Background
Clinical reasoning: the application of knowledge and experience towards problem solving- is a core tenet of medical education. Teaching clinical reasoning can be difficult, however, due to inconsistent curricular time and lack of standardization. Some faculty development workshops in clinical reasoning have received modest, positive feedback from a single, two-hour session\(^1\). This innovation in medical education hopes to advance such workshops with two paired sessions that build on concepts and promote retention of information.

Aims and Objectives
1. Practice identifying clinical reasoning limitations in both medical student and resident learners
2. Teach strategies for improving clinical reasoning
3. Pilot a curriculum to identify the best practices and measurement strategies for improving clinical reasoning teaching

Methods
Setting and Participants
- Participants were faculty members from three Internal Medicine residency programs across Connecticut.
- Four groups of 24 total faculty members participated in the pilot curriculum from January 2017 to April 2017.

Study Design
- Faculty development workshops included two, one-hour sessions administered roughly four to eight weeks apart.

Session 1 ("Diagnose the Learner")
- **Didactic (20 minutes):**
  - Dual Process Theory: describe Type 1 (fast, pattern recognition) and Type 2 (slow, analytical) thinking
  - Steps: explicitly diagram the clinical reasoning process (Fig. 1)
- **Activity (30 minutes):**
  - Small groups practice paper case scenarios of learner limitations and discuss answers with the larger group.

Session 2 ("Treat the Learner")
- **Didactic (20 minutes):**
  - Improvement Strategies: describe several methods to promote increased learner experience and organization (Fig. 4)
- **Activity (30 minutes):**
  - Participants in small groups practice cognitive dispositions to respond (CDR) and precepting strategies (Fig. 6).
  - CDR\(^2\) ("Charades"): Participants take turns describing a brief case. The partner then has to guess the CDR and provide a cognitive debiasing strategy.
  - One-Minute-Preceptor\(^3\) (OMP): Participants take turns being a preceptor and following the OMP format to get a commitment, probe for evidence, provide general rules, reinforce accurate reasoning, and correct mistakes (Fig. 5).

Self Directed Learning: Each participant is provided a laminated, 3" x 6" tip sheet summarizing teaching points for each session (Fig. 3).

Discussion (Pilot Study Feedback)
Needs Assessment
- **Interest:** The workshop was universally well-received with faculty appreciating the relevance to their educational practice.
- **Need:** Participants were particularly unfamiliar with the dual process theory, CDR, and Bayesian analysis.

Content
- **Theory:** Initially drawing off the work of Bowen\(^4\) and Audétat\(^5\), the workshop’s final clinical reasoning model included data acquisition, problem representation, hypothesis generation, illness script selection and management (Fig. 1).
- **Activities:** consistently the favorite aspect for participants
  - **Session 1:** Activity expanded from three to five "diagnose the learner" cases, each taking roughly five to seven minutes.
  - **Session 2:**
    - CDR: After learners struggled with terminology overlap, cases were narrowed to the unpacking principle, confirmation bias, anchoring bias, availability bias, base-rate neglect, and premature closure.
    - OMP: Learners found this strategy easy-to-follow and high-yield, with each role play taking only three to five minutes.
  - **Bayesian analysis:** Given participant unfamiliarity, instructors will teach Bayesian Analysis in a case-based activity using Medicine ToolKit app\(^6\) for future iterations.
- **Tip Sheet:** valued for consolidation and application of information

Future Directions
Measurement
- **Format:** mixed-methods, survey
- **Timing**
  - Opportune times include Session 1 introduction (5 minutes), Session 2 introduction (5 minutes), and via electronic survey four to eight weeks after Session 2 (5 minutes)
- **Domains**
  - Knowledge (definition): dual process theory, cognitive biases
  - Skills (frequency): one minute preceptor, teaching biases
  - Attitudes (comfort, satisfaction): teaching clinical reasoning
- **Outcomes (performance):** The best method of performance- as directly or indirectly related to participation in the workshop- is still under consideration.
- **Target Population:** Participants recommended teaching residents and providers in fields other than Internal Medicine

Conclusion
"The Right Reasons" reinforced a need for faculty development workshops in clinical reasoning while informing potential best practices in teaching and means to operationalize measurement.

References