

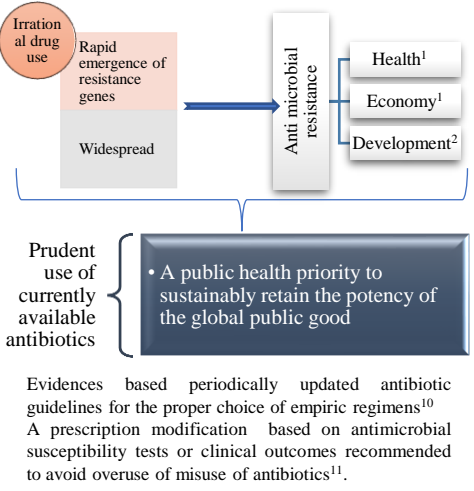
AN ASSESSMENT OF ANTIBIOTIC TREATMENT GUIDELINE ADHERENCE FOR COMMON INFECTIONS IN A TERTIARY CARE HOSPITAL WITH ESTABLISHED ANTIMICROBIAL STEWARDSHIP PROGRAM IN KATHMANDU, NEPAL

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Background



In context of Nepal

- High utilization of antibiotics in hospitals⁵⁻⁹
- High burden of resistant/multi drug resistant bacteria³⁻⁴
- Limited evidence on antimicrobial stewardship

Research Question

- The extent of adherence to antibiotic prescribing practice guidelines by physicians and the frequency of de-escalation for common infections in the inpatient settings of Grande International Hospital

Focus

- To assess inpatient antibiotic prescribing practices for common infections in a tertiary care hospital
- Compare it with the hospital guideline recommendations
- Evaluate prescription patterns related to non-adherent antibacterial therapy
- Assess the frequency of streamlining antibiotics deemed by microbiology reports

Data Analysis

- Descriptive analysis for qualitative data; frequency and percentage for nominal and dichotomous variables, and the mean and SD for continuous.
- Univariate and multivariate analysis for quantitative data

Inclusion

Inpatients aged 15 years and above for both genders were admitted as ICD-10 code cases with urinary tract infections, pneumonia, or skin and soft tissue infections.

Treated with empirical treatment in the respective inpatient departments during the study period.

Antibiotic therapies of those inpatients discharged on oral medications within 72 hours were evaluated in relation to those who received continued therapy in the hospital

Exclusion

- Patients who received antibiotics exclusively for a prophylactic indication
- Pregnant women and pediatric groups (<15 years of age)
- Prescribing physicians considered more than one specific site of infection
- Patient had concomitant antiviral, antifungal, anti-tubercular or anti-parasitic treatment
- Antibacterial therapy started prior to hospital admissions
- Had hospital stays < 3 days after the initiation of empiric therapy and did not receive antibiotics further
- Medical records with incomplete information to completely assess the course of the patient's illness.

- The clinical records of 354 inpatients were included in the analysis. Overall, 37.9% of antibiotic prescriptions were adherent to guideline recommendations. The frequency of concurrence with the guideline for prescribed empiric antibiotic therapy based on antibiotic selection, dosage, and duration were 69.8%, 68.9%, and 38.1% respectively. The most commonly prescribed antibiotics were Azithromycin (39%), Piperacillin/Tazobactam (34.2%), Amoxicillin/ Clavulanate acid (20.7%), Meropenem (10.5%), and Cefazolin (7.1%).

De-escalation

-Higher in medical wards(47%), followed by ICU(12.2%).	-No difference in terms of those patients with clinical specimens collected on the day of therapy/before therapy or after the start of antibiotics	-Patients with negative culture tests de-escalated compared to positive .
-Pneumonia(52%), UTI(32%)	-Antibiotic spectrum prescribed significantly broad(81%)	-Patients in general medica ward with most de-escalation events at 120 hours(30%, OR 0.28)
		-But, de-escalation in clinical specimens with culture test



- Conclusions**
- Revealed low guideline adherence despite the availability of the updated guideline.
 - Suggested significant differences in guideline concordance between age groups and the antibiotics administered.
 - Excess duration of the treatment: a major concern for guideline non-adherence in the study, compounding the risk of adverse drug events and drug resistance
 - Poor streamlining of the empiric regimens.

Objectives

- To assess the physician's adherence to hospital antibiotic treatment guidelines recommendations for Urinary Tract Infections (UTI), Pneumonia, and Skin and Soft Tissue Infections (SSTI) in adult inpatients based on drug selection, dosage, and duration.
- To determine the prescription pattern relating to non-adherent antibacterial therapy.
- To determine the frequency of de-escalation of empiric treatment regimens deemed by microbiology reports.

Results

Factors	Adherent, No. (%)	Non-adherent, No. (%)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	p-value
Patient age group (n=354)					
Below 45 years	35(31.8)	75(68.2)	Ref	Ref	
45-65 years	42(34.4)	80(65.6)	1.87 (1.09-3.21)	1.09 (0.58-2.06)	0.78
>65 years	57(46.7)	65(53.3)	1.67 (0.99-2.78)	0.87 (0.45-1.68)	0.69
Presence of comorbidities (n=354)					
No	23(24.7)	70(75.3)	Ref	Ref	
Yes	108(42.5)	146(57.5)	0.44 (0.26-0.75)	0.49 (0.25-0.99)	0.11
Unknown	3(42.9)	4(57.1)	0.43 (0.09-2.1)	0.39 (0.07-2.21)	0.29
Antibiotic (drug) allergy (n=354)					
Yes	2(25)	6(75)	Ref		
No	98(40)	147(60)	0.5 (0.09-2.52)		
Not registered	34(33.7)	67(66.3)	0.65 (0.12-3.42)		
Empiric antibiotics					
Levofloxacin (n=354)					
No	131(39.6)	200(40.4)	Ref	Ref	
Yes	3(13)	20(87)	4.36 (1.27-14.98)	4.68 (1.27-17.20)	0.00*
Azithromycin (n=354)					
No	67(31)	149(69)	Ref	Ref	
Yes	67(48.6)	71(51.4)	0.47 (0.30-0.74)	0.571 (0.27-1.19)	0.13
Ceftriaxone (n=354)					
No	111(42)	153(58)	Ref	Ref	
Yes	23(25.6)	67(74.4)	2.11 (1.24-3.60)	2.22 (1.22-4.06)	0.00*

Table : Factors relating to physicians' adherence to antibiotic prescribing practice guidelines

Limitation and strength

- Limitation**
- A single-center retrospective observational study. Thus, findings may have limited generalizability
- Strength**
- The first of its kind in the context of Nepal in assessing the extent of guidelines adherence of professionals to antibiotic treatment, prescription patterns, and de-escalation practices in adult inpatients.
 - This study described the entire process of antibiotic stewardship implemented in the inpatient department of the hospital.

Methods

- Study design**
- A retrospective, Cross-sectional study
- Data collection materials**
- A review of medical records between 1 Jan 2018 and 31st Dec, 2019
 - Included admission notes, medical and nursing charts, medication charts and discharge summaries.
 - Detailed information on microbiology culture results and imaging studies extracted from the hospital laboratory and imaging information system.
- Onsite data collection**
- Performed manually from the paper-based medical records using a validated Clinical Record Form
 - The analysis of the documented prescriptions: established treatment guideline of the hospital
 - The selection of the antibiotic(s) matching the guideline recommendation for infection was considered correct and then the dose and duration were evaluated separately.
 - Ethical Approval from regulatory authorities received.

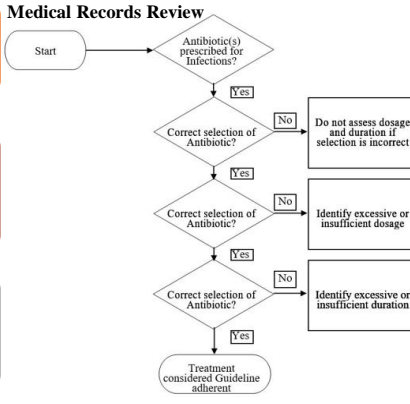


Figure : depicting medical records review

Recommendation

- Confront the antibiotic prescription pattern in the tertiary care centers for tailored interventions
- Reduce the broad-spectrum antibiotic exposure to patients
- Need appropriate, contextual, and time-being revisions.

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