Feasibility and Perception of Virtual Reality for Anatomy Education in the High School Classroom

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Background

Virtual reality (VR) allows individuals to interact from afar with benefits over standard videoconferencing. The ENGAGE software permits development of virtual classrooms including a replica of the Stanford Clinical Anatomy Lab, with 3D anatomical models that can be manipulated and annotated in real-time. This project investigated the feasibility and perceptions of attending a VR anatomy lab by high school students.

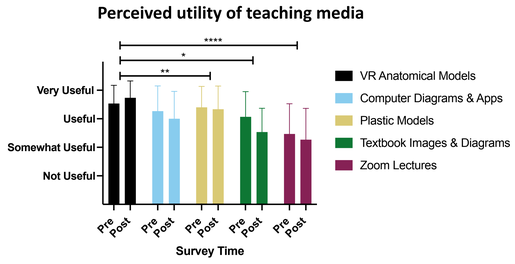
Methods

Two science teachers from Crespi Carmelite (all-male) High School in Los Angeles, California were loaned Oculus Quest 2 VR headsets for use in their Anatomy and Physiology (A&P) classes. Sixteen (n=16) students (age 17-18) were enrolled by informed consent/assent. Students completed a questionnaire to probe the perceived utility of VR lessons for A&P education before and after participating in two lectures involving the gastrointestinal and urinary tracts. Students self-selected into one of three groups; 1) participated in ENGAGE VR anatomy lab while wearing an Oculus VR headset (n=5); 2) participated in ENGAGE VR anatomy lab on their laptop or cellphone (n=6); 3) hybrid of groups 1 & 2 (n=5). All protocols approved by Stanford IRB eProtocol 56592.

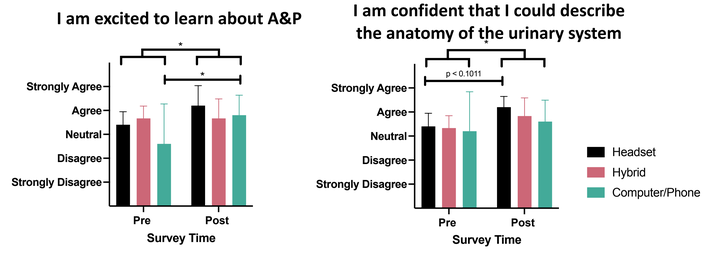
Figure 1. (A) The virtual Stanford anatomy lab in ENGAGE provides a life-like replica of Stanford's gross anatomy lab. Specimens can be displayed from a library, manipulated in size, location, and orientation, and labeled in real time. **B)** Instructors can use a virtual laser pointer to highlight anatomical structures. The specimen library includes 3D scanned specimens from real human donors and **(C)** computer-rendered anatomical models.

Results

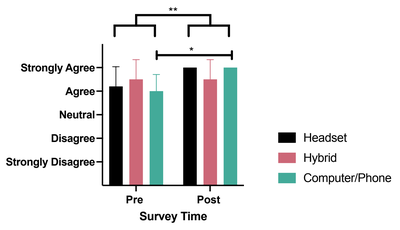
Students ranked VR anatomical models as more useful than plastic models, textbook images/diagrams, and zoom lectures



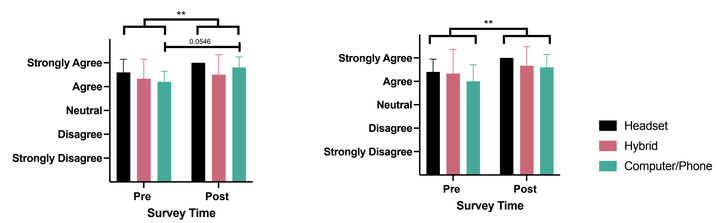
After VR A&P lessons, students were more excited to learn about A&P and had increased confidence in their understanding of the urinary system



After VR A&P lessons, students perceived VR to provide better in-class interactions with their peers



After VR A&P lessons, students wanted to use VR more frequently in school and were likely to recommend its use to other students for A&P education



Conclusions

This project established that VR is a feasible and well-received alternative to standard videoconferencing technology as both a distance and in-person learning platform for high school science education. The addition of VR in the A&P classroom increased students' confidence in their ability to describe anatomical content. Future studies will expand upon the impact of VR on learning specific to anatomy education.

Acknowledgements

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Surgeon perceptions and practices surrounding error disclosure

Developing simulation-based disclosure training for surgery residents

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Background

In a 2010 national survey of 7,905 surgeons, approximately 9% reported making a major medical error in the last 3 months.[1]

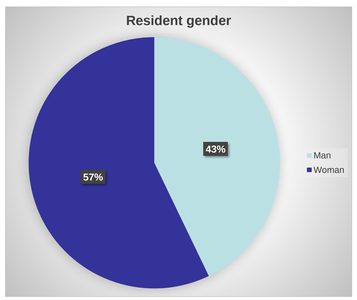
Despite this pervasiveness of medical errors, there remains a gap in surgeon training surrounding their disclosure.

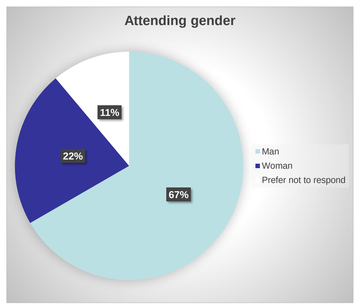
In a 2008 survey of over 1,100 medical students and residents, only 33% had reported receiving training in error disclosure.[2]

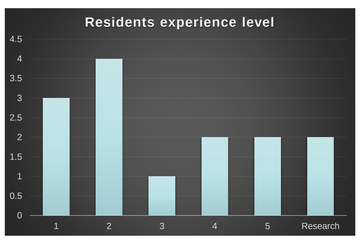
We hope to examine both perceptions and actual performance of surgical trainees at our institution before and after implementation of a novel, simulation-based disclosure training.

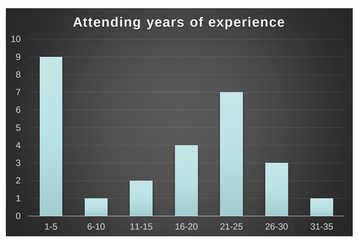
Methods/Results

A REDcap survey was conducted to examine general surgery attending and resident perceptions about disclosing surgical errors, incorporating a validated Barriers to Error Disclosure Assessment Tool.[3] This will be followed by a performance assessment in which residents disclose a surgical error to a standardized patient. The results will be used to develop a simulation-based education workshop.



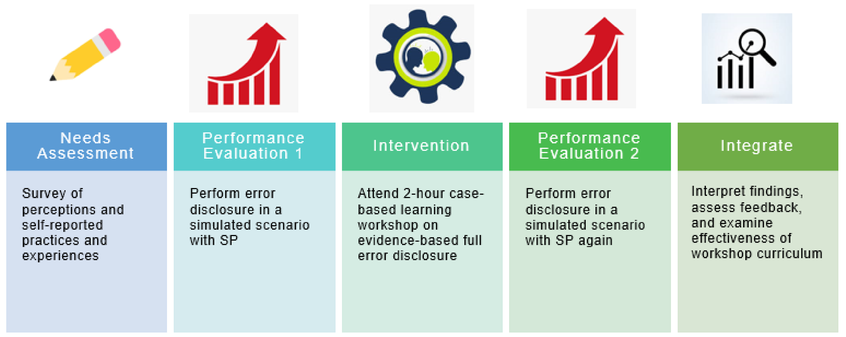




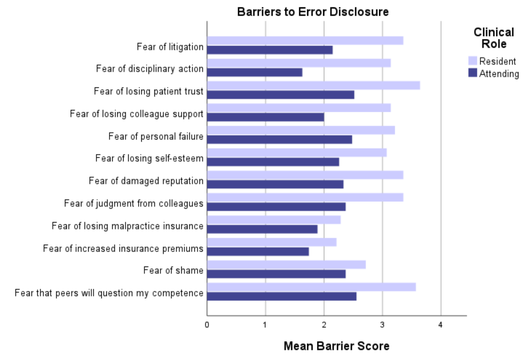


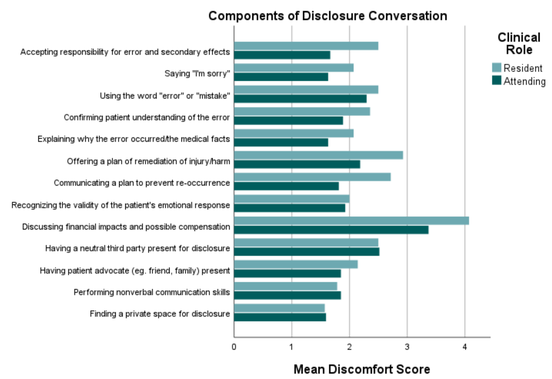
Summary of descriptive analysis of demographic data collected.

STUDY PHASES



- 41 respondents to the survey: attendings (27, 65.9%) and residents (14, 34.1%)
- 34.1% of all respondents reported previous disclosure training
- For nearly two-thirds of respondents (23, 63.9%), their most recent error occurred within the past year



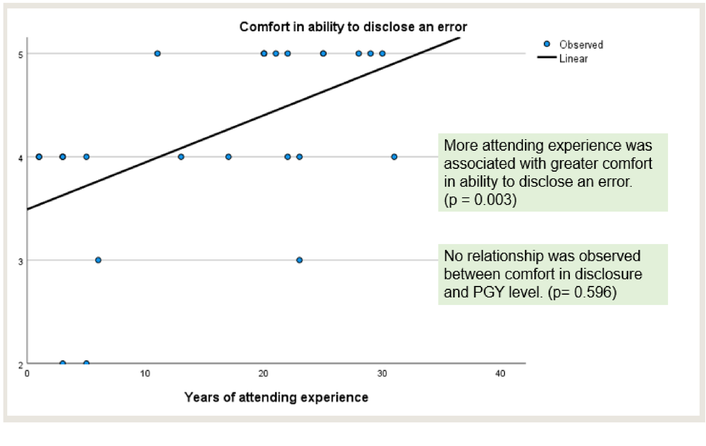


Clinical Role

	Count	Percent
Attending	27	65.9
Resident	14	34.1
Total	41	100.0

Previous disclosure training by Clinical Role

		Clinical Role	
		Attending	Resident
		N %	N %
Prior training in error disclosure	No	59.3%	78.6%
	Yes	40.7%	21.4%



Conclusions

- The majority of respondents are comfortable with accepting responsibility for the error, explaining the medical facts of the error, and communicating a plan to prevent re-occurrence.
- Respondents were in most agreement that fear of losing patient trust, fear of personal failure, and fear that peers will question the respondent's competence are barriers to disclosure.

Future directions

- Progression to second phase of study: baseline assessment of surgery resident performance of error disclosure in a simulated encounter with standardized patient

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Impact of a Mindfulness Program on a Physician Assistant Surgical Residency

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INTRODUCTION

Many healthcare Professionals including Physicians and Advanced Practice Providers experience burnout during their resident years. Despite the growing focus on trainee burnout, there is a lack of effective wellness programs that can easily be combined into a trainee's curriculum.

Figure 1. Group restorative postures

Figure 2. Legs-On-The-Chair Pose

OBJECTIVES

1. Objectively measure the effects of a mindfulness program on Physician Assistant Surgical Residents through pretest and posttest comparison.
2. Understand the association between mindfulness strategies and burnout.
3. Understand the correlation between mindfulness strategies and resiliency.
4. Practice breath work, open awareness, restorative postures and Loving-Kindness-Meditation to bolster resiliency and work with second-hand trauma, empathy, fatigue, and chronic stress by engaging the parasympathetic nervous system.

METHODS

Twelve surgical Physician Assistant (PA) Residents voluntarily participated in a structured mindfulness program initiated by their Program Director. An informal needs assessment was conducted by the Program Director and data were shared with a meditation instructor specialized in working with individuals affected by trauma and suffering from Post-traumatic Stress Disorder (PTSD). Participants completed two pre-course surveys prior to the first mindfulness session; first, the Maslach Burnout Inventory (abbreviated) which measured burnout as defined by symptoms of emotional exhaustion, depersonalization, and personal accomplishment. The second survey, the Response to Stressful Experiences Scale, measured individual differences in cognitive, emotional, and behavior responses to stressful life events. Data from these surveys and regular conversations and interviews with the Program Director also informed the meditation instructor's overall program design. The program consisted of four, fifty-minute sessions, held in-person over eight weeks in March and April 2022. Each session consisted of a brief introduction, science behind the meditation techniques, and time to practice the techniques. Both surveys will be readministered as posttests two weeks following the final session.

OUTCOMES

The first survey provided pretest baseline measurements for future comparison. Over 33% of initial responses to the Maslach Burnout Inventory demonstrated a high burnout rate regarding personal accomplishments. Over 41% of PA resident responses reflected a high burnout rate of emotional exhaustion. Fortunately, over 83% of respondents acknowledged a low burnout rate regarding the depolarization of patient care. The baseline Response to Stressful Experiences Scale demonstrated higher scores representing greater resiliency. Two additional post-course surveys were distributed to present longitudinal results. They demonstrated an improvement in personal accomplishment and emotional exhaustion. Depolarization was slightly increased. There were no changes in pretest or posttest outcomes on the Response to Stressful Experiences Survey.

Maslach Burnout Inventory

Response to Stressful Experience Scale

During and after life's most stressful events, I tend to...	Minimum	Maximum	Median	Mean	Standard Deviation
...take action to fix things.	3	5	4	3.83	0.69
...not give up trying to solve problems I think I can solve.	3	5	4	4.17	0.69
...find a way to do what's necessary to carry on.	3	5	4.5	4.42	0.62
...pray or meditate.	1	5	2	2.58	1.5
...face my fears.	1	5	3	3.17	1.07
...find opportunity for growth.	3	5	4	4.08	0.49
...calm and comfort myself.	2	5	3.5	3.58	1.04
...try to "recharge" myself before I have to face the next challenge.	2	5	4	3.83	0.99
...see it as a challenge that will make me better.	1	5	4	3.42	1.19
...look at the problem in a number of ways	2	5	4	4.08	0.95
...look for creative solutions to the problem.	1	5	3	3.08	1.32
...put things in perspective and realize I will have times of joy and times of sadness.	3	5	5	4.5	0.65
...be good at determining which situations are changeable and which are not.	3	5	4	4.17	0.8
...find meaning from the experience.	2	5	4	3.83	1.21
...find strength in the meaning, purpose, or mission of my life.	2	5	4	3.75	1.23
...know I will bounce back.	3	5	4	4.08	0.76
...expect that I can handle it.	2	5	4.5	4.25	0.92
...learn important and useful life lessons.	3	5	4	4.17	0.8
...understand that bad things can happen to anyone, not just me.	4	5	5	4.67	0.47
...lean on my faith in God or a higher power.	1	5	1.5	2.25	1.53
...draw upon lessons learned from failures and past. Mistakes	3	5	4	4.17	0.69
...practice ways to handle it better next time.	2	5	4	4	0.91

DISCUSSION

Data from previous research of mindfulness programs show decreased rates of burnout and increased resiliency and happiness. The author's hypothesis is that participation in a structured mindfulness program will allow PA residents to understand their individual responses to stress and this knowledge / self-awareness may lead to lower burnout rates and improved employee satisfaction. A mindfulness course is underway and survey responses will be collected at various points throughout the academic year. Further research is needed to explore the impact of a mindfulness program on rates of exhaustion, resiliency, happiness, and to determine any correlation with improved patient care and reduced employee turnover.

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Teaching Academy

Nuvance Health

A rare anatomical variation of the ulnar artery arising from the axillary artery: a cadaveric study

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Background

- A superficial ulnar artery (SUA) is an anatomical variation in which the ulnar artery branches proximally to its typical branch site within the cubital fossa. Variations in branching of SUAs exist with possible embryological origins to the exact branching point. [2]
- The literature suggests the presence of SUA is rare, with an incidence of 0.7-9.38%.[6] Bilateral presence of SUA is even more rare, with a reported incidence of 0.01-0.62%.[2]
- The presence of SUA is clinically significant for surgical teams, interpretation of angiographic images, and unintended intra-arterial cannulation.[2]

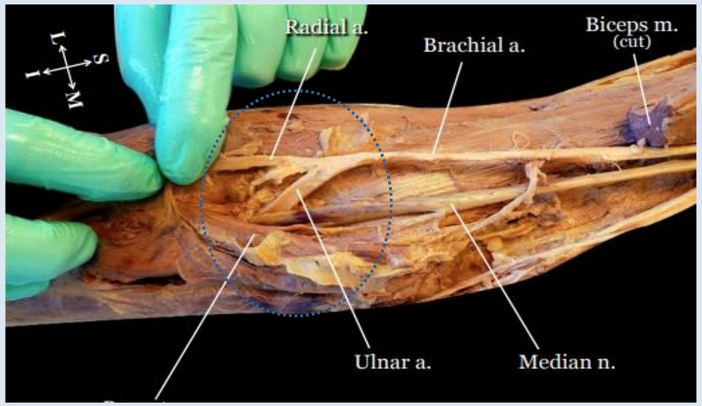

Figure 1: Reference image from Bernd Virtual Dissector of the right arm. The ulnar artery typically branches from the brachial artery in the cubital fossa near the elbow (blue dashed line).[1]

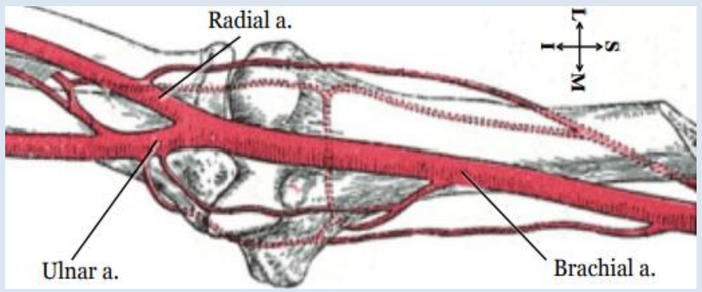

Figure 2: Reference figure of the right arm from Netter Anatomy.[5]

References and Acknowledgments

The authors would like to acknowledge UVM Larner College of Medicine Anatomical Gift Program and the Department of Neurological Sciences for their support, as well as the donor's next of kin for giving permission to report our findings.

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Images

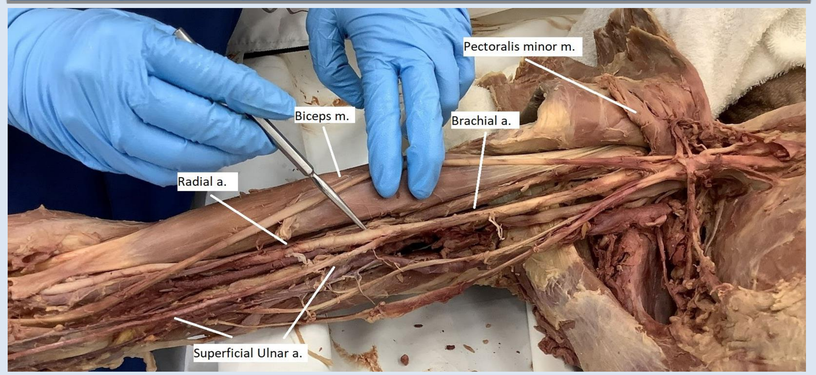


Figure 3: Image of the donor's right arm, indicating bifurcation of radial and ulnar arteries proximal to the cubital fossa.

Figure 4: Image of the donor's left arm, indicating branching (red circle) of the ulnar artery (dashed line) from the axillary artery.

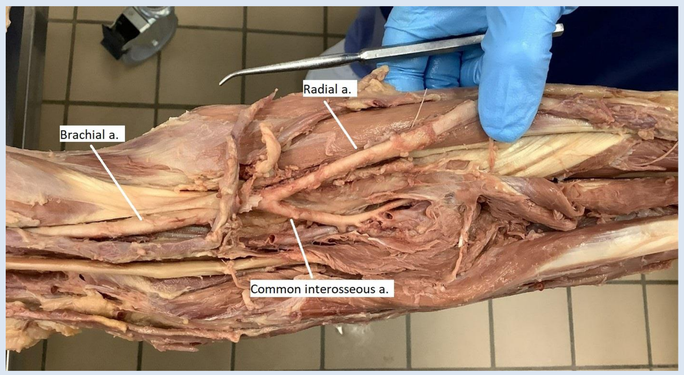


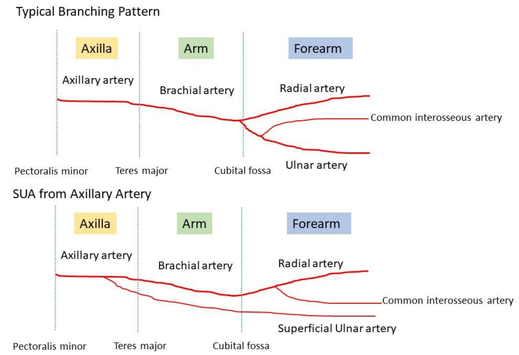
Figure 5: Image of the donor's left cubital fossa.
While the common interosseous artery typically branches from the ulnar artery, here it can be seen branching from the radial artery.

Discovery and Observations

- During anatomical dissection of the upper limb, a case of bilateral SUA was discovered in an 87-year-old white male cadaver. The donor's history was significant for peripheral vascular disease and coronary artery disease. Permission was received from the donor's next of kin to report on this discovery.
- The right SUA originated from the brachial artery superior to the cubital fossa, in the proximal half of the arm.
- The right SUA was much smaller in diameter than is typically encountered during cadaveric dissection.
- The left SUA originated from the second part of the axillary artery and continued down the medial aspect of the forearm independent from the brachial artery.

Discussion and Conclusions

Educational Significance
The differing branching pattern can be a source of confusion for students who may mistake the common interosseous artery as the ulnar artery. This unique branching pattern must be kept in mind during cadaveric dissections to accurately identify vasculature and preserve what may be a small and superficial ulnar artery.



Clinical Significance

- SUA anomalies, and forearm blood supply anomalies in general, must be taken into consideration during radiological or angiographic imaging of the forearm and surgery.
- The SUA risks injury during:
  - reconstructive surgery involving forearm skin flaps[2]
  - intra-arterial cannulation[2]
  - artery harvesting for coronary artery bypass grafts (CABG)[2]
- Injury to SUA can lead to ischemia in the distal portion of the forearm.[2,6]
- In certain cases where the radial artery (RA) is removed or used for a procedure, the ulnar artery is relied upon to continue providing blood supply to the hand and digits.
  - The RA is used in about 5% of CABG procedures, however its use is growing in popularity due to evidence of better outcomes in patients who receive arterial grafts.[4]
- It is recommended that an Allen test, which gauges collateral blood flow to the hand, be conducted on patients undergoing procedures involving either forearm artery to ensure blood supply to the hand will be preserved if the radial artery is used for a procedure. This is especially recommended for radial forearm free flaps. This test should be followed up with more advanced imaging to better visualize blood flow in the distal forearm.[7]

WHAT'S IN THE SECRET SAUCE?

Investigating and Designing Interprofessional Education Best Practices for Serious Illness Communication Trainings

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OBJECTIVE

To investigate best practices in interprofessional education for serious illness communication trainings. Our goal is to identify facilitation behaviors and course curricular elements to increase inclusive and equitable learning environments for all disciplines.

BACKGROUND

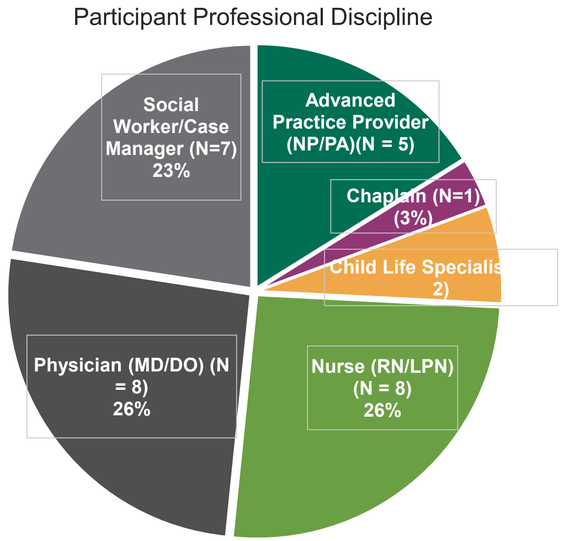
- Training clinicians in serious illness communication skills has been shown to increase the likelihood of goal concordant, high-quality care.[1,2]
- Deliberate practice can improve frequency and quality of goals of care communication [3,4]and increase meaning and connection in patient interactions.
- Interprofessional education fosters collaboration in team based clinical care leading to improved clinical outcomes, reduced cost of care and fewer medical errors.[5]
- There is ample evidence to support the impact of communication skills training, but there remains a gap on how to create an inclusive learning environment with small group trainings composed of professionals from varied disciplines

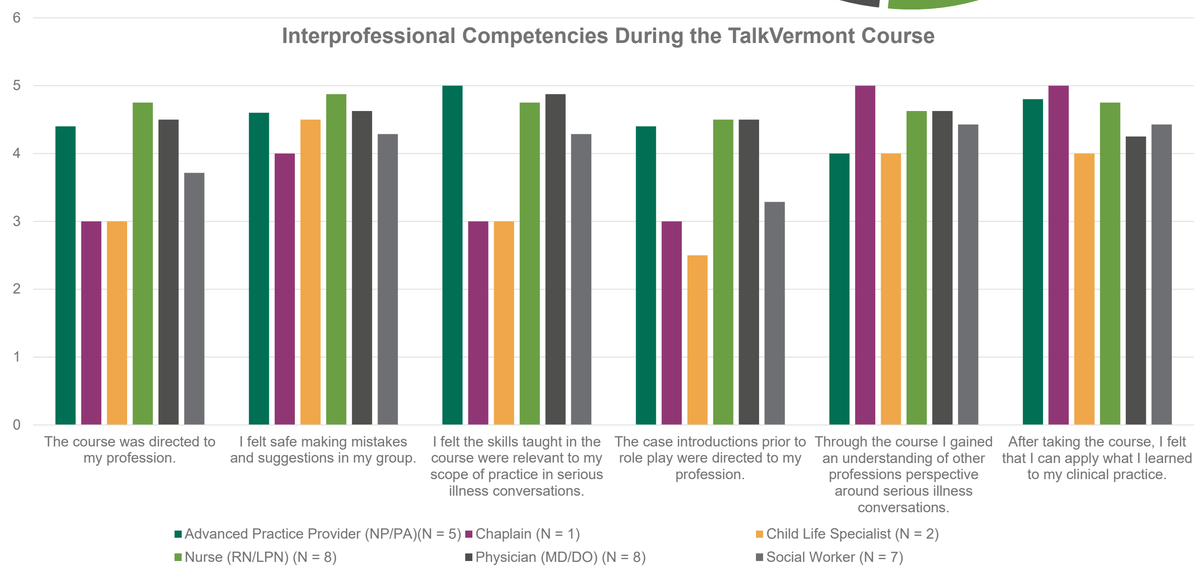
INNOVATION DESIGN

TalkVermont is a multi-component educational initiative designed to improve conversations between clinicians and seriously ill patients across the UVM Health Network. We have collaborated with VitalTalk and Ariadne Labs, two national leaders in communication training to devleop a unique interprofessional approach to teaching these skills. Our 8 hour courses feature evidence-based small-group learning focusing on cognitive mapping, deliberate practices with simulated patients, and just-in-time feedback to help our participants elicit patient values in the context of their illness.

This ongoing study is aimed at understanding the perspective of learners from diverse backgrounds and clinical expertise when participating in the TalkVermont serious illness communication training. We used survey and focus groups to gather data from course graduates.

Our intention is to use data obtained to update our course curriculum for 2023-2024 courses.





METHODS

Our mixed methods project included a survey eliciting experience and comfort with interprofessional competencies. We held five focus groups with participants of six professional disciplines. Our interview guide centers on opinions and insights into learner experiences during our communication workshops. We are using qualitative analysis of focus group transcripts to inform TalkVermont curriculum revisions. Following implementation of these changes, we will assess impact through a post course survey.

OUTCOMES

Initial review of survey data reveals that updating case introductions for role play will improve the inclusivity of our course. Qualitative analysis of focus group transcripts is currently ongoing.

STRENGTHS AND LIMITATIONS

Strengths include the diversity of professions and varied clinical experience of participants. Limitations include that participants were self-selected. Additionally, the course structure of TalkVermont has varied over time (virtual vs in person, facilitator training, etc.). Learning experiences were not uniform.

NEXT STEPS

We will create and disseminate a facilitation guide for serious illness communication training to assist educators in reducing barriers to inclusion and safety in the interprofessional learning environment at academic institutions nationwide.

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THE TALKVERMONT VISION:

A Needs Assessment for the Development of a Surgical Critical Care Curriculum for Residents

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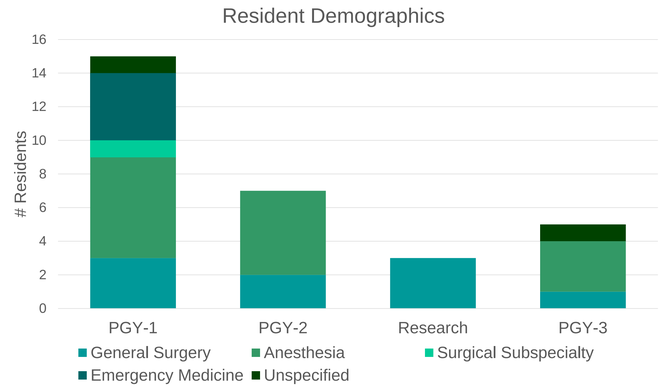
Background

- Critical care experience during training is required by the ACGME for general surgery, surgical subspecialty, anesthesiology, and emergency medicine residents
- Only 1/3 of LCME accredited medical schools require intensive care unit rotations[1]
- Residents may be entering residency with limited or no critical care experience
- At UVMMC, residents are responsible for overnight call in the surgical intensive care unit (SICU) beginning intern year
- High acuity patients, variability of patient condition, and unpredictable schedules can present challenges to resident learning in the SICU[2]
- Critical care curriculums for trainees have been shown to improve resident knowledge and confidence in multiple medical and surgical disciplines[3,4,5,6]
- There is currently no formalized curriculum for residents in the UVMMC SICU
- Protected education time and scheduled didactics on other surgery rotations at UVMMC have received positive feedback from residents

Methods

- Electronic survey distributed to all SICU attendings and all residents scheduled to rotate through the SICU
- Attendings were asked to rate expectations of residents in managing clinical conditions and performing procedures and if residents were meeting expectations
- Residents were asked to rate their comfort level managing clinical conditions and performing procedures and preferred learning modalities
- Clinical conditions and procedures included were based on the SCORE curriculum, ACGME requirements, and input from a critical care anesthesiologist and surgeon

Results



- 60% of residents reported medical school critical care experience
  - Experience ranged from 2-12 weeks
- Expectations and comfort level were ranked on a 5-point Likert scale quantifying resident autonomy

1= observation only
2 = direct supervision
3 = indirect supervision
4 = independent
5= supervise/teach others

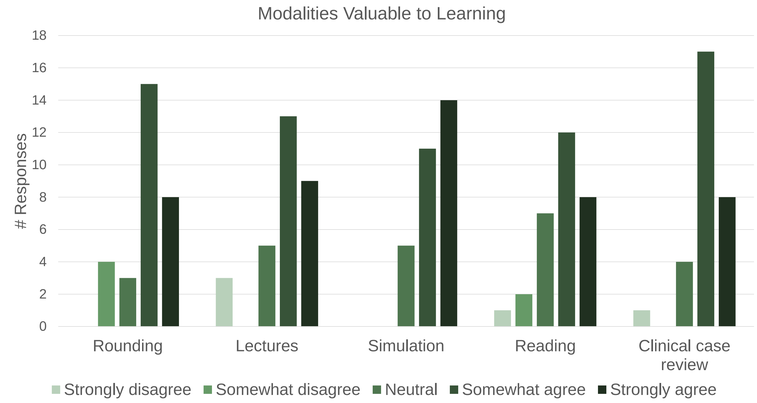
Mean PGY1 Resident Scores and Attending Expectation Scores

	Resident	Attending
Cerebral vasospasm	1.80	2.00
Endocrine dysfunction	1.93	2.50
Hepatic failure	1.93	2.25
Abdominal compartment syndrome	2.07	2.13
Cardiogenic shock/failure	2.07	2.13
Cardiac arrest	2.20	2.50
Neurogenic shock	2.27	2.63
Renal failure	2.33	2.63
Respiratory failure	2.33	2.50
Sepsis/Septic shock	2.40	2.38
Cardiac arrhythmias	2.47	2.87
Hypovolemic shock	2.53	2.63
Electrolyte & Acid-Base derangements	2.67	2.75
Nutrition	2.73	2.50
Agitation/Delirium	2.93	2.63
Arterial line insertion	2.33	2.13
Arterial line management	2.00	2.38
PA catheter insertion	1.73	1.63
PA catheter management	1.80	1.75
Central line insertion	2.20	1.88
Central line management	1.93	2.25
Ventilator management	1.93	2.38

Mean PGY2-3 Resident Scores and Attending Expectation Scores

	Resident	Attending
Cerebral vasospasm	2.33	2.88
Hepatic failure	2.60	3.13
Endocrine dysfunction	2.67	3.13
Abdominal compartment syndrome	2.80	3.00
Cardiac arrest	3.00	3.38
Neurogenic shock	3.07	3.50
Cardiogenic shock/failure	3.20	3.25
Renal failure	3.33	3.50
Electrolyte & Acid-Base derangements	3.40	3.63
Cardiac arrhythmias	3.53	3.5
Respiratory failure	3.53	3.38
Nutrition	3.60	3.50
Sepsis/Septic shock	3.93	3.38
Agitation/Delirium	4.00	3.50
Hypovolemic shock	4.13	3.75
Arterial line insertion	4.40	4.50
Arterial line management	4.20	4.13
PA catheter insertion	2.67	2.50
PA catheter management	3.00	2.75
Central line insertion	4.27	4.38
Central line management	4.13	4.00
Ventilator management	3.73	3.13

- Knowledge gaps reported by attendings
  - PGY 1: Electrolyte/Acid-base disorders & Renal failure
  - PGY 2-3: Cardiogenic shock/Cardiac failure
  - All PGY levels: Ventilator management
- 80% of residents agreed/strongly agreed that formal didactics would be valuable to their learning



Discussion

- There is variability in clinical critical care experience among incoming residents
- Resident comfort increases with PGY level; however, lower rated categories remain similar through progression of training
- Residents feel formal didactics would be beneficial to learning
- Simulation was rated as the most valuable learning modality by residents
- Currently developing curriculum that incorporates simulation to address knowledge gaps and increase resident comfort managing critically ill patients

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Perceptions on a Global Health Curriculum Among Pediatric Residents

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Background

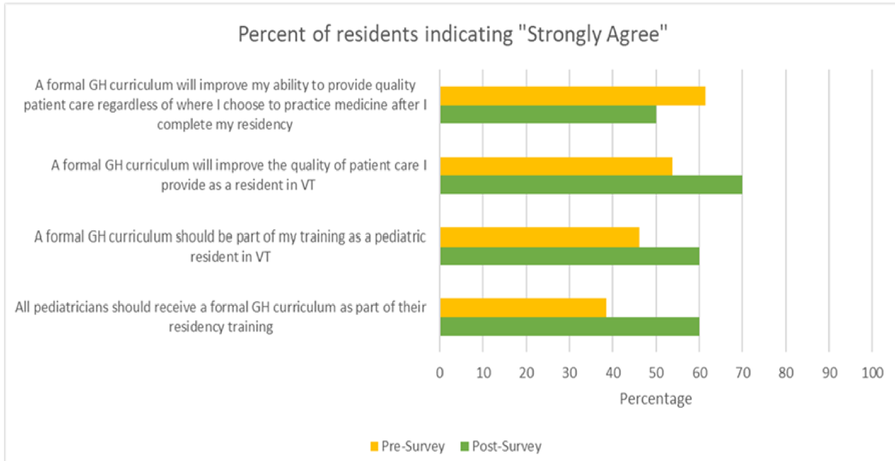
- About 1/4 of US based children were born in another country or have a parent who immigrated from outside the US. 1 of 200 children in the world is a refugee or displaced for another reason[4]
- In the last decade, the number of dedicated Global Health (GH) tracks for pediatric residents has doubled. Over 50% of programs offer international electives[3,5]
- Globalization of disease burden has warranted a push to train globally competent physicians versed in domains such as cultural humility, resource utilization, social determinants of health, and preventative medicine[1]
- Individualized learning has become a higher priority for many pediatric residency programs, with learner engagement and knowledge assessments becoming more integral in effective adult learning[6]

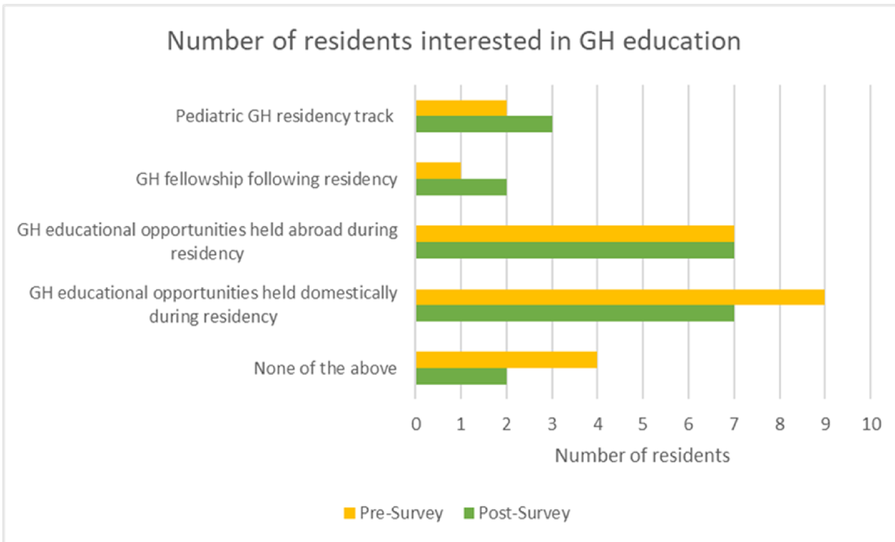
Methods

- In spring 2022 pediatric residents were asked to respond on a Likert scale from 1-5 the degree to which they agreed that a formal GH curriculum would benefit them as residents training in VT, in practice regardless of location, and whether GH was applicable to general pediatrics
- Additional questions included interest in pursuing GH opportunities of varying kinds and what types of barriers may prevent them from doing so.
- After participating in an introductory GH didactic session, a post-survey reassessed their previously stated opinions
- Descriptive statistical analysis compared pre- and post-survey data to detect any significant changes in response

Results

- Out of a possible 20 residents, 13 responded to the pre-survey while 10 responded to the post survey (50% response rate)
- Most notable was an increase in respondents who strongly agreed that a formal GH curriculum should be available to all pediatricians (38.5% pre- vs. 60% post-).
- Following the presentation on GH, most respondents strongly agreed to the addition of a formal GH curriculum (60%), and that it would benefit the quality of their patient care at their current institution (70%) and regardless of their future practice location (50%).





Conclusions

- The results of this study suggest that increased awareness about GH favorably affects how pediatric residents view GH curriculum as part of their training
- This study also suggests that pediatric residents believe a formal GH curriculum will benefit the quality of their patient care regardless of their future practice location
- In the beginning stages of developing a new curriculum, survey data may additionally offer insight into how to best target learning objectives toward the interests of residents to ensure maximum engagement and benefit from the curriculum.
- Limitations of this project include a small sample size, discrepancies in response rate between pre- and post-surveys, and deidentification of responses that precluded paired statistical testing
- Future directions of this project include repeated surveying of residents to track curriculum effectiveness and identify additional needs/knowledge gaps, administration to a larger resident cohort, and adaptation for other departments looking to implement dedicated GH curriculum

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Optimizing Nursing Student Well-Being: A Longitudinal Study

THE UNIVERSITY OF VERMONT COLLEGE OF NURSING AND HEALTH SCIENCES

Jane Nathan, PhD & Lili Martin, DNP, RN, PCCN

Background

Mental health issues among nursing students are on the rise.[2]

Stress, anxiety, and depression contribute to impaired physical and mental well-being, burnout, dropout rates, and suicide. [2,6]

Additionally, a 2-year COVID-19 impact study *(N*=12,694 nurses) found younger nurses in particular are impacted by the pandemic: [1]

- 66% are anxious
- 43% are depressed
- 2 out of 3 reported burnout
- 63% considering leaving the profession

We must provide nursing students and nurses the tools they need to manage stress and optimize physical and mental health.

Stress management training has been shown to decrease stress and anxiety and improve the mental health of healthcare practitioners.[3,4,5]

Purpose

1. To evaluate the effectiveness of an 8-week Stress Management and Resiliency Training (SMART) with 4th-year B.S nursing students compared to a group of controls.

2. To re-evaluate groups one year later to determine any changes over time.

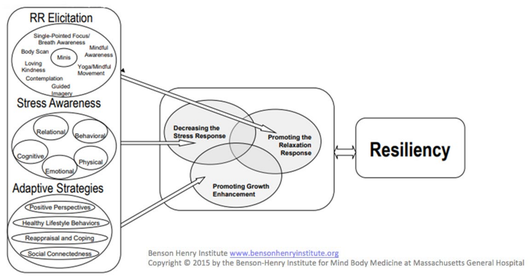
What is SMART?

A wellness curriculum developed at the Benson Henry Institute at Harvard Medical School and Massachusetts General Hospital.

SMART provides a wide array of evidence-based stress management tools drawn from:

- Positive psychology literature
- Established CBT techniques
- Life satisfaction, mindfulness and meditation literature

SMART Components



Benson Henry Institute www.bensonhenryinstitute.org

Methods

All 4th-year B.S. nursing students were invited to participate *(N*=95):

- 14 students self-selected to take SMART
- 18 students chose to be in the control group

A SMART Certified Practitioner ran the 1.5-hour sessions virtually for 8 weeks during the 2020 fall semester.

Standardized and qualitative measures were administered to both groups around the 8-week training and again 1-year later.

Control and SMART participants were paid $25 at each data collection point.

Quantitative Results

Means & Paired T-Tests Before SMART, After SMART & One Year Later

	Range	Group	Before SMART (SMART *n*=14, Con *n*=18)	After SMART (SMART *n*=14, Con *n*=18)	One Year Later (SMART *n*=11, Con *n*=18)	*p* Changes Before & After SMART	*p* Changes One Year Later
Mindful Attention Awareness-15	Higher score = greater mindful awareness (Range 1-6)	SMART Control	3.7 4.0	3.7 3.6	4.1 3.9	.91 .01	.35 .18
Perceived Stress Scale-10	Moderate stress 14-26 Higher stress 27–40 (Range 0-40)	SMART Control	22.4 16.7	19.1 19.9	16.1 20.3	.05* .02	.23 .68
PROMIS-29 Anxiety	Higher score= greater anxiety symptoms (Range 2-10)	SMART Control	6.3 5.2	5.3 5.7	5.0 6.0	.05* .21	.83 .47
PHQ-2 Depressive Symptoms	Higher score= greater depressive symptoms (Range 0-6)	SMART Control	1.8 1.1	1.0 1.3	1.5 2.1	.05* .60	.25 .03
Brief Resilience Scale-6	Higher score= greater resiliency (Range 1-5)	SMART Control	2.9 3.5	3.3 3.5	3.4 3.4	.13 .54	.46 .21
Mind-Body Medicine Engagement	Range 0-20 Higher score= more MBM practices	SMART Control	7.4 7.2	10.1 7.2	8.2 6.4	.01 1.0	.02 .05*

p < .05 two-tailed t-test (* one-tail)

Beginning group differences:

SMART participants started with higher stress and less resilience.

After the 8-week Training & 1-Year Later:

SMART participants demonstrated:

Lower perceived stress levels → stable 1 year later

Reduced anxiety & depression symptoms → stable 1 year later

Increased mind-body practice → decreased 1 year later

Controls demonstrated:

Increased perceived stress levels → unchanged 1 year later

Decreased mindful awareness → unchanged 1 year later

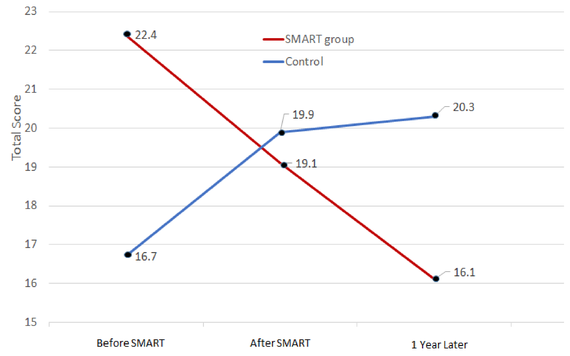
Significantly greater depression symptoms 1 year later

Decreased mind body practices 1 year later

Quantitative Results Cont.

As stress levels decreased over time for SMART participants, they increased for the controls

Perceived Stress Scale: Before, After & 1 Year Later



Qualitative Results

SMART Participants:

100% would recommend SMART to others

80% felt SMART should be required for all nursing students

64% were using SMART strategies a year later

1 Year Later:

46% SMART vs. 78% Controls felt their lives were very stressful

82% SMART vs. 56% Controls were satisfied with their jobs

55% SMART vs. 17% Controls rated their mental health as good to very good

67% Controls wished they had taken SMART

Majority of ALL participants agree to strongly agreed:

- There should be more opportunities to learn stress management techniques during nursing school
- It is important to learn about and utilize mind body practices to manage their own stress
- Nurses should be able to implement stress management techniques with patients

Comments One Year Later

SMART Participants

It was incredibly helpful to learn techniques for myself and my patients.

This jumpstarted my journey to creating a healthier lifestyle mentally & physically. I now have the tools.

…Now that I have a foundation and know how much better it makes me feel, I feel inspired…

THANK YOU! I didn't realize how much I needed this and could not be more grateful for it during this time!

It truly helped me grow and advance as a person and future RN.

Thank you for this amazing course!

CONTROL Participants

I am drowning every time I come to work…

I already feel burnt out…

I have no tools to manage stress.

Every part of me wishes I took the stress management course…

Summary & Next Steps

SMART benefited senior nursing students by decreasing stress, anxiety, and depression around the training and one year later.

SMART participants were very satisfied with the training and would highly recommend it for all nursing students.

Those who didn't participate in SMART had increased stress and depression one year later.

In retrospect, many of those who didn't take SMART wish they had.

Next steps:
A 2-credit course entitled "Compassionate Care for Nurses" exploring:

- The impact stress has on disease process
- Stress management techniques for self and patient

Acknowledgments & Contact

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References

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A Pilot Study of Residency Program Director Expectations in a Growing Pass/Fail Environment

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LARNER COLLEGE OF MEDICINE

BACKGROUND

- Residency programs have historically relied on metric-driven assessment tools to rank applicants.
- In order to provide a more holistic, equitable assessment of student performance, many medical schools are shifting away from standardized testing/rankings toward P/F curricula and competency based assessments such as Entrustable Professional Activities (EPAs).
- Program directors are therefore having to rely more and more on subjective assessment tools such as letters of recommendation and personal statements, despite a high level of skepticism regarding their true value.
- In addition to the challenges noted above, success in residency often depends on attributes *not* currently being systematically assessed, i.e., team work, resilience, curiosity, and a growth mindset.

OBJECTIVE

- To assess the parameters currently being utilized by University of Vermont (UVM) Program Directors in the selection of resident applicants.
- To develop new assessment tools that more closely align with the attributes associated with success in residency and beyond.

METHODS

- Literature review
- UVM Medical Center (UVMMC) Program Director interviews in the specialties listed in Table 2
- Interviews aimed at querying current methods beings utilized in their review of American Medical College Application Service (AMCAS) applications
- Emphasis was placed on attitudes regarding the impact of a pass-fail United States Medical Licensing Exam (USMLE) and Undergraduate Medical Education (UME) assessment system on the residency match process.
- Program Director survey to rank American Association of Medical Colleges (AAMC) Core Competencies in order of most desired applicant characteristics[1]

RESULTS

Table 1: Residency Program Directors ranking of the most desired residency applicant characteristics from the AAMC Core Competencies

Characteristic	Adjusted Score	SD (σ)
Teamwork	2.14	1.21
Reliability and Dependability	2.57	1,51
Critical Thinking	5.14	2.61
Resilience and Adaptability	5.14	2.41
Ethical Responsibility	5.71	3.30
Capacity for Improvement	7.29	2.75
Cultural Competence	7.57	4.58
Oral Communication	7.57	4.16
Written Communication	8.14	2.85
Service Orientation	8.86	3.67
Social Skills	9.00	1.83
Quantitative Reasoning	10.29	2.06
Scientific Inquiry	11.57	1.27

Scores are an average (n=7) from program director respondents. Lower numerical score represents higher ranked characteristic

Table 2: Residency Program Directors prioritization of AMCAS data for selection of residency applicants for an interview

Which of the following AMCAS criteria do you prioritize in your assessment of applicants?

Specialty	Filter by Step 2 Scores?	Most important aspect of AMCAS?	How do you treat tokens?
Family Medicine	No	Letters of Recommendation (LoR)	N/A
Internal Medicine	No, unless failed	LoR	Works as tie-breaker
Neurology	No	LoR	Works as tie-breaker
OBGYN	Yes	LoR	Works as tie-breaker
Orthopedics	Yes	LoR	N/A
Pathology	No, unless failed	Personal Statement	N/A
Pediatrics	No	MSPE, Deans Letter	Favored

DISCUSSION

- Residency program directors at UVMMC identified the following as the most important attributes they consider when assessing residency applicants: teamwork, reliability and dependability, critical thinking, resilience and adaptability.
- Program directors were open to exploring standardized measures of the above characteristics, provided there was some measure of consistency.
- This data could help guide UME medical educators on developing formal, longitudinal assessment tools of desirable traits.
- Success in residency often depends on noncognitive attributes listed in Table 1, competency-based education has yet to bridge the gap in assessment of these qualities.
- There is a wide range of responses necessitating further inquiry and an expansion in the number of program director interviews.

FUTURE DIRECTIONS

- Expansion of our inquiry to include all program directors at UVMMC.
- Expansion of our inquiry to include program directors from other institutions
- Creation of a list of “Larner Physician Attributes” (LPAs) that help define the qualities we seek to develop among graduates to best meet the health care needs of society.
- Adjustment of LCOM curricular learning objectives to include LPAs
- Exploration of new assessment tools for LPAs

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Advancing Addiction Medicine in Undergraduate Medical Education: Piloting an Addiction Medicine Elective

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Background

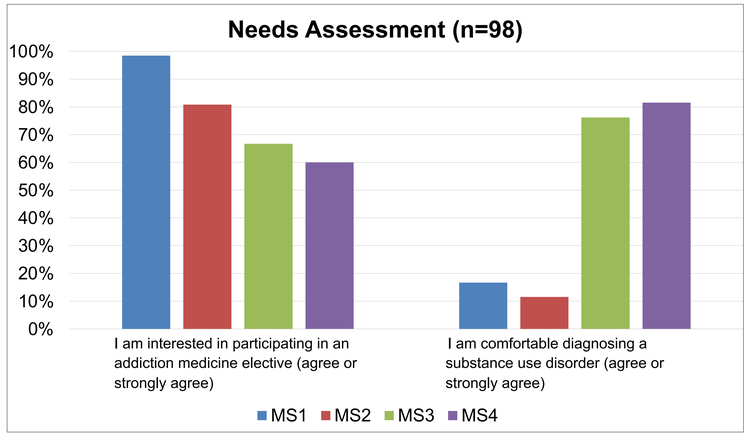
Opioid overdose deaths are preventable, and substance use disorders (SUDs) are treatable. Drug related deaths are surging in the United States with over 100,000 lives lost to overdose in 2021.[1] Physician education in addiction medicine is inadequate and stigma toward those who use drugs is widespread, resulting in poor health outcomes.[2] It is imperative that future doctors are trained to provide addiction treatments that reduce morbidity and mortality.

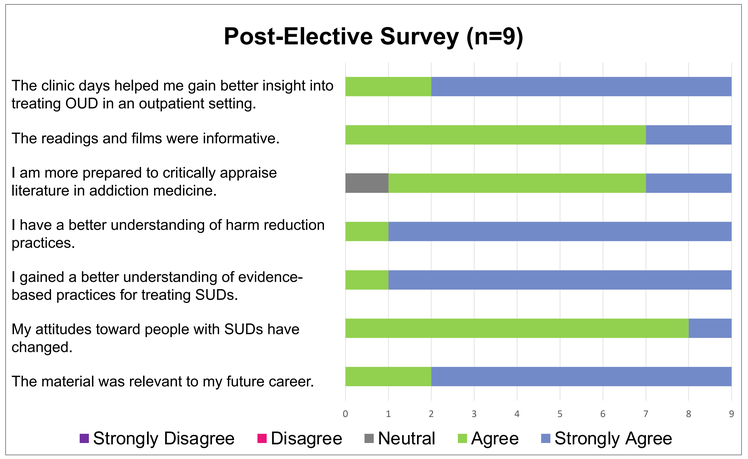
Although Larner College of Medicine (LCOM) students are exposed to topics in addiction medicine during preclinical and clinical years, a coordinated curriculum did not exist. We developed an elective to prepare medical students, regardless of specialty interest, to provide compassionate, evidence-based care to people with SUDs. This elective is a part of the Area Health Education Centers (AHEC) Scholars' Program that provides students with deeper knowledge and experience working with underserved populations.[3]

Methods

- A needs assessment was conducted via a voluntary, anonymous survey to gauge interest in and knowledge of addiction medicine topics using a 5-point Likert scale (graded from strongly disagree to strongly agree). Twenty percent of LCOM students responded to the survey.
- A 2-week addiction medicine elective was offered to 4th year medical students twice during the 2021 academic year.
- The elective content was approximately 70% reading, film, and didactic material and 30% clinic and field trip experiences.
- University of Vermont faculty with expertise in addiction medicine taught the didactic material.
- Students rotated in Vermont's nationally acclaimed outpatient Hub and Spoke Model of care. Other experiences included site visits to a syringe service program, low barrier buprenorphine clinic, peer recovery coach program, journal club, and participation in mutual support group meetings.
- Anonymous, post-elective surveys were completed. They included 7 questions with a 5-point Likert scale and an open feedback section. Nine of ten students completed the survey.

Results





Student Quotes

> I wish that this course was mandatory and given at an earlier point in my education, maybe even during preclinical years. More specifically, the compassion demonstrated and "taught" within the course would be influential, not only for myself but other classmates that struggle to treat patients with compassionate care.

> Everything was relevant – the readings, the lectures, field trips, and the clinical experiences.

> The content of this course was consistently patient-oriented and humanistic. These are qualities I strive to include in my clinical practice, and I think that they are key components to addressing the individual needs of patients who use substances.

Discussion

- Many LCOM students were interested in taking an addiction medicine elective, though interest waned across years.
- Participants felt the material presented was relevant to their future careers and gave them a better understanding of evidence-based practices for treating SUDs.
- It was challenging to find an appropriate time in the 4th year schedule where all interested students were able to access the elective.
- Collaboration between departments and with community healthcare professionals was key to developing this course.
- Medical schools should consider adding addiction medicine electives to the curriculum in order better prepare students, regardless of specialty interest, to provide care for patients with SUDs.

Conclusion

- The addiction medicine elective provided 4th year students in depth study and clinical experience in caring for patients with SUDs.
- Students agreed or strongly agreed that learning goals were achieved, the material was relevant to their future careers, and their attitudes toward people with SUDs had changed because of the elective.
- Students valued the small, interactive sessions with faculty, the field trips, and direct patient care. Although it was a self-selected group, participants felt all medical students would benefit from exposure to the topics presented in this course.
- The next steps are to further develop topics in addiction medicine within the extant medical curriculum and continue to make 4th year elective opportunities available.

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Raising Obstetricians: Integrating Trauma Informed Care and Doula Skills into the Ob/Gyn Clerkship

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BACKGROUND

Training in trauma-informed care is not yet standard in undergraduate medical education, yet is critical to providing equitable care across populations. The Ob/Gyn clerkship provides clinical opportunities for medical students to apply a trauma-informed approach, particularly during prenatal care and on labor & delivery. Birth doula and midwifery practices similarly prioritize birthing people's psychological and emotional well-being, recognizing that one's life experiences may affect interactions with healthcare providers.

We developed an interprofessional curriculum using tenets of midwifery and doula care to teach trauma-informed care and labor support practices to 3rd year medical students beginning their Ob/Gyn clerkship.

AIMS

- Teach the basics of trauma informed care
- Provide students with sensitive language for patient care
- Review the evidence behind birth doulas improving obstetric outcomes
- Improve comfort with the L&D learning environment by providing tips on how to be helpful for labor support
- Benefit from interprofessional education

EDUCATIONAL SESSION

Session:
- 60 minute Zoom session during Ob/Gyn Clerkship orientation
- Facilitated by 4th year medical student and doula (midwife and Ob/Gyn attending when schedule allows)

Pre-Reading:
1. Handout on basics of trauma informed care and doula support skills
2. Stephanie Tillman's article "Painful Cervical Exams During Labor"[1]

Didactic component:
- Discussion around trauma-informed care
- Education on labor support skills
- Discussion around how medical students can effectively advocate for patients

Video Content:
- Interviews with Ob/Gyn resident and midwife team
- Depiction of an emotionally supportive space during a water birth
- Communication around cord cutting post delivery
- Debrief discussions following each video

Other Presentations

Workshop at APGO Faculty Development Seminar, Scottsdale, Arizona Jan 7-10th 2023

DISCUSSION

While trauma-informed care is particularly important for Ob/Gyn, it is critical for all specialties and providers should assume that all patients may carry trauma. We have found that medical students at the Larner College of Medicine received limited education in this area and benefit from additional education, especially considering many will not become Ob/Gyns. Additionally, medical students are in a unique position to support patients with their increased time, which is therapeutic for patients. Our goals for this session are to build confidence in medical students to become active advocates, provide skills to be helpful in patient care during deliveries, and for medical students to move into their careers with a trauma-informed patient care lens.

FUTURE DIRECTIONS

- -Incorporate this training into the Medical Student 4th year and residency "bootcamp"
- -Include sessions on doula skills and trauma-informed care into residency didactics
- -Create a medical student 4th year elective that includes the 22-hour doula training, readings, and discussion around how these principles can be put into practice.
- -Pair interested medical students with patients to serve as a doula through their prenatal appointments and delivery.

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Fostering the Qualities of Excellent Clinical Teachers in Medicine: A Pilot Observed Structured Teaching Encounter

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INTRODUCTION

- The Accreditation Council for Graduate Medical Education (ACGME) includes teaching skills in its Core Competencies and Milestones.
- The Larner College of Medicine (LCOM) at the University of Vermont (UVM) offers a Residents, Students, and Fellows as Teacher (RAST) elective twice annually for fourth-year medical students, residents, and fellows.
- The effectiveness of the course has not yet undergone formal evaluation.

METHODS

- The pilot session was held at the conclusion of the week-long RAST elective to assess implementation of teaching strategies learned in the course.
- We utilized the Observed Structured Teaching Encounter (OSTE), a well-documented clinical teaching simulation strategy [1-3].
- Learners chose one of six adult and pediatric clinical scenarios, prepared their teaching for five minutes, and led a teaching encounter with another learner acting as a student.
- Performance was measured using a published OSTE assessment form [3].
- Participant perception of the activity was assessed via survey using a standard Likert scale.

RESULTS

Figure 1. OSTE Assessment Form

OSTE Assessment Form *Resident:*_____
Date: __/__/2019 *Learner:*_____ *Reviewer:*_____

The Five Microskills of Clinical Teaching - Assessment Form (OSTE)

	Criteria For Evaluation	Evidence	Emerging Evidence	No Evidence
Learning Environment	Models professionalism (demonstrates respect for learner)	◯ Allows the learner to speak without interrupting, creates a non-intimidating learning environment	◯ Occasional interruption but regroups	◯ Disinterested, rude, judgmental comments
	Demonstrates enthusiasm for teaching	◯ Motivated to teach, upbeat/positive attitude, includes component of "teach a general rule"	◯ A bit lost, overwhelmed, but does teach	◯ Distracted by case and does not teach
	Encourages learner to voice uncertainty, ask questions	◯ Asks something like "How can I be helpful to you?", creates supportive learning environment/invites inquiry	◯ Some encouragement of inquiry	◯ No encouragement of inquiry
Learner	Encourages learner to present and share information	◯ Demonstrates active listening, engaged, makes eye-contact, nods with understanding	◯ Demonstrates active listening, but interrupts occasionally for clarification	◯ Does most of the talking, frequent interruptions, takes over the presentation
	Solicits and provides learner feedback	◯ Provides feedback (Ask-Tell-Ask Method), specific comments	◯ Provides feedback but does not solicit learner input or feedback given is generic	◯ Forgets/avoids feedback
	Helps learner make connections	◯ Crafts questions to support synthesis of information, helps learner develop differential	◯ Discussion is simple, mainly talks out loud with their own thought process	◯ Does not promote discussion of case nor ask thought provoking questions

The Five Microskills	Asks learner to make a commitment (diagnosis)	◯ Asks "What do you think is going on?" Gets a commitment (+/- follow up questions)	◯ Gets learner to talk, but does not commit to diagnosis	◯ Does not ask learner to make a commitment, gives own diagnosis
	Probes the learner for supporting evidence i.e. asks Why?	◯ Asks why, probes for reasoning, investigates learner's knowledge/thought process	◯ Asks basic follow up questions that do not thoroughly investigate learner thinking	◯ Does not probe for supporting evidence
	Teaches the learner a relevant topic related to the case presentation	◯ Teaches, topic is relevant, teaching is well-organized, succinct (1-2 points made)	◯ Teaches but digresses into a mini-lecture, topic is not related to case or learner questions	◯ Does not teach
	Provides positive feedback (reinforces what was done right)	◯ Discusses specific details about what was done well	◯ Provides positive feedback, but it is generic	◯ Does not provide positive feedback
	Corrects mistakes thoroughly and accurately (identifies 1-2 items for improvement)	◯ Discusses specific opportunities for improvement	◯ Provides generic suggestions	◯ Does not provide constructive feedback, or mentions too many mistakes
Other Teaching Skills	Maintains good eye contact with learner during case presentation and discussion	◯ Comfortable interaction, relaxed posture, good eye contact	◯ Appears nervous, some eye contact	◯ Interaction appears uncomfortable, cold
	Leads an organized discussion and teaching session with learner	◯ Flow is organized, not rushed, covers all microskills	◯ Conversation is a bit disorganized but covers most microskill components	◯ Disorganized, no teaching, does not cover all microskills
	Encourages self-directed learning by suggesting further reading on the teaching topic	◯ Encourages further questions on the case, suggests future topics to read/discuss	◯ Mentions to read on topic but advice is generic	◯ Does not encourage self-directed learning
	Encourages self-reflection by encouraging learner to develop an action plan (i.e. what to consider for next time)	◯ Outlines goals for next time, includes learner input, develops action plan	◯ Discussion includes input from learner, does not develop formal action plan	◯ Does not encourage self-reflection

v01-14-2019

- All participants strongly agreed (n=8) that the OSTE experience was valuable and that the feedback received was useful for their teaching.
- The teaching cases were felt to be an accurate representation of real-life scenarios.
- Learners agreed that the environment was conducive to practicing teaching skills.
- Results are summarized in Table 1.

Table 1. Participant satisfaction survey results

Quality Measure	Average Agreement Standard 1-5 Likert Scale 5=strongly agree (Standard Deviation)
Instructions for the OSTE were clear.	4.75 (0.46)
The cases were clear.	4.875 (0.35)
The cases accurately represented real-life scenarios.	4.875 (0.35)
I had enough time and ability to prepare my teaching.	4.625 (0.52)
I felt comfortable teaching my case topic after the allotted research time.	4.625 (0.52)
The environment and setting were conducive for me to practice my teaching.	4.875 (0.35)
The assessment form was clear and easy to use.	4.375 (0.74)
The feedback I received was useful for my teaching.	5 (0)
Overall, this was a valuable experience.	5 (0)

DISCUSSION

- Our data show that learners valued the OSTE experience in the development of teaching skills.
- In addition to this ongoing needs assessment, we plan to implement pre- and post-elective OSTE sessions in the RAST course to assess for interval change following course participation.
- In the future, the elective will include a longitudinal workplace-based assessment to ensure long-term behavioral change for learners.

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Fostering Belongingness to Achieve a Successful Clinical Education Experience for a Student who is Deaf

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Background

- The APTA affirms the need for the physical therapy profession to promote diversity, equity, and inclusion in education and practice
- DPT programs and clinicians must embrace the challenge of educating and preparing students of all abilities to become successful clinicians
- Clinical education experiences (CEE) are crucial components of DPT education and provide the opportunity to foster a sense of belongingness for all students, particularly those with differing abilities and backgrounds
- Using an ethnographic approach, we describe how a sense of belongingness was used to promote success for a student who is deaf during a CEE

Clinical Education

- The program, CI, and student reviewed expectations and collaborated to create a clinical environment that minimized barriers and integrated accommodations
- The student and CI held weekly meetings to give feedback and brainstorm changes for the future
- All team members were equally vital in promoting a successful clinical experience
- The CI acted as an ally in patient introductions and interactions and among clinicians and staff

Challenges and Opportunities

Challenges:

- Busy clinic environment
- Mask use during the pandemic reducing lip reading
- Sign-language interpreter scheduling
- Accuracy of interpreter translation

Opportunities:

- Partnership formed by program, student, and CI with communication and feedback facilitating and promoting student independence.
- Patients exposed to diverse student clinician.
- Clinic exhibits best inclusive practice for clinical teaching

Results

Student

Through providing intermittent support, shared decision-making and guided clinical reasoning, I was able to fine tune my success with each patient in the clinic.

My CI became my ally, standing up for me in times of difficulty, modeling how to interact with me directly vs talking to my interpreters. My CI demonstrated metacognitive learning strategies to think out loud and through reflective listening.

An ally will* introduce you through your own self-identifying terms to patients*, building you up rather than undermining you. How my CI introduces me will influence how the individual forms a first opinion of me, setting me up as a strong student vs undermining me

Clinical Instructor

I treated the student as a person first. I acknowledged her hard-of-hearing challenge, but it was not the forefront of our time together.

I worked with her as I would any student on their clinical experience, trying to develop a sense of independence and self-efficacy. I asked her how I could best help her feel more comfortable and confident in the clinical environment, and we worked together to achieve those goals.

Foster a way to reach the end goal of learning and understanding, with the student doing as much of the clinical reasoning as possible.

Fostering Belongingness

- Belongingness supports engagement and fosters clinical competence
- The clinical environment highly impacts student learning
- Negative staff and patient relationships lead to student alienation
- Belongingness promotes self-directed learning and self-efficacy
- Plan and implement processes for success
- Provide program-backed pedagogical support
- Educate peers and mentors

Example

CI: "I have a physical therapy student with me today who has a disability and support companion person with her, is it okay if she works with you today?"
CI: "I have a physical therapy student with me today. She is hard-of-hearing and has an ASL interpreter. Would you be willing to wear a clear mask today? She will be performing the evaluation today".

Pro Tips

- Develop learner-based curriculum aligned to societal needs
- Barriers are not insurmountable
- Understand additional cognitive load when using an interpreter
- Promote supportive ally-building actions and behaviors
- Build in weekly meeting time
- Use larger spaces away from high-traffic areas
- Monitor patient and interpreter positioning
- Interpreters work in ~ 2-hour shifts; provide space for interpreter breaks
- Create an environment where students feel valued, significant, connected, and accepted

Conclusion

Exposure to this novel CEE allowed the CI and DPT program to gain insight into fostering belongingness, autonomy, and competency for a student who is deaf.
A sense of belongingness can be transformative, impacting clinical learning.

Resident physicians' perceptions of telemedicine in a primary care setting

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Background

- The coronavirus pandemic led to an abrupt transition to telemedicine which included visits by phone or video
- Resident physicians lacked formal training when pivoting to this technology
- It is important to ensure both quality of care for patients and quality of education for trainees with regards to telemedicine
- The purpose of this study was to evaluate resident perceptions of strengths and weaknesses of telemedicine in the primary care setting

Methods

Data collection

- Convenience sampling of 2nd and 3rd year residents at the University of Vermont Burlington Adult Primary Care Clinic
- Three focus groups, each with 5-7 residents, conducted between April and May of 2021
- An interview guide was created to study residents' experience with telemedicine in logistics, educational value, impact on patient care, and impact on relationships with patients

Qualitative analysis

- Line-by-line thematic analysis, compared by two co-authors
- Codes were developed and applied
- Themes were identified
- Each theme was further divided into whether perceptions were positive, negative, or neutral

Results

Theme	Positive quote	Negative quote
Access	*It provided care for some people that otherwise would not have had access to it, which is a great thing.*	*Then of course the old people, or people who don't have smart phones, or people who don't have internet access, you know this is something we struggle with in the US, people in rural areas who don't have great internet access.*
Communication	*I think these issues in terms of how to navigate the discussion over the screen or over the phone will slowly change as more younger doctors come up.*	*It's not just the technology, it's the physical presence of two people talking. Your body subconsciously understands the flow of the conversation. And with that screen, you don't have the same connection.*
Disposition	*I feel like it made me better at contingency planning in the outpatient setting … it just kind of made me think about the next few steps, maybe a few more steps than I would think if I had a patient with more information.*	*You tend to be more prone to testing, more prone to treating without confirming your diagnosis.*
Technology	*When we got to the point where we had the iPad on the stand, it was pretty much like taking care of a patient in clinic without a physical exam.*	*Early on what was really a struggle with telehealth was that there wasn't the electronic infrastructure for it like there wasn't a camera, we were all on cell phones.*

Table 1: Selected quotes from resident physician participants

Pre-visit

- Residents suggested a scheduling algorithm to limit telemedicine in challenging situations (e.g. skin issues, preventive visits, etc.)
- Logistics worked best when telemedicine was treated similar to in-person
- Telemedicine improves access to care, though does introduce new barriers (technology)

During a visit

- Home environments can provide more information, and can also be a distraction
- It was more challenging to communicate and build rapport using telemedicine
- Physical exam was limited, but some maneuvers were still possible

After a visit

- Quality of care was contingent on appropriate use of telemedicine – perceived to be non-inferior for mental health, known patients, follow-ups
- Educational value was preserved when precepting remained in-person

Discussion

- Residents appreciated improved access to care and insight into home environments, but struggled with communication and physical exam
- Our research supports prior literature: communication and physical exam in telemedicine should be taught to trainees
- We found it important to establish a scheduling algorithm to ensure telemedicine is being used appropriately, especially as we transition out of the coronavirus pandemic
- While it improves access to care, telemedicine does also create new barriers that should be addressed intentionally on a systems level

Conclusions

As we reach a new steady-state that balances telemedicine and in-person visits, training in telemedicine should be part of ambulatory resident program curricula.

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MULTIMODAL RURAL EMERGENCY MEDICINE CURRICULUM: PREPARING RESIDENTS FOR RURAL PRACTICE

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Background

- Rural regions face emergency medicine (EM) physician shortages.
- Most training programs are urban and lack rural clinical experiences, didactics, and mentorship to excite and prepare residents for rural EM practice.
- There is limited data on optimal training methods for preparing residents for rural practice.

Description

- We created a multimodal rural EM curriculum for UVM residents and visiting residents to prepare trainees to independently work in rural EDs at graduation

Methods

- Our curriculum is based on two years of case review from two rural critical access EDs, with additional input from our experienced rural EM faculty.
- It consists of lectures, simulation training, and clinical electives.
- Lectures and simulation focus on skills required in resource limited solo practice: ventilator management, obstetric emergencies, transfer logistics, telemedicine, prolonged critical care.
- Electives take place in rural and remote EDs from Vermont to Alaska.
- During each elective, we collect quantitative data on patient volume, acuity, and procedures, and qualitative data on new skills, unique experiences, and limitations.

Results

- Quantitatively, residents see patient acuity and procedures similar to academic center rotations but gain unique experiences from the challenges of a rural environment.
- Residents specifically cited greater time for procedures and greater ownership of those procedures was a clear benefit of a rural setting with no specialty back up and lower patient volume.
- 11/11 residents gained new skills and confidence and found these experiences invaluable.
- 88% of graduating residents chose a rural practice

Figure 1. Top Rural Elective Unique Procedures and Skills

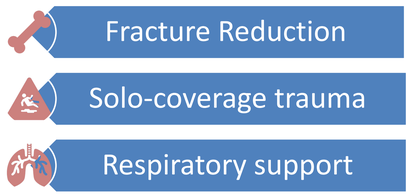
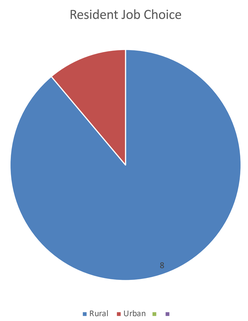


Figure 2. Resident Career Choices After Rural Curriculum



Discussion

- Our rural EM curriculum has proven successful over the first two years.
- More work is needed in our program and nationally bridge the gap between urban tertiary care training programs and rural emergency care needs.

Next Steps

- Expand our lecture and simulation content to include palliative care, primary care, point of care ultrasound, and rural EMS support
- Expand our elective options to additional rural and resource limited domestic and global health sites
- Expand the impact of our program
  - Share lecture and simulation content with other residencies
  - Open additional rural clinical experiences to trainees nationwide
  - Build a free, open access, online resource for rural emergency medicine content

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UVMHealth.org

Interprofessional Case-Based Learning with DPT and DNP Learners: Perspectives and collaboration in the development of clinical reasoning skills

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Background

- The 4 Interprofessional Education Collaborative (IPEC) competencies of teamwork, communication, values and ethics, and understanding professional roles are accreditation requirements for health science graduate programs.
- A request for DPT faculty to musculoskeletal clinical exam to DNP students evolved into an IPE experience when faculty identified a need for interprofessional clinical learning rather than skills instruction.
- Faculty recognized students could have a richer learning experience by showcasing the unique exam and clinical reasoning strengths of each discipline.
- Faculty recognized the need for collaborative practice to enrich interprofessional education with a focus on improved patient outcomes.

Objectives

DNP and DPT learners and faculty gained insight into fostering interprofessional teamwork, communication, and role identification with this novel learning experience

- Compare and contrast key elements of the clinical exam for different musculoskeletal (MSK) complaints from the perspective of the DPT and DNP provider.
- Discuss differential diagnoses, supportive findings, and additional workup for MSK complaints, in a collaborative manner, considering the unique perspectives of each discipline.
- Compare and contrast management decisions from the DPT and DNP perspective.
- Apply and operationalize IPEC competencies.

Description of Event & Outcomes

- For the third consecutive year, students worked in small groups consisting of 2nd year DPT and 3rd year DNP students with equal representation of each discipline.
- Each discipline took turns leading MSK pain cases with a focus on comparing and contrasting clinical reasoning skills, physical exam techniques, and differential diagnoses.
- Using faculty facilitated discussion, students utilized the cases to explore similarities and differences between the disciplines, specifically in terms of diagnosis, management and the referral relationship.
- Following each session, students completed evaluations highlighting learning outcomes and opportunities for improvement. This data was reviewed and utilized to enhance subsequent sessions.
- Evaluation data revealed understanding and application of the four IPEC competencies, specifically:
  - DPT students gained an appreciation for DNP role regarding subjective examination, medical management skills, red flags, and screening for referral.
  - DNP students gained an appreciation for DPT diagnostic skills, differential diagnosis and clinical reasoning for MSK conditions.
  - The experience promoted trust between the two disciplines and an appreciation for future collaboration.

Results

Student Comments

"I enjoyed observing how the DPT students approached the clinical cases and how it differed from my own thinking."

I can better recognize the type of interprofessional communication that is necessary for a multi-disciplinary team. I also feel more comfortable in doing so now that I am less intimidated by DNPs….we can assist each other by communicating to provide the best care for our patient."

"This class reinforced my beliefs that PT should be heavily involved in collaborative management of musculoskeletal pain conditions. It will certainly affect how I draft referrals for my PT patients and how often I collaborate with my patients' physical therapy team."

Faculty Observations

Students recognized the benefit of breaking down communication barriers

Students gained an appreciation of each discipline's scope of practice and reported an increased likelihood of communicating to ask questions or share information

Students from both disciplines reported that working together will make them better clinicians

Challenges and Opportunities

Challenges
Finding mutual timing in curriculum and classroom space for learning activity.

Opportunities
Ongoing scope of practice identification and appreciation of the similarities and differences in examination and treatment approach between the two disciplines.

Future Steps

- Continue enhancing this experience through continued incorporation of student and faculty feedback.
- Continue offering this unique experience, with a focus on interprofessional collaboration, to improve awareness of other healthcare provider disciplines, with the goal of improving patient outcomes.
- Continue offering and enhancing this experience based on the positive outcome of improved communication between healthcare providers (reduction of communication barriers), which has been shown to improve patient outcomes.

Summary and Conclusions

- DPT and DNP students have participated in a collaborative learning experience for three consecutive years.
- Experience feedback and outcomes have been gathered and analyzed.
- Students were able to appreciate the roles and responsibilities of each profession by teaching each other the strongest elements of their own patient encounters.
- Students strengthened communication skills by working collaboratively through mutually relevant patient cases.
- Students gained new knowledge in MSK examination for ruling out red flags, screening for referral, and differential diagnosis.
- Students were able to identify how interprofessional collaboration improves patient outcomes and reduces healthcare utilization costs.