Training Future Team Scientists: Reflections from Translational Course

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Background

- There is a need to work outside of disciplinary silos towards finding lasting solutions to healthcare problems.
- Multi-PI grants is linked to increased scholarly productivity (Hall et al, 2012).
Purpose

• Team science is a collaborative effort to address a scientific challenge that leverages the strengths and expertise of professionals trained in different fields.
• In order to prepare students for future job market, where working as part of transdisciplinary teams is the norm, formal training in team science skills is needed.
Inter-professional Translational Research Design Course

- Part of core first year courses in the Human Pathophysiology and Translational Medicine (HPTM) program.
- The course is developed as an eight-week inter-professional course.
- Biomedical graduate students (n=6) were teamed with medical students (n=10) to design a translational research project that addresses a significant gap in the detection, treatment, or prevention of human disease.
- The capstone project for each team (n=5 teams) was an NIH-style translational research proposal.
Team Science Competencies

- Building Research Teams
- Fostering Trust
- Developing a Shared Vision
- Communication about Science: (e.g., believe differences in opinion promotes new ideas)
- Sharing Recognition and Credit
- How to Handle Conflict
- Interpersonal Communication (e.g., integrate personal goals to team goals)
- Leveraging Networks
Reflective Writing Assignment

- At the end of course, students were asked to describe an issue, event, or experience that occurred within their team, what were their initial reaction and nuanced reflection.
- Seven prompts were provided (e.g., “if your experience was overwhelmingly positive, what aspects contributed to this outcome? How will you use this experience in your research and professional career?”)
Analysis

- Quantitative: student responses to the reflective writing prompts were directly mapped to the eight team science competencies
- Qualitative: constant comparative analysis was used to analyze student responses.
Results (Quantitative)

- Total n = 16, Average mean = 2.3 ± 0.3. The number of competencies identified per student ranged from 0 to 5.
  - One student did not identify any competencies.
  - One student identified 5 competencies.
- Developing Shared Vision (n = 9) and Fostering Trust (n = 8) were identified by most students.
- Two of the competencies were not identified by students were:
  - Sharing Recognition and Credit
  - Leveraging Network
Results Cont. (Qualitative)

- Three themes Emerged:
  - (1) Awareness of Grant Writing Process
    - Choosing a topic (identifying gap in literature)
    - Feasibility
  - (2) Change in Attitudes toward Transdisciplinary Team Collaborations
    - Misconceptions about group work (e.g., work ends up falling on one person)
    - Stereotypes about students from specific academic background (e.g., medical students are not interested in research, graduate students are only interested in their own area of research)
Results Cont. (Qualitative)

- (3) Awareness of Team Science Competencies
  - Choosing appropriate communication mode for message (e.g., text messages not appropriate to discuss project direction)
  - Leadership/peer mentoring
    - Roles organically emerged were not negotiated
    - Roles were interchangeable based on expertise
  - Importance of Psychological safety, Trust, Feedback, Unified Vision, Plan for addressing conflict
Conclusion

- The overall experience was a positive learning experience for students.
- Students own examples in the reflective assignment revealed an understanding of the importance of transdisciplinary collaborations and awareness of key elements of team science competencies.
- An inter-professional course with defined transdisciplinary team project may be an effective tool to teach team science competencies.
Future Directions

- Modification to the course evaluation plan will include semi-structured interviews and validated team effectiveness instrument in conjunction with reflective writings to measure the effectiveness of an inter-professional course with a defined transdisciplinary project in fostering team science competencies.