Fostering and Evaluating Reflective Capacity in Medical Education: Developing the REFLECT Rubric for Assessing Reflective Writing

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Abstract

Purpose
Reflective writing (RW) curriculum initiatives to promote reflective capacity are proliferating within medical education. The authors developed a new evaluative tool that can be effectively applied to assess students' reflective levels and assist with the process of providing individualized written feedback to guide reflective capacity promotion.

Method
Following a comprehensive search and analysis of the literature, the authors developed an analytic rubric through repeated iterative cycles of development, including empiric testing and

determination of interrater reliability, reevaluation and refinement, and redesign. Rubric iterations were applied in successive development phases to Warren Alpert Medical School of Brown University students' 2009 and 2010 RW narratives with determination of intraclass correlations (ICCs).

Results
The final rubric, the Reflection Evaluation for Learners' Enhanced Competencies Tool (REFLECT), consisted of four reflective capacity levels ranging from habitual action to critical reflection, with focused criteria for each level. The rubric also evaluated RW for transformative

reflection and learning and confirmatory learning. ICC ranged from 0.376 to 0.748 for datasets and rater combinations and was 0.632 for the final REFLECT iteration analysis.

Conclusions
The REFLECT is a rigorously developed, theory-informed analytic rubric, demonstrating adequate interrater reliability, face validity, feasibility, and acceptability. The REFLECT rubric is a reflective analysis innovation supporting development of a reflective clinician via formative assessment and enhanced crafting of faculty feedback to reflective narratives.

Editor's Note: Commentaries on this article appear on pages 5 and 8.

Fostering reflective capacity within medical education helps develop critical thinking skills,[1,2] inform clinical reasoning,[3] and enhance professionalism[4] among trainees. Reflection—the expertise-enhancing, metacognitive, tacit process[5,6] whereby personal experience informs practice[7]—is integral to core professional practice competencies.[8,9] Development of reflective capacity has been highlighted as necessary for effective use of feedback in medical education[10,11] and is an essential aspect of self-regulated and lifelong learning.[5,10] Reflection can guide practitioners as they encounter the

complexity that is inherent to clinical practice, potentially influencing the choice of how to act in "difficult or morally ambiguous circumstances."[12] In this vein, the development of reflective practice has been associated with enhancing an individual's character or "virtue," fostering a "habit of mind,"[13] "dispositional tendency,"[14] or "medical morality"[15] with which to approach clinical reasoning and ethical or values-related[16] dilemmas that may arise. It also helps in developing "phronesis"— adaptive expertise or practical wisdom to guide professionally competent clinical practice.[13,17] Failure to reflect on one's own thinking processes, including critical examination of one's assumptions, beliefs, and conclusions, was recently described as a cognitive component of "physician overconfidence," a contributing cause of diagnostic error in medicine.[18] In line with this, research has offered promising new evidence of an association between analytical reflective reasoning and improved diagnostic accuracy in challenging cases.[1]

Definitions of reflective capacity abound, though they generally include review, interpretation, and understanding experiences to guide future behavior. For

example, Mann and colleagues[19] define reflective capacity as "critical analysis of knowledge and experience to achieve deeper meaning and understanding." Theoretical pillars of reflective capacity include Schon's[20] progression from knowing-in-action, to surprise, reflection-in-action ("thinking on our feet"[21]), experimentation, and, finally, reflection-on-action (postexperience reflection), and Boud and colleagues'[22] emphasis on addressing feelings in the reflective process. Moon[23] introduces the component of meaning making to reflection in learning, and Mezirow[24] links premise reflection with transformative or confirmatory learning, bringing additional depth and breadth to reflection conceptualization. Mann and colleagues[19] describe two overarching dimensions in models of reflection: iterative and vertical. The iterative dimension of reflection is one triggered by experience, producing a new understanding; the vertical dimension combines surface (descriptive) and deeper (analytic) levels of reflection.

Reflection is not necessarily intuitive, especially in students at initial stages of their medical careers. Thus, medical educators strive to implement innovative

educational methods to promote development of reflective capacity early in the training process. The use of reflective writing (RW) to facilitate reflective practice is well documented.[25–29] Curricula have included RW groups for students in clerkships and residencies, journaling, portfolios, video essays, and what we have termed "interactive" RW—integration of written feedback from faculty to foster learners' development of more sophisticated reflection skills.[29] Pedagogic goals of professional development, insights into the process of patient care, and practitioner well-being have been addressed through the small-group RW process.[30] RW, a subset of narrative medicine, cultivates self-awareness and builds narrative competence for clinical encounters through the processes of attending, representing, and affiliating that are shared between RW and clinical practice.[25] RW embodies the "interpretative and narrative"[31] qualities of practical medical reasoning. Narrative competence and emotional self-reflective ability, which may be cultivated through RW, can bolster resilience to emotionally challenging situations[32] and promote capability in challenging communication encounters, such as breaking bad news.[33]

Mentors who skillfully support and challenge learners through noticing the reflective moment, making sense of the experience (including emotional responses), tolerating uncertainty (or "messiness" of clinical practice at the "heart of professional expertise"[20]), and using new insights[5,34] are an essential component to developing reflective capacity. Their guided written feedback about reflective narratives can promote a more in-depth reflective process.[35,36] At the Warren Alpert Medical School (AMS) of Brown University, students receive guided, individualized feedback about their RW from interdisciplinary faculty[29,37–39] during the Doctoring course[40,41] and family medicine clerkship.[42] Faculty use a rigorously developed tool (the Brown Educational Guide to the Analysis of Narrative [BEGAN]) to enhance the educational impact of their written feedback about reflective narratives.[43]

The proliferation of RW curricula locally and internationally has created the need for a valid, reliable evaluative tool that can be effectively applied to assess students' levels of reflection and the development of reflective skills within RW pedagogy. Publications on the utility of RW in medical education have been largely anecdotal or based on student self-report. Although some suggest assessing students' levels of reflection to evaluate reflective learning outcomes,[44,45] a recent comprehensive review concluded that measurement of reflection is at an early stage of development and that qualitative and exploratory research approaches are appropriate for achieving deeper understanding of this essential construct.[19]

There are significant limitations and challenges in applying available coding systems for analyzing written reflective journals to determine the extent and level of reflection. Proposed criteria for "grading" physiotherapy students' reflective journals,[46] for example, lacked clear explication,[47] and a reliable structured worksheet for assessing reflection level[48] focused on depth to the exclusion of breadth of reflection.[47] Plack and colleagues[7] applied a modified Bloom's taxonomy to determine achievement of higher-order thinking in reflective journals, yet they only indirectly assessed reflection per se. Identification and coding of textual elements of journals for levels of reflection using Boud and colleagues'[22] model was described as relatively difficult and not achieving sufficiently reliable outcomes.[44,46] Plack and colleagues[47] broadened coding schema for reflective journals by including Schon's,[20] Boud and colleagues',[22] and Mezirow's [24] theoretical frameworks; however, the schema did not integrate criteria within reflective levels, and the authors identified the need for further refinement of some operational definitions. In addition, our review of available criteria for assessing level of reflection revealed that existing criteria did not include Mezirow's[24] transformative or confirmatory learning schemata[49]; in fact, we encountered a critique of his reflection levels (as used in current assessment formats) as inadequately describing the process of reflective thinking.[46] Some recently published rubrics for reflective narrative analysis are limited either in scope[50–52] or in building a validity argument.[53] Lastly, the factorial validity of at least one self-report reflection instrument has been questioned.[54] In light of the increased interest in formal assessment of level of reflection as an indicator of professional development of medical students and best teaching practices,[35] we set out to design an empirically tested, concise, "user-friendly" evaluative paradigm stemming from our review of existing qualitative and quantitative measures and frameworks for reflective capacity.

The Reflection Evaluation for Learners' Enhanced Competencies Tool (REFLECT), a new rubric for evaluating medical students' levels of reflection and the development of those levels within RW pedagogy, is an innovative approach to assessing reflection that includes multiple fundamental domains of reflection. In this report, we describe the development of the rubric, present reliability and validity data, and discuss the rubric's application and potential use for enhancing the educational effects of reflective narratives in medical education.

Method and Results

Preliminary stage: Literature and model review

The development of the REFLECT rubric began in early 2008 with a comprehensive analysis of the literature, including theoretical models of reflection, RW pedagogy, elements of reflective practice, and existing assessment modalities in health professions education. By October 2008, we concluded literature searches in the PubMed database for relevant articles for the years 1995 to 2008 using key words such as "reflection," "reflective practice," reflective writing," "reflection in medicine," "reflection in medical education," and "reflection in health professions education." We then conducted ongoing subsequent literature searches until late 2010 (to inform the writing of this article) with "reflection," "reflective writing," and "reflection assessment" used as key words, though articles from 2008 to 2010 were not included in the literature review for the development of REFLECT.

We then used snowball technique to extend the literature search from retrieved articles to other relevant sources. The snowball technique for sampling is a method whereby existing study participants suggest, recruit, or assist in recruiting future subjects from among their acquaintances or contacts.[55] In this case, it refers to careful review of

the bibliographies of articles found from database searches to detect other relevant articles that may have been otherwise missed. From our review of the literature, we identified four existing modalities of reflection assessment: (1) scales ("paper and pencil" forms with responses scored by respondents), (2) thematic coding (qualitative analysis that codes themes in the narratives), (3) qualitative analysis (more elaborate qualitative analysis moving beyond themes into models), and (4) analytical instructional rubrics (theory-based delineation of dimensions or levels of an assessed construct).

We next examined these four approaches for their utility in the assessment of medical students' RW. Our deliberations were based on both theoretical and functional premises. We used anonymized analogical datasets of medical student RW exercises—sampled anew with each iteration—from the 2009 and 2010 Doctoring course and family medicine clerkship as anchors for the deliberation. Although our literature search uncovered an existing scale for measuring "personal reflection,"[54] we did not use it for our analysis given its intended purpose for students' self-reported reflective capacity rather than for assessment of the construct within RW. Thematic coding[26,27] with sole emphasis on extraction of themes was also inadequate for our evaluative aims because students' reflective levels within RW could not be determined with such a method. Similarly, qualitative analysis was deemed insufficient because of its inability to provide focused differentiation of reflective levels. The fourth approach, the analytical instructional rubric,[56] is specifically used for assessment. Analytical instructional rubrics

seemed to be the best choice for the assessment of reflective levels because they are based on a theoretical framework and can be tailor-made for specific purposes. An instructional rubric delineates the various dimensions or levels of an assessed construct, defining benchmarks for each, and can yield quantitative scores.[57,58] The rubric format—used for both formative and summative purposes—may vary, though common features include quality level gradations on a continuum of strong to weak work product, as well as a relatively complex list of criteria or "what counts" in completing a project or mastering a skill.[59] Our close examination of the four existing approaches led us to select an analytical instructional rubric as the evaluative paradigm for our own tool.

Iterative development of the initial rubric

Once we had determined which approach to use, we began the process of developing an actual analytical instructional rubric to assess students' reflective narratives. This was accomplished through an accepted methodology of thorough model review, listing criteria, designating quality levels, creating a rubric draft, and revising the draft.[59] Several iterative cycles of development were required.

The first iterative cycle: Initial reflection rubric. In the first cycle, we constructed an initial reflection rubric based on our comprehensive analysis of relevant theoretical models of reflection and existing reflection measure instruments.[60] After considering a

broad range of possible elements, we reached consensus on five levels of reflection with associated criteria based on the theories of Schon,[20] Boud and colleagues,[22] Moon,[23] and Mezirow.[24] This rubric included the following levels: Level 1: Nonreflective: Habitual Action; Level 2: Nonreflective: Thoughtful Action; Level 3: Reflective; Level 4: Critically Reflective; and Level 5: Transformative Learning. We developed criteria or dimensions for each level (e.g., descriptive versus reflective stance, attending to emotions) based on a synthesis of literature descriptors. A session aimed at standardization of scoring on three RW samples followed. Within this session, we presented rationale for scoring, discussed and resolved scoring discrepancies, and reached consensus about scoring.

We obtained full formal institutional review board approval from the Memorial Hospital of Rhode Island prior to narrative analyses to allow cycles of empirical testing on actual examples of randomly selected medical students' RW. We applied the initial rubric to a dataset of all 93 second-year students' self-selected "best" RW "field notes" collected for evaluation (2008–2009). Three raters applied the initial reflection rubric to code subsets of these field notes, with an overlap of 10 randomly selected notes for reliability calculation, and interrater reliability was determined on these 10 overlapping notes using intraclass correlation (ICC; see Table 1). The distribution of students in each reflection level, according to our coding, was as follows: Level 1 = 0, Level 2 = 17, Level 3 = 38, Level 4 = 28, and Level 5 = 10.

Table 1

Interclass Correlation (ICC) Estimates Computed for Each Iteration of the REFLECT (Reflection Evaluation for Learners' Enhanced Competencies Tool) Rubric in Five Pilot Tests of the Rubric, Developed at Warren Alpert Medical School (AMS) of Brown University, Providence, Rhode Island, 2009–2010

Date of pilot test	Rubric iteration	Sample	Number of raters	ICC single measures	Cronbach alpha
1: July 2009	1	10 narratives from the Doctoring course, year 2, AMS	3	0.748	0.899
2: December 2009	2	10 narratives from the Doctoring course, Year 2, and family medicine clerkship, years 3–4, AMS	3	0.455	0.715
3: January 2010	2	10 narratives from the general surgery clerkship, University of Alberta	3	0.376	0.644
4: February 2010	3	10 narratives from the family medicine clerkship, years 3–4, AMS	3	0.508	0.756
5: April 2010	3	60 narratives from the Doctoring course, year 2, AMS	4	0.632	0.774

The second iterative cycle: The REFLECT rubric. Next, we set out to modify the rubric on the basis of insights gained from further literature review (including review of literature gleaned from the original search, plus new search results), application of the initial reflection rubric to students' reflective narratives, and feedback obtained when we presented our initial findings at conferences. We reached consensus about definitions for four reflection levels retained from initial rubric and two possible outcomes of the reflective process, as well as more precise delineation of criteria presented as a continuum of development. The four levels carried over from the initial rubric were Nonreflective: Habitual Action; Nonreflective: Thoughtful Action; Reflective; and Critically Reflective. The two possible learning outcomes require achievement of the Critically Reflective level and were defined as transformative learning and confirmatory learning.

We refined and elaborated criteria for mastering each of the four levels: voice and presence, description of conflict or disorienting dilemma (insight and reflection), attending to emotions, and critical analysis and meaning making. We also identified attention to assignment as an optional "minor" criterion to be addressed when relevant. During this iteration, we named the rubric REFLECT.

Using three raters, we applied the second iteration rubric to a sample of 10 new reflective narratives from the second-year Doctoring course and the family medicine clerkship and a sample of 10 field notes from a general surgery clerkship and again determined interrater reliability using ICC (see Table 1).

Third iteration. After improving the tool and retesting it during the second iteration, we further reevaluated, refined, and redesigned the REFLECT in a third iteration. To empirically test the tool and determine its interrater reliability, we applied the rubric to a sample of 10 family medicine clerkship reflective narratives. We then applied the rubric to all 92 second-year Doctoring course students' self-selected "best" reflective narratives (2009–2010). We scored all narratives independently, and then four raters independently scored 60 narratives, randomly split into batches of 10. Each narrative was scored independently by

two raters, and we computed ICCs for the six combinations.

Present iteration. The present iteration of the REFLECT was informed by methodological consultation with additional content and psychometric experts and further close reading of the relevant literature. Our aim was to more precisely calculate interrater reliability data and to deliberate the role of the REFLECT rubric in formative versus summative assessment. Given our primary emphasis on analyzing quality of reflection within RW in a developmental context, we decided to omit assigned numbers for reflection "levels" to encourage use of the rubric for formative rather than summative purposes (Appendix 1).

REFLECT rubric application

The process of applying the REFLECT rubric to a reflective narrative consists of four steps:

1. Read the entire narrative.

2. Fragmentation: Zoom in to details (phrases/sentences) of the narrative to assess the presence and quality of all criteria (see Appendix 1). Determine which level each criterion represents.

3. Gestalt: Zoom out to consider overall gestalt of the narrative (while taking into consideration the detailed analysis of Step 2). Determine which level the narrative as a whole achieves. If the Critical Reflection level is achieved, determine whether either or both learning outcomes (transformative or confirmatory learning) were also achieved.

4. Defend the assignment of level and learning outcomes with examples from the text. Do not "read between the lines."

A sample reflective narrative and REFLECT rubric analysis is presented in Appendix 2. Another example can be seen in Supplemental Digital Appendix 1, http://links.lww.com/ACADMED/A68.

Statistical analyses

We applied single-measure ICCs[61] to all datasets and computed ICCs for each iteration of the REFLECT in the pilot developmental phases (Table 1). We used SPSS version 11.0 (IBM Corporation, Armonk, New York) to calculate ICCs. An ICC is used to measure

ordinal/continuous data for interrater reliability for two or more raters when data may be considered interval. It may also be used to assess test–retest reliability. An ICC may be conceptualized as the ratio of between-groups variance to total variance. In single-measure reliability, individual ratings constitute the unit of analysis (i.e., single-measure reliability provides the reliability for a single judge's rating). Single-measure ICC is the more conservative estimate and can represent how much agreement one rater will have with other raters. We chose to use ICCs because the levels in rubric iterations are ordinal data where gradations are interpretable, with no "natural zero." Each application of the developing rubric involved at least three raters.

As demonstrated in Table 1, we observed variation in the ICCs. The noted decrease between iterations 1 and 2 may be attributed to insufficient training of the raters and/or lack of clarity in definitions of levels and criteria. Some of the ensuing variation may be due to the use of different samples of field notes, each of which may have had different qualities, as well as the small sample sizes in iterations 1 to 4. In addition, further variation may be attributed to the alterations in the criteria for the rubric's rating scale, which occurred as part of the iterative process of scale development. The current iteration is likely a more stable ICC because it includes 60 field notes, though this is still a relatively small sample. Internal consistency measured by Cronbach alpha is also reported in Table 1 and ranges from 0.644 to 0.899.

Discussion

RW initiatives within medical education have prospered as medical educators are called on to prepare students to become reflective clinicians.[3,62] Increasing use of such pedagogy has led to interest in formal assessment of achieved level and qualities of reflection within narrative. The rationale for conducting theory-informed evaluation of RW includes obtaining a deeper understanding of the professional development of students, designing best teaching practices, and evaluating curriculum outcomes and effectiveness. Although written essay methodology may tap into important competencies such as empathy, personal reflection, and professionalism, effective

assessment of RW can be challenging.[32] We obtained encouraging results in ease of application and interrater reliability with the REFLECT rubric.

We deliberately chose an analytic rubric evaluation paradigm because it promotes a theory-informed evaluation of RW and supports learning and metacognition ("the act of monitoring and regulating one's thinking").[59] The content validity of the resulting framework is sound given the iterative process of instrument development we employed. Additionally, the components of the rubric (levels of reflection, criteria defining each level, and outcomes) are grounded in the reflection literature. Rubric levels capture developmental progression from habitual action to critical reflection. Criteria for each level are based in theory and clearly explicated. Fundamental, core processes of the reflection construct, including presence, recognizing "disorienting" dilemmas, critical analysis of assumptions, attending to emotions, and deriving meaning from the exercise, are all assessed with the rubric. An additional distinguishing feature of the REFLECT is the two possible learning outcomes of critical reflection—new understanding (transformative learning) and/or confirming one's frames of reference or meaning structures (confirmatory learning). Both of these delineated outcomes have relevance for gaining insight to guide present and future behavior.

The REFLECT rubric is currently used within AMS for structured RW paradigms within the Doctoring course and family medicine clerkship, though we could envision its application for products of spontaneous in-class RW assignments as well. Written feedback about students' RW is currently standard within the Doctoring course and the family medicine clerkship curricula, and faculty can use the BEGAN[43] and/or REFLECT rubric tools to formulate this written feedback. Faculty assess overall "level" of reflection for research purposes, but students do not receive this information as feedback. Faculty do not assess quality of writing, in keeping with recent evidence of a lack of significant relationship between quality of writing and reflective content.[63]

Recently reported rubrics for "grading" RW exhibit similarities and differences with REFLECT. O'Sullivan and colleagues[50] used a similar statistical approach in the development of their reflection rubric, yet this rubric does not include various reflection domains. Kember and colleagues[52] introduce a "transitional" phase between each of four reflection categories, though these categories are not elaborated. McNeill and colleagues[51] offered a relatively cursory grading system without clear reference to theoretical underpinnings, and Devlin and colleagues'[53] rubric is described as a feedback rubric, based on one typology. In general, we propose that the REFLECT rubric achieves a more comprehensive assessment than these recent rubric design efforts, increasing its credibility within an increasing pool of instruments for a similar purpose.

The process of rubric development involved refining a pilot rubric through further immersion in the literature, application of the rubric to various datasets, and discussion until consensus was reached on specific criteria. The ICC scores at the present iteration demonstrate acceptable interrater reliability. Feasibility of scoring and acceptability to both raters and students are promising based on feedback from faculty development workshops and use in student instruction. We have received positive feedback about the REFLECT rubric for formative assessment of students' RW from faculty development workshops locally, nationally, and internationally. Further investigations, including feedback queries for students and faculty at AMS and multiinstitutional collaboration, are planned. The generalizability of the REFLECT rubric is potentially limited, given its development and testing within a single institution, but we are currently undertaking efforts to improve generalizability by using the rubric within various health professions curricula at multiple institutions. We hope to soon complete and distribute a rubric "codebook" containing illustrative examples of rubric application to narratives to enhance feasibility and promote generalizability. Future directions include assessments of longitudinal reflective narratives at various stages of the professional life cycle and analysis of variables such as writing prompt design on rubric results.

We note some limitations to our work. Although we provide ample content evidence, further support from studies with larger samples will be required to establish robust internal structure validity. In addition, we recommend testing this rubric against other validated reflection evaluation tools.

We propose the use of the REFLECT rubric as a developmental tool within medical education. It is designed to help guide our learners toward achieving greater breadth and depth of reflective capacity within the developmental trajectory of becoming reflective practitioners.[62] Such formative assessment and feedback may help foster expertise, promoting more effective self-evaluation[64] and self-directed learning,[65] as well as more thoughtful approaches to patient care.[66] Although our efforts at standardization have yielded promising psychometric properties, we recommend using the REFLECT rubric for formative rather than summative assessment. In contrast to "quantifying" or "grading," which may risk a lack of reflective authenticity by encouraging more formulaic approaches to reflection,[67] we envision the REFLECT rubric as providing qualitative anchors to help educators both assess development of reflective capacity dimensions and formulate constructive, individualized feedback to students' reflective narratives. At this time, we counter calls for rubrics to be used for quantitative and summative assessment of learners.[68] We urge caution in this regard because such use may prove counterproductive, potentially inhibiting the development of reflective capacity within interactive RW.

We plan to study the use of the REFLECT rubric to enhance the educational impact of RW feedback. We hope to examine both faculty's and students' perspectives on the effectiveness of rubric application for feedback formulation and promotion of reflective capacity. Given the current emphasis in medical education on measurable objectives, future research to determine the extent to which what is being measured in text is a valid indicator of reflective activity and how this predicts or correlates with professionalism issues is of interest. Further research is needed to explore concurrent validity through the use of reflection scales,[54] thematic analyses,[26] and/or measures of reflective practice outcomes. We propose the inclusion of our rubric paradigm within such an approach as a means of enhancing "state of the art" reflection

assessment. The study of medical schools that teach reflective practice has been suggested to determine whether they are more likely to produce physicians who are able to improve patient care.[69] Thus, the connection between medical education modalities such as RW-enhanced reflective capacity and quality clinical outcomes[69] warrants further investigation.

Conclusions

RW and its assessment may enhance our understanding of the professional development of physicians and help guide pedagogic initiatives aimed at supporting this process. Metacognitive skills including reflection as well as dimensions of professionalism in effective patient care (such as self-awareness, empathy, and insight), and physician well-being can potentially be fostered through RW exercises.[30] We are hopeful that longitudinal investigations of RW exercises using the REFLECT rubric will assist educators as well as learners as they reflect on the efficacy of such curriculum initiatives. In essence, the use of the REFLECT rubric as part of the assessment tool kit has the potential to broaden the question of "How do doctors think?"[70] to "How can we help doctors to think?" As interdisciplinary interest continues to grow in RW and the role of reflective capacity in health care practice, increased rigor in theory building, curricula implementation, assessment, and outcome research is called for in order to demonstrate authenticity and sustainability of such constructs. Such efforts can help realize the promise of RW as a vehicle for promoting reflective capacity and its role in building professional identity, as well as for guiding development of medical expertise, leading to the formation of mindful, compassionate, and competent practitioners.

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Appendix 1
The REFLECT (Reflection Evaluation For Learners' Enhanced Competencies Tool) Rubric

Criterion	Level				Axis II for critical reflection	
	Habitual action (Nonreflective)	Thoughtful action or introspection	Reflection	Critical reflection	Transformative reflection and learning	Confirmatory learning
Writing spectrum	Superficial descriptive writing approach (fact reporting, vague impressions) without reflection or introspection	Elaborated descriptive writing approach and impressions without reflection	Movement beyond reporting or descriptive writing to reflecting (i.e., attempting to understand, question, or analyze the event)	Exploration and critique of assumptions, values, beliefs, and/or biases, and the consequences of action (present and future)	Frames of reference or meaning structures are transformed. Requires critical reflection Integration of new learning into one's identity, informing future perceptions, emotions, attitudes, insights, meanings, and actions. Conveys a clear sense of a breakthrough	Frames of reference or meaning structures are confirmed. Requires critical reflection
Presence	Sense of writer being partially present	Sense of writer being partially present	Sense of writer being largely or fully present	Sense of writer being fully present		
Description of conflict or disorienting dilemma	No description of the disorienting dilemma, conflict, challenge, or issue of concern	Absent or weak description of the disorienting dilemma, conflict, challenge, or issue of concern	Description of the disorienting dilemma, conflict, challenge, or issue of concern	Full description of the disorienting dilemma, conflict, challenge, or issue of concern that includes multiple perspectives, exploring alternative explanations, and challenging assumptions		
Attending to emotions	Little or no recognition or attention to emotions	Recognition but no exploration or attention to emotions	Recognition, exploration, and attention to emotions	Recognition, exploration, attention to emotions, and gain of emotional insight		
Analysis and meaning making	No analysis or meaning making	Little or unclear analysis or meaning making	Some analysis and meaning making	Comprehensive analysis and meaning making		
Optional minor criterion: Attention to assignment (when relevant)	Poorly addresses the assignment question and does not provide a compelling rationale for choosing an alternative	Partial or unclear addressing of assignment question; does not provide a compelling rationale for choosing an alternative	Clearly answers the assignment question or, if relevant, provides a compelling rationale for choosing an alternative	Clearly answers the assignment question or, if relevant provides a compelling rationale for choosing an alternative		

Appendix 2
REFLECT (Reflection Evaluation for Learners' Enhanced Competencies Tool) Rubric Applied to a Reflective Narrative From a Third-Year Student in the Family Medicine Clerkship at Warren Alpert Medical School of Brown University, Providence, Rhode Island

Reflective Narrative

Writing Prompt

"Sick people need physicians who can understand their disease, treat their medical problems, and accompany them through their illness." Rita Charon, MD, PhD

Reflect on a patient care experience(s) in which you learned something new about the role of a primary care physician. Include a description of the experience(s) of the patient encounter. Some dynamics to consider:

- *Longitudinal physician–patient relationship*
- *Being there for the patient, alleviating or sharing the suffering, preserving our empathy over time*
- *Responsibility and service*

Were any of your assumptions challenged or validated? Did you gain any insights about yourself (cognitive and/or emotional)? How might your experience(s) change your practice of medicine?

Student Narrative

Sitting on a small green stool about a foot away from the patient, the doctor furrowed his brow. It had been a particularly long day, filled with patients asking for early refills on pain medications. Now, Donna* had come in having an asthma attack and we were trying to discuss her medications.

"I don't know the name of it," Donna said. "It's round and green."

"Are you sure it's green?"

"Oh yeah, I'm sure it's green. I can see it in my head right now. Round and green. Dark green."

"Are you sure it's not purple? And does it look like a flying saucer?"

The doctor was sure that his patient was on Advair which came in a dispenser that *could* be described as round, but was definitely *not* green. Donna was sitting on the exam table, her face and her eyes, teary since the attack, were a matching shade of red. The records indicated that Donna was taking Advair on a daily basis and Albuterol for acute attacks. Donna, however, was describing a green round device that didn't sound like anything that the doctor and I were familiar with.

"I take the green circle thing whenever I have an attack and that hasn't been for awhile. Then I take the other medicine every day."

"Hold on," said the doctor reaching for the door. He rustled through his closet outside the exam room for awhile and then returned, holding an Advair discus. "Do you take anything that looks like this?" he questioned.

"Ohhhhh, yeah!!! That's it, that's the thing. That's the thing I take whenever I have an attack."

"This … is the green circle?" I asked incredulously.

"Oh, well … I guess it's purple."

Oh, Jesus, I thought. This was ridiculous. This lady has no idea what medications she's taking and it sounds like she's been taking them completely wrong. There's no way the doctor didn't explain to her that Advair was for daily use and Albuterol was for acute attacks. And the discus was obviously *not* green! How did she not bring her medications list in with her, or better yet, the medications themselves so she could tell us how she took them?

My mentor discussed how to take her medications with her again and then scheduled a follow-up appointment with her so that they could make sure she understood.

"Wow, I really dropped the ball on that one," he said as we were walking back to his office.

"Excuse me?" I said, unable to hold in my disbelief. *He* dropped the ball? It was the patient who had dropped the ball! She had fairly serious asthma and didn't know what medications she was on!

"I obviously didn't communicate well with her the first time she was here. She really didn't know much about her medications."

"Well, didn't you tell her that the Advair was for daily use and then Albuterol for whenever she had an attack?"

"Of course, but obviously something I said didn't register with her. It's the job of a family physician to not only tell the patients what medications to take, but to make sure you're communicating in a way that is effective. To be honest, I don't think she's going to do a much better job taking the medications after today. It's hard to remember anything when 10 minutes before you couldn't breathe. That's why I'm having her come back so soon."

I thought about that patient on my drive home. I usually consider myself to be sensitive to the needs of my patients. I think I'm pretty darn good at talking to them, empathizing with them, and expressing myself in a way that they understand. But that day, after dealing with what felt like drug seeker after drug seeker, I had been frustrated and completely unable to relate to this woman. I don't know if I would have thought to have her return in a calmer state to go over her medications. I'm embarrassed to say that I might have written her off as someone who just didn't care.

From this experience I was reminded of just how complicated the job of a family physician truly is. Sure, many times the diagnosis isn't difficult, but there is so much more to family medicine than diagnosis. Communication is so crucial to doing the job right. While I may be a good communicator and try hard to empathize with patients, there is obviously so much left for me to learn. Even my mentor, who has been practicing for almost 25 years, is still improving. Patients are as individual as their diseases. If a physician is not continuously working on communicating more effectively, no matter how brilliant he/she may be, the patient is being done a disservice.

(Appendix continues)

Appendix 2, Continued

REFLECT Rubric Application Process

Writing Spectrum: The learner is reflecting on herself in the situation as well as the mentor, demonstrating Reflection on Action. There is clear "*movement beyond reporting or descriptive writing to reflecting, i.e., attempting to understand, question, or analyze the event*" for Reflection level. The narrative describes grappling with a more nuanced view of a family physician. The writer appears to be on the cusp of critical reflection–transformative learning level. The importance of "communication," for example, is identified and described, though some more elaborated concrete examples of how this could be realized and integrated in future practice might have been helpful, possibly contributing to more comprehensive meaning making. **Overall Level: Reflection.**

Individual Criteria

Presence: An authentic voice permeates the writing and there is a sense of bringing the full self to the situation. Thus, the narrative fully conveys "being there." The reader is brought into the exam room through provision of details and then into the writer's "head." The writer engages the reader in a powerful, meaningful way. **Level: Critical Reflection.**

Description of conflict or disorienting dilemma: The disorienting dilemma regarding perceived responsibility for such a medication mishap poignantly emerges ("unable to hold in my disbelief, *my mentor* dropped the ball? It was the patient who had dropped the ball!"). The potential conflicts within a developing professional identity (i.e., the "expert" not always getting it right, exuding competence while remaining open to improving with humility in approach, considering broader communications issues and issues of responsibility) are impressively identified, though the challenging of assumptions could be further elaborated. The dilemma of preserving clinical empathy within "dealing with what felt like drug seeker after drug seeker" is implied. **Level: Reflection.**

Attending to Emotions: "I had been frustrated" ("and completely unable to relate to this woman") is an opening phrase, a reflective trigger. Critical analysis might include (1) considering how feelings of frustration or anger toward patients could arise out of one's own vulnerability and/or (2) how self-awareness of emotional state can help maintain provision of quality care, potentially preventing/minimizing emotional distancing. "I'm embarrassed to say that I might have written her off as someone who just didn't care"—self-reflective and authentic revelation. There could be further consideration of (attending to) patient's emotional state (e.g., emotional upheaval, such as anxiety, in the clinical encounter potentially disrupting information processing). **Level: Reflection.**

Critical Analysis and Meaning Making: Salient themes include importance of individualized communication, humanizing of mentor, dedication to lifelong learning within the profession. Enhanced appreciation of "staying on one's toes," reflecting in action to ascertain patient "being on board" is described, and assumptions are beginning to be challenged. Though there is room for further elaboration of "communication" for more comprehensive meaning making, the student has introduced several notable elements and appears to have examined the dilemma on several levels. **Level: Reflection–Critical Reflection.**

* Patient's name has been changed.