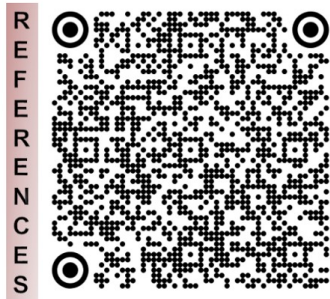




A Scoping Review of Remediation in Graduate Medical Education

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Learning Objectives:

- 1.Understand the importance of structured remediation in graduate medical education.
- 2.Identify common challenges and barriers to effective remediation.
- 3.Evaluate evidence-based strategies for improving remediation outcomes.
- 4.Recognize the role of faculty and institutional policies in supporting struggling students.

Research Question:

What are the current practices, challenges, and evidence-based recommendations for implementing effective remediation protocols in graduate medical education?

Abstract:

Remediation in graduate medical education is essential for supporting underperforming learners, yet inconsistent policies and a lack of standardization hinder its effectiveness. Faculty training gaps, stigma, and resource constraints further complicate implementation. Competency-based medical education (CBME) emphasizes structured interventions, but many programs lack clear remediation strategies. This review analyzes current remediation practices, identifies key challenges, and provides evidence-based recommendations to enhance transparency, structure, and student success in medical education. Addressing these gaps is crucial for ensuring competent future healthcare professionals.

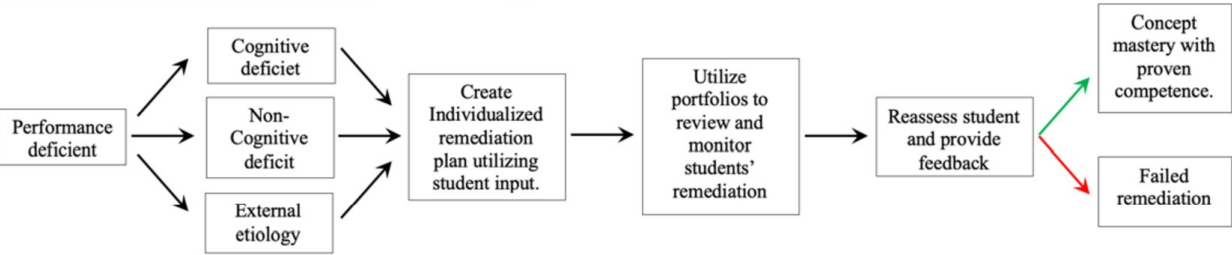
Table 1. Etiology of Failure ^a	
Etiology	Examples
Struggle or failure due to underlying deficits in cognitive skills	Student exhibits deficits in understanding history-taking, physical examination, clinical knowledge, clinical reasoning, ^{33,47,48} and/or academic preparation. ⁴⁹ Student fails quizzes, exams, OSCEs, etc. Remediation of isolated cognitive deficits have been the focus of most studies and is broadly implemented in many remediation programs due to the frankness. ⁴⁶
Struggle or failure due to underlying deficits in noncognitive skills	Student exhibits deficiencies in professionalism ^{30,50,51} and communication. ⁵² Students may pass or fail quizzes, exams, OSCEs, and/or core academia, however, does not comprehend the social science of medicine, thus may fail professionalism assessments. Studies indicate noncognitive are the most difficult to remediate, ^{50,53} and will not be the focus of the recommendations section of this scoping review.
Struggle or failure due to external causes	Life stressors, medical diagnosis, death within family, etc. Etiology of struggle or failure is external to academia
Struggle or failure due to mixed etiology	A mixture of each subcategory appropriately termed by Bourgeois et al as the “social determinants of performance.” ⁹ Students are likely to struggle across the spectrum of medical education. Studies indicate these students may exhibit deficits in time management skills, emotional intelligence and well-being, ^{12,54,55} and professionalism. Thus, deemed high risk for failure. ⁵⁶

^a Multiple studies posit that most struggling students present with two failure etiologies. ^{6,7,9,12,16,30,33,47,48,50,52,53,57}
Table 1 categorizes the different causes of academic struggles among graduate medical students, dividing them into four main etiologies.

Table 2: Proposed Remediation Framework	
Step	Description
Early Identification	Use multiple assessments (exams, OSCEs, faculty evaluations) to detect struggling learners.
Diagnosis of Deficiency	Determine whether the issue is cognitive (knowledge/skills) or non-cognitive (professionalism, communication, external factors) with student's input.
Dedicated Faculty Support	Assign trained mentors/faculty to provide targeted guidance and support.
Individualized Remediation Plan	Develop tailored interventions, success coaching, and structured learning strategies based on student needs while considering their input.
Reassessment & Follow-up	Implement clear consequences for success or failure, ensuring competency before progression.

Table 2: Table outlines a structured, step-by-step approach to identifying, supporting, and reassessing struggling learners in graduate medical education.

Figure 1: Proposed Remediation Process



Methods: A scoping review analyzed remediation strategies in graduate medical education. Searches across multiple databases (PubMed, JSTOR, EMBASE, CINAHL) identified 343 studies (1989–2024), with 90 meeting inclusion criteria. Studies were selected based on relevance to remediation policies, competency assessment, and retention strategies. Key themes were synthesized to highlight best practices and major challenges.

Results: Remediation lacks standardization, leading to inconsistent student outcomes. Barriers include unclear policies, faculty inexperience, limited resources, legal concerns, and remediation stigma. Best practices include early identification of struggling learners, recognizing the etiology of failure (Table 1), implementing individualized remediation plans (Table 2), and assigning dedicated trained faculty mentors.

Conclusion: A standardized, evidence-based remediation approach (Figure 1) improves student retention and competency. Institutions should establish clear policies, train faculty, and reduce stigma. Implementing structured early intervention and reassessment ensures struggling learners receive effective support, ultimately enhancing medical education and the quality of future healthcare professionals.