al species of streptococci can fall into Lancefield groups C, F, or G and may be α-, β-, or nonhemolytic.

The following parody on the famous T. S. Eliot poem, “The Naming of Cats” (the basis for the Broadway production of Cats) may be appropriate:

The Naming of Strep is a difficult matter,
It isn’t just one of your holiday games;
You may think at first I’m as mad as a hatter
When I tell you, a strep may have three different names.
First of all, there’s the name that the family use daily,
Such as alpha or beta or gamma—that’s non,
Such as Lancefield Group G or else strep viridans
All of them everyday, sensible names.
There are fancier names if you think they sound sweeter,
Such as bovis, or milleri group or mutans,
All of these also are everyday names.
But I tell you, a strep needs a name that’s particular,
Else how can it keep up its dignity and pride?
Of names of this kind, I can give you a listing,
Pyogenes, pneumoniae or else gllalloyticus,
agalactaea, dysgalactiae subspecies equisimilis,
Intermedius, constellatus or just simply canis—
Names that never belong to more than one strep.

Acknowledgments


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Obeservational Studies of Salvage Treatment for Persistent Bacteremia: Beware of Survivor Treatment Selection Bias

To the Editor—Jang et al [1] recently published an observational study on the efficacy of linezolid with or without carbapenem in salvage treatment for persistent methicillin-resistant Staphylococcus aureus (MRSA) bacteremia. They found that the MRSA-related mortality rate was lower for patients treated with a linezolid salvage regimen than for patients continually treated with a vancomycin-based regimen (13% vs 53%; P = .030) and concluded that linezolid, with or without carbapenem, produces better outcomes for patients with persistent MRSA bacteremia.

Although they may be right, their manuscript failed to mention a significant limitation of these findings: the survivor treatment selection bias. Indeed, as the introduction of linezolid was treated as a time-invariant factor in their analysis, the authors did not take into account the fact that patients who received linezolid may be different from those who did not, simply by virtue of having survived until the date of treatment alteration [2]. In other words, longer survival may increase the patient’s probability of receiving linezolid and, thus, lead to a survivor selection bias. Of note, in the study by Jang et al [1], there was a trend toward a longer duration of bacteremia in patients treated with a linezolid salvage regimen, with a mean (± standard deviation) of 26.4 ± 38.8 days, compared with 11.8 ± 3.9 days in patients continually treated with a vancomycin-based regimen [1]. Although not statistically significant, which comes of no surprise given the small sample size and the wide dispersion of values, this trend suggests that survivor treatment bias may account for most of the survival benefit attributed to linezolid by the authors. Indeed, if the differences observed were related to the efficacy of the linezolid salvage regimen, one would expect a shorter duration of bacteremia in patients treated with linezolid, compared with patients who continued to receive a vancomycin regimen.

Treatment survivor bias is common in studies published in top medical journals [3] and frequently affects key factors and conclusions [4]. To adequately address this issue, the authors should consider linezolid introduction as a time-dependent covariate in their analysis.

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Reply to Tattevin et al

To the Editor—We thank Tattevin et al [1] for their interest in our manuscript [2]. We agree with comments that a longer duration of bacteremia in patients treated with a linezolid salvage regimen (although statistically not significant) and treatment survivor bias could affect the mortality rates observed among patients with persistent methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia. However, we have some replies to their comments.

First, Tattevin et al stated that “they found that the MRSA-related mortality rate was lower for patients treated with a linezolid salvage regimen than for patients continually treated with a vancomycin-based regimen and concluded that linezolid, with or without carbapenem, produces better outcomes for patients with persistent MRSA bacteremia” [1]. However, our conclusion, as presented in the abstract and text of our article [2], is that linezolid-based salvage therapy effectively eradicated *S. aureus* from the blood of patients with persistent MRSA bacteremia and that the salvage success rate was higher for patients receiving linezolid therapy than for those receiving vancomycin-based combination therapy. Our conclusion was not derived from mortality rates between the 2 groups but from the following 2 outcome measures (which were described in the Patients and Methods section of the article [2]): (1) the microbiological clearance of bacteremia within 72 h and (2) the salvage success rate. Because our study was not designed in a randomized prospective manner, it is limited to dealing with the relationship between mortality and salvage therapy, as Tattevin et al indicated. Therefore, we were very cautious with regard to making any conclusion from the mortality rates. For this reason, we also did not perform any additional analysis (ie, time-dependent survival analysis). We already indicated this limitation of our study design in the Discussion section of the article [2].

Second, one can imagine that survivor treatment selection bias could have affected our results significantly if the bacteremia had already resolved and then linezolid had been introduced later. However, in our study, bacteremia was not resolved before linezolid introduction in every patient who was treated with linezolid. Considering the natural course of *S. aureus* bacteremia, it is hard to imagine that bacteremia was spontaneously resolved and that patients were spontaneously cured and survived after discontinuation of vancomycin and introduction of ineffective linezolid in 87% of patients, mainly because of the survivor treatment selection bias. In our opinion, patients with persistent bacteremia who were treated with linezolid still had a high risk of mortality.

Third, the overall mortality rate among patients with persistent bacteremia for \( \geq 7 \) days was 65% (20 of 31 patients), and *S. aureus*–related mortality was 45% (14 of 31 patients) in our previous investigation, which was performed before introduction of linezolid from January 1998 through October 2001 [3]. However, the mortality rates were decreased to 34% and 29%, respectively, in our investigation that occurred from January 2006 through March 2008 \( (P = .02 \text{ and } P = .22) \). The reduction of mortality rates was mainly observed among patients who were treated with linezolid-based regimens.

We agree with the comments of Tattevin et al [1] with regard to the limitation of retrospective observation analysis. Further investigation with a prospective interventional design is needed to make a clear conclusion on the efficacy of salvage treatment.

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References


Critically Important Antimicrobial—or Not?

To the Editor—A recent article by Collignon et al [1] provides an in-depth overview of the World Health Organization’s (WHO’s) ranking of antimicrobials according to their perceived importance in human medicine. The overall objective is to categorize antimicrobials as critically important, highly important, or important, thereby allowing risk managers to develop guidelines for the prudent use of these compounds in veterinary medicine. This cross-disciplinary approach is—and will be—of considerable value for the containment of antimicrobial resistance from a zoonotic perspective. There is, nonetheless, a major area of concern regarding the exclusion of certain older antimicrobial agents from the WHO’s list of critically important antimicrobials. The ultimate