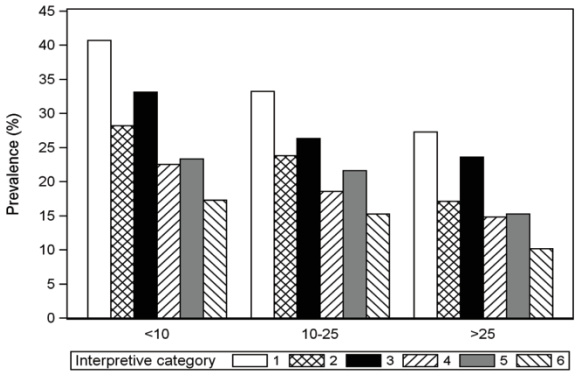
Supplementary Table 1a. Comparison of neutrophil and epithelial cell quantity in induced sputum samples from children aged 1-59 months with WHO-defined severe or very severe pneumonia, CXR+ Cases

	Number of neutrophils per low power field							
	>25		10-25		<10		All	
	N	%	N	%	N	%	N	%
Number epithelial cells per low power field								
<10	694	39.9	233	13.4	235	13.5	1162	66.8
10-25	232	13.3	65	3.7	64	3.7	361	20.8
>25	165	9.5	20	1.2	31	1.8	216	12.4
All	1091	62.7	318	18.3	330	19	1739	100.0

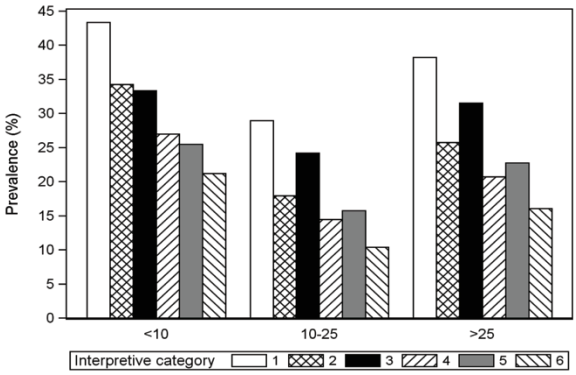
Percentages represent percent of total specimens among subset of cases (N=1739).
Abbreviations: WHO, World Health Organization.
CXR+ defined as radiographic evidence of pneumonia (consolidation and/or other infiltrates).

Supplementary Figure 1a. Prevalence of organisms by induced sputum culture interpretive criteria and induced sputum quality variables[a] in children aged 1-59 months with WHO-defined severe or very severe pneumonia, CXR+ Cases (N=1739)

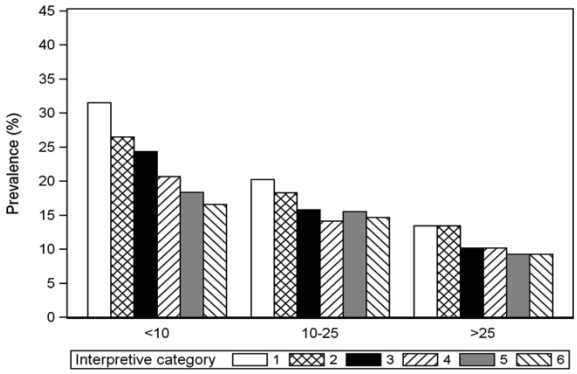
A. *H. influenzae*, Epithelial cells per LPF



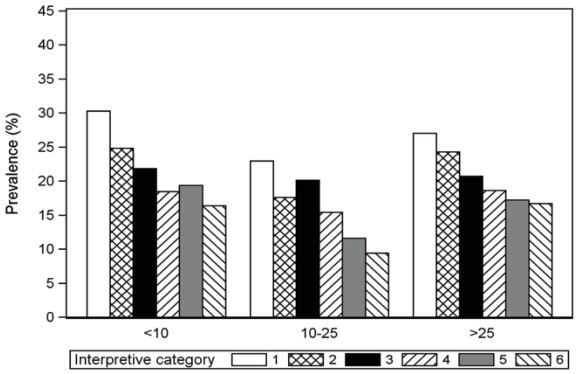
A. *H. influenzae*, Neutrophils per LPF



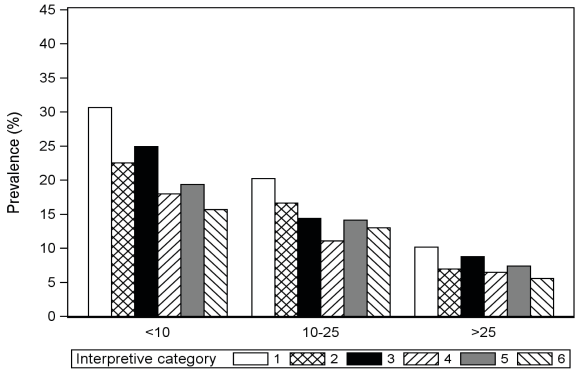
B. *S. pneumoniae*, Epithelial cells per LPF



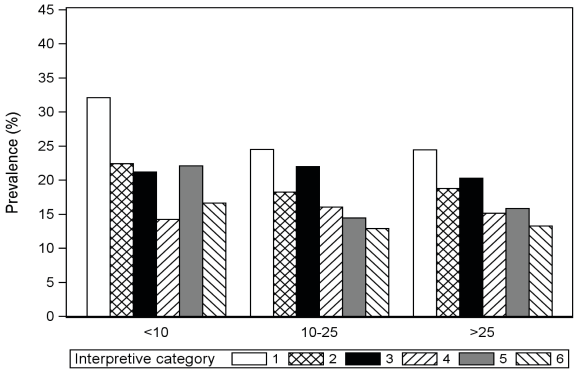
B. *S. pneumoniae,* Neutrophils per LPF



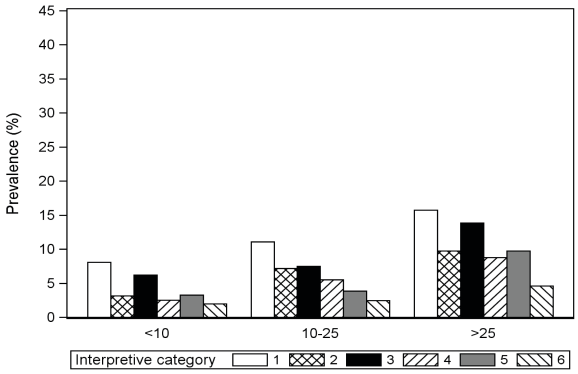
C. *M. catarrhalis*, Epithelial cells per LPF



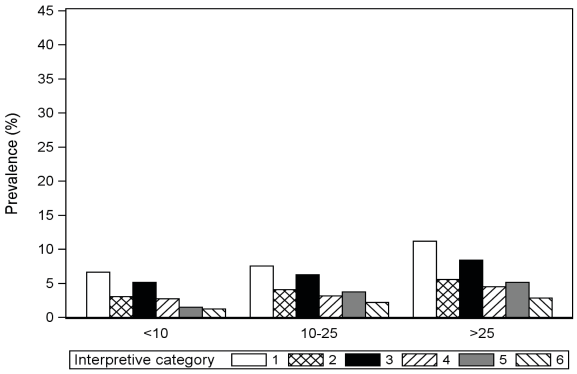
C. *M. catarrhalis,* Neutrophils per LPF



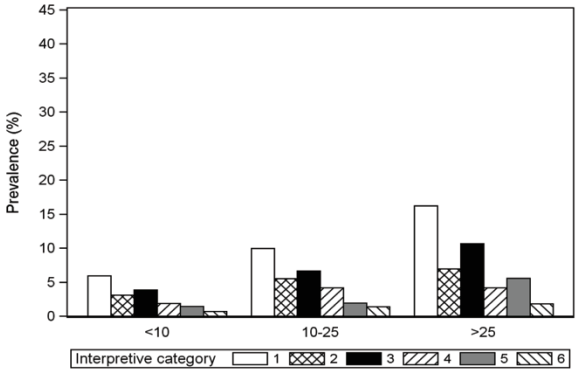
D. *S. aureus*, Epithelial cells per LPF



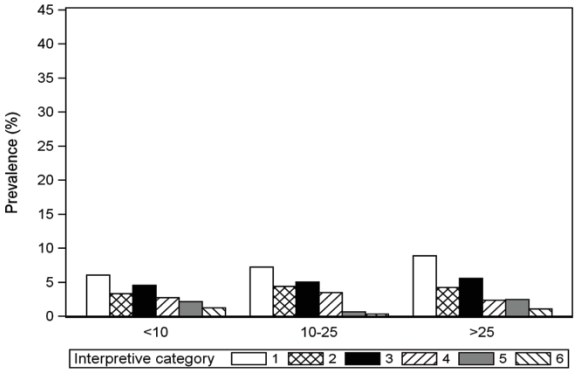
D. *S. aureus,* Neutrophils per LPF



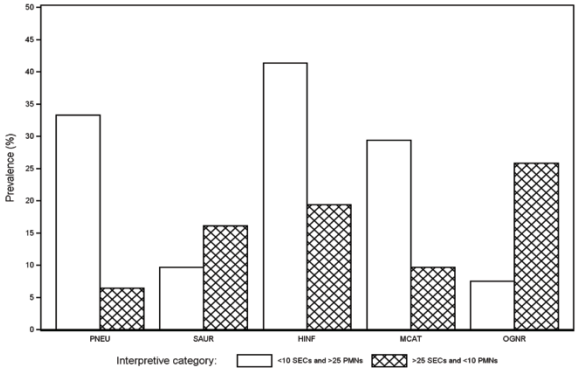
E. Other Gram-negative rods[b], Epithelial cells per LPF



E. Other Gram-negative rods[b], Neutrophils per LPF



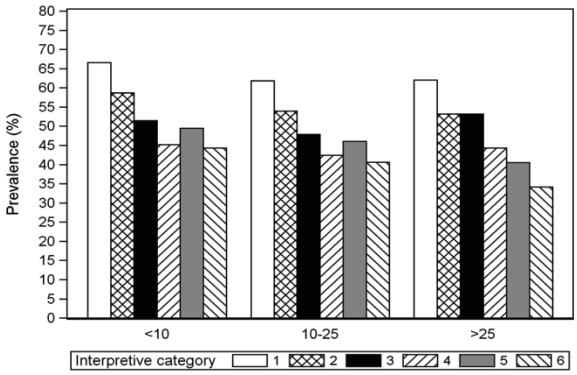
F. All organisms, Traditional IS quality measures



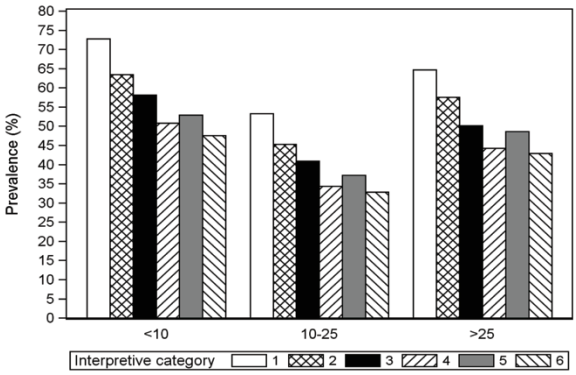
Abbreviations: HINF, *H. influenzae*;LPF, low power field; MCAT, *M. catarrhalis*; OGNR, Other non-fermentative gram-negative rods; PMNs, polymorphonuclear cells; PNEU, *S. pneumoniae*; SAUR, *S. aureus*; SECs, squamous epithelial cells; WHO, World Health Organization.
CXR+ defined as radiographic evidence of pneumonia (consolidation and/or other infiltrates) (N=1739).
Other non-fermentative gram-negative rods includes: *Acinetobacter* species and *Pseudomonas* species.
[a] Sputum interpretative criteria: 1 = organism present in any amount; 2 = present in any amount with compatible Gram stain morphotype; 3 = present as the predominant organism; 4 = present as the predominant organism with compatible Gram stain morphotype; 5 = present in quantities ≥=2+; 6 = present in quantities ≥=2+ with compatible Gram stain morphotype.
[b] Other non-fermentative gram-negative rods includes: *Acinetobacter* species and *Pseudomonas* species.

Supplementary Figure 1b. Prevalence of organisms by induced sputum culture interpretive criteria[a] and induced sputum quality variables in children aged 1-59 months with WHO-defined severe or very severe pneumonia, Cases with no prior antibiotics (N=842)

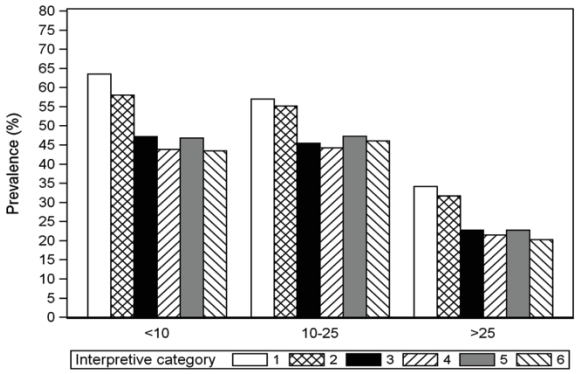
A. *H. influenzae*, Epithelial cells per LPF



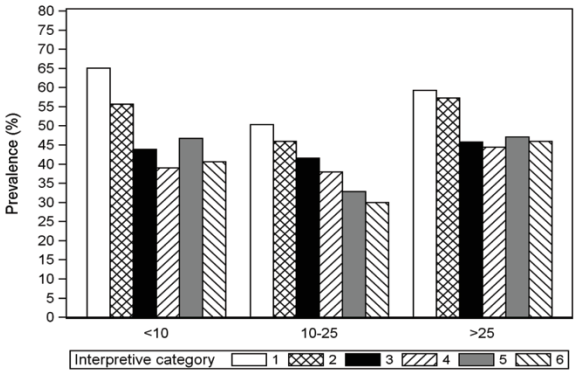
A. *H. influenzae*, Neutrophils per LPF



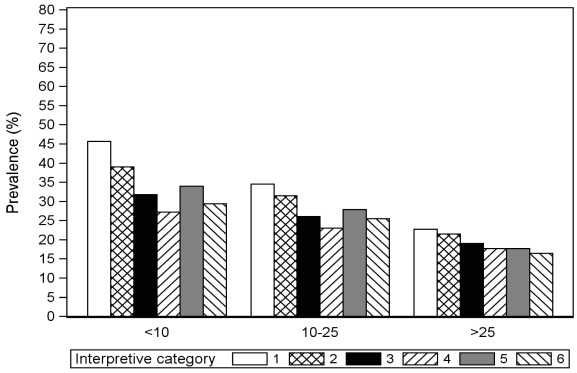
B. *S. pneumoniae*, Epithelial cells per LPF



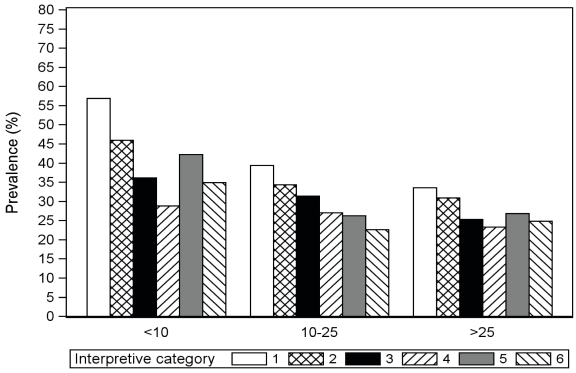
B. *S. pneumoniae,* Neutrophils per LPF



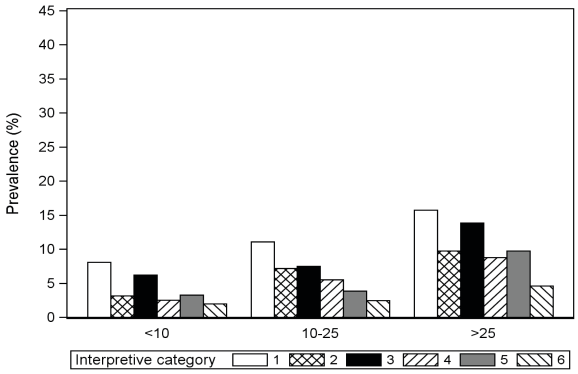
C. *M. catarrhalis*, Epithelial cells per LPF



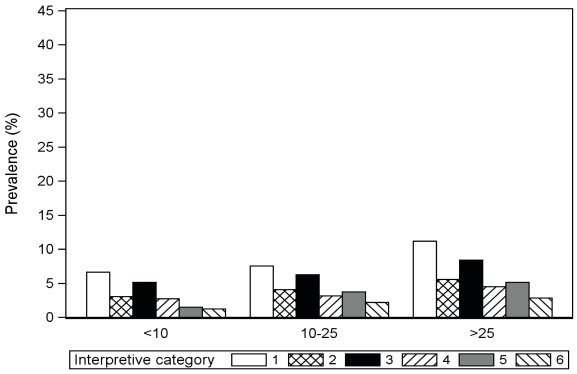
C. *M. catarrhalis,* Neutrophils per LPF



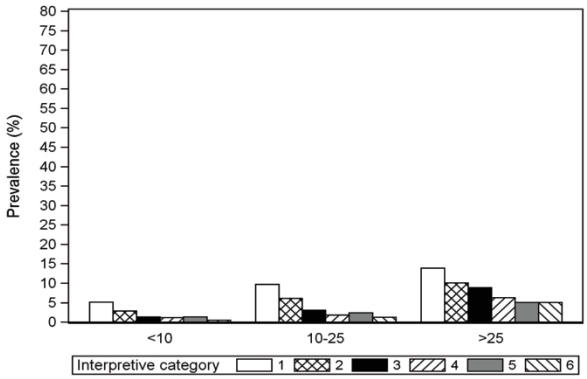
D. *S. aureus*, Epithelial cells per LPF



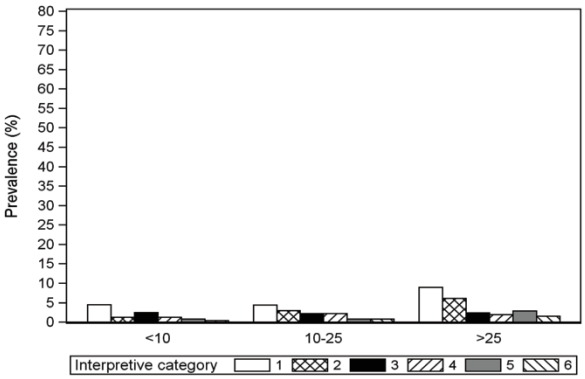
D. *S. aureus,* Neutrophils per LPF



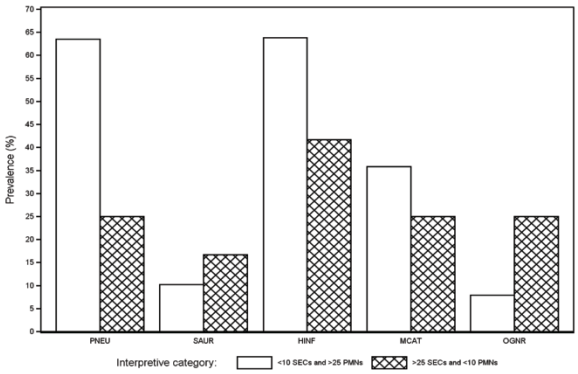
E. Other Gram-negative rods[b], Epithelial cells per LPF



E. Other Gram-negative rods[b], Neutrophils per LPF



F. All organisms, Traditional IS quality measures



Abbreviations: HINF, *H. influenzae*; LPF, low power field; MCAT, *M. catarrhalis*; OGNR, Other non-fermentative Gram-negative rods; PMNs, polymorphonuclear cells; PNEU, *S. pneumoniae*; SAUR, *S. aureus*; SECs, squamous epithelial cells; WHO, World Health Organization.

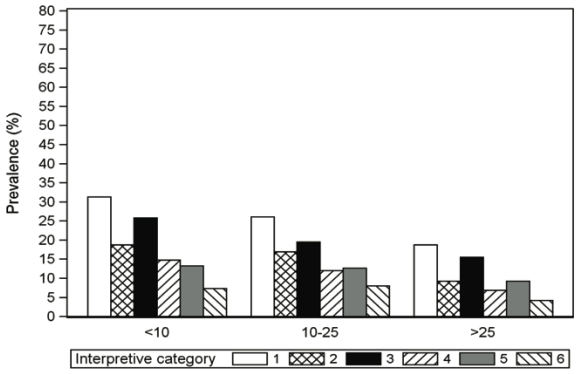
Other non-fermentative gram-negative rods includes: *Acinetobacter* species and *Pseudomonas* species.

[a] Sputum interpretative criteria: 1 = organism present in any amount; 2 = present in any amount with compatible Gram stain morphotype; 3 = present as the predominant organism; 4 = present as the predominant organism with compatible Gram stain morphotype; 5 = present in quantities ≥=2+; 6 = present in quantities ≥=2+ with compatible Gram stain morphotype.

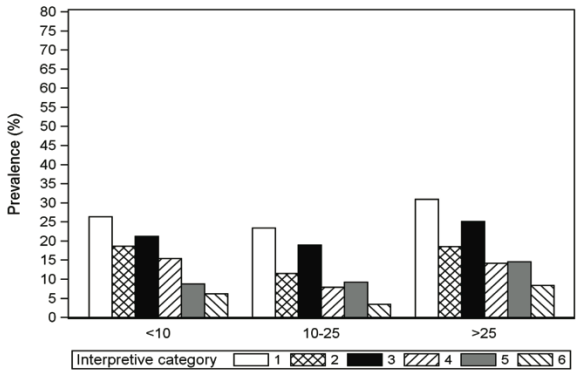
[b] Other non-fermentative gram-negative rods includes: *Acinetobacter* species and *Pseudomonas* species.

Supplementary Figure 1c. Prevalence of organisms by induced sputum culture interpretive criteria and induced sputum quality variables[a] in children aged 1-59 months with WHO-defined severe or very severe pneumonia, Cases with prior antibiotics (N=2833)

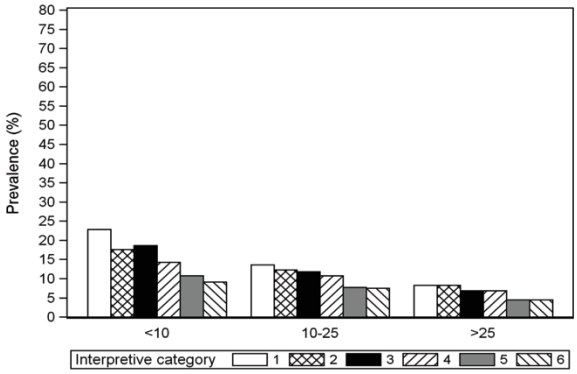
A. *H. influenzae*, Epithelial cells per LPF



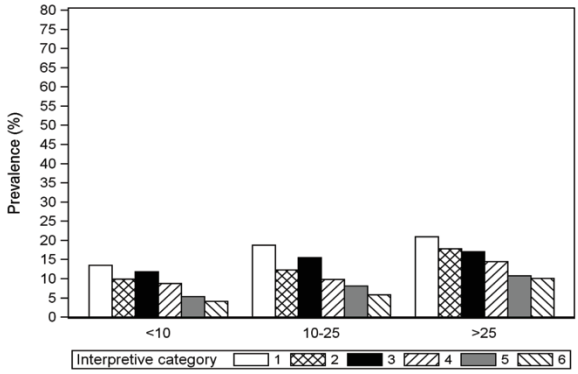
A. *H. influenzae*, Neutrophils per LPF



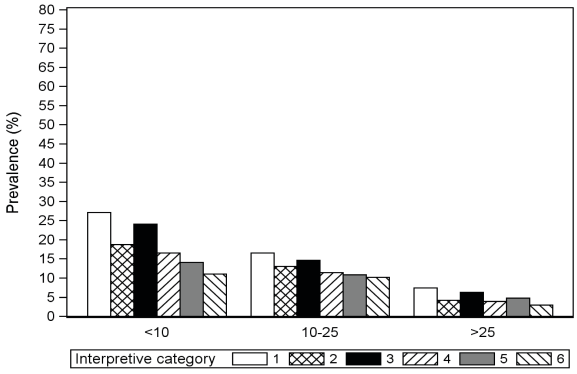
B. *S. pneumoniae*, Epithelial cells per LPF



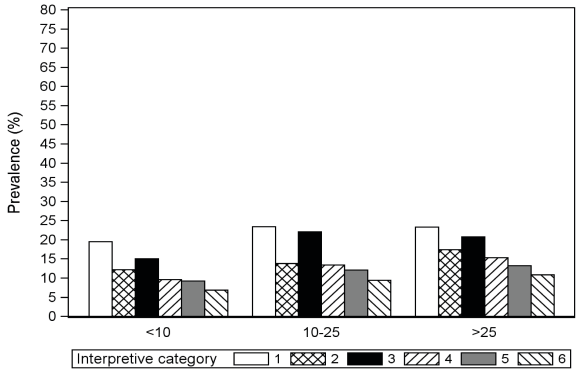
B. *S. pneumoniae,* Neutrophils per LPF



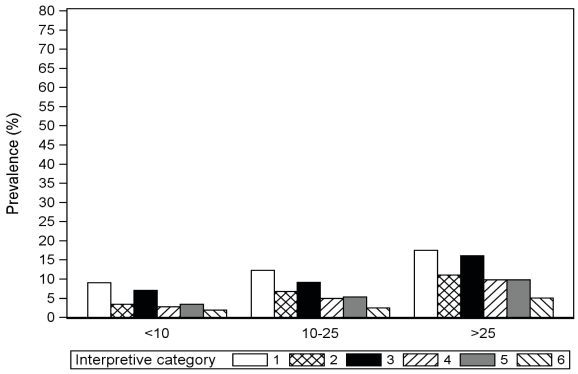
C. *M. catarrhalis*, Epithelial cells per LPF



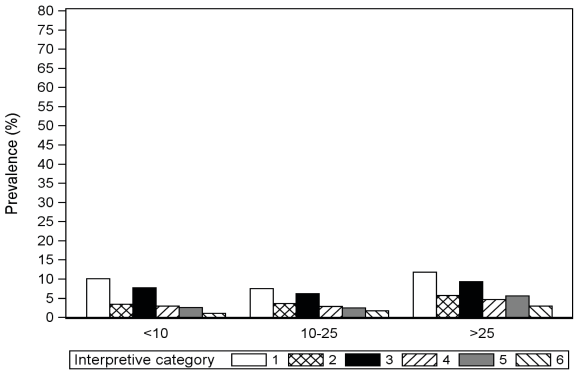
C. *M. catarrhalis,* Neutrophils per LPF



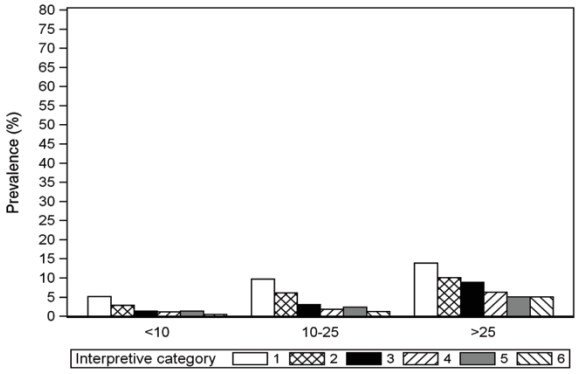
D. *S. aureus*, Epithelial cells per LPF



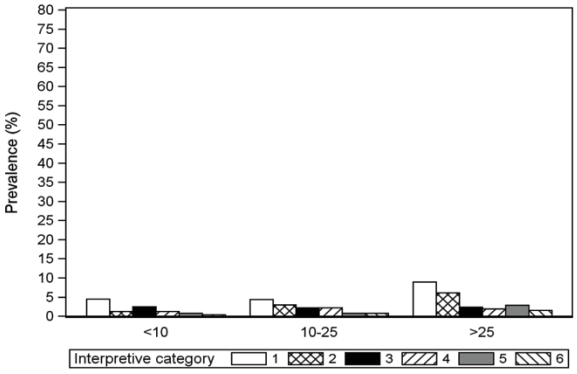
D. *S. aureus,* Neutrophils per LPF



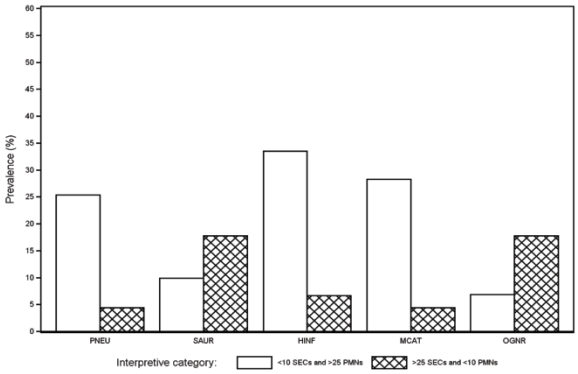
E. Other Gram-negative rods[b], Epithelial cells per LPF



E. Other Gram-negative rods[b], Neutrophils per LPF

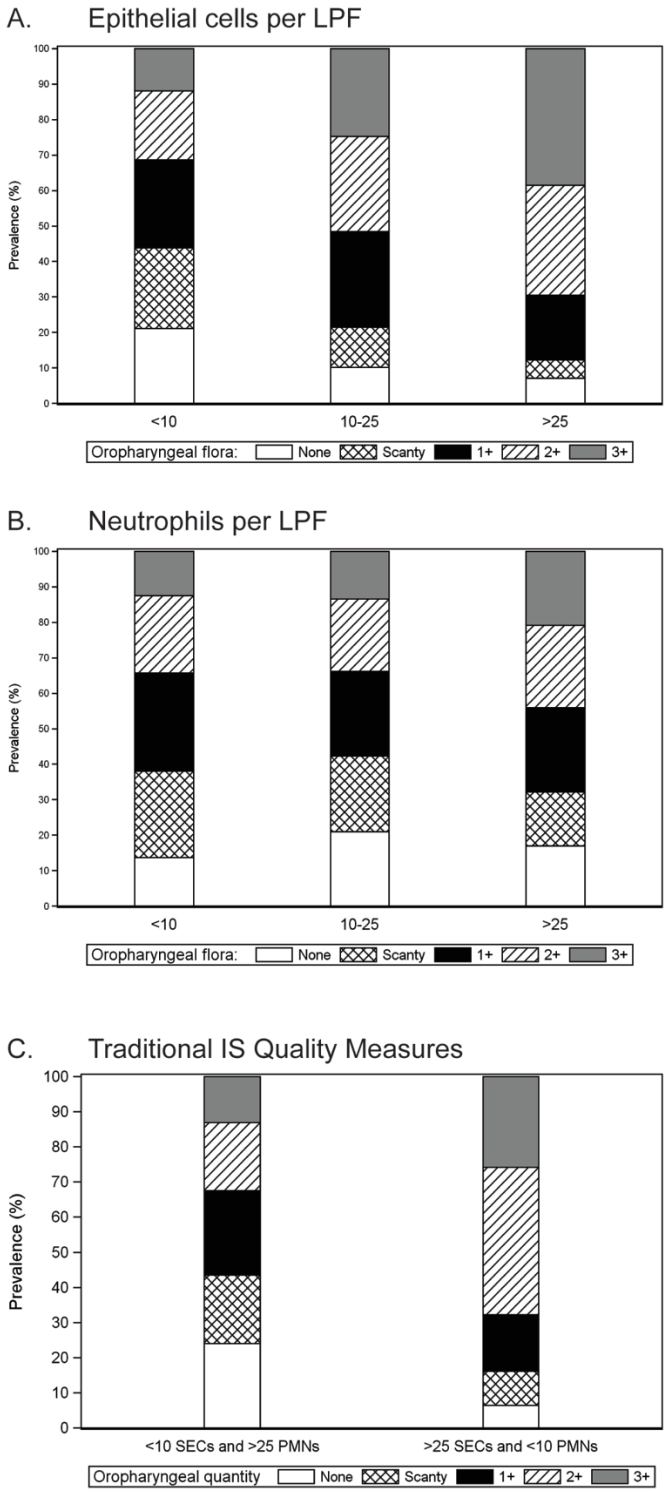


F. All organisms, Traditional IS quality measures



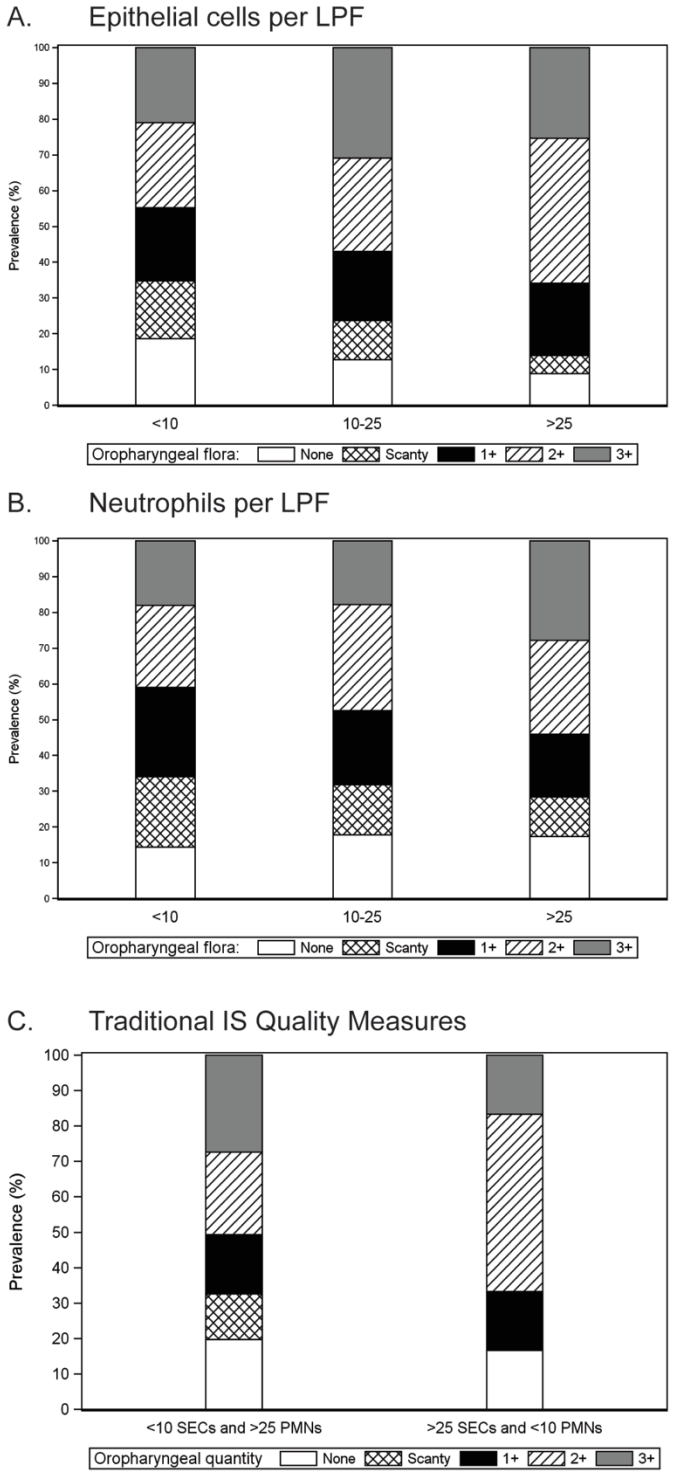
Abbreviations: HINF, *H. influenzae*; LPF, low power field; MCAT, *M. catarrhalis*; OGNR, Other non-fermentative Gram-negative rods; PMNs, polymorphonuclear cells; PNEU, *S. pneumoniae*; SAUR, *S. aureus*; SECs, squamous epithelial cells.
Other non-fermentative gram-negative rods includes: *Acinetobacter* species and *Pseudomonas* species.
[a] Sputum interpretative criteria: 1 = organism present in any amount; 2 = present in any amount with compatible Gram stain morphotype; 3 = present as the predominant organism; 4 = present as the predominant organism with compatible Gram stain morphotype; 5 = present in quantities ≥=2+; 6 = present in quantities ≥=2+ with compatible Gram stain morphotype.
[b] Other non-fermentative gram-negative rods includes: *Acinetobacter* species and *Pseudomonas* species.

Supplementary Figure 2a. Quantity of oropharyngeal flora in induced sputum in children aged 1-59 months with WHO-defined severe or very severe pneumonia by induced sputum quality variables, CXR+ cases (N=1739)



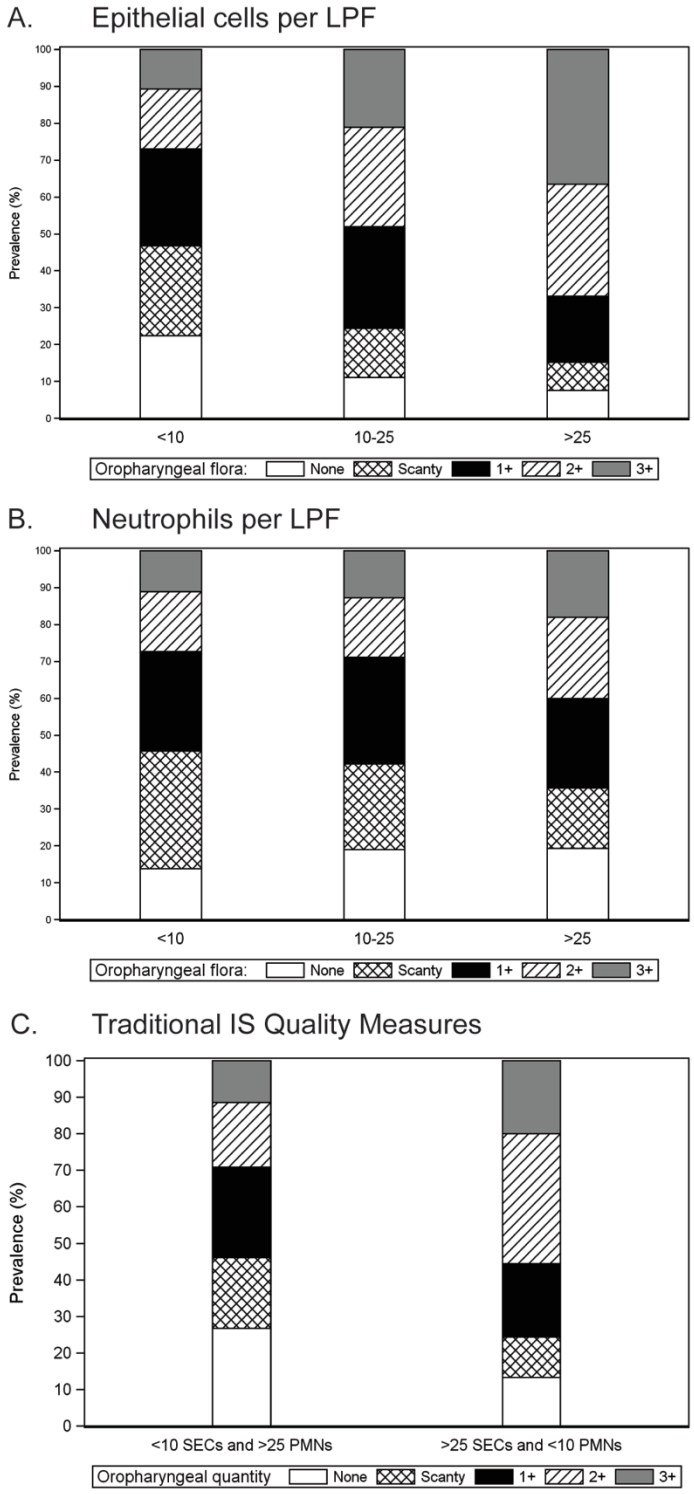
Abbreviations: LPF, low power field; PMNs, polymorphonuclear cells; SECs, squamous epithelial cells; WHO, World Health Organization.
CXR+ defined as radiographic evidence of pneumonia (consolidation and/or other infiltrates).

Supplementary Figure 2b. Quantity of oropharyngeal flora in induced sputum in children aged 1-59 months with WHO-defined severe or very severe pneumonia by induced sputum quality variables, Cases with no prior antibiotics (N=842)



Abbreviations: LPF, low power field; PMNs, polymorphonuclear cells; SECs, squamous epithelial cells; WHO, World Health Organization.

Supplementary Figure 2c. Quantity of oropharyngeal flora in induced sputum in children aged 1-59 months with WHO-defined severe or very severe pneumonia by induced sputum quality variables, Cases with prior antibiotics (N=2833)



Abbreviations: LPF, low power field; PMNs, polymorphonuclear cells; SECs, squamous epithelial cells; WHO, World Health Organization.

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