



Virtual Core Competency Learning Amidst the Pandemic:
The Use of Telemedicine
in Undergraduate Pediatrics

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Disclosure


- Key opinion leader for Wyeth, Pediatrca, Sanofi Pasteur and Aventis, Menarini, Bayer
- No conflict of interest in the materials being presented in this presentation

Road Map

- Definition of Telemedicine
- Concerns about its use
- Goals of Telemedicine as an educational strategy
- Telemedicine skills set/ competencies
- Telemedicine curricular activities (TCAs)
- Where and how to integrate Telemedicine in the undergraduate medical curriculum

The COVID-19 pandemic has generated unprecedented stress to our health care system





Practical and logistic challenges to the learning environment with lasting effects on medical education

Rose S. Medical Student Education in the Time of COVID-19.
JAMA 2020 Mar 31

Academic institutions must consider new measures to continue their mission of training future physicians



Although not an exact replacement for in-person care,

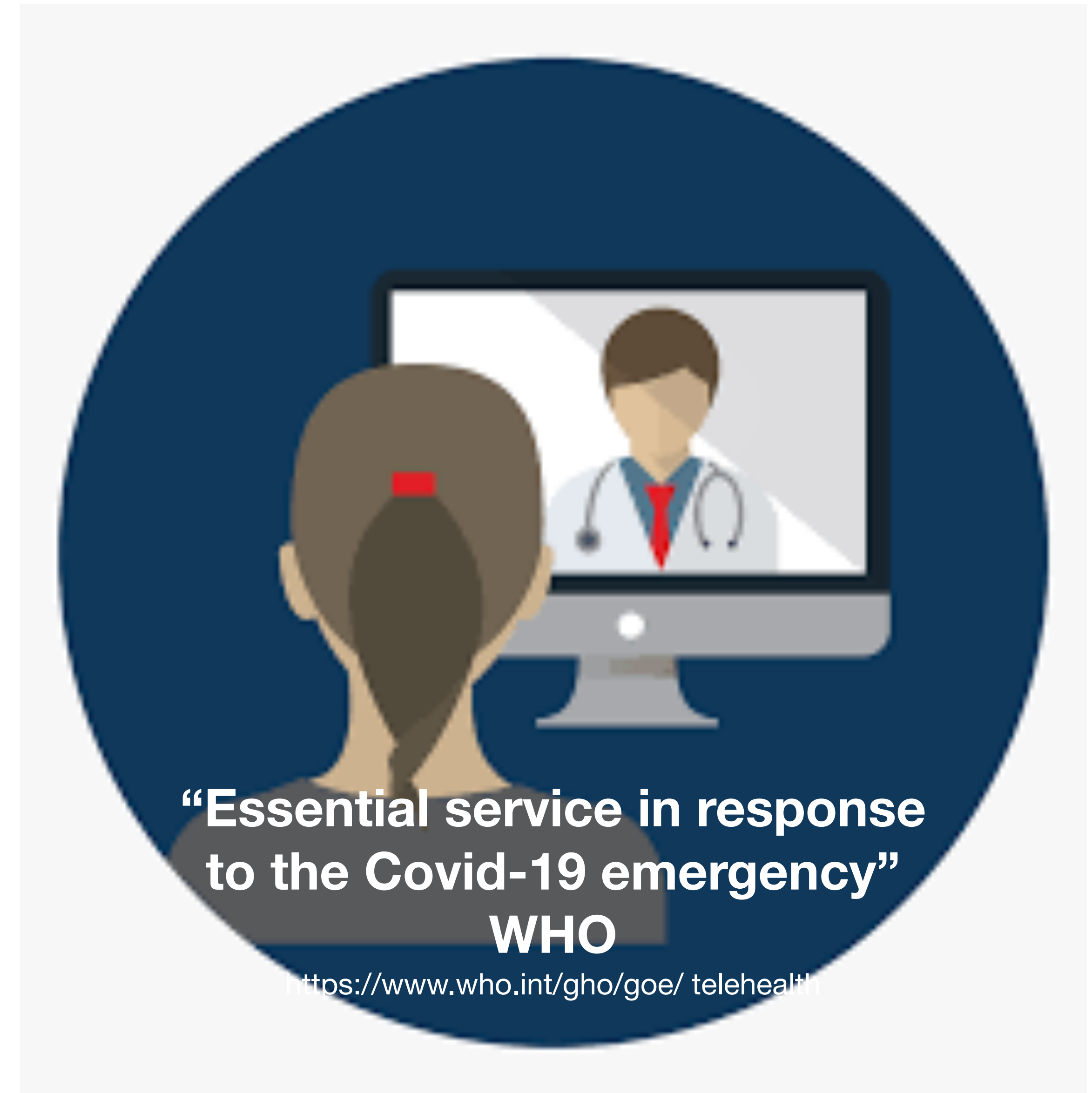
**institutions have a unique opportunity to bridge this current gap in clinical education with
TELEMEDICINE**

Iancu A, et al. J Med Internet Res 2020 | vol. 22 | iss. 7 | e19667

Telemedicine

Definition

“Provision of health care services over a spatial distance through the use of telecommunication technology with the aim of benefitting a patient or population”



Concerns about Telemedicine



Compromised **quality of care** as compared with in person visits



Reduced **privacy and security** of patients' health information



Potential lack of **personal connection** between providers and patients during telemedicine visits

Concerns about Telemedicine



Direct-to-consumer telehealth may increase medical malpractice



Technology perceived to be in competition with HCP services

“Training physicians during medical school to deliver high-quality, secure, and personable health care through telemedicine can alleviate these concerns and promote population-wide adoption of the technology.”

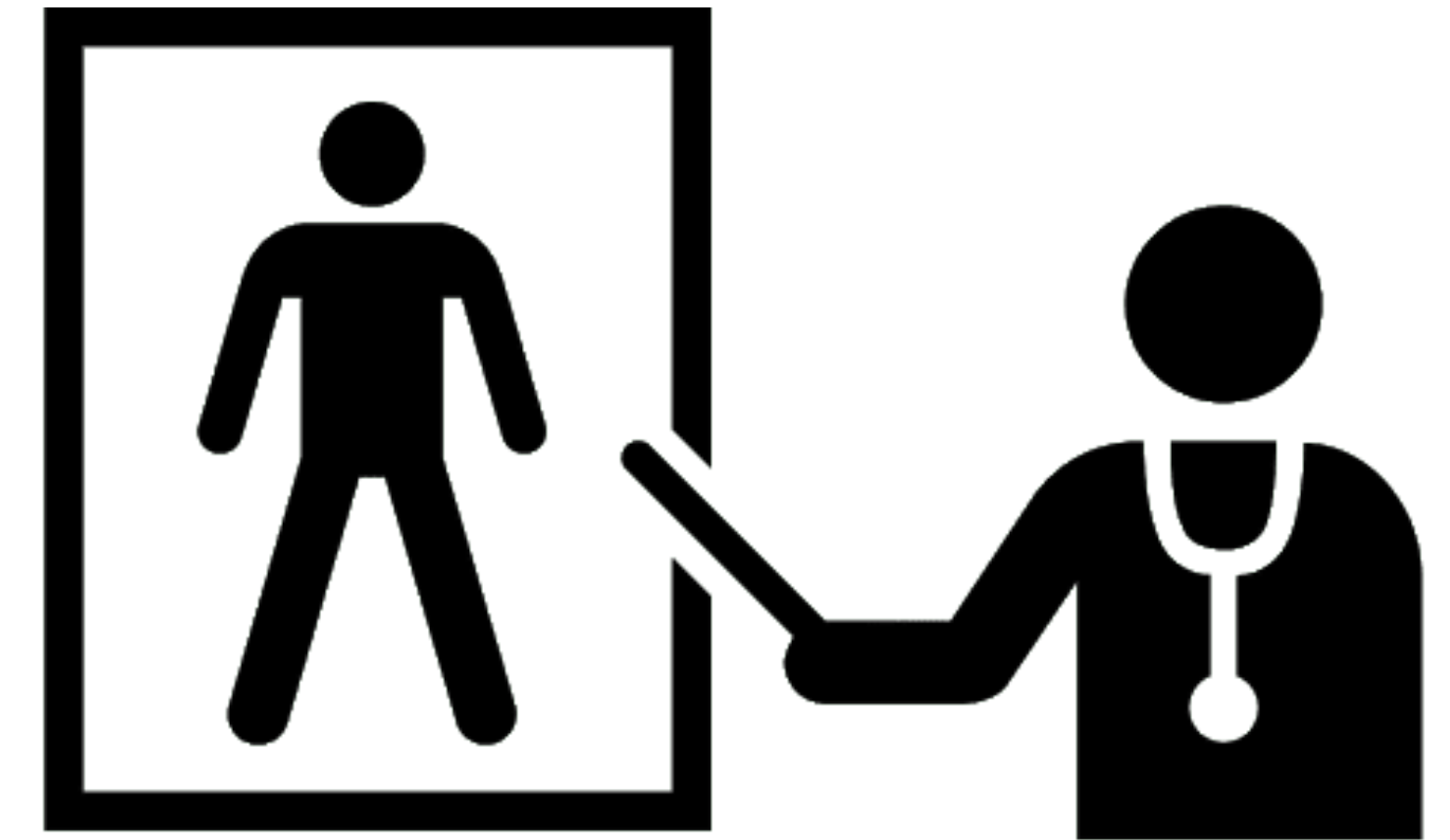
“Medical students who interact with telemedicine during their undergraduate medical training find that it contributes to the development of **core competencies in patient care, medical knowledge, and practice-based learning**”



Goals of Telemedicine as an Educational Strategy

1. Facilitate basic knowledge/entrustable professional skills acquisition
2. Improve decision making
3. Improve psychomotor skills and skill coordination
4. Practice for rare or critical events
5. Learn team training (team work)
6. Enhance perceptual variation in subjects that rely on visualization (ex. anatomy)

**Incorporate into
the curriculum**



**Integrate with existing
clinical experiences**

Entrustable Professional Activity (EPA)	Telemedicine Curricular Activity
EPA 1: Gather a history and perform a physical exam	Clinical e-visit (telephone, email) Virtual consult (videoconferencing)
EPA 2: Prioritize a differential diagnosis	Clinical e-visit Virtual consult Pathology/ Radiology cases
EPA 3: Diagnostic and screening tests	Clinical e-visit Virtual consult Pathology/ Radiology cases
EPA 4: Enter and discuss orders and prescriptions	Clinical e-visit Virtual consult
EPA 5: Document a clinical encounter	Clinical e-visit Virtual consult Pathology/ Radiology cases
EPA 6: Provide an oral presentation of a clinical encounter	Clinical e-visit Virtual consult Pathology/ Radiology cases Student led patient education project

Entrustable Professional Activity (EPA)	Telemedicine Curricular Activity
EPA 7: Clinical questions to advance patient care	Post e-visit reflection Virtual journal clubs Student led inquiry projects
EPA 8: Give or receive a patient hand off	Virtual standardized patients and Objective Structured Clinical Examination (OSCE)
EPA 9: Collaborates as a member of an interprofessional team	Interdisciplinary rounds Teleconsult Tumor boards Group discussions with other health professional schools
EPA 10: Recognize urgent or emergent situations	Clinical e-visit Telestroke team Teletrauma team Covid 19 call center, Forward triage response team
EPA 11: Obtain informed consent for tests and/or procedures	Clinical e-visits in surgery, OB-Gyne, etc
EPA 12: General procedures of a physician	Online procedure courses, augmented and virtual simulations, live-streamed surgical theater
EPA 13: Identify system failures and contribute to cultures of safety and improvement	Post e-visit reflection Quality improvement training

Telemedicine Curricular Activities

Telemedicine Curricular Activities (TCAs)

Remote versions of traditional “face-to-face” TL strategies

- **Direct patient care delivery**
 - Clinical e-visits
 - Virtual consult with real patients
 - Faculty-supervised standardized patient encounter
 - Store and forward telemedicine
 - Forward triage
 - Remote patient monitoring (RPM)
- **Direct teacher-learner interaction**
 - Pathology/ Radiology cases
 - Virtual journal clubs
 - Student-led education projects
 - Virtual clinical conferences (multidisciplinary rounds, morbidity/ mortality conference, hand-offs, etc)
 - Tele-specialties (Telepediatrics, Telerehabilitation, Telestroke, etc)
 - Elective

Telemedicine Curricular Activities (TCAs)

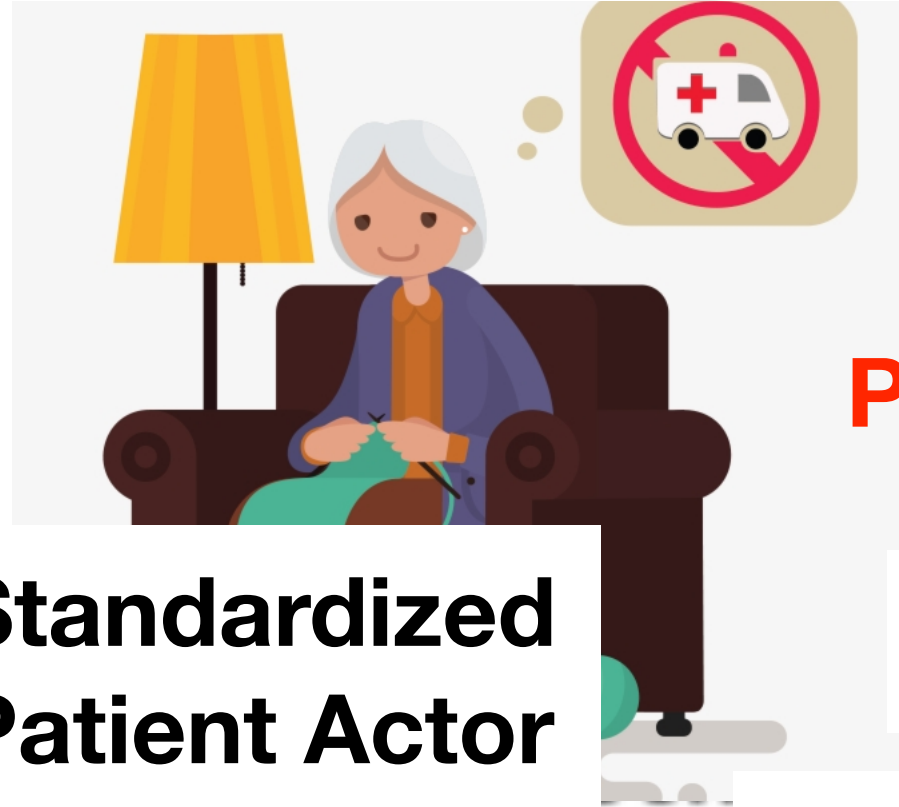
- Remote Training
 - Quality improvement
 - Ethics programming
 - Ethics
 - Safety
 - Applications
 - Research



FACULTY SUPERVISION

Medical interviewing, Virtual PE and Communication skills

Meaningful remote patient care in various settings



Standardized Patient Actor (SPA)

PROFESSIONAL ATTITUDE



Patient-centered, Compassionate care

Diagnosis Management

SYSTEMS-BASED PRACTICE

Specialist Doctor 1 (On Site)



Observes Gives feedback

Specialist Doctor 2 (Mobile)

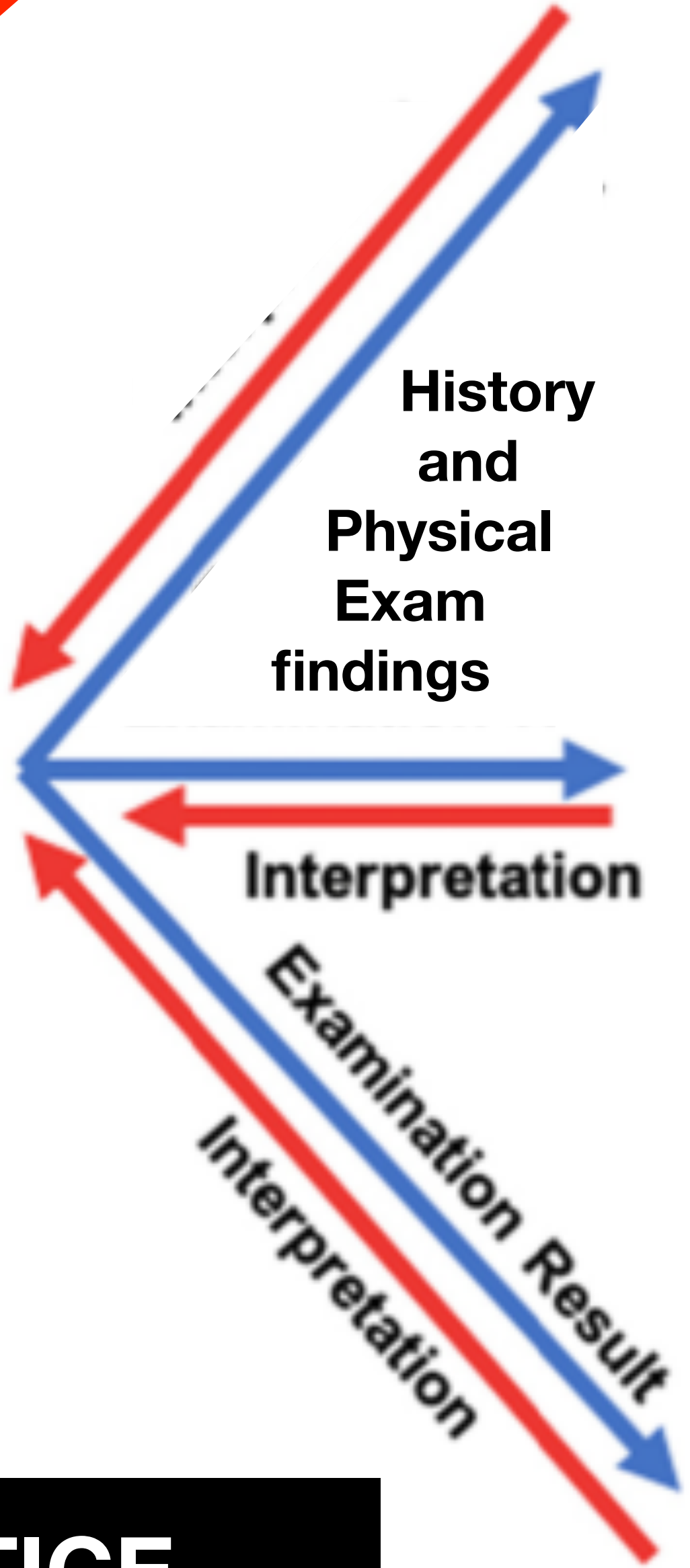


Asks questions Clarifies

Specialist Doctor 3 (Mobile)



Facilitates Provides expert answer



Store-and-Forward Telemedicine Education

- Acquisition of clinical information by trainee
- Transfer data to multiple clinical sites/
appropriate specialists (e.g. radiology,
pathology, etc)
- Studies showed that it helped trainees
develop core competencies in:
 - patient care, medical knowledge,
practice-based learning and improvement and
system-based practice



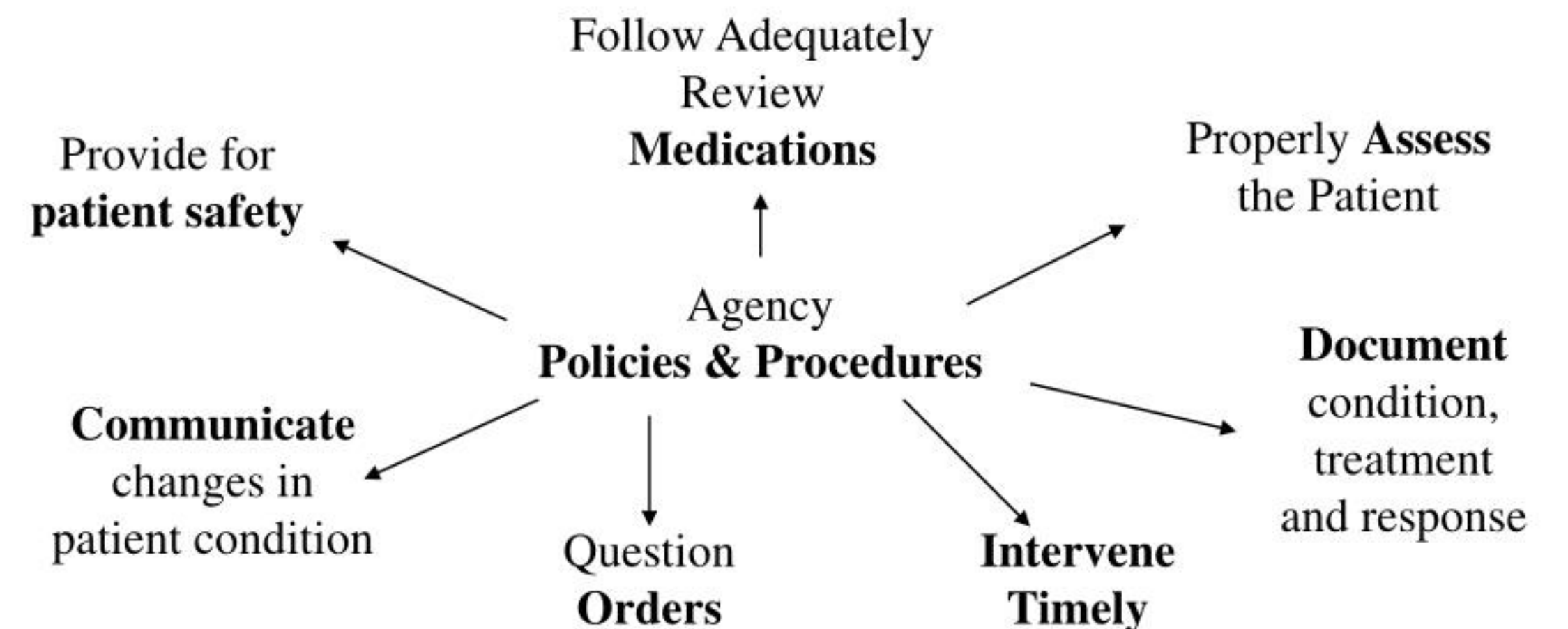
Forward Triage

Screening patients before they arrive in the ER

- For patients in need of chronic or preventative care who are reluctant to visit the clinic
- Medical students could be directly involved in **testing, screening, and triage using history taking and clinical reasoning skills** to report findings to their preceptors



Teletriage Practice



Chronic Disease Management & Remote Patient Monitoring

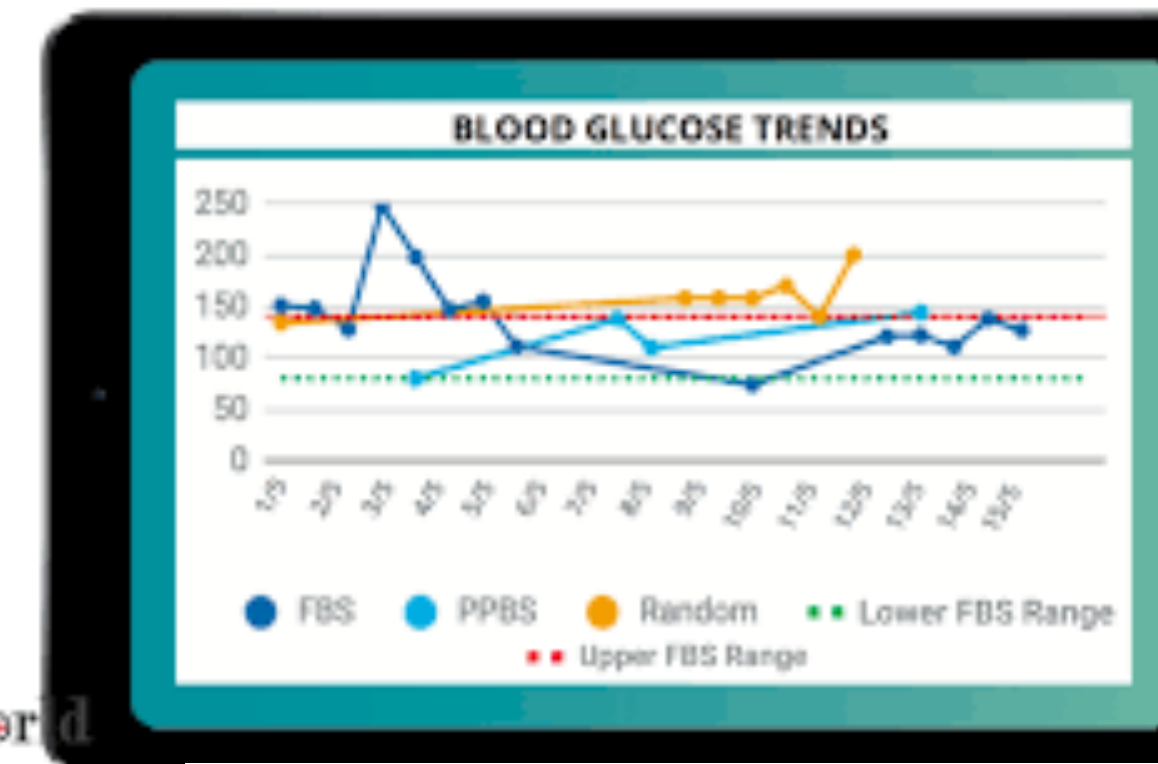
Inpatient Telemedicine and Online File Sharing Applications

- Goals:
 - safely monitor the physical and mental well-being of high risk patients
 - reduce rates of visits to the ER and re-hospitalizations of those with multiple complex conditions
- Trainees learn to **monitor regularly, look at patterns, provide counseling, do early intervention**



Telepsychiatry

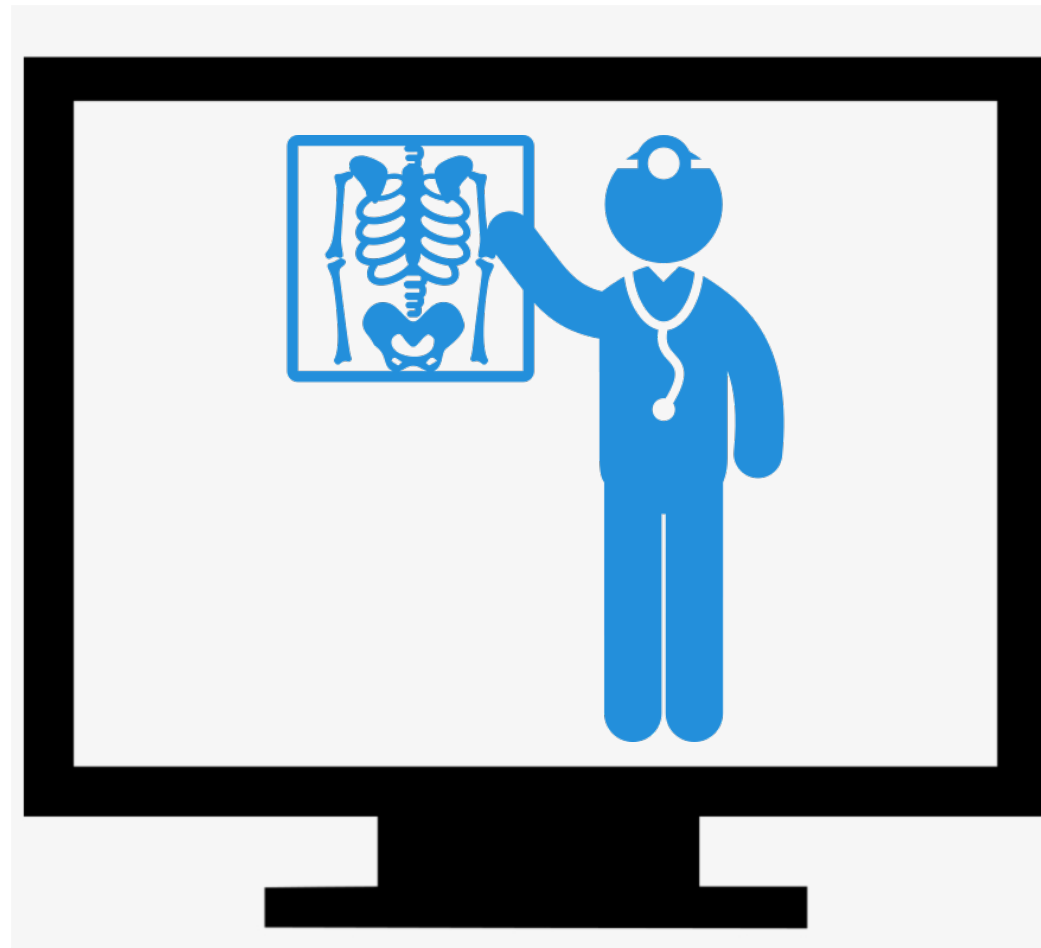
Continuous glucose monitoring



Home monitoring of cardiovascular implantable device



Direct Teacher-Learner Interactions



- Faculty/ specialist directly conducts or facilitates interaction in remote manner
- Trainees tasked to present a case or a project, discuss a journal article, participate in conference/s remotely
- Presence of patients not required

Telespecialty: Telepediatrics

JMIR PEDIATRICS AND PARENTING

Shah & Badawy

Review

Telemedicine in Pediatrics: Systematic Review of Randomized Controlled Trials

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³Department of Pediatrics, Northwestern University Feinberg School of Medicine, Chicago, IL, United States

11 RCT/ Cluster Randomized Trials

Various health conditions assessed: obesity, asthma, mental health conditions, otitis media, skin conditions, type 1 diabetes, attention deficit hyperactivity disorder, and cystic fibrosis–related pancreatic insufficiency

Videoconferencing



Smartphone-based interventions

Telephone counseling



Telemedicine-based screening visits

Telemedicine interventions resulted in outcomes comparable to or better than the outcomes of control groups

These outcomes were related to symptom management, quality of life, satisfaction, medication adherence, visit completion rates, and disease progression

Telesurgery

Use of wireless networking and robotic technologies to operate on distantly located patients



Haptic sensation
feedback technology

Provides remote
proctoring
for proficiency

Gives expert support for
rural and global health
settings



Enables remotely
located experts to
mentor medical
students or
residents at the
surgical site

Trainees can:

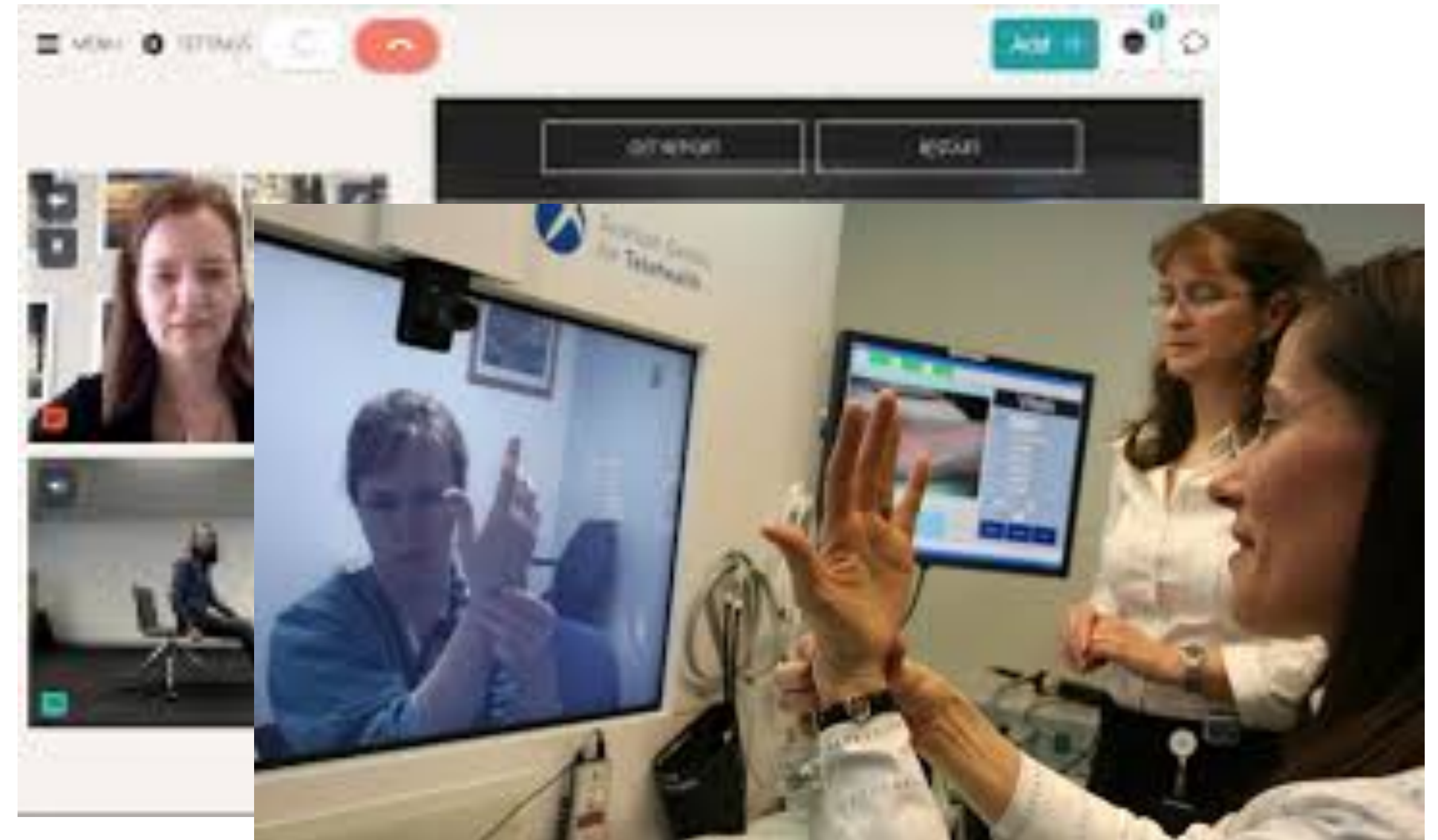
- gain **observational experience** of core procedures
- become **familiar with technologies**

Telerehabilitation

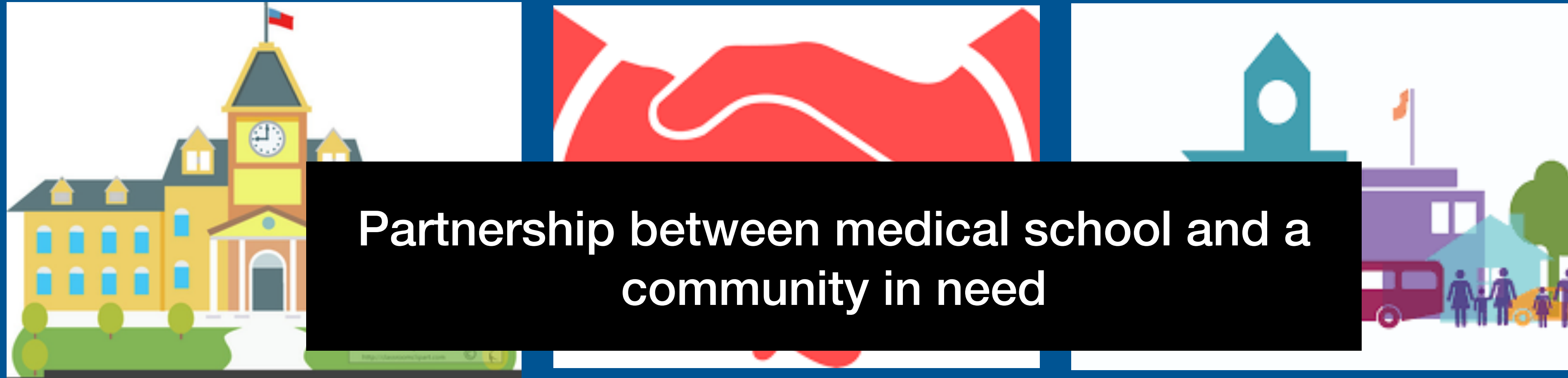
Use of technology to observe patients as they execute movements and monitor their improvement at home

Trainees can:

- employ **motivational interviewing skills** to promote and increase adherence to a schedule of regular physical activity
- serve as **active partners with rehabilitation teams**



Faculty- **provide feedback on students' communication skills and efficacy of counseling**



Partnership between medical school and a community in need

Teaching Core Competencies Through Telemedicine



Telemedicine hardware and Infrastructure

Patient appointment

CHED Program Outcomes for MD

Program Outcome	Description	Telemedicine Curricular Activities
Demonstrate clinical competence	Competently manage clinical conditions of all patients in various settings	Clinical e-visits, RPM, Store-&-Forward, Virtual conferences, Radiology case, Tele-specialties
Communicate effectively	Convey information, written and oral, across all types of audiences, venues, media	Clinical e-visits, RPM, Store-and-Forward, Virtual conferences, Tele-specialties
Lead and manage health care teams	Initiate planning, organizing and implementing & evaluation of programs & health facilities	Remote training
Engage in research activities	Utilize current research evidence in decision making as practitioner, educator or researcher	Clinical e-visits, RPM, Store-and-Forward, Virtual conferences, Tele-specialties
Collaborate within inter professional teams	Effectively work in teams in managing patients, institutions, projects, etc	Store-and-Forward, Triage, Virtual conferences, Radiology cases

CHED Program Outcomes for MD

Program Outcome	Description	Telemedicine Curricular Activities
Utilize systems-based approach to healthcare	Utilize systems-based approach in actual delivery of care	Clinical e-visits, virtual conferences, radiology/pathology case
Engage in continuing personal and professional development	Update oneself through a variety of avenues for personal and professional growth to ensure quality healthcare and patient safety	Remote training Tele-specialties
Adhere to ethical, professional, and legal standards	Adhere to national and international codes of conduct and legal standards that govern the profession	Clinical e-visits, Virtual conferences, Store-and-Forward, Student led projects
Demonstrate nationalism, internationalism and dedication to service	Demonstrate love for one's national heritage, respect for other cultures and commitment to service	Clinical e-visits, RPM, Store-and-Forward, Student led projects
Practice the principles of social accountability	Adhere to the principles of relevance, equity, quality and cost effectiveness in the delivery of healthcare to patients, families and communities	Clinical e-visits, RPM, Store-and-Forward, Virtual conferences, Tele-specialties

Telemedicine Skills Set/ Competencies

Competencies	Areas
Digital communication	Communication speed Clear enunciation Minimal body motion and gestures Colloquial speech
Physical examination (functional)	Unique techniques Application of remote monitoring devices Collaboration with on-site providers Virtual evaluations including home assessment
Professionalism and webside manner	Privacy Legal limits of e-prescribing Reporting of practices
Technological literacy	Screen sharing Use of virtual health platforms

Where to Integrate Telemedicine?

In existing curricular structures to avoid additional burden to educators

Clinical rotations- OPD, ER, critical care, in-patient

Preceptorials, small group discussions

Ethics programming

Rural care exposures/ community rotations

Electives

Research

How to Implement Telemedicine?

- Tailor goals and tasks of the session to the level of training and expertise of students
- Implement a focused approach in performing tasks
- Record and revisit TL sessions
- Adopt telemedicine as an elective

Tailor goals and tasks to the level of the student's training



1st and 2nd year students:

Thorough history, selected PE assisted by px's companion



Upper level/ senior students:

Same tasks, plus generating own assessment and treatment plans

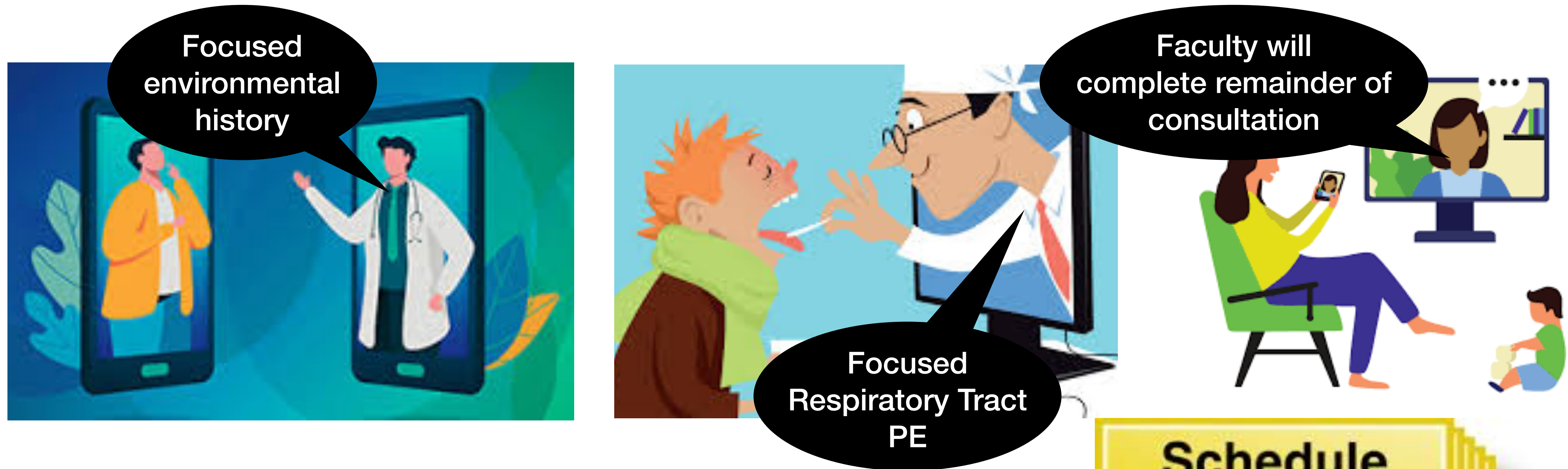
Students and faculty physicians are at one site providing verbal instructions

Patients/ companions/ clinical providers are at a distant site giving feedback

Faculty member:

- Review students' findings
- Evaluate their decisions
- Assist in finalizing care recommendations to share w/ patient & community health team

Focused approach in performing task



Encounters could be pre-sorted and scheduled based on the patient's chief complaint or problem list



Record and revisit patient-doctor session

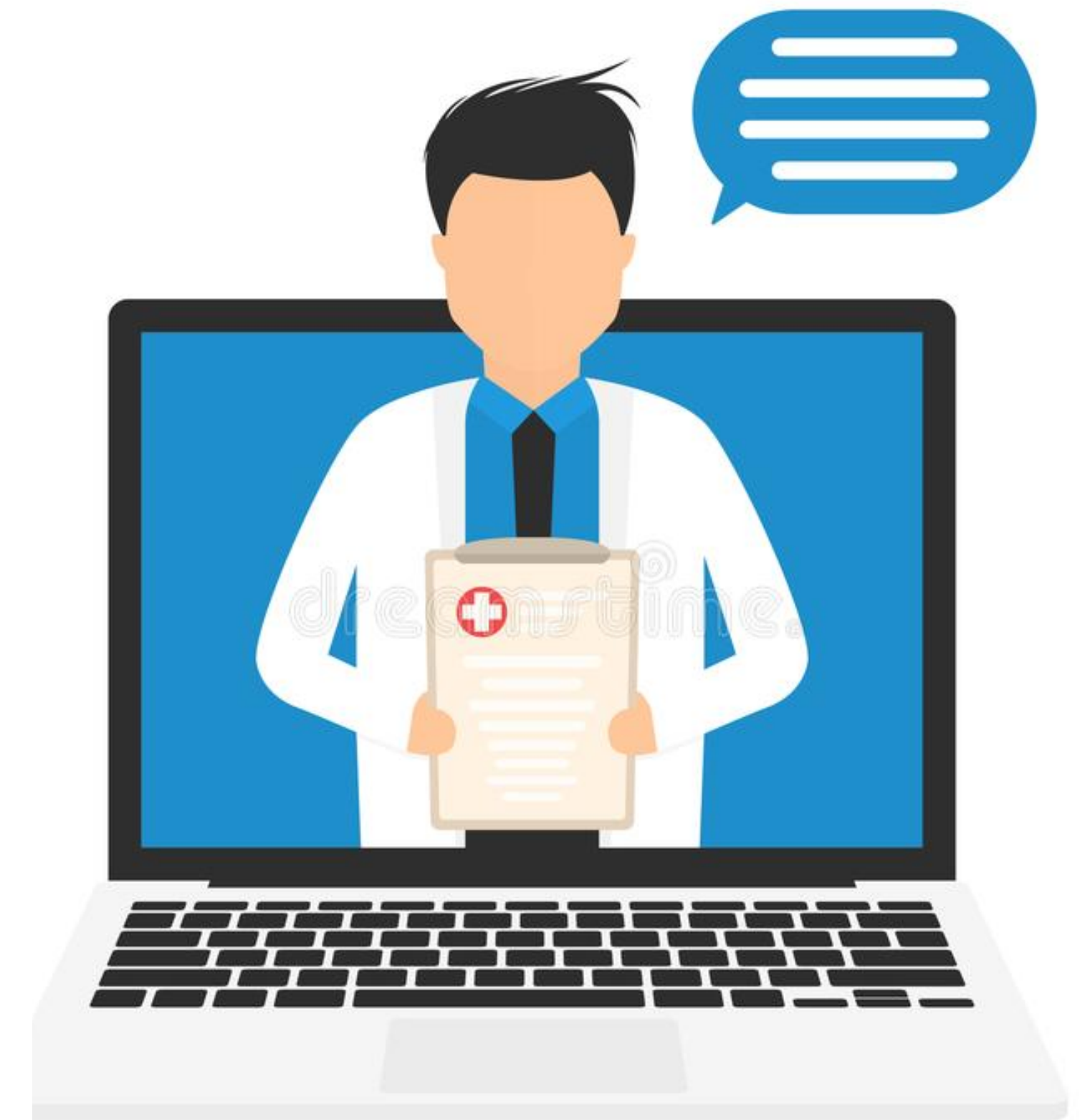


- Record patient encounters with permission, to be used as learning tools
- Benefits:
 - Encourages enhanced feedback
 - Helps to assess quality
 - Recorded unique cases and didactic encounters could be integrated into lectures for the benefit of all students

Adopt a telemedicine elective course

2-week elective on telemedicine and digital health

- Specific, measurable and feasible objectives
- TL activities: lectures, shadowing clinicians working in telehealth, and final projects
- Simulated video encounters with standardized patients
- Students interview a patient over a video monitor, take a medical history, conduct a virtual exam and receive feedback from both the patient and faculty



Issues in Telemedicine

Ethical, regulatory and legal issues

Threats to **patient privacy**- robust privacy and security plan that is well implemented and disclosed to patients

Informed consent- discuss risks and benefits of phone or video visits; core competency in providers-in-training

Guidelines for video and telephone visits including limitations- students to be provided with tools (teach-back method*) to ensure mutual understanding between clinicians and patients

*Teach back method- useful for patient communication and to prevent medical documentation errors

More research is needed on the efficacy of existing telemedicine curricula and its practice implementation



Summary

We have seen the **value of Telemedicine** in light of the imminent health care needs that surfaced with the COVID-19 pandemic

As a teaching learning method, it can **help develop important clinical competencies** among physicians-in-training with the **use of technology**, even if the patient is distantly located

It can be **integrated in the existing medical curricula**, as a **part of various clinical rotations** in the hospital and community, with the addition of **training on its ethical, legal, and regulatory implications on health care**

The vast array of telemedicine initiatives can be utilized to augment traditional courses, providing students with broader access to diverse learning opportunities to prepare them for future practice.



Online Resources for Students and Providers

American Telemedicine Association: <https://www.americantelemed.org/>

Center for Telemedicine and eHealth Law: <https://www.telehealthlawcenter.org/>

Health Resource and Services website: <https://www.hrsa.gov/>

American Academy of Pediatrics' Section on Telehealth Care: https://pediatrics.aappublications.org/section_on_telephone_care

AAP Council on Clinical Information Technologies: https://pediatrics.aappublications.org/council_on_clinical_information_technology

National Telehealth Center, UP Manila-DOH: <https://telehealth.ph/>