

A RESEARCH BRIEF

ARTIFICIAL INTELLIGENCE TO IMPROVE ANTIBIOTIC PRESCRIBING: A SYSTEMATIC REVIEW

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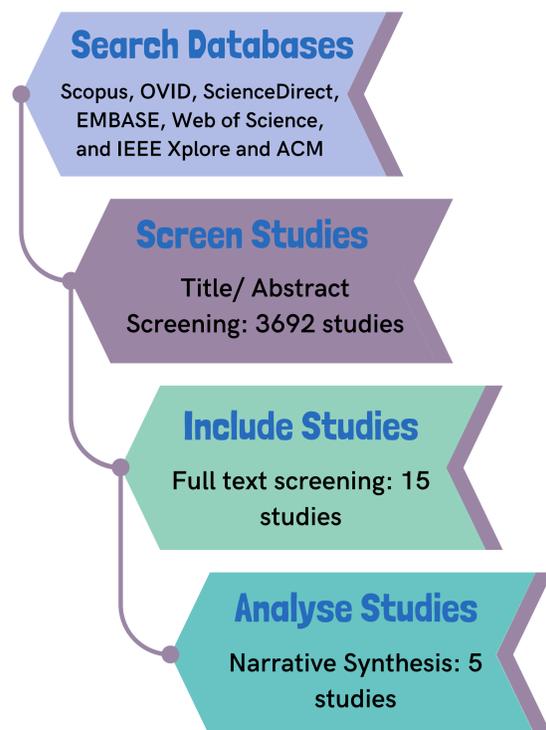
EXECUTIVE SUMMARY

The use of antibiotics lead to antibiotic resistance (ABR). Different methods have been used to improve antibiotic prescribing (ABP), and thus control ABR. Recently, Machine learning (ML) as a subfield of artificial intelligence (AI) has been explored as means to improve ABP. This review found that the use of ML models may improve ABP for human patients in healthcare settings. However, none of the ML models in the studies included in this review were deployed nor evaluated in clinical settings, nor any clinicians have been involved in the development process of these models.

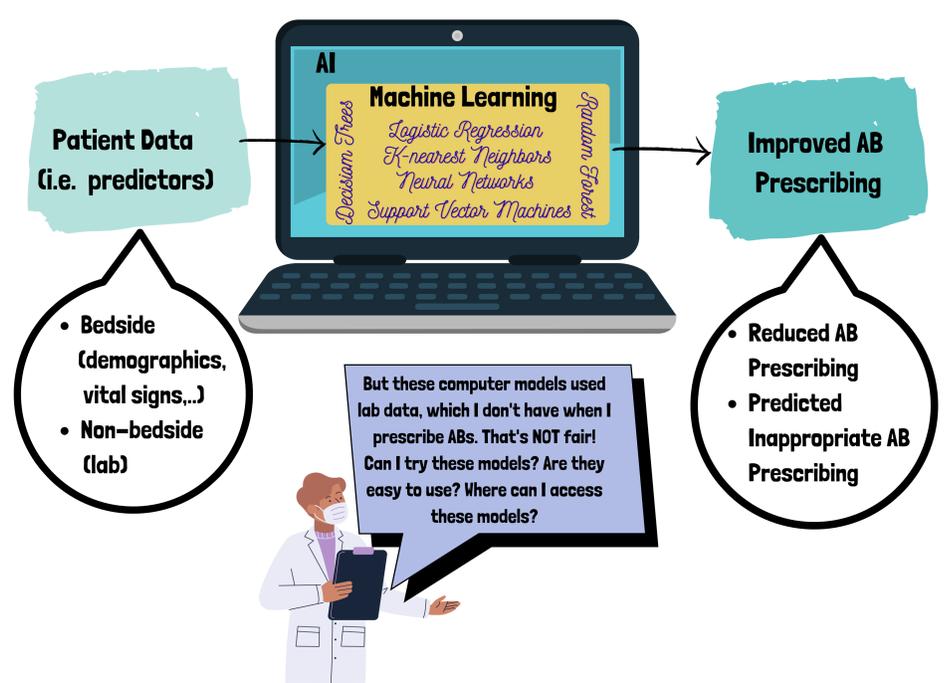
WHY WAS THIS REVIEW IMPORTANT?

- Between 2000 and 2010, global human antibiotic (AB) consumption increased by 35%.
- Inappropriate and excessive antibiotic prescribing contributes to the spread of antibiotic resistance (ABR).
- ABR has been listed among the top ten health threats by the World Health Organisation (WHO).
- No previous reviews were identified on the use of AI to improve antibiotic prescribing.

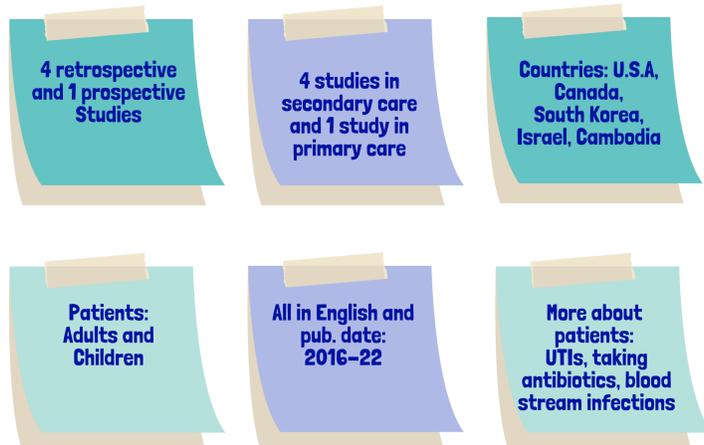
HOW DID WE DO THIS REVIEW?



MORE FINDINGS?

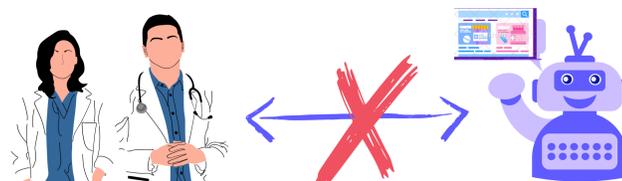


FINDINGS?



WHAT WAS THE CONCLUSION?

- The use of ML models may improve antibiotic prescribing in both primary and secondary healthcare settings.
- Data availability (ex.: lab data) may have been the main factor behind ML models outperforming clinicians.
- None of the ML models in the studies included in this review were evaluated in clinical settings.



RECOMMENDATIONS

- ML models should be tested in healthcare settings to assess their true impact in guiding antibiotics prescribing.
- Prescribing clinicians should be engaged in the development and deployment processes of ML models in healthcare settings.

