Disclosure

• I have no financial disclosures relevant to this presentation
• Unrelated disclosures:
  • Stipend for Executive Editor, Practical Radiation Oncology
  • Stipend for membership Radiation Oncology Healthcare Advisory Council, analysis arm of Radiation Oncology Incident Learning System
• Both total <$3000
Cognitive Debiassing

- Techniques to limit the impact of bias on your decision making
- Cognitive forcing strategies
How do we Address Bias?

• Limit predisposing conditions as discussed:
  • optimize workflow/health information technology
• Eat
• Avoid fatigue (sleep!)
• Avoid cognitive overload/repetitive decision making if possible
• Be aware when you are vulnerable (allostatic overload!)
G.I. Joe Fallacy

Now you know...

And knowing is half the battle.
Committees with implicit biases promote fewer women when they do not believe gender bias exists

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Whether gender bias contributes to women’s under-representation in scientific fields is still controversial. Past research is limited by relying on explicit questionnaire ratings in mock-hiring scenarios, thereby ignoring the potential role of implicit gender bias in the real world. We examine the interactive effect of explicit and implicit gender biases on promotion decisions made by scientific evaluation committees representing the whole scientific spectrum in the course of an annual nationwide competition for elite research positions. Findings reveal that committees with strong implicit gender biases promoted fewer women at year 2 (when committees were not reminded of the study) relative to year 1 (when the study was announced) if those committees did not explicitly believe that external barriers hold women back. When committees believed that women face external barriers, implicit biases did not predict selecting more men over women. This finding highlights the importance of educating evaluative committees about gender biases.
• https://implicit.harvard.edu/implicit/takeatest.html
• Committees with a stronger science=male association exhibited the largest decrease in selecting women (a lower log-transformed AI ratio) if those committees also had weaker beliefs that external barriers hold women back.

• Implicit gender bias was unrelated to selection decisions in those committees whose members believed that gender disparities in science can be due to external barriers.
Knowing is part of it!
External resources to cognitively unload

- Review practice guidelines (ASTRO, NCCN)
- Access decision support techniques (review up to date work up for _____ symptom)
External resources to cognitively unload

- Systematic Approach:

Figure 1. Example of a perceptual error. Anteroposterior radiograph of the chest of a 4-year-old boy. The presence of a swallowed coin within the esophagus was missed twice by a skilled pediatric radiologist. The clinical history provided did not mention the possibility of a swallowed coin.
External resources to cognitively unload

- **Contours**: Review target volumes and OARS
- **Beam Arrangements/Fields**: Appropriate and reasonable
- **Coverage**: Evaluate on graphic plan and DVH
- **Heterogeneity/Hot Spots**: Value and location
- **Organs at Risk**: Review specified constraints, corresponding isodose lines on plan, and DVH
- **Prescription**: Total dose, dose per fraction, and image guidance
Cognitive unloading: checklists

### TAC 289.227 Compliance Checklist

<table>
<thead>
<tr>
<th>Requirements for Fluoroscopic X-Ray System</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>m1A II X-ray production must be prohibited until barrier (usually imaging system) is in place</td>
<td>Pass</td>
</tr>
<tr>
<td>m1C III Means must be provided for stepless adjustment of collimators</td>
<td>Pass</td>
</tr>
<tr>
<td>m1C III Minimum field size at maximum SID is $&lt; 5 \times 5$ cm for collimators</td>
<td>Pass</td>
</tr>
<tr>
<td>m2 Deadman type foot or hand switch is required for X-ray activation</td>
<td>Pass</td>
</tr>
<tr>
<td>m3B II III High level controls:</td>
<td></td>
</tr>
<tr>
<td>Special means must be used for activation</td>
<td>Pass</td>
</tr>
<tr>
<td>Continuous manual activation is required</td>
<td>Pass</td>
</tr>
<tr>
<td>Continuous audible signal must be produced</td>
<td>Pass</td>
</tr>
<tr>
<td>m3D Medical physicist must perform periodic measurement of entrance exposure rate</td>
<td>Pass</td>
</tr>
<tr>
<td>m3D I Entrance exposure rates must be tested annually and after repair</td>
<td>FYI</td>
</tr>
<tr>
<td>m3D II Results must be posted where fluoroscopist can reference them during fluoroscopy</td>
<td>Pass</td>
</tr>
<tr>
<td>Results of previous fluoroscopy inspection are posted.</td>
<td>Yes</td>
</tr>
<tr>
<td>Results of this inspection are posted.</td>
<td>Yes</td>
</tr>
<tr>
<td>m5 kVp/mA must be continuously indicated at control or fluoroscopist's position</td>
<td>Pass</td>
</tr>
<tr>
<td>Minimum Source to Skin Distance:</td>
<td></td>
</tr>
<tr>
<td>m6A I 38 cm for stationary units</td>
<td>NA</td>
</tr>
<tr>
<td>m6A II 30 cm for mobile units</td>
<td>Pass</td>
</tr>
<tr>
<td>m6B 20 cm for units used for specific surgical applications</td>
<td>Pass</td>
</tr>
<tr>
<td>m7A I; m7B III II Means shall be provided to preset the cumulative on-time of the fluoroscope to 5 min or less</td>
<td>Pass</td>
</tr>
<tr>
<td>m7A II; m7B IV When 5 minutes expire an audible signal must exist for 2 seconds until auto reset</td>
<td>Pass</td>
</tr>
<tr>
<td>m8A Scatter radiation drapes of $&gt; 0.25$ Pb must be in place on column console except when not possible</td>
<td>NA</td>
</tr>
<tr>
<td>m8B I When m8A is not possible, personnel aprons must be $0.35$ mm Pb equivalent</td>
<td>FYI</td>
</tr>
<tr>
<td>m8B II When m8A is not possible, the field size must be minimized by collimation</td>
<td>FYI</td>
</tr>
<tr>
<td>m8B III When m8A is not possible, operating &amp; safety procedures must state this and personnel to respond appropriately</td>
<td>FYI</td>
</tr>
</tbody>
</table>
Make sure you don’t shut down prematurely!

• Rule of three- When considering a diagnosis or treatment option, force yourself to fully consider 3 options.
Make sure you don’t shut down prematurely!

• Rule out worst case scenario: make sure a serious (but perhaps unlikely) possibility is considered
Make sure you don’t shut down prematurely!

• Consider the opposite strategy: Reverse what you think, and go over the data and see if it still fits as well as you think it does.
• Exposure Control: Limit exposure to information that might influence judgment before your impression is formed
Make sure you don’t shut down prematurely!

• Premortem/prospective hindsight: Pretend a bad outcome has happened. Now, look back at your decision, and try to identify the tell tale signs that would indicate you were on the wrong path
Other strategies

• For affective bias: Acknowledge your bias to yourself. Then, run the case by a colleague or two. Give them just the facts, and leave out the rest to gauge your clinical judgment.

• Summarize aloud: list the basic tenets of the case to its minimum components, and see if this makes the path more clear.
“OK, let me play advocate for a minute...”
RED TEAMS!

• Try it yourself: When preparing for your next presentation, instead of asking (yourself, your helpers) “Is my presentation ok,” ask, “What can you find wrong with my presentation?”

• Not advocating indecision, or lack of confidence, but rather that one take a moment to focus on flaws of one’s choices before going ahead with those choices.

• Disconfirmation and considering the opposite often takes less time than the confirmation, basking in one’s own glory, listening to “yes-men” and “preaching to the choir” that otherwise occurs.
Other strategies

- Recalibration: When bias is anticipated, the decision maker may recalibrate
Other strategies

• Group decision strategy- Crowd Wisdom: Chart Rounds!
Conclusions:

• Bias is everywhere!

• Be self aware

• Cognitively unload

• When all else fails, consider the opposite!
Thank you!!