

# DCH Project

**ANTIBIOTIC USAGE ACCORDING TO  
STANDARD TREATMENT GUIDELINES IN  
THE PAEDIATRIC WARD – An audit**

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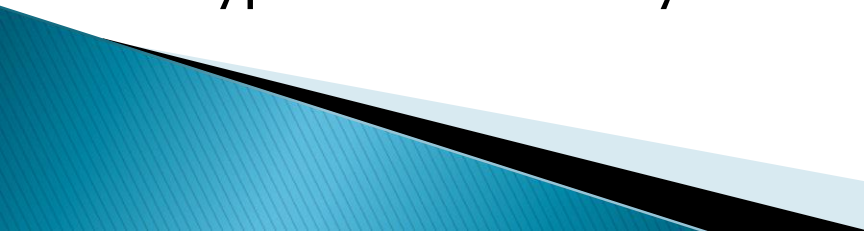
# Introduction

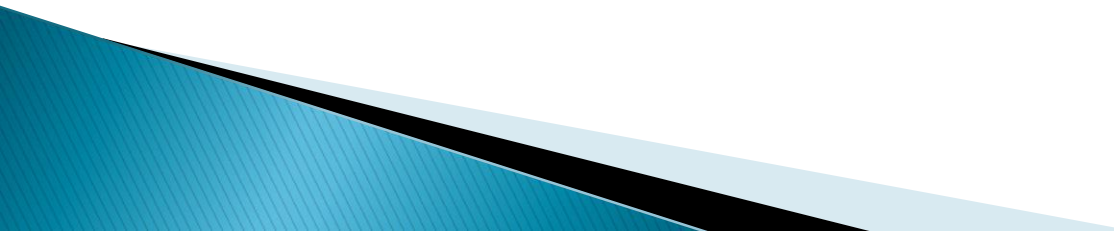
- ▶ Antibiotics are a group of drugs that is used widely to treat bacterial infections

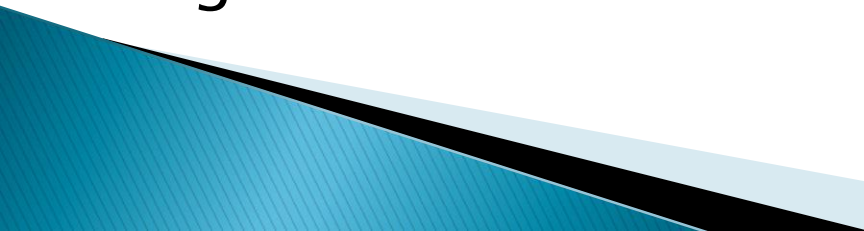
Inappropriate use of antibiotics has caused

1: drug resistance

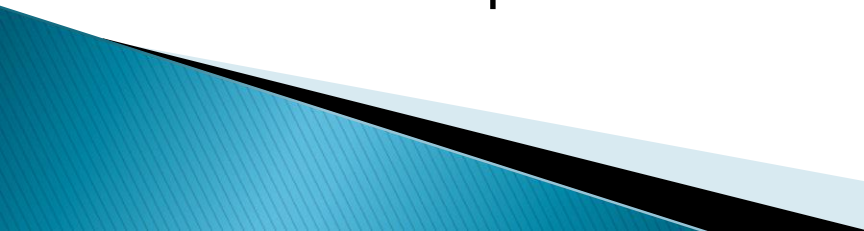
2: rapid emergence of resistant bacteria

- ▶ Drug resistance rising to a dangerously high level endangering the efficacy of antibiotics
  - ▶ New resistant mechanism are emerging and spreading globally, threatening our ability to treat common infectious diseases such as pneumonia, tuberculosis, typhoid and many other infections.
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- ▶ With the development of new antibiotics lagging significantly behind, common bugs are becoming resistant to cheap and easily available antibiotics.
  - ▶ **The implications include;**
    - 1: significant increases in morbidity and mortality
    - 2: significant rise in costs to health care
    - 3: prolonged hospital stays.
  - ▶ This is accelerated by the misuse and overuse of antibiotics, as well as poor infection control and prevention.
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- ▶ This study was designed to identify the use of antibiotics to treat most common infections admitted to Mt Hagen Paediatric ward
  - ▶ They include, Moderate Pneumonia, Severe Pneumonia, Typhoid, Dysentery and Acute gastroenteritis
  - ▶ The type and doses of antibiotics prescribed on admission were compared to standard treatment guide (PNG) 2016 and WHO standard treatment guide
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# Aims and Objectives

1. To document antibiotic usage rate of admitted patients within the Paediatric unit of WHPHA
  2. Identifying prescribed antibiotics follow current standard treatment protocols for a number of designated diagnoses
  3. Identify poor antibiotic prescription practices
  4. Aim to find ways to improve antibiotics prescription practices
  5. Identifying the most commonly used antibiotics across admitted patients
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# Methodology

- ▶ Sites:

Paediatric wards

- ▶ Duration:

April 2021 to July 2021

- ▶ Study Design:

a point prevalence study of antibiotic use in the Paediatric ward.

# Subjects

Admitted Paediatric patients with diagnosis of;

**1: Moderate Pneumonia**

**2: Severe Pneumonia**

**3: Dysentery**

**4: Typhoid**

**5: Acute gastroenteritis.**

▶ **Inclusion criteria**

- No underlying comorbidities
- No associated conditions
- Admitted to Paediatric ward
- On antibiotics

▶ **Exclusion Criteria**

- Those developed complication
- Misdiagnosed initially
- Underlying comorbidities

- ▶ **Sample Size**

A total of 100 patients were reviewed

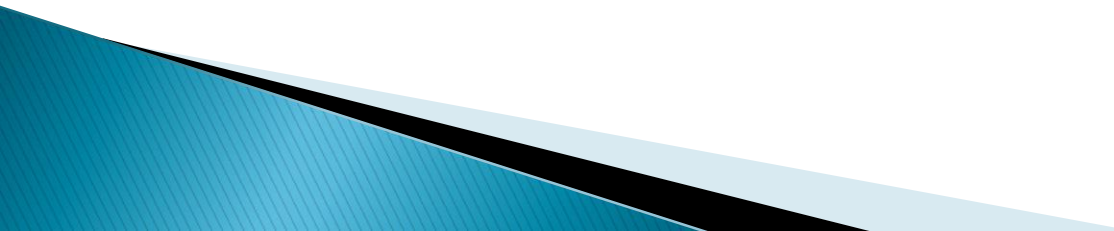
**Data collections:**

Data's collected from each patients chart upon the day of admission

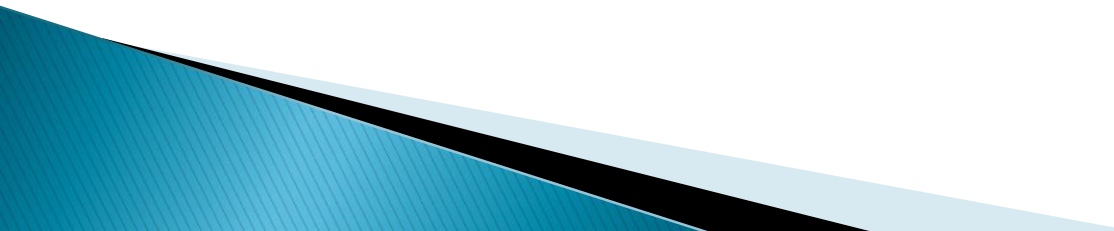


# Variables include

## 1. Ward data

- a. Total number of patients on bed
  - b. Ward bed capacity on that day
  - c. Total number of patients per day
  - d. Number of patients on antibiotics on that day
  - e. Admissions by diseases
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# Patient data

- b. Patient data (age, gender, weight)
  - c. Primary diagnosis (and other diagnoses)
  - d. Indication for antibiotics
  - e. Antibiotic data (Name, dose, rate, route of administration, duration, targeted or empirical, consistency with STB for primary diagnosis)
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# Data analysis:

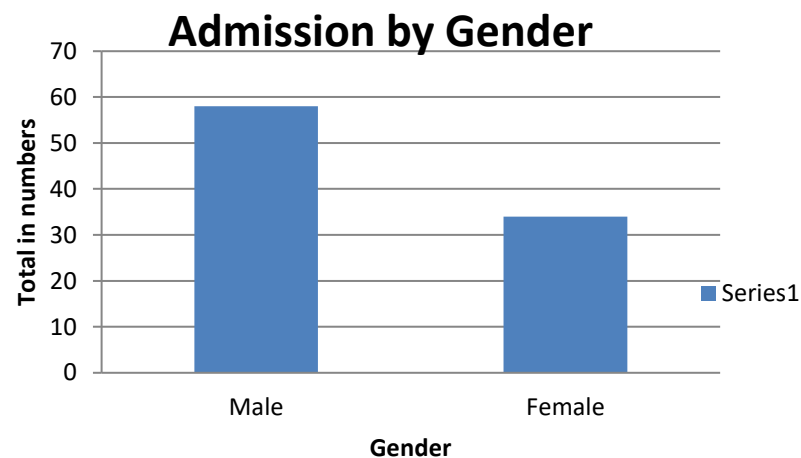
1. Data's entered into a SPSS spreadsheet
2. Frequencies of antibiotic use in the total number of patients computed
3. Assessment of compliance with standard treatment protocols for the primary diagnosis in terms of:
  - a. **Correct regimen for primary diagnosis**
  - b. **Correct dosage and frequency and route of administration**
  - c. **Reasonable duration of therapy**
- 4: Noting if addition of antibiotics prescribed without good reason
- 5: Any other issues with antibiotic use to be noted

# Results

- ▶ 92 patients included in the study: 63% male, 37% female.
- ▶ Most from within Hagen central (60%).
- ▶ Most less than 1 year of age
- ▶ 46% had immunizations up to date.
- ▶ 67% percent within Z score of  $>2$  to 3 SD, well nourished

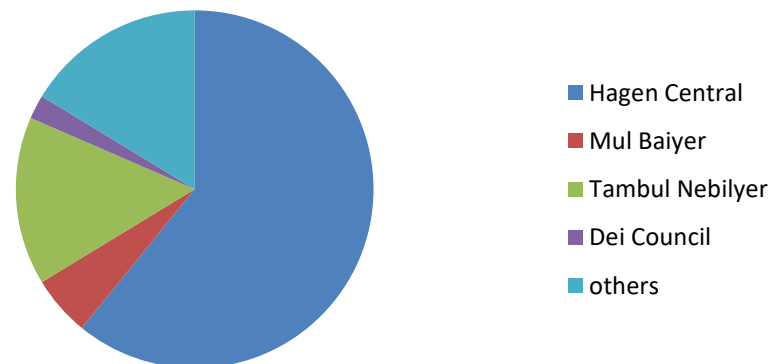
# Results

Admission by Gender		
	Frequency	Percent
Male	58	63
Female	34	37
Total	92	100



District of origin		
	Frequency	Percent
Hagen Central	56	60.9
Mul Baiyer	5	5.4
Tambul Nebilyer	14	15.2
Dei Council	2	2.2
others	15	16.3
Total	92	100

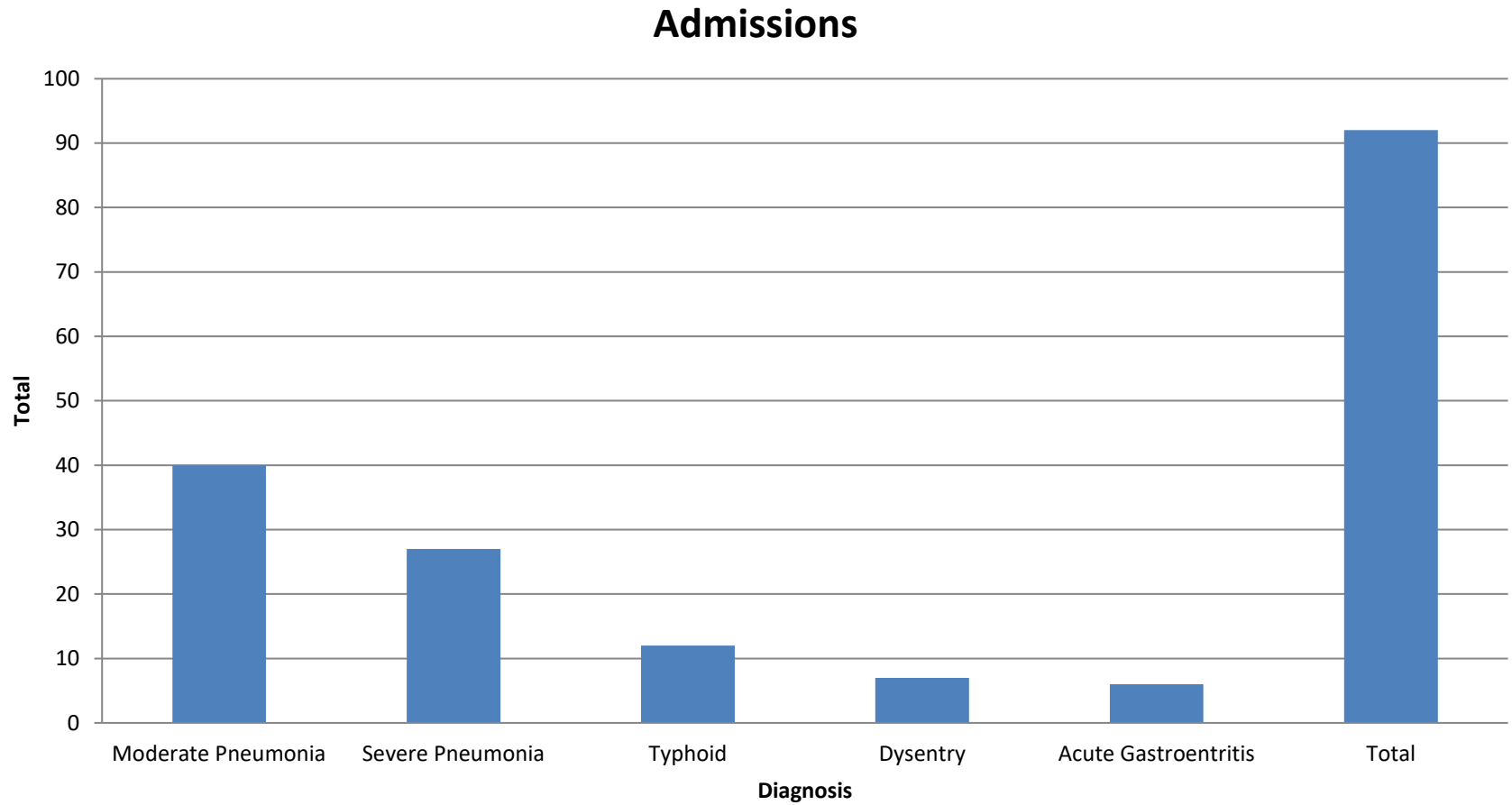
**District of origin Frequency**



# Admission By Diseases

Admission by diseases		
	Frequency	Percent
Moderate Pneumonia	40	43.5
Severe Pneumonia	27	29.3
Typhoid	12	13
Dysentry	7	7.6
Acute Gastroenteritis	6	6.5
Total	92	100

# Admission by diseases



Diagnosis	Antibiotic commenced		
	Standard Treatment	Non-Standard Treatment	Other Antibiotic included
<b>Moderate Pneumonia</b>	Crystalline Penicillin	Crystalline Penicillin/Gentamycin	
	8	32	5 – Erythromycin
			3– Ceftriaxone added
<b>Typhoid</b>	Ceftriaxone	Ceftriaxone/Gentamycin	
	6	6	
<b>Acute gastroenteritis</b>	No antibiotic	Chloramphenicol and Flagyl	
	0	6	
<b>Dysentry</b>	Ceftriaxone/Flagyl	Chloramphenicol or other treatment	
	7	0	
<b>Severe Pneumonia</b>	Crystalline Penicillin Gentamicin	Ceftriaxone or Erythromycin with X-Pen and Gent	
	19	8	



# Results

Immunization Status		
	Frequency	Percent
Up to date	46	50
Complete	13	14.1
Incomplete	17	18.5
Unimmunized	16	17.4
Total	92	100

Nutritional Status		
	Frequency	Percent
>3SD	21	22.8
> 2 to 3SD	67	72.8
> 0 to 2 SD	2	2.2
< 0 to -3SD	2	2.2
Total	92	100

# Treatment and Dosage

Treatment		
	Frequency	Percent
Standard Treatment from Blue Book/WHO	41	44.6
Non-standard	51	55.4
Total	92	100

Dosage according to Weight		
	Frequency	Percent
Appropriate dosage	67	72.8
Inappropriate dosage	25	27.2
Total	92	100


# Length of Stay and Outcome

Length of hospital stay		
	Frequency	Percent
Inappropriate longer stay	19	20.7
Appropriate stay	73	79.3
Total	92	100

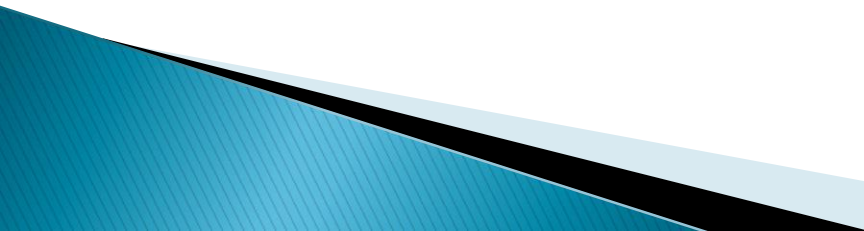
Outcome		
	Frequency	Percent
Discharge	91	98.9
Abscond	1	1.1
Total	92	100

# Discussions

- ▶ This study showed that Gentamycin was the most common prescribed antibiotic.
- ▶ A total of 80% of the admitted patient with moderate pneumonia received gentamycin which did not following the standard treatment protocol.
- ▶ 50% of cases admitted with typhoid received gentamycin
- ▶ Antibiotics were also prescribed for patients with acute gastroenteritis.
- ▶ Commonly used antibiotic combination was chloramphenicol and Flagyl, which is not in the standard treatment guide
- ▶ 100% of the admitted cases with AGE were prescribed antibiotics
- ▶ Other antibiotics misused in patients who were admitted with mod pneumonia
  - 12.5 % were given erythromycin with crystalline penicillin
  - 7.5 % were given ceftriaxone on the second days

- ▶ 43 % of patients were admitted with Moderate Pneumonia followed by 29 % with severe Pneumonia
  - ▶ Pneumonia is also the leading cause of admission to ward.
  - ▶ 51% of patients were prescribed antibiotics without following the standard treatment guide
  - ▶ 23% were given inappropriate dosages.
  - ▶ 19% of the patients stayed inappropriately longer than expected
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# Conclusion

- ▶ Antibiotics were often inappropriately prescribed for common paediatric conditions such as moderate Pneumonia, acute gastroenteritis and typhoid
  - ▶ Gentamycin was the most overused drug
  - ▶ Gentamycin was prescribed for moderate pneumonia which was not according to standard treatment guide. 40–45% Of PNA is caused by viral infections.
  - ▶ Antibiotics were prescribed for AGE which was not required. Most of AGE is also caused by viral infection.
  - ▶ These trend of practice will lead to emergence of new antibiotic resistance when we are now faced with multi-drug resistance
  - ▶ Therefore, antibiotics must always be prescribed with care and must not be abused and misused
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# Recommendation

- ▶ Always consult the standard treatment guide
  - ▶ Always have a reason to prescribe antibiotics
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# Acknowledgement

- ▶ Dr Ripa
  - ▶ Professor Duke
  - ▶ Dr Kurubu
  - ▶ Dr Kaupa
  - ▶ Dr Kintwa
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# References

- ▶ 1. WHO Methodology for Point Prevalence Survey on Antibiotic Use in Hospitals, 2018
- ▶ 2. (Arno Muller, Wenjing Tao, and Peter Jarb, 2018)
- ▶ 3. Point prevalence survey of healthcare – associated infections and antimicrobial use in European long – term care facilities (HALT – 2), April – May 2013 (Stockholm: ECDC; 2014).
- ▶ 4. European Centre for Disease Prevention and Control. Point prevalence survey of healthcare– associated infections and antimicrobial use in European acute care hospitals – ECDC PPS validation protocol version 3.1.2. Stockholm: ECDC; 2019.