Antibiotic consumption in hospitals in humanitarian settings in Afghanistan, Bangladesh, Democratic Republic of Congo, Ethiopia, and South Sudan

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Introduction

Antimicrobial resistance is of great global public health concern. There is paucity of antibiotic consumption data and antimicrobial resistance surveillance systems in hospitals in humanitarian settings.

Aim

To estimate antibiotic consumption in six hospitals in order to develop recommendations for improvements in antimicrobial stewardship programmes.

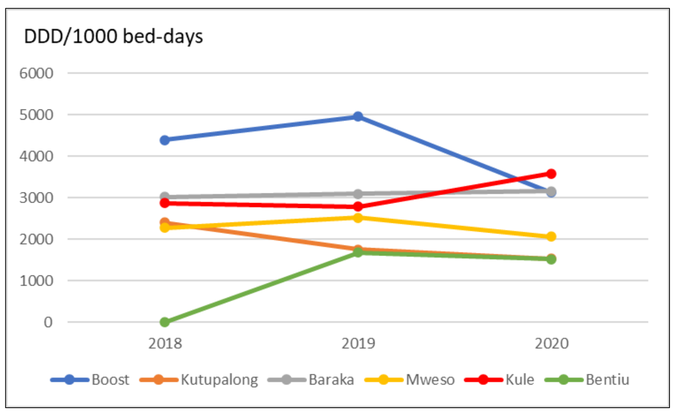
Methods

Six hospitals MSF-supported hospitals were included in the study: Boost-Afghanistan, Kutupalong-Bangladesh, Baraka and Mweso-Democratic Republic of Congo, Kule-Ethiopia, and Bentiu-South Sudan. Inpatient (n=36,984) and antibiotic consumption data were collected from 2018-2020. Antibiotics were categorised per WHO AWaRe classification. Total antibiotic consumption was measured by Defined Daily Doses (DDDs)/1000 bed-days.

Country	Hospital	Humanitarian context	Number of beds	Wards
Afghanistan	Boost	Chronic conflict	109	Maternity Internal medicine ICU Isolation Surgery
Bangladesh	Kutupalong	Refugee camp	36	Internal medicine Isolation
DRC	Baraka	Chronic conflict	108	Internal medicine ICU Maternity Surgery
	Mweso	Chronic conflict	147	Internal medicine ICU Maternity Surgery
Ethiopia	Kule	Refugee camp	62	Internal medicine High dependency unit Maternity
South Sudan	Bentiu	IDP camp	60	Internal medicine Maternity Surgery

MSF- supported study hospitals and their set up.

Consumption of AWaRE antibiotics by DDDs/1000 bed-days in six MSF-supported hospitals 2018-2020.



Total antibiotic consumption by DDDs/1000 bed-days in six MSF-supported hospitals 2018-2020.

Results

Average antibiotic consumption in all hospitals was 2745 DDDs/1000 bed-days. Boost hospital had the highest antibiotic consumption (4157 DDDs/1000 bed-days) and Bentiu the lowest (1598 DDDs/1000 bed-days). In all hospitals, Access antibiotics were mostly used (69.7%), followed by Watch antibiotics (30.1%). The most consumed antibiotics were amoxicillin (23.5%), amoxicillin and clavulanic acid (14%), and metronidazole (13.2%). Across all projects, mean annual antibiotic consumption reduced by 22.3% during the study period.

	MSF-supported hospital						
Category	Boost	Kutupalong	Baraka	Mweso	Kule	Bentiu	Total
Access	73.90%	60.40%	64.80%	73.75%	64.40%	58.80%	69.70%
Watch	26.10%	38.50%	34.80%	26.25%	35.60%	41.20%	30.20%
Reserve	0%	1.10%	0.40%	0%	0%	0%	0.10%

Average consumption of antibiotics per AWaRe classification in six MSF- supported hospitals 2018-2020.

Conclusions

Antibiotic consumption in project hospitals was higher than those reported in other settings. However, in the absence of comparative studies and case-mix information, it is uncertain if the high antibiotic consumption was inappropriate.

Variations in antibiotic consumption between hospital settings can be partially explained by variations in the case-mix and in seasonality of infectious diseases.

DDD metric is a robust and reproducible method for routine antibiotic consumption monitoring. If combined with methods for assessment of the appropriateness of antibiotic use it becomes a useful tool.

Total antibiotic use in all hospitals reduced between 2018-2020, primarily in Boost hospital in 2020, which might be explained by opening a separate COVID-19 facility for management of all suspected COVID-19 cases.

Routine antibiotic consumption monitoring systems accompanied by prescribing audits and point prevalence surveys should be implemented in hospitals in humanitarian settings to support antimicrobial stewardship efforts.

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