Roma, 29 novembre 2019

VACCINAZIONE

ANTI-PNEUMOCOCCICA & ANTI-INFLUENZALE

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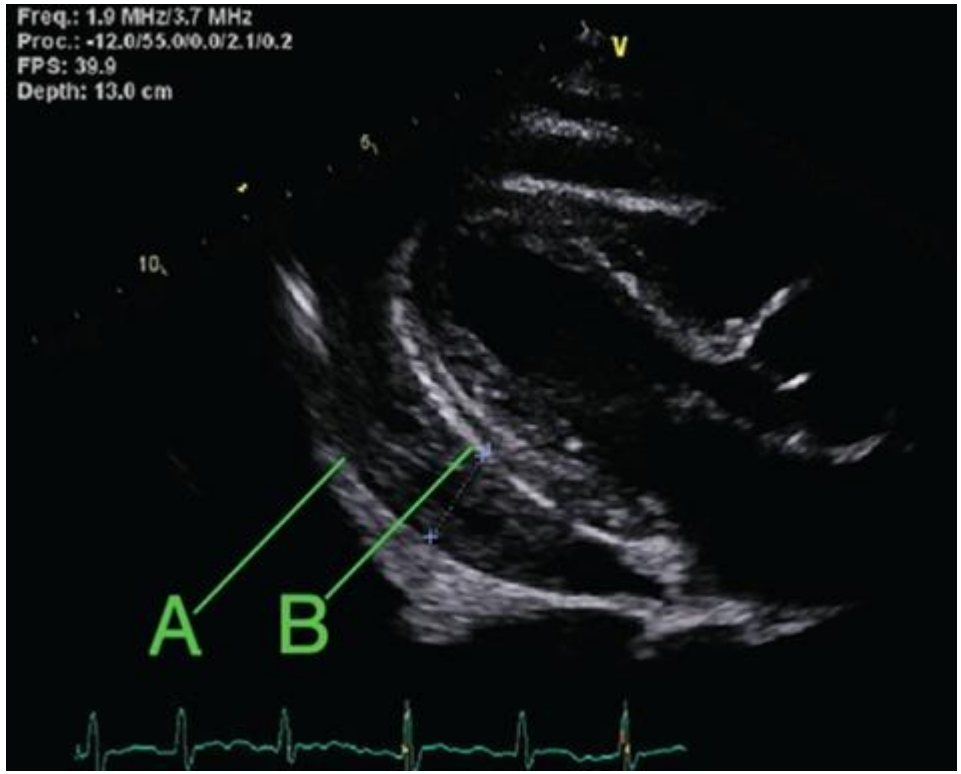
Department of Medical and Surgical Sciences – ID Unit

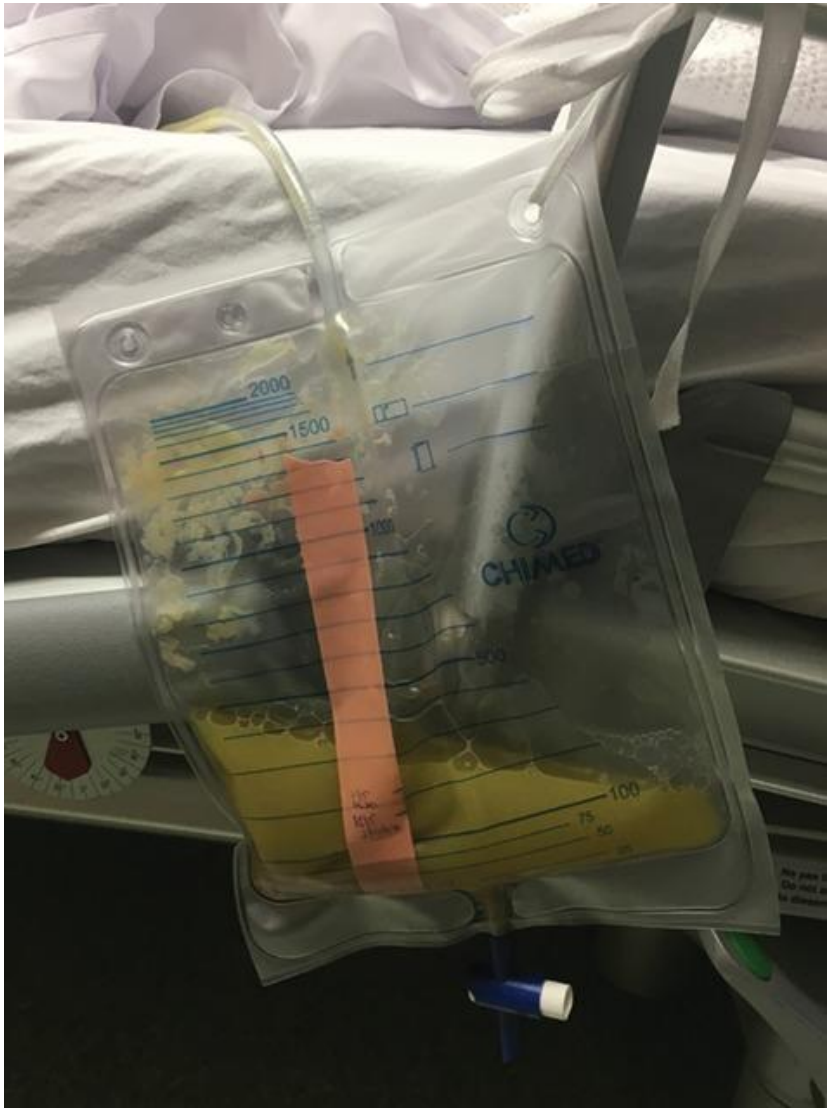
A 74-year-old gentleman presented to hospital with a 1-day history of acute onset pleuritic chest pain and fever. He was found to have widespread ST segment elevation on electrocardiogram, and blood cultures taken were positive for *Streptococcus pneumoniae*.

Two days following admission the patient developed dyspnea, and a large pericardial effusion and right middle lobe consolidation were demonstrated on a computed tomography scan of the chest.

A transthoracic echocardiogram confirmed the presence of a large circumferential pericardial effusion with multiple prominent adhesions and marked heterogenous thickening of the pericardium, without evidence of tamponade



Pericardiocentesis drained a purulent exudate positive for pneumococcal antigen.



Patient was discharged alive 4 weeks later after 20 days of antibiotic treatment

Purulent pneumococcal pericarditis, a vaccine-preventable illness.

Rees MJ, Wilson A Oxf Med Case Reports. 2019 Aug 29;2019

Donna di 51 anni

Splenectomizzata nel 2012 per M. di Werlhof

In data 5.12.2018 nel primo pomeriggio, afferisce in PS accusando lieve disorientamento spazio temporale, diarrea e febbre.

All'esame obiettivo

P.A. 90/60 ←

FR 100 /minuto

FC 28 atti/min ←

Vigile ma rallentata ←

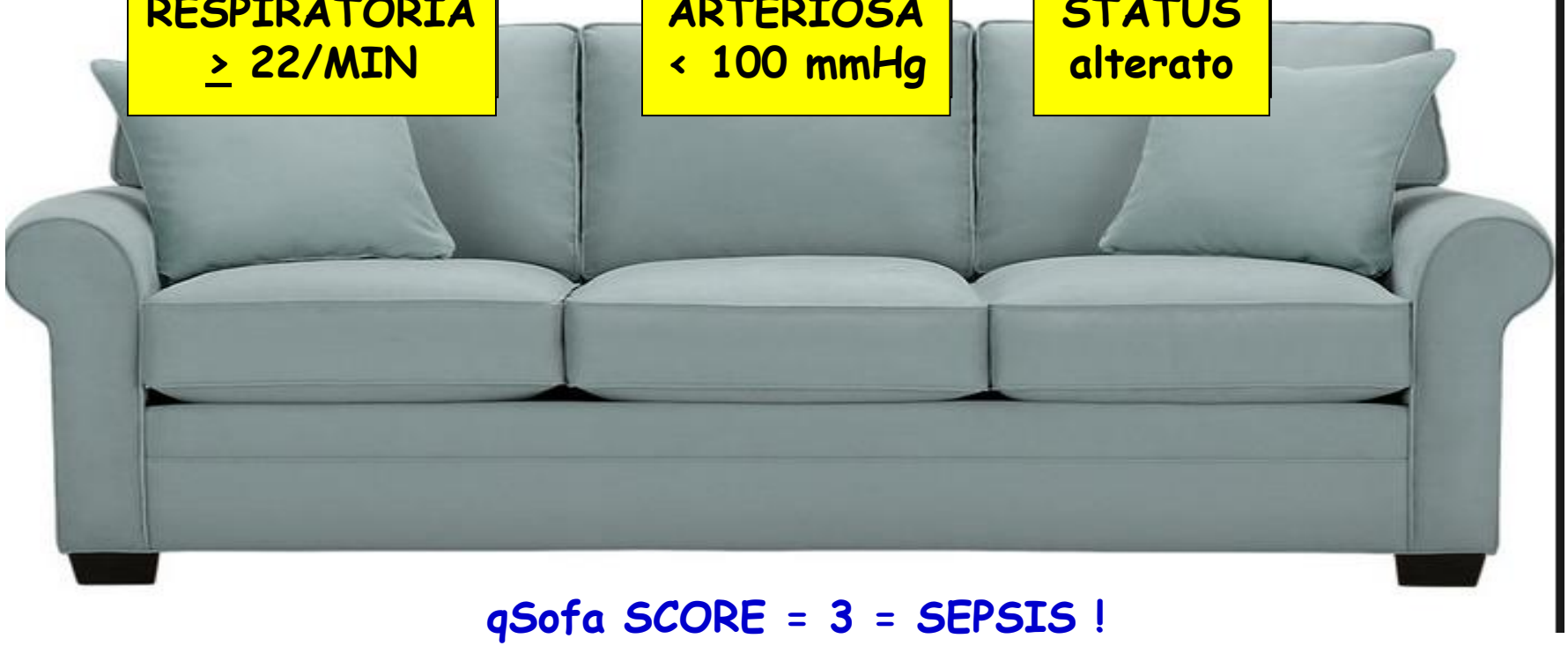
The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)

qSofa SCORE

FREQUENZA RESPIRATORIA ≥ 22/MIN

PRESSIONE ARTERIOSA < 100 mmHg

MENTAL STATUS alterato



qSofa SCORE = 3 = SEPSIS !

The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)

Sequential [Sepsis-Related] Organ Failure Assessment Score[a]

	Score				
System	0	1	2	3	4
Respiration					
Pao_2/Fio_2, mm Hg (kPa)	≥400 (53.3)	<400 (53.3)	<300 (40)	<200 (26.7) with respiratory support	<100 (13.3) with respiratory support
Coagulation					
Platelets, $\times 10^3/\mu L$	≥150	<150	<100	<50	<20
Liver					
Bilirubin, mg/dL (μmol/L)	<1.2 (20)	1.2-1.9 (20-32)	2.0-5.9 (33-101)	6.0-11.9 (102-204)	>12.0 (204)
Cardiovascular	MAP ≥70 mm Hg	MAP <70 mm Hg	Dopamine <5 or dobutamine (any dose)	Dopamine 5.1-15 or epinephrine ≤0.1 or norepinephrine ≤0.1	Dopamine >15 or epinephrine >0.1 or norepinephrine >0.1
Central nervous system					
Glasgow Coma Scale score[c]	15	13-14	10-12	6-9	<6
Renal					
Creatinine, mg/dL (μmol/L)	<1.2 (110)	1.2-1.9 (110-170)	2.0-3.4 (171-299)	3.5-4.9 (300-440)	>5.0 (440)
Urine output, mL/d				<500	<200

LATTATI 2.2 mmol/L

Donna di 41 anni

Splenectomizzata nel 2012 per M. di Werlhof

In data 5.12.2018 nel primo pomeriggio, afferisce in PS accusando lieve disorientamento spazio temporale, diarrea e febbre.

All'esame obiettivo
P.A. 90/60
FR 100 /minuto
FC 28 atti/min
Vigile ma rallentata

PORPORA FULMINAS PNEUMOCOCCICA

Petecchie arti inferiori e superiori

Esegue PL : Liquor limpido
Esegue PCT : 25 mcg/dL
Esegue Ag Urinario Pneumococco: positivo

14/3

16/3

NON ERA VACCINATA per PNEUMOCOCCO !

Invasive Pneumococcal Disease Among Immunocompromised Persons: Implications for Vaccination Programs

Shigayeva A et al, Clin Infect Dis 2016;62:139–47

Annual Incidence of IPD and Incidence Rate Ratio

	Population	All	
	N	Incidence[a]	IRR (95% CI)
Immunocompetent	3 973 048	4.8	
Immunocompromised (all)	112 439	56	12 (8.7–15)
Chronic renal failure requiring dialysis[b]	2798	89	19 (5.3–65)
HIV infection	19 274	56	11 (6.1–21)
Hematological malignancy[c]	9038	266	55 (36–84)
Acute leukemia	850	647	134 (58–313)
Chronic leukemia	1818	220	46 (17–124)
Lymphoma	5184	106	22 (9.4–51)
Multiple myeloma	945	847	176 (87–358)
Solid organ/bone marrow transplant	4377	217	45 (24–86)
Sickle cell disease	1226	122	25 (5.1–127)
Systemic autoimmune disease[d]	20 427	20	4.1 (1.5–11)
Immunosuppressive therapy[e]	55 300	19	3.9 (2.1–7.3)

Invasive Pneumococcal Disease Among Immunocompromised Persons: Implications for Vaccination Programs

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Case Fatality Ratio and Adjusted Odds Ratio for Death

15-64 y	CFR (95% CI)	OR (95% CI)
Immunocompetent	8.9% (7.7%–10.2%)	Ref
Immunocompromised	16.3% (14.1%–18.5%)	1.8 (1.4–2.3)

≥ 65 y	CFR (95% CI)	OR (95% CI)
Immunocompetent	27.0% (25.1%–28.9%)	Ref
Immunocompromised	29.6% (26.6%–32.6%)	1.3 (1.1–1.6)

Invasive Pneumococcal Disease Among Immunocompromised Persons: Implications for Vaccination Programs

Shigayeva A et al, Clin Infect Dis 2016;62:139–47

Case Fatality Ratio and Adjusted Odds Ratio for Death in specific Underlying Immunocompromising Conditions, in people aged > 65

	CFR (95% CI)	OR (95% CI)
Chronic renal failure	38.6% (32.1%–45.1%)	1.7 (1.3–2.3)
Solid organ cancer	39.0% (29.1%–48.8%)	1.4 (.9–2.3)
Hepatic cirrhosis	45.8% (34.3%–57.3%)	3.0 (1.8–5.1)
Solid organ transplant	20.8% (4.6%–37.1%)	1.2 (.4–3.4)

In 2014, the Advisory Committee on Immunization Practices recommended routine use of PCV13 in series with PPSV23 for all adults aged ≥65 years based on demonstrated PCV13 safety and efficacy against PCV13-type pneumonia among adults aged ≥65 years

US ACIP recommendations for pneumococcal vaccination in adults[1-3]

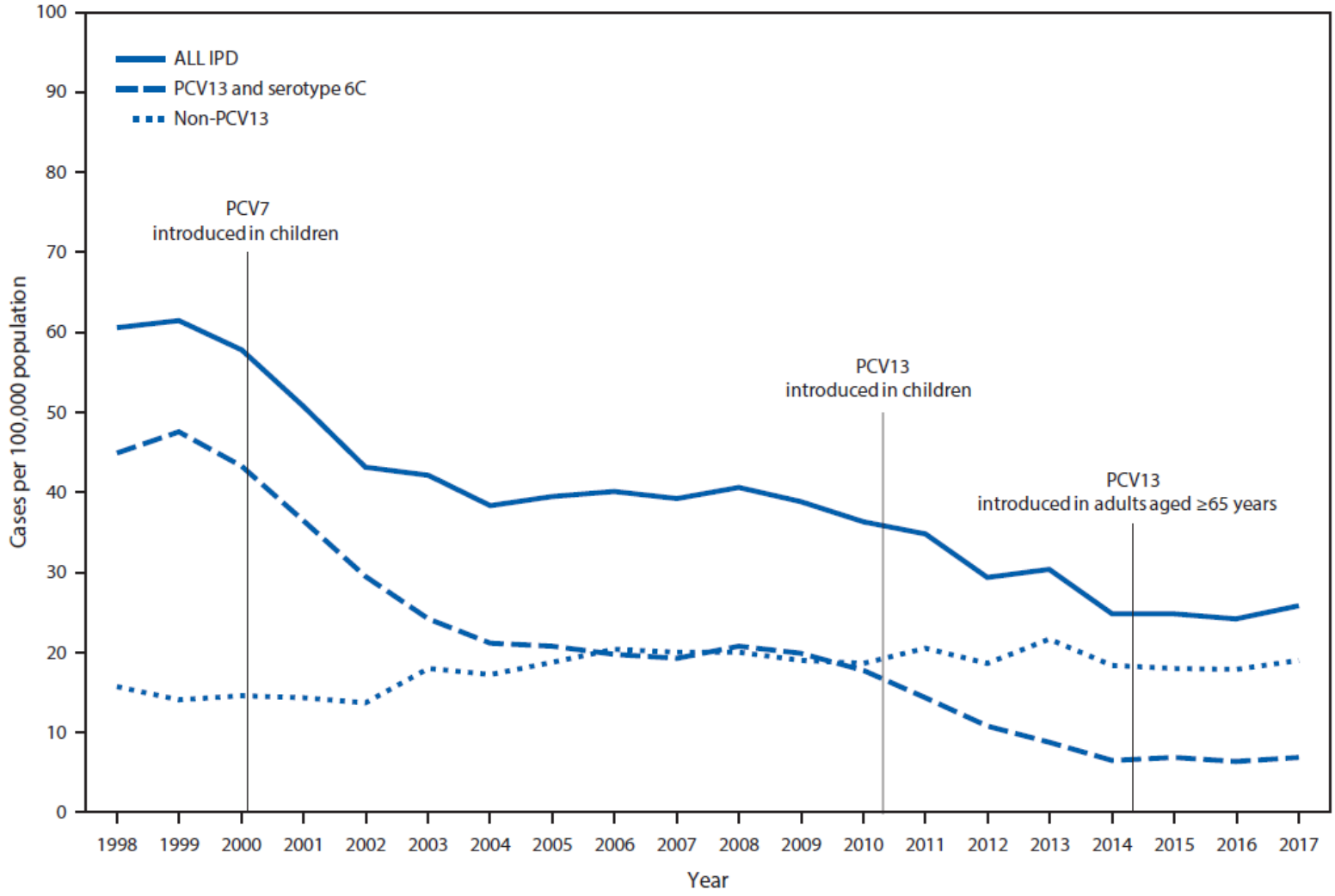
		Initial dose	Additional doses
All persons ≥65 years of age[1,2]	**Pneumococcal vaccine-naïve***	**1 dose of PCV13†**	**1 dose of PPSV23‡ (≥1 year following dose of PCV13)**
	Previously vaccinated with PPSV23 at age ≥65	**1 dose of PCV13 (≥1 year after the most recent dose of PPSV23)**	
	Previously vaccinated with PPSV23 <65 who are now aged ≥65	**1 dose of PCV13 (≥1 year after the most recent dose of PPSV23)**	**1 dose of PPSV23‡ (≥1 year following dose of PCV13, and ≥5 years since the most recent dose of PPSV23)**
Immunocompromised persons ≥19 years of age[3]	**Pneumococcal vaccine-naïve**	**1 dose of PCV13**	**1 dose of PPSV23§ (≥8 weeks following dose of PCV13)**
	Previously vaccinated (PPSV23)	**1 dose of PCV13 (≥1 year after receipt of most recent PPSV23 dose)**	**1 dose of PPSV23§ (≥8 weeks following dose of PCV13, and ≥5 years since most recent dose of PPSV23)**

* Pneumococcal vaccine-naïve or unknown vaccine history. † 13-valent pneumococcal conjugate vaccine. ‡ The 2 vaccines (PCV13 and PPSV23) should not be co-administered. § Minimum interval between sequential administration of PCV13 and PPSV23 is 8 weeks; PPSV23 can be given later than 6 to 12 months after PCV13 if this window is missed.

1. Kobayashi M, et al. MMWR Morb Mortal Wkly Rep. 2015;64;944-7.
2. Tomczyk S, et al. MMWR Morb Mortal Wkly Rep. 2014;63:822-5.
3. Bennett NM, et al. MMWR Morb Mortal Wkly Rep. 2012;61:816-9.

Use of 13-Valent Pneumococcal Conjugate Vaccine and 23-Valent Pneumococcal Polysaccharide Vaccine Among Adults Aged ≥65 Years: Updated Recommendations of the Advisory Committee on Immunization Practices *Matanock A et al, MMWR 2019, Nov 22*

IPD incidence among adults aged ≥65 years, by serotype US, 1998–2017



2019 - ACIP recommends PCV13 based on shared clinical decision-making for adults aged ≥65 years who do not have an immunocompromising condition, CSF leak, or cochlear implant and who have not previously received PCV13.

All adults aged ≥65 years should receive a dose of PPSV23

Immunocompromising conditions include adults with :

chronic renal failure, nephrotic syndrome,

hepatic cirrhosis

immunodeficiency, iatrogenic immunosuppression,

generalized malignancy,

human immunodeficiency virus,

Hodgkin disease, leukemia, lymphoma, multiple myeloma,

solid organ transplants,

congenital or acquired asplenia,

sickle cell disease, or other hemoglobinopathies.

Shared clinical decision-making regarding use of PCV13 in adults aged ≥65 years

The following adults aged ≥65 years are potentially at increased risk for exposure to PCV13 serotypes and might attain higher than average benefit from PCV13 vaccine:

- Person residing in nursing homes or other long-term care facilities
- Persons residing in settings with low pediatric PCV13 uptake
- Persons traveling to settings with no pediatric PCV13 program

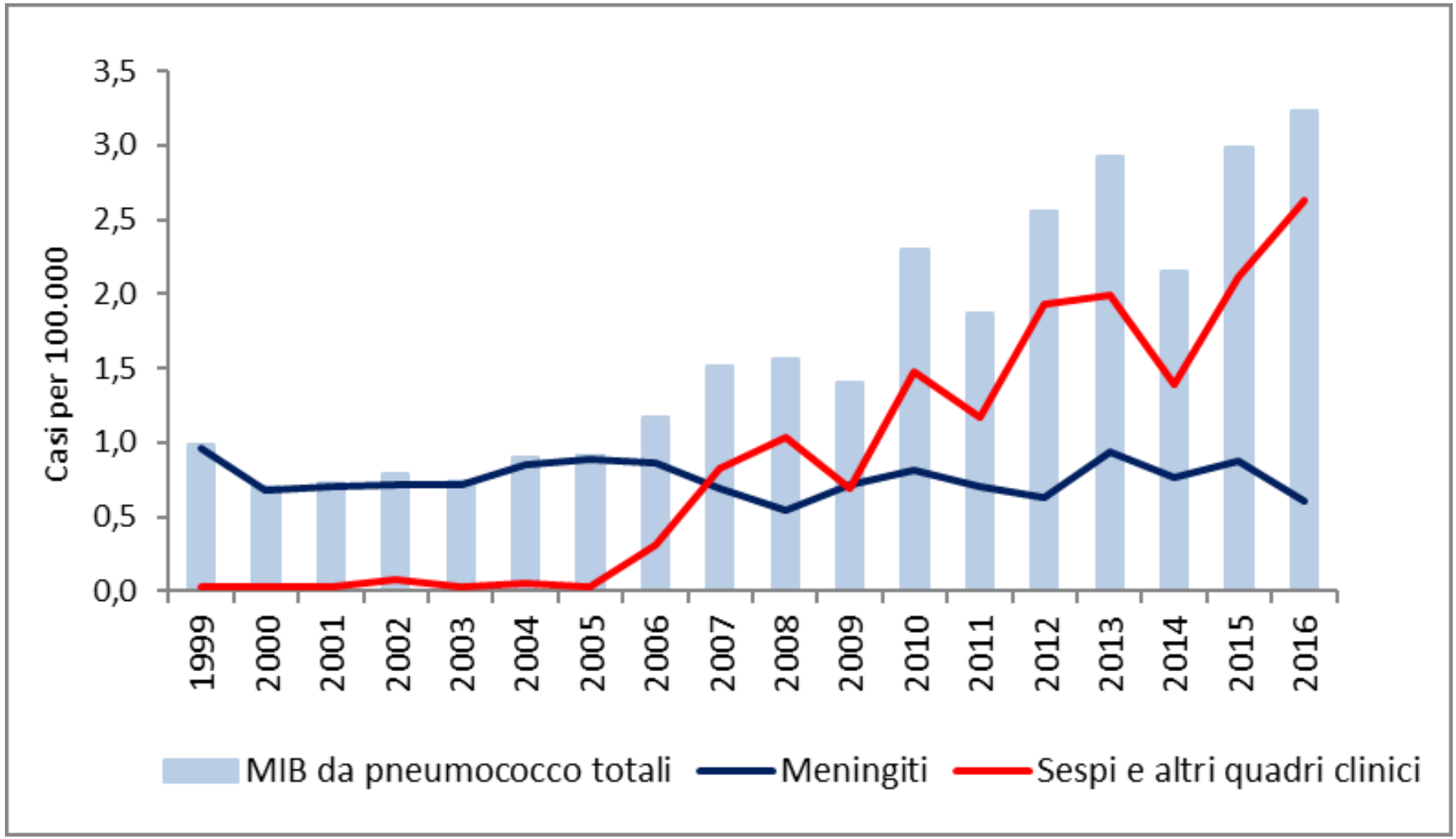
Incidence of PCV13-type invasive pneumococcal disease and pneumonia increases with increasing age and is higher among persons with chronic heart, lung, or liver disease, diabetes, or alcoholism, and those who smoke cigarettes or who have more than one chronic medical condition.

Although indirect effects from pediatric PCV13 use were documented for these groups of adults and were comparable to those observed among healthy adults, the residual PCV13- type disease burden remains higher in these groups.

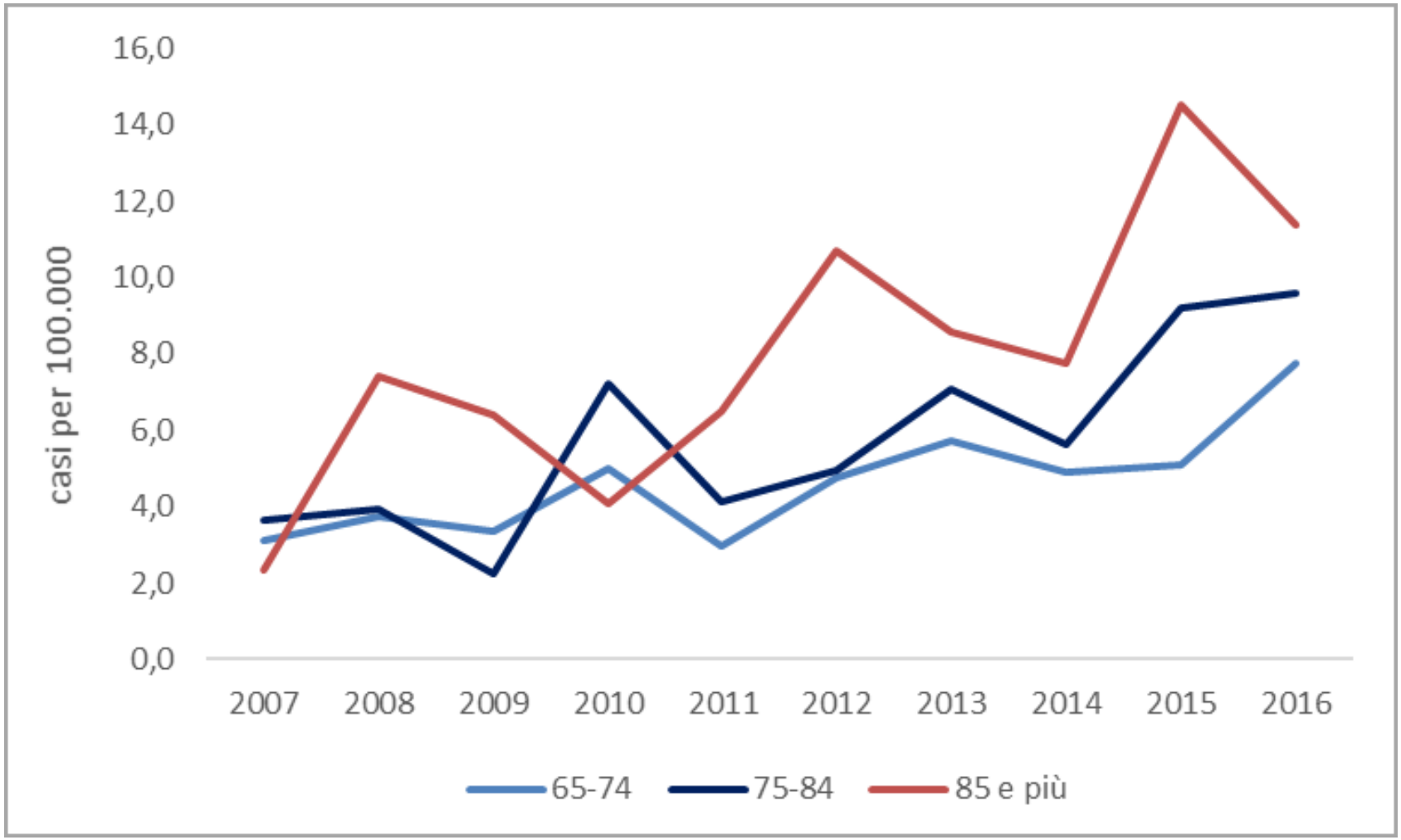
Medical indication group	Specific underlying medical condition	PCV13 for persons aged ≥19 years	PPSV23* for persons aged 19–64 years	PCV13 for persons aged ≥65 years	PPSV23 for persons aged ≥65 years
None	None of the below	No recommendation	No recommendation	Based on shared clinical decision-making†	1 dose; if PCV13 has been given, then give PPSV23 ≥1 year after PCV13
Immunocompetent persons	Alcoholism Chronic heart disease§ Chronic liver disease Chronic lung disease¶ Cigarette smoking Diabetes mellitus	No recommendation	1 dose	Based on shared clinical decision-making†	1 dose; if PCV13 has been given, then give PPSV23 ≥1 year after PCV13 and ≥5 years after any PPSV23 at age <65 years
	Cochlear implant CSF leak	1 dose	1 dose ≥8 weeks after PCV13	1 dose if no previous PCV13 vaccination	1 dose ≥8 weeks after PCV13 and ≥5 years after any PPSV23 at <65 years
Immunocompromised persons	Congenital or acquired asplenia Sickle cell disease/other hemoglobinopathies Chronic renal failure Congenital or acquired immunodeficiencies** Generalized malignancy HIV infection Hodgkin disease Iatrogenic immunosuppression†† Leukemia Lymphoma Multiple myeloma Nephrotic syndrome Solid organ transplant	1 dose	2 doses, 1st dose ≥8 weeks after PCV13 and 2nd dose ≥5 years after first PPSV23 dose	1 dose if no previous PCV13 vaccination	1 dose ≥8 weeks after PCV13 and ≥5 years after any PPSV23 at <65 years

Pneumococco: andamento temporale dei casi per quadro clinico.

Fonte SMI Emilia-Romagna 1999-2016. Casi per 100.000 abitanti



Pneumococco: andamento temporale dei casi nelle classi di età over 65.
Emilia-Romagna 2007-2016. Casi per 100.000 abitanti



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Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

Phase 1 trial of a 20-valent pneumococcal conjugate vaccine in healthy adults

Allison Thompson [a], Erik Lamberth [b,*], Joseph Severs [a], Ingrid Scully [a], Sanela Tarabar [c], John Ginis [b], Kathrin U. Jansen [a], William C. Gruber [a], Daniel A. Scott [b], Wendy Watson [b]

[a] Vaccine Research and Development, Pfizer, Inc., Pearl River, NY, United States
[b] Vaccine Research and Development, Pfizer, Inc., Collegeville, PA, United States
[c] Pfizer Clinical Research Unit, Pfizer, Inc., New Haven, CT, United States

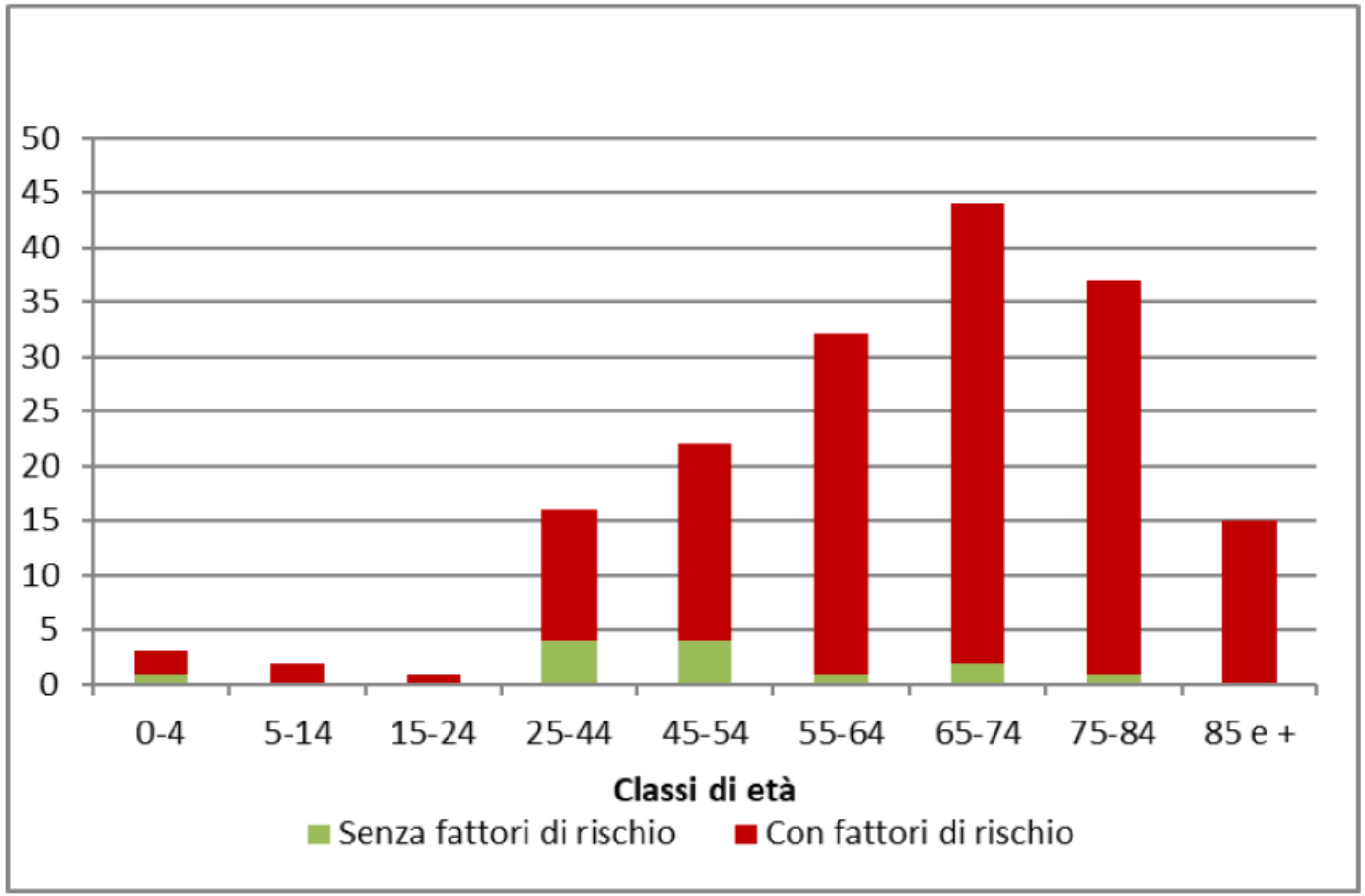
Italia: impatto stagione influenzale 2018-2019

- Stimati: 4.780.000 casi di sindrome influenzale

- Casi gravi: 809 (8 in gestanti). Casi di influenza confermata ricoverati in UTI con diagnosi di SARI (Severe Acute Respiratory Infection) e/o ARDS
- 601 casi hanno richiesto intubazione
- Decessi: 198 casi (1/4 casi gravi)
- 89% dei deceduti aveva almeno una condizione di rischio
- 80% dei casi gravi non era vaccinato
- Virus responsabili dei casi gravi: A (H1N1) 69%, A(H3N2) 14%, A non sottotipizzato 17%.

  In un solo caso isolato il virus di tipo B

Casi gravi di influenza per classi di età e fattori di rischio, Emilia-Romagna stagione 2018-19



165/172 casi con anamnesi vaccinale nota
< 65aa: 86% non vaccinati, > 65 aa: 62% non vaccinati

RegioneEmilia-Romagna

Efficacia della Vaccinazione Antiinfluenzale

Riduzione percentuale di evento (popolazione vaccinata vs. non vaccinata)

Popolazione	Studio	Visite dal curante (calo)	Ricoveri (calo)	Infarti (calo)
Patologie croniche (adulti)	Australia 2014 *Vaccine 2015; 33(51):7352-6;*		51,3%	
	Spagna 2010 *Vaccine 2012; 30(39):5714-20*		53%	
	Olanda 2009-2010 *BMC Infect Dis 2011; 11:196*		49%	
	Danimarca *BMJ 2011; 344:d7901*	49%	44%	
	Inghilterra *J Infect Dis 2011; 203(1):32-9*	62%		
Trapiantati	Spagna 2010-2011 *Clin Microbiol Infect 2012*		85%	
Cardiopatici (pregresso IMA)	Sydney 2008-2010 *Heart 2013; 99(24):1843-8*			83.6%

Efficacia della Vaccinazione Antiinfluenzale

Riduzione percentuale di evento (popolazione vaccinata vs. non vaccinata)

Popolazione	Studio	Morte per qualsiasi causa (calo)	Ospedalizzazione per polmonite in influenza (calo)	Morte entro 30 gg da ricovero per polmonite in influenza (calo)
Adulti>65 aa	Ontario 1993-2008 *PLoS One 2013;8: e76318*	22%	19%	25%

Efficacia della Vaccinazione Antiinfluenzale

Riduzione percentuale di evento (popolazione vaccinata vs. non vaccinata)

Popolazione	Studio	Accessi in PS (calo)	Ricoveri (calo)
Operatori sanitari	Portogallo 2009-2010 *Int Arch Occup Environ Health 2012; 85 :747-52*	90.5%	
	Giappone 2009-2010 *Jpn J Infect Dis 2011; 64(3):177-82*		70.5%

Efficacy of vaccines in immuno-suppressed populations may not always be optimal, but partial protection is preferred over no protection.

Victims, vectors and villains: are those who opt out of vaccination morally responsible for the deaths of others? *Jamrozik E et al, J Med Ethics 2016;42:762–768*

A typical person transmitting infection may seem innocent because they do not choose to contract or transmit the infection, just as the driver of a car rarely chooses the moment when his brakes fail.

Yet we are all at risk of being both the victims and vectors of infectious disease, and by taking reasonable steps, where possible, to ensure that we are immune from being a victim, we also prevent ourselves from being a vector.

Vaccination is a prime example of an action that, in this way, prevents harm to oneself as well as harm to others.