TELERHEUMATOLOGY IN EDUCATION: BEYOND THE PANDEMIC

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I HAVE NO RELEVANT DISCLOSURES
OBJECTIVES

1. DESCRIBE HOW TELEMEDICINE USE IN TRAINING HAS EXPANDED BEFORE AND DURING THE PANDEMIC

2. DISCUSS CHALLENGES IN INCORPORATING TELERHEUMATOLOGY IN MEDICAL EDUCATION

3. GENERATE IDEAS FOR BEST PRACTICES IN THE USE OF TELERHEUMATOLOGY IN MEDICAL EDUCATION
WHY SHOULD WE FOCUS ON
TELEMEDICINE IN MEDICAL EDUCATION?

• the practice of telemedicine has proven essential to health care
  ...FOR NOW...
• requires a unique set of clinical skills to provide remote care effectively
  { focus on outpatient telemedicine in rheumatology and medical education }
Prior to the pandemic, about half of American medical schools included telemedicine in their curriculum.

Medical students were not consistently integrated into telemedicine.

Exposure to telemedicine was not universal – electives or standardized patients.
TELEMEDICINE DURING THE PANDEMIC

• Gradual adoption; practical restrictions
• All of a sudden, it’s everywhere

Perspective
Virtually Perfect? Telemedicine for Covid-19
Judd E. Hollander, M.D., and Brendan G. Carr, M.D.
WIDESPREAD ADOPTION OF TELERHEUMATOLOGY AFTER COVID-19

• Cai et al 2020: 80% of rheumatology appointments in Australia were via telemedicine in April 2020
• Gupta et al 2020: 51% of rheumatologists in India conducting telemedicine in March 2020 (1:40,000 people)
• Akintayo et al 2020 survey study of 544 rheumatologists in Africa

Restrictions relaxed
Infrastructure variable
CASE 1 (SPRING 2020)

- Phone visit (audio only)
- 48 yo woman with a history of GPA diagnosed on renal biopsy 2018. At the time, also had sinusitis and scleritis of the L eye
- Has been on rituximab infusions every 6 months since 2018 and has been in remission, off steroids
- Last seen in the clinic 6 months ago without complaints (pre-pandemic). Labs at the time were normal including ESR and ANCAs
- Today notes worsening R eye pain x 2-3 months with redness and blurred vision
- Has not been able to see ophtho in the last year
WHAT IS THE NEXT MOST APPROPRIATE STEP IN THIS PATIENT’S MANAGEMENT?

• What would you do?
• What would you tell a rheumatology fellow to do?
HOW DO WE TEACH WHEN WE ARE STILL LEARNING?

Virtually perfect?
• Ideal candidates
• Reasons for exclusions
• Patient preferences
• Physician preferences
• Outcomes research is still needed
• What new skills does it require?
• How do we teach them?

Kulcsar et al, 2016
CURRICULAR DESIGN FOR TELEMEDICINE

• Scoping review of curricular needs for telemedicine training
• 43 published studies from five continents
• Instructional modalities
  • hands-on experience
  • interactive case-based didactic sessions
  • journal clubs
  • opportunities for reflection
  • simulation

Stovel et al, 2020
In short, practice of (and education on) telemedicine/telerheumatology in the US has been variable.

Sometimes newly-graduated trainees were asked to take on telemedicine without prior exposure.

Then March 2020 rolled around...
TELERHEUMATOLOGY FOR TRAINEES IN SPRING 2020

- Global survey of rheumatology trainees (in training in 2020): 302 respondents, mostly USA and Europe
- Just over a third (n= 97, 39%) reported they had received training in telemedicine, higher in the US (62%) compared to everyone else (21%, p<0.001)
- Technology and platform use were most frequently addressed by this training (88%) compared to clinical skills (38%) and billing (40%)
TELERHEUMATOLOGY FOR TRAINEES IN SPRING 2020: WOMP WOMP

- Most trainees using telemedicine evaluated new patients during the pandemic (n= 161)
- A larger proportion of trainees (n= 170) agreed or strongly agreed that they felt comfortable using telemedicine to evaluate follow-up patients, compared to evaluating new patients
TELERHEUMATOLOGY FOR TRAINEES

• most trainees reported a negative impact of telemedicine on clinical teaching
• prioritize in-person visits for less-experienced (e.g., first year) trainees until they become confident
• structure curriculum around pre-existing telemedicine systems to enhance learning experiences
  • telemedicine-specific clinical skills teaching: necessary foundational knowledge and skills before virtual visits
  • support of trainees evaluating new or complex patients using telemedicine
  • adequate supervisory arrangements
HOW DO WE DESIGN THIS CURRICULUM?
LESSONS FROM VIRTUAL PATIENTS AND SIMULATION

• Virtual patients
  • interactive computer simulations of real-life clinical scenarios for health professions training, education, or assessment

• What is the POINT of using virtual patients?
  • experiential learning theory
  • simulated clinical experiences: information gathering and clinical decision making in a safe environment
  • Reflection and conceptualization

• Should we use it? → What is the alternative?
TECHNOLOGY SHOULD NOT DRIVE THE CURRICULUM

- Virtual patients may be ineffective if technological objectives drive teaching instead of learning needs
  - Should not replace but complement contact with real patients
  - Difficult assessment of empathy and communication
  - May de-emphasize some clinical skills
- So what is the purpose of teaching telemedicine?
CASE 2 WINTER 2020

• Video visit:
• 66yo woman with HTN and DM2 referred after hospital discharge for joint pains
• Sees an outside PCP, new to rheumatology clinic
• Admitted July 2020 with pneumonia (not COVID), set up with rheumatology f/u on discharge for long-standing joint pain of the hands, wrists, and knees
• Missed original in-person appt, rescheduled for telemedicine
• Complains of >3 years of joint pain and stiffness throughout: hands, knees, ankles, with hours of AM stiffness. NSAIDs not very helpful
• Labs from hospital: ANA, RF, CCP negative, ESR 70s
• Enlarged joints at PIPs bilaterally, not MCPs, DIPs, or wrists
WHAT IS THE NEXT MOST APPROPRIATE STEP IN THIS PATIENT’S MANAGEMENT?

• What would you do?
• What would you tell a rheumatology fellow to do?
“BACKWARDS”
DESIGN

• Innovative educational theory
• A new movement in interior decor
• Jargon to describe how you would educate people using common sense

• “Technology should not drive the curriculum”
• Decide what you’re trying to accomplish first, then figure out how to teach it
• Assessment is key
• Figure out the end goal, then determine how you get there
• Normally this is done for us
  • ACGME gives us competencies (end goals)
  • ACR/ACGME give us curricula
  • NBME, ABIM give us evaluations
APPLYING BACKWARDS DESIGN TO TELEHEALTH AND RHEUMATOLOGY TRAINING

• While we have an excuse for operating on the fly for the last year and a half, we don’t have an excuse for continuing the same way

• NOT “How do we teach telehealth?”, BUT

• Rheumatologists practicing telemedicine should be able to (not a comprehensive list)
  • Figure out what patients are appropriate for telehealth
  • Figure out what patients should be evaluated in the office
  • Evaluate certain conditions using telemedicine

• How do we teach these skills?
RHEUMATOLOGY/AAMC

TELEHEALTH

COMPETENCIES

- 7 domains
- progression of proficiency from recent medical school graduates to residents and 3-5 years post-residency

<table>
<thead>
<tr>
<th>Patient Safety and Appropriate Use</th>
<th>Data Collection and Assessment</th>
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<tbody>
<tr>
<td>Recognize limitations</td>
<td>Obtain history, adapt exam</td>
</tr>
<tr>
<td>Conversion to in-person</td>
<td></td>
</tr>
<tr>
<td>Access and Equity</td>
<td>Technology</td>
</tr>
<tr>
<td>Understanding bias?</td>
<td>Use basic and emerging</td>
</tr>
<tr>
<td>Barriers to technology access?</td>
<td>Technology</td>
</tr>
</tbody>
</table>

Communication

Communication with caretakers, coordinating complex care

Ethical Practices and Legal Requirements

Legal and privacy regulations

Systems-based Requirements

Coordinates participants, addresses gaps in care
TELEMEDICINE IN MEDICAL EDUCATION

• Medicine in the digital age: Telemedicine in medical school education (Kuhn 2018, Germany)
• Blended learning curriculum, implemented for medical students
• five modules, each with an e-learning unit and 3-hour classroom course
  • Digital doctor-patient communication and social networks
  • "Smart devices" and medical apps
  • Telemedicine: emergency room scenario including a supervising physician and teleradiology
  • “Virtual Reality”, “Augmented Reality” and computer-assisted surgery
  • Individualized medicine and big data
TELEMEDICINE IN MEDICAL EDUCATION

• Results: improved self-rating of knowledge and skills with respect to telemedicine
• Outcomes with respect to competencies: ???
  • patient safety and appropriate use
  • recognize limitations of technology
  • ethical practices and legal requirements: not clear
TELEMEDICINE
IN MEDICAL EDUCATION

Model for Medical Student Introductory Telemedicine Education (Walker 2019, U Iowa)

introductory educational program pertinent across all specialties to prepare for future telemedicine use

basic principles: improve knowledge, confidence with technology

three modules (with post-quiz), a video, and a simulation session

- telemedicine history, current uses, terminology, Medicare-Medicaid rules, and legal issues
- efficacy, ethical concerns, and best practices
- steps for success, including environment (sound, lighting, color, and camera placement), communication tips, documentation, and follow-up
- video of an ideal telemedicine visit
- simulation session: case scenarios, telemedicine software and equipment; pre-test and post-test
TELEMEDICINE IN MEDICAL EDUCATION

• Results: improved knowledge and confidence (with technology)
• Outcomes with respect to competencies: ???
  • patient safety and appropriate use: case scenarios
  • Technology and equipment
  • Ethical practices and legal requirements
  • Access and equity, barriers to care? Not clear
• Not assessed
  • Obtaining a history and exam
  • Communication with caretakers
  • Systems issues: coordination of care
HOW DO WE KNOW IF WE HAVE EFFECTIVELY TAUGHT TELEHEALTH SKILLS?

Assessment!

- One-on-one observation
- Portfolio review
- Reflection
- Simulation
SIMULATION CAN BE USED TO ASSESS TELEMEDICINE SKILLS

• Virtual OSCE
• Allows one-one-one observation
• Basic skill: obtaining a history and adapting physical exam
• “Curated” cases designed to evaluate
  • Patient safety and appropriate use: what cannot or should not be assessed via telemedicine
  • Communication with caretakers: transition from pediatric to adult medicine
  • Systems issues: coordination of care
TEACHING TELEMEDICINE PRINCIPLES AND SKILLS TO TRAINEES: WHAT WORKS FOR US

- No scheduled telemedicine for the first two months of fellowship training
- Set up for success
  - 1-2 telemedicine patients, separate from regular clinic
  - No new patients
  - After seeing a patient in clinic, fellow can schedule telemedicine followup
CASE 3: SUMMER 2021

- Phone visit: audio only
- 54 yo M with HTN, DM, gout
- Diagnosed with gout 5 years ago based on podagra, treated with allopurinol 300 mg daily
- No recent flares, no h/o kidney stones
- Last uric acid 5.7 in 2020
SKILLS REQUIRED FOR TELEMEDICINE VISITS ARE INHERENTLY DIFFERENT THAN THOSE REQUIRED FOR TRADITIONAL ENCOUNTERS

<table>
<thead>
<tr>
<th>Before the visit</th>
<th>During the visit</th>
<th>After the visit</th>
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<tbody>
<tr>
<td>• Don’t assume, demonstrate</td>
<td>• Obtain consent</td>
<td>• Discussion (if not integrated into the visit)</td>
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<tr>
<td>• Review the case with the fellow</td>
<td>• Set expectations for the patient</td>
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<tr>
<td></td>
<td>• Physical exam maneuvers</td>
<td></td>
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<td></td>
<td>• Counseling</td>
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<td></td>
<td>• Discuss follow-up and scheduling</td>
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Faculty and trainee discuss clinic expectations

- Decide on next steps for trainee - work on documentation or see next patient
- Trainee sees patient first in telemedicine video consultation platform
- Trainee exits telemedicine platform, patient remains in the platform

All parties exit platform. Faculty and trainee debrief and feedback using video conference or phone call

- Faculty and trainee join patient in telemedicine platform together, finish visit
- Faculty and trainee discuss history, visual exam, and finalize assessment and plan
- Trainee notifies faculty they are ready to discuss patient
- Virtual “team room” for discussing patient: video conference or phone call
SUMMARY

- Flexibility and adaptability are necessary in COVID and for telemedicine
- Background knowledge is important: technology, business, administration, safety, and ethics (including privacy and consent)
- Clinical skills are essential: history-taking, limited exam, identifying pitfalls and emergencies
- Research in telemedicine and program evaluation is necessary
- Develop telemedicine entrustable professional activities (EPAs) and milestones???
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- Cai 2020 https://doi.org/10.5152/eurjrheum.2020.20060
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- Kulcsar 2016 10.1016/j.semarthrit.2016.05.013
- Kuhn 2018 10.1007/s00117-017-0351-7
- Stovel 2020 https://doi.org/10.1080/0142159X.2020.1799959
- Walker 2019 10.1089/tmj.2018.0140
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- Rheumatology telehealth competencies (draft, presented at ACR)
WHERE TO BEGIN IN TELEMEDICINE?

Backwards design:

• Integrate telemedicine into the rheumatology curriculum and workflow
• Build a system to be used for telemedicine education across the institution

Needs assessments

• Understand telemedicine use and patterns in different departments and specialties
• Conduct a telemedicine-focused needs assessment across different departments
**CREATING AN INSTITUTIONAL FRAMEWORK FOR TELEMEDICINE EDUCATION**

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<thead>
<tr>
<th>Determine the institution’s telemedicine technology and software requirements</th>
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<th>Provide trainees with equitable access to essential telemedicine opportunities</th>
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<tbody>
<tr>
<td>• Device with camera, WiFi, privacy</td>
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<th>Develop a functional workflow</th>
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<tbody>
<tr>
<td>• Pilot</td>
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<tr>
<td>• share</td>
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TIPS FOR INCORPORATING TELEMEDICINE IN TRAINEE EDUCATION

• Avoid reinventing the wheel: work with other departments/divisions, as well as other institutions
  • Technology and implementation
  • Curriculum and competencies
• Remain flexible
  • Open to feedback
  • Responsive to changes