**	**0.53 [0.49, 0.57]**
Total events	499		973			

Heterogeneity: Chi² = 347.01, df = 34 (P < 0.00001); I² = 90%
Test for overall effect: Z = 17.35 (P < 0.00001)



PREVENCIÓN BACTERIEMIA

La profilaxis antibiótica se muestra efectiva en prevenir la bacteriemia pero no necesariamente la endocarditis (evidencia limitada, heterogenea y de baja calidad)

Cahill TJ el al, Heart 2017;103:937-44

VII CONGRESO SEICAV Sociedad Española de Infecciones Cardiovasculares
SEVILLA 16 Y 17 DE NOVIEMBRE DE 2018

Dental procedures, antibiotic prophylaxis, and endocarditis among people with prosthetic heart valves: nationwide population based cohort and a case crossover study

Sarah Tubiana,[1,2] Pierre-Olivier Blotière,[2] Bruno Hoen,[3] Philippe Lesclous,[4] Sarah Millot,[5] Jérémie Rudant,[2] Alain Weill,[2] Joel Coste,[2] François Alla,[2] Xavier Duval[1]

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Table 4 | Association between dental procedures and oral streptococcal infective endocarditis in case crossover study, 2008-14

Dental procedures	Odds ratio (95% CI)	P value
Non-exposure	1.00	
Dental procedures model		
Invasive dental procedures	1.66* (1.05 to 2.63)	0.03
Non-invasive dental procedures	0.98* (0.70 to 1.36)	0.16
Antibiotic prophylaxis dental procedures model		
Invasive dental procedures:		
Without antibiotic prophylaxis	1.62 (0.81 to 3.27)	0.32
With antibiotic prophylaxis	1.69 (0.93 to 3.06)	0.19
Non-invasive procedures:		
Without antibiotic prophylaxis	0.99 (0.69 to 1.42)	0.29
With antibiotic prophylaxis	0.92 (0.44 to 1.91)	0.39

*Interaction test between invasive and non-invasive dental procedures z score=1.80 (0.527/0.292; P=0.07).

French national health insurance administrative data / National hospital discharge database

- Los procedimientos dentales invasivos aumentaron la incidencia de endocarditis en los pacientes de alto riesgo.
- No se observó disminución del riesgo en los pacientes que recibieron profilaxis antibiótica

Tubiana et al, BMJ 2017; 358:j3776

ORIGINAL RESEARCH ARTICLE

The Cost-Effectiveness of Antibiotic Prophylaxis for Patients at Risk of Infective Endocarditis

CLÍNIC BARCELONA Hospital Universitari

Matthew Franklin, PhD
Allan Wailoo, PhD
Mark J. Dayer, MBBS, PhD
Simon Jones, PhD
Bernard Prendergast, DM
Larry M. Baddour, MD
Peter B. Lockhart, DDS
Martin H. Thornhill, MBBS, BDS, PhD

Clinical Perspective

What Is New?

- This study uses recent data to evaluate the cost-effectiveness of antibiotic prophylaxis (AP) in preventing infective endocarditis (IE).
- It demonstrates that AP before invasive dental procedures for those at moderate or high risk of IE is very cost-effective, in fact, cost saving.
- Cost-effectiveness is even greater when AP is confined to those at high risk of IE.
- For high-risk individuals, AP is cost-effective even if it only prevents 1.44 cases of IE per year.

What Are the Clinical Implications?

- If AP was reinstated in England for those at moderate or high risk of IE, it could save £5.5 to £8.2 million ($7.3–$10.9 million; €6.6–€9.8 million) and result in health gains >2600 quality-adjusted life-years per year.
- AP is even more cost-effective for those at high risk of IE. Restricting AP to those at high risk would result in cost savings of £4.0 million ($5.32 million; €4.8 million) and health gains of >1070 quality-adjusted life-years per year in England because of the smaller number of individuals at high risk.
- These findings support the cost-effectiveness of guidelines recommending AP use, in particular, in high-risk individuals.

Base de datos y costes. NHS británico

La profilaxis antibiótica es coste-efectiva para prevención de endocarditis, especialmente en los pacientes de alto riesgo.

Franklin M, et al. Circulation 2016;134:1568-78

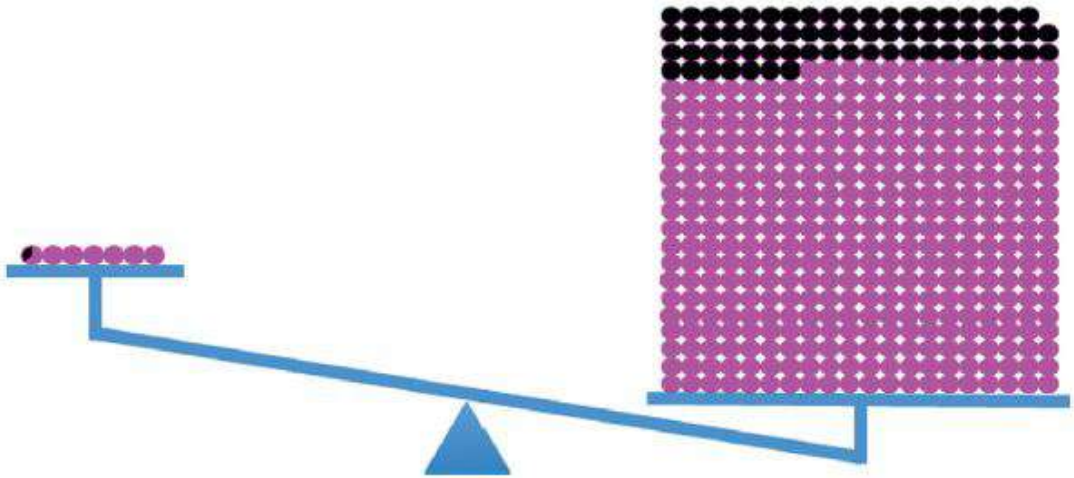
Antibiotic Prophylaxis Against Infective Endocarditis

Widening the Net?*

John B. Chambers, MA, MD

CLÍNIC BARCELONA Hospital Universitari

FIGURE 1 Balance of Risks in Deciding to Give Antibiotic Prophylaxis



In the absence of a randomized controlled trial, the efficacy of antibiotic prophylaxis (AP) remains unproven, and clinicians and their patients must make a balanced judgment. If AP is effective but not given for high-risk cases, then there might be 35 more cases per month in the United Kingdom and 66 deaths each year (8), as shown on the **right of the balance**. If, however, AP is given despite not being effective, there might be 2 adverse reactions but no deaths each year if amoxicillin is used or 7 reactions per year and 1 death every 3 years if clindamycin is used (9). The balance, therefore, favors giving AP. Adapted with permission from Thornhill et al. (18).

Chambers JB. J Am Coll Cardiol 2018;24:2741-3

PREVENCIÓN DE ENDOCARDITIS INFECCIOSA

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CLÍNIC BARCELONA Hospital Universitari

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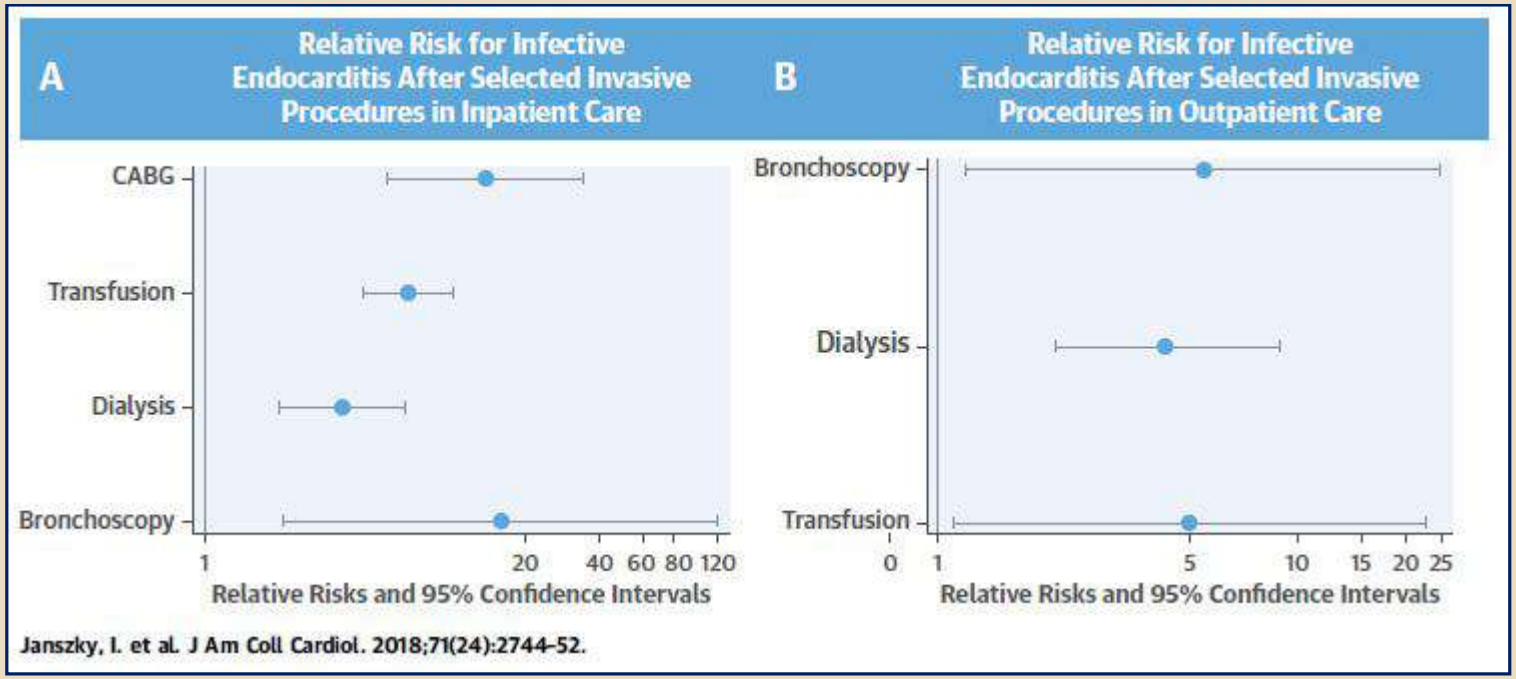
5. **Trabajos recientes que podrían cambiar las recomendaciones.**
6. Conclusiones: ¿que mensajes me llevo a casa?

Invasive Procedures Associated With the Development of Infective Endocarditis

Imre Janszky, MD, PhD,[a,b] Katalin Gémes, PhD,[c] Staffan Ahnve, MD, PhD,[c] Hilmir Asgeirsson, MD, PhD,[d,e] Jette Möller, PhD[c]



Janszky, I. et al. J Am Coll Cardiol. 2018;71(24):2744-52.

Swedish National Patient Register 1998-2011

Diferentes procedimientos no odontológicos se asocian a mayor riesgo de endocarditis

Janszky I et al. J Am Coll Cardiol 2018; 71:2744-52

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VII CONGRESO SEICAV Sociedad Española de Infecciones Cardiovasculares
SEVILLA 16 Y 17 DE NOVIEMBRE DE 2018

Infective Endocarditis in Patients With Bicuspid Aortic Valve or Mitral Valve Prolapse

Isabel Zegri-Reiriz, MD, PhD,[a] Arístides de Alarcón, MD, PhD,[b] Patricia Muñoz, MD, PhD,[c] Manuel Martínez Sellés, MD, PhD,[d] Victor González-Ramallo, MD, PhD,[e] Jose M. Miro, MD, PhD,[f] Carles Falces, MD, PhD,[g] Claudia Gonzalez Rico, MD,[h] Xabier Kortajarena Urkola, MD,[i] José Antonio Lepe, MD,[b] Regino Rodriguez Alvarez, MD,[j] Jose Maria Reguera Iglesias, MD,[k] Enrique Navas, MD,[l] Fernando Dominguez, MD, PhD,[a,m] Pablo Garcia-Pavia, MD, PhD,[a,n] for the Spanish Collaboration on Endocarditis–Grupo de Apoyo al Manejo de la Endocarditis infecciosa en España (GAMES)

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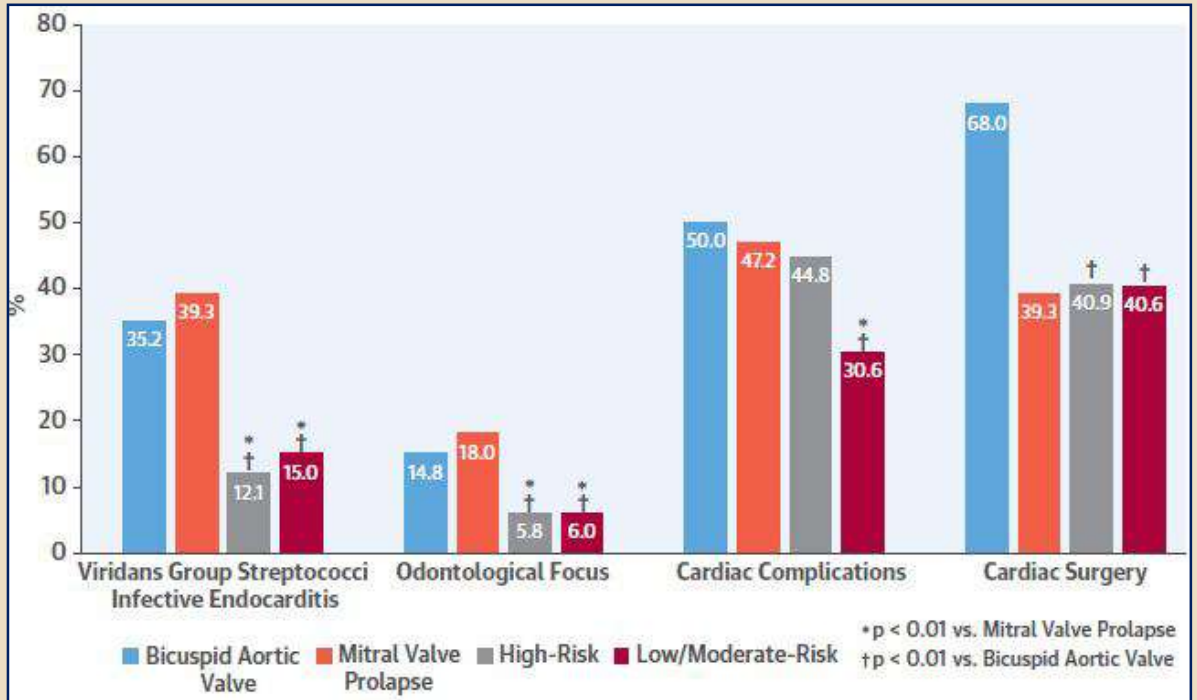

Zegri-Reiriz, I. et al. J Am Coll Cardiol. 2018;71(24):2731-40.

Cohorte GAMES
3208 pacientes
31 hospitales
2008-2016

¿Debería reclasificarse a los pacientes con prolapso mitral o aorta bicúspide como "alto riesgo" y recibir profilaxis antibiótica?

CONCLUSIONS IE in patients with BAV and MVP have higher rates of viridans group streptococci IE and IE from suspected odontologic origin than in other IE patients, with a clinical profile similar to that of high-risk IE patients. Our findings suggest that BAV and MVP should be classified as high-risk IE conditions and the case for IEAP should be reconsidered. (J Am Coll Cardiol 2018;71:2731–40) © 2018 by the American College of Cardiology Foundation.

Zegri-Reiriz I et al. J Am Coll Cardiol 2018;71:2731-40

VII CONGRESO SEICAV Sociedad Española de Infecciones Cardiovasculares
SEVILLA 16 Y 17 DE NOVIEMBRE DE 2018

Quantifying infective endocarditis risk in patients with predisposing cardiac conditions

Martin H. Thornhill[1,2]*, Simon Jones[3,4], Bernard Prendergast[5], Larry M. Baddour[6], John B. Chambers[5], Peter B. Lockhart[2], and Mark J. Dayer[7]

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Predisposing condition	OR of developing IE in 5 years	95% CI	P-value	OR of dying during a hospital admission with IE	95% CI	P-value
High risk						
Previous IE	265.5	244.2–288.2	<0.0001	214.9	179.2–255.6	<0.0001
Prosthetic valve replacement	70.1	65.8–74.7	<0.0001	62.0	54.4–70.4	<0.0001
Valve repair with prosthetic material	76.7	68.3–85.8	<0.0001	59.5	45.6–76.1	<0.001
Cyanotic CHC	55.4	45.6–66.6	<0.0001	133.6	68.8–231.7	<0.001
CHC repaired with prosthetic material	18.3	11.8–26.8	<0.0001	24.4	7.5–56.8	<0.001
CHC with palliative shunt or conduit	86.1	58.1–122.1	<0.0001	314.5	111.6–688.0	<0.001
Moderate risk						
Rheumatic fever	51.4	47.9–55.0	<0.0001	54.5	48.0–61.7	<0.0001
Non-rheumatic valve disease	41.5	39.6–43.6	<0.0001	35.9	32.6–39.5	<0.0001
Congenital valve anomalies	66.4	55.4–80.1	<0.0001	56.7	25.8–106.0	<0.001
Unknown risk						
Heart transplant	5.5	0.3–24.2	0.089	NC	NC	NC
Prosthetic heart/VAD	124.2	20.3–398.9	<0.0001	NC	NC	NC
Hypertrophic cardiomyopathy	32.8	23.3–44.6	<0.0001	4.0	0.2–17.5	0.17
Implanted pacemaker/cardioverter	9.7	9.0–10.6	<0.0001	10.1	8.6–11.7	<0.001
Reference group						
The population of England (2008)	1.0			1.0		

Base datos NHS británico

Pacientes de "riesgo moderado" deberían reclasificarse a riesgo elevado

Thornhill MH et al. Eur Heart J 2018;39:586-95

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PREVENCIÓN DE ENDOCARDITIS INFECCIOSA
ESTRUCTURA DE LA PRESENTACIÓN

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1. Evolución de las recomendaciones sobre profilaxis antibiótica.
2. Recomendaciones actuales.
3. Estudios poblacionales tras la disminución de profilaxis: ¿ha aumentado la incidencia?
4. ¿Es realmente efectiva la profilaxis antibiótica?
5. Trabajos recientes que podrían cambiar las recomendaciones.
6. **Conclusiones: ¿que mensajes me llevo a casa?**

CONCLUSIONES

MENSAJES PARA LLEVARSE A CASA

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- No hay evidencia concluyente sobre la profilaxis antibiótica en la endocarditis.
- Estudios contradictorios:
  - Sobre si la reducción de profilaxis ha aumentado incidencia.
  - Sobre si la profilaxis antibiótica reduce la endocarditis estreptocócica.
- Visión global: la profilaxis antibiótica parece “beneficiosa” o “neutra”, pero no dañina.
- Algunos pacientes “de riesgo intermedio” se comportan como de riesgo elevado (estudio GAMES: prolapso mitral y aorta bicúspide).
- Balanza: parece razonable y posiblemente coste-efectiva la profilaxis en los pacientes de riesgo elevado.
- Diferentes procedimientos invasivos no odontológicos son factores de riesgo para endocarditis y debemos investigar sobre la prevención en estas situaciones.

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