Risk profiles and vaccine uptake in children with invasive pneumococcal disease at a tertiary hospital in Tshwane:

A retrospective review

Xandré Dearden

www.up.ac.za

<table>
<thead>
<tr>
<th>Streptococcus pneumoniae incidence rate per 100,000 children under five years of age, 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1000</td>
</tr>
<tr>
<td>1000–2000</td>
</tr>
<tr>
<td>2000–3000</td>
</tr>
<tr>
<td>≥3000</td>
</tr>
</tbody>
</table>
Causes of under 5 childhood mortality in South Africa in 2000 and 2010

Method

- Retrospective descriptive analysis
- Pediatric wards of Kalafong Hospital in Tshwane.
- Younger than 13 years
- February 2009 until February 2013
- Positive culture for *S. pneumoniae* from a sterile site.
## Results

<table>
<thead>
<tr>
<th>Patient characteristics</th>
<th>N = 84</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N(%)</td>
</tr>
<tr>
<td>Median age</td>
<td>36 months (6-4207)</td>
</tr>
<tr>
<td>Male:Female ratio</td>
<td>1.18:1</td>
</tr>
<tr>
<td>HIV positive</td>
<td>33 (51%)</td>
</tr>
<tr>
<td>CD4 count %</td>
<td>13.8% (0.8-35.6)</td>
</tr>
<tr>
<td>HIV status unknown</td>
<td>19 (23%)</td>
</tr>
<tr>
<td>Anthropometry done (admission)</td>
<td>58 (69%)</td>
</tr>
<tr>
<td>Underweight (&lt; -2 z-score weight for age)</td>
<td>25 (43%)</td>
</tr>
</tbody>
</table>

- **Tuberculosis** was a comorbidity in 8/84 (9.5%)
- 13/76 (17%) missed primary PCV vaccine series
- **Specimen source**
  - Blood culture 48/69 (70%)
  - CSF 18/69 (26.1%)
2009-2010 2011-2013
Non-PCV7 PCV7 serotypes

Serotype 1
Serotype 23F
Serotype 6A
Serotype 6B
Serotype 14
Serotype 19F
Serotype 19A
Serotype 8
Serotype 5
Serotype 15B
Other
### Discussion

- Bacteraemia was the most common form of IPD identified at Kalafong hospital.
- HIV infection and malnutrition were two comorbid conditions found in up to half of cases.
- There was a decrease in the absolute number of IPD cases with PCV7 serotypes.
- Serotypes contained in the current 13-valent pneumococcal conjugate vaccine will protect against the most prevalent serotypes found.
- Ongoing surveillance of the antimicrobial resistance pattern will advise future policy on the recommended antibiotic strategy for pneumococcal infections.
Take Home Message

- *Streptococcus pneumoniae* is still a major cause of death in children.
- HIV infection, TB and malnutrition are frequent co morbid conditions.
- Serotypes contained in the available 13-valent PCV will protect against the most prevalent serotypes found, thus emphasizing continued vaccine advocacy.

Recommendations

- Complete vaccine schedule
- Promote vaccination
- Catch up vaccines
- Investigate for TB and HIV
- Correct dose of antibiotics
Keep calm, this is the end of the presentation.

<table>
<thead>
<tr>
<th>Serotypes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumovax</td>
<td>1, 2, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19A, 19F, 20, 22F, 23F, 33F</td>
</tr>
<tr>
<td>Prevnar</td>
<td>4, 6B, 9V, 14, 18C, 19F, 23F</td>
</tr>
<tr>
<td>Prevnar-13</td>
<td>1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F, 23F</td>
</tr>
</tbody>
</table>
In private, the vaccine strains are decreasing
13 valent now covers strains most commonly found during 7 valent era.
Serotype 1: shown to have distinct features such as prone to cause outbreaks (article in press)
3:1 more effective than 2:1
Strains now in prevenar 13 use to be the strains previously resistant to ab.
In practise, a fully vaccinated, uncomplicated patient, should not need broad spectrum or any ab when presenting with AOM.