

# A Longitudinal Study of Point Prevalence Surveys of Antibiotic Prescriptions and Infection in Sanandaj Hospitals 2015-2017, Prospects for Quality Improvement

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## Introduction:

Point Prevalence Surveys (PPS) is a useful tool for assessment of in-hospital antimicrobial prescribing and changing prescribing practices for antibiotic stewardship programs. Herein, we compared antibiotic prescribing indicators of 3 hospitals in Sanandaj, west Iran from 2 consecutive studies to find targets for quality improvement.

## Methods:

The quality indicators from 2 consecutive Global-PPS studies on antimicrobial use in hospitalized patients, performed in the October and December 2015 and 2017 were compared. To qualify indicators, we used a previously validated and standardized method based on the "Global Point Prevalence study project" (Global PPS) designed by Antwerp University, Belgium. The indicators were compared in terms of prevalence of antibiotic usages by hospital name and ward types, proportional usage of antibiotics, indication for usage, most common diagnosis, reason in notes, compliances to guidelines, and stop/review date documentations.

## Results

Overall antimicrobial prevalence's prescriptions in adult wards were increased slightly in Besat Hospital (63.8 to 69%). Similar Numbers for Tohid and social security hospitals were 42.6 vs 35.4% & 57.4 vs 42.9% respectively.

### Overall antimicrobial prevalence by region and type of adult ward (2017)

	Total	AMW	HO-AMW	T-AMW	P-AMW	ASW	AICU
North America	33.2	28.3	32.9	45.3	0.0	37.3	47.5
South America	47.2	43.9	58.7	0.0	51.9	41.1	59.6
Africa	44.5	37.2	0.0	0.0	0.0	48.1	70.0
North Europe	32.3	21.2	25.0	0.0	0.0	50.9	43.8
West Europe	22.9	18.9	33.3	0.0	32.8	25.8	44.3
South Europe	42.1	35.0	15.4	0.0	20.0	43.5	72.5
East Europe	21.2	9.4	16.7	0.0	29.8	26.8	56.2
West & Central Asia	44.6	40.1	50.0	0.0	0.0	39.8	66.5
East & South Asia	42.0	41.9	34.8	87.5	48.1	38.4	65.8
Australia & New Zealand	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Besat hospital 2015	63.8	69.0	0.0	0.0	0.0	58.6	100.0
Besat hospital 2017	69.0	54.5	0.0	0.0	0.0	71.3	100.0
Tohid hospital 2015	42.6	42.3	22.7	0.0	0.0	44.0	56.7
Tohid hospital 2017	35.4	33.1	26.3	0.0	0.0	55.6	36.1
Social Security hospital 2015	57.4	56.0	0.0	0.0	0.0	75.0	33.3
Social Security hospital 2017	42.9	38.1	0.0	0.0	0.0	52.0	33.3

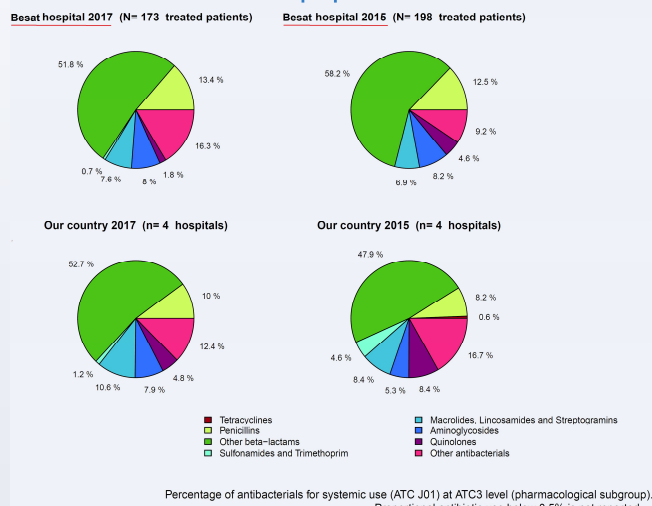
Antimicrobial prevalence (%): 100\*(number of treated patients/number of registered patients according to UN macro-geographical subregions).  
Total = Overall antimicrobial prevalence in adult wards; AMW = Adult Medical Ward; HO-AMW = Haematology-Oncology AMW;  
T-AMW = Transplant (BMT/solid) AMW; P-AMW = Pneumology AMW; ASW = Adult Surgical Ward; AICU = Adult Intensive Care Unit.

If there are less than three participating hospitals, results are not reported.

Table 1: Overall antimicrobial prevalence by region and type of child or neonatal ward (2017)

	Total	PMW	HO-PMW	T-PMW	PSW	PICU	NMW	NICU
North America	22.4	35.0	50.0	0.0	37.8	30.2	1.0	20.8
South America	32.7	35.3	5.9	0.0	42.1	54.2	11.5	28.0
Africa	45.3	46.7	0.0	0.0	73.7	0.0	29.6	38.2
North Europe	8.3	9.1	0.0	0.0	0.0	0.0	0.0	0.0
West Europe	20.6	20.5	80.0	0.0	0.0	0.0	2.1	0.0
South Europe	51.3	55.6	61.3	88.9	48.8	71.4	33.3	40.8
East Europe	25.5	0.0	0.0	0.0	23.9	40.0	0.0	100.0
West & Central Asia	52.4	45.8	0.0	0.0	75.0	66.7	50.0	53.5
East & South Asia	49.8	51.1	41.2	100.0	70.0	68.6	28.1	57.6
Australia & New Zealand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

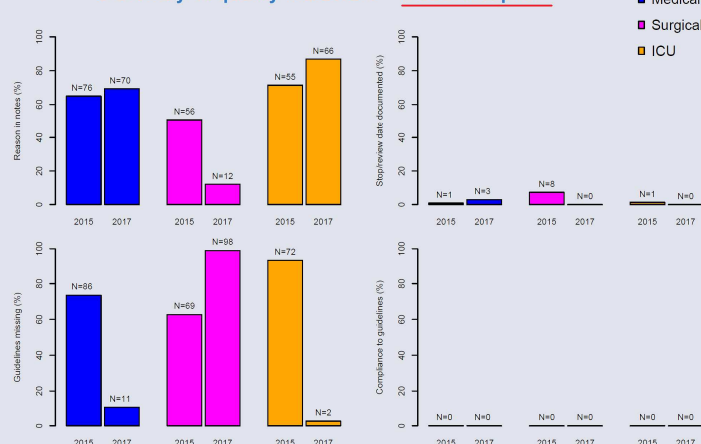
## Overall proportional antimicrobial use



Country: IRAN, ISLAMIC REPUBLIC OF. If there are less than three participating hospitals, results are not reported.

The most commonly prescribed antibiotics were Penicillins and other beta lactam including ceftriaxone in two consecutive studies and these figures was not changed significantly.

## Summary of quality indicators – Besat Hospital



Antibiotic quality indicators by activity (medical, surgical, ICU) for patients admitted on adult wards receiving antibacterials for systemic use (ATC J01).  
- For reason in notes and stop/review date documented: Count at antibacterial level.  
- For guidelines missing: Count on NA (= no local guidelines for the specific indication) at patient level and diagnosis over total scores for this indicator.  
- For guideline compliance: Count at patient level and diagnosis for compliance = yes or no only. For combination therapy with >1 antibiotic: If 1 antibiotic by diagnosis is not compliant, this combination therapy as a whole for this diagnosis will be counted as non-compliant.

Reason in notes was the indicator that improved significantly from 2015 to 2017. Other indicators including most common diagnosis, reason in notes, compliances to guidelines, and stop/review date documentations were not changed between two studies.

## Conclusions

The quality indicators of hospital performances for antibiotic usage were not changed during two consecutive studies. More interventions with targeted action for quality improvements in hospital antibiotic prescriptions is strongly needed. The high percentage of antimicrobials use, prolonged surgical prophylaxis and lack of antibiotic prescription guideline could be targets for quality improvement in our health centers.