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**Research Article** 

# RATIONAL USAGE OF ANTIBIOTICS IN ACUTE RESPIRATORY TRACT INFECTIONS

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Abstract:		
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**Background:** Increasing trend of developing resistant strains and patterns among general population. **Objective:** Usage of clinical approach among underdeveloped medical healthcare systems where blood cultures are not test of ease so targeted approach of antibiotics with their usage in bacterial suspected cases only should be

**Duration of study:** September 2018 to January 2019.

**Method:** OPD cases of ARI's were categorized into bacterial and viral. Viral suspected cases were given symptomatic treatment and bacterial suspected cases were given empirical regime of antibiotics. Non-resolved among viral suspected cases were given empirical regime of antibiotics and results were noted.

**Results:** Total 1100 cases were categorized as ARI, 826 were labeled as viral while 274 as bacterial. The viral suspected cases were only given symptomatic treatment. 714 were resolved while 112 were not. They were then given antibiotics. 82 got resolved while 30 were not resolved. The bacterial suspected cases were given antibiotics. 243 got resolved while 31 did not.

Key Words: Acute Respiratory Tract Infections (ARI).

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#### **INTRODUCTION:**

ARI comprises of a wide range of diseases including Acute Rhinitis, Sinusitis, Pharyngitis, Bronchitis, Pneumonia, Otitis Media etc. [1]. Organisms predominantly responsible for ARIs are mainly either bacterial or viral [2]. Blood cultures are diagnostic tool to start definite treatment [3]. In settings of underdeveloped medical system, Blood culture are not the test of ease, so irrational usage of antibiotics is practiced [4]. Resistant strains and patterns are emerging, leading to complication of simple cases [5]. In such settings, diagnosis based on clinical basis rather than diagnostic test would definitely show better results [6]. The practice to start antibiotics in every case of ARI due to unavailability of blood cultures is not merely a justification [7].

#### **METHOD AND MATERIAL:**

We devised a criteria based on clinical experience and observational analysis. The criterion is mainly based on clinical judgment by observing signs and symptoms of patients rather than diagnostic labs.

	VIRAL	BACTERIAL	
Fever	Usually Low grade fever	High grade fever	
Symptoms	Sneezing, Coughing, Headache,	Predominantly Fever with Sore throat	
	Rhinorrhea, Sore throat		
Pharyngeal Wall	Redness	Redness with exudates and whitish spot	
	(no exudates)		
Resolution	<7 days	>7 day	
Sputum	Non-purulent	Purulent	

The survey among patients coming through routine OPD is applied following mentioned criteria. Cases of ARI were categorized into bacterial or viral as per defined criteria. They were sorted and then followed on after 02 weeks. Viral suspected cases were given symptomatic treatment comprising of anti-histamine and NSAIDs with general measures. Bacterial suspected cases were given antibiotics as per empirical regime. After 02 weeks, cases were sorted out as resolved and non-resolved. Viral suspected non-resolved cases were again given antibiotics as suspicion for bacterial infections misdiagnosed clinically as viral infections and followed up after 02 weeks.

#### **RESULTS:**

Total 1100 cases were categorized as ARI, 826 were labeled as viral while 274 as bacterial. The viral suspected cases were given symptomatic treatment including Anti-Histamines, NSAIDs and General medical measures. Patients were followed up after 02 weeks and restudied for their symptoms. Out of 826 suspected cases, 714 were resolved for their symptoms. 112 cases were not resolved. They were given antibiotics as a suspicion for either bacterial infection or superimposed bacterial infection and were followed up for 02 weeks after giving antibiotics. 82 out of 112 cases were resolved and 30 were not resolved. They were considered as resistant strains and were referred to specialized infectious control health care systems for targeted approach treatment.

Bacterial suspected cases were given antibiotics as per empirical regime and were followed up after 02 weeks. Out of 274 cases, 243 were resolved while 31 cases were not resolved so they were considered as resistant strains and were referred to specialized infectious control health care systems for targeted approach treatment.

TOTAL CASES						
1100						
SUSPECTED VIRAL CASES		SUSPECTED BACTERIAL CASES				
(Symptomatic Treatment)		(Antibiotics Given)				
826		274				
Resolved	Not Resolved		Resolved	Not Resolved		
714	112		243	21		
	Given Antibiotics					
	Resolved	Not Resolved	243	51		
	82	30				

#### **DISCUSSION:**

Analytical study conducted to check the patency of clinical criteria for underdeveloped medical care system and for the benefits of patients. 75.09% cases were suspected as viral and 24.9% as bacterial. For viral suspected cases, validity of clinical criteria is 86.44% (714/826). 9.5% cases which are not recovered are those which would probably be bacterial and not judged by clinical criteria. In bacterial suspected cases, validity of clinical criteria is 88.68% (243/274). Total 957 out of 1100 cases were judged correctly and resolved, deducing overall validity rate of the mentioned clinical criteria as 87%. Among viral suspected group, 13.66% cases were not clinically judged. One of the possibilities for failure is obvious that they were actually bacterial infections, but it might be a possibility that initial viral infection was superimposed by bacterial organisms in later course of disease [8]. In such scenario, initial blood cultures will also not be predictive [9]. Sensitivity of the clinical criteria is actually greater than 87% and the additional benefit is economic control on expenditures due to irrational usage of antibiotics. Secondly the leading resistant strains due to excessive usage of antibiotics will be effectively reduced. As data of international researches show that the sensitivity of empirical regimen antibiotic therapy is almost 56% [10] and culture targeted treatment is 80%-96% for 02-03 sets of cultures respectively [11], so efficacy of above mentioned clinical criteria is justifiable.

30 cases among viral suspected group which are 2.72% (30/1100) and 31 cases among bacterial suspected cases which are 2.81% (31/1100), were not resolved so the overall resistant cases are almost same i.e. 2.72% and 2.81%. These numbers of cases are actually resistant strains in which blood culture

guided therapy is actually needed rather than irrational usage of empirical regime of antibiotics. Conclusively, total 5.54% (61/1100) were not resolved, therefore referred to specialized infectious control health care systems for targeted approach treatment.

#### **CONCLUSION:**

Following the clinical criteria, it is deducted that majority of the cases are viral so habit to use antibiotics irrationally in every case of ARI due to unavailability of blood cultures is merely not a justification.

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