

*STREPTOCOCCUS  
PNEUMONIAE*  
DISEASE BURDEN

Turkey

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# *STREPTOCOCCUS PNEUMONIAE* DISEASE BURDEN

- *Streptococcus pneumoniae* is the most common bacterial cause of:
  - Meningitis
  - Bacteremia
  - Pneumonia
  - Otitis media
  - Sinusitis

# SURVEILLANCE

- No surveillance study for invasive pneumococcal diseases in Turkey
- Invasive pneumococcal disease burden study (ASPECT) in Ethical Committee evaluation
- AOM study in Ethical Committee evaluation
- Serotyping study in invasive pneumococcal isolates (ongoing)
- Pediatric meningitis study

# Pediatric Meningitis Working Group

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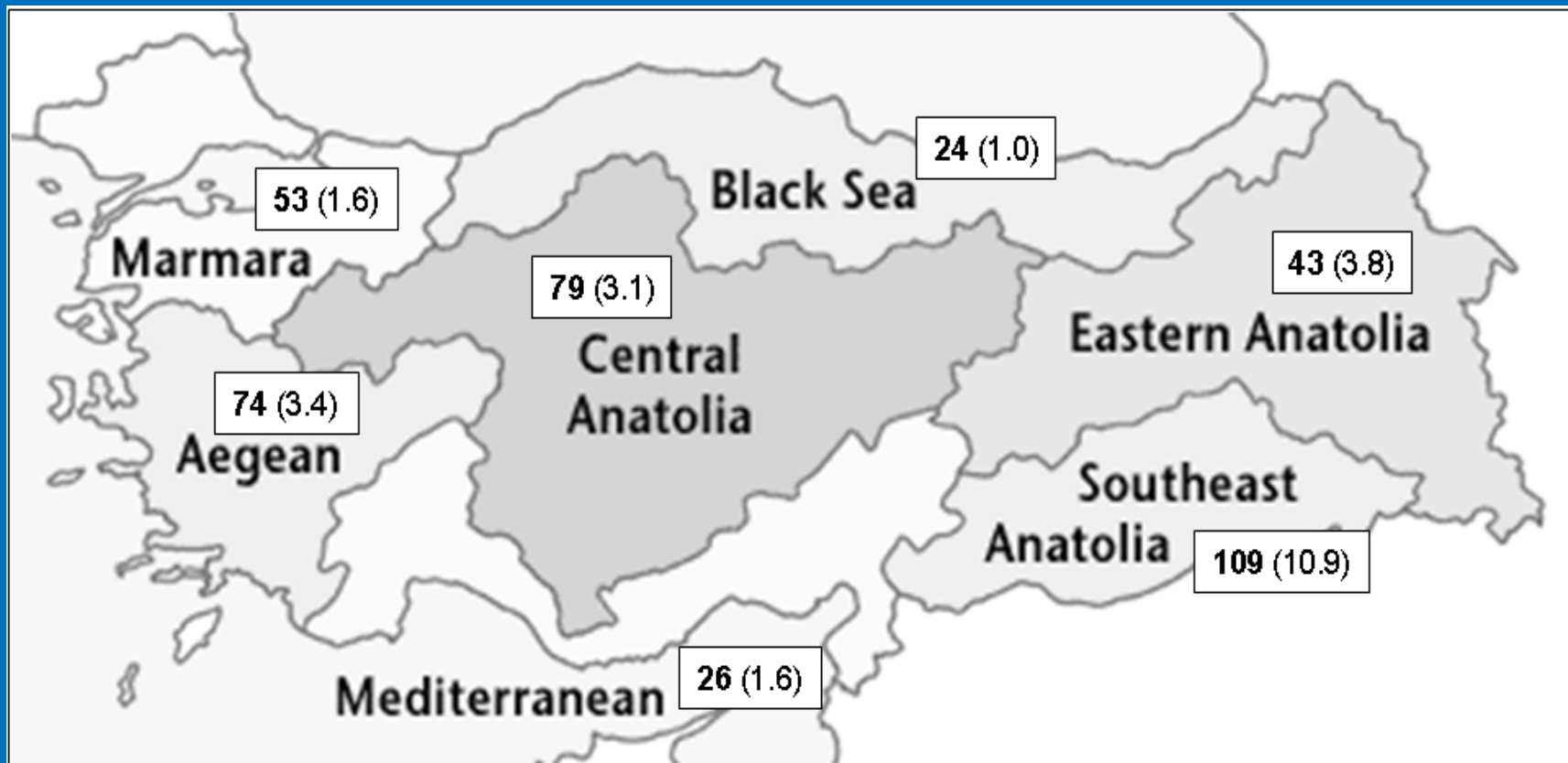
Dr. Paul BALMER

Dr. Steve GRAY

# Results

- 12 centers from 7 different geographical regions serving to 32 % of the population
- Patients with bacterial meningitis: 408
- Mortality: 4.9 %
- Diagnosis: 243 samples (cases) had etiologic diagnosis with laboratory tests.
  - CSF culture: 41 (17 %)
  - Latex agglutination: 56 (23 %)
    - 37 *N. meningitidis*,
    - 10 Hib,
    - 9 *S. pneumoniae*
  - PCR 243 (100 %) cases

# Region-specific incidence rates of laboratory-confirmed meningitis (per 100,000 population)



## Bacteriae causing childhood acute bacterial meningitis, 2005-2006

Bacteriae	No	Percent	
<i>Neisseria meningitidis</i>	Serogroup W-135	59	42.7 <sup>†</sup>
	Serogroup B	43	31.1 <sup>†</sup>
	Serogroup A	1	0.7 <sup>†</sup>
	Serogroup C	-	-
	Serogroup Y	3	2.2 <sup>†</sup>
	Nongroupable	32	23.2 <sup>†</sup>
Total	<b>138</b>	<b>56.5</b>	
<i>Streptococcus pneumoniae</i>	<b>55</b>	<b>22.5</b>	
<i>Haemophilus influenzae</i> tip b	<b>50</b>	<b>20.5</b>	
<b>Total</b>	<b>243</b>	<b>100</b>	

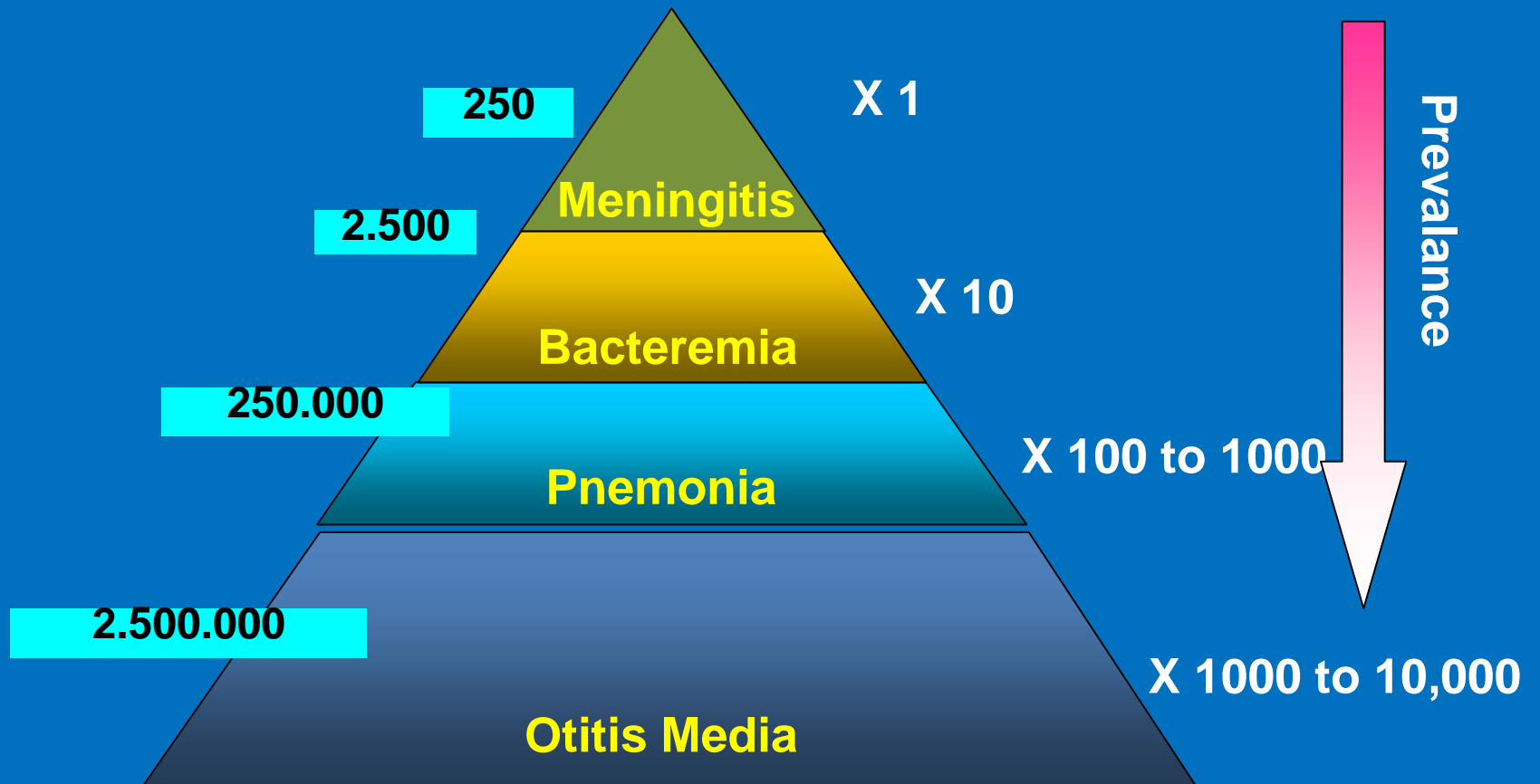
# Ongoing study...

## Active surveillance 2006-2007-

Bacteriae		Percent
<i>Neisseria meningitidis</i>	Serogroup W-135	17.6
	Serogroup B	35.1
	Serogroup A	8.3
	Serogroup C	-
	Serogroup Y	-
	Nongroupable	39.0
	Total	<b>40.4</b>
<i>Streptococcus pneumoniae</i>		<b>36.8</b>
<i>Haemophilus influenzae</i> tip b		<b>22.8</b>
<b>Total</b>		<b>100</b>



# Disease burden projection for Turkey



Adapted from: American Academy of Pediatrics. Pediatrics. 2000;106:367-376 & MMWR. 1997;46:1-24

## Nasopharyngeal Carriage in Turkey 8.5-43 %

Age	Carrier %	Year	Location	Author
2 mo--12 y	43	2000	Ankara	Çiftçi E, Doğru Ü, et al. Pediatrics International 2000; 42: 552-6.
6-13 y	13,9	2007	Mersin	Aslan G, et al. Indian J Med 2007; 125: 582-7.
< 16y	19	2005	Malatya	Bayraktar M et al. Int J Antimicrob Agents. 2005; 26: 241-6
< 16y	8.5	2002	İstanbul	Bakır M et al. Eur J Pediatr.2002;12:123,124
< 16y	28	2004	İstanbul	İlki A ve ark, Mikrobiol Bul 2004; 38:1-7.

## Serotypes in Turkey and 7V PCV

Age	Location	N	Year	Serotypes	Vaccine	Author
6-16	Mersin	1440	2007	6,19,1,23,17	40	Aslan G, et al. Indian J Med 2007; 125: 582-7
<16 y	Malatya	166	2005	6,9,10,18,19,23	76	Bayraktar MR et al. Int J Antimicrob Agents. 2005; 26: 241-6
Adult +child	İstanbul	44	2004	19F, 6B, 4, 14, 9L, 23B, 3, 9A, 23F, 6A, 19C	75	Gürol Y, ve ark. Ankem Derg 2004; 18(4): 213-5
<16 y	Ankara	143	1998	23, 19, 9, 14, 6	83,1	Şener B, Günalp J Antimicrob Chemother. 1998;42:381-4.

## Serotypes responsible for invasive disease in Turkey and 7V PCV

Age	Location	N	Year	Serotypes	Vaccine	Author
<16 y	Ankara	44	1998	14, 19F ve 23F	90 (9-valent) (< 2 years)	Kanra G, et al. Acta Paediatr Jpn 1998; 40:437-40.
<16 y	İstanbul, Ankara, Adana, İzmir	93	2006	19F, 6B, 23F, 18C, 9V, 14	88.9 (< 2 years)	Yalçın I, et al. Eur J Pediatr. 2006;165(9):654-7.

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*S. pneumoniae* serotypes in PCR positive CSF  
 ( PCR, Bionax NOW and Bio-plex )  
 2006-2007, Turkey

Serotype	No	%
5	6	24
1	3	12
23F*	3	12
19F	2	8
6A	2	8
8	1	4
14	1	4
18	1	4
19A*	1	4
6B*	1	4
Non-typable	4	16
<b>Total</b>	<b>25</b>	<b>100</b>

**40 % !!**

6A, 9A, 9L,  
 18B and 18F

# SUMMARY

- Need for:
  - Disease burden studies
  - Surveillance system for
    - Pneumococcal diseases
    - Serotype distribution
  - Cost-effectivity studies
- Expectation:
  - Conjugate pneumococcal vaccine is cost effective
  - It is the first candidate vaccine for Turkey NIP