

## Science-of-medicine themes as content drivers for interprofessional education



Kristine E. Kamm<sup>1</sup>, Kim Hoggatt Krumwiede<sup>2</sup> and Angela P. Mihalic<sup>3</sup>

UT Southwestern Graduate School of Biomedical Sciences<sup>1</sup>, UT Southwestern School of Health Professions<sup>2</sup>, UT Southwestern Medical School<sup>3</sup>

### Abstract

**Background:** We implemented an interprofessional education (IPE) curriculum, Convergence, aimed at first-year medical, health professions and graduate students. Roles, responsibilities, behavioral styles, and aspects of teamwork are taught in the context of an annual science-of-medicine theme. Initially, we saw significant gains in attitude, but small or no gains in knowledge, as assessed by pre- and post-Convergence knowledge probes. We were thus challenged to improve student learning and our assessment of it.

**Methods:** To improve knowledge gains we brought focus to the science-of-medicine theme by developing case studies on the specific disease topic and translational research of the theme's keynote speaker. Each school held pre-sessions on the topic. Students subsequently met in small interprofessional groups to discuss the case on Convergence Day. An interprofessional committee of faculty experts developed the case and designed learning objectives and focused knowledge questions for the probe. Questions were also added to address behavioral styles and teamwork. Students completed the pre-probe in the fall and post-probe after Convergence Day. Improved performance was assessed by the fold increase in knowledge.

**Results:** Science-of-medicine themes were Obesity (2010-11), Aging (2011-12), Medical Genetics (2012-13), and Innate Immunity (2013-14). Our targeted case-study innovation was implemented for the last two themes. Each Convergence Day culminates in a university-wide lecture on the theme by a prominent clinician-scientist. By focusing on the lecturer's specific disease topic, students from all schools were better prepared to understand and appreciate the presentation. Gains in knowledge were significantly greater for all groups when comparing results before (Obesity and Aging themes) and after (Medical Genetics and Innate Immunity themes) our intervention. Combined results for pre- to post-probe fold increases were  $1.069 \pm 0.031$  (n=6) before and  $1.394 \pm 0.060$  (n=6) after the innovation ( $p < 0.001$ ).

**Discussion:** Knowledge gains in different areas (science-of-medicine topic, behavioral styles and teamwork) across three schools suggest that focused, theme-based content provides a productive medium for IPE. This may represent a good educational strategy for other efforts with IPE in the healthcare arena. For example, this strategy could be useful with multidisciplinary students looking into biotech innovation (engineers, business, scientists, etc.), or public health policy (physicians, nurses, educators, policy-makers, etc.).

### Convergence Goals, Methods and Assessment

The goals of Convergence are to develop, implement and assess activities to:

- 1) improve understanding of and respect for the roles of other health professionals,
- 2) enhance interprofessional communication, and
- 3) increase knowledge of effective teamwork.

Goals are addressed by small interprofessional groups of first-year students.

Groups meet twice in March to:

- 1) learn roles & responsibilities communication styles and selected teamwork skills, and
- 2) simulate a team meeting on the annual science-of-medicine theme.

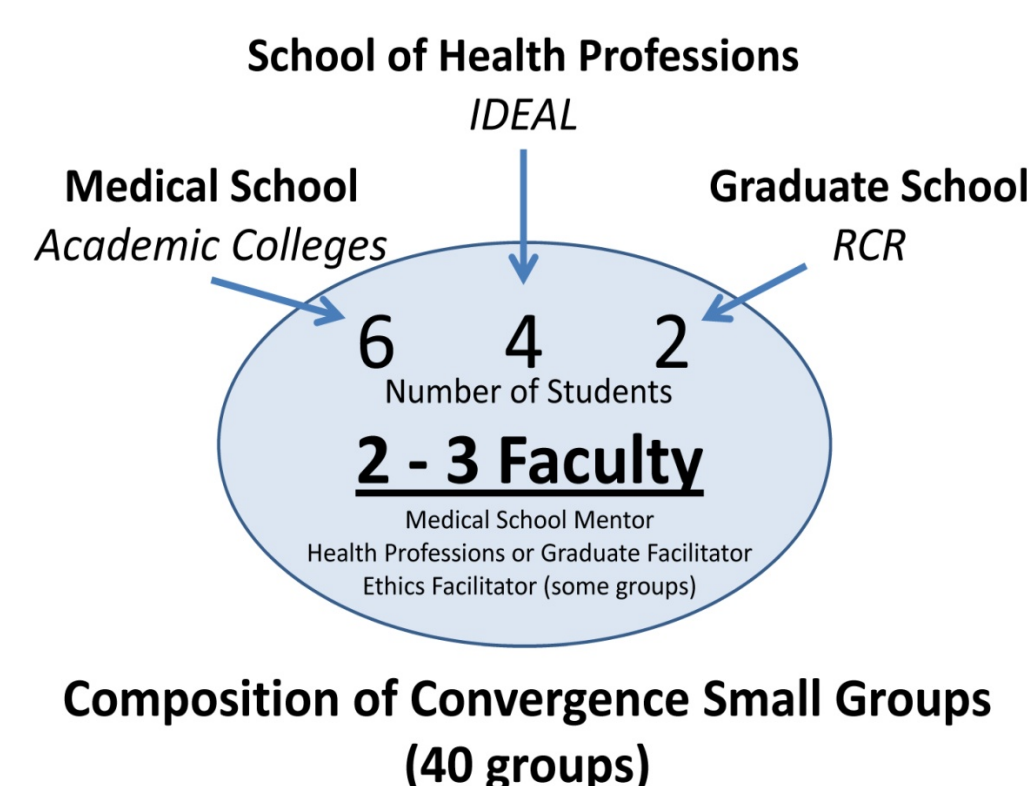
Assessment is accomplished by ;

- 1) Pre- and Post-Convergence Knowledge & Attitude Probe, and
- 2) Surveys with Likert-scaled questions and comment boxes.

### Organization of Small Groups

Convergence collaborated with professional development courses in the medical, health professions and graduate schools to accomplish interprofessional educational objectives in a small group setting. Students from all schools could meet together because the courses have adopted a common schedule.

Convergence groups were constructed based on the forty small groups of the Academic Colleges and their physician mentors. To each College group are added students from health professions IDEAL and graduate school RCR, plus a facilitator from either health professions or graduate faculty.



### Convergence Curriculum is Focused on Science-of-Medicine Themes

Year

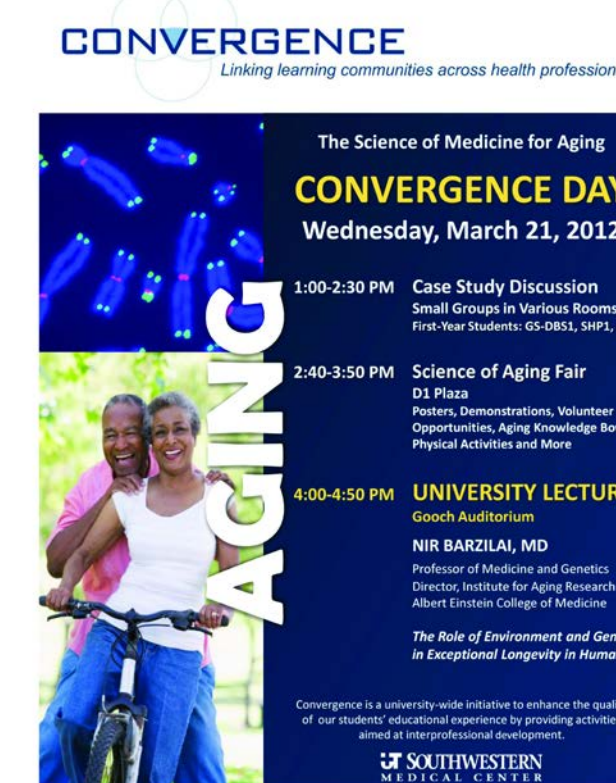
2010-2011

2011-2012

2012-2013

2013-2014

Convergence Themes and Keynote Speakers



Case Study Topic for Discussion

Non-Alcoholic Fatty Liver Disease

Alzheimer's Disease and Falls

Marfan Syndrome

PAPA Syndrome

Case Linked to Speaker's Research

NO

NO

YES

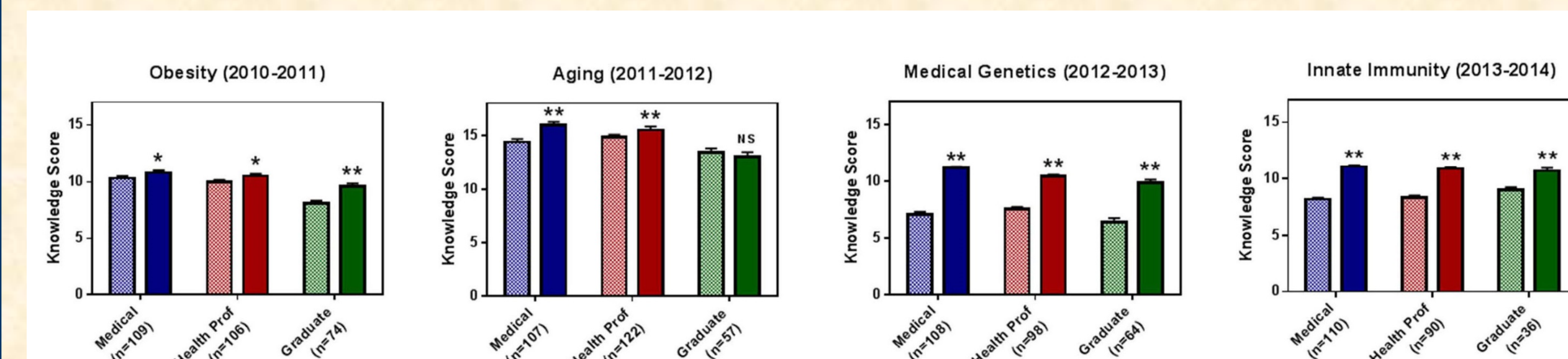
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### Convergence Curriculum

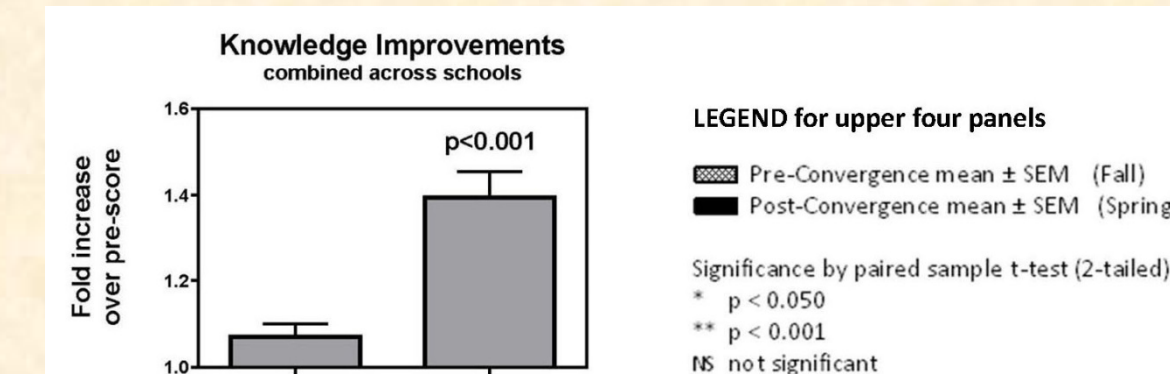
Students are introduced to the theme and topic in their school's learning community before joint sessions in March. The calendar also shows dates for knowledge and attitude assessments, and faculty development.

Convergence Calendar for 2013-2014 – Science of Medicine Theme: Innate Immunity				
Month (2013-2014)	Medical School (MS1)	School of Health Professions (HP1)	Graduate School (DBS1)	Faculty Development (MS, HP, DBS Faculty)
August	Pre-Convergence Knowledge and Attitude Probe			
Fall Semester		9/4 – Behavioral Styles and DISC – Facilitators 11/15 – Systemic Onset Juvenile Idiopathic Arthritis Case Intra – Faculty	12/4 – RCR: Behavioral Styles and DISC – S. Rovnik, PhD	12/18 – Faculty Development for Interprofessional Education and PAPA Case Preview (75 min) – Kamm, Krumwiede, Shah, Punaro
Winter Break				CME Survey
January	1/7 – Medical Physiology Clinical Correlation: Inflammation and PAPA Syndrome – M. Punaro, MD	1/17 – Professional roles in treating a case of Systemic Onset Juvenile Idiopathic Arthritis – Faculty, J. Fuller, MD		
February	2/12 – Behavioral Styles and DISC – A. Mihalic, MD, M. LaPorte	2/14 – Professional roles in treating a case of Scleroderma – Faculty 2/19 – SSHP Lecture Series: A case of PAPA Syndrome – M. Punaro, MD and patient family	2/19 – RCR: Discovery of the Inflammasome and PAPA Syndrome – V. Pascual, MD	
March 5	Combined College, RCR and IDEAL Small Groups Teamwork			Teamwork Session Preparation (20 min)
Spring Break				
March 19 Convergence Day	Convergence Day for Innate Immunity Combined College, RCR and IDEAL Small Groups 1:230 PM-PAPA Case discussion from the perspective of each profession 2:40-3:50 PM – Science-of-Medicine Health Fair 4-5 PM – All students attend University and Keynote Lecture – Dan Kastner, MD, PhD Horror Autoinflammation: The Molecular Pathophysiology of Autoinflammatory Disease			Case Study Session Preparation (20 min)
March-April	Student Surveys Post-Convergence Knowledge and Attitude Probe			Convergence Faculty Survey

### Knowledge Outcomes



To improve knowledge outcomes, we brought focus to the science-of-medicine theme by developing case studies on the specific disease topic of the theme's keynote speaker in 2013 and 2014. This approach led to significant improvements in theme knowledge across schools as assessed by the pre- and post-knowledge probe.



### Conclusions

- Knowledge gains across three schools suggest that focused, theme-based content provides a productive medium for interprofessional education.
- Strong institutional support is essential for any IPE project.