Introduction and Background
Due to curriculum, time, and faculty limitations, medical students do not receive uniform training in radiologic image interpretation. Only 25% of medical schools require radiology clerkships.

At our institution in AY 2020
• 115 students (71% of graduating class) going into all specialties except obstetrics/gynaecology and psychiatry
• 67.5% report medical school experience prepared them moderately, very, or extremely well for interpreting X-rays and 54.2% for interpreting CTs
• 45.8% reported feeling slightly or not well prepared for CT interpretation
• Widely ranging comfort levels of image interpretation, from 19.1% for abdominal X-ray (AXR) to 46.7% for CT head (CTH)

Objectives:
• Improve consistency of radiology education
• Determine if condensed flipped classroom model is effective for improving image interpretation skills

Program deployed during a mandatory transition to residency (TTR) program at end of 4th year of medical school in 2021

Results

Results AY 2021 Knowledge Assessment
• 2 sections of 4th year medical students (March and April)
  • Total 61 students with 58 completing post-test
  • Students self-selected into control or RFC subgroups based on which videos watched
  • Mean pre-test score of 58.33% vs. mean post-test score of 65.4%

Figure 2: RFC post-workshop knowledge scores were significantly higher than control scores for questions related to the RFC videos watched.

Results AY 2021 Attitudes
• For X-ray (67.2%) felt moderately well prepared by curriculum
• For CT (44.3%) felt moderately or very well prepared
• Based on the pre-survey, 80% of students visualize own X-rays and 75% visualize own CTs in clinical encounters

• 87.9% of students said they learned a moderate amount, a lot, or a great deal from the workshop
• Most students found self-study material to be useful

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Radiology Flipped Classroom (RFC) Methods

Figure 1: Structure of RFC
Topics covered include:
• CT head (CTH)
• Chest and abdomen X-rays (AXR, AXR)

Pre-workshop knowledge & attitudes assessment
Self-study material (FOAMEd videos) provided to students for review at their own pace
(1 day for March group, 4 days for April group)

CTC workshop time to practice interpreting images with the guidance of senior radiology residents
(1.5 hours total)

Post-workshop knowledge & attitudes assessment

Radiology Flipped Classroom (RFC) Methods

Results

• Shortened format especially suitable for students with previous clinical experience and effective for the purposes of review
• Reviewing slide decks did not improve scores more than interactive workshop alone
• Conversion to video-based self-study materials improved engagement, with most favoring this modality, resulting in improvement in knowledge scores over the interactive workshop alone

Discussion/Conclusions
• All workshops highly interactive and well-received
• Effective even as completely online session
• Increased use of FOAMEd can be beneficial when developing workshops
• High-quality faculty-curated videos can save instruction time and improve the consistency of education
• Structure of workshop fostered interdisciplinary collaboration
• Developed didactic skills of instructing radiology residents

Limitations
• Small sample size and lack of true randomization
• Self-selection into RFC groups and appeared to only watch videos of materials they were comfortable with
• Almost double the students watched CTH compared with other radiology
• Speculate that students had preceding Neurology rotation and watched the same CTH video prior. Possible misinterpretation of survey question leading students to state they had watched this video ever, as opposed to during this module.
• Increased screen time cited as barrier to completion of all videos

Future Direction
• Integrate formal image interpretation earlier into curriculum to promote retention, increase student comfort, and encourage personally visualizing images obtained for patients

Reinforcing Image Interpretation Skills Using a Flipped Classroom Model During a Transition to Residency Curriculum
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