Course Name: Virtual Care: Telemedicine for Future Providers

Course Director: Stephanie Lyden, MD **Course Coordinator:** Heather Forsgren

Sponsoring Department: RUUTE

Department Code & Proposed Course Number: MDID 6002

Type of Elective: Lecture

Number of Credits: 1 Credit (40 hours worth of work)

Timing & Frequency: September 11th – November 13th

- Students will be expected to watch a pre-recorded orientation on an individual basis.
- Lectures are pre-recorded for students to complete on their own.
- They will also be expected to set aside three - 3 hr blocks of time to complete simulated virtual cases (1 emergent series of 3 cases, 1 outpatient series of 3 cases, 1 series with difficult issues in 3 cases). They will have to form groups of 3 for these cases.

Prerequisites/Co-requisites: No prerequisites are required.

Add Policy: Course may be added to schedule by the first day of class.

Drop Policy: Course may be dropped from schedule by the first day of class.

Brief Statement of Rationale:

Telehealth is a rapidly expanding technology that has been adopted by various medical professionals as a new means of care delivery. The utilization of telemedicine has ranged from performing standard office visits to delivering care to rural or underserved areas with less access to specialty care. With the recent COVID pandemic, it has also become a staple for emergency preparedness and a solution for continued care practices. However, many medical schools lack formal training of their students in how to conduct these visits. There is also a lack of awareness in how this technology is used within different subspecialties. This course is available to all medical students with the primary focus being rising MS2 medical students.

MDID 6002 - Virtual Care: Telemedicine for Future Providers Syllabus

Credit Hours: 1.0

Contact Information

Name	Position	Phone/Pager	Email
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Course Information

Brief Description of Course

This course aims to provide a foundational understanding of the current practice of telemedicine and telemedical devices across multiple sub-specialties. It will give instruction on the practical application of how to complete a telemedicine consultation in the outpatient and emergent care settings. It will function to equip students with an operational skill set that will better prepare them to enter the evolving world of telemedicine.

Students will be required to watch various pre-recorded Zoom lectures that will discuss ways telemedicine is being utilized from different faculty who are telemedicine champions within their field. They will also receive instructional lectures on how to effectively complete a telemedicine visit, as well as participate in a student discussion board to discuss their own experiences with telemedicine. Students will also be required to read articles and watch various video media. They will be required to write a paper on a new medical technology that is advancing the field of medicine that was not covered in this course.

Students will also participate in simulated emergent and outpatient cases where they will each be given the opportunity to be the consulting provider, the tele-provider and patient with assigned packets explaining their role and the cases. This will allow for hands-on learning. They will be required to record these cases and upload them to zoom for a facilitator to review and then submit a 1 page feedback on how the simulation went.

Course Objectives

As a result of successfully completing the **Virtual Care: Telemedicine for Future Providers,** students will be able to:

1. Explain how the history of telehealth has contributed to the current application of this technology in healthcare
2. Describe the various ways telemedicine is used within different specialties
3. Describe the benefits and limitations of telemedicine
4. Demonstrate an understanding of how an outpatient and emergent telemedicine visit may differ
5. Demonstrate the ability to use telemedicine to complete urgent and outpatient telemedicine visits via simulated exercises. This will include demonstration of effective telepresence, efficient history taking, adequate exam skills over the camera and clear communication with the patient and the care team. ***See Appendix B.*** Assessment will be qualitative with feedback provided to the students from a facilitator that reviews excerpts of their recorded sessions.
    a. Students will be encouraged to adhere to the patient care standards outlined in the MD program objections, regarding patient care delivery, knowledge for practice, interpersonal and communication skills, professionalism, systems based practice and interprofessional collaboration and teamwork during their case simulations. ***See Appendix C.***
6. Describe emerging telemedical technologies

Course Format & Schedule

Timeline
September 11th – November 13th

Educational and Instructional Modalities

Modality	Percentage
Lectures	35%
Clinical Application Simulations	25%
Assignments	25%
Quizzes	15%

Role of the Student in this Course

- Students will complete the assigned lectures, quizzes and assignments and actively participate in the clinical application simulations.

Required Textbooks/Readings

- NRTRC Telemedicine 101 Canvas Course -- https://nrtrc.catalog.instructure.com/courses/telehealth101
- Health Literacy and Health Information Technology Adoption: The Potential for a New Digital Divide -- https://www.jmir.org/2016/10/e264#Body
- Does That Make Sense? -- http://www.telemedmag.com/article/does-that-make-sense/
- Prescriptions on Demand: The Growth of Direct-to-Consumer Telemedicine Companies -- https://jamanetwork.com/journals/jama/article-abstract/2740743?guestAccessKey=ba5f9c06-f7f3-4087-ade2-44388fc76380&utm_source=silverchair&utm_medium=email&utm_campaign=article_alert-jama&utm_content=etoc&utm_term=072619
- Difficulties with remote work: Why Remote Work Sucks, According To Science https://www.npr.org/sections/money/2020/04/28/846671375/why-remote-work-sucks-according-to-science?utm_campaign=storyshare&utm_source=facebook.com&utm_medium=social
- Antibiotic Prescribing During Pediatric Direct-to-Consumer Telemedicine Visits - A controversy -- https://www.ncbi.nlm.nih.gov/pubmed/30962253

Additional Resources

- The Future of Telemedicine, Parts 1 & 2
  https://anchor.fm/medicaleducation/episodes/The-Future-of-Telemedicine-Part-1-eobf0i
  https://anchor.fm/medicaleducation/episodes/Overcoming-the-Challenges-of-Telemedicine-Part-2-eonn5a
- Telemedicine - The Answer to Rural Medicine Challenges -- https://www.youtube.com/watch?v=7O2tQTRjzJ0
- Medical Technologies: https://www.youtube.com/watch?v=PXPIu8LazqI
- Cardiovascular Robotics: https://www.youtube.com/watch?v=2Ku7FR5D_oU
- Wearable Devices: https://www.youtube.com/watch?v=kohLcShNbHE
- Example of an Electronic Stethoscope: https://www.youtube.com/watch?v=XrWSJXzfXkM
- Machine Learning: https://www.youtube.com/watch?v=G1IsZeFR_Rk

Assessment & Grading

	Weight	Must Pass/ Must Complete	Due Date
Course Assessments			
List quiz sections	N/A	Must Pass*	September 25 October 2, 16 October 30
Assignments and Must Complete Elements			
Lectures (Foundational, Outpatient, Emergent, Innovations)	N/A	Must Complete*	September 25 October 2, 16 October 30
Clinical Application Simulations (Outpatient, Emergent, Difficult Issues) – Upload of recorded videos for the simulations required.	N/A	Must Complete*	October 5, 19 November 9
Three reflective essays - Students will complete one essay each following their clinical application simulations (emergent, outpatient and difficult case series simulations) explaining the benefits and limitations they experienced in each setting	N/A	Must Complete*	October 8, 22 November 12
Research and report on a medical innovation - Write a page essay on a medical device that was not discussed in this course or thoughts on innovation for a new device or technology to a discussion board for others to view.	N/A	Must Complete*	November 5

*See Appendix D for Grading Rubric

Grading Criteria

Students who participate and complete all the elective discussions, lectures, and assignments will receive a grade of PASS for the elective.

Grading System

Students will receive a final letter grade of PASS (P) or FAIL (F) for this course:

PASS: A student who successfully completes ALL Must Pass and Must Participate elements for the course will be assigned a grade of PASS.
FAIL: A student who fails to achieve a Pass for each Must Pass element or who fails to participate in all Must Participate elements for the course will be assigned a grade of FAIL.

Student Feedback

Student feedback is an important aspect of curriculum quality improvement. Thus, students are expected to complete all assigned feedback surveys specific to a course by the due date.

Standard Policies

Please refer to the Student Handbook (on the Student Affairs' website) for these policies:

Accommodations
Addressing Sexual Misconduct
Dress Code
Examination and Grading Policies
Grade or Score Appeal
Professionalism, Roles & Responsibilities
Mistreatment
Infectious, Environmental and Bloodborne Pathogen Exposures Policy

Alternate Name and/or Personal Pronoun

Class rosters are provided to the instructor with the student's legal name as well as 'Preferred' first name (if previously entered by you in the Student Profile section of your CIS account). While CIS refers to this as merely a preference, we will honor you by referring to you with the name and pronoun that feels best for you in class, on papers, exams, group projects, etc. Please advise us of any name or pronoun changes (and please update CIS) so we can help create a learning environment in which you, your name, and your pronoun will be respected.

Center for Disability & Access Services

The School of Medicine seeks to provide equal access to its programs, services and activities for all medical students. The Center for Disability and Access (CDA) provides accommodations and support for the educational development of medical students with disabilities. Medical students with a documented disability and students seeking to establish the existence of a disability and to request accommodation are required to meet with the CDA Director for recommended accommodations. The CDA will work closely with eligible students and the Academic Success Program to make arrangements for approved accommodations. The School of Medicine and CDA maintain a collegial, cooperative, and collaborative relationship to ensure compliance with federal and state regulations for students with disabilities.

Steven Baumann EdD, School of Medicine Senior Director of Academic Success Program, serves as the liaison between the School of Medicine and the CDA.

Contact Information:
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University of Utah Center for Disability and Access
Olpin Student Union Building, Room 162 Phone (Voice/TDD): (801) 581-5020
http://disability.utah.edu

Course Schedule

Time/Date	Topic	Lecturer/Facilitator	Notes
September 11, 2023	Introduction to the Course	Stephanie Lyden	Pre-recorded orientation
Various Dates	Lectures and Subsequent Quizzes ***(See Appendix A)***	Varied faculty members	Pre-recorded lectures, Quizzes located on Canvas to take following completion of the corresponding lecture
October 5, 2023 11:59pm	Outpatient Simulated Clinical Application Series	Stephanie Lyden *May require additional facilitators depending on student enrollment*	Students will complete on their own and record their session and upload to Canvas for review
October 8, 2023 11:59pm	Student Reflection Essay Following the Outpatient Simulated Series	Stephanie Lyden	Students complete on their own and upload to Canvas
October 19, 2023 11:59pm	Emergent Simulated Clinical Application Series	Stephanie Lyden *May require additional facilitators depending on student enrollment*	Students will complete on their own and record their session and upload to Canvas for review
October 22, 2023 11:59pm	Student Reflection Essay Following the Emergent Simulated Series	Stephanie Lyden	Students complete on their own and upload to Canvas
November 5, 2023 11:59pm	Medical Technology/Innovation Essay due	Stephanie Lyden	Students complete on their own and upload to Canvas
November 9, 2023 11:59pm	Difficult Issues Simulated Clinical Application Series	Stephanie Lyden *May require additional facilitators depending on student enrollment*	Students will complete on their own and record their session and upload to Canvas for review
November 12, 2023 11:59pm	Student Reflection Essay Following the Difficult Issues Simulated Series	Stephanie Lyden	Students complete on their own and upload their essay to Canvas

Appendix A: LECTURES

Telemedicine Foundational Lectures:

- **Essentials of Telemedicine - NRTRC course**
    - Overview - Telehealth Nuts & Bolts
    - Engagement, Evaluation & Reporting
    - Creating a Clinical Workflow
    - Telehealth Technology Basics
    - Medicare Reimbursement
    - Legal & Regulatory Considerations
- Telepresence
    - Do's and don'ts video: https://www.youtube.com/watch?v=K4unpA1Se5I -
    - https://www.caltrc.org/knowledge-center/videos/
- Telemedicine for Educational Opportunities - Project ECHO
- Network Development - VA; SCORES and Bi-directional Quality Reviews | Network Development - Rural state consideration
- Telemedicine Policy & Access Considerations

Outpatient Lectures:

- Primary Care Telemedicine Overview
- Tele-Dermatology Overview
- Tele-Therapy (PT, OT, SLP) Overview
- Tele-OB/GYN Overview
- Tele-Psych Overview
- Tele-ENT

Emergent Lectures:

- Teleneurology/Telestroke Overview
    - Telestroke Structure with Telestroke Exam Tips
        - NIH stroke scale training
        - AAN - Neurology exam video
- Tele-ER Overview
- Tele-ICU Overview
- Tele-Burn Overview

Innovative Medical Technologies:

- Imaging Technologies - VIZ AI
- Mobile Stroke Units
- Bench to Bedside Technologies
- Tele-Rehab Overview

Potential Fall 2023 Additions

- Telehealth Cart Demonstration
- Virtual Reality Telehealth Simulation – *This is pending contracting and software development. If completed at the time of the course, students will be asked to check out a virtual reality headset and complete a telehealth simulation (estimated time 35 minutes)*

Appendix B: CLINICAL SIMULATION COMPETENCIES

Component	Behaviors
Set Up and Telepresence	• Understands effective telemedicine set-up; ranging from background selection, lighting and sound quality and effective telemedicine presence, such as eye contact.
History Taking	• Performs a complete, organized, and relevant history in an emergent and non-emergent setting. • Demonstrates good time management. • Able to establish rapport with patient; addresses all members in the room. • Demonstrates clarity of communication.
Exam	• Demonstrates an ability to adapt basic exam to telemedicine platform based on lectures that were given. • Demonstrates an ability to maneuver the camera or instructions on how to position the camera to appropriately assess patient. • If an assistant is available to aid in the exam portion of the visit, the student demonstrates clear instruction to educate the assistant on how to assist with the exam.
Lab & Imaging Review	• Adequately able to multitask, assessing lab work and imaging (*the consulting provider role will have this information if asked by student playing the teleprovider role)*
Assessment and Plan	• Formulates an assessment and differential diagnosis. Clinical accuracy is not as important as their practice learning the process. • Able to provide initial treatment recommendations in an easy to understand manner, requests read-back verification to ensure the recommendations were understood. • Demonstrates professionalism during the interaction with the patient and the consulting physician role and patient • Discusses transfer options in the emergent cases (hospital is full, what kind of transport would you like, what will the ETA be, communicating updates to the receiving team at the accepting institution)
Misc Issues	• Identifies and addresses technical issues and calls for assistance appropriately

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Appendix C: Alignment of Program Objectives and Course Objectives

Program Objective	Course Objective
Patient Care • Gather essential and accurate information about patients and their conditions through history-taking physical examination, and the use of laboratory data, imaging, and other tests • Make informed decisions about diagnostic and therapeutic interventions using an evidence-based approach based on patient information and preferences, scientific evidence, and clinical judgment • Counsel and educate patients and /or their families to empower them to participate in their care and enable shared decision making • Provide healthcare services to patients, families, and communities aimed at preventing health problems or with maintaining health	• Demonstrate an understanding of how an outpatient and emergent telemedicine visit may differ • Demonstrate the ability to use telemedicine to complete urgent and outpatient telemedicine visits via simulated exercises. This will include demonstration of effective telepresence, efficient history taking, adequate exam skills over the camera and clear communication with the patient and the care team. ***See Appendix B.*** Assessment will be qualitative with feedback provided to the students.
Knowledge for Practice • Apply established and emerging physiologic, pathologic, molecular, biochemical, microbiologic, cellular, immunologic, pharmacologic, and genetic scientific principles fundamental to prevention, risk assessment, diagnosis, and management of disease for patients and / or populations • Apply established and emerging principles of clinical sciences to diagnostic and therapeutic decision-making, clinical problem-solving, and other aspects of evidence-based health care to patient scenarios *(if applied to real patients refer to Patient Care objectives above)* • Demonstrate knowledge of ethical principles pertaining to provision or withholding of care, confidentiality, and/or informed consent	• Explain how the history of telehealth has contributed to the current application of this technology in healthcare • Describe the various ways telemedicine is used within different specialties • Describe the benefits and limitations of telemedicine • Demonstrate an understanding of how an outpatient and emergent telemedicine visit may differ • Demonstrate the ability to use telemedicine to complete urgent and outpatient telemedicine visits via simulated exercises. This will include demonstration of effective telepresence, efficient history taking, adequate exam skills over the camera and clear communication with the patient and the care team. ***See Appendix B.*** Assessment will be qualitative with feedback provided to the students. • Describe emerging telemedical technologies
Practice Based Learning and Improvement • Identify strengths, deficiencies, and limits in one's knowledge and expertise • Set learning and improvement goals • Identify and perform learning activities that address one's gaps in knowledge, skills, and / or attitudes • Locate, appraise, and apply evidence from scientific studies related to patients' health problems	• Describe emerging telemedical technologies • Explain how the history of telehealth has contributed to the current application of this technology in healthcare • Describe the various ways telemedicine is used within different specialties • Describe the benefits and limitations of telemedicine

	• Students will be encouraged to adhere to the patient care standards outlined in the MD program objections, regarding patient care delivery, knowledge for practice, interpersonal and communication skills, professionalism, systems based practice and interprofessional collaboration and teamwork during their case simulations.
Interpersonal and Communication Skills • Demonstrate interpersonal and communication skills that result in the effective exchange of information with patients, families, peers and / or other team members • Demonstrate sensitivity, honesty, and compassion in difficult conversations, including those about death, end of life, adverse events, bad news, disclosure of errors, and / or other sensitive topics	• Students will be encouraged to adhere to the patient care standards outlined in the MD program objections, regarding patient care delivery, knowledge for practice, interpersonal and communication skills, professionalism, systems based practice and interprofessional collaboration and teamwork during their case simulations. • Explain how the history of telehealth has contributed to the current application of this technology in healthcare • Describe the various ways telemedicine is used within different specialties • Describe the benefits and limitations of telemedicine • Demonstrate an understanding of how an outpatient and emergent telemedicine visit may differ
Professionalism • Demonstrate respect for others in all interactions, including team, classroom and patient interactions, and during conflict resolution, students will treat peers, faculty, staff, patients, and / or patient's families with consideration, compassion, dignity, and respect • Demonstrate a drive for excellence through a lifelong commitment to learning and self-improvement	• Demonstrate the ability to use telemedicine to complete urgent and outpatient telemedicine visits via simulated exercises. This will include demonstration of effective telepresence, efficient history taking, adequate exam skills over the camera and clear communication with the patient and the care team. ***See Appendix B.*** Assessment will be qualitative with feedback provided to the students. • Students will be encouraged to adhere to the patient care standards outlined in the MD program objections, regarding patient care delivery, knowledge for practice, interpersonal and communication skills, professionalism, systems based practice and interprofessional collaboration and teamwork during their case simulations.
Systems-Based Practice • Coordinate patient care within and across the health care system, including patient hand-offs • Incorporate considerations of cost awareness and risk-benefit analysis in patient and / or population-based care • Identify risks to patient safety and apply strategies to deliver safe patient care	• Describe the various ways telemedicine is used within different specialties • Describe the benefits and limitations of telemedicine • Demonstrate an understanding of how an outpatient and emergent telemedicine visit may differ • Demonstrate the ability to use telemedicine to complete urgent and outpatient telemedicine visits via simulated exercises. This will include demonstration of effective

	telepresence, efficient history taking, adequate exam skills over the camera and clear communication with the patient and the care team. ***See Appendix B.*** Assessment will be qualitative with feedback provided to the students. • Describe emerging telemedical technologies
Interprofessional Collaboration and Teamwork • Provide feedback to enhance team members' learning and performance	• Describe the various ways telemedicine is used within different specialties • Demonstrate the ability to use telemedicine to complete urgent and outpatient telemedicine visits via simulated exercises. This will include demonstration of effective telepresence, efficient history taking, adequate exam skills over the camera and clear communication with the patient and the care team. ***See Appendix B.*** Assessment will be qualitative with feedback provided to the students.

AAMC Telehealth Competencies

Our course addresses all of these as well:

- https://www.aamc.org/system/files/2020-09/hca-telehealthcollection-telehealth-competencies.pdf

Appendix D: Pass/Fail Rubric

A passing assignment does all of the following:

- Addresses the objectives of the assignment
- Demonstrates knowledge of the subject matter relevant to the assignment
- Reflects accurate understanding of concepts, terminology, and key takeaways
- Develops arguments and/or presents information in a coherent, focused manner
- Includes insightful analysis and reflection
- Integrates appropriate evidence, including examples and experiences, to support assertions and support arguments
- Appropriately cites sources of information where appropriate
- Utilizes clear, accurate spelling and grammar
- Is completed on or by the designated due date

A failing assignment does some or all of the following:

- Fails to address the objectives of the assignment
- Demonstrates weak knowledge of the subject matter relevant to the assignment
- Fails to demonstrate understanding of concepts, terminology, and key takeaways
- Shows incoherent, fragmented development of arguments and/or presentation of information
- Includes little analysis and reflection, relying mainly on summary
- Fails to integrate appropriate evidence, including examples and experiences, to support assertions and support arguments
- Fails to cite sources appropriately where appropriate
- Does not utilize clear, accurate spelling and grammar
- Is not completed on or by the designated due date

LATE ASSIGNMENTS

- Quizzes that are received late will receive a 5% deduction in their calculated score. All quizzes need to be completed by the end of the course with a cumulative pass score.
- If two assignments are received late, an extra credit assignment will be required.