



The Severity and Duration of Hypoxemia, in Children with Pneumonia in Mount Hagen

Presenter: Tracy Jeff

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SMHS- UPNG

Supervisors:

Dr Ripa, Professor Duke, Dr Kurubi, Dr Kaupa

Outline

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AIM

- To determine the prevalence and severity of hypoxemia in children with pneumonia and other ALRI, and time taken for hypoxia to resolve in children aged 1 month to 5 years.

Background

- Pneumonia- most common reason for admission (16.1% of admissions). (*Annual Child Morbidity and Mortality; 2019*)
- Pneumonia case fatality rates- significantly lower than in previous years: 3.6% overall (previously 5%), and 7.4% for severe pneumonia (previously more than 10%). (*Annual Child Morbidity and Mortality; 2019*)

Mount Hagen Hospital

- Pneumonia- frequent cause of admission and is one of the top 5 of the admissions.
- Total admissions in the period of four months was 1326 and 37% was Pneumonia
- Prolonged hypoxemia is the dilemma faced everyday in the wards with patients admitted as pneumonia and requiring oxygen therapy; thus longer hospital stay.

Methods

- Prospective Descriptive Study
- All patients presenting with pneumonia and or bronchiolitis despite underlying conditions or cor-morbidities were recruited.
- Oxygen saturation reading of <90% in room air on admission.
- Study done over 4 months Period: April to July 2020 at Mt Hagen Hospital, Paediatric Unit
- Patients not included ;
 - SP02 was 90/> or
 - investigator was not on call

Con.

- Patients had subsequent monitoring twice daily until the hypoxia resolution time
- Other data collected:
 - Socio-demographic Variables
 - Clinical data on Respiratory/Pneumonia Variables
- Data was analysed using SPSS version 20

Results

- **Sample Study-** 152 children participated
- **Gender:** Male 85 (60%), Female 67 (44%)
- **Median age:** 4.25 months with IQR of 2.6 to 7.9 months.
- The youngest was 1 month old and oldest 14 months.

Flow Chart of Study Population

Total Number of Admissions over The Study
Period: 1326



Total Number of Pneumonia/ Bronchiolitis Patients Admitted
over the Study Period: 489 (37% of total Admissions)



Total Population Recruited: 152 (31% of Pneumonia/Bronchiolitis)

Results

| District of Residence | Total Number of Patients | Percentages |
|------------------------------|---------------------------------|--------------------|
| Hagen Central | 81 | 53 |
| Mul Bayer | 16 | 10.5 |
| Dei Counsel | 8 | 5.3 |
| Tambul Nebilyer | 12 | 16.4 |
| Other Provinces | 19 | 15.5 |
| Province of Origin | | |
| WHP | 114 | 75 |
| SHP | 6 | 3.9 |
| Enga | 8 | 5.3 |
| Jiwaka | 17 | 11.2 |
| Hela | 5 | 3.3 |
| Others | 2 | 1.3 |

Results

- **Duration of cough:** median (IQR) = 4 days (3-5days)
- **Duration of Shortness Of Breath** = 3 days (2-4 days)
- **Respiratory rate on admission** = 65 (56-72)
- **Pulse rate on admission** = 160 (149-172)
- **Respiratory distress score** = 14 (14-15) min 12 max 56

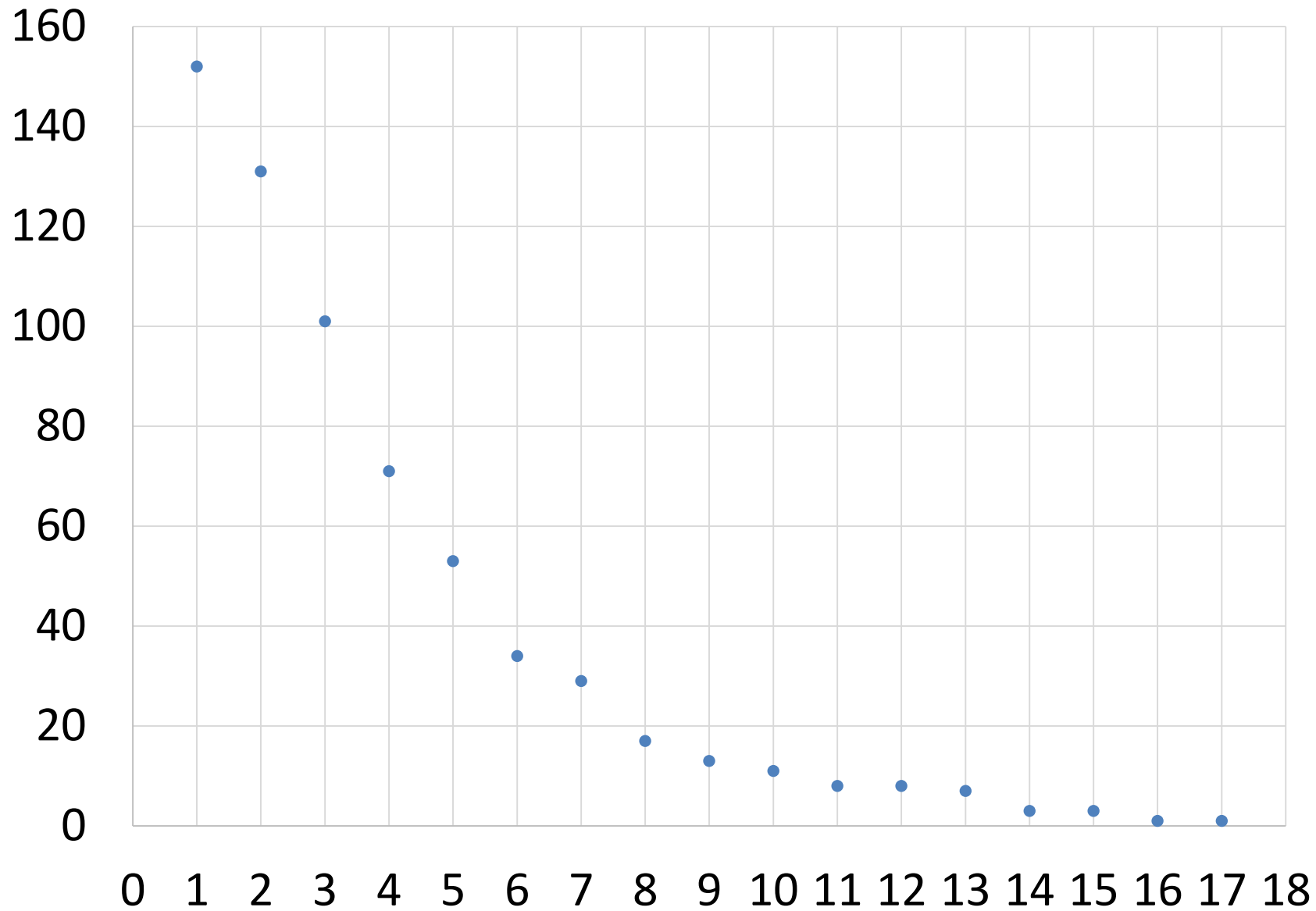
Results

- **Oxygen Saturation In Air On Admission**
 - Median- 78 (IQR 66-83 %); Range- 32-89%
- **Days to Resolution of Hypoxia:**
 - Median- 2.5 days (IQR 1.5- 5days), Range- (0.5- 17days)
- **Outcome:**
 - Survived: 141 (92.8%)
 - Died: 4 (2.6%)
 - Absconded: 7 (4.6)
- **Clinical Diagnosis:**
 - Pneumonia- 78 (51.3)
 - Bronchiolitis- 17 (11.2%)
 - Bronchiolitis/Pneumonia- 57 (37.5%)

Proportion of Children Still Needing Oxygen

| Number of Days | Number of Patients | Percentages |
|----------------|--------------------|-------------|
| 1 | 152 | 100 |
| 2 | 131 | 86.2 |
| 3 | 101 | 66.4 |
| 4 | 71 | 46.7 |
| 5 | 53 | 34.9 |
| 6 | 34 | 22.4 |
| 7 | 29 | 19.1 |
| 8 | 17 | 11.2 |
| 9 | 13 | 8.6 |
| 10 | 11 | 7.2 |
| 11 | 8 | 5.3 |
| 12 | 8 | 5.3 |
| 13 | 7 | 4.6 |
| 14 | 3 | 2 |
| 15 | 3 | 2 |
| 16 | 1 | 0.7 |
| 17 | 1 | 0.7 |
| 18 | 0 | 0 |

Number of patients continuing to need oxygen every day



Comorbidities

| Comorbidities | No' of Patients | % | Survived | Died | Absconded | Median Days of Hypoxia Resolution |
|----------------------|------------------------|----------|-----------------|-------------|------------------|--|
| None | 132 | 86.8 | 123 | 2 | 7 | |
| Anaemia | 1 | 0.66 | 1 | | | |
| CHD on Anti -HF | 4 | 2.63 | 5 | | | 15(7-13) |
| TB Meningitis | 5 | 3.2 | 4 | 1 | | 3(3-5) |
| Low Birth Weight | 5 | 3.2 | 1 | | | |
| Empyema | 1 | 0.66 | 1 | | | |
| Down Syndrome/CHD | 1 | 0.66 | 2 | | | 15 (4-17) |
| SAM | 2 | 2 | 1 | | | |
| PPTCT on Septrin | 1 | 0.66 | 3 | 1 | | 7 (4.5-8) |

Deaths

- **Median age- 7 months**
- **Median duration of cough -4 days**
- **Median duration of SOB -3 days**
- **Median saturation in air on arrival = 34%**
- **Median Oxygen Saturation in air for survivors= 79%**
- Numbers too small to analyse risk factors for death

| Patients that Died | Number of Days inpatient |
|--------------------|--------------------------|
| 1 | 4 |
| 2 | 17 |
| 3 | 7 |
| 4 | 14 |

Discussion

- From the study the median days required for hypoxia to resolve is 2.5 days without underlying cor-morbidities
- The mortality rate of the sample population was 2.6%
- The mortality shows that if hypoxia is properly managed, the outcome is reasonable even if co-morbidities exist
- Study with larger numbers could show predictors for mortality
- Possibility of some bias in selection as inclusion was not strictly systemic.

Conclusion/Recommendations

- The outcome for pneumonia will be good if we continue to concentrate on training staffs in the routine use of pulse oximetry in pneumonia patients and recognise and treat hypoxia early.

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Reference

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