

# Rate calculations for topical antimicrobials

## NAUSP rate calculations

Participation in the National Antimicrobial Utilisation Surveillance Program (NAUSP) allows users to track antimicrobial usage at their facility via both reports and rate calculations. Rate calculations allow users to track usage of an antimicrobial formulation, agent or class via the following:

- > The **quantity** of product dispensed
- > The number of Defined Daily Doses (**DDD**s) dispensed
- > The number of **grams** dispensed
- > The usage **rate** (the number of DDDs per 1000 occupied bed days)
- > The moving average of the usage rate over time – expressed as 'RateMA' – see Section 6.1 of the [NAUSP Portal User Guide](#) for further information

## Defined Daily Doses for topical agents

NAUSP has collected usage of topical antimicrobial agents since 2019. Due to wide person-to-person variation in the daily usage of some topical agents (e.g. creams, eyedrops), the World Health Organization (WHO) does not assign DDDs to many topical formulations. Table 1 outlines the topical formulation categories added to the NAUSP Portal in January 2019 and whether the WHO has assigned DDDs.

**Table 1: Topical formulation categories added to the NAUSP**

Formulation type	WHO assigned DDD?
Cream, ointment, gel, lotion	No
Eye drop, ear drop	No
Shampoo	No
Pessary, vaginal cream and gel	Yes
Oral gel, lozenge	Yes

For topical agents where WHO have not assigned a DDD, NAUSP has arbitrarily assigned a DDD of 1. The assignment of a DDD was required to enable rate calculations from the NAUSP Portal. Nystatin liquid, capsules and tablets have been assigned a DDD in units by the WHO and have also been assigned a DDD of 1, because rate calculations in units are not possible through the NAUSP Portal with current methodology.

## How to interpret topical rate calculations

Topical rate calculations will appear the same as other NAUSP rate calculations and will allow portal users to track the quantity of topical antimicrobials used in both **quantity dispensed** and **grams dispensed** (see figure 1 below). Although the 'DDD', 'Rate' and 'Rate MA' columns will appear in these rate calculations, these will not be as useful for many topical agents, due to the arbitrary assignment of a DDD of 1 by the NAUSP team.

**Figure 1: Example of output from a topical rate calculation**

Date	Antibiotic	Contributor Name	Code	Quantity	Denom	DDD	Grams	Rate	Rate MA
01/12/2018	CLOTRIMAZOLE CREAM 1%, 50 grams, 500mg, TOPICAL	Test	Test	90	7256	45.000	45.000	6.201764	0.153
01/01/2019	CLOTRIMAZOLE CREAM 1%, 50 grams, 500mg, TOPICAL	Test	Test	48	8888	24.000	24.000	2.70027	0.153
01/12/2018	CIPROFLOXACIN EYE DROPS 0.3%, 5ml, 15mg, TOPICAL	Test	Test	33	4333	0.495	0.495	0.11424	0.001
01/01/2019	CIPROFLOXACIN EYE DROPS 0.3%, 5ml, 15mg, TOPICAL	Test	Test	40	6505	0.600	0.600	0.092237	0.001

The NAUSP team report topical usage as grams per 1,000 OBDs in Annual Reports. To manually calculate topical usage in this manner, simply utilise the 'Grams' and 'Denom' columns in the following formula:

<b>Topical Usage Rate</b>	Monthly usage rate (grams per 1,000 OBDs) = $\frac{\text{grams per month}}{\text{OBD per month}} \times 1,000$
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## For more information

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