Team-based learning in a medical microbiology course

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Medical Microbiology
AMC
Team-Based Learning, TBL

- Enhance active participation and motivation
- More accountable for performance and presence
- Learn how to effectively work together as a team
- Learn from each other in the process
- Enjoy learning!
Steps in the TBL process

- Individual Readiness Assessment Test; iRAT
- Team Readiness Assessment Test; tRAT
- The Application: Team assignment

- Module in course “Advanced Medical Microbiology” of the UvA Master Biomedical Sciences, 20 students
- Subject:
  “Vaccination against Group B meningoccal disease”
First step: iRAT

1. Study basic information at home: 3 short reviews / opinion papers
2. Test of 20 multiple choice questions, individually
3. Mark given for this iRAT test
4. Right answers NOT shown after test
Second step: tRAT

1. Same MC test in groups of 4-6 students; discussion allowed, but no access to the study materials

2. Groups get feedback on whether or not the answers are correct

3. Mark for tRAT test which counts for each student of the group

Study materials can now be used to find missing correct answers, written argumented appeals possible \(\rightarrow\) high motivation

Short remedial teaching / discussion on frequently made mistakes \(\rightarrow\) efficient way of central teaching
The “real thing”: the Application

• Same teams as in tRAT

• Essential: 4 S’s
  – Significant problem
  – Same problem
  – Specific choice
  – Simultaneous reporting
The real thing: the Application

• Study 10 recent papers on vaccination
  – Scientific background on different vaccines
  – Efficacy studies of different “camps”
  – Opinion papers
  – Cost / benefit considerations
• Discuss 5 statements (agree/disagree) within the groups
• Prepare one slide per statement with argumented opinion
• For each statement a separate discussion:
  – All groups to present their slide
  – Discussion between the groups
  – Consensus, or argumented disagreement
Statements: Agree / Not Agree

1. Recently 2 vaccines against serogroup B meningococcal disease have become available on the market. One of these vaccines should instantly be included in the “Rijksvaccination” program.

2. Of the 2 available vaccines Bexsero potentially has the highest coverage.

3. The results of the MATS assay provide a reliable assessment of the number of cases of meningococcal disease should the Bexsero vaccin be introduced in the vaccination program.

4. Nonamen potentially is a better vaccine than Trumemba or Bexsero.

5. The indirect effect of vaccination with Trumemba or Bexsero is equivalent to that of conjugate polysaccharide vaccines.
Recently 2 vaccines against serogroup B meningococcal disease have become available on the market. One of these vaccines should instantly be included in the “Rijksvaccination” program.

Disagree

- Side effects in children
- Carriage reduction unknown
- No long term memory
- Not cost-effective
Sufficient Room for Discussion…

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<thead>
<tr>
<th>Statement</th>
<th>Group</th>
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<tbody>
<tr>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
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<tr>
<td>3</td>
<td>No</td>
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<tr>
<td>4</td>
<td>No</td>
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<tr>
<td>5</td>
<td>No</td>
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- Good knowledge on the study material
- Materials critically studied
- Able to use the material for argumentation in discussions
- Very well prepared
- Students actively participating
Schedule of the module

- Monday:
  - Introduction 45 min, self study iRAT – tRAT; 4 hours
- Tuesday:
  - iRAT, tRAT, introduction of Application: 3 hours
- Wednesday:
  - Reading for Application: 4 hours
- Thursday:
  - Reading for Application / preparing slides: 4 hours
- Friday:
  - Application presentations and discussion: 6 hours
Scoring

- iRAT score: personal mark: 25%
- tRAT score: group mark: 25%
- Application: group mark: 50%
  - Judgement based on slides, argumentation, use of literature, and participation in discussion; average of marks given by 2 teachers
Evaluation

Better than expected, but please keep in mind every statement was a group effort. It did make me understand the matter better.

- We had a really good discussion when we had different approaches to the subject.
- The main subject about the vaccines was really interesting.
- The first test was too in detail. I thought that it would be more general.
- Overall, I believe it was a pretty good experience.
Summary

• Very motivating way of teaching
• High level knowledge
• Ability not only to reproduce but also use
• Verifiable active student participation

• Module requires careful design to make it work
• Explanation of the TBL approach needs to be very clear
TBL more information, also for entire curricula…

- [www.teambasedlearning.org](http://www.teambasedlearning.org)
- [https://vimeo.com/51713733](https://vimeo.com/51713733)
- [www.utexas.edu/academic/ctl/largeclass/#tbl](http://www.utexas.edu/academic/ctl/largeclass/#tbl)
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