Revolutionizing Antimicrobial Stewardship: Can ChatGPT Lead the Charge?

DE VITO, A. ET AL. (2024) 'ASSESSING CHATGPT'S THEORETICAL KNOWLEDGE AND PRESCRIPTIVE ACCURACY IN BACTERIAL INFECTIONS: A COMPARATIVE STUDY WITH ID RESIDENTS AND SPECIALISTS'.

Artificial Intelligence - ChatGPT

This study assess the ability of ChatGPT4 in answering questions related to bacterial infection and choosing antibiotics treatment.

Study Participants

- 4 Residents in last year of ID
- 4 ID specialists of at least 3 year experiences
- ChatGPT-4
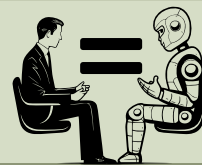- Trained ChatGPT-4

Topics

1. Blood Stream Infection
2. Pneumonia
3. Intra-abdominal Infections
4. Endocarditis

Questions per topic

1. True/False Questions x 6
2. Open Ended Questions x 6
3. Clinical Cases x 6

- Equal distribution of difficulty levels

Results - True/False

- No significant difference - Average of 70% correct

- Similar performance for chatGPT and clinicians for "Easy" and "Medium" questions
- ID specialists performed better for "Difficult" questions - 68.7% vs 37.5%

Results - Open Ended Questions

ChatGPT4 and trained ChatGPT4 provide:

More accurate answers (p=0.004)

Completeness scoring (p<0.001)

Results - Clinical Case

Accuracy in Resistance Mechanism

- Trained chatGPT performed similarly to the human expertise
- Conventional chatGPT had lower accuracy

Choosing Antibiotics Treatments

- ChatGPT (trained & conventional) had higher rates of incorrect response then human experts.
- Tend to not presribe newer antibiotics Eg Cefiderocol, imipenem-cilastatin-relebactam
- Trained Chat-GPT4 is more conservative - offering longer than necessary

Conclusion:

- Healthcare professionals must remain central to the diagnostic process.
- Digital tools can augment but not overtake the expertise