# Article information:

Optimization of Vancomycin Initial Dose in Term and Preterm Neonates by Machine Learning - PubMed  
<https://pubmed.ncbi.nlm.nih.gov/35918452/>

# Article summary:

1. This study developed a Machine Learning (ML) algorithm based on pharmacokinetic profiles obtained by Monte Carlo simulations using a population pharmacokinetic model from the literature, in order to derive the best vancomycin initial dose in preterm and term neonates.

2. The Xgboost algorithm yielded numerically best performances and target attainment rates compared to an equation derived from a previously published POPPK model.

3. The Xgboost model resulted in less AUC/MIC > 600, thus decreasing the risk of nephrotoxicity.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

This article is generally reliable and trustworthy as it provides evidence for its claims through simulations and external sets of real patients. The authors have also provided detailed information about their methods, which adds to the trustworthiness of the article. Furthermore, they have discussed potential limitations of their study such as the lack of data on long-term outcomes or adverse events associated with vancomycin use in neonates.

However, there are some points that could be improved upon in terms of trustworthiness and reliability. For example, there is no discussion of potential biases or sources of bias that may have affected the results of the study, such as selection bias or confounding factors. Additionally, there is no mention of any counterarguments or alternative perspectives that could be taken into consideration when interpreting the results. Finally, there is no discussion of possible risks associated with using ML algorithms for this purpose, which should be noted given that these algorithms can be prone to errors due to overfitting or other issues.

# Topics for further research:

* Selection bias
* Confounding factors
* Counterarguments
* Alternative perspectives
* Overfitting
* ML algorithm risks

# Report location:

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