Table 1. Red-flags & recommendations for the at-risk EM applicant.

Red Flag	Key Recommendations
Academic Struggles	
Failure of USMLE or COMLEX	• Retake and pass as soon as possible • Consider a course in test-taking strategy • Plan to take USMLE Step 2 CK early • Determine a backup plan
Failure of Pre-clinical Course or Repeating Pre-clinical Year	• Successfully retake/complete the course work
Failure of Clerkship	• Successfully repeat the clerkship • This is often interpreted as a result of professionalism deficiencies therefore it is important to explain the circumstances surrounding the failure in your personal statement and/or MSPE
Negative Feedback on Medical Student Performance Evaluation (MSPE)	• Carefully review your MSPE • Take ownership of negative feedback and be able to discuss steps taken to improve
Professionalism Concerns	
Academic Misconduct	• Explain your case in your personal statement, however it is likely that you may not be able to match into emergency medicine. • Determine a backup plan
Misdemeanor/Felony History	• Take time to truly reflect on the experience, identify how you could have handled the situation differently and what you have learned from the past • Utilize the narrative text-box within ERAS regarding misdemeanors/felonies
Unexplained Gap in CV	
Time off during medical school or other large gaps in CV	• Explain in your personal statement or MSPE

4 The CORD Student Advising Task Force (SATF) Emergency Medicine Re-Applicant Residency Guide: Helping Applicants on the Second Go Around

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Background: Applying for residency is stressful, but even more so for the applicant who has already been through the process and not matched. The unmatched applicant is immediately faced with questions and uncertainty and there is a scarcity of advising resources to guide the un-matched EM applicant. The Council of Residency Directors (CORD) Student Advising Task Force (SATF) is comprised of program leaders, clerkship directors, and residents with a special interest in student advising. The SATF created advising recommendations for re-applicants. The purpose of the recommendations is to serve as a vetted instructional guide for EM re-applicants.

Educational Objectives:

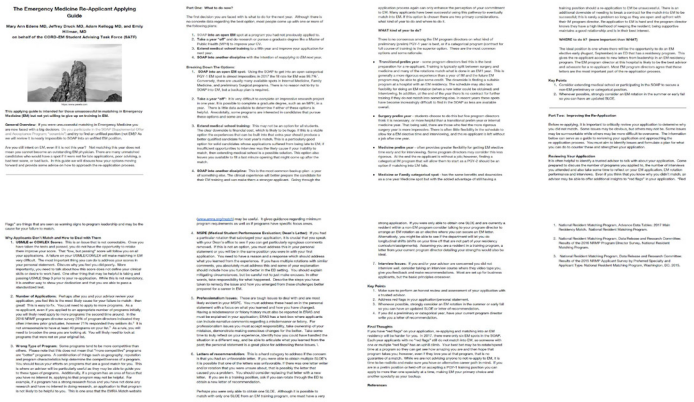
- To review why applicants are unsuccessful in the EM match and provide recommendations on how an applicant can strengthen his/her application.
- To discuss the options for students who were unsuccessful in the EM match.

Curricular Design: Members of the CORD SATF worked over a period of 10 months to draft advising recommendations; available data was used to support recommendations where possible. Two main areas for directed advising were identified. First, what should an applicant do in the year following the unsuccessful match to better position themselves the second time around. Second, what caused the unsuccessful match and what, if anything can be done about it?

Impact/Effectiveness: An advising guide for EM re-applicants was created by the CORD SATF and is available online through the CORD website. The recommendations are endorsed by CORD, the Clerkship Directors in Emergency Medicine (CDEM), and the Emergency Medicine Residents' Association. The guide has been highlighted in the Vocal CORD blog, which has garnered 184 views to date. In the future we are hoping to strengthen the recommendations by generating survey data obtained from residency program leaders and advisors, and we will work to distribute the guide to leaders in undergraduate medical education.

Table 1. Best practice guidelines for the re-applicant in emergency medicine.

Part I: What to do the next year	Key Recommendations
	1. Participate in the Supplemental Offer & Acceptance Program (SOAP) for EM • Almost impossible, will require a backup plan
	2. Take a year "off" • Research - difficult to complete a project in one year • Pursue a graduate degree (i.e. MPH)
	3. Extend medical school training • Expensive, not always an option. A good option for those late to EM • Applicant available to fill a last minute opening after the match
	4. SOAP into another discipline (most common) • Options: transitional prelim, surgery prelim, medicine prelim, medicine or family categorical • Choose option that allows for additional EM experience early (July-Sept) to allow for updated SLOE
Part II: Improving the Re-Application	**Key Recommendations**
	Take time for honest reflection. Critically review your application with a trusted advisor to determine why you did not match. Was the problem one of the following?
	1. USMLE/COMLEX Scores • Failures and "low but passing" scores makes an EM match very difficult • Take Step 3 early • Address the low score in your personal statement
	2. Number of Applications • Apply to additional programs not originally on your list • Plan to apply to at least 40 programs
	3. Wrong type of programs • Apply more broadly
	4. Medical Student Performance Evaluation (MSPE/Dean's Letter) • Speak with the Dean's office and see if there was severe negative comments you can explain or that can be changed based on new information.
	5. Professionalism issues • Address head-on in your personal statement • If you have a misdemeanor or felony, take responsibility and ownership of your mistake. Include a brief narrative that explains what you have learned
	6. Letters of recommendation • Obtain a new SLOE • Replace or remove a potentially negative SLOE
	7. Interview issues • Ask for honest feedback from an advisor • Practice, take a course



5 Tracking Resident Cognitive Maturation with Natural Language Processing

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Background: Cognitive maturation, the development of the ability to manage patients independently, is an important goal of graduate medical education. In contrast to assessments of procedural competency or knowledge base, there is no structured transparent scalable way to track the cognitive maturation of residents. An important component of residency training is the solicitation of evaluations by attending physicians to gauge a resident's performance and provide actionable feedback. These evaluations provide insight into cognitive maturation, but their analysis is time-consuming and subjective.

Educational Objectives: We developed software to analyze freetext evaluations of residents that attendings conducted after each clinical shift in the Emergency Department. The software uses natural language processing to automatically identify areas for improvement or commendation, based on milestones set by the Accreditation Council for Graduate Medical Education and American Board of Emergency Medicine. Our underlying conceptual hypothesis is that linguistic markers track the development of medical decision making, which we term cognitive maturation.The software is written in Python and freely available, with extensive documentation, on GitHub.

Curricular Design: In this proof-of concept study we simulated faculty evaluations from 100 residents over the course of one year. The resident performance was created from four archetypes, the rock star, the late bloomer, the laggard, and the work horse. The tone of the faculty evaluation was created from four faculty archetypes: laconic, effusive, disapproving, or diligent. It correctly identified 22/25 notes where the "laggard" archetype predominated.

Impact/Effectiveness: Ours is the first demonstration of natural language processing to use faculty evaluations to track the cognitive maturation of residents. This innovation may help facilitate automatic pervasive real-time tracking of resident progress, identifying competency-based developmental progression or deficits and allowing for early initiation of tailored educational interventions. Automation also provides an opportunity to include novel data streams, such as clinical documentation, in tracking resident progression.

6 Using the ACGME's CLER Pathways to Excellence Framework in Assessing Residency Competency in a Patient Safety Curriculum

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Background: The ACGME CLER Pathways to Excellence has created well-defined priorities for a culture of patient safety which include: reporting, education, creation of a supporting culture, resident experience, and monitoring of engagement in safety practices. Procedural sedation in the pediatric population is a high-risk situation with myriad potential safety issues. Many adverse outcomes can be mitigated by following pre-procedure protocols, and by participating in event reporting systems (ERS) to prevent future mishap.

Educational Objectives: To assess resident's retention of our patient safety curriculum, using the ACGME Pathways to Excellence framework in Safety, in the setting of a high-risk pediatric procedure.

Curricular Design: The annual competency assessment for EM residents included a simulated patient encounter requiring procedural sedation for a child. The residents were handed a syringe containing 10 times the weight-based ordered dose along with the empty drug vial. Residents were observed for adherence to patient safety practices including; appropriate equipment/ room preparation, medication time-out, procedural time out, and response to airway compromise during the event. Following the simulation, residents were asked to log an error/near miss report in the institutional on-line ERS. The quality of these reports was evaluated for accuracy of event description, ability to identify contributing factors, and inclusion of suggestions to prevent future occurrences.

Impact/Effectiveness: The annual competency assessment for EM residents included a simulated patient encounter requiring procedural sedation for a child. The residents were handed a syringe containing 10 times the weight-based ordered dose along with the empty drug vial. Residents were observed for adherence to patient safety practices including; appropriate equipment/ room preparation, medication time-out, procedural time out, and response to airway compromise during the event. Following the simulation, residents were asked to log an error/near miss report in the institutional on-line ERS. The quality of these reports was evaluated for accuracy of event description, ability to identify contributing factors, and inclusion of suggestions to prevent