MEDICAL EDUCATION IN REVIEW

Optimising the delivery of remediation programmes for doctors: A realist review

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Abstract

Context: Medical underperformance puts patient safety at risk. Remediation, the process that seeks to 'remedy' underperformance and return a doctor to safe practice, is therefore a crucially important area of medical education. However, although remediation is used in health care systems globally, there is limited evidence for the particular models or strategies employed. The purpose of this study was to conduct a realist review to ascertain why, how, in what contexts, for whom and to what extent remediation programmes for practising doctors work to restore patient safety.

Method: We conducted a realist literature review consistent with RAMESES standards. We developed a programme theory of remediation by carrying out a systematic search of the literature and through regular engagement with a stakeholder group. We searched bibliographic databases (MEDLINE, EMBASE, PsycINFO, HMIC, CINAHL, ERIC, ASSIA and DARE) and conducted purposive supplementary searches. Relevant sections of text relating to the programme theory were extracted and synthesised using a realist logic of analysis to identify context–mechanism–outcome configurations (CMOcs).

Results: A 141 records were included. The majority of the studies were from North America (64%). 29 CMOcs were identified. Remediation programmes are effective when a doctor's insight and motivation are developed and behaviour change reinforced. Insight can be developed by providing safe spaces, using advocacy to promote trust and framing feedback sensitively. Motivation can be enhanced by involving the doctor in remediation planning, correcting causal attribution, goal setting and destigmatising remediation. Sustained change can be achieved by practising new behaviours and skills, and through guided reflection.

Conclusion: Remediation can work when it creates environments that trigger behaviour change mechanisms. Our evidence synthesis provides detailed recommendations on tailoring implementation and design strategies to improve remediation interventions for doctors.

1 | INTRODUCTION

Competent doctors, operating efficiently within teams, are critical to the provision of high-quality and safe care for patients. If a doctor is underperforming, patients may be at risk.[1] Remediation is 'an intervention, or suite of interventions, required in response to assessment against threshold standards',[2]: p. 366 with the aim of remedying underperformance so the doctor can return to safe practice.[3]

Remediation is used in health care systems globally. Despite its importance in the regulation of doctors and the retention of doctors in the workforce, good quality research is lacking in this area.[4,5] Three systematic reviews and one thematic review have been conducted on remediation across the continuum of medical education.[4,6-8] All four reviews highlight a lack of research that would provide a firm theoretical base to underpin remediation interventions. The reviews also failed to identify why particular interventions work for some doctors and not for others. As noted by Cleland et al: 'we cannot delineate precisely what works, and why, in remedial interventions for medical students and doctors'.[4: p. 247]

However, researching remediation is challenging.[5,9] Medical performance is shaped by a variety of different contextual factors including the attributes and skills of colleagues, system resources and organisational culture. Therefore, remediation covers a broad array of interventions, occurring across a range of settings and at different stages of a doctor's career. The traditional focus on remediation as an educational intervention ignores the complexity of medical performance and the processes by which interventions create sustained performance change. The issues being addressed through remediation can be wide-ranging, often related to professionalism and behaviour rather than knowledge or skills. Moreover, remediation for practising doctors as opposed to medical students often occurs outside formal educational settings. A 'practising doctor' is defined in this study as any doctor practising medicine who has successfully completed medical school and includes those in training grades and consultant or attending physicians. We chose to focus our research on practising doctors as the stakes of failure are particularly high for this group, it is an under-researched area, and it is an issue with which the medical education community has struggled for many years.[5]

Given this complexity, recent years have seen an important shift in the conceptualisation of remediation towards 'supporting practice change' rather than 'redressing gaps in skills and knowledge'.[5,10] This repositions remediation as being a behaviour change process, which requires understanding of what is necessary to produce lasting performance improvement for a particular doctor in a particular context.[5,10] Within this reconceptualisation, remediation works when the intervention is able to change aspects of the context to facilitate a change in practice.

Our aim was to address the complexity of remediation for practising doctors by developing a theory of how remediation is supposed to work, for whom and the contexts that lead to different outcomes. Theory-led research is important because it is able to deliver findings at a level of abstraction whereby they are transferable to a range of interventions, while being close enough to actual practice to be relevant to those who plan and deliver remedial interventions.[11]

2 | METHODS

Realist review is a practical methodological approach designed to inform policy and practice. It is distinct from other types of literature review as it is interpretive and theory-driven, combining literature from qualitative, quantitative and mixed-methods research.[12] The main strength of this approach is that it produces transferable findings that explain how and why context can affect outcomes.[12] This is achieved by developing programme theories that aim to explain how, why, in what contexts, for whom and to what extent interventions 'work'.[13]

The review followed a previously published detailed protocol.[14] The plan of investigation is based on Pawson's five iterative stages for realist reviews (see later)[15] and is set out in brief below. The review process was guided by the RAMESES (Realist And Meta-narrative Evidence Syntheses: Evolving Standards) quality and publication standards, and training materials for realist reviews.[16] The review was conducted by a ten person review team, which comprised six active medical education researchers, a realist method expert, an information specialist, a former lead intervention and assessment advisor for the Patient Performance and Advisory Service (formerly the National Clinical Assessment Services), and a patient and public representative. Three of the review team were also practising clinicians, covering both primary care and secondary care. The review team met monthly throughout the duration of the study and was instrumental at all stages of programme theory development.

2.1 | Stakeholder group

Stakeholders are an essential part of the process in this type of review. A diverse stakeholder group (n = 12) was recruited to provide subject knowledge for programme theory refinement, for optimisation of dissemination plans, and to aid the generation of feasible and practical recommendations. A total of 12 people were consulted throughout the review, including doctors who have undergone a remediation programme, personnel who identify underperforming doctors and initiate involvement in remediation programmes, personnel involved in the delivery of remediation programmes, senior doctors, remediation coaches, remediation researchers, patient and public representatives, and members of relevant medical bodies. The stakeholders were purposively selected and approached by members of the review team. Consultations with stakeholder group members took place in 2-hour meetings at regular intervals throughout the project (n = 4). At each stakeholder meeting, we would present aspects of our findings to the stakeholders and made extensive notes of the discussions. These notes would be emailed out to all stakeholders, so that those unable to attend the meeting could also contribute and additions could be made. We also contacted some stakeholders through individual telephone calls and

email exchanges. Appendix S1 provides information on attendance of stakeholder meetings and the topics discussed.

As this study did not involve the collection of data from participating stakeholders, the Faculty of Health and Human Sciences Ethics Committee at the University of Plymouth determined that ethical approval was not required.

2.1.1 | Step 1: Locate existing theories

A programme theory is an abstracted description typically including a diagram that outlines the key activities of an intervention, the intended outcomes and the mechanisms that contribute to particular outcomes.[17] JA, TP and NB devised an initial programme theory from their knowledge of the literature (see Appendix S2). This was refined through discussions with the review team and stakeholders, and through informal searching, until we had a programme theory to test.[18]

2.1.2 | Step 2: Search strategy

Step 2 identifies a body of relevant literature to further develop and refine the programme theory. The searches were designed, piloted and carried out by AW, using an iterative process whereby search terms were added, removed and refined to achieve a balance of sensitivity and specificity in the results. The search strategies can be found in Supplementary File 1.

The following databases were searched in June 2018: MEDLINE (via Ovid), EMBASE (via Ovid), PsycINFO (via Ovid), Health Management Information Consortium (HMIC) (via Ovid), CINAHL (via EBSCO), ERIC (via EBSCO), ASSIA (via ProQuest) and DARE (via CRD). The search syntax and indexing terms were amended where needed from the original MEDLINE search for use in these databases (see Appendix S3 for a full breakdown of the search strategy). Following stakeholder discussions, in June 2019 we added an additional search specifically to identify grey literature using the following databases: Google Scholar, OpenGrey, NHS England, North Grey Literature Collection, NICE Evidence, Ethos, Health Systems

Evidence and Trip Database. Citation searching was undertaken including 'cited by' searches and searches of citations in the reference lists of relevant documents. The inclusion and exclusion criteria were deliberately broad in order to find quantitative, qualitative and mixed-methods articles (see Table 1). The search results were exported to EndNote X7 (Clarivate Analytics, Philadelphia, PA, USA) and deduplicated using the 'find duplicates' function. We also conducted purposive supplementary searches using Google Scholar to search for particular aspects of the emerging programme theory, for example insight, dissonance, psychological safety and behaviour change. These concepts were identified as potentially useful to programme theory development, arising from either the literature included from the main searches, or stakeholder group discussions. Literature identified through these targeted searches did not need to meet the original inclusion criteria, primarily because we were not looking for additional literature on remediation specifically, but rather seeking to expand our understanding of these emergent key concepts. The added information on these concepts helped to strengthen our explanations for how and why mechanisms might act in our programme theory. This iterative process of analysis, moving between discussion and additional targeted searches, is an important element in realist review methodology.

2.1.3 | Step 3: Article selection

The inclusion criteria are presented in Table 1. We included all studies in the English language on the remediation of practising doctors, all study designs, all health care settings and all outcome measures. We did not include interventions aimed solely at addressing health concerns. Documents were selected based on relevance, that is whether data can contribute to theory development and refinement.[19] This meant including a diverse range of literature, including theoretical papers and commentaries, as these could all contribute to the programme theory. Assessments of rigour were done at the level of the included data (where needed) and programme theory.[20] All of the screening was carried out in Rayyan (https://rayyan.qcri.org/). An initial random sample of 10% was assessed and discussed by TP and NB to ensure consistent selection decisions. The very few

TABLE 1 Inclusion criteria for formal search

Aspect of remediation	All documents that focus on the remediation of practising doctors. We defined remediation as 'an intervention, or suite of interventions, required in response to assessment against threshold standards'.[105: p. 366]
Study design	All study designs.
Types of setting	All documents about primary or secondary care settings.
Types of participant	All practising doctors. A practising doctor can be defined as a licensed doctor that has graduated from medical school and is practising medicine. Studies about medical students only were excluded.
Outcome measures	All remediation-related outcome measures.
Language	Studies published in the English language
Publication date	All studies published up until June 2018.

inconsistencies identified were resolved through discussion. TP then screened all the remaining titles and abstracts.

2.1.4 | Step 4: Extracting and organising data

Articles were imported into NVivo 12 (QSR International, Warrington, UK) qualitative data analysis software and coded in alphabetical order. Initial coding focused at the conceptual level, including barriers and facilitators to remediation, strategies employed by remediation programmes and processes engendering change. Coding was both inductive, that is the codes were identified from analysing the literature, and deductive, that is the codes generated were informed by the initial programme theory, stakeholder group discussions and exploratory literature searches. TP and NB developed the initial coding framework, and TP conducted the coding. The coding framework was regularly reviewed at meetings of the review team. Data on study characteristics and findings were also extracted into tables (See Appendix S4). MB and TP performed this part of the data extraction, and NB checked 10% to ensure accuracy. In accordance with more recent developments in realist review guidance, and in a departure from Pawson's original five step approach, we did not quality appraise included studies.[20] This is because quality appraisal tools are not able to capture the different ways in which papers contribute to a programme theory.

Once conceptual coding was complete, working as a full review team, we considered whether the categories (or subcategories within them) contained data that could be identified as contexts, mechanisms and outcomes.

2.1.5 | Step 5: Synthesising evidence and drawing conclusions

To develop, refine and test the programme theory, we used a realist logic of analysis. In brief, this sought to develop realist causal explanations for outcomes in the form of context–mechanism–outcome configurations (CMOcs). The purpose of a CMOc is to capture and explain how, why, for whom and in which context(s) an outcome is caused to happen by a mechanism. We moved between the data (as extracted and coded in NVivo and Word documents), and analysis, advice and feedback offered by the review team and the stakeholder group.[21] In order to develop the programme theory, we moved back and forth between this stage, and the supplementary searches are described in Stage 2. We focused on what was unique about remediation interventions with the view that these interventions 'work' when they can create the opportunities and resources to overcome the barriers that are unique to remediation.

3 | RESULTS

Of 4,554 articles returned in the formal search, 114 met the inclusion criteria and were included in the study. A further 27 papers
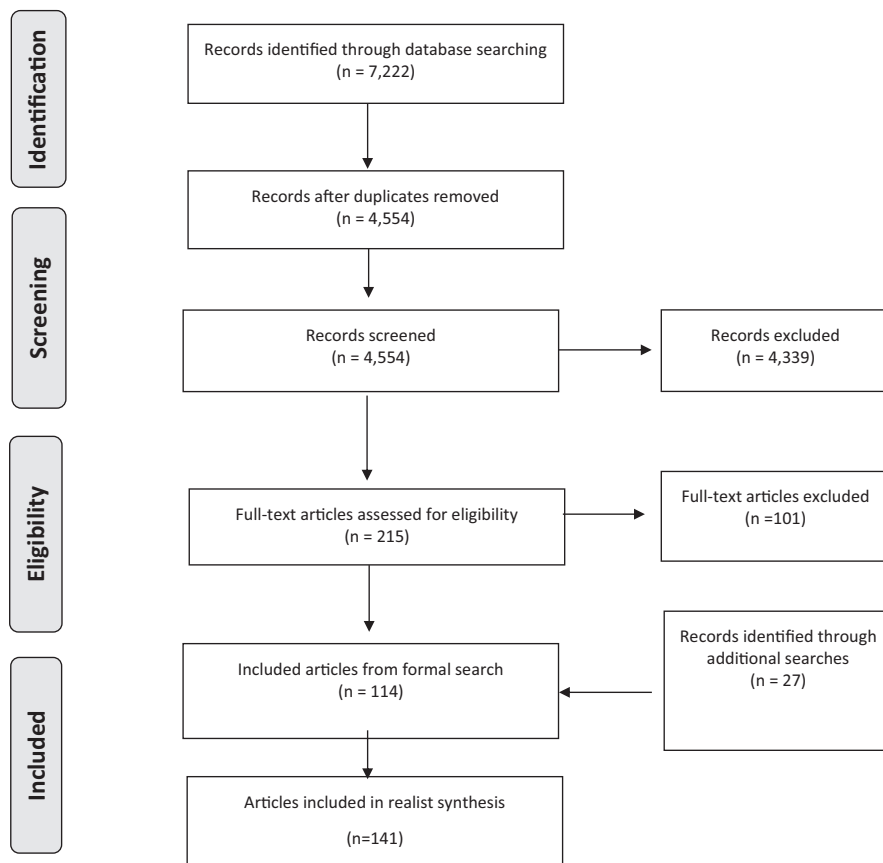

FIGURE 1 PRISMA flow diagram

were returned from the additional searches. Ten of these 27 met the inclusion criteria (five from citation searching, two from a grey literature search and three were recommended by stakeholders or review team members). The remaining 17 papers were from targeted supplementary searches with the purpose of developing aspects of the programme theory (see Figure 1 for PRISMA diagram).

The vast majority (64%) related to studies or remediation programmes in North America. 14% related to the UK. 72% were published between 2008 and 2018. Commentaries constituted 33% of the articles, 30% were research papers and 25% were case studies. Of the research papers, 64% were quantitative, 19% were literature reviews and 14% were qualitative. 40% of the returned articles focused on junior doctors or residents, 31% on practising physicians, whereas 17% were a mixture of both (with some including medical students). Nearly half of the studies (40%) focused on remediating all areas of clinical practice including medical knowledge, clinical skills and professionalism. 27% focused on professionalism only, and 19% focused on knowledge, clinical skills, or both. 32% were descriptions of existing remediation interventions, 16% outlined strategies for designing remediation programmes, and 11% outlined models upon which to base remediation programme models. Appendix S3 provides a more in-depth overview of the characteristics of the included studies.

Twenty-nine CMOcs were identified (see Table 2), which, taken together, constitute our programme theory of how remediation for practising doctors works (see Figure 2). We have provided below a brief explanation of the main stages of the programme theory (developing insight, developing motivation, performance or behaviour improves) with the corresponding CMOcs indicated by their numbers and displayed in brackets.

3.1 | Develops insight

The importance of insight for successful remediation is often cited in the literature.[10,23-31] We defined insight as being comprised of a readiness to explore others' perceptions of one's own behaviour or performance, and to validate those perceptions; and acceptance that one's own performance or behaviour is divergent from accepted standards.[22,23] Developing trusting relationships can help facilitate a readiness to explore problems and is important because of the negative emotions, such as anger and shame, which might be invoked by being identified as needing remediation.[24,31-41] In order to develop trust, remediation strategies may seek to develop a 'safe space' in which a confidential discussion can take place, without fear of sanction or judgement.[30,33,34,36-41] Safe spaces are important because remediating doctors usually fear the consequences of being identified as needing remediation (these aspects of the programme theory relate to CMOcs 1-2).

Trust can also be developed through building personal relationships during the process of remediation. Sometimes such a relationship is described as a coaching model,[32-34,38,40,43-46] and elsewhere in terms of a mentoring programme.[24,30,31,34,43,48-55] Regardless of the term used, a key focus in the literature is that someone in the

remediation programme takes on the role of being an advocate for the remediating doctor. The provision of 'unconditional positive regard',[56] empathy and validation,[55] may be key to developing what has been described as a 'therapeutic relationship'.[57] The person performing this advocacy role may be a senior doctor[56] or a peer,[33,51] described as either coach, mentor or other. Advocacy may be most effective when the individual involved has no role in the summative evaluation of the remediating doctor or the final outcome of the process.[32,34,56] The advocate does not necessarily have to be intimately involved with the delivery of the remediation programme, but should be familiar with the case (CMOcs 3-4).[58]

When feedback challenges a doctor's own perceptions of their performance or behaviour, it may invoke a sense of dissonance, which can lead to acceptance of the need for change. However, doctors may be inclined to reject the feedback given to them due to the sensitivity associated with undergoing remediation.[30,59] Dissonance rather than denial may be invoked when the remediating doctor's own ideas about what makes a good doctor are elicited, and then, their own behaviours or performance are compared to this standard.[60,61] Because these values come from the remediating doctor rather than an external source, they may be perceived as being more authentic and less challengeable (CMOc 5). Feedback from trusted colleagues may also invoke dissonance (CMOcs 5, 7).[62]

Feedback may be more difficult to deny when there are specific data from a variety of feedback sources.[22,27,36,38,62] Feedback should be articulated in ways that are unambiguous and objective (CMOcs 6, 8).[2,4,39,43,45,52,64-66] Sensitivity to the way feedback is framed may be more pronounced for more senior doctors, as they will likely be further removed from an educational environment in which feedback on practice is a regular occurrence.

Affirming a remediating doctor's strengths may increase the chances that any corresponding negative feedback is validated.[31,67,68] Moreover, care should be taken to ensure that the feedback is delivered in a way that is not judgemental or demeaning (CMOcs 10-11).[31] Feedback that undermines a doctor's professional identity may result in its rejection (CMOc 9). It may also be important to frame feedback according to norms that a doctor can relate to and that are congruent with their professional identity, such as patient safety[38,46] (CMOcs 12-13).

3.2 | Develops motivation

A lack of motivation is common in remediation, due in part to the fact that remediation entails a loss of professional autonomy (CMOc 15). Facilitating a remediating doctor to maintain a degree of professional autonomy may have positive motivational consequences because it protects professional identity and engenders a sense of agency. This can be achieved through involving the remediating doctor in the planning of the remediation programme (CMOc 14). In the literature, this is often framed in terms of developing 'buy-in' to the programme, suggesting that involving the doctor in the design of the programme may give them more of an emotional investment.[24,29,31,33,35,69-72]

TABLE 2 Summary of CMOcs

	Insight
	Providing safe spaces and using advocacy to develop trust in the remediation process
CMOc 1	When a remediating doctor fears the consequences of remediation or does not trust the remediation process (C), an environment of trust will not develop (O) because they do not feel psychologically safe (M). An intervention strategy that can be used to change this context is the provision of a safe space where issues can be discussed in confidence.[10,23-32,38,46,59]
CMOc 2	When a remediating doctor feels that their discussions are confidential and are able to express any negative emotions they feel (C), they will be more likely to feel psychologically safe (M), leading to an environment of trust (O) and a readiness to explore perceptions of their performance (O).[10,22-41]
CMOc 3	When a remediating doctor experiences empathy and positive regard (C), psychological safety is invoked (M), leading to a trusting relationship (O) and a readiness to explore perceptions of their performance (O). Advocacy, as an intervention strategy, may be used to provide opportunities for the remediating doctor to experience empathy and positive regard.[10,22-34,37,39,42-56]
CMOc 4	If a remediating doctor has their motivations validated (C), this may invoke psychological safety (M), leading to an environment of trust (O) and a readiness to explore others' perceptions of their performance (O). An intervention strategy that may be used to provide validation is through advocacy, where the advocate can acknowledge the motivations of the remediating doctor and their dedication. The role of an advocate may be most effective when the advocate has no role in the summative judgements about the remediating doctor.[10,23-35,55,56]
	Framing feedback 1: Juxtaposition
CMOc 5	When remediating doctors' perceptions of good practice or behaviour are juxtaposed against data on their actual practice or behaviour (C), this may lead to an uncomfortable professional dissonance (M) which, in turn, invokes an acceptance of the need to change (O).[10,23-32,44,60-62]
	Framing feedback 2: Specific data from different sources
CMOc 6	When feedback contains specific performance data and/or clear examples of reported behaviours, and is derived from a number of different sources (C), it is more likely to be validated by the remediating doctor (M), leading to an awareness of the discrepancy between perceived and actual performance and behaviours (O).[30,31,34,35,37,39,43,45,46,47,49,51,53,59,62-64,70,81,90,106,107]
CMOc 7	When a remediating doctor accepts that their perceptions of their performance or behaviours are not the same as their actual performance or behaviour (C), dissonance (M) leads to an acceptance of the need to change (O).[44,60-62]
CMOc 8	When feedback is perceived as a generalised judgement about an individual doctor, the remediating doctor is more likely to be defensive (C) and therefore go into denial (M), leading to rejection of the feedback (O) and/or rejection of the standards to which that feedback pertains (O) [31,67,68]
	Framing feedback 3: affirmation, normative frameworks and feedback standard discrepancy
CMOc 9	When a remediating doctor perceives remediation to be a threat to their career or their professional identity (C), they may deny either the veracity of the feedback itself or the standard to which they are being held (M), leading to non-engagement in the programme (O) or superficial engagement (O).[33,35,69,108]
CMOc 10	If a coach or mentor is able to affirm a remediating doctor's strengths and offer perspective (C), the doctor is more likely to accept negative feedback (O) because they have received professional affirmation (M).[24,29,31,33-35,38,40,43-56]
CMOc 11	If feedback data are presented in a way that makes the problem seem manageable (C), then dissonance (M) may lead to the remediating doctor accepting the need to change performance or behaviours (O). Intervention strategies that make issues seem manageable include affirming prior achievements, breaking up issues into manageable chunks and setting realistic goals.[33,38,51,66,70,82,90,91]
CMOc 12	If feedback is framed in terms of a remediating doctor's professional values (C), then a mechanism of normative enticement (M) may lead to accepting the need to change (O).[38,46,73,74,109]
CMOc 13	In the context of a remediating doctor that accepts, there is a performance issue but does not receive validation of their professional motives or unconditional positive regard or affirmation of their professional identity (C), then identity dissonance (M) may lead to rejection of medical professional identity (O).[38,46,73,74,109]
	Motivation
	Involving the remediating doctor in remediation planning
CMOc 14	If the remediating doctor has a role in planning aspects of the remediation process (C), they may perceive that they have some control over the process (perceived agency) (M) and be intrinsically motivated to change (O).[24,29,31,33,35,69-72]
CMOc 15	When a remediating doctor experiences a crisis of professional identity (C), they may lack the motivation to change (O) because of normative rejection (M). Intervention strategies that can mitigate against a loss of professional identity include maintaining a degree of autonomy for the remediating doctor in the remediation programme.[38,46,73,74,109]

(Continues)

TABLE 2 (Continued)

Correcting causal attribution	
CMOc 16	When the remediating doctor is able to identify those aspects of their performance or behaviour that have caused problems that they can change (C), they have more perceived control over the process (M), leading to greater motivation to engage (O).[65,77,81]
CMOc 17	When a remediating doctor is given specific strategies for learning or behaving (C), because of improved self-efficacy (M), they have greater motivation (O).[10,27,32,35,39,45,52,57,59,62,64,65,70,77,81-83]
CMOc 18	When a remediating doctor explores their own emotional triggers (C), then they are less likely to react to these triggers (O) because they are self-aware (M).[77,81]
Goal setting	
CMOc 19	When the remediating doctor has a clear goal and a realistic sense that a goal is achievable (C), they may have greater belief in their own ability to achieve this goal (self-efficacy) (M), which may lead to more motivation to change (O). Interventions that may create this context include SMART goal-setting strategies.[33,38,51,66,70,82,90,91]
Destigmatising remediation	
CMOc 20	When the process of remediation is reframed in a more positive light (C), the remediating doctor feels more psychologically safe (M), leading to greater motivation to engage in the programme (O).[3,5,79,80]
CMOc 21	When remediation is framed as punishment (C) and/or when a community of practice stigmatises those who have to be remediated (C), the remediating doctor may feel alienated from their peers (M), leading to a sense of isolation (O).[3,25,70,76-78]
CMOc 22	When a doctor feels isolated from their peers (C), normative rejection (M) may lead to a lack of motivation to change (O). Remediating in groups, and/or networking with peers undergoing remediation, may lessen the sense of isolation.[53,55,60,61,65,69,84,86,88,110-112]
Clarity of consequence	
CMOc 23	When a remediating doctor understands the consequences of not changing their behaviour or improving performance (C), they may be able to evaluate the costs and benefits of change (M), and may be motivated to engage with remediation (O) or change their goal (O).[25,31,36,45,49,51,56,58,70,88,92,113]
Facilitating practice change	
Practising new behaviours or skills	
CMOc 24	With repeated performance of correct behaviours or skills (C), performance or behaviour improves (O) because of repetition (ie practice) (M). This practice can be in situ if appropriate, but can be simulated if needed.[37,44,50,56,59,95]
CMOc 25	When this repeated performance is accompanied by appropriate feedback and guided reflection (C), positive improvements are more likely (O) because the remediating doctor is able to integrate new knowledge and experiences into their learning (M).[37,44,50,56,59,95]
Guided reflection	
CMOc 26	When a remediating doctor has been guided through what the feedback means (C), they are more likely to engage with the feedback (O) because it makes sense to them (M). Intervention strategies that may help to bring this about include regular face to face meetings and open reflective questioning from a trained coach.[34,42,44,66,90,93,94]
CMOc 27	When feedback makes sense to a remediating doctor (C), dissonance is more likely to be invoked (M), leading to the remediating doctor gaining further insight into their performance or behaviours (O).[34,42,44,66,90,93,94]
CMOc 28	When the process of reflection is guided by someone from outside of the remediating doctor's immediate working environment (C), the feedback will be perceived as less threatening (M), leading to more meaningful reflection (O).[32,56]
CMOc 29	When a remediating doctor is allowed to develop and keep a reflective log that is meaningful to them (C), they have the opportunity to integrate their new learning and experiences (M), leading to insight into their own progress (O) and sustained changes in performance or behaviour (O). This may work best when the reflective logs are not assessed but when their completion is nevertheless verified.[30,51,59]

Autonomy is a key component of professional identity, especially in those doctors who have passed through training and become a consultant doctor ('attending physician').[5] Giving doctors input into remediation planning may mitigate the challenge to professional identity as the doctor retains some control over the process. This may help motivation because individuals can be intrinsically motivated to adopt certain behaviours or practices when these behaviours are associated with their own professional values.[35] In other words, remediating doctors can be motivated because they want to be, or remain, part of the 'in group' (CMOcs 12, 15).[73,74]

The medical community may hold ambiguous views of remediating doctors,[75] and policy developments around increased accountability in some health care systems may have created an unhelpful climate of fear around doctor performance.[3] Seeking to remove the

RESTORE PROGRAMME THEORY OF REMEDIATION

INDIVIDUAL CONTEXT
Stage in doctor's career
Negative emotions
Distrust of remediation processes
Fear of remediation consequences
Professional identity development

SETTING CONTEXT
Workplace environment
Stigma of remediation

Doctors asked to remediate

PROVIDING SAFE SPACES AND USING ADVOCACY TO DEVELOP TRUST IN THE REMEDIATION PROCESS
CMOc 1,2 ,3, 4

FRAMING FEEDBACK 1: JUXTAPOSITION
CMOc 5

FRAMING FEEDBACK 2: SPECIFIC DATA FROM DIFFERENT SOURCES
CMOc 6, 7, 8

FRAMING FEEDBACK 3: AFFIRMATION, NORMATIVE FRAME-WORKS AND FEEDBACK STANDARD DISCREPANCY
CMOc 9, 10, 11, 12, 13

DEVELOPS INSIGHT
A readiness to explore and validate others' perceptions of one's own behaviour or performance.
Acceptance of the need to change

INVOLVING THE REMEDIATING DOCTOR IN REMEDIATION PLANNING: PERCEIVED CONTROL
CMOc 14, 15

CORRECTING CAUSAL ATTRIBUTION
CMOc 16, 17, 18

GOAL SETTING
CMOc 19

DESTIGMATISING REMEDIATION
CMOc 20, 21, 22

CLEAR CONSEQUENCES
CMOc 23

DEVELOPS MOTIVATION
Intrinsic motivation
Extrinsic motivation

PRACTISING NEW BEHAVIOURS / SKILLS
CMOc 24, 25

GUIDED REFLECTION
CMOc 26, 27, 28, 29

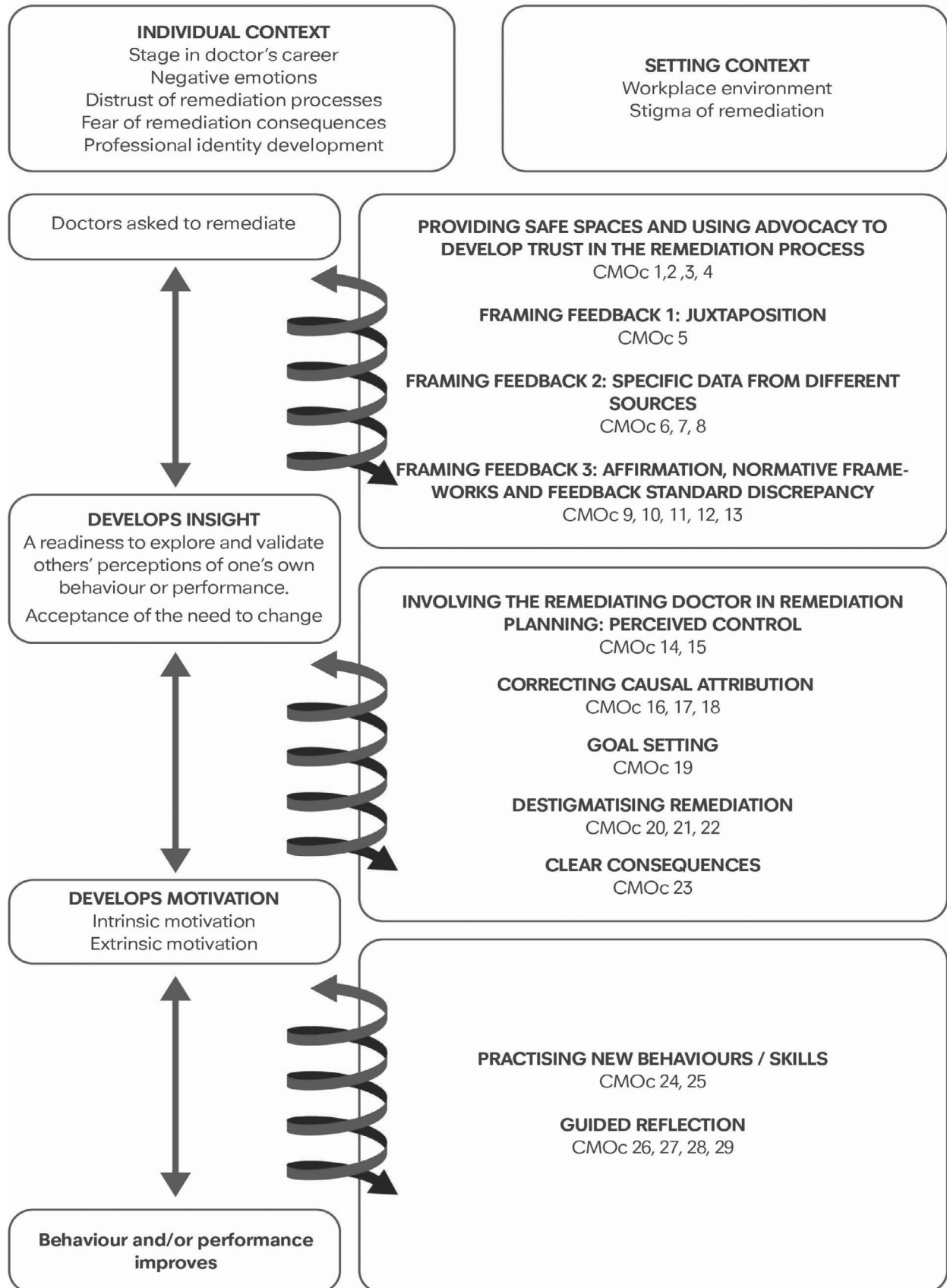**Behaviour and/or performance improves**

FIGURE 2 Programme theory of remediation

stigma around remediation may therefore help to protect professional identities and motivate participation in remediation (CMOcs 20-22).[3,25,70,76-80]

Another contributing factor to (a lack of) motivation is when a remediating doctor does not believe they are able to improve their performance or behaviour. This is likely to happen when they attribute the problem to something they cannot control, such as their ability, as opposed to something that they can control, such as study techniques.[65] Correcting causal attribution may, therefore, have motivational consequences (CMOcs 16-17). Likewise, if a remediating doctor is able to recognise particular triggers for poor behaviour, they may become more aware of why they behave in this way and how they might seek to change (CMOc 18).[77,81] Exploring the problem adequately may involve formalised post-referral assessment strategies that examine not just the identified performance or behavioural problem, but also its possible causes, including potential health problems.[10,27,32,35,39,45,52,57,59,62,64,65,70,77,81-83] Accurate causal attribution will also enable the development of individualised and targeted remediation plans, a feature of a large number of remediation programmes.[6,10,29,54,83,85-89]

Some interventions note the importance of having clear and achievable goals set out in the remediation programme.[33,38,51,66,70,82,90,91] The clarity is not just about the goals themselves, but ensuring the doctor understands how these goals are being assessed (CMOc 19).[82] It will also be important to be clear about the consequences and courses of action if goals are not met (CMOc 23).[36,51,56,58,88,92]

3.3 | Sustained improvements to behaviour or performance

Feedback works to enhance performance when a practitioner reflects on what that feedback means (CMOcs 26-27),[34,44,66,90,93,94] and this works best when it is a guided process; reflection will not automatically follow feedback, but with guidance from a coach or mentor, reflective practice can aid behaviour change[34,90] and improve performance. This is noted for both clinical skills and knowledge issues, as well as professionalism.[42,66,90] This process of mentoring may be more effectively facilitated by someone outside of the remediating doctor's immediate working environment (CMOc 28).[32,56] Written reflective logs may also aid reflection,[30,59] especially if they are not formally assessed (CMOc 29).[51]

Sustained improvements of performance or behaviour will be facilitated if there is an opportunity to practice new skills and behaviours as part of in iterative process of practice, reflection and further developing insight (CMOcs 24-25).[50,95] Again, sensitivity to this process may be more pronounced in more senior doctors, as they are less used to receiving and reflecting on feedback, and some may have completed training at a time when developing reflection skills was not part of their medical education.

4 | DISCUSSION

4.1 | Main findings

In this realist review, we sought to develop a theory of how the remediation of doctors is supposed to work, for whom and the contexts that lead to different outcomes. Our findings indicate three key facets of remediation that are fundamental for success: insight, motivation and behaviour change. Remediation works when it helps participants develop insight. The remediation intervention strategies that help produce insight relate to the environment created and the framing of feedback. A supportive environment, with confidential discussions and someone who provides advocacy and emotional support, will help invoke psychological safety that may lead to trust and subsequently a readiness to explore feedback. If feedback is then framed in a supportive and effective way (juxtaposition, specific data from multiple sources, affirmation and relatable normative frameworks), then further mechanisms of affirmation or dissonance or normative enticement may be triggered, which may lead to the remediating doctor validating the feedback received.

A remediating doctor must be motivated to engage with the process. Strategies aimed at developing intrinsic motivation include doctor involvement in remediation planning, correcting causal attribution, effective goal setting and destigmatising remediation. When these strategies are employed, perceptions of control, self-efficacy and self-awareness may function as mechanisms to induce intrinsic motivation. Alongside this, clarity in terms of the potential outcomes of the process may trigger an evaluation of costs and benefits.

Guided reflection is likely to be important at all stages of a remediation programme. Practising new skills or behaviours in simulated environments may be an important aspect of a remediation programme. A doctor may be tasked with specific behaviours to practise and, through a coaching process, can reflect on the success or otherwise of these processes when they meet with their coach. The change in performance or behaviour is not necessarily the endpoint of remediation; remediation may well be a cyclical process, whereby changed behaviours may engender further insight into other issues or areas.

4.2 | Comparison with previous literature

The last systematic review to develop a model for remediation was conducted by Hauer and colleagues in 2009.[6] Their model was, broadly speaking, akin to a medical model of treatment: assessment, diagnosis, intervention and follow-up. Our findings add considerably greater detail on what some of these processes might look like in a successful programme. For example, the use of multimodal forms of assessment, highlighted by Hauer et al to aid accurate diagnosis and understanding of the concern, is widely supported in the literature.[28,41,84,93,94,96-98] However, our findings suggest that multimodal assessment should

also be used to gather specific and direct feedback that is more likely to be validated by a remediating doctor. We identified that organisational issues were pertinent to how a remediating doctor reacts in a particular work setting,[99-101] and may point to the need for organisational changes to facilitate a more effective remedial environment. Examining the workplace environment is not currently common in remediation assessment processes (see [102] for an exception) although it may be an important contributing factor to performance or behavioural problems.[103] We conclude that the need to consider wider organisational issues when considering remediation is critical.

Diagnosing a deficiency, the next stage in Hauer et al's model, is central to remediation. Our research suggests that identifying the manifest problem itself may be a slightly different endeavour from identifying the cause of the problem. Identifying that cause, which will allow a remediating doctor to develop self-awareness and a sense of control, means that guided reflection can help engender insight and self-efficacy. Developing an individualised remediation plan should, we suggest, be an activity undertaken with the remediating doctor to afford the greatest opportunity for their inputting into the process.

We would agree with Hauer et al that coaching and mentoring have an important role in a remediation process. What we have added via this realist review is *how* coaches and mentors are an integral part of the remediation process. The way in which coaches or mentors frame feedback and whether or not they create an environment in which a remediating doctor is able to feel safe and be candid about their thoughts and feelings is central to whether feedback is likely to be accepted or rejected, and whether that feedback will engender the self-efficacy and sense of control needed to motivate a doctor to complete a remediation programme. This supports a model of feedback such as that described by Telio et al, whereby a supportive environment is used to develop an 'educational alliance' between coach and coachee.[104]

Remediation is often viewed in terms of an educational model,[4,5] and our focus here has been on the more behavioural aspects of change that are required for learning to take place. We are not the first to argue that remediation should be understood in this way,[10] but have used this same conceptualisation to build a more detailed theory about the processes that occur throughout a remediation programme to produce its effects.

4.3 | Strengths and weaknesses of this study

To the best of our knowledge, this is the first realist review of the published and grey literature on remediation in medical education. We carried out a robust and thorough realist analysis, following RAMESES quality standards for realist synthesis.[17] The process of developing the CMOcs was strengthened by numerous checks and input from a wide range of stakeholders, including doctors who had themselves been through remediation. Our detailed realist analysis has enabled us to clearly link the data in included documents to our recommendations, enabling us to identify the contexts that need to be in place for the desirable outcomes of remediation to occur, and the interventional strategies that are needed to create these contexts. Thus, we have produced a clear set of guidelines for those seeking to improve remediation practice (see Table 3).

However, like all reviews, the robustness of these findings is limited by the quality of the data, and there remains a lack of high-quality research on remediation, and the concentration of this research in North America, which may limit its applicability to health care systems in other regions. In this case, some CMOcs are better supported by the data than are others. The use of the stakeholder group was invaluable in this respect, as it allowed us to elaborate on the CMOcs that were less supported by the data, and test their applicability on a health care system that is not in North America (ie the UK).

The stage in a doctor's career is an important contextual factor that will often have a bearing on the remediation process, and as noted above, we have included in this review all doctors who practise medicine, including those in training grades. This decision was made in the first stakeholder meeting as our stakeholders felt that, in the real world of medical practice, there was no clear point of demarcation between 'independent' doctors and those in training; independence in practice is something that increases incrementally through the training stages. In the narrative description of the programme theory, we have sought to indicate where a doctor's stage in their career might make a particular aspect of the programme theory more or less relevant. It was not possible with the data we had to be more precise on what aspects of an intervention would work most effectively for different stages of training, and even if we had these data, it would vary across different health care systems.

A further potential weakness that is more specific to the realist review methodology is that these findings have been derived from our reading of the data; we accept that other researchers could interpret the data differently. However, we propose that our explanations of the data are plausible and have been thoroughly tested through a robust, iterative process.

A further strength was the strong input from a diverse range of stakeholders with various experience and expertise in remediating doctors and PPI input to ensure that a patient voice was present in all discussions. The stakeholders contributed throughout the whole review process, sense checking our findings against their real-world experience and assisting with theory building. However, we struggled to recruit practising doctors that had undergone remediation, and only one was a member of the stakeholder group (although one other stakeholder had undergone remediation during medical school). Having more doctors that had undergone remediation might have provided more variety of perspectives on the experience of undergoing remediation and how remediation produces its effects.

4.4 | Implications for research, policy and practice

Our findings have a number of significant implications for policy and practice. A full set of recommendations is provided in Table 3. In summary, we posit that focusing remediation interventions on developing insight is critical. Bringing about insightful practice may

require remediation programmes to give significant attention to the way in which feedback is framed and the environments created for reflective practice. This is important because practising doctors are not often functioning within an educational environment, in which making mistakes and learning from those mistakes are an integral part of the process. Rather, doctors function in an environment

TABLE 3 Recommendations for practice

RESTORE: Findings and recommendations relevant to those working to deliver remediation programmes	
Findings	**Recommendations**
Remediation programmes work when they develop insight	
Safe spaces for confidential discussion help a remediating doctor become ready to explore issues related to their performance or behaviour.	Remediating doctors should have the opportunity for confidential discussion with someone in a supportive role.
Juxtaposing a remediating doctor's own values with their actual behaviours helps remediating doctors accept the need for change.	Remediation programmes for issues related to conduct should include an opportunity for remediating doctors to reflect on their own professional values and contrast these with the feedback they receive on their own behaviours.
When a remediating doctor has the support of an advocate, who has no role in summative judgements, they are more likely to develop trust in the remediation process.	Remediating doctors should be supported by someone who has the role of advocate. This individual may be a coach or mentor, and should not have a role in making summative judgements throughout the remediation programme.
When feedback on performance or behaviour is specific and comes from multiple sources, it is more likely to be validated by a remediating doctor.	Remediating doctors should be provided with specific feedback that details the reasons and examples of underperformance or poor conduct. If the feedback relates to behaviour, it should detail specific events, with a date and time. This feedback should ideally come from more than one source and include feedback from patients whenever possible. Feedback will be needed throughout the remediation process, not just at the beginning. The appropriate feedback to determine progress, and the way that it is delivered, should be ascertained in the remediation planning stage.
When feedback is framed in a way that is sensitive to a doctor's professional identity, they are less likely to reject that feedback and may accept the need to change performance or behaviour to align with their own professional values.	Feedback may be more effective when in person, and should be guided by someone who has been trained to deliver feedback. The feedback should be framed in such a way that it relates to the professional values of the doctor, is presented in a way that seems manageable and affirms any identified strengths.
Remediation is more likely to be successful when assessment is used to explore and identify the full range of possible causes for a 'problem'.	Multimodal assessment should be used to explore a full range of potential issues, including behavioural issues, even when the identified problem may appear to relate to knowledge and skills. Assessment should also be used to determine any organisational issues that may contribute to poor performance or behaviour. This will help determine whether the work environment is a contributory factor, and whether this environment will be suitable for undertaking remediation activities. If there are problems with the work environment, then remediation may need to be conducted elsewhere.
When remediating doctors are facilitated to identify and reflect on the triggers of poor performance or unprofessional behaviour, they are may be able to avoid these reactions in the future.	Remediation programmes should offer the opportunity for the remediating doctor to reflect on the reasons for their referral and to identify the triggers for underperformance or poor conduct.
Remediation programmes work when they motivate practitioners to change	
If a remediating doctor has input into the design of an individualised remediation programme, they are more likely to have buy-in to the programme and will be more motivated to engage.	Where possible, remediating doctors should collaborate in the design of the individualised remediation plan and help to shape it. The planning stage should include setting scheduled points for assessing progress and determining what kind of feedback will be appropriate for the assessment of this progress.
When part of the remediation planning process includes setting realistic and achievable goals, the remediating doctor may feel that they are more capable of achieving these goals.	The remediating doctor should collaborate in the process of goal setting, and the goals set should be achievable and measurable.
When remediating doctors are clear about what happens when targets are achieved or not achieved, they are more likely to choose to engage in the remediation programme.	Remediation programmes should include an individualised plan that specifies the milestones, points for review of progress and the consequences of achieving or not achieving targets.

TABLE 3   (Continued)

RESTORE: Findings and recommendations relevant to those working to deliver remediation programmes	
Findings	**Recommendations**
If efforts are made to destigmatise remediation wherever possible, remediating doctors are more likely to engage with the process and be more motivated, because there is less of a threat to their professional identity.	Remediation programmes should seek to destigmatise the process of undergoing remediation and frame it, as far as possible, in terms of positive professional development.
	If relevant, remediation programmes could consider changing the name from *remediation* to *professional support* or similar. Positive framing may also include changing the language around the guidance for remediation, to include terms that indicate support and development.

Remediation programmes work when changes to practice are facilitated

When there is an opportunity for remediating doctors to practise new performance or behaviours, these new performances or behaviours are more likely to be integrated into their practice.	Where appropriate, remediation programmes should offer an opportunity for remediating doctors to practise any new skills or behaviours they have developed. This may include rehearsing new behaviours in simulated settings. Where this is not possible, guided reflection can offer an opportunity to reflect on in situ practice.
When there are scheduled points for guided reflection, remediating doctors have more opportunity to integrate new knowledge and skills and develop further insight.	Remediation programmes should have scheduled points for reviewing progress with the remediating doctor. The remediating doctor should be involved in this process of review, and reflections should be guided so that the remediating doctor continues to gain insight into their progress.
When the remediating doctor has an active role in reflecting on feedback, the feedback is more likely to be accepted and engender a change in performance.	Reflection should be built into the remediation programme and should be guided, but not form part of a final judgement on progress. Reflection may include one-to-one discussion of feedback, or discussions of entries in reflective logs. The purpose of reflection is to have an interesting and meaningful conversation to embed new knowledge and behaviours and engender further insight.
	Recent medico-legal cases may have placed uncertainty over the confidentiality of reflective logs. The exact legal status of any written reflections should be established in advance.

(more or less, depending on their stage of training and/or their role), in which a return to a more educational environment entails a loss of autonomy and is likely to invoke an adverse reaction. This brings into focus a careful consideration of how the roles in remediation are structured, and how the remediation programme can create facilitative environments for feedback to be accepted.

If the important processes that function within a remediation programme relate to behavioural change, then it is important to acknowledge that the transformative learning that really matters may be the most difficult to measure. Intermediate outcomes essential to the remediation process, related to insight and motivation, may be assessed through the qualitative judgements of trained individuals who are able to identify, respond, frame feedback, challenge (in a supportive way) and recognise when reflection is a genuine rather than a strategic endeavour. If programmes focus on measurable outcomes only, they may not be able to deliver sustainable practice change.

Future research should use our evidence-based recommendations to evaluate and refine existing remediation interventions or to design, implement and evaluate new interventional strategies. We suggest using a realist evaluation approach as this would enable an investigation as to whether or not remediation programmes create the proximal outcomes that we have identified in this report. Another avenue for future research involves investigating the topic of remediation relating to other health care professions using an extended realist review approach.

5 | CONCLUSION

Remediation is clearly a complex issue for which there is no 'magic bullet'. However, using a realist review approach allowed us to look at remediation through fresh eyes. Using this methodological lens shifts discussions and action from simple solutions to explicitly recognising the complexity of remediation, which may lead to more productive interventions in the future.

CONFLICT OF INTEREST
None.

AUTHOR CONTRIBUTIONS
Dr Tristan Price was the research fellow on the project. Tristan was part of the review team involved with the design of the study and the development of the research. Tristan had substantial input at all stages of the study, carrying out the article screening and selection, coding and developing the programme theory.

He was the lead writer of the report, wrote the first draft of this paper and was involved in editing for all subsequent iterations. Dr Geoff Wong was the methodological advisor on the study. Geoff was part of the review team involved with the design of the study and the development of the research. Geoff had substantial input at all stages of the study, advising on methods and the development of the programme theory. Geoff contributed to the writing of the final report, the first draft of this paper and all subsequent iterations. Dr Lyndsey Withers was the patient partner (PPI) on the study. Lyndsey was part of the review team involved with the design of the study and the development of the research. Lyndsey had substantial input at all stages, including the development of the programme theory, and the drafting and editing of the report and all iterations of this paper. Amanda Wanner was the information specialist on the study. Amanda designed the search strategy and sourced the articles. Amanda was part of the review team involved with the design of the study and the development of the research. Amanda had substantial input at all stages, including the development of the programme theory, and the drafting and editing of the report and all iterations of this paper. Professor Jennifer Cleland was part of the review team involved with the design of the study and the development of the research. Jen had substantial input at all stages of the study, advising on methods and the development of the programme theory. Jen contributed to the writing of the final report, the first draft of this paper and all subsequent iterations. Professor Tom Gale was part of the review team involved with the design of the study and the development of the research. Tom had substantial input at all stages of the study, advising on methods and the development of the programme theory. Tom contributed to the writing of the final report, the first draft of this paper and all subsequent iterations. Dr Linda Prescott-Clements was part of the review team involved with the design of the study and the development of the research. Linda had substantial input at all stages of the study, advising on methods and the development of the programme theory. Linda contributed to the writing of the final report, the first draft of this paper and all subsequent iterations. Professor Julian Archer was part of the review team involved with the design of the study and the development of the research. Julian had substantial input at all stages of the study, advising on methods and the development of the programme theory. Julian contributed to the writing of the final report, the first draft of this paper and all subsequent iterations. Dr Marie Bryce was part of the review team involved with the design of the study and the development of the research, with a leading role in data extraction. Marie had substantial input at all stages of the study, advising on methods and the development of the programme theory. Marie contributed to the writing of the final report, the first draft of this paper and all subsequent iterations. Dr Nicola Brennan was the chief investigator on the study. Nicola led on the design of the study and the development of the research. Nicola had substantial input at all stages of the study, working closely with Tristan Price on the development of the programme theory, coordination of stakeholders, and the drafting and editing of the report and all iterations of this paper.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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