Breakpoints for topical use of antimicrobial agents (v 3.0)

EUCAST has provided “breakpoints” for topical agents since 2014 (revised 2016) as a mixture of ECOFFs and breakpoints determined for use in systemic infections. It is frequently assumed that concentrations of free agent are high at the infection site, but for most topical agents it is not known what the concentrations are, how long they are maintained or what variation there is in practice. In addition, there are multiple formulations, including mixtures of agents and various administration schedules. For most agents there are no sound pharmacokinetic data and no data relating treatment to outcome other than anecdotal comment.

For the above reasons, in 2012 EUCAST proposed that epidemiological cut-off values (ECOFFs) are used to indicate susceptibility to topical agents (with the exception of mupirocin, see below). While this might underestimate the activity of some agents in topical preparations it would at least categorise isolates as wild type or non-wild type and would demonstrate the presence of phenotypically detectable resistance mechanisms, which may result in a higher probability of clinical failure. It was noted that:

1. The guidelines relate to topical use of agents to treat superficial skin infections, external eye infections and external ear infections only. The guidelines do not include agents with activity in the gastro-intestinal tract (e.g. bowel decontamination) or inhaled respiratory agents.

2. When there may be tissue involvement the use of systemic treatment and systemic breakpoints should be considered.

3. Acceptable MIC distributions are not available for neomycin and bacitracin with several organisms so ECOFFs are yet to be defined.

4. There are specific breakpoints for nasal decontamination of *S. aureus* with mupirocin as clinical data supporting these are available.
In the absence of clinical data on outcome related to MIC of infecting organisms EUCAST has not been able to determine relevant clinical breakpoints specifically valid for topical use of antimicrobial agents. Laboratories are advised to either use the regular breakpoints (as listed in the regular breakpoint tables) or the cut-off values listed in the “Topical agents” section of the breakpoint tables to distinguish between organisms without and with resistance mechanisms. Note that the mupirocin breakpoints are exceptional in that breakpoints for nasal decontamination have been set.

Version 1: 29 March 2014
Version 2: 19 December 2016
Version 3: 21 November 2019