A Novel Clinical Reasoning Coaching Program for the Medicine Learner in Need

Andrew Parsons[1], Karen Warburton[1]

Corresponding author: Dr Andrew Parsons asp5c@virginia.edu
Institution: 1. University of Virginia
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Abstract

Background: Clinical reasoning deficits are common among medical trainees. Assessment of clinical reasoning skills is challenging, and limited evidence is available to guide remediation practices.

Objective: We identified graduate medical learners struggling with clinical reasoning within the University of Virginia (UVA) Department of Medicine (DOM) and referred them for structured remediation.

Methods: In 2016, we implemented a three phase remediation program for struggling graduate medical learners. Learners were referred to a remediation specialist who performed a standardized global assessment and identified a primary clinical deficit in one of the following areas: medical knowledge, clinical reasoning, organization/efficiency, and professionalism. Those with a primary clinical reasoning deficit were referred to a clinical reasoning coach to participate in a novel remediation program comprised of a 10-step, case-based targeted assessment followed by coaching of the clinical reasoning deficit(s) along the following spectrum: hypothesis generation; data gathering; problem representation; illness script knowledge and organization; and appropriate manipulation of the differential diagnosis. Learners then engaged in direct observation exercises with supervising faculty.

Results: Remediation plans were implemented for twelve resident and fellow learners (5% of total learners) in the DOM. Clinical reasoning was the most commonly identified deficit (8/14 referred learners). Targeted assessment of these learners revealed deficits in the following domains of clinical reasoning: hypothesis generation (5/8), data gathering (2/8), problem representation (6/8), illness script knowledge and organization (2/8), and appropriate manipulation of the differential diagnosis (7/8). Following completion, all learners are currently in good standing in their respective programs.

Conclusions: This three phase program employing global assessment of learner need, targeted assessment of clinical reasoning deficit, and direct observation utilizing dynamic coaching and feedback is an effective remediation strategy. The strength of our approach involves the targeted, granular assessment of clinical reasoning deficit and the ability to translate a skillset into practice with standardized direct observation.
Keywords: Remediation; Clinical Reasoning; Coaching; Direct Observation; Targeted Assessment; Global Assessment; Graduate Medical Education; Deliberate Practice

Introduction

Based on a national survey of program directors (PD), it is common for internal medicine (IM) residents to struggle during training. (Yao, 2000) Accurate assessment of the primary area of struggle is critical, yet challenging. (Warburton, Goren and Dine, 2017) Insufficient medical knowledge, inefficient use of time, and poor clinical reasoning, defined as a complex cyclical process of information gathering, information integration and interpretation, working diagnosis formation, and updating prior probabilities as new information is learned with the end goal of sufficiently reducing diagnostic uncertainty, are common deficiencies requiring remediation. (Bowen, 2006) Those who struggle with clinical reasoning do not necessarily lack medical knowledge, but rather the ability to effectively apply knowledge to clinical practice. For example, a learner may know the differential diagnosis for dizziness, and even do well on a standardized exam testing such knowledge with prompts, but is unable to efficiently apply this knowledge to a patient presenting to clinic with chief complaint of dizziness. Assessment of clinical reasoning skills can be particularly difficult in standard clinical situations where evaluation of residents and fellows frequently focuses on factual information, and direct observation of a trainee’s clinical reasoning skills is often limited. Though methods to improve clinical reasoning have been proposed, and there are new established models that elucidate fundamental concepts of clinical reasoning, limited evidence is available to guide remediation practices. (Bowen, 2006) (Guerrasio and Aagaard, 2014) (Marcum, 2012) Using a previously published remediation framework, we sought to identify graduate medical learners struggling with clinical reasoning within the University of Virginia (UVA) Department of Medicine (DOM) (phase 1). (Warburton, Goren and Dine, 2017) Once identified, learners were referred for structured remediation in two subsequent phases.

Methods

There are 134 residents and 81 fellows within the UVA DOM. In the fall of 2016, we implemented a three phase remediation program for graduate medical learners within the DOM who struggle with clinical performance.

Phase 1: Learners who are not meeting milestones are referred by the Program Director or the Clinical Competency Committee (CCC) to a remediation specialist (0.4 FTE) who performs a standardized, global assessment and identifies a primary clinical deficit on which to focus the remediation (Figure 1). (Warburton, Goren and Dine, 2017)

Figure 1. An Algorithm for Identification and Referral to a Novel Clinical Reasoning Coaching Program
This global assessment includes review of the learner's file using a standardized checklist, focusing on clinical performance in the current program as assessed by standardized programmatic evaluations, standardized test scores, and examination of the learner's performance in the prior program. The global assessment also includes direct communication with evaluators, additional direct observation when necessary, and a face-to-face interview with the learner with the end goal of diagnosing a primary deficit in one of the following areas: medical knowledge, clinical reasoning, organization and efficiency, and professionalism.

Phase 2: Those identified as having a primary clinical reasoning deficit are referred to a clinical reasoning coach (0.2 FTE) to initiate a novel clinical reasoning remediation program. In contrast to a previously described clinical reasoning remediation program, our session begins with a 10-step, case-based targeted assessment to further delineate the clinical reasoning deficit along the following spectrum: hypothesis generation; data collection; problem representation; illness script knowledge and organization; and appropriate manipulation of the differential diagnosis.

(Guerrasio and Aagaard, 2014) We conduct weekly one-on-one, in-person coaching sessions that include a review of key clinical reasoning terms, cognitive biases/error with debiasing strategies, and dual process reasoning using handouts and online videos. Case-based reasoning exercises are then targeted to the specific clinical reasoning deficit. Utilizing deliberate practice, learners work through segmented clinical reasoning cases and exercises to promote metacognition, using frequent ‘stops’ to determine the reasoning behind their ideas and decisions.

(Ericsson, 2004) After the specific clinical reasoning deficit is identified, the coach employs an adapted model that integrates the analytic and non-analytic processes of cognition with metacognition to promote reflection on the reasoning process.

(Marcum, 2012) Learns are taught to reason in a hypothesis-driven manner, first forming a broad differential diagnosis based on a chief complaint followed by directed data gathering. Improvement in clinical reasoning skills, assessed by the clinical reasoning coach, is demonstrated by evidence of consistent mental
comparison of diagnostic possibilities from the presentation of the chief complaint through plan generation, with constant modification as new information is revealed.

Phase 3: Lessons learned through direct coaching are fed forward by the clinical reasoning coach to faculty evaluators for use during subsequent direct observation on scheduled clinical rotations. Armed with data from the global and targeted assessment, the clinical reasoning coach gathers real-time feedback from these clinical rotations in order to coach faculty evaluators, creating a dynamic process of coaching and feedback. Faculty evaluators use a standardized direct observation tool (Supplement 2) to inform the coaching process.

Results

A comprehensive assessment and individualized remediation plan was developed and implemented for twelve resident and fellow learners (5% of total learners) in the DOM at UVA. Clinical reasoning was the most commonly identified deficit (either primary or secondary), in eight out of fourteen learners. Targeted assessment of these learners by a coach revealed deficits in the following domains of clinical reasoning: hypothesis generation (5/8), data gathering (2/8), problem representation (6/8), illness script knowledge and organization (2/8), or appropriate manipulation of the differential diagnosis (7/8). Phase 2 of remediation was time-intensive, as has been previously reported for clinical reasoning deficits.(Guerrasio, Garrity and Aagaard, 2014) The clinical reasoning coach spent 11 hours of direct observation and 17 hours in preparation, on average, per learner. After implementation of the individualized remediation plans, learner performance, as assessed based on standard residency evaluations and a standardized direct observation tool. All learners are currently in good standing in their respective programs.

Discussion

This unique three phase program, utilizing global assessment, targeted clinical reasoning remediation, and structured direct observation on clinical rotations allows for accurate identification of specific clinical reasoning deficits and individualized instruction to effectively address deficiencies. To our knowledge, we are the first to describe this targeted identification of clinical reasoning deficit to guide coaching. Our study is limited by small sample size at a single institution, and we acknowledge the subjectivity in the clinical reasoning assessment process. However, we feel this systematic approach to remediation of clinical reasoning skills is reproducible at other institutions with appropriate commitment of time and financial resources, and builds on a previously successful clinical reasoning remediation program at another academic center.(Guerrasio and Aagaard, 2014) The strength of our approach involves the ability to translate a skillset into practice with standardized direct observation. Initial targeted coaching provides the framework that augments the subsequent direct observation process already in place at many institutions, and this targeted approach combined with a direct observation tool encourages higher quality feedback. Future directions may include expansion to other clinical departments and comparison of this approach to other forms of coaching.

Take Home Messages

- Assessment of clinical reasoning skills is challenging, and limited evidence is available to guide remediation practices.
- We implemented a three phase remediation program for struggling graduate medical learners.
- Clinical reasoning was the most commonly identified deficit among struggling learners and targeted assessment revealed problem representation and appropriate manipulation of the differential diagnosis as two
common areas of struggle within the clinical reasoning domain.

- This three phase program employing global assessment of learner need, targeted assessment of clinical reasoning deficit, and direct observation utilizing dynamic coaching and feedback is an effective remediation strategy.
- The strength of our approach involves the targeted, granular assessment of clinical reasoning deficit and the ability to translate a skillset into practice with standardized direct observation.

Notes On Contributors

Dr. Andrew Parsons is an Assistant Professor of Medicine at the University of Virginia (UVA) School of Medicine, where he works as a hospitalist. Dr. Parsons directs the Clinical Skills Course for the School of Medicine and serves as Assistant Program Director and Lead Clinical Reasoning Coach for the UVA Internal Medicine Residency Program. At the GME level, he chairs the Clinical Reasoning Subcommittee, a multidisciplinary group focused on remediation for residents and fellows who struggle with clinical reasoning.

Dr. Karen Warburton is an Associate Professor of Medicine at the University of Virginia (UVA) School of Medicine, where she works as a transplant nephrologist. Dr. Warburton has 10 years of GME leadership experience, having served as an associate program director of the internal medicine residency and the nephrology training program at the University of Pennsylvania, prior to moving to UVA in 2016. At UVA, she serves as the Director of GME Professional Development in the Department of Medicine and runs a GME-wide coaching and remediation program for residents and fellows who struggle with clinical performance.

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'Clinical Reasoning Coaching for the Medicine Learner in Need'. University of Virginia (UVA) Academy of Distinguished Educators (ADE) Medical Education Week, March, 2018. Poster Presentation. Authors: Parsons AS, Warburton KM.

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**Appendices**

None.

**Declarations**

*The author has declared that there are no conflicts of interest.*

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