


**ΠΡΟΓΡΑΜΜΑ
ΜΕΤΑΠΤΥΧΙΑΚΩΝ ΣΠΟΥΔΩΝ
«ΛΟΙΜΩΞΙΟΛΟΓΙΑ» 2019-2021**

Πνευμονία συνδεόμενη με υπηρεσίες υγείας

ΠΑΡΑΜΥΘΙΩΤΟΥ ΕΛΙΣΣΑΒΕΤ

ΠΑΘΟΛΟΓΟΣ,ΕΝΤΑΤΙΚΟΛΟΓΟΣ,ΛΟΙΜΩΞΙΟΛΟΓΟΣ

Β ΠΑΝΕΠΙΣΤΗΜΙΑΚΗ ΚΛΙΝΙΚΗ ΕΝΤΑΤΙΚΗΣ ΘΕΡΑΠΕΙΑΣ

- 
- ▶ Πνευμονία: ορισμός
 - ▶ Πνευμονία: παθοφυσιολογία
 - ▶ Πνευμονία: «κατηγορίες»
 - ▶ HCAP (health – care associated pneumonia)
 - ▶ HAP (hospital – associated pneumonia)
 - ▶ Συμπεράσματα



- ▶ **Πνευμονία: ορισμός**

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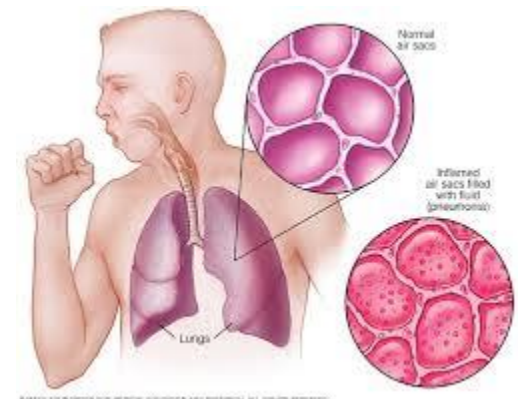
- ▶ Συμπεράσματα


PNEUMONIA

- ▶ as "new lung infiltrates plus clinical evidence that the infiltrate is of an infectious origin, which include the new onset of fever, purulent sputum, leukocytosis, and decline in oxygenation."

Pneumonia Essentials 2010 3rd Edition

Burke A. Cunha



- 
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ΠΑΘΟΦΥΣΙΟΛΟΓΙΑ ΠΝΕΥΜΟΝΙΑΣ

- ▶ Υποκείμενοι μηχανισμοί :
- ▶ ΕΙΣΠΝΟΗ παθογόνων
- ▶ ΕΙΣΡΟΦΗΣΗ παθογόνων
- ▶ ΑΙΜΑΤΟΓΕΝΗΣ ΔΙΑΣΠΟΡΑ

ΠΑΘΟΦΥΣΙΟΛΟΓΙΑ ΠΝΕΥΜΟΝΙΑΣ

▶ ΕΙΣΠΝΟΗ ΠΑΘΟΓΟΝΩΝ:

οι μικροοργανισμοί παρακάμπτουν τους φυσιολογικούς μηχανισμούς άμυνας

Είτε ο ασθενής εισπνέει gram - αρνητικούς μικροοργανισμούς οι οποίοι αποικίζουν το ανώτερο αναπνευστικό σύστημα


ΠΑΘΟΦΥΣΙΟΛΟΓΙΑ ΠΝΕΥΜΟΝΙΑΣ

▶ ΠΝΕΥΜΟΝΙΑ ΑΠΟ ΕΙΣΡΟΦΗΣΗ:

- Εισρόφηση αποικισμένων εκκρίσεων ανώτερων αναπνευστικών οδών
- Το στομάχι είναι ένα είδος «αποθήκης» gram – αρνητικών παθογόνων τα οποία αποικίζουν το αναπνευστικό σύστημα
- Η χρήση των φαρμάκων για καταστολή παραγωγής γαστρικών υγρών αυξάνει την εμφάνιση της πνευμονίας (κυρίως αναστολείς αντλίας πρωτονίων)

ΠΑΘΟΦΥΣΙΟΛΟΓΙΑ ΠΝΕΥΜΟΝΙΑΣ

- ▶ **Η αιματογενής οδός** περιλαμβάνει την παρουσία λοίμωξης από μακρινή πηγή
- ▶ Φτάνει στους πνεύμονες μέσω αιματικής κυκλοφορίας

- 
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« Κατηγορίες » ΠΝΕΥΜΟΝΙΑΣ

- ▶ CAP
- ▶ HCAP
- ▶ HAP
- ▶ VAP

CAP (community – acquired pneumonia)

HAP (hospital – acquired pneumonia)

VAP (ventilator – associated pneumonia)

HCAP (health – care associated pneumonia)


ΣΕ ΤΙ ΑΠΟΣΚΟΠΟΥΝ ΑΥΤΟΙ ΟΙ ΔΙΑΧΩΡΙΣΜΟΙ;

Στο γεγονός ότι
**διαφορετικοί
μικροοργανισμοί**
εμπλέκονται στην
αιτιολογία της
πνευμονίας
ανάλογα με την
περίπτωση



Διαφορετική
η εμπειρική
θεραπεία
που
εφαρμόζεται



- 
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 - ▶ HAP
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ΟΡΙΣΜΟΣ

The term healthcare-associated pneumonia (HCAP) was defined as pneumonia in NONHOSPITALIZED patients who had significant experience with the healthcare system

- ▶ Any patient who was hospitalized in an acute care hospital for two or more days **within 90 days** of the infection;
- ▶ Resided in a nursing home or long-term care facility;
- ▶ Received recent intravenous antibiotic therapy, chemotherapy, or wound care within **the past 30 days** of the current infection;
- ▶ Hemodialysis clinic
- ▶ are exposed to a family member with a drug-resistant pathogen infection

HCAP

- ▶ Η έννοια της HCAP εισήχθη **το 2005** ως ξεχωριστή νοσολογική οντότητα στις κατευθυντήριες γραμμές για τη διάγνωση της νοσοκομειακής πνευμονίας .

American Thoracic Society Documents

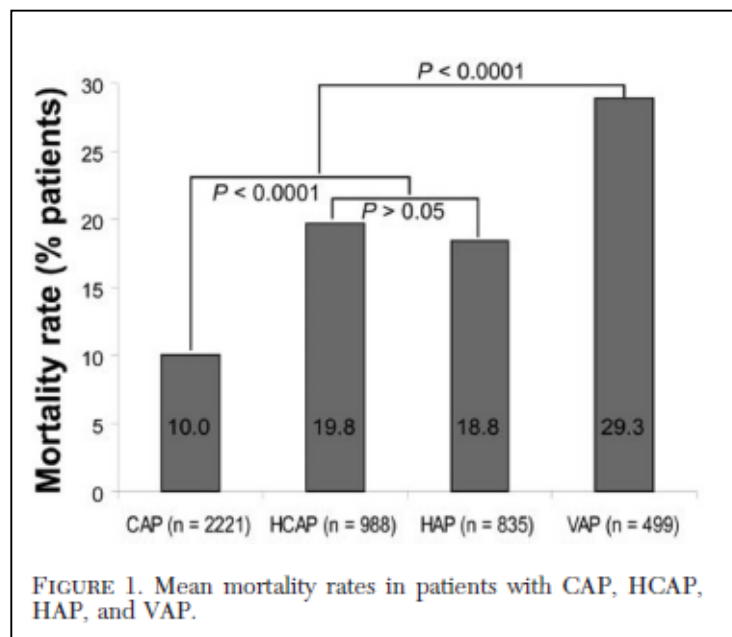
Guidelines for the Management of Adults with Hospital-acquired, Ventilator-associated, and Healthcare-associated Pneumonia

Epidemiology and Outcomes of Health-care–Associated Pneumonia: Results From a Large US Database of Culture-Positive Pneumonia

- ▶ **Of a database of 3209 patients from**
 - ▶ **59 US hospitals with CAP and a positive culture,**
 - ▶ **34% of patients had a pathogen resistant to standard empirical therapy, mostly MRSA and PA**
-
- ▶ Kollef Marin H.MD, FCCPaShorr Andrew MD, MPH, FCCPbTabak Ying P.PhDccGupta Vikas PharmD, BCPScLiu Larry Z.MD, PhDdJohannes R.S.MD, MSc

Chest 2005;128:3854e62.

Epidemiology and Outcomes of Health-care–Associated Pneumonia: Results From a Large US Database of Culture-Positive Pneumonia




- ▶ Kollef Marin H.MD, FCCPaShorr AndrewMD, MPH, FCCPbTabak Ying P.PhDccGuptaVikasPharmD, BCPScLiuLarry Z.MD, PhDdJohannesR.S.MD, MSc

Chest 2005;128:3854e62.

- ▶ Οι μικροοργανισμοί που θεωρήθηκε ότι ΔΕΝ καλύπτονταν από την εμπειρική αγωγή και στους οποίους αποδιδόταν η αυξημένη θνητότητα ήταν
- ▶ ***Staph aureus***
- ▶ ***Pseudomonas aeruginosa***

Chest 2005;128:3854e62.

- 
- ▶ Η τακτική αυτή εφαρμόστηκε κυρίως σε ΗΠΑ
 - ▶ Ιαπωνία, Κορέα,
 - ▶ Ιταλία

 - ▶ Κατέληξε σε αυξημένη χρήση αντιμικροβιακών έναντι σταφυλοκόκκου

Surveillance of infections in long-term care facilities (LTCFs): The impact of participation during multiple years on health care-associated infection incidence

A. P. J. Haenen^{1,2}, L. P. Verhoef¹, A. Beckers³, E. F. Gijbers¹, J. Alblas¹, A. Huis², M. Hulscher², S. C. de Greeff¹ and on behalf of the SNIV study group

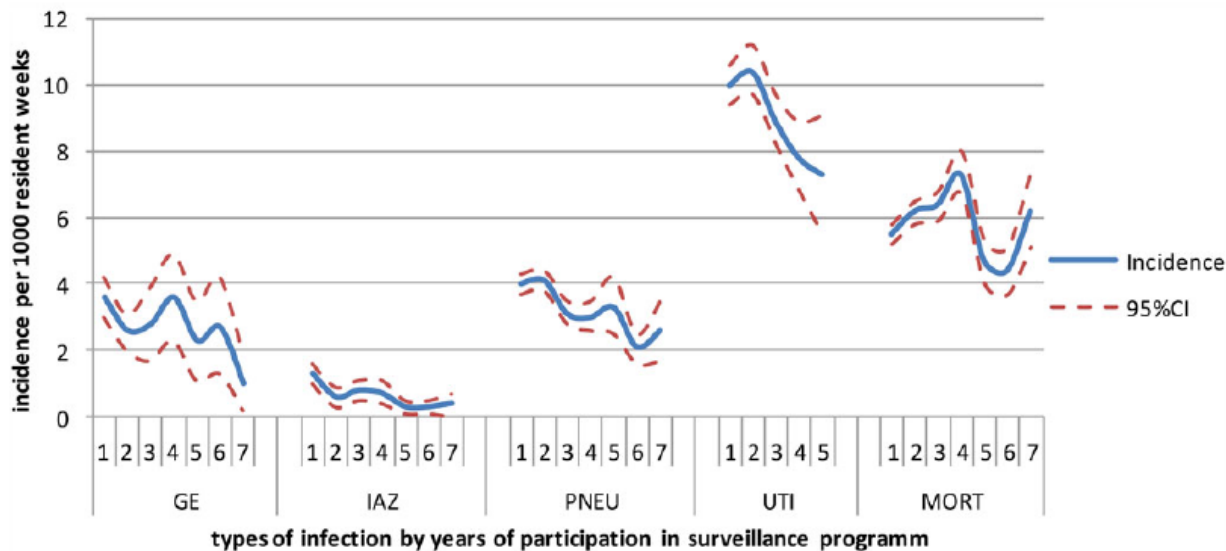


Fig. 2. Incidence per 1000 residents weeks per each successive year participating in surveillance. GE, gastroenteritis; IAZ, influenza-like illness; PNEU, probable pneumonia; UTI, urinary tract infections; MORT, mortality.

ΣΥΧΝΟΤΗΤΑ HCAP

▶ 17,3 % - 67,4%

Curr Opin Infect Dis. 2008 Apr;21 (2):168-73.

Ann Intern Med. 2009;150:19-26

Association of guideline-based antimicrobial therapy and outcomes in healthcare-associated pneumonia

Michael B. Rothberg^{1*}, Marya D. Zilberberg², Penelope S. Pekow³, Aruna Priya³, Sarah Haessler⁴, Raquel Belforti⁵, Daniel Skiest⁴, Tara Lagu³, Thomas L. Higgins⁶ and Peter K. Lindenauer³

¹Center for Value-Based Care Research, Medicine Institute, Cleveland Clinic, Cleveland, OH, USA; ²EviMed Research Group, LLC, Goshen, MA, USA; ³Center for Quality of Care Research, Baystate Medical Center, Springfield, MA, USA; ⁴Division of Infectious Diseases, Baystate Medical Center, Springfield, MA, USA; ⁵Division of General Medicine, Baystate Medical Center, Springfield, MA, USA; ⁶Division of Pulmonary/Critical Care Medicine, Baystate Medical Center, Springfield, MA, USA

Patients and methods: We conducted a pharmacoepidemiological cohort study at 346 US hospitals. We included adults hospitalized between July 2007 and June 2010 for HCAP, defined as patients admitted from a nursing home, with end-stage renal disease or immunosuppression, or discharged from a hospital in the previous 90 days. Outcome measures included in-hospital mortality, length of stay and costs.

Conclusions: Among patients who met HCAP criteria, GBT was not associated with lower adjusted mortality, length of stay or costs in any analyses. Better criteria are needed to identify patients at risk for MDR infections who might benefit from broad-spectrum antimicrobial coverage.

Guideline-Concordant Antimicrobial Therapy for Healthcare-Associated Pneumonia: A Systematic Review and Meta-analysis

**Anthony X. Troitino · Jahan Porhomayon ·
Ali A. El-Solh**

- Απουσιάζουν οι τυχαιοποιημένες κλινικές μελέτες για να αξιολογήσουν την επίπτωση της εφαρμογής των κατευθυντηριων γραμμών

Guideline-Concordant Antimicrobial Therapy for Healthcare-Associated Pneumonia: A Systematic Review and Meta-analysis

Anthony X. Troitino · Jahan Porhomayon ·
Ali A. El-Solh

Results A total of six studies were included in the analysis and involved 15,850 participants. Meta-analysis showed that GCAT was associated with increased 30-day mortality compared to non-GCAT (OR 1.80, 95 % confidence interval [CI] 1.26–2.7). There was no advantage in GCAT over non-GCAT in terms of hospital length of stay (WMD 1.18 days, 95 % CI –0.48 to 2.84) or time to clinical stability (WMD 0.17 days, 95 % CI –0.32 to 0.67).

Conclusion In hospitalized patients with HCAP, GCAT did not show survival benefit compared to non-GCAT. However, our results are limited by the cohort design of the selected studies and the degree of heterogeneity among them. Future trials are needed to identify risk factors for multidrug-resistant pathogens in HCAP patients who may benefit from broad-spectrum antimicrobial regimens.

Health Care–Associated Pneumonia Is It Still a Useful Concept?

Grant W. Waterer, MBBS, PhD^{a,b,*}

Clin Chest Med 39 (2018) 765–773

- Οι επόμενες μελέτες δεν επιβεβαίωσαν την ύπαρξη του υψηλού ποσοστού πολυανθεκτικών της μελέτης Kollef
- Η αυξημένη θνητότητα δεν μπορούσε εύκολα να αποδοθεί στη μη σωστή χρήση αντιμικροβιακών
- Η παρουσία μάλλον διαφόρων παραγόντων κινδύνου φαίνεται να εμπλέκεται με την αυξημένη θνητότητα

Health Care–Associated Pneumonia

Is It Still a Useful Concept?

Grant W. Waterer, MBBS, PhD^{a,b,*}

Table 1

Individual risk factors for methicillin-resistant *Staphylococcus aureus* and multiresistant gram negatives like *Pseudomonas*

Risks for MRSA	Risks for <i>Pseudomonas</i> and Other Multiresistant Gram Negatives
Recent hospitalization ^{20,25,59,60}	Recent hospitalization ^{25,61}
Residence in aged-care facility ^{25,62,63}	Residence in aged-care facility ^{62,64}
Severe chronic obstructive pulmonary disease ^{25,59}	Severe chronic obstructive pulmonary disease ^{61,62,65–67}
Antibiotics in the prior 90 d ²⁵	Antibiotics in the prior 90 d ^{25,62,66,68}
Prior culture of MRSA ^{20,21,27,60,70}	Bronchiectasis ^{61,66,69}
Diabetes ^{25,60,62,63,71}	Prior culture of PA or multiresistant gram negative ^{27,64}
Tube feeding ⁶⁰	Tube feeding ^{46,66,72,73}
Cerebrovascular disease ^{60,63}	Cerebrovascular disease ²⁵
Chronic wound care ⁷⁴	

Narrative review

Healthcare-associated pneumonia: is there any reason to continue to utilize this label in 2019?

S. Ewig ^{1,*}, M. Kolditz ², M.W. Pletz ³, J. Chalmers ⁴

¹⁾ *Thoraxzentrum Ruhrgebiet, Kliniken für Pneumologie und Infektiologie, Herne und Bochum, Germany*

²⁾ *Division of Pulmonology, Medical Department I, University Hospital Carl Gustav Carus, Technische Universität Dresden, Germany*

³⁾ *Institute for Infectious Diseases and Infection Control, Jena University Hospital, Jena, Germany*

⁴⁾ *Scottish Centre for Respiratory Research, University of Dundee, Ninewells Hospital and Medical School, Dundee, DD1 9SY, UK*

Μελέτες για HCAP μεταξύ 2014 και 2018

Narrative review

Healthcare-associated pneumonia: is there any reason to continue to utilize this label in 2019?

S. Ewig^{1,*}, M. Kolditz², M.W. Pletz³, J. Chalmers⁴

¹⁾ Thoraxzentrum Ruhrgebiet, Kliniken für Pneumologie und Infektiologie, Herne und Bochum, Germany

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³⁾ Institute for Infectious Diseases and Infection Control, Jena University Hospital, Jena, Germany

⁴⁾ Scottish Centre for Respiratory Research, University of Dundee, Ninewells Hospital and Medical School, Dundee, DD1 9SY, UK

- ▶ 41 μελέτες συμπεριλήφθησαν αρχικά
- ▶ Δέκα μελέτες συνέκριναν HCAP και CAP
- ▶ Οι ασθενείς με HCAP μεγαλύτερης ηλικίας και με περισσότερες συννοσηρότητες.
- ▶ Η θνητότητα ήταν μεγαλύτερη στην HCAP
- ▶ Αλλά οι προγνωστικοί παράγοντες για την θνητότητα, ΔΕΝ ήταν η λοίμωξη από MDR αλλά η λειτουργική κατάσταση του ασθενούς και η παρουσία κακοήθειας

Narrative review

Healthcare-associated pneumonia: is there any reason to continue to utilize this label in 2019?

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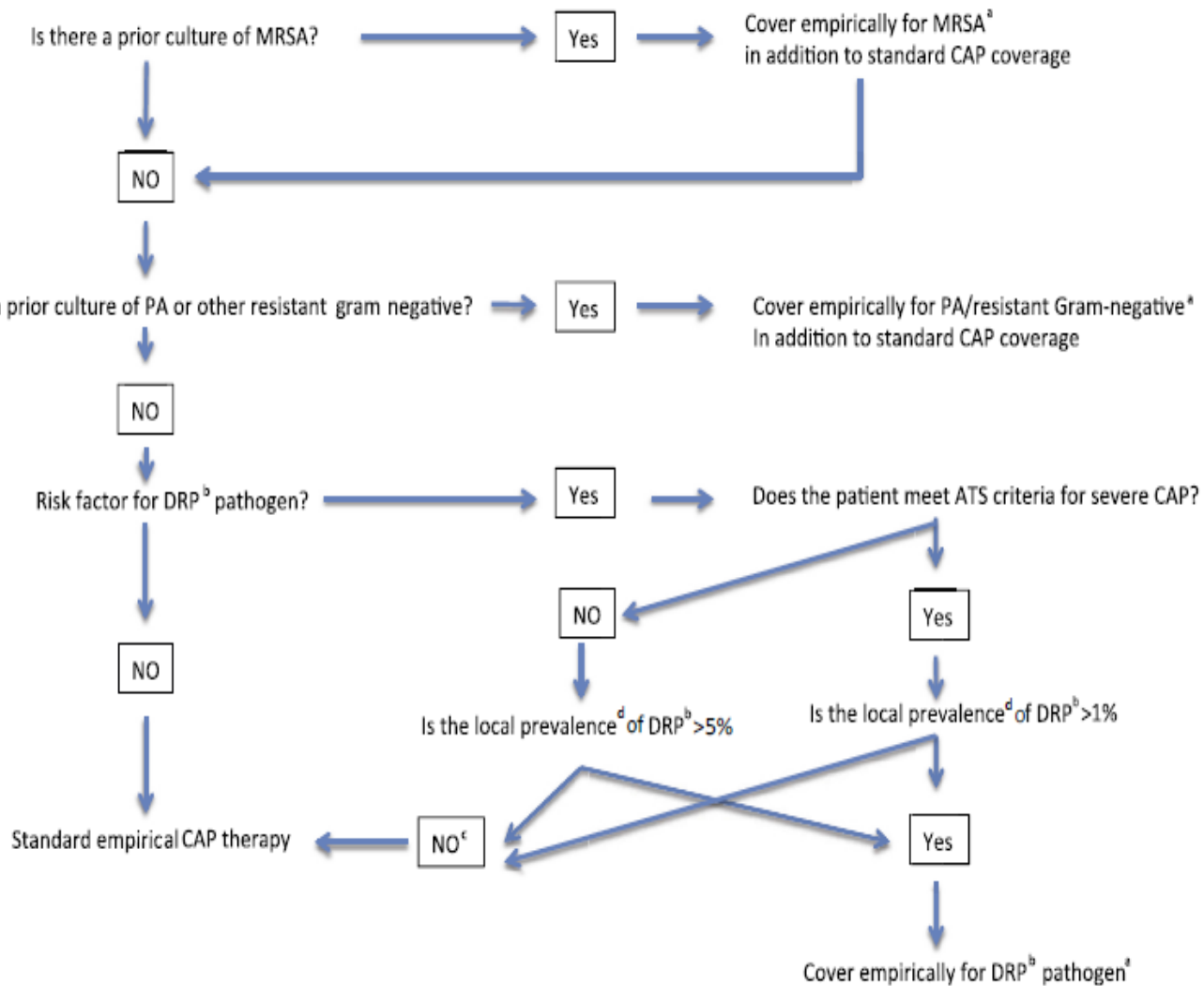
⁴⁾ Scottish Centre for Respiratory Research, University of Dundee, Ninewells Hospital and Medical School, Dundee, DD1 9SY, UK

The DRIP score for the prediction of multidrug-resistant (MDR) pathogens in pneumonia patients [46]. The cutoff is ≥ 4 points

Characteristic	No. of points
Major risk factors	
Antibiotic use previous 60 days	2
Residence in long-term care facility	2
Tube feeding	2
Prior infection with MDR (1 year)	2
Minor risk factors	
Hospitalization within previous 60 days	1
Chronic pulmonary disease	1
Poor functional status	1
Gastric acid suppression	1
Wound care	1
MRSA colonization (1 year)	1
Total no. of points possible	14

ΤΙ ΘΑ ΠΡΕΠΕΙ ΝΑ ΚΑΝΟΥΜΕ ΣΕ ΠΕΡΙΠΤΩΣΗ ΗΣΑΡ?

- Να στηριχτούμε σε τοπικά επιδημιολογικά δεδομένα
- Να πάρουμε καλλιέργειες ΠΡΙΝ την έναρξη ή την ΤΡΟΠΟΠΟΙΗΣΗ της αγωγής
- **Αν στηριχτούμε σε επιδημιολογικά δεδομένα άλλων κινδυνεύουμε να υπο – η υπερ θεραπεύσουμε**
- Οι μοριακές τεχνικές πιθανόν να αποδειχτούν χρήσιμες



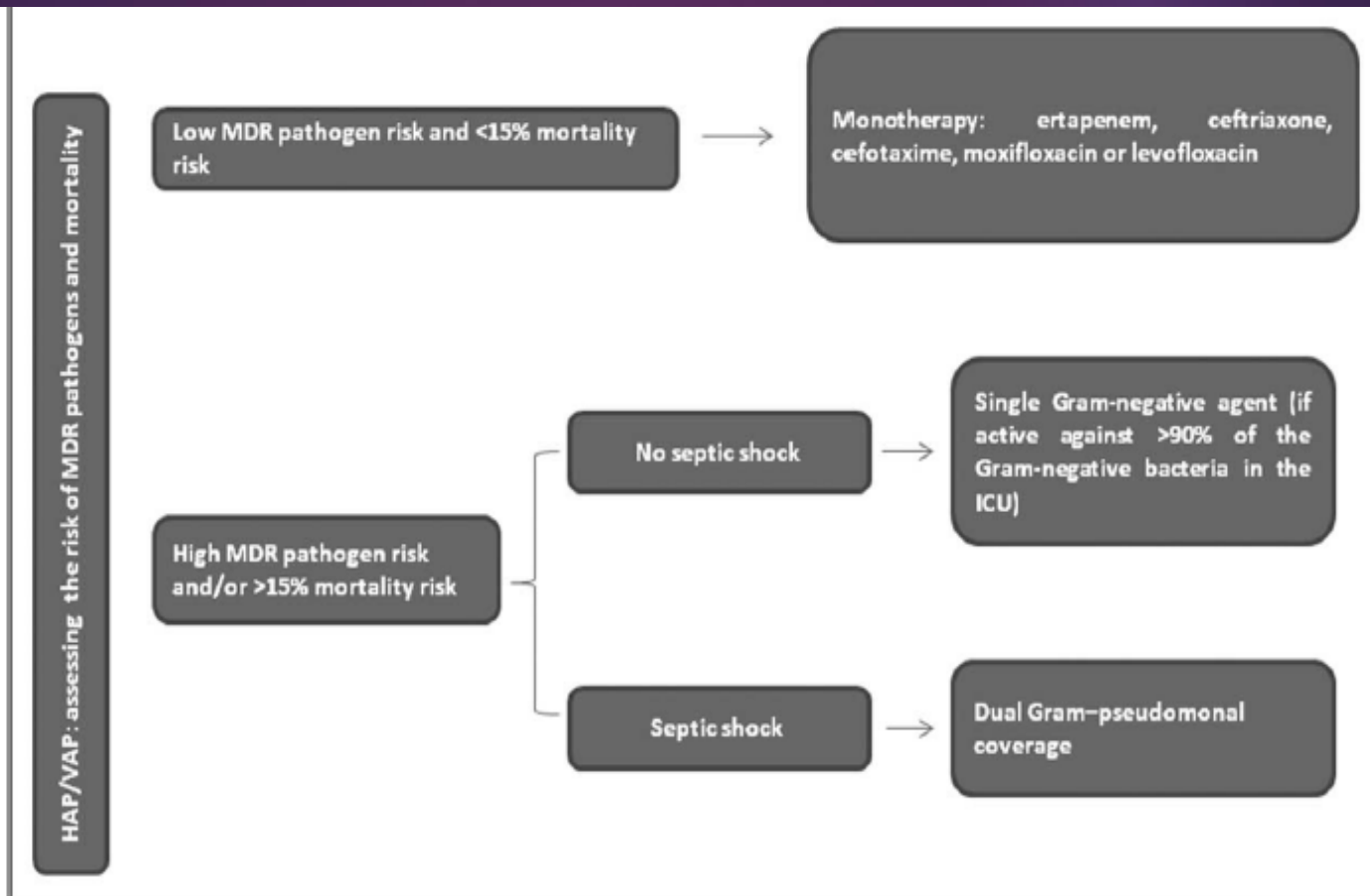


FIGURE 2. Algorithm for the empiric antibiotic treatment of hospital-acquired pneumonia/ventilator-associated pneumonia caused by multidrug-resistant Gram-negative pathogens.



- 
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Management of Adults With Hospital-acquired and Ventilator-associated Pneumonia: 2016 Clinical Practice Guidelines by the Infectious Diseases Society of America and the American Thoracic Society

Andre C. Kalil,^{1,a} Mark L. Metersky,^{2,a} Michael Klompas,^{3,4} John Muscedere,⁵ Daniel A. Sweeney,⁶ Lucy B. Palmer,⁷ Lena M. Napolitano,⁸ Naomi P. O'Grady,⁹ John G. Bartlett,¹⁰ Jordi Carratalà,¹¹ Ali A. El Solh,¹² Santiago Ewig,¹³ Paul D. Fey,¹⁴ Thomas M. File Jr,¹⁵ Marcos I. Restrepo,¹⁶ Jason A. Roberts,^{17,18} Grant W. Waterer,¹⁹ Peggy Cruse,²⁰ Shandra L. Knight,²⁰ and Jan L. Brozek²¹

- ▶ Αφαίρεση της έννοιας HCAP από τις κατευθυντήριες γραμμές

ΟΡΙΣΜΟΣ

- ▶ **Hospital-acquired pneumonia (HAP)**
- ▶ Λοίμωξη κατώτερου αναπνευστικού που ΔΕΝ βρισκόταν σε επώαση όταν ο ασθενής εισήχθη στο νοσοκομείο και η οποία παρουσιάζεται 2 ή περισσότερες ημέρες ΜΕΤΑ την είσοδο στο νοσοκομείο
- ▶ Το επεισόδιο της πνευμονίας ΔΕΝ σχετίζεται με τον μηχανικό αερισμό (VAP)

Epidemiology, pathogenesis, microbiology, and diagnosis of hospital-acquired (and ventilator-associated pneumonia) in adults

The pathogenesis of HAP (or nosocomial pneumonia) (and VAP) is related to the number and virulence of micro-organisms entering the lower respiratory tract and the response of the host (eg, mechanical, humoral, and cellular host defenses)

- Approximately 45 percent of healthy subjects aspirate during sleep and an even higher proportion of severely ill patients aspirate routinely

▶ Michael Klompas, MD, MPH, Thomas M File, Jr, MD, Sheila Bond, MD, uptodate 2019

Epidemiology, pathogenesis, microbiology, and diagnosis of hospital-acquired and ventilator-associated pneumonia in adults

- ▶ Hospitalized patients often become colonized with microorganisms acquired from the hospital environment, and as many as 75 percent of severely ill patients will be colonized within 48 hours

- ▶ Sievert DM, Ricks P, Edwards JR, et al. Infect Control Hosp Epidemiol 2013; 34:1.

Epidemiology, pathogenesis, microbiology, and diagnosis of hospital-acquired and ventilator-associated pneumonia in adults

261 episodes of HAP in nonventilated patients were identified

Sievert DM, Ricks P, Edwards JR, et al. Infect Control Hosp Epidemiol 2013; 34:1.

Epidemiology, pathogenesis, microbiology, and diagnosis of hospital-acquired and ventilator-associated pneumonia in adults

- ▶ The infecting flora **in nonventilated patients with HAP** was similar, except non-Enterobacteriaceae gram-negative bacilli (***P. aeruginosa*, *Acinetobacter*, and *S. maltophilia***) were less likely.
- ▶ Specifically, it included **MSSA** (13 percent), **MRSA** (20 percent), ***P. aeruginosa*** (9 percent), ***S. maltophilia*** (1 percent), ***Acinetobacter spp*** (3 percent), and other species (18 percent).

Γιατί μας απασχολεί η HAP?

- ▶ Επειδή παρουσιάζει σημαντική νοσηρότητα και θνητότητα
- ▶ Η εκτιμώμενη θνητότητα από HAP είναι 20-30%
- ▶ Είναι η δεύτερη σε συχνότητα νοσοκομειακή λοίμωξη
- ▶ Αυξάνει τη διάρκεια και το κόστος νοσηλείας

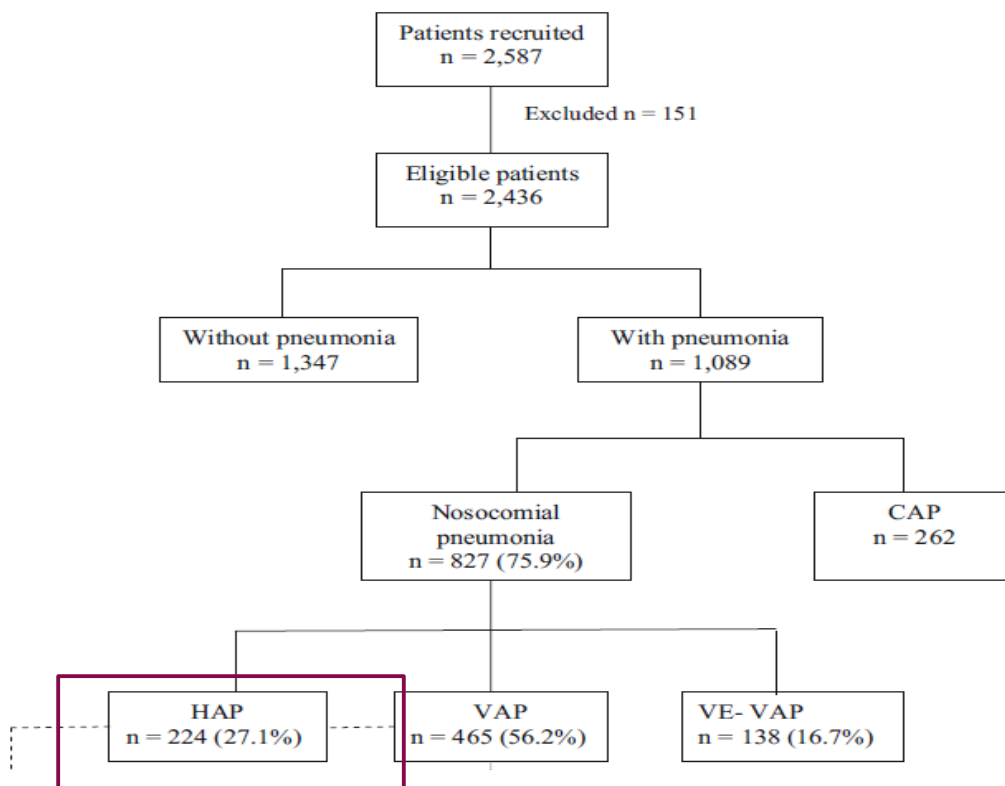
An overview of guidelines for the management of hospital-acquired and ventilator-associated pneumonia caused by multidrug-resistant Gram-negative bacteria

Curr Opin Infect Dis 2019, 32:000–000

Catia Cillóniz^{a,b}, Cristina Dominedò^c, and Antoni Torres^{a,b}

Nosocomial pneumonia in 27 ICUs in Europe: perspectives from the EU-VAP/CAP study

D. Koulenti^{1,2} • E. Tsigou³ • J. Rello^{4,5}



MDR risk factors

- ▶ The etiology of HAP (and VAP) depends in large part upon whether the patient has risk factors for MDR pathogens
- ▶ The frequency of specific MDR pathogens **varies** among hospitals, within hospitals, and between different patient populations.
- ▶ **Prolonged hospitalization and recent exposure to antibiotics** are two of the most important risk factors for MDR pathogens.
- ▶ An awareness of the susceptibility patterns of the nosocomial pathogens within a given health care setting is important for appropriate empiric antimicrobial therapy

MDR ΟΡΙΣΜΟΙ

- ▶ **Multidrug resistant (MDR)** refers to acquired nonsusceptibility to at least one agent in three different antimicrobial classes.
- ▶ ● **Extensively drug resistant (XDR)** refers to nonsusceptibility to at least one agent in all but two antimicrobial classes.
- ▶ ● **Pandrug resistant (PDR)** refers to nonsusceptibility to all antimicrobial agents that can be used for treatment.

Magiorakos AP, Srinivasan A, Carey RB, et al. Multidrug-resistant, extensively drug-resistant and pandrug-resistant bacteria: an international expert proposal for interim standard definitions for acquired resistance. Clin Microbiol Infect 2012; 18:268.

Table 1. Hospital-acquired pneumonia/ventilator-associated pneumonia caused by multidrug-resistant Gram-negative pathogens: prevalence and outcomes

Micek et al 2015	retrosp	HAP (PSEUD)	31%MDR
Behnia et al 2014	retrosp	HAP/VAP	75% k.pneum, ESBL
Di Pasquale 2014	retrosp	HAP/VAP	28% MDR P.AERUGINOS A

Curr Opin Infect Dis 2019, 32:000–000

ΔΙΑΓΝΩΣΗ

- ▶ Clinical diagnosis based upon a new lung infiltrate plus clinical evidence that the infiltrate is of infectious origin,
- ▶ which includes **the new onset of fever, purulent sputum, leukocytosis, and decline in oxygenation**
- ▶ no individual sign or symptoms nor any combination of signs and symptoms have been found to be **highly sensitive or specific for diagnosis.**

ΔΙΑΓΝΩΣΗ

- ▶ **Cultures of pulmonary secretions** (sputum, endotracheal aspirates, bronchoalveolar lavage) are also prone to false positives and false negatives
- ▶ **Quantitative endotracheal aspirate cultures** had a pooled sensitivity of 48 percent (95% CI 38-57 percent) and positive predictive value of 81 percent (95% CI 67-91 percent)
- ▶ **Quantitative bronchoalveolar lavage cultures** had a sensitivity of 75 percent (95% CI 58-88 percent) and positive predictive value of 77 percent (95% CI 66-85 percent)

ΔΙΑΓΝΩΣΗ

- ▶ **Molecular diagnostic tests** for detection of respiratory pathogens are being developed and offer promise for more rapid identification of the causes of HAP or VAP
- ▶ Although there are **limitations regarding the specificity of these tests** (eg, colonization or true pathogen), they offer the potential for more rapid identification of pathogens and resistance patterns

ΑΡΧΕΣ ΘΕΡΑΠΕΙΑΣ ΗΑΡ

- Δεν αναγνωρίζεται η έννοια της ΗCAP
- Η σύσταση να υπάρχει σε κάθε νοσοκομείο το δικό του αντιβιογράμμα
- Τα δεδομένα χρειάζονται για να ελαττωθεί η περιττή χρήση αντιμικροβιακών 'εναντι *STAPH AUREUS* , *PSEUDOMONAS AERUGINOSA*
- Σύσταση για βραχεία διάρκεια χορήγησης αντιμικροβιακών

Management of Adults With Hospital-acquired and Ventilator-associated Pneumonia: 2016 Clinical Practice Guidelines by the Infectious Diseases Society of America and the American Thoracic Society

Andre C. Kalil,^{1,2} Mark L. Metersky,^{2*} Michael Klompas,^{3,4} John Muscedero,⁵ Daniel A. Sweeney,⁶ Lucy B. Palmer,⁷ Lena M. Napolitano,⁸ Naomi P. O'Grady,⁹ John G. Bartlett,¹⁰ Jordi Carratalá,¹¹ Ali A. El Solh,¹² Santiago Ewig,¹³ Paul D. Fey,¹⁴ Thomas M. File Jr,¹⁵ Marcos I. Restrepo,¹⁶ Jason A. Roberts,^{17,18} Grant W. Waterer,¹⁹ Peggy Cruse,²⁰ Shandra L. Knight,²⁰ and Jan L. Brozek²¹

ΑΡΧΕΣ ΘΕΡΑΠΕΙΑΣ ΗΑΡ

- ▶ Να είναι βασισμένη σε λήψη καλλιέργειών και όχι εμπειρική
- ▶ Οι καλλιέργειες να λαμβάνονται με ΜΗ επεμβατικές μεθόδους
- ▶ Η έναρξη αγωγής να βασίζεται σε ΚΛΙΝΙΚΑ ΚΡΙΤΗΡΙΑ και όχι σε δείκτες φλεγμονής όπως η προκαλσιτονίνη και η CRP ούτε και σε σκορ CPIS

ΑΡΧΕΣ ΘΕΡΑΠΕΙΑΣ ΗΑΡ

Table 2. Risk Factors for Multidrug-Resistant Pathogens

Risk factors for MDR VAP

- Prior intravenous antibiotic use within 90 d
- Septic shock at time of VAP
- ARDS preceding VAP
- Five or more days of hospitalization prior to the occurrence of VAP
- Acute renal replacement therapy prior to VAP onset

Risk factors for MDR HAP

- Prior intravenous antibiotic use within 90 d

Risk factors for MRSA VAP/HAP

- Prior intravenous antibiotic use within 90 d

Risk factors for MDR *Pseudomonas* VAP/HAP

- Prior intravenous antibiotic use within 90 d

Abbreviations: ARDS, acute respiratory distress syndrome; HAP, hospital-acquired pneumonia; MDR, multidrug resistant; MRSA, methicillin-resistant *Staphylococcus aureus*; VAP, ventilator-associated pneumonia.

ΑΡΧΕΣ ΘΕΡΑΠΕΙΑΣ ΗΑΡ

Οχι σε μεγάλο κίνδυνο θνητοτητας , οχι RF (MRSA,)	ΟΧΙ hrmortality αλλα κινδυνος MRSA	ΨΗΛΟΣ κινδυνος θνητότητας
PIP/TAZO	PIP/TAZO	PIP/TAZO
CEFEPIME	CEFEPIME	CEFEPIME,CEFTA
LEVOFLOXACIN	LEVOFLOX	LEVOFLOX
CARBAPENEM	CARBAPE,AZTREP	IMIP/MEROP
	VANCO,LINEZOLI D	AMIKACIN,GENTA ,TOBRA
		VANCO, LINEZOLID

ΑΡΧΕΣ ΘΕΡΑΠΕΙΑΣ ΗΑΡ

- ▶ Η βελτιστοποίηση της αγωγής πρέπει να συμπεριλαμβάνει τις αρχές της PK/PD

ΘΕΡΑΠΕΙΑ ΚΑΤΕΥΘΥΝΟΜΕΝΗ

- ▶ **MRSA** (vancomycin or linezolid)
- ▶ **PSEUDOMONAS AERUGINOSA** (ανάλογα με το αντιβιογράμμα) – όχι μονοθεραπεία με αμινογλυκοσίδη

Σε απομόνωση *Pseudomonas aeruginosa*

- ▶ Σε αιμοδυναμικά σταθερο ασθενή δεν χρειάζεται συνδυασμένη θεραπεία
- ▶ Σε ασταθή αιμοδυναμικά ασθενή καλύτερος ο συνδυασμος
- ▶ ΟΧΙ μονοθεραπεια με αμινογλυκοσίδη

Σε απομόνωση gram negative ESBL

- ▶ Ανάλογα με το αντιβιογράμμα
- ▶ Λαμβάνουμε υπόψη και παράγοντες που αφορούν στον ασθενή, πχ αλλεργίες.

Σε απομονωση *ACINETOBACTER SPP*

- ▶ Carbapenem or ampicillin/sulbactam επι ευαισθησίας
- ▶ Colistin επί αντοχής
- ▶ Δεν προτείνεται τικεκυκλίνη
- ▶ Δεν προτείνεται προσθήκη ριφαμπικίνης

International ERS/ESICM/ESCMID/ALAT guidelines for the management of hospital-acquired pneumonia and ventilator-associated pneumonia

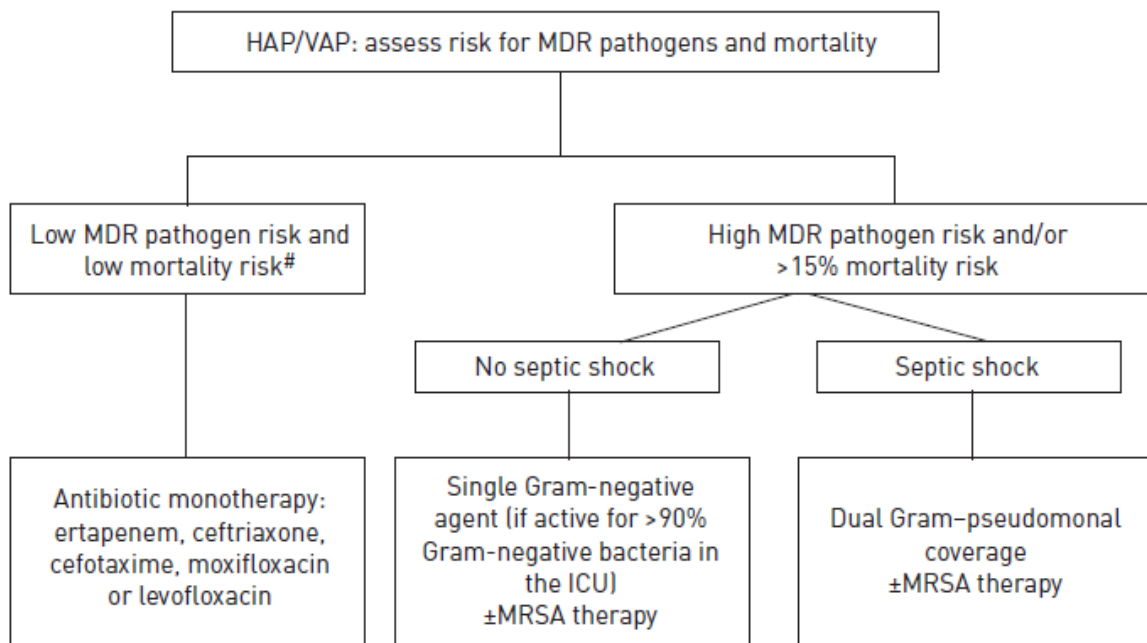


FIGURE 2 Empiric antibiotic treatment algorithm for hospital-acquired pneumonia (HAP)/ventilator-associated pneumonia (VAP). MDR: multidrug-resistant; ICU: intensive care unit; MRSA: methicillin-resistant *Staphylococcus aureus*. #: low risk for mortality is defined as a $\leq 15\%$ chance of dying, a mortality rate that has been associated with better outcome using monotherapy than combination therapy when treating serious infection [80].

VAP/HAP High Risk	
American guidelines (2016)	European guidelines (2017)
Previous antibiotic use	Previous antibiotic use
≥5 days of hospitalization	≥5 days of hospitalization
Septic shock	Septic shock
<i>ARDS before VAP</i>	<i>Hospital settings with high rates of MDR pathogens</i>
<i>Acute renal replacement therapy before VAP onset</i>	<i>Previous colonization with MDR pathogens.</i>

FIGURE 1. Hospital-acquired pneumonia/ventilator-associated pneumonia high risk.

ΔΙΑΡΚΕΙΑ ΘΕΡΑΠΕΙΑΣ

- ▶ Σε ασθενείς με ΗΑΡ, προτείνεται θεραπεία 7 ημερών (strong recommendation, very low quality evidence).
- ▶ Παράγοντες που πρέπει να ληφθούν υπόψη: ρυθμός βελτίωσης κλινικών και ακτινολογικών παραμέτρων

Review

Strategies to reduce non-ventilator-associated hospital-acquired pneumonia: A systematic review

Brett G. Mitchell^{a,b,*}, Philip L. Russo^{c,d,e}, Allen C. Cheng^{f,g},
Andrew J. Stewardson^h, Hannah Rosebrock^a, Stephanie J. Curtis^h,
Sophia Robinsonⁱ, Martin Kiernan^j

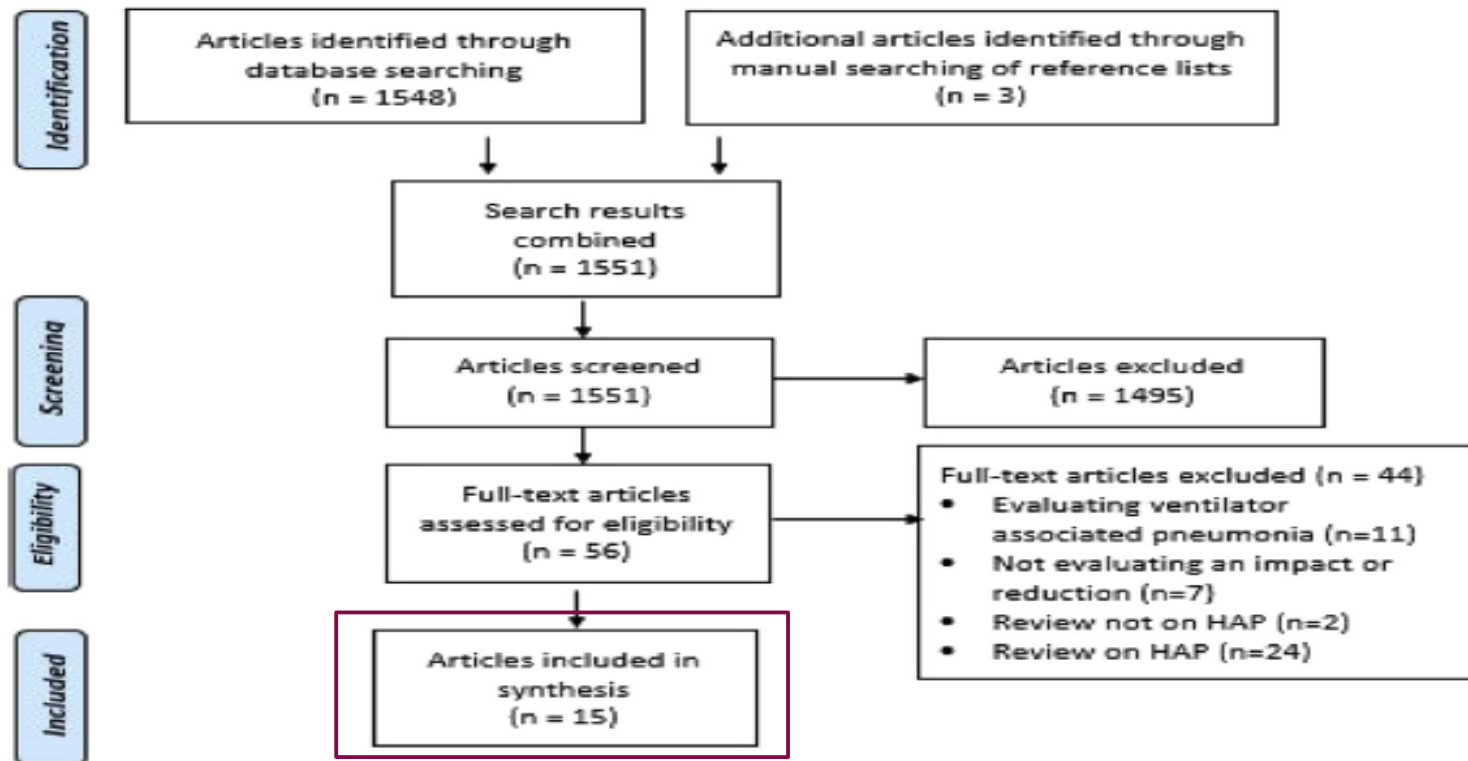


Figure 1 Flow diagram for selection of articles.

Table 1 Studies included in the review.

Author, Year	Design	Sample	Setting	Broad intervention strategy	Significant change in pneumonia
Adachi et al., 2002 [28]	RCT	141	Nursing home	Oral care (professional)	YES
Bellisimo-Rodrigues et al., 2014 [29]	RCT	254	Hospital (Intensive Care Unit)	Oral care (professional)	YES
Boden et al., 2018 [32]	RCT	441	Hospital	Physical activity	YES
Bouringault et al., 2010 [30]	RCT	2513	Nursing home	Oral care (professional)	NO
Chen et al., 2016 [40]	Cohort	873	Hospital (Intensive Care Unit)	Oral care	YES
Cuesy et al., 2010 [33]	RCT	223	Hospital	Physical activity	YES
Johansen et al., 2016 [37]	Cohort	88	Hospital (Ear, Nose and Throat Department)	Prophylactic antibiotics	YES
McNally et al., 2018 [38]	Quasi-experimental	2891	Hospital (non-ICU)	Oral care	NO
Quinn et al., 2014 [14]	Quasi-experimental		Hospital	Oral care	Decrease+
Robertson et al., 2013 [20]	Quasi-experimental	85	Hospital (acute neurosurgical unit)	Oral care	YES
Schrock et al., 2018 [35]	Cohort	2372	Hospital	Dysphagia screen	YES
Stolbrink et al., 2014 [34]	Quasi-experimental	156	Hospital (respiratory and elderly wards)	Physical activity	YES
Titsworth et al., 2013 [36]	Cohort	2334	Hospital	Dysphagia screen	YES
Wagner et al., 2016 [39]	Cohort	1656	Hospital	Oral care	YES
Yoneyama et al., 2012 [31]	RCT	366	Nursing Home	Oral care (professional)	NO

Note: + significance values not provided.

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- Υπάρχει μεγάλη ετερογένεια μεταξύ των μελετών ως προς τους ορισμούς, τις παρεμβάσεις, τις μεθόδους
- **Η βελτίωση της στοματικής φροντίδας**
- **Η αυξημένη κινητικότητα**
- **Ο αποτελεσματικός χειρισμός της δυσφαγίας**
- **Αποτελούν κάποιους από τους τρόπους πρόληψης της HAP**
- Ωστόσο, χρειάζονται περισσότερες και καλά σχεδιασμένες μελέτες για την εξαγωγή έγκυρων συμπερασμάτων

- ▶ Ελαχιστοποίηση διάρκειας Θεραπείας
- ▶ Βελτίωση πρακτικών υγιεινής που αφορούν στα χέρια και στον εξοπλισμό
- ▶ Προφυλάξεις επαφής
- ▶ Σωστή φροντίδα στόματος
- ▶ Προφυλάξεις έναντι της εισρόφησης

An overview of guidelines for the management of hospital-acquired and ventilator-associated pneumonia caused by multidrug-resistant Gram-negative bacteria

- 
- ▶ Πνευμονία: ορισμός
 - ▶ Πνευμονία: παθοφυσιολογία
 - ▶ Πνευμονία: «κατηγορίες»
 - ▶ HCAP (health – care associated pneumonia)
 - ▶ HAP (hospital - acquired pneumonia)
 - ▶ **Συμπεράσματα**

ΣΥΜΠΕΡΑΣΜΑΤΑ

- ▶ Η έννοια της HCAP τείνει να καταργηθεί
- ▶ Η αντιμικροβιακή αγωγή σε ασθενή **με πνευμονία της κοινότητας εξατομικεύεται** αναλόγως με τη βαρύτητα της κατάστασής του και την παρουσία ή **όχι παραγόντων κινδύνου** για ανθεκτική ***Ps.aeruginosa* ή *MRSA*** .
- ▶ η αντιμικροβιακή αγωγή του ασθενούς με νοσοκομειακή πνευμονία ΕΚΤΟΣ ΜΕΘ επιλέγεται με βάση **τα τοπικά επιδημιολογικά δεδομένα**.

ΕΥΧΑΡΙΣΤΩ ΓΙΑ ΤΗΝ ΠΡΟΣΟΧΗ ΣΑΣ

Table 1. Interpretation of Strong and Weak (Conditional) Recommendations

	Strong Recommendation	Weak (Conditional) Recommendation
Patients	Most individuals in this situation would want the recommended course of action, and only a small proportion would not.	The majority of individuals in this situation would want the suggested course of action, but many would not.
Clinicians	Most individuals should receive the intervention. Adherence to this recommendation according to the guideline could be used as a quality criterion or performance indicator. Formal decision aids are not likely to be needed to help individuals make decisions consistent with their values and preferences.	Recognize that different choices will be appropriate for individual patients and that you must help each patient arrive at a management decision consistent with his or her values and preferences. Decision aids may be useful in helping individuals to make decisions consistent with their values and preferences.
Policy makers	The recommendation can be adopted as policy in most situations.	Policymaking will require substantial debate and involvement of various stakeholders.