An Escape Room as an Alternative to Team-Based-Learning for Teaching Evidence-Based Medicine

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Background

- Bringing literature to life in the classroom is challenging
- Active learning engages students in the classroom
- Escape room activities may further enhance student engagement and enjoyment in the classroom
- Study designed to determine if student perceptions differed from usual Team Based Learning (TBL) application exercises after participating in an escape room activity

Methods

- An escape room activity was developed for the final day of the Evidence Based Medicine (EBM) unit, spring P2 year
- Recent JAMA meta-analysis provided to students to read before class
  - Zheng, et al., JAMA. 2019;321(3):277–287.
- Students worked in teams of 4-5 students
- Community pharmacy patient case provided to students at the beginning of class
  - Patient (an engineer) requests a recommendation regarding aspirin for primary prophylaxis based on contents from the article above
- Escape room class activities contained 5 consecutive puzzles
  - Word scramble to unlock the patient's medical record
  - Calculating the patient's ASCVD risk score
  - Quiz evaluating the JAMA article
  - Identifying the most recent and pertinent guidelines
  - Counseling the patient with a medical recommendation
- Teams could request 1 hint and the top 3 team scores received a prize
- Faculty led debriefing session facilitated after all teams "escaped the room" to review concepts covered by the activity
- Survey provided to students at the end of class to provide feedback

Puzzles

Case

Application Case

It is 5 minutes to closing on a Thursday night (2/16/2023) at your pharmacy. It's been slow this evening and you're excited you finally get to leave on time. You have plans to meet with friends tonight. As you are about to close the shutters, you see a man in a suit quickly approaching the pharmacy. You turned to greet him.

"How can I help you today, Sir?"

"Hi, I went to my doctor today and he told me to take an aspirin every day to protect my heart. I don't really trust him since he says my heart is perfectly fine, but he wants me to take the aspirin. I guess I just want to know why I should take it since I don't like taking a lot of medications. I like facts, I'm an engineer. What do you make of it?"

He hands you the article by Zheng, *Association of aspirin use for primary prevention with cardiovascular events and bleeding events: a systematic review and meta-analysis*, for review.

"I also have my information from my visit with the doc today."

In order to close the pharmacy, you must assess the patient's situation, the article, and make a recommendation for this patient.

Puzzle 1, Word Jumble

The object of the game is to rearrange or unscramble the letters to form a word. Once all words are unscrambled, the letters in the circles spell a word that provides the response to the sentence below.

TIRFONACIN

ESIBUR

ADCSV

TLOC

DELEB

SIKR
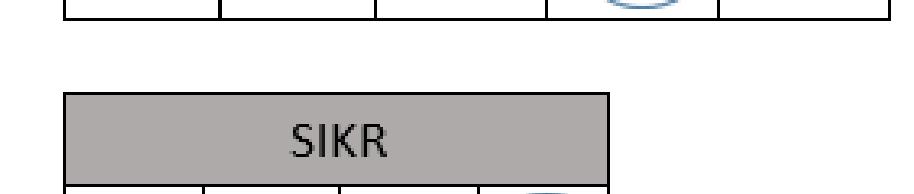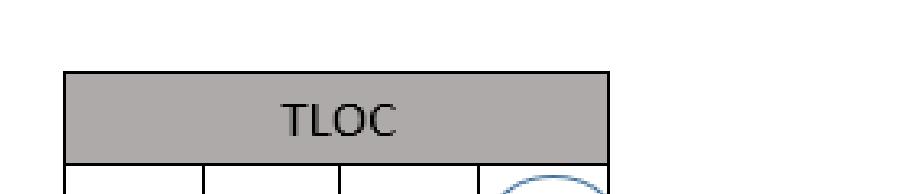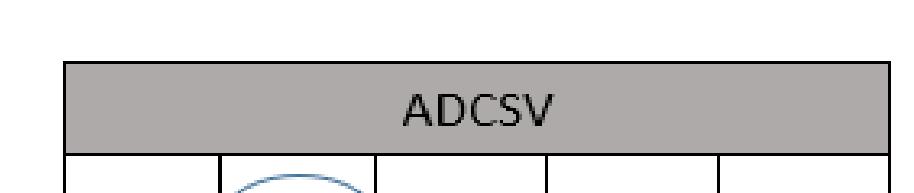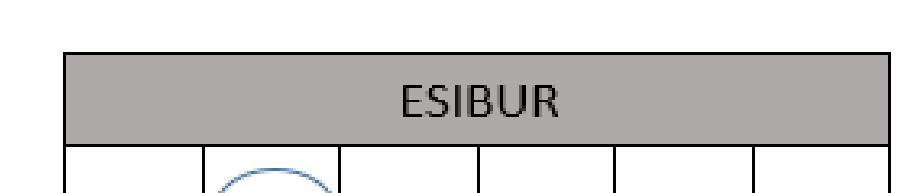
If the patient is not given the proper care, he may suffer a

This is the password to unlock the medical record, located in WorldClass.

Team-based learning   **Traditional**

- Out of Class
- Readiness assessment
- In Class
- Learn concepts
- In Class
- Lecture
- Apply concepts
- Out of Class

8
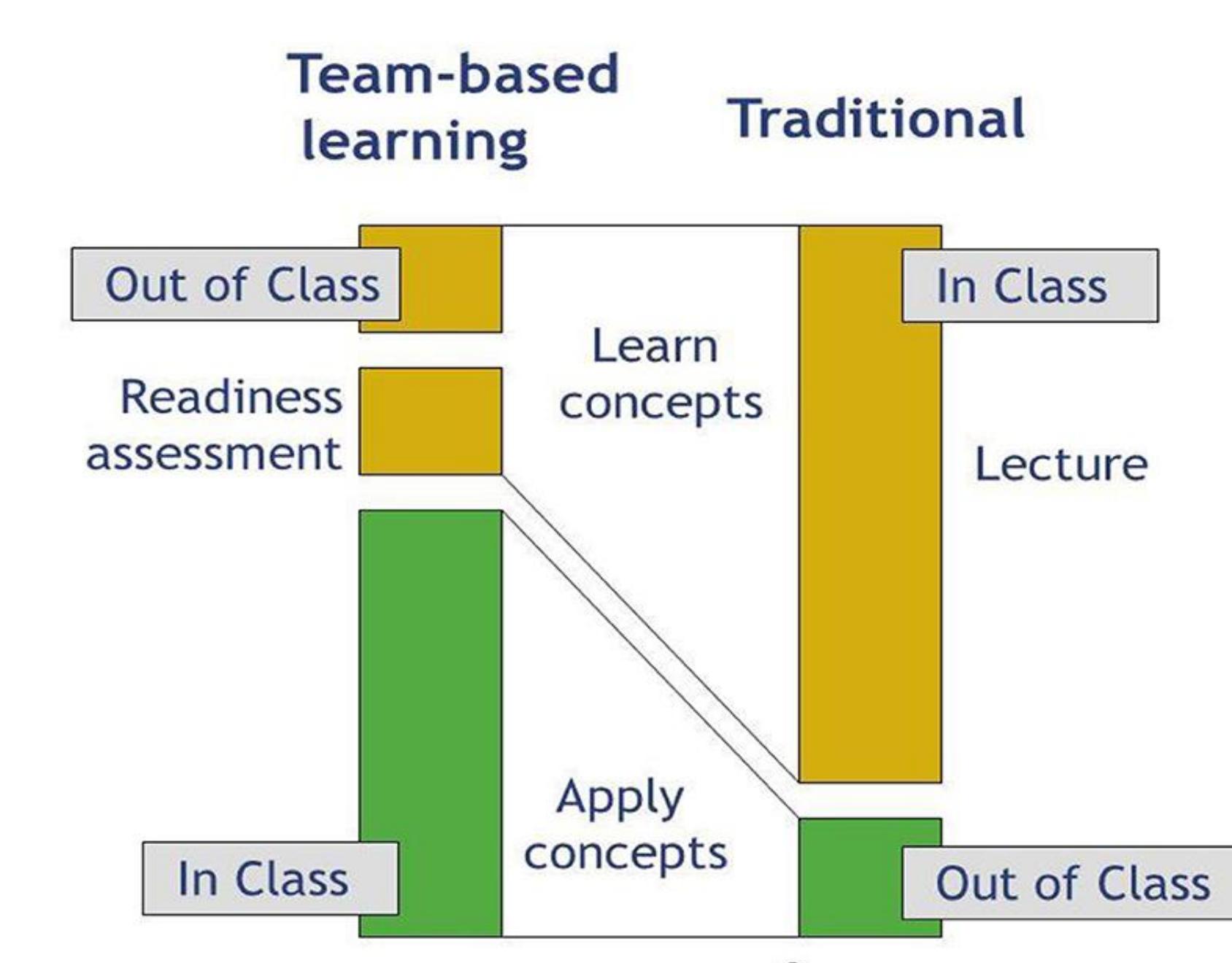
Puzzle 2, Medical Record

Outpatient Medical Record

56 y/o BM, NKDA

PMH:

Dyslipidemia, hypertension

Vitals:

HR 77, BP 148/90, Temp 98.6, BMI 31 kg/m^2

Social History:

Tobacco (+), 1 ppd

Alcohol (+), 1 drink daily

Current Medications

Atorvastatin 20 mg PO daily

Lisinopril 5 mg PO daily

Labs (2/16/23)

Glu 92	Na 140
BUN 19	K 4.1
SCr 0.97	Total cholesterol 178
TBili 0.24	HDL 57
AST 18	LDL 105
ALT 10	Trigs
Ca 9.5	

Puzzle 2

Analyze the patient's data. Determining the patient specific considerations will allow you to 'unlock' the frame of mind you should be using when reviewing the Zheng article. This will allow you to provide the best recommendation possible to the patient. Cracking the code for the lock will provide you with the instructions for the next puzzle to complete before you respond to the patient.

Hint: the code contains three digits that provide an important patient parameter used in the article by the authors to stratify patients according to risk as described in the subgroup analysis section.

Once you crack the code, proceed to the pharmacy lab to unlock your team specific clue.

Puzzle 3, Quiz

- 5 questions
- Composite endpoints
- Calculation of NNT and NNH (major bleeding)
- Initial thoughts on prescribing aspirin for primary prophylaxis

Puzzle 4, CPG

- Upload screen shot of the most current guidelines for primary prophylaxis of CVD with aspirin
- Use tertiary resources to identify guidelines

Puzzle 5, Patient Counseling

Counsel the patient. The entire team must be present to counsel the patient. Grader to be the patient and note the time in which the counseling session starts. Once counseling session ends, grader to lead the group out and collect the next group.

Counseling rubric

Team:		Start Time:	
Counseling point	Stated	Prompted	Comments
Most recent guidelines	1	0.5	
ASCVD score value	1	0.5	
ASCVD importance to patient	1	0.5	
Bleeding risk (low)	1	0.5	
ASA yes, low dose, with food	1	NA	
ASA no	1	NA	
Stop smoking/alternative to smoking	1	0.5	
Lose weight	1	0.5	
Maximum statin and/or lisinopril dose	1	0.5	
Introduce team members	1	NA	
Bonus point (maximum 1 point, provide rationale)	1		

Hint Card

Use this card for one hint

We are happy to help!

Results

- Most students completed a survey (42/50,84%).
- Most felt more engaged (88%) and found the class more enjoyable (78%), compared to traditional TBL.
- Most felt that their team discussed possible answers (81%) and worked collaboratively (86%) more than with traditional TBL.
- Most felt the debrief solidified understanding of literature evaluation for treatment of an individual patient (86%) and would participate in a similar escape room activity (83%).
- Team quiz scores were 90$\pm$4.56% and escape room were scores 88%$\pm$4.21% (based on time to complete, quiz score, and counseling points); on par with TBL scores.

Conclusion

- The escape room improved student engagement and enjoyment compared to TBL
- Over half of the class reported more collaboration and discussion of solutions
- Escape room activities provide an alternative to traditional TBL activities for active learning in the classroom

References

Zheng SL, Roddick AJ. Association of aspirin use for primary prevention with cardiovascular events and bleeding events: a systematic review and meta-analysis. JAMA. 2019;321(3):277-287. doi:10.1001/jama.2018.20578

The authors have nothing to disclose.

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