



Developing a Pilot Radiology Curriculum catered to the Yale University School of Medicine Primary Care Clerkship (PCC)



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BACKGROUND

- Knowledge of medical radiation safety and evidence based imaging (EBI) guidelines is essential for primary care physicians to appropriately order imaging studies.
- Previous studies have demonstrated a lack of understanding amongst medical students with regards to radiation safety and EBI guidelines
- Currently, medical students at Yale have no formal exposure to these topics
- There is an opportunity to understand and address these important gaps in knowledge.

OBJECTIVE

Assess the impact of implementing a pilot radiology curriculum, consisting of topics on radiation safety and EBI guidelines, for senior medical students rotating through their PCC.

METHODS

- Radiation safety and EBI guidelines workshops were created for this pilot project.

RADIATION SAFETY	EBI GUIDELINES
PRE-TEST •5 questions on radiation safety •4 additional survey questions	PRE-TEST •10 case scenarios requiring the students to order the next best imaging step •Guidelines were adapted from the American College of Radiology (ACR) appropriateness criteria. •An additional 4 survey questions were also included.
INTERVENTION: •WORKSHOP; 72 students	INTERVENTION: •WORKSHOP; 80 students
POST-TEST; 32 responses •Same 5 questions on radiation safety •4 additional survey questions	POST-TEST; 31 responses •Same 10 clinical case scenarios •4 additional survey questions

- Responses to the pre and post test radiation safety questions as well as the 10 clinical case scenarios from the EBI workshop were evaluated via the Chi-squared test to assess if the workshops had a significant impact on the number of correct responses
- Chi-squared test was also to assess whether the EBI workshop had a significant impact to the question "I am aware of the ACR appropriateness criteria"

MATERIALS

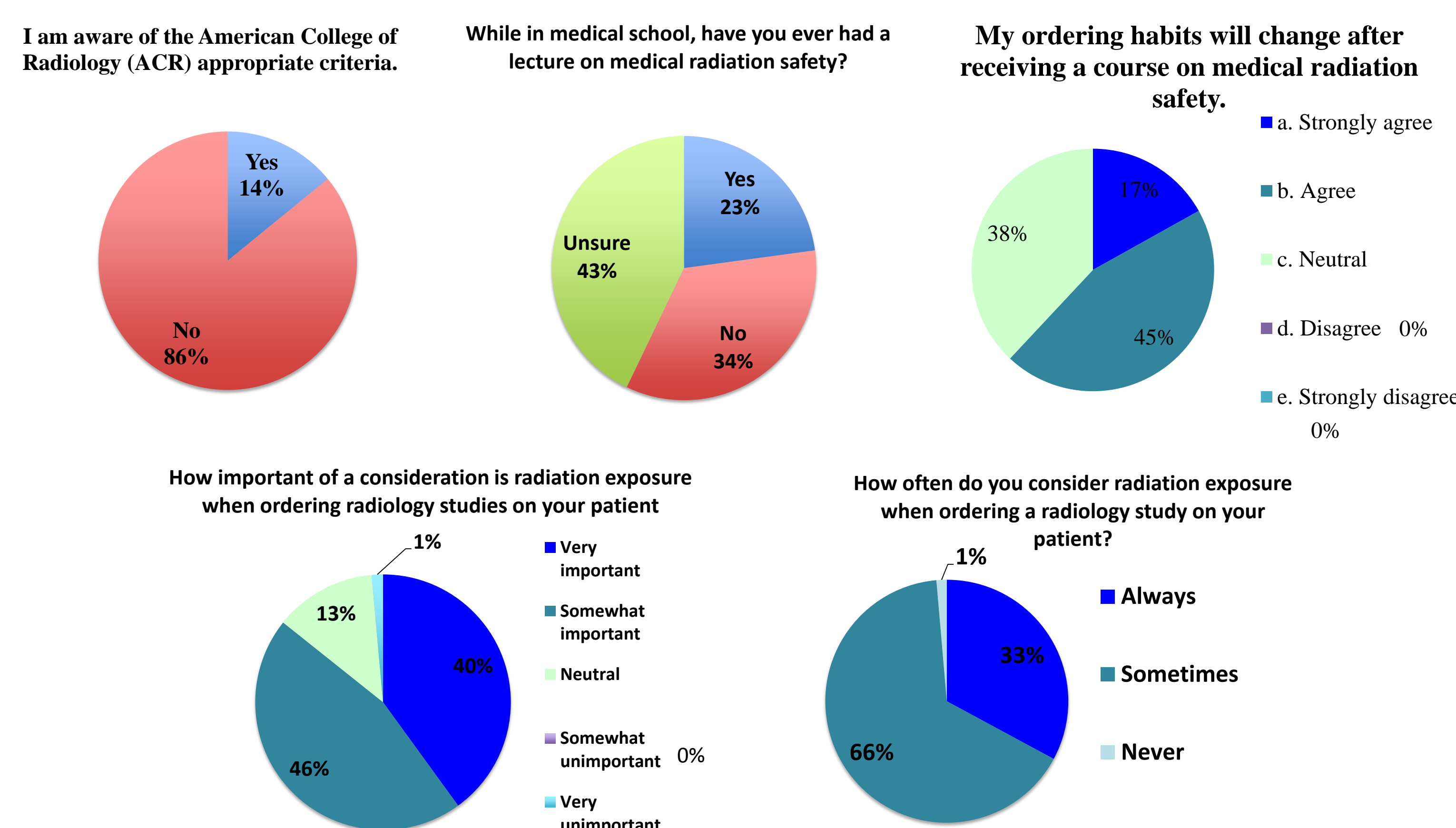
Radiation Safety Questions

1. Which of the following diagnostic imaging examinations involves ionizing radiation?
2. A frontal and lateral chest radiograph imparts the same amount of radiation as a flight to:
3. Which of the following conditions have never been demonstrated to take place in humans following diagnostic imaging radiation exposure?
4. The dose from a chest CT equates to the dose from how many CXRs?
5. Which study gives the highest radiation exposure?

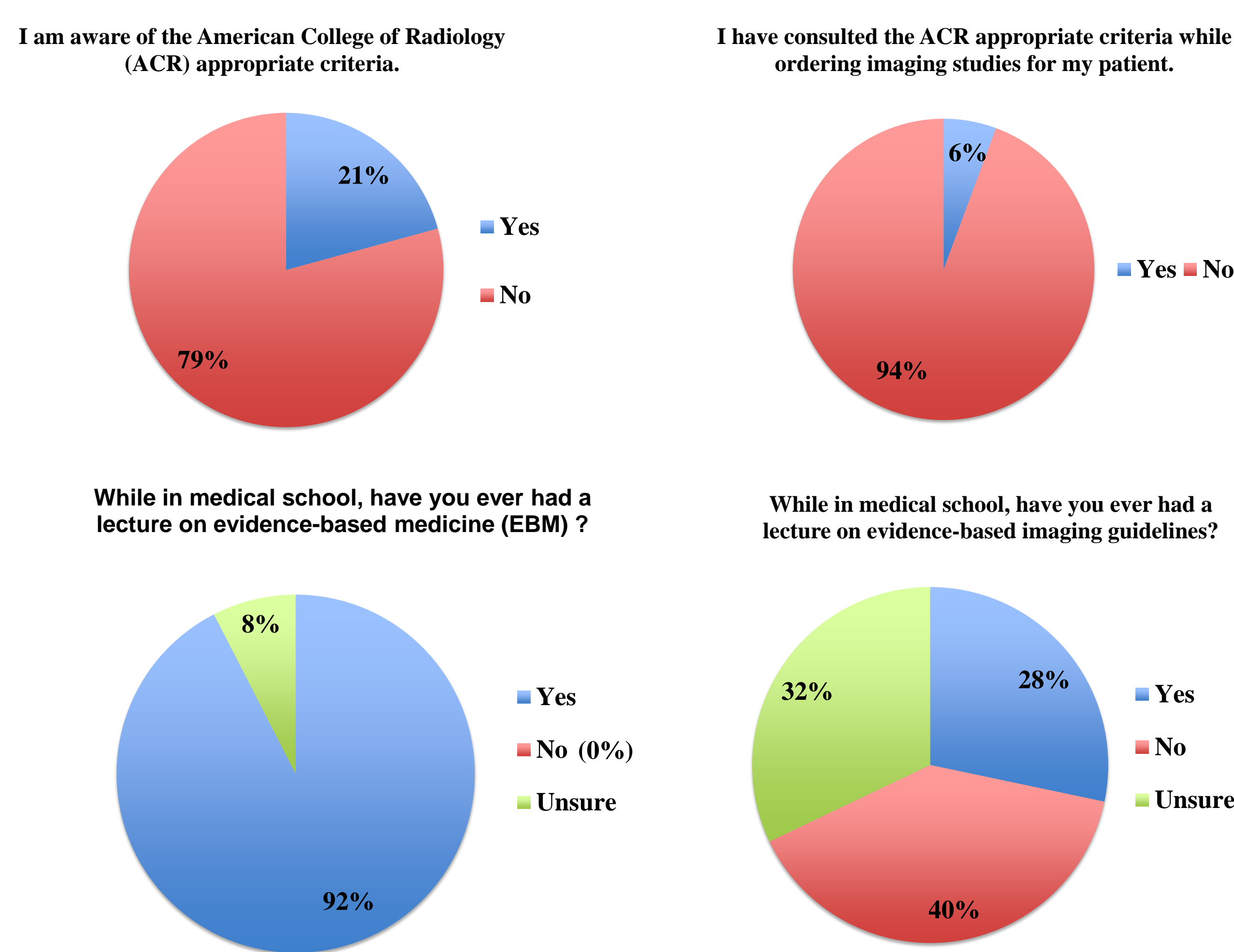
EBI Questions (with answers in parentheses)

1. Right Upper quadrant pain (US)
2. Uncomplicated Pyelonephritis (None)
3. Left lower quadrant pain - suspected diverticulitis (CT)
4. Painless jaundice (US)
5. Right lower quadrant pain - suspected appendicitis (CT)
6. Acute pancreatitis; first time presentation; certainty of diagnosis, <48-72 hours of pain (US)
7. Acute onset scrotal pain (US)
8. Pelvic pain in pregnant reproductive female (US)
9. Suspected small bowel obstruction (CT)
10. Indications for Non-contrast CT scan

RADIATION PRE-TEST SURVEY RESULTS



EBI PRE-TEST SURVEY RESULTS



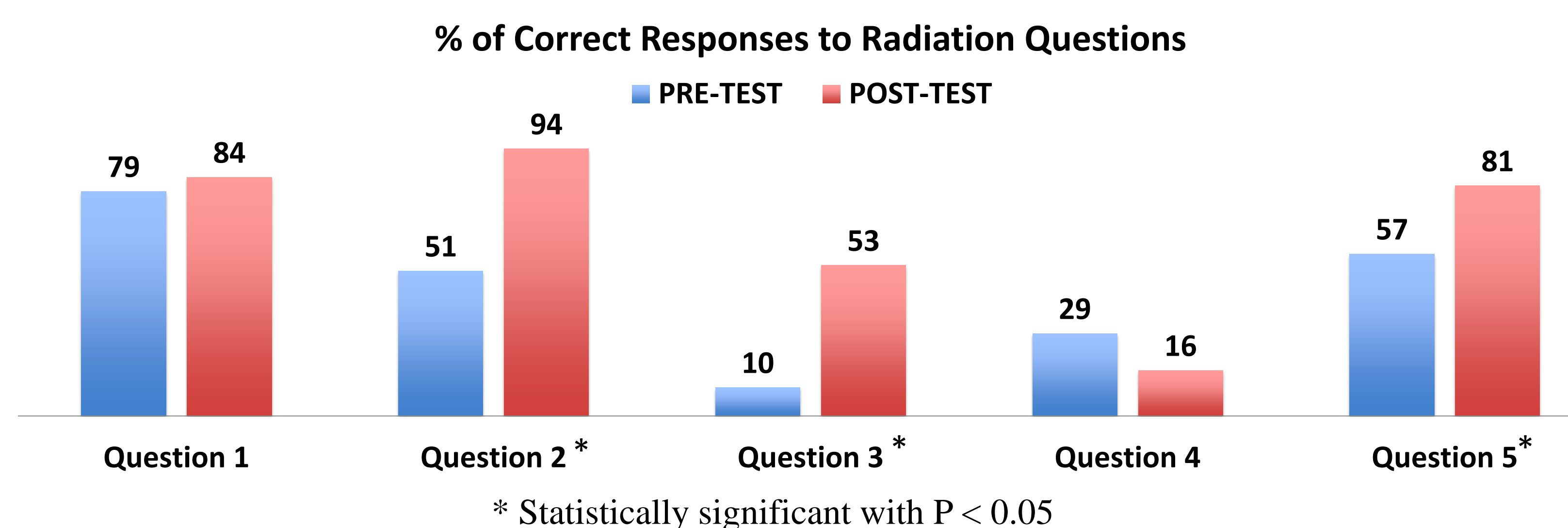
POST SURVEY RESULTS

RADIATION SAFETY	EBI GUIDELINES
I have a better understanding of the radiation risks of imaging studies: •31% Strongly agree •56% Agree •13% Neutral	I am aware of the American College of Radiology (ACR) appropriate criteria: •97% Yes •3% No
I feel more confident discussing the radiation risk of imaging studies with my patients: •25% Strongly agree •72% Agree •3% Neutral	I intend on using the ACR appropriate criteria on my future clinical rotations and during my career as a physician: •48% Strongly agree •39% Agree •13% Neutral
My ordering habits will change having received a lecture on medical radiation safety: •28% Strongly agree •47% Agree •19% Neutral	I left the sessions having a better sense for the indications behind ordering certain imaging studies: •42% Strongly agree •58% Agree •13% Neutral

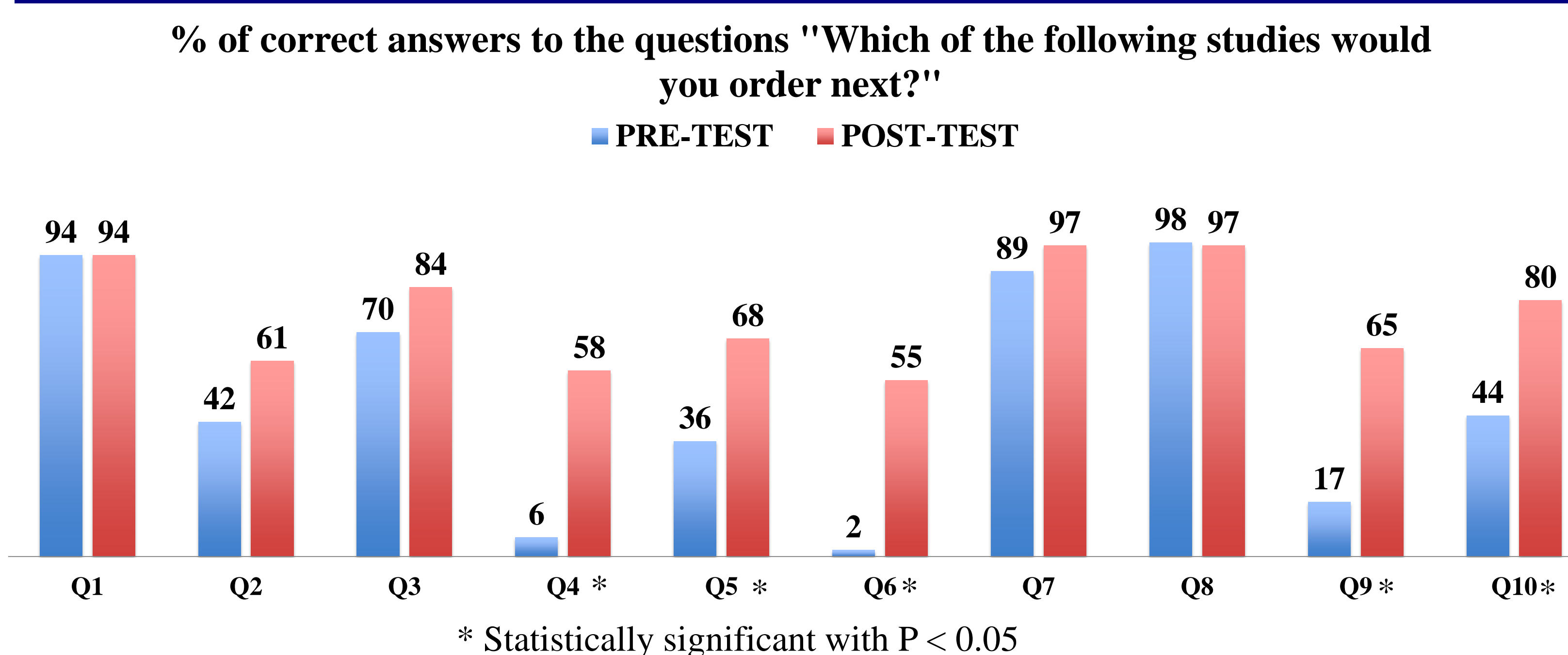
DISCUSSION

- Regarding medical radiation safety:**
- Prior to this pilot curriculum, the majority of students did not remember receiving a formal lecture on this topic. However, the majority of students feel that radiation exposure is an important consideration when ordering studies for their patients.
 - Performance on radiation safety questions improved after a dedicated lecture on this topic.
 - More importantly, medical students subjectively felt more confident discussing the radiation risks of imaging studies with their patients.
- Regarding EBI guidelines:**
- Prior to this pilot curriculum, students could not identify a resource for established EBI guidelines (the ACR appropriateness criteria)
 - After our workshop, students were more familiar with resources for EBI guidelines and performed better on the clinical case scenarios
 - Students now plan on using the ACR appropriateness criteria to guide their ordering habits
- Future directions:**
- Supplementing the radiation safety lecture with patient simulations may help to ensure long-term retention.
 - Expanding the EBI lectures to include other radiology sub-specialties
 - Expanding this curriculum to residents and attending physicians (particularly primary care, emergency medicine and internal medicine)

RADIATION SAFETY TEST RESULTS



EBI GUIDELINES TEST RESULTS



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