PNEUMOCOCCAL AND VACCINE USE
JAMAICAN EXPERIENCE

YVONNE MUNROE
MINISTRY OF HEALTH
JAMAICA
Streptococcus Pneumoniae

- Bacteria with polysaccharide capsule - major virulence factor
- Approximately 90 serotypes
- Emergence of antibiotic resistant strains
Invasive Pneumococcal infections

- Most common invasive infection
- WHO estimates over 1,000,000 deaths annually due to pneumococcal infections
- Invasive infections include: Meningitis, Septicemia, Pneumonia, otitis media etc.
Invasive Pneumococcal Disease in Jamaican Children under 5 years

• Retrospective Case Study at BHC 1995 - 1999:
  ø 98 cases identified (incidence 34.5/100,000)
  ø 88% of cases were under 2 years of age

• Clinical Diagnoses:
  ø Pneumonia 70%
  ø Meningitis 35%
  ø Septicemia 17%

Evaluation of 14 Valant Pneumococcal Vaccine in SS Disease

• John et al - (Jamaica) 1978-83.
  • Efficacy of prophylactic penicillin and 14 valent pneumococcal vaccine - 242 children aged 6 months to 3 years
  • 11 pneumococcal infections in the vaccine group, Type 23 accounted for five and infection was high in 1 year or below in the vaccine group.
Invasive Pneumococcal Disease in Jamaican Children under 5 years

- Retrospective Case Study at BHC 1995 - 1999

Underlying disease:
- Sickle Cell disease -- 10%
- HIV infection -- 9%
- Poor outcome in 21% of meningitis patients
- All deaths were in infants

Pneumococcal Vaccine at Sickle Cell Unit, UWI - Jamaica

- In mid 1980s recommended to all patients with genotypes for SC disease in early childhood (risk greater)
- All children with HbSS and SB thal given pneumovax at age 4
- < 4 yrs on penicillin prophylaxis (Penadur / 28 days)
- In mid 1990s a 7 valent vaccine was tested but result unknown
Pneumococcal Vaccine at Sickle Cell Unit

• In 2000 Unit started recommending “catch up” after several persons in late childhood and early adulthood presented with pneumococcal sepsis
Surveillance Systems

- < 1998  Ad hoc surveillance
- 1999 – 2000  CAR-IBIS
- 2001 – 2006  Ad hoc surveillance
Ad Hoc Surveillance

- Included all CMCs
- Specimens collected from cases with various invasive bacterial diseases
- Unknown proportion of all cases reported to CAREC
<table>
<thead>
<tr>
<th>Serotypes</th>
<th>0-2 years</th>
<th>&gt;2-5 years</th>
<th>&gt;5 - 16 years</th>
<th>Adults</th>
<th>without age</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serotypes</td>
<td>4 6 6A 6B 9 9V 11 14 18 18C 19 19A 23A NT</td>
<td>0 1 1 1 1 1 1 1 2 3 2 2 3 1</td>
<td>0 1 1 1 1 1 1 1 2 3 2 2 3 1</td>
<td>0 1 1 1 1 1 1 1 2 3 2 2 3 1</td>
<td>0 1 1 1 1 1 1 1 2 3 2 2 3 1</td>
<td>0 1 1 1 1 1 1 1 2 3 2 2 3 1</td>
</tr>
<tr>
<td>No. isolates</td>
<td>1 1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>No. isolates</td>
<td>1 1 1 1 1</td>
<td>1 1 1 1 1</td>
<td>1 1 1 1 1</td>
<td>1 1 1 1 1</td>
<td>1 1 1 1 1</td>
<td>1 1 1 1 1</td>
</tr>
<tr>
<td>No. isolates</td>
<td>2 3 12 3 1 5 1</td>
<td>1 1 1 3</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>
Pneumococcal Polysaccharide Vaccine

- Retrospective study of 80 episodes of invasive pneumococcal disease in 68 sickle cell (SS) patients in Jamaica:
  - Pneumococcal polysaccharide vaccine improved clinical outcome and appeared to ameliorate the course of invasive disease.
  - Penicillin prophylaxis still recommended

Ref. Knight-Madden & Serjeant  J of Pediatr 2001; 138: 65
Private Sector Usage of 7-Valent

- Launched in 2005
- 2006: Increase of 752% compared with 2005
- 2007: Increased by 435% over 2006
- 2008: Increased growth
Conclusion

• Based on risk factors the health sector in Jamaica identified the following priority groups:
  • Severe haemoglobinopathies
  • HIV infected persons
  • The Elderly
• If only severe SC disease and HIV infected children are targeted for vaccination with the conjugate vaccine this would cost some US $ 75,000.0
• Cost-effectiveness studies to justify wide scale use of vaccination is hindered by:
  ᵇ Inadequate documentation of diagnosis of invasive pneumococcal disease
  ᵇ Low yield of isolates from blood culture (25-30%)
• Efforts are being made to review and revise HIS to ensure effective system, capable of generating the evidence base needed to support this justification.
• Jamaica is to start purchasing through PAHO Revolving System pneumococcal vaccine for persons with haemoglobinopathies
THANK YOU!!