

# Adoption of HAP treatment guideline in HCAP

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1885 Chejungwon

1904 Severance Memorial Hospital

1913 Severance Medical School

2005 Main building of the Severance Hospital



## Definition by ATS/IDSA 2005

- Hospitalization for 2 or more days in the preceding 90days
- Residence in a nursing home or long-term care facility
- Home infusion therapy (including antibiotics)
- Home wound care
- Recent intravenous chemotherapy within 30days
- Chronic dialysis

# 4 major principles

- Avoid untreated or inadequately treated HAP, VAP, or HCAP, because the failure to initiate prompt appropriate and adequate therapy has been a consistent factor associated with increased mortality.
- Recognize the variability of bacteriology from one hospital to another, specific sites within the hospital, and from one time period to another, and use this information to alter the selection of an appropriate antibiotic treatment regimen for any specific clinical setting.
- Avoid the overuse of antibiotics by focusing on accurate diagnosis, tailoring therapy to the results of lower respiratory tract cultures, and shortening duration of therapy to the minimal effective period.
- Apply prevention strategies aimed at modifiable risk factors.

# 4 key factors about HCAP in ATS 2005

HCAP- a category of pneumonia distinct from CAP

Know your bugs !

Initial inappropriate antibiotics and poor outcome –consider drug resistant pathogen

Avoid overuse of antibiotics and tailored therapy

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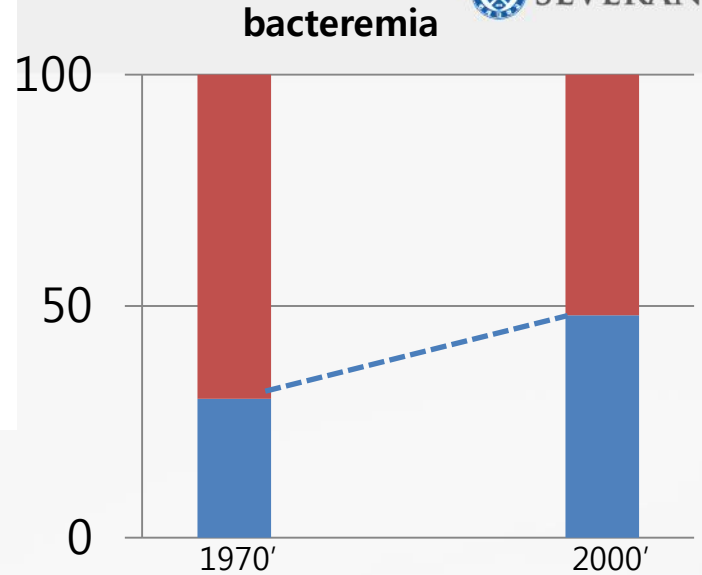
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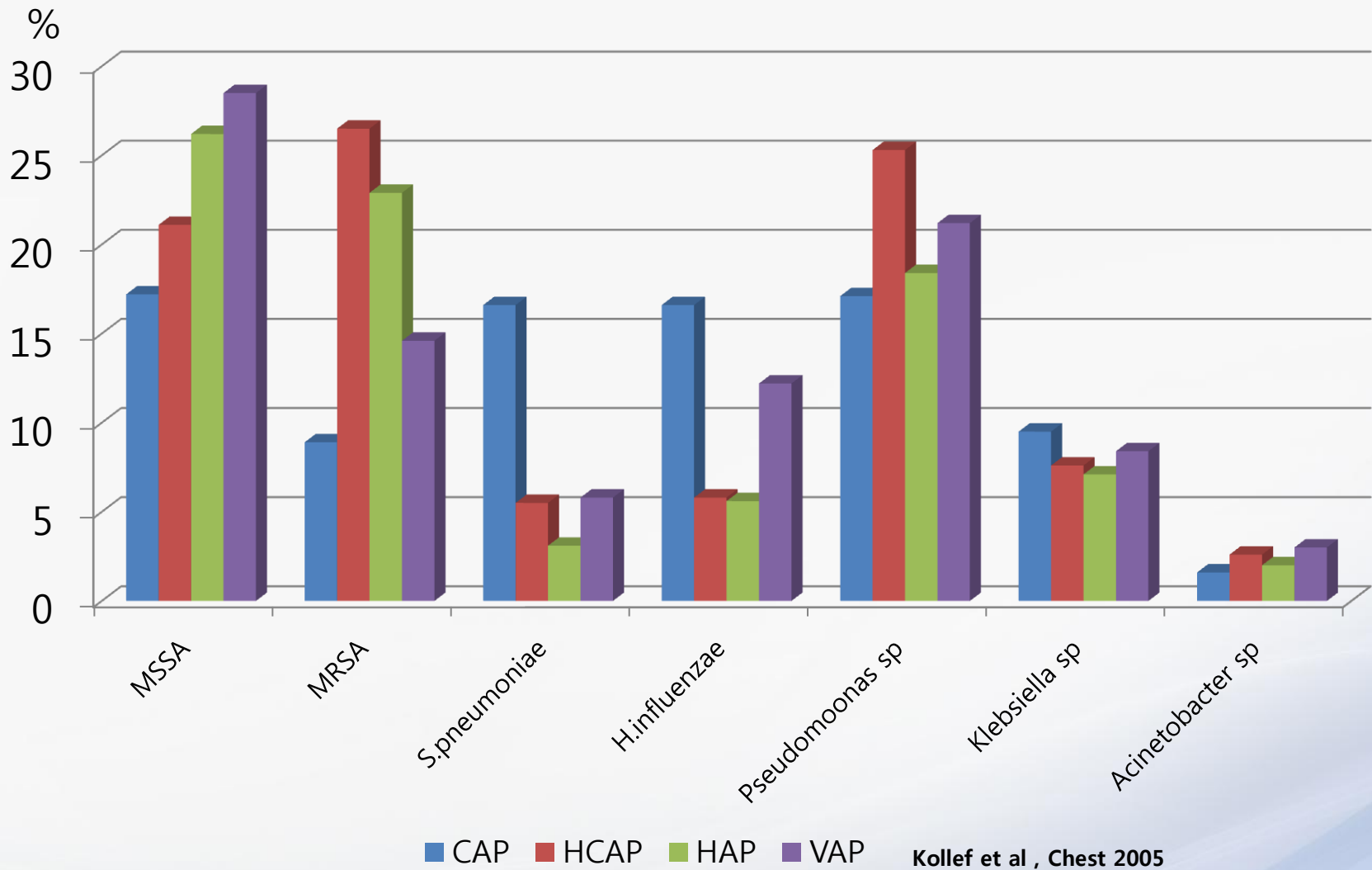
# Health Care–Associated Bloodstream Infections in Adults: A Reason To Change the Accepted Definition of Community-Acquired Infections

N. Deborah Friedman, MBBS; Keith S. Kaye, MD, MPH; Jason E. Stout, MD, MHS; Sarah A. McGarry, MD; Sharon L. Trivette, RN; Jane P. Briggs, RN; Wanda Lamm, RN; Connie Clark, RN; Jennifer MacFarquhar, RN; Aaron L. Walton, MD; L. Barth Reller, MD; and Daniel J. Sexton, MD

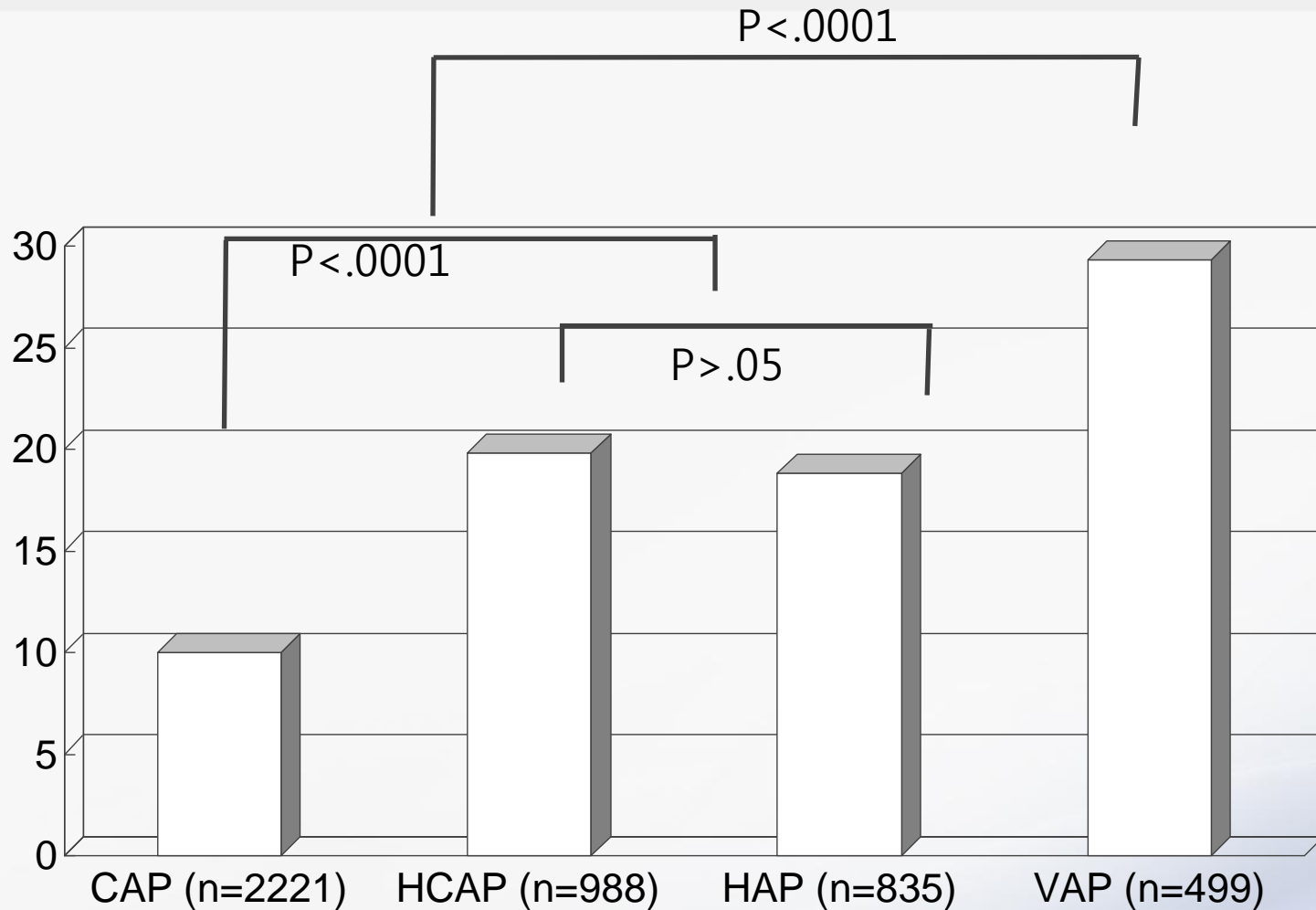


| Bacteremia, 504  | Pathogen                             | Mortality |
|--|--------------------------------------|-----------|
| Community-acquired ,143 (28%)  | <i>E.coli</i><br><i>S.pneumoniae</i> | 16%       |
| Healthcare-associated ,186 (37%) <ul style="list-style-type: none"> <li>Received iv therapy at home within 30days</li> <li>Attended a hospital or hemodialysis clinic or iv chemotherapy within 30days</li> <li>Hospitalization more than 2days within 90days</li> <li>Resided in a nursing home or LTC</li> </ul> | <i>S.aureus</i>                      | 29%       |
| Nosocomial 175 (35%)   | <i>S.aureus</i>                      | 37%       |

# HCAP pathogen similar to HAP

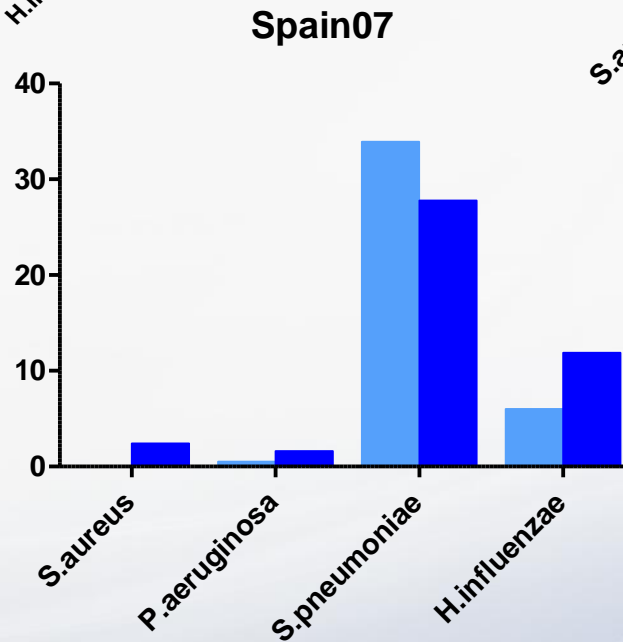
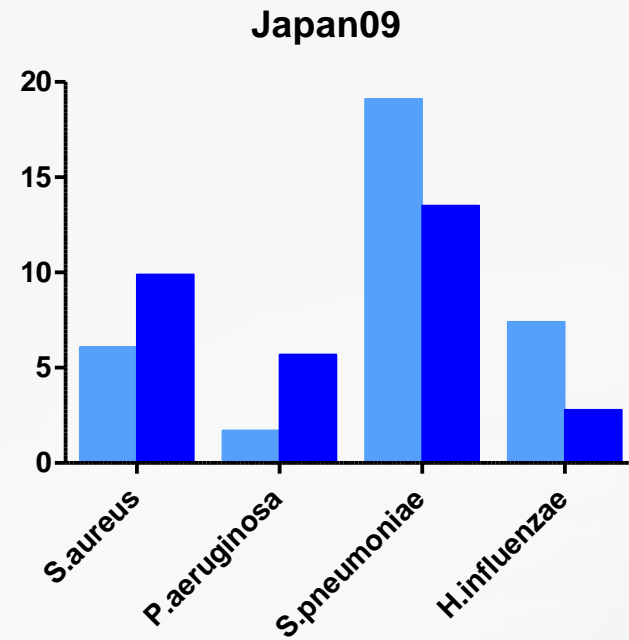
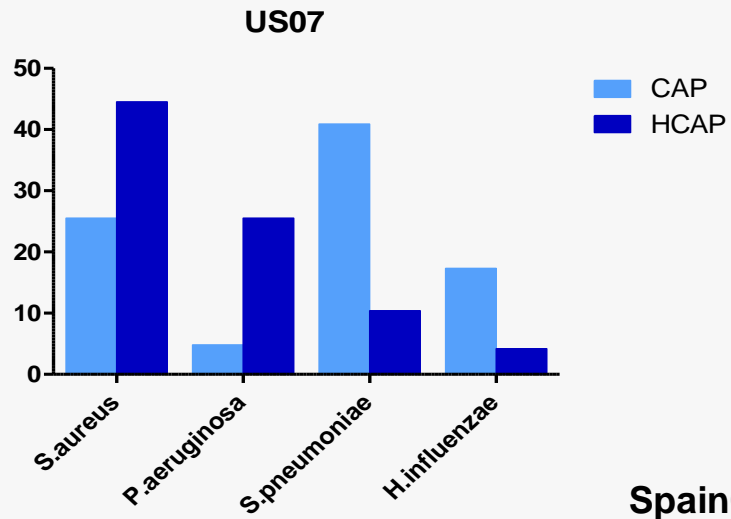


# Mortality in CAP, HCAP, HAP and VAP

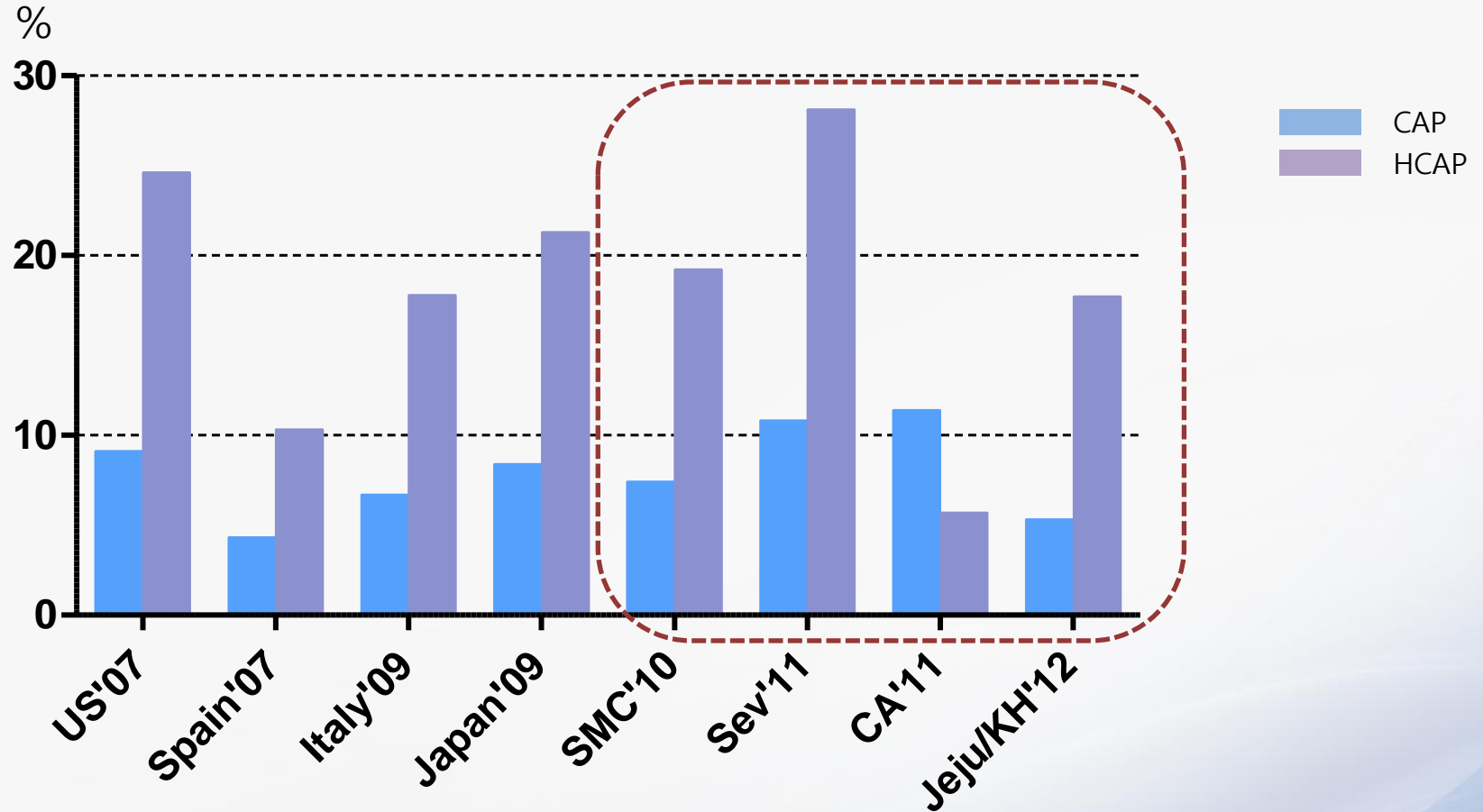


Kollef et al , Chest 2005

# More drug-resistant pathogen in HCAP



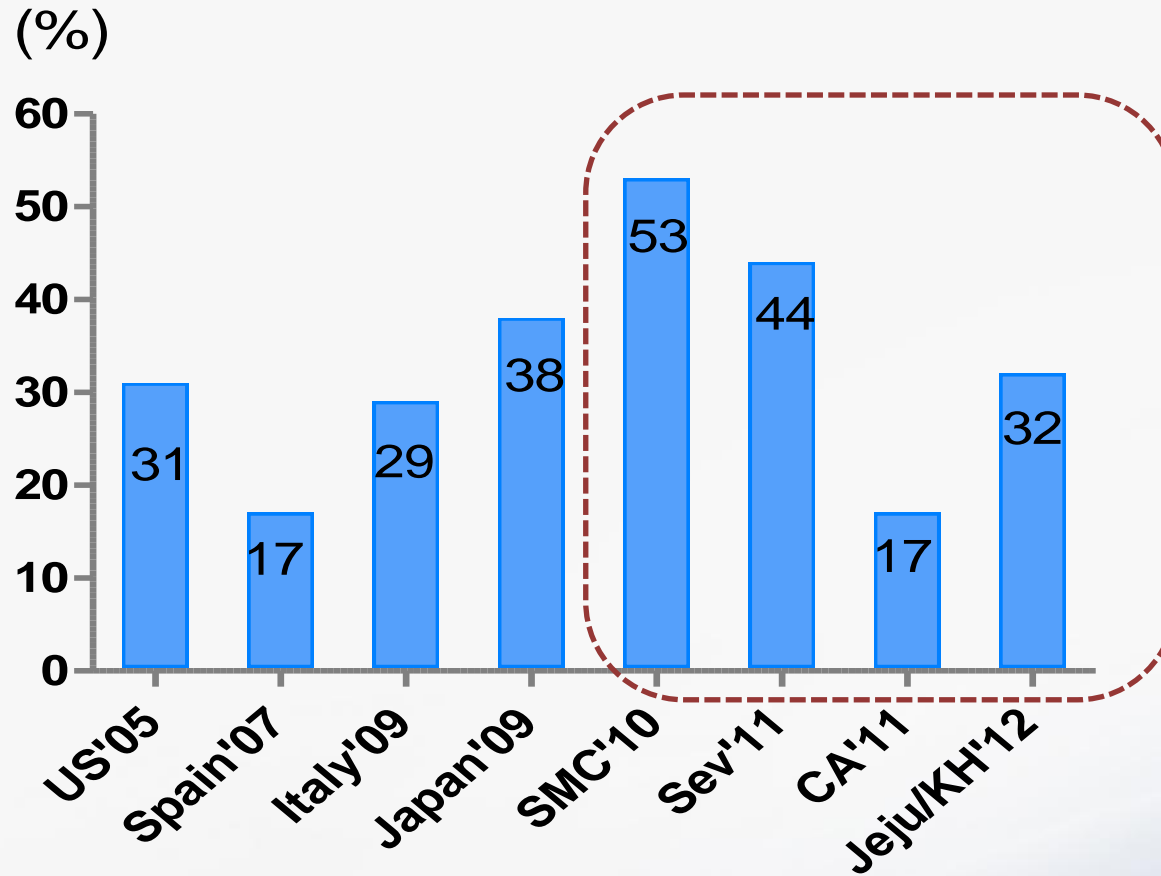
# Mortality of CAP and HCAP



# Heterogeneous definition

| Publication | Hospital admission | NH/LTCF | Home infusion therapy | IV chemotherapy within 30days | Dialysis | immunosuppression |
|-------------|--------------------|---------|-----------------------|-------------------------------|----------|-------------------|
| 2005 ATS    | 90days             | ○       | ▲                     |                               | ▲        |                   |
| US'05       | 30days             | ○       |                       |                               | ▲        |                   |
| Spain'07    | 90days             | ○       | ▲                     | ○                             | ▲        |                   |
| US'07       | 360days            | ○       |                       |                               | ▲        | ○                 |
| Italy'09    | 180days            | ○       |                       | ○                             | ▲        |                   |
| Japan'09    | 90days             | ○       | ▲                     |                               | ▲        |                   |
| Korea'10-12 | 90days             | ○       | ▲                     | ○                             | ▲        |                   |

# Variable proportion of HCAP



# Subgroup of HCAP

| HCAP  | SMC'10<br>182,% | Sev'11<br>231,% | CA'11*<br>35,% | J/K'12<br>96,% |
|---|-----------------|-----------------|----------------|----------------|
| Hospitalization $\geq$ 2days within 90days      | 65.9%           | 73.6%           | 60.0%          | 37.5%          |
| Recent IV therapy (antibiotic,<br>chemotherapy) | 35.7%<br>39.0%  | 64.9%           | 25.7%          | 10.4%          |
| Hemodialysis clinic                             | 2.2%            | 10.4%           | 11.4%          | 8.3%           |
| Reside in a NH or ECF                           | 4.4%            | 9.1%            | 31.4%          | 43.7%          |

\* > 60 years



LONG TERM CARE  
**노인장기요양보험**

# 4 key factors about HCAP in ATS 2005



HCAP- a category of pneumonia distinct from CAP



Know your bugs !

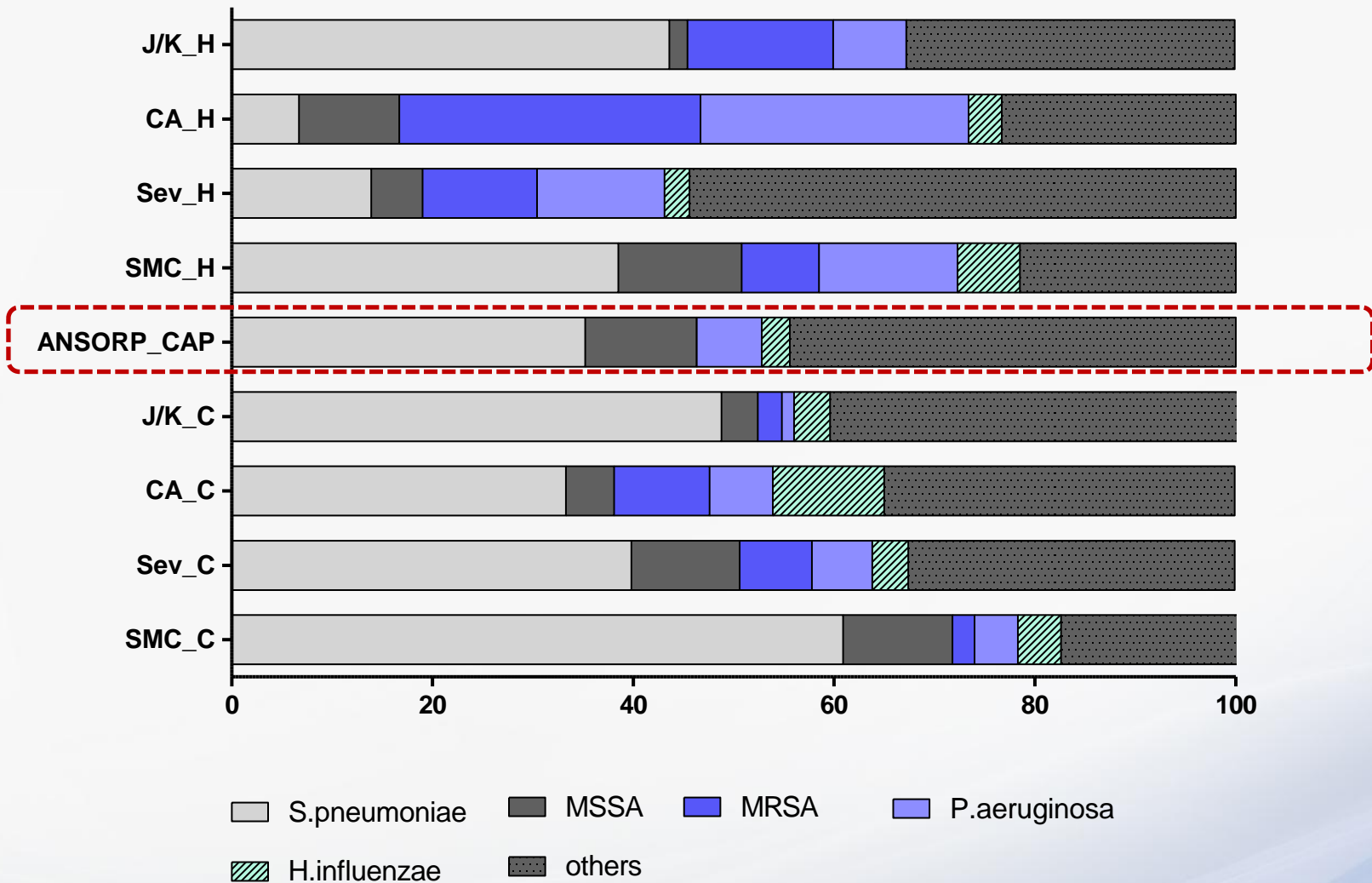


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Avoid overuse of antibiotics and tailored therapy

# Pathogen from CAP and HCAP in Korea



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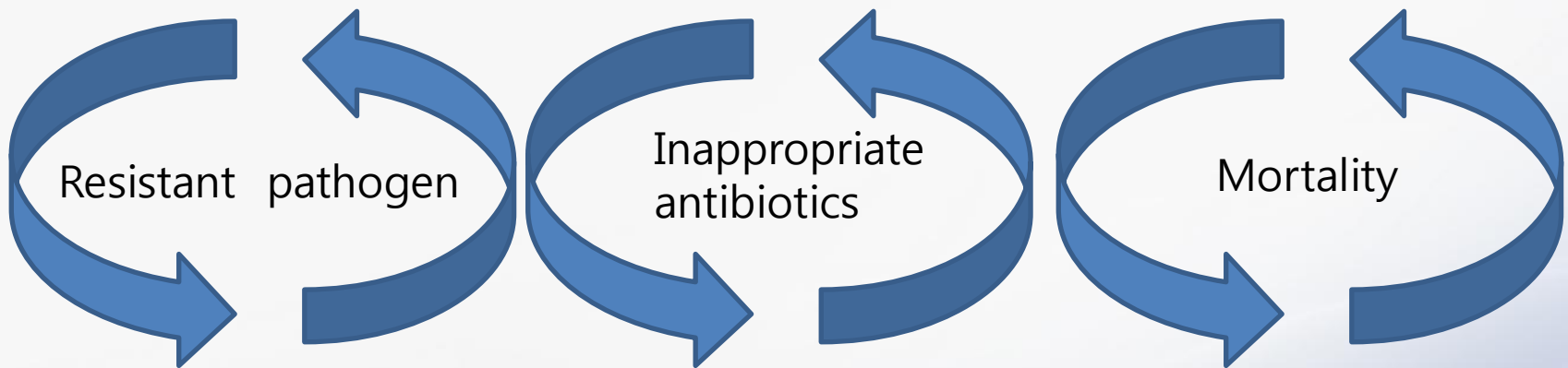
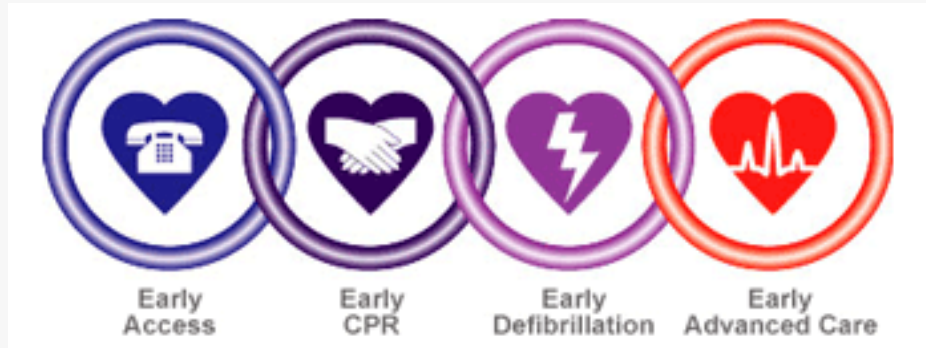
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# Chain of Survival



# Outcome of HCAP



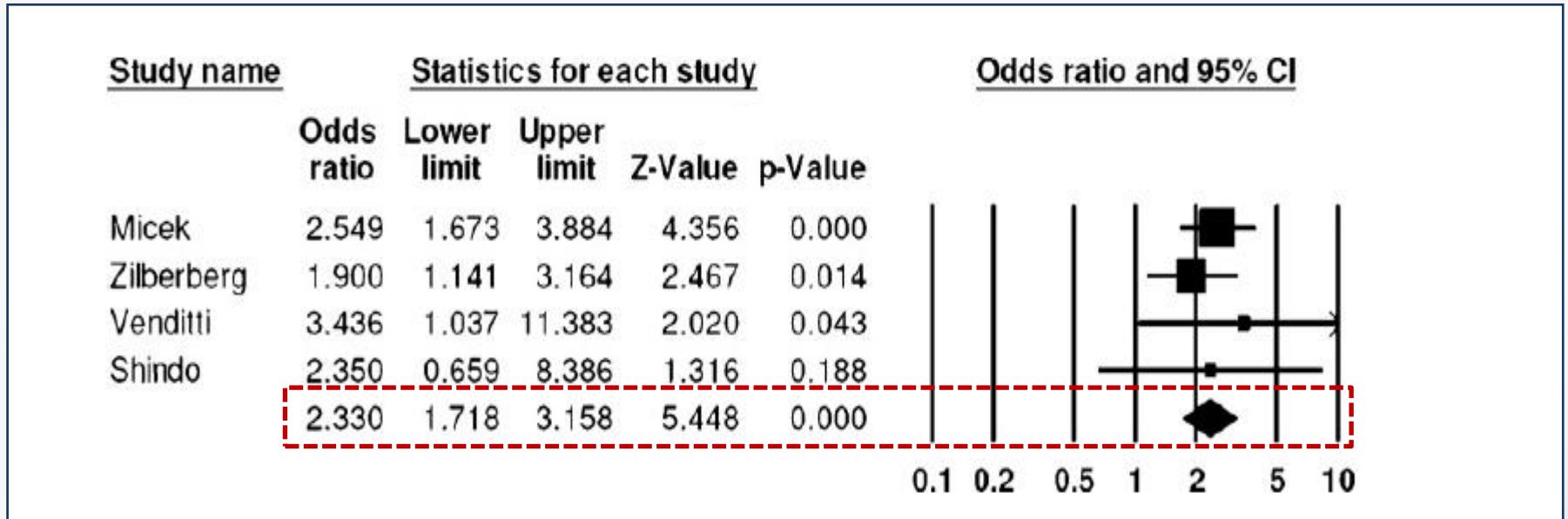
- 55 centers, 362 pneumonia patients
- Prospective, observational

**Table 4. Antimicrobial Therapy and Outcomes**

| Variable  | Community-Acquired Pneumonia (n = 223) | Health Care-Associated Pneumonia (n = 90) | Hospital-Acquired Pneumonia (n = 49) | P Value  |
|---|--|---|--------------------------------------|----------|
| Initial antibiotic monotherapy (95% CI), %        | 54.9 (47.7 to 62.2)                    | 60.7 (48.1 to 73.2)                       | 28.6 (14.7 to 42.4)                  | 0.010*   |
| Adherence to international guidelines (95% CI), % | 58.7 (51.8 to 65.6)                    | 26.7 (16.5 to 36.8)                       | 69.4 (57 to 81.8)                    | <0.001†  |
| Inappropriate antibiotic therapy (95% CI), %      | 5.8 (2.1 to 9.5)                       | 18.9 (10 to 27.8)                         | 10.2 (-2.6 to 23)                    | 0.020†   |
| Mean duration of antibiotic therapy (95% CI), d   | 13.8 (12.9 to 14.7)                    | 16.1 (14.6 to 17.7)                       | 16.7 (14.3 to 19.1)                  | 0.010†   |
| Mean duration of hospitalization (95% CI), d      | 14.7 (13.4 to 15.9)                    | 18.7 (15.9 to 21.5)                       | 24.8 (19.8 to 29.8)                  | <0.001*† |
| Overall in-hospital mortality rate (95% CI), %    | 6.7 (2.9 to 10.5)                      | 17.8 (10.6 to 24.9)                       | 18.4 (6.4 to 30.3)                   | 0.020†   |

|                             | OR  | 95%,CI    |
|-----------------------------|-----|-----------|
| Depression of consciousness | 3.2 | 1.06-9.8  |
| leukopenia                  | 6.2 | 1.01-37.6 |
| Inappropriate antibiotics   | 6.4 | 6.4-17.6  |

# Mortality and inappropriate antibiotics



Kollef et al, IJID 2011

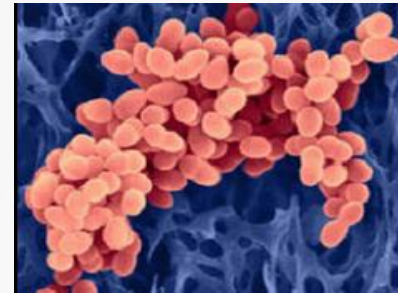
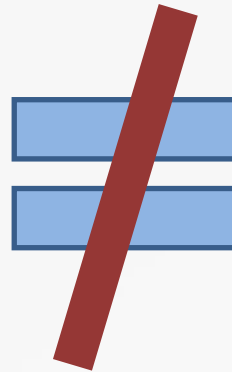
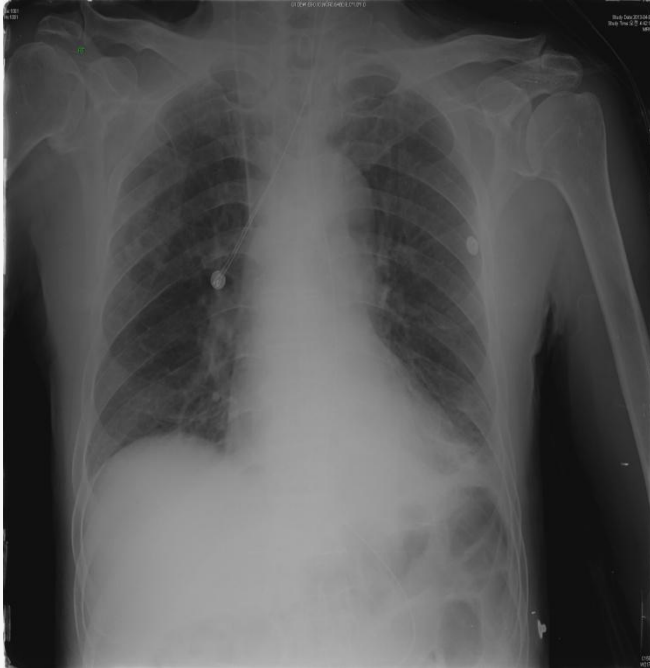
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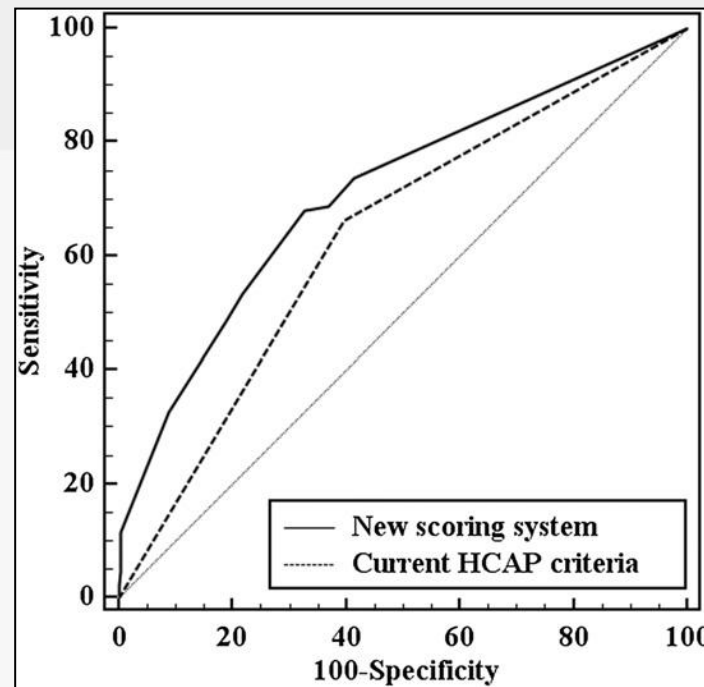
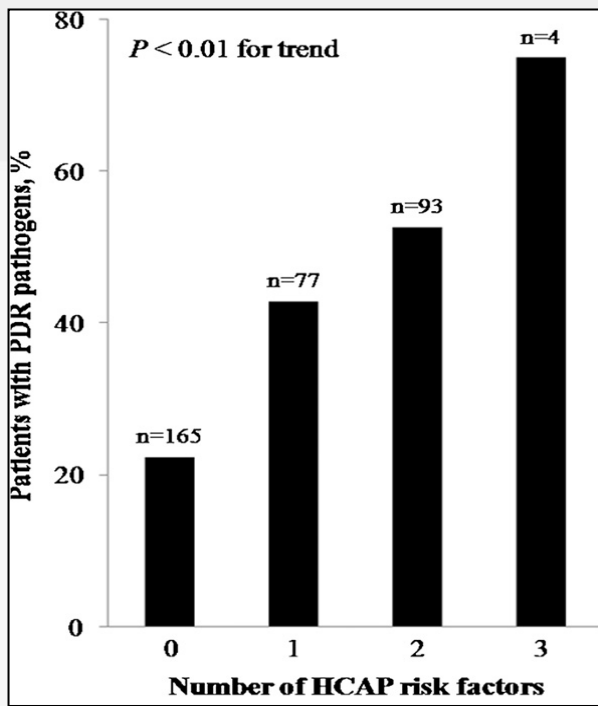
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# Avoid overuse and tailored therapy

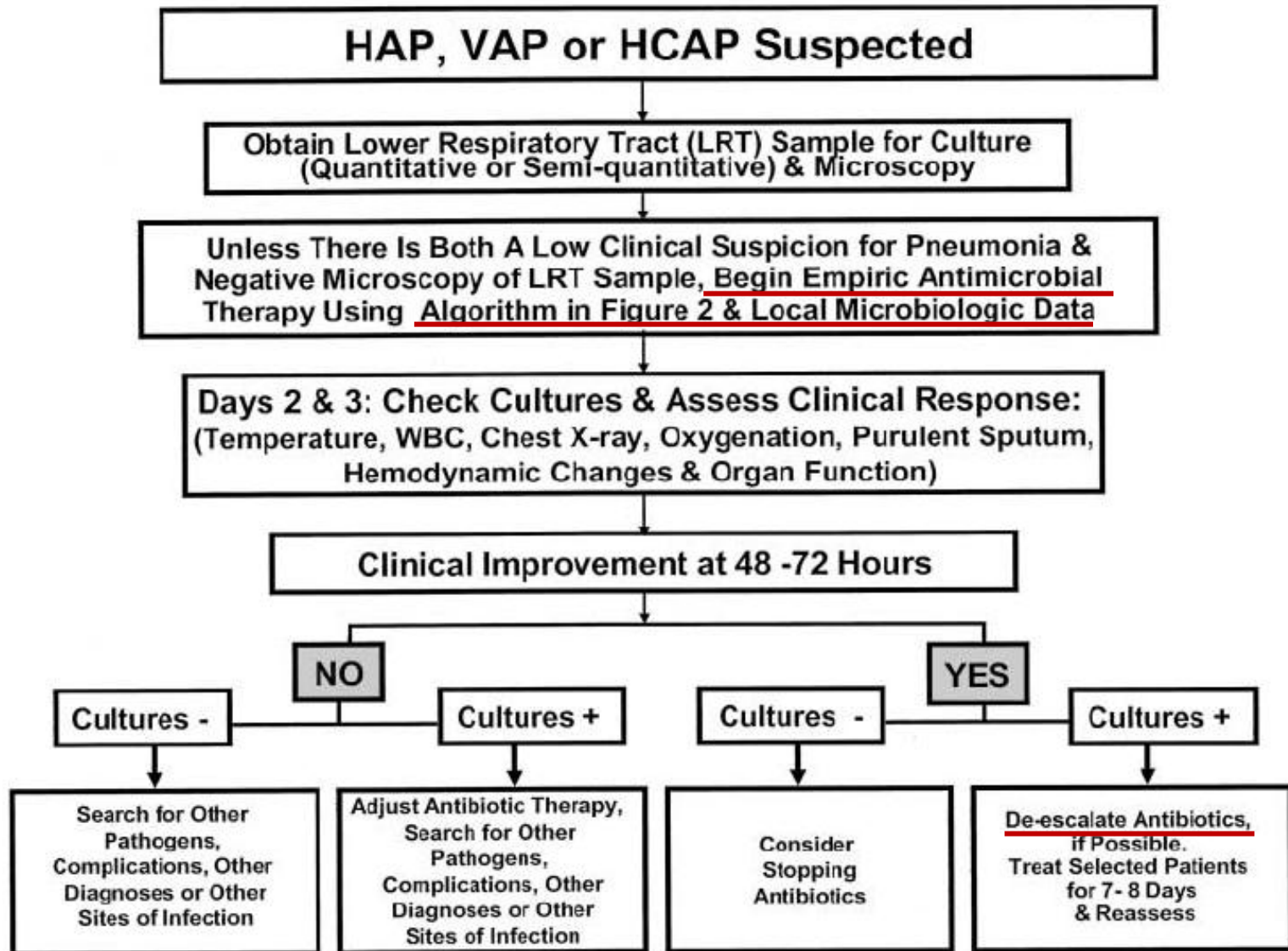
- Know your bugs!
- Know your patient's factors!
- Search for causative pathogen!
- De-escalate antibiotics!

# Know your patient's factors





| Risk factors                               | OR    | 95% CI     |
|--|-------|------------|
| Hospitalization $\geq$ 2days within 90days | 2.51  | 1.36-4.63  |
| Residence in a nursing home or ECF         | 1.23  | 0.47-3.21  |
| IV antibiotic treatment within 30days      | 2.35  | 1.04-5.29  |
| Chemotherapy within 30days                 | 0.64  | 0.26-1.57  |
| Hemodialysis clinic                        | 2.91  | 0.88-9.63  |
| Nasogastric tube feeding                   | 15.28 | 4.15-56.28 |



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Thank you!



