I. Specific Educational Aims

Recent studies by the American Telemedicine Association indicate telemedicine can improve access, decrease costs, and improve quality while also improving patients' satisfaction and trust with their care provider.[1,2,3] However, there are distinct communication challenges with virtual visits compared to face-to-face visits. Medical schools have not yet fully incorporated a virtual health curriculum to prepare graduates for this challenge. My project is to create a virtual health curriculum for medical students in the required Family Medicine clerkship, with the following objectives.

Aim 1: Describe current roles of telehealth applications in health care delivery. Identify potential challenges, including determining when appropriate to use telehealth applications.

Aim 2: Demonstrate essential skills in patient-centered virtual communication including establishing rapport, health coaching (patient activation/therapeutic engagement), and in managing "difficult" calls/encounters

Aim 3: Demonstrate clinical assessment skills in a virtual visit, including obtaining an appropriate history, triaging for red flags, formulating a patient-centered treatment plan, and indications for follow-up.

Aim 4: Applies professionalism in virtual communication including maintaining confidentiality, security of visits, and documentation

II. Project rationale:

Virtual communication is rapidly becoming an integral part of health care delivery. This growth of telemedicine is expected to be rapid with a growth rate of 18-30% per year, according to various market research organizations including the Institute for Healthcare Consumerism. Despite this growth, current medical students have little or no exposure to telemedicine training. Recognizing this gap, the American Medical Association recently adopted a policy specifically encouraging accrediting bodies to include core competencies for telemedicine in their programs.[4]

My project will provide students with hands on experience in telemedicine. My hypothesis is that while students may be comfortable with technology, they may underestimate communication challenges in telemedicine. I am also interested in understanding their general attitudes about the quality of care in a virtual visit in comparison to an in-person visit, and how they may approach nuances in determining which visits are appropriate for virtual heath.

There is little existing research/literature in telemedicine training in medical students. One PubMed study in Australia describes a clinical skills lesson to prepare 3rd year students in small groups to enable interactive learning.[5] The lesson, evaluated by a student survey, demonstrated statistically significant improvements in understanding the issues and challenges in telemedicine, and in increasing students' confidence level in telemedicine encounters. The study commented on the lack of literature on enabling medical students to acquire needed telemedicine/communication skills.

III. Approach:

In the current stage of this project, I have developed two educational tools: an educational video and a teleOSCE encounter. In collaboration with the Family Medicine clerkship director (Dr.Tracy Rydel), we plan to implement the OSCE this fall. I have not yet developed the pre-intervention assessment, which I hope to do through the support of this grant.

1) Educational video: students will watch a video as part of their self-study prior to participating in the video TeleOSCE. I developed this educational video in collaboration with Clickwell Care (Stanford's first virtual primary care clinic) and Matt Abrahams (Virtual Communication expert at Stanford Graduate School of Business). It reviews current telemedicine practices, fundamentals of effective virtual communication skills, as well as provides case scenarios of clinical video visit encounters for remote blood pressure monitoring, ankle pain, and sore throat.
2) Direct observation through TeleOSCE: I have created a TeleOSCE case, in which the student is reviewing an elevated A1c test results with a diabetic patient via videoconference. I have reviewed the case with Dr. Andrew Nevins (medical director of Standardized Patients). This formative TeleOSCE will be administered at the conclusion of the Family Medicine clerkship. Students will receive feedback from the SP, as well as from faculty who will be observing the video recording in real-time. Students will also participate in a group debrief, in which faculty will replay student video clips that exemplify best practices. These group sessions will also allow for student reflection and shared learning from their experiences.
3) Pre-interventional assessment: I would also like to develop a pre-interventional assessment in which each student will have Standardized Patient clinical video visit prior to any educational intervention (including educational video) for baseline skills assessment. This will be later compared to the formative TeleOSCE at the end of the clerkship for any behavioral changes that occurred with the educational intervention.

IV. Timeline and Implementation:

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug
Train SP for teleOSCE												
Implement tele-OSCE												
Develop pre-test												
Implement pre-test												
Feedback and modification												
Review and aggregate data												

V. Anticipated Work Product/Evaluation Plan:

1) Student self-assessment survey results: The pre-intervention survey will assess any prior exposure to patient care in telemedicine, confidence in communication skills, and their perception of quality of care of telemedicine encounters, as well as expected challenges of telemedicine encounters. The post-intervention survey will assess changes from baseline and importance to their education. Survey results will elucidate whether the virtual health curriculum was effective from the perspective of knowledge and attitudinal learning, as well as provide feedback for modification of the curriculum based on students' interests.
2) Pre and post-intervention standardized patient skills assessment: Each student will have a pre-intervention assessment in which baseline skills are assessed. The student will receive an SP and faculty assessment (case-specific checklist and a 10-item communication skills rating form). At the end of the clerkship, each student will compete a formative TeleOSCE, which is also assessed by the SP and faculty. Evaluation of behavior changes can be assessed

through comparison of these assessments.

VII. Dissemination of results: My project has been accepted to present at the 2018 Society of Teachers of Family Medicine Conference on Medical Student Education (Feb 2018). I plan to share my preliminary results at this time and the full project the subsequent year.

Budget:

	Item:	**Justification:**	**Amount:**
Non-compensation	Standardized Patient	Video visit	$5000
	Research Analyst	Data analysis	$3000
		Total**:**	**$8000**

References:

1. Indian Health Service Innovations Have Helped Reduce Health Disparities Affecting American Indian And Alaska Native People Thomas D. Sequist, Theresa Cullen, and Kelly J. Acton Health Affairs October 2011 30:101965-1973
2. Integrated Telehealth And Care Management Program For Medicare Beneficiaries With Chronic Disease Linked To Savings Laurence C. Baker, Scott J. Johnson, Dendy Macaulay, and Howard Birnbaum Health Affairs September 2011 30:91689-1697
3. Gustke, S.S., Balch, D.C., West, V.L., and Rogers, L.O. 2000. Patient satisfaction with telemedicine. Telemedicine Journal Spring 6(1): 5-13
4. ACP Policy Compendium: AMA Encourages Telemedicine Training for Medical Students, Residents, Jun 15, 2016
5. Rienitis, H., Teuss G., Bonney, A. Teaching telehealth consultation skills. Clinical Teaching 2016 April: 13 (2): 119-23