BREAKING OUT OF TRADITIONAL LEARNING

Evaluating an Escape Room Approach to Antimicrobial Education

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BACKGROUND

Antimicrobial Stewardship (AMS) remains a cornerstone in combating antimicrobial resistance, yet undergraduate medical education on this topic is often limited to didactic or web-based teaching (1). Moreover, a local survey among our medical students revealed that **85%** had received little or no prior education in AMS, highlighting a significant knowledge gap. We designed 'Outbreak Escape', an innovative escape room-style learning intervention to engage students in active problem-based learning and enhance their confidence in diagnosing and managing infectious diseases.

Figure 1: Medical students examining a high-fidelity mannikin as part of 'Outbreak Escape'

Figure 2: Debriefing a group of medical students following the intervention.

METHODOLOGY

Medical students were placed into groups of three in a "containment ward" with a high-fidelity mannikin representing "patient zero" of a yet unidentified infection. Over 45 minutes, students collaborated to determine the diagnosis, identify the source and plan appropriate management (Figure 3).

Tasks included taking an infection history, performing an A-E assessment, drawing blood and blood cultures and interpreting laboratory results. Participants were also tasked with solving AMS-themed puzzles such as matching clinical vignettes with pathogens and antimicrobial therapy, a microbiology crossword and a contact-tracing challenge. The infection was revealed to be *Legionella* pneumonia, with the source tracing to a contaminated shower on the ward. Pre- and Post-session questionnaires assessed student confidence across key domains using a 5-point Likert scale. Statistical analysis was performed using paired t-tests.

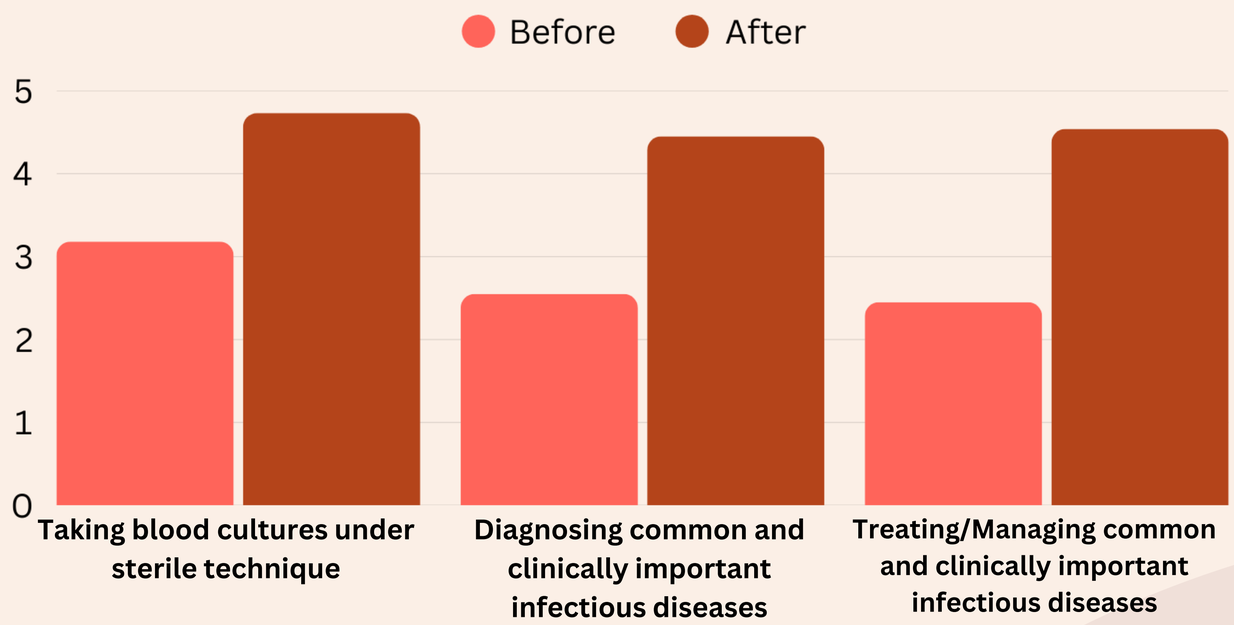

Table 1: Improvement in confidence in various areas before and after 'Outbreak Escape'

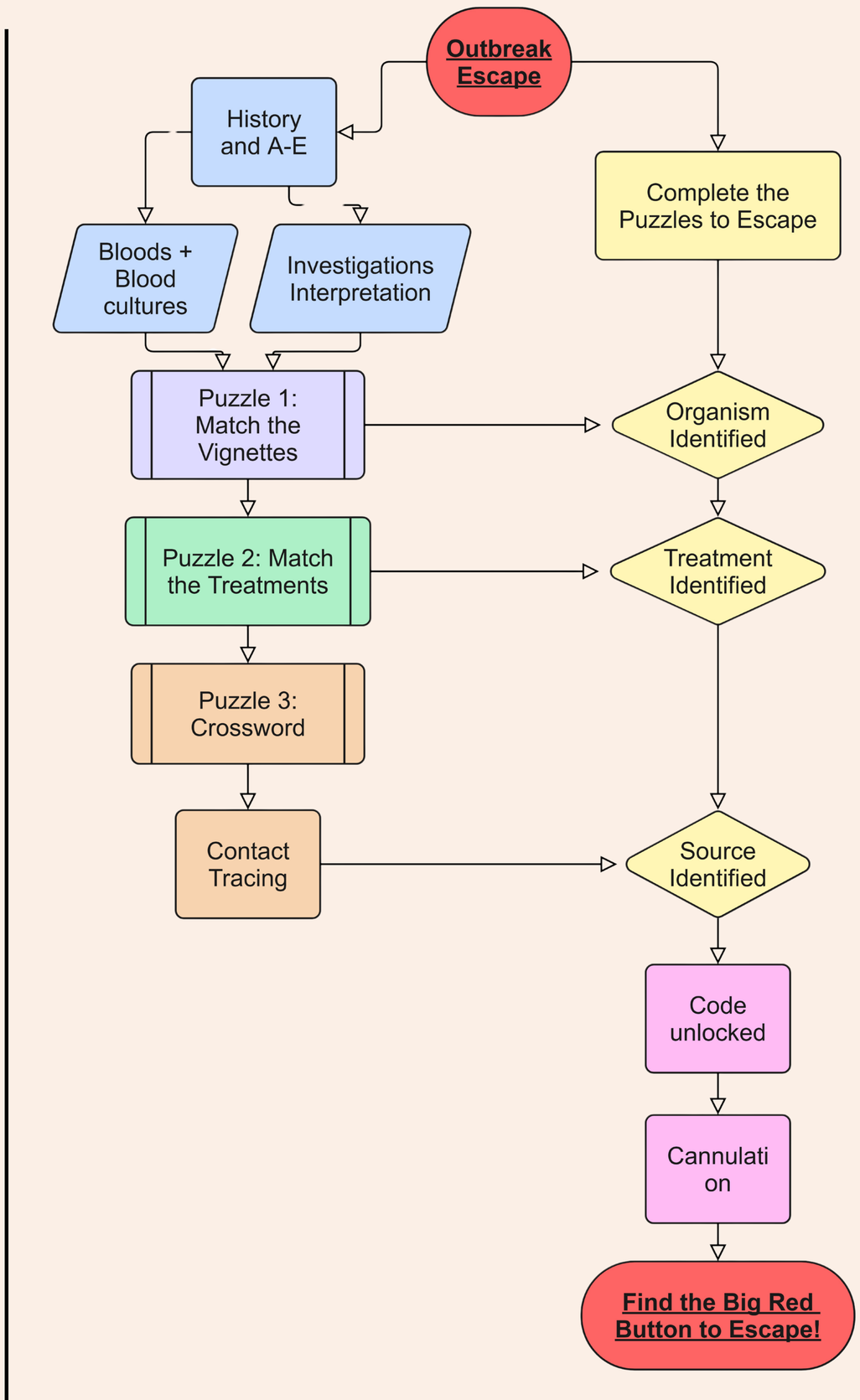

Figure 3: Layout of 'Outbreak Escape'

RESULTS

All students (**100%**) rated the session appropriate for their level of training and would recommend it to peers. All participants reported an improved understanding of infectious diseases and microbiology following the session. Mean confidence scores for diagnosing common infectious diseases increased from 2.55 to 4.45 (+**75%**), and for managing and treating infections from 2.45 to 4.55 (+**86%**), both significant at $p < 0.0001$. Qualitative feedback highlighted the value of interactivity, teamwork, and real-world application in reinforcing AMS principles.

CONCLUSION

'Outbreak Escape' demonstrates that immersive, gamified learning can substantially enhance medical students' understanding and confidence in AMS. By combining clinical reasoning, teamwork, and practical skills within a high-engagement format, this approach bridges the gap between theoretical knowledge and clinical application. Future plans include expanding the initiative to other medical schools and adapting the format for postgraduate training to further promote stewardship principles among early-career clinicians.

References: Augie BM, Miot J, van Zyl RL, McInerney PA. Educational antimicrobial stewardship programs in medical schools: a scoping review. JBI Evidence Synthesis. 2021 Aug 13;19(11):2906–28.

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