

# COMparison of Short versus long term duration of Antimicrobial Therapy for the treatment of *Stenotrophomonas maltophilia* pneumonia: COMSAT Study

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## Background

- *Stenotrophomonas maltophilia* (*S. maltophilia*) is a gram-negative bacilli associated with opportunistic infections with high morbidity and mortality
- The most common manifestation is pneumonia (PNA)
- Selecting appropriate antibiotic (abx) treatment and duration is a challenge as *S. maltophilia* exhibits multi-drug resistance
- The drug of choice is co-trimoxazole (12.5 - 20 mg/kg/day of trimethoprim component in divided doses), and most cases are treated for 14-21 days or longer
- Because of a lack of controlled clinical trials, treatment duration is largely based on anecdotal evidence and case reports

## Objectives

- To describe the differences between two patient groups with pneumonia caused by *S. maltophilia*; treatment with **short course** antibiotics (14 days or less) or treatment with **long course** antibiotics (15 days or more)

## Methods

- **Study Design:** Retrospective cohort study
- **Inclusion Criteria:** All adult (>18 year old) patients admitted to SMH, BUH, or ARH from Jan 2011 to July 2014 with a diagnosis (dx) of PNA and a positive sputum culture for *S. maltophilia*
- **Exclusion Criteria:** Less than 3 days of antibiotic therapy completed, pregnancy
- **Primary Outcome:** Recurrence rate †
- **Secondary Outcomes:**
  - Clinical Cure ‡
  - In-hospital mortality
  - Length of hospital stay (after PNA dx)
- **Statistical Analysis:** Chi Squared and Student's T-test

## Figure 1: Patient Flowchart

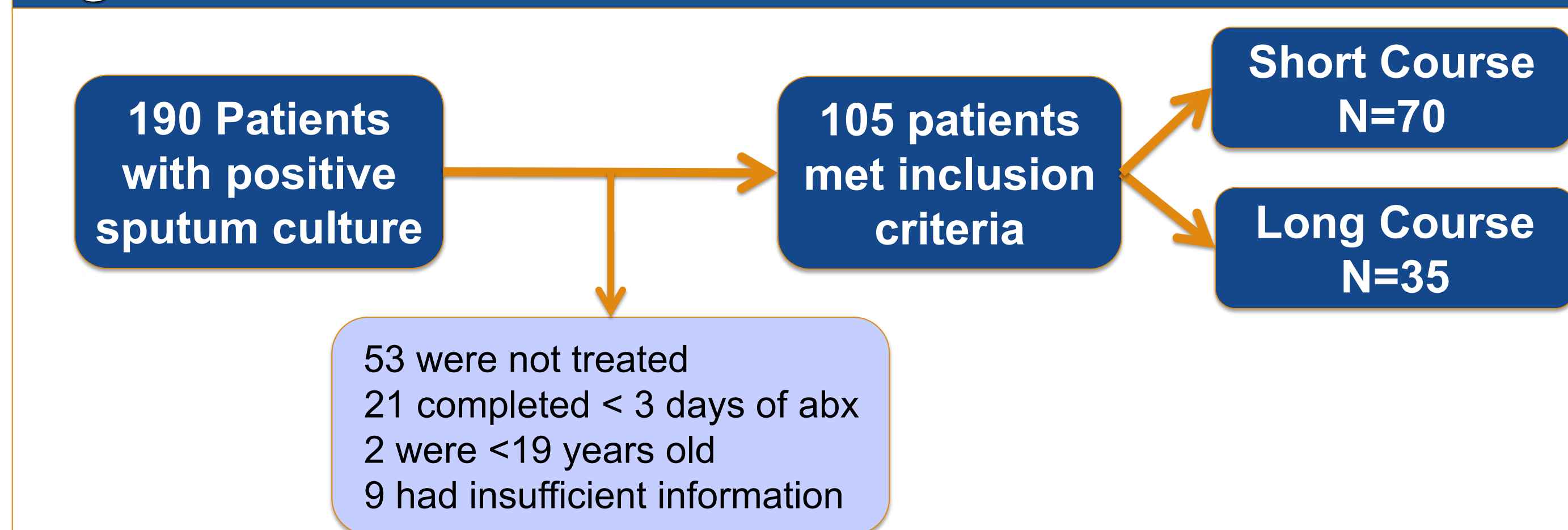


Table 1: Baseline Characteristics

Patient Characteristics (No. (%) or mean ± SD)	Short course N = 70	Long course N = 35
Age, years	71 ± 11.8	67 ± 14.7
Sex, male	46 (66)	20 (57)
<b>Pre-existing condition</b>		
Cardiac	46 (66)	20 (57)
Diabetes	16 (23)	14 (40)
Pulmonary	37 (53)	20 (57)
Cancer	6 (9)	4 (11)
Weight, kg	72 ± 20.9	67 ± 20.3
Mechanical ventilation	54 (77)	25 (71)
Location in hospital, ICU	49 (70)	25 (71)
Other organism in sputum	33 (47)	22 (63)
Concurrent infection	40 (57)	24 (69)
Concurrent antibiotic use	57 (81)	30 (86)
<b>Clinical criteria for PNA dx</b>		
Temperature °C	37.5 ± 0.8	37.4 ± 0.9
WBC count x 10 <sup>9</sup>	13.8 ± 6.5	16.8 ± 9.8
Infiltrates on CXR	62 (93)	34 (97)
Antibiotic use in last 15 days	66 (94)	34 (97)
Appropriate empiric dose	50 (71)	30 (86)
Length of stay*, days	85 ± 77	156 ± 193
Length of Ventilation*, days	52 ± 76	158 ± 209
Treatment Duration*, days	10 ± 2.6	20 ± 5.3

\*Statistically significant

Table 2: Outcomes

Event (No. (%) or mean±SD)	Short course	Long course	P-value
<b>Primary Outcome</b>			
Recurrence†	10 (14)	5 (14)	1.0
<b>Secondary Outcomes</b>			
Clinical cure‡	50 (71)	27 (77)	0.533
In-hospital mortality	31 (44)	11 (31)	0.205
Length of stay, days	51 ± 76	112 ± 176	0.055

## Definitions

† **Recurrence:** PNA caused by the same pathogen at least 72 hours (but no more than 30 days) after resolution of the original PNA

‡ **Clinical cure:** resolution of signs and symptoms of PNA compared with baseline, no requirement for additional antibiotic treatment

Figure 3. Susceptibilities and Antibiotic Prescribing Practices

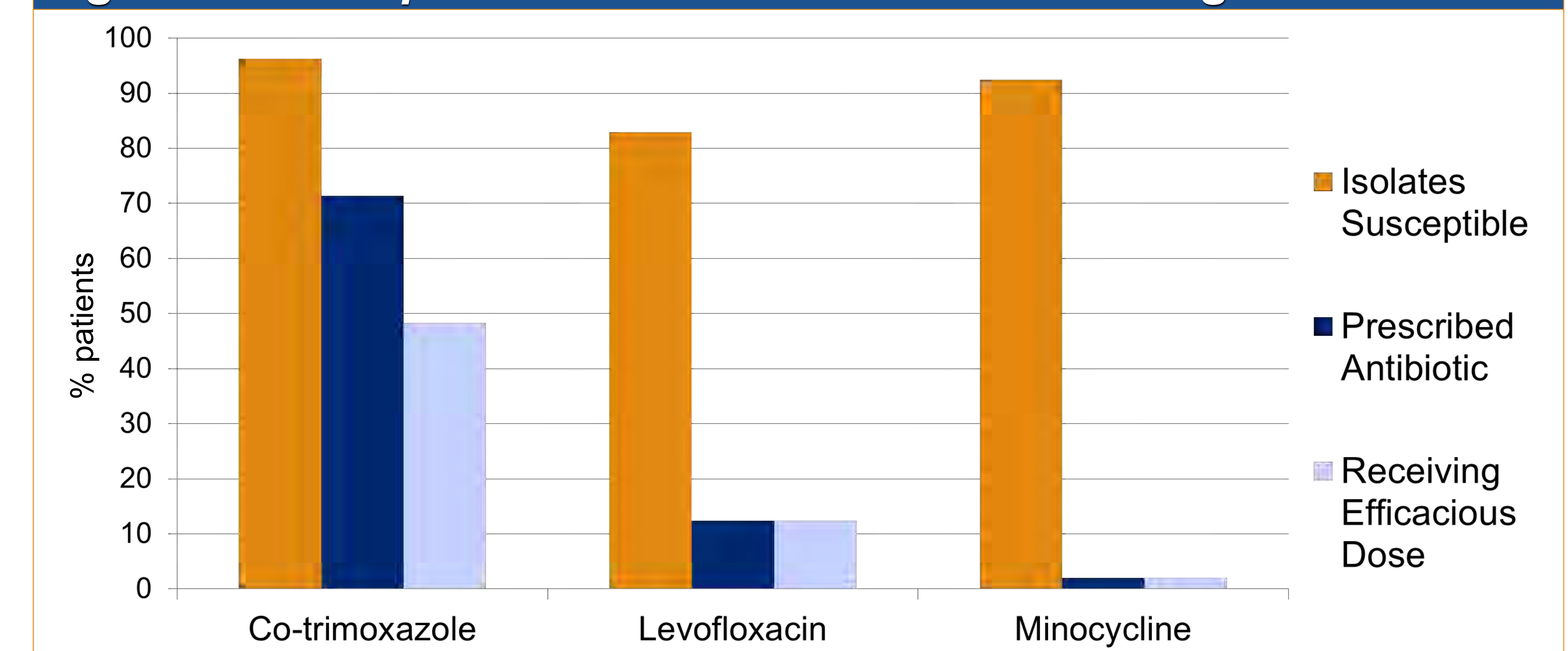


Table 3: Analysis Based on Recurrence

Patient Characteristic (No. (%) or mean ± SD)	Recurrence N = 15	No Recurrence N = 59	P-value
Age, years	74±11	67±14	0.083
Location in hospital – ICU*	13 (87)	33 (56)	0.028
Mechanical Ventilation	13 (87)	39 (66)	0.120
Length of Stay, days*	175 ± 113	97 ± 131	0.032

\*Statistically significant

## Limitations

- Retrospective study design
  - Evaluation of clinical outcomes based on documentation in chart
- Sample size of convenience
  - Increased risk of type II error
- Many patients had co-isolates in sputum
  - It is unknown if *S. maltophilia* was the pathogen or if it was a colonizer
- Patients who died between day 3 and 14 of the antibiotic course were included in the short course group

## Conclusion

- There is no difference in recurrence rate between short or long course treatment
- One third of patients treated with co-trimoxazole received sub-therapeutic doses
  - There is a need for increased education and awareness
- Patients with longer durations of stay and prolonged mechanical ventilation were treated with longer courses of antibiotics
  - The patient's clinical status influences the clinician's choice of therapy duration
- Larger, prospective studies specific to *S. maltophilia* are needed to determine optimal treatment duration

Acknowledgements: Elaine Tung BSc. & Jennifer Jun BSc. for their contribution to data collection