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<th>Comment from (name, contact details)</th>
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<td>If an isolate is categorized as “I”, and the likelihood of therapeutic success would be newly defined as “increased by adjusting the dosing regimen or by its concentration at the site of infection” This implies that the adjusted dosing regimen will lead to a generally increased likelihood of therapeutic success. In the “standard patient” this is most likely true, but can we really assume and/or imply for critical cases that an increased dose will lead to expected PK/PD characteristics in critical patients with various influencing factors? For critical cases the likelihood for administration of intermediate drugs will increased as more factors will influence decision making than in uncomplicated cases, and restricted options in drug selection are more likely. Assuming that there is a higher likelihood of comorbidities in critical patients, e.g. on ICU or after surgery a drug’s PK/PD may be altered. If we assume further that there will be a tendency that intermediate drugs may be more likely selected, if alternatives are lacking, and if we assume that alternatives are more likely lacking in complicated patients: How does this consequently affect the reliability of the definition as “increased by adjusting the dosing regimen or by its concentration at the site of infection”? Wouldn’t this be challenged?</td>
<td>It is not possible to cover all therapeutic scenarios with altered pharmacokinetics within clinical breakpoints, even when applying the ‘Intermediate’ definition. Clinical situations such as paediatrics, renal impairment or augmented clearance, or critical care (including e.g. increased volume of distribution) should be dealt with by specialists in those fields developing appropriate dosing regimens that produce that same degree of antimicrobial exposure as the standard or high exposure dosing regimen as adults with a bacterial infection. Guidance by therapeutic drug monitoring may be needed in these situations. In critical cases, the situation can be even more complex because there could be temporary significant renal impairment or, at the other extreme, augmented renal clearance. The renal function can also fluctuate from day to day. Again, it is expected that the treating clinician will make the appropriate dosing regimen adjustments, or better still, undertake therapeutic drug monitoring.</td>
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Or should the definition ask for/recommend/mention therapeutic drug monitoring (TDM) in such cases? At least in severely ill patients? This may lead to a higher level of confidence and will reflect the more complex situation in the “intermediate area” better. Of course similar considerations would apply to the “S” category in principle, but criticality seems higher in the “borderline” area.

Sören Gatermann on behalf of the German NAC
soeren.gatermann@rub.de

The German NAC fully agrees with the need for revising the current definition of intermediate. However, we believe that there are major disadvantages when the current S/I/R categorization is maintained but used with a new meaning. As pointed out in many instances there are different interpretations of “I” which are all used by clinicians. Often the consequence is that an antimicrobial agent marked as “I” is avoided and a drug reported as “S” is used instead. These attitudes are strongly coupled to seeing the letter “I”. Many will not bother learning the new definitions because they think they already know them.

The German NAC instead proposes to abandon the classification as "S" and “I", since changing only the “I” would mean that the clinician will resort to the letter “S”, of which he thinks he knows the meaning. If, however, both the “S” and the “I” are changed, everybody will need to learn these two definitions before initiating therapy.

A possible new classification could be

| S  |   N or SN or S\text{\textsuperscript{H}} (susceptible at normal dose) |
| I  |   H or SH or S\text{\textsuperscript{H}} (susceptible at high dose) |

This has been discussed in the Steering Committee and during EUCAST talks.

The proposal from the SC lists good arguments for why we think changing one or several of the currently used letters for susceptibility categories (S, I and R) to other letters will result in confusion.

However, we aim to have consensus so a separate query will be sent to SC members and to all NACs to request their formal opinion in time for the next SC meeting.

It is worth pointing out, that irrespective of whether or not one uses the category “S” or “I” for normal dosing of \textit{Pseudomonas}, the breakpoint clearly separates wild type from non-wild type. There is no room for “low level resistant” \textit{Pseudomonas} to be categorised as in between wild type and resistant which is why EUCAST aims to review \textit{Pseudomonas} breakpoints to ascertain that there are no intermediate categories for \textit{Pseudomonas}. There is a note on the \textit{Pseudomonas} tab in Breakpoint Tables 8.1 to the effect that high dose regimens should be used for
Indeed, it is acknowledged that introducing new letters (N/H or SN/SH) beside the R may also cause problems and will be challenging for laboratories and epidemiologists in Europe; we, however, think that the effort will be worthwhile.

Although maintaining the current letters S and I will be much easier for IT companies since no laboratory information systems (LIS) will have to be reprogrammed, we are convinced it will be easier to reprogram some thousand LIS instead of reprogramming >1.6 million European doctors that “I” is the new “S high dose”. We believe that maintaining the current letters will lead to worse patient care for years and provoke great collateral damage that we as doctors will then have to deal with.

The German NAC has used the “I” in its new meaning since 2014 and introduced for *E. coli* and *Klebsiella* spp. that the ampicillin, ampicillin-sulbactam and cefuroxime results should be reported “I” in wild type strains. This was introduced as an exception to EUCAST.

We have since then tried to convince our doctors that I for ampicillin (or cefuroxime) – the German exception – just means that high dose therapy should be used. We have to admit that we had limited success in convincing our clinical colleagues; instead, it led to the use of broader agents like piperacillin-tazobactam for an ampicillin susceptible *E. coli*. We are afraid that exactly the same thing will happen all over Europe when the current system of S/I/R is maintained but used with the new definition.

In addressing the conundrum of susceptibility categorising of *Pseudomonas* spp. and selecting the appropriate dose for treatment of infections caused by wild type organisms of *Pseudomonas* spp., one may reason in one of several ways.

Indeed, there are reservations and there is no perfect solution. Most have taken the view that changing over to categorising all wild type *Pseudomonas* as Intermediate (to signal the need for a higher dose) would create major confusion in laboratories and among colleagues not normally following discussions on breakpoints. Not all therapeutic guidance can be expressed or taught through breakpoint decisions. We have to believe that clinical colleagues know that *Pseudomonas* infections will require dosing regimens different to those required for Enterobacteriales.

To us it seems unavoidable that the Susceptible category is used when “everything is normal”, that the Intermediate category is used when things are no longer normal but can still be overcome by a “non-normal dosing strategy” and that the Resistant category is used to signal that even when using the highest approved dosing and mode of administration, it is no longer possible to treat the isolate with the agent in question.
It is obvious that the EUCAST SC shares these reservations somehow. Formally, and in keeping with the new definition of the “I”, many agents against *Pseudomonas* spp. should be reported “susceptible increased dose”. To avoid the overuse of meropenem or ceftazidime-avibactam, the EUCAST SC decided to report these drugs “S” and change the dose on which the breakpoints are based. Although this avoids the mentioned problem, it introduces ambiguity into the definition of “S” in that the doses on which “S” is based are now species specific. Although this will not cause confusion of the uninformed it will likely lead to underdosing in potentially severe infections.

Introducing two new letters for susceptible will definitely be easier to teach to clinicians than using old letters with a new meaning, in addition it keeps the definition of “normal” and “high dose” consistent.

Furthermore, as there are still laboratories in Europe that report according to CLSI, further damage could happen when CLSI reports with “I” are interpreted by doctors used to the EUCAST meaning. Also for that reason, the use of a new letter for “I” is indispensable.

Therefore, we believe for the sake of our patients it is well worth investing the extra work of introducing two new letters. That work will be substantial, but for a limited period of time and will pay off in the long run.

We have already checked with the LIS providers that are being used by the German NAC members. All members stated that this change can be done within a year (some can even do it within a day).

Likely, the same will be possible in the digital age in other
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| countries. For the big manufacturers of AST systems, we have already contacted them regarding this issue. They will definitely follow EUCAST if there is any revision of the current system. We believe there should be an open discussion on that issue including also clinicians/ID specialists and experts on antibiotic stewardship, since they will be greatly affected by our reporting. |

| Christoffer Lindemann on behalf of the Norwegian breakpoint committee (NWGA) | The NWGA supports the modified definitions of SIR and the introduction of an ATU, the consultation was discussed at our meeting in March. |
| Jari Jalava on behalf of Finnish Study Group for Antimicrobial Resistance jari.jalava@thl.fi | We agree with the proposed S I R definitions and find them clearer than those previously suggested. |

| “Selecting only agents with a ‘Susceptible’ result inevitably drives therapy towards broad-spectrum agents.” This may be the true, however it depends on the antimicrobial in question and the options available for treatment (for example urinary tract OXA-48 positive E. coli that is fosfomycin-S and nitrofurantoin-S but ertapenem-I). Our suggestion is that you replace the word “inevitably” with the word “may”. |

| “The EUCAST Steering Committee has been reluctant to change the designations S, I and R.” ... “Hence we believe that it is important to retain the letter S, I and R; and instead change the meanings of the categories.” |
| It is excellent that EUCAST draws laboratories’ attention to ATUs. The current document explains the principles of the concept in a |

| Noted. |
| Noted. |
| Noted. Corrected |
| Noted. |
| These were examples of principles. Once the principle of introducing ATUs has been accepted, we will finalise |
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general level. However, a more detailed explanation on how the ATU area is defined, is needed. For example a more detailed Piperacillin-tazobactam example should be given. Now it is difficult to predict the proposed ATU from the table 2 figures. The areas where the interpretations of MIC and mm results are not concordant are wider in the table 2 figures than the proposed ATUs.

What is the proposed ATU for piperacillin-tazobactam (30µg disk, Enterobacteriaceae)? In the consultation text is 15 mm – 19 mm and in the table 2 title text it is 17 mm – 19 mm (or is this for piperacillin?).

principles and statistics for defining the ATUs.

We believe that initially EUCAST will suggest few and very obvious ATUs and add more as the principles and practicalities have been accepted and agreed. Piperacillin-tazobactam for Enterobacterales, ceftaroline for Enterobacterales, ceftaroline for Staphylococcus aureus, ceftobiprole and S. aureus and colistin and E. coli, K. pneumoniae, P. aeruginosa and Acinetobacter baumannii at 4 mg/L are all good and obvious examples of agent/species combinations in need of ATUs. Cefotaxime vs Enterobacterales, meropenem vs. Enterobacterales and aminoglycosides vs. almost all species are good examples of agent/species combinations which will not need ATUs.

"repeat the test."
“use an alternative test (perform an MIC) “

Q1: If you retest the strain and/or use different susceptibility testing method (for example MIC) and still the results are within the ATU, how should you then report the result?

Q2: Specifically, ATU and I-category overlap in Enterobacterales

Q1: Retesting is only needed if you suspect or know that something went wrong with the first test (in Broth Micro Dilution a result with skipped wells would merit this; in disk testing a disk which has fallen off or not properly attached to the agar or where an unfortunate combination of disks produced zones that interfere with each other are examples). Otherwise use an alternative test. If you still end up in the ATU there are several options, depending on the situation It may be that you have now confirmed that the correct report is INTERMEDIATE. It may be that you have confirmed that the isolate cannot be categorised - explain to the clinical colleague or if there are alternatives, report Resistant.

Q2: If you have performed an alternative test and this is in
| vs. piperacillin-tazobactam and in S. aureus vs. ceftaroline. Which are the practical conditions in which a lab can report them as “I”? | the Intermediate category, report Intermediate. |
| “If there are several possible therapeutic alternatives in the AST report it is permissible to classify the result in the ATU as “not possible to interpret” – report “R” but include a comment and save the isolate.” | Noted. |
| Although this is a possible solution we would like EUCAST to pay attention to the fact that this may affect AMR surveillance results increasing the proportion of (multi)resistant strains. | This is something we will keep an eye on. However, initially only a few ATUs will be identified and the need will be obvious to all. The data produced without the ATU are of such poor quality that AMR surveillance is already compromised. |
| There are several alternatives how the ATUs can be dealt with. However more instructions are needed until ATUs can be implemented by the routine laboratories with some uniformity. | More instructions will be provided. |
| Will ATUs be implemented in the EUCAST bp-table? | Yes, the idea is to have a column listing the ATU as MIC 2 mg/L and/or zone diameter 17 – 19 mm (as an example). |

Gerd Fätkenheuer, on behalf of the German Society of Infectious Diseases (DGI); vorstand@dgi-net.de  
The German Society of Infectious Diseases (DGI) fully supports the comments of the German and Slovenian NAC.  
Noted.

Nicole Mahoney, PhD  
Director, Global Regulatory Policy on Behalf of MSD  
We appreciate EUCAST’s efforts regarding the definitions of S, I, and R and opportunity to provide input.  
We ask for consideration of the following comments:
The proposed definition of “I – Susceptible, increased exposure” is very similar to the “susceptible-dose dependent” (SDD) category used by the CLSI to convey that susceptibility is dependent on the dosing regimen of the antimicrobial agent that is used in the patient. Organisms are considered “susceptible” when a different dosage regimen is used that yields a higher exposure and probability of adequate coverage by an antimicrobial agent.

We ask EUCAST to consider further harmonizing with the CLSI definition and to use “SDD” in addition to S and R, rather than re-defining “I” to “I – Susceptible, increased exposure”. While there may be adjustments needed for AST and reporting, changing the actual terminology to “SDD” would better clarify the intention of this category, and avoid further uncertainties of the already confusing “I” or “intermediate”.

As EUCAST stated, any change will cause some confusion, and we recognize that the introduction of “SDD” would require extensive education in order to properly interpret and act on susceptibility information. However, harmonizing the terminology with other standard setting organizations should help eliminate any further uncertainties in interpreting the category “I” or “intermediate”.

EUCAST has considered using the SDD as already tried by CLSI. However, all EUCAST breakpoints are dose-dependent. So, if you read the document for consultation carefully you will note that S, I and R are all dose-dependent and always were with EUCAST.

Thus, SDD is semantically unsuitable. Further it only refers to dose, not dosing regimen or other ways to increase exposure, which is what is really being referred to.

We also request that EUCAST clarify how susceptibility criteria will be presented in situations where different infection-specific or patient population-specific dose regimens are recommended for use.

This is clarified in the EUCAST breakpoint table where there are specific breakpoints AND dosage recommendations for infections such as “uncomplicated UTI”, “meningitis”, pneumonia with *S. pneumoniae* etc.

Regarding the issues of a buffer zone for AST, the Area of ATU is not an extra susceptibility testing category. The
Technical Uncertainty (ATU) is introduced to describe the uncertainty of AST results. However, it is unclear in reality how an ATU can be distinguished from a true “I – Susceptible, increased exposure”, since it is difficult (almost impossible) to know whether the results in this zone are due to technical uncertainties, or truly due to the species/drug interactions. In clinical practice, there may not be time to repeat the AST test, or use alternative testing methods as suggested by EUCAST.

ATU and the susceptibility report interpretation are two separate entities where ATU is a warning to the laboratory and does not involve the clinician. Not only intermediate results may be inside an ATU – it could be a susceptible or a resistant result (ceftaroline vs. *S. aureus* is a good example, as is isolates close to the colistin breakpoints).

We ask that EUCAST further clarify how ATU vs. “I – Susceptible, increased exposure” (per the new definition) may be distinguished in practice?

The ATU is simply a warning to the laboratory to make sure that the result, whatever the category, is checked to be correct, and if that is not possible, to report back to the clinician that it was not possible to achieve an unequivocal result, or report the equivocal result but with a warning or explanation.

It is also unclear whether ATU is being proposed as an extra category (in addition to S, I, R) in AST testing. We ask that EUCAST clarify or provide examples of how a practical clinical interpretation of ATU may result in the use of the antimicrobial agent to treat the patient (i.e., to treat ATU like “I – Susceptible, increased exposure” or “SDD”).

See above. We disagree, it is clear that the ATU is for the laboratory only.

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<th>BSAC NAC</th>
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<tr>
<td>After consideration, the UK NAC fully agrees with the need for revising the current definition of intermediate, and agrees with the proposed changes to the definition. However, the committee has concerns about whether the ATU as</td>
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<td>The Intermediate categorization is between the laboratory and the recipient of the report. The ATU is a warning to the laboratory that, for whatever reason, the value (MIC or zone diameter) on which they</td>
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a formalized concept is useful, particularly given the multiplicity of options for dealing with the ATU.

The committee felt that there would be confusion, particularly in situations where the ATU was within the current intermediate range, where an increased dose could be used.

We note also in the graphs given, that the ceftaroline vs Enterobactericeae disc test does not seem to perform well at all. We would be concerned if the ATU was used as a mechanism to introduce unreliable disc tests.

We would welcome further discussion before implementation of the ATU.

are about to base their S, I or R categorization is in an area where there are interpretative and or technical difficulties and that they may want to confirm the result with another method, or be safe and downgrade the category to that nearest below (S to I or I to R).

The ATU is not per se related to any specific phenotypic method, such as MIC determination or disk diffusion.

The ceftaroline difficulties are not restricted to disk diffusion; it is just as muddled with MIC testing – the difference being that we have come to consider MIC automatically right and final. Colistin, where MIC testing is the only method recommended, is a good example of this. MICs of wild type and by the clinical breakpoints clinically susceptible isolates of Enterobacterales are 2 mg/L. Low level resistant isolates may exhibit MIC-values of 4 mg/L, which means that even with a perfectly OK test method for MIC determination, 10 – 20 % of the isolates will flip one dilution below or above the most common value. An ATU of 4 mg/L would warn laboratories to check their QC, their method, their supplier of testing material, or to just inform the clinician that there are difficulties.

Furthermore, each laboratory may consider adopting the system of warnings consisting of ATUs that will be defined by EUCAST, or to ignore it and accept the ensuing rather large errors inherent in some of the testing.

Currently, we can easily see that ATUs are needed for
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| Guillaume Béraud, on behalf of ESGAP (beraudguillaume@gmail.com) | S, R or I are the three options currently used for categorical reporting of antibiotic susceptibility. Although “S” and “R” send a clear message to prescribers there are many cases that are not straightforward and more information is needed. For instance, it is well known that high doses ± prolonged perfusions of piperacillin-tazobactam are required to treat severe infections caused by wild-type *P. aeruginosa*, even when reported as “S”. Using “I” instead of “S”, for bacteria requiring high doses is an option to counteract this limitation. As “I” is already used for various circumstances in which there is significant uncertainty regarding the therapeutic effect of the antibiotic, it seems crucial to examine potential unintended consequences of this policy in real life.

The first consequence is that many microorganisms currently classified as “S” would be recategorized into the “I” category. As many prescribers consider “I” as "impossible to prescribe!" or as a surrogate for “R”, this may bias antibiotic selection towards those antimicrobials reported as “S”, mainly broader spectrum piperacillin-tazobactam in *E. coli* and to a lesser extent in *K. pneumoniae*, for ceftaroline with *S. aureus* and Enterobacterales, ceftobiprole and *S. aureus*, to mention a few obvious agents. Experience with the new β-lactam inhibitor agents tell us that some of these will also be in need of a grey area where we are reluctant to offhand categorize the isolate. |

EUCAST thanks ESGAP for its comments.

We believe we have answered all the concerns brought forward by Guillaume Béraud, on behalf of ESGAP, in the document itself and further developed in our response to the German NAC (see above).

In the end, it comes down to whether or not one believes there to be a problem with implementing new “letters for susceptibility categories” throughout the world on a given date or not. EUCAST has decided to further investigate the consequences of changing the letter from “I” to another “one-letter designation”. Separate queries will be distributed to NACs, AST manufacturers, and other involved parties.

Any change will come with an educational package. It requires the same amount of effort to teach uninterested colleagues about “S” as it would to teach a new meaning of “I”. It will always be difficult to reach all individuals, but this applies also when introducing new letters. The new... |
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<p>| antibiotics such as carbapenems. A radical solution would be to drop “I” completely as it would simplify things but it would require active input and counselling from the microbiologist should the pathogen’s susceptibility result falls between S and R (as per the existing breakpoints), and consequently a massive overload of work. Another solution would be to redefine a category called susceptible with high dose “S\textsuperscript{H}” to identify those bug-drug combinations in which high doses are needed. Of note, the US CLSI has introduced the category S-DD for Susceptible Dose Dependent. The German NAC (National Antimicrobial susceptibility testing Committee) suggests using another letter instead of “I” such as “N” for normal vs. “H” for susceptible but requiring a high dose. |
| proposal from EUCAST is not status quo, but a change, which will need educational efforts. However, as pointed out, WHEN users have not understood the new meaning of Intermediate no damage or confusion is done – the user will then continue to consider Intermediate a useless result and his/her decision making has not changed. EUCAST would be happy to collaborate with ESGAP on how to educate people on utilising the new definition. |
| Arguments in favour of introducing a new category (“S\textsuperscript{H}“I”): |
| • It would help physicians to consider prescribing “narrow spectrum” antibiotics at appropriate doses instead of broad spectrum antibiotics. |
| • It would help to clarify some of the circumstances currently included in the “I” category and avoid confusion when prescribing (i.e. whether “I” means “S” or “R” and in which cases). |
| • It would allow for a gradual transition between the S and the R zone and a more meaningful explanation what to do when the result is “I” (i.e. treating with higher dose). |
| • S\textsuperscript{H}/H would prevent the “automatic” interpretation of “I” |</p>
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<th>Arguments against introducing a new category (“$SI^{H}$”), and even more I with a new meaning:</th>
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<td>• Some physicians would not use the antibiotic I/ $SI^{H}$ as it is not labelled $S$ and would still go to a broad spectrum antibiotic such as carbapenems, which would be counterproductive.</td>
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<td>• Some physicians would use it without considering the appropriate correct high dose, considering that it would work “at least a little bit” exposing patients to the risk of failure.</td>
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<td>• It would be difficult to teach the meaning of I/ $SI^{H}$ as it would vary according to each bug/drug combination, requiring huge amount of time and educational efforts from clinical microbiologists.</td>
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<td>• More input/guidance from the clinical microbiologist will be needed, especially in the beginning after the change is implemented, to explain the difference with the current category and the meaning of the new I/$SI^{H}$. This resource issue may be particularly difficult for smaller hospitals, and hospitals which outsource microbiology to off-site laboratories.</td>
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What is precisely a “high dose” depends on MIC of the organism, thus it requires prescribers to know how to interpret a MIC and how to prescribe an antibiotic regarding this MIC. But the best way to prescribe an antibiotic according to the MIC is still under discussion for some bugs such as *P. aeruginosa* (Mouton JW et al JAC 2018). Also MIC is an imperfect measure. It is an evolving field; thus it would be difficult to ensure that the meaning of susceptibility reporting evolves at the same pace.

In addition to taking into account the MIC and the dose, the site of infection should be taken into account e.g. amoxicillin and pneumococci in pneumonia or in meningitis. Therefore a supplementary distinction should be introduced taking into account the MIC, the dose and the site of infection (e.g. UTI). This would add additional complexity.

From a technological perspective, changing or adding a different category may be extremely difficult regarding the diversity of existing information systems, especially if something like S" is considered (two letters instead of one and superscript).

It may take several years for such a change to translate into practice in all hospitals (both adoption of the practice in reporting, and in understanding among the clinicians). This could lead to confusion among clinicians.
who rotate between healthcare institutions.

- There remains some uncertainty, even in the determination of the MIC, and thus in its interpretation as a predictor of efficiency. This should be distinguished from the problem of reporting susceptible with high doses, but it would still create some confusion.

In the end, the problem is that it is not possible to summarize all the subtleties of antibiotic prescribing optimisation in a brief user-friendly table. Therefore, the question is more about what is expected from a susceptibility testing report. For instance:

- A static tool providing all available information to be used by the prescriber to optimize antibiotic prescribing. This implies relying on the competence of the prescriber and their willingness to search for the latest guidelines and/or seek advice.

- A coercing tool mentioning only what could be used without harm done, and forcing the prescriber to ask for advice each time that true optimisation could be achieved.

- Between these 2 extremes, many relevant trade-offs could be considered. As an example, “coercion” could be limited to drug/bug combinations regarded as problematic in relation to the current and local context.

History has taught us that changes often result in counter-intuitive attitudes, but even the current status quo has
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Unintended consequences. Maybe it is the time to conduct studies on how to best report susceptibility testing results to nudge the prescriber into the right direction, using methods embraced by modern economists and psychologists.

See the Pros and Cons listed in the table below.

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<th>Pros</th>
<th>Cons</th>
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| **Leaving dose-dependent as “S”** | • Least prescribing dissuasive  
  • Represents current *status quo* (no implementation effort needed) | • Risk of therapeutic failure  
  • Risk of emergence of resistance |
| **Moving dose-dependent “S” to “I”** | • Maximum avoidance of therapeutic failures due to under dosing | • The most prescribing dissuasive (unintended prescribing consequence)  
  • Increases the heterogeneity of “I” category, hampering its understanding by clinicians  
  • Significant implementation effort required: input/guidance from the clinical microbiology and education, mild changes in the information systems |
| **Moving dose-dependent “S” to “SH”** | • Abbreviation represents well the desired therapeutic actions to be taken  
  • Less prescribing | • More prescribing dissuasive than “S”  
  • Significant implementation effort required: input/guidance from the clinical microbiology and education, important changes in the information systems |
As a conclusion, we suggest that, while using ‘I’ with a new meaning has little benefits and the status quo is not a better option, introducing a new category such as $S^4$ appears as the option with the less harm, as it could indeed result in better antibiotic prescribing. However, implementation of a new tool being as important as the tool itself, we suggest conducting studies on the best way to introduce this new category, or at the minimum a prudent and thorough implementation to nudge prescriber in the right direction.

On behalf of the EUCAST Steering Committee

Gunnar Kahlmeter, Technical Data Coordinator