Best Practices: Designing a Virtual Advanced Clinical Elective in Maternal-Fetal Medicine

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We discovered a number of best practices while designing and navigating our first virtual advanced elective in Maternal-Fetal Medicine (MFM), which we have shared here.

1) Benefits & Drawbacks of Virtual Electives

Benefits	Drawbacks
Increased time for one-on-one teaching and mentorship	Exposure to surgical cases and Labor & Delivery shifts
Telemedicine exposure (e.g. remote ultrasound reading, lactation clinic, MFM consults)	Hands-on ultrasound learning
Oral presentation at APGO conference on virtual elective experience	Performing physical exam skills on inpatient rounds and outpatient consults
Opportunity to pursue an independent scholarly project	Team connection with residents and fellows

2) Fostering Virtual Team Dynamics

Virtual team building requires students, trainees, and faculty to communicate expectations and to encourage flexibility from the beginning of the rotation. In order to support these goals, it is important to support faculty development and to generate buy-in with in-person team members, as well as the virtual learners.

Each team member can take specific actions on a daily basis to optimize communication, which are listed in the table below. Communication - both scheduled and informal, through a variety of platforms - is key in fostering virtual learning opportunities.

Role	Team Building Opportunities
Advanced Clinical Elective Director	• Schedule weekly feedback • Seek educational opportunities over email, phone, or text
Inpatient Team	• Place student on speaker phone for rounds and patient counseling

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	• Introduce virtual learner to nursing staff, patients, and new team members • Include student in all email communication • Seek educational opportunities over email, phone, or text
Advanced Clinical Student	• Be flexible with availability and communication • Actively seek and implement feedback

3) Virtual Student Assessment

Virtual clinical education is relatively new. In fact, when presenting our elective at an APGO faculty development seminar, ~63% of audience members reported that they had never assessed a student's virtual performance. It is therefore essential to outline appropriate forms of assessment to guide students and faculty through remote patient encounters. Consultations offer an excellent opportunity for advanced students to engage in independent clinical care and for proctors to assess their performance.

The table below lists the 13 core Entrustable Professional Activities (EPAs) created by the AAMC to assess medical students' preparedness for residency. During a virtual outpatient consultation, the advanced elective student is responsible for gathering the patient's history, presenting to the preceptor, participating in clinical decision making, and documenting the encounter in a note. Nine of the 13 EPAs can be assessed in these sessions, demonstrating that students' performance in virtual clinical electives can be rigorously assessed by faculty.

In addition to the information provided here, there is a virtual consult protocol included in the Course Logistics resource.

EPA	Assessed during virtual patient care?
Gather a history and perform a physical exam.	✅ / 🚫
Prioritize a differential diagnosis following a clinical encounter.	✅
Recommend and interpret common diagnostic and screening tests.	✅
Enter and discuss orders and prescriptions.	✅
Document a clinical encounter in the patient record.	✅

Provide an oral presentation of a clinical encounter.	✅
Form clinical questions and retrieve evidence to advance patient care.	✅
Give or receive a patient handover to transition care responsibility.	✅
Collaborate as a member of an interprofessional team.	✅
Recognize a patient requiring urgent or emergent care and initiate evaluation and management.	🚫
Obtain informed consent for tests and/or procedures.	🚫
Perform general procedures of a physician.	🚫
Identify system failures and contribute to a culture of safety and improvement.	✅

Although not all activities can be directly assessed, there are alternative solutions. For instance, while discussing clinical management, a preceptor may ask a student how they would approach obtaining informed consent for a recommended test or procedure.

4) Technology & Learning Opportunities

Literature on virtual learning emphasizes the need to supplement clinical care with online resources, rather than directly substituting one for the other. Otherwise, online education can mistakenly communicate to students that patient care is "extraneous" to their education.

If implemented appropriately, technology allows students to:

- Attend conferences and didactics outside of their hospital site, including a national lactation workshop and a COVID-19 literature review presented by a neighboring hospital
- Access more learning opportunities on a daily basis given the time saved by not commuting to or traveling within the hospital
- And practice time management during independent study periods

Here is a list of the communication platforms used by our inpatient and outpatient teams:

- Phone (text/call)
- Email
- Doximity (including three-way calls for consults)
- Zoom (including the shared screen feature for ultrasound readings)
- Epic (key for remote access)

As a reminder, any technology used to exchange or discuss patient information must be HIPAA compliant. Please consult with your IT department to confirm approved platforms.

Conclusion

- Mentorship can be created and maintained virtually.
- Communication requires setting expectations, including the need for flexibility and creativity.
- Medical students' virtual clinical performance can still be rigorously assessed through EPAs.
- Technology can enhance real-time, synchronous participation.

References

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