R2C2 in Action: Testing an Evidence-Based Model to Facilitate Feedback and Coaching in Residency

Joan Sargeant, PhD
Karen Mann, PhD
Sarah Manos, MD, FRCP(C)
Ian Epstein, MD, FRCPC
Andrew Warren, MD, MSc, FRCPC
Cindy Shearer, PhD
Michelle Boudreau, MA

ABSTRACT

Background Feedback is increasingly seen as a collaborative conversation between supervisors and learners, where learners are actively and reflectively engaged with feedback and use it to improve. Based on this, and through earlier research, we developed an evidence- and theory-informed, 4-phase model for facilitating feedback and practice improvement—the R2C2 model (relationship, reaction, content, coaching).

Objective Our goal was to explore the utility and acceptability of the R2C2 model in residency education, specifically for engaging residents in their feedback and in using it to improve, as well as the factors influencing its use.

Methods This qualitative study used the principles of design research. We recruited residents and their supervisors in 2 programs, internal medicine and pediatrics. We prepared supervisors to use the R2C2 model during their regular midrotation and/or end-of-rotation feedback sessions with participating residents to discuss their progress and assessment reports. We conducted debriefing interviews with supervisors and residents after each session. We analyzed transcripts as a team using template and content analysis.

Results Of 61 residents, 7 residents (11%) participated with their supervisors (n = 5). Schedules and sensitivity to feedback prevented broader enrollment. Supervisors found the structured R2C2 format useful. Residents and supervisors reported that the coaching phase was novel and helpful, and that the R2C2 model engaged both groups in collaborative, reflective, goal-oriented feedback discussions.

Conclusions Participants found that using the R2C2 model enabled meaningful feedback conversations, identification of goals for improvement, and development of strategies to meet those goals.

Introduction

Understanding of feedback continues to evolve, and it is increasingly being seen as a collaborative conversation between a supervisor and a learner, in which learners are actively engaged with their feedback and use it to improve.[1,2] Current initiatives, such as programmatic assessment[3] and competency-based medical education,[4–8] highlight the need for frequent observation, feedback, and coaching to guide progression from one level of competence to the next.[9,10]

Research[11–14] demonstrates that the provision of feedback in clinical settings often lacks the features known to support and guide progressive learner competence. Supervisors report reluctance to provide constructive feedback and limited opportunities to observe and assess their learners, while residents report receiving infrequent and nonspecific feedback that lacks direction for improvement. More recently, Telio et al[15] explored the influence of the supervisor-learner relationship on assessment and learning. They proposed that effective learning, assessment, and feedback interactions are built on a trusting educational alliance, similar to the therapeutic patient-physician alliance, demonstrating shared respect and goals and mutual roles.

Building on this foundation, we undertook research to address identified challenges and to further understand and promote meaningful feedback. We used an evidence- and theory-informed, 4-phase model for facilitating feedback and coaching previously developed through research with physicians.[16] The model is founded in 3 theoretical perspectives: humanism and person-centered approaches,[17] informed or guided self-assessment,[18] and the science of behavioral change.[19] The 4 phases include (1) rapport and relationship building; (2) exploring reactions to feedback; (3) exploring feedback content; and (4) coaching for change. The model is referred to as R2C2 (relationship, reaction, content, coaching). A learning change plan can be used to guide the coaching phase.[20] To existing models of feedback, R2C2 adds several features: establishing rapport; focusing on creation of a feedback conversation rather than a 1-way delivery; actively engaging learners in their performance data and in reflection; and enabling supervisors to coach. We use a definition of coaching from education: "a 1-to-1 conversation

DOI: http://dx.doi.org/10.4300/JGME-D-16-00398.1

focused on the enhancement of learning and development through increasing self-awareness and a sense of personal responsibility, where the coach facilitates the self-directed learning of the coachee through questioning, active listening, and appropriate challenge in a supportive and encouraging climate."[21(p17)]

The goal of this study was to explore the use of the R2C2 model in residency education. Our specific purpose was to determine the model's utility and acceptability for engaging residents in their feedback, and in using it to plan for improvement.

What was known and gap
Feedback is increasingly viewed as an active conversation with learners, yet models to facilitate this have not been widely tested.

What is new
A small, qualitative study of internal medicine and pediatrics residents tested the R2C2 model (relationship, reaction, content, coaching).

Limitations
Very small sample, limited specialties, and study conducted at a single institution limit generalizability.

Bottom line
Residents and supervisors reported the R2C2 model engaged them in collaborative, reflective, goal-oriented discussions.

Methods

Design

This was a qualitative study using the principles of design research, a type of formative research to test and refine educational designs based on theoretical principles derived from prior research.[22] It provides for study in the real world, with the goal of formatively and iteratively testing and refining an intervention.

Recruitment

At our university, we recruited residents and their supervisors in 2 programs—internal medicine and pediatrics—by e-mail invitation and by attending 1 of the regularly occurring meetings for each group to explain the study. Study settings included a clinical teaching unit at an adult and a pediatric tertiary care site.

Supervisor Preparation

Supervisors participated in either a 1-hour workshop or in a 1-on-1 training session with a member of the research team. The workshop included a brief orientation to the evidence and theory behind the model, explanation of the model phases, and practice using the model. We also provided a trifold brochure identifying each phase with helpful prompts,[20] and encouraged its use during feedback sessions.

Data Collection

Supervisors used the R2C2 model during their regular midrotation and/or end-of-rotation feedback sessions with participating residents, in which they discussed the resident's midrotation or final in-training evaluation report, the assessment report used in their clinical rotations and completed by the supervisor. We conducted debriefing interviews using semistructured, open questions separately with supervisors and residents after each feedback session. Questions addressed their experiences with and reactions to the overall model, each phase, and the perceived benefits and limitations of the model. We audiotaped and transcribed feedback and debrief sessions and anonymized transcripts.

The study was approved by the Research Ethics Board of Dalhousie University, Halifax, Nova Scotia, Canada.

Analysis

We used template analysis to examine the feedback session transcripts, specifically to determine the use of the model overall and each phase, and to identify helpful phrases used in each phase.[23,24] Template analysis is appropriate when using an a priori coding structure to guide the analysis. The 4 stages of the R2C2 model comprised our template, and through analysis, we identified in each feedback interview the extent to which each phase was used, particular phrases used by supervisors, and residents' responses to them. We used thematic analysis for the debrief transcripts to identify strengths and limitations of the model and factors that influenced its use.[25]

To ensure rigor, we conducted the analysis as a team, dividing into pairs to first analyze transcripts for each resident-supervisor dyad. We then met as a team to compare findings across dyads, and finally, we compiled and compared summaries across transcripts by theme (eg, R2C2 phase, model strengths, limitations).

Results

There were 61 residents in the 2 programs. Seven (11%) participated with their supervisors (n = 5). For 3 reasons, we experienced more challenges than anticipated in recruiting both residents and supervisors. The first was the sensitive nature of feedback interviews, which led to reluctance from both residents and supervisors to have their interviews audiotaped. The second was the need to pair residents who volunteered with their supervisors. If the

respective supervisor did not volunteer, that resident was not able to participate in the study. The third challenge also arose from the pairing of residents with their respective supervisors, relating to clinical schedules. The respective supervisor's schedule did not always match that of his or her paired resident, and this limited participation.

Of the residents who participated, 4 were postgraduate year 1 (PGY-1), 1 was PGY-2, and 2 were PGY-3. Of the 5 supervisors, 1 had been in practice for 26 years, 2 for 14 years, and 2 for less than 10 years. The supervisor-resident dyads rotated together for an average of 7 days during the 4-week rotation. Feedback sessions averaged about 20 minutes, and debrief sessions averaged about 15 minutes.

Overall, the small group of participating supervisors and residents expressed general support for the R2C2 model and reported using all 4 phases. The BOX provides sample phrases used in each phase. Note that these are mainly open phrases or questions seeking residents' views and promoting reflection. Residents appeared to respond positively to the open communication. In the following paragraphs, we describe additional strategies used in each phase and provide representative quotes. We identify the quotes by participant using a coding number preceded by an *S* for supervisor and an *R* for resident.

Phase 1: Rapport and Relationship Building

The goal of Phase 1 was to engage the resident and build the relationship and trust. While several supervisors reported that they knew the residents well, most used specific phrases to further build the relationship. They appeared to use 3 relationship-building strategies. The first, as reported in the BOX, was to engage the resident in the feedback conversation and learn his or her perspectives about progress and past experience. The second was to confirm and support the resident's perspectives, using phrases like "I still find that challenging" and "I find the more you do, the more comfortable you get" (S01). The third was providing positive feedback: "You did very well with time management" (S02) and "In terms of communication . . . I think you really have a nice way with families" (S04).

Phase 2: Exploring Reactions to Feedback

The purpose of Phase 2 was to explore residents' reactions to their assessment report and feedback. Questions encouraged residents to reflect on and compare how they thought they were doing and their feedback. For example, "Was there anything in *this* evaluation that surprised you or were you pretty much expecting that sort of feedback?" (S03)

BOX Sample Facilitative Phrases Used by Supervisors in Each Phase of the R2C2 Model

Phase 1: Rapport and Relationship Building
- "Tell me about feedback you've received in your last 3 months."
- "What are some things that people have said were your strengths/you could improve on?"
- "What kind of settings/rotations/patients have you enjoyed?"
- "Do you see some trends or some things that come up consistently in your feedback?"
- "What were you hoping to gain in this rotation?"
- "What are some strengths you think you bring?"

Phase 2: Exploring Reactions to Feedback
- "So was there anything in *this* evaluation that surprised you, or were you pretty much expecting that sort of feedback?"
- "What's your initial reaction to this?"
- "So what do you think? Like what do you think about this evaluation? Is it fair? Is it what you expected?"
- "So in this stage here, I just want us to reflect on what I just gave you in terms of the feedback. Were there any surprises to what I just told you in terms of your strengths? Were you surprised by any of the strengths that I mentioned or any of the areas to work on?"
- "Is this consistent with some of your other feedback?"

Phase 3: Exploring Feedback Content
- ". . . Anything that you are unclear about or want more clarification about"
- "So was there anything I said that didn't make sense or was unclear?"
- "Anything that sort of struck you?"
- "In terms of recognizing a pattern, you had mentioned that you had been getting fairly consistent feedback with regards to your communication . . ."
- "So what do you think made it go smoother than you thought it was going to?"

Phase 4: Coaching for Change
- "Was there anything that you found difficult, would do differently, or want to work on prior to or during another rotation?"
- "What are you hoping to gain from your first stint as junior on the pediatric medical unit? What are some of your identified learning objectives that you wanted to gain?
- "But in terms of moving toward next week for rounds and the week after, were there any changes that you were hoping to make personally?"
- "What are you going to do to make sure . . . to reach that goal?
- "How are you going to track those changes or how are you going to know that you're, in the next 6 months, building that knowledge?"

Through the open questions, supervisors learned about the residents' perspectives. For example, 1 resident reported that being in the particular clinical area "was very overwhelming because we had a lot of very complex patients" (R07), which led to further exploration by the supervisor.

Phase 3: Exploring Feedback Content

In Phase 3, supervisors reviewed and confirmed the specific feedback in the report with residents to ensure that they understood it. In our study, supervisors also used this phase to provide more complete feedback and confirm their assessments with those of the resident:

> Supervisor: *I guess the only thing in terms of manager role that I would say is that you probably are more inclined to investigate more than I would. I'm a little bit more of a "watch and wait" person. I've been trying to think about costs of investigations and potential consequences to patients, and think, "Could we wait on this and see?" So that would be my only suggestion around that, is to just think about each time, how will this change my management today? This test, if we don't do it today, could we do it tomorrow or potentially not need it tomorrow if the patient is getting better?* (S02)

Phase 4: Coaching for Change

The purpose of Phase 4 was for the supervisor and resident together to identify at least 1 gap in performance and develop a plan to address it. They identified goals and ways to meet them (eg, time management, teaching junior learners, patient and family communication). Phases 3 and 4 often overlapped. Supervisors and residents identified Phase 4 as the most useful phase because it required planning for specific action. Supervisors used facilitative coaching approaches to promote reflection (even for students doing very well) and to guide goal setting:

> Supervisor: . . . *I think things are running actually pretty smooth this week. And it's helped that the team has slowed down a bit. But in terms of moving toward next week for rounds and the week after, were there any changes that you were hoping to make?*
>
> Resident: *Yes. Probably I would focus on finding the words to tell the parents. Because I find myself sometimes not telling them the problem . . . and then . . . I tend to go to the details, the numbers, which is the thing I need to work on . . .*
>
> Supervisor: *Yes.*
>
> Resident: *Which is using clear, simple language.*
>
> Supervisor: *Yes . . . that's a good point. Because you tell them things that you're focused on.* (S01, R02)

Two supervisors in particular also provided coaching at a higher or meta level, encouraging the residents to plan for the longer term, especially in managing their learning and seeking feedback.

Responses to R2C2 Model as a Whole

The small group of participating residents and supervisors found the R2C2 model helpful in engaging residents in discussions about their assessment, feedback, and goals. Supervisors valued having a structure for feedback conversations, and also noted that the 4 phases could be used iteratively. They appreciated the opportunity to coach and specifically to engage the resident in conversation, promote reflection, identify a goal, and develop a plan. They found the model useful when working with residents who were doing well as it allowed for identifying areas for enhancement that might otherwise have been overlooked. One supervisor observed: "I think 1 of the huge, really positive things out of this is the coaching for change; that's a great addition because it suddenly means you're working with the person, not against" (S06).

Residents agreed that the model enabled a helpful and comfortable conversation. They especially appreciated working collaboratively with the supervisor. For example, "I guess the fact that it was clear that the session is aimed at not just patting each other on the back and high-fiving, but it *really* was asking you to find things that didn't work" (R06); and ". . . she just helped me to better put it into context and figure out what I could do to actually make it better" (R07).

Both supervisors and residents discussed challenges in using R2C2. They identified the need for each to review the assessment report ahead of time to prepare for the feedback session, yet the assessment technology did not allow residents to view their reports beforehand. Supervisors noted that they needed to make time to learn to use the R2C2 model. As with any new skill, though, repeated use made it easier, and the trifold brochure was a helpful guide. Supervisors also noted that participating residents were generally doing well, and that it could be more challenging to use the model with residents who were struggling.

Supervisors and residents identified system factors, such as short clinical rotations and supervisors having

multiple and varied learners, which limited their ability to have meaningful feedback interactions with residents. Finding time was always challenging, as 1 supervisor said, "*Had* I not been involved with this study, I think it may have been tempting to do suboptimal feedback just to get it done and say [to the resident] 'Okay . . . let's take 3 minutes, you're doing well, the rotation is good, I don't have any concerns'" (S02).

Discussion

This qualitative study of a small group of supervisors and residents used the R2C2 feedback model. While responses point to favorable initial responses, the small numbers require cautious consideration of results and their implications.

Perhaps the most compelling finding was residents' and supervisors' consistency in reporting being engaged in the feedback discussions. In general, they worked collaboratively to review residents' performance and identify goals for improvement. They described Phase 4, coaching, as the most helpful and novel phase as it enabled productive collaborative work. Such findings are consistent with earlier work that supports collaborative learning relationships,[15] with the potential for reducing supervisor and resident anxiety in providing and receiving feedback.[12,15]

Both residents and supervisors observed that using a reflective model like R2C2 with a defined coaching phase prompted them to think differently about providing and receiving feedback. Framing feedback conversations as opportunities to coach for improvement seemed to shine a positive light on feedback. This approach is consistent with current competency-focused models, such as competency-based medical education and programmatic assessment,[3,7,8] which emphasize the importance of regularly engaging learners in feedback conversations and coaching.[26,27] With further study, these results may contribute to our understanding of specific strategies to bring about a positive shift in the feedback culture.[11,15,28–30]

There are several limitations to this study. In addition to the small sample size, only 2 residency programs in 1 site were included. Our findings are preliminary: an extensive study, involving more sites and diverse programs with larger numbers of supervisors and residents, is needed to explore and confirm our findings. Using mixed methods studies with both qualitative approaches to understand how the model works and quantitative measures to determine its impact would be particularly useful. An additional limitation is that supervisors reported that most participating residents were doing quite well, and there was no opportunity to use the model with struggling residents. More will need to be learned about its effectiveness with struggling residents.

The next step in this body of research is to conduct a multi-site study to explore its utility and impact more broadly and to explore the findings reported here more fully. Practically, we also see the need to consider ways to design residency education programs that will remove barriers to developing educational alliances between supervisors and residents and support ongoing feedback conversations and coaching.

Conclusion

Supervisors and residents reported that using the R2C2 model enabled meaningful, collaborative, goal-oriented feedback discussions. Results now need to be confirmed and further explored through larger studies.

References

1. Boud D, Molloy E. What is the problem with feedback? In: Boud D, Molloy E, eds. *Feedback in Higher and Professional Education: Understanding It and Doing It Well*. Oxon, England: Routledge; 2013:1–10.
2. Molloy E, Boud D. Changing conceptions of feedback. In: Boud D, Molloy E, eds. *Feedback in Higher and Professional Education: Understanding It and Doing It Well*. Oxon, England: Routledge; 2013:11–33.
3. van der Vleuten CP, Schuwirth LW, Driessen EW, et al. A model for programmatic assessment fit for purpose. *Med Teach*. 2012;34(3):205–214.
4. Accreditation Council for Graduate Medical Education. ACGME website. https://www.acgme.org. Accessed January 17, 2017.
5. Royal College of Physicians and Surgeons of Canada. RCPSC website. http://www.royalcollege.ca. Accessed January 17, 2017.
6. The College of Family Physicians of Canada. CFPC website. http://cfpc.ca/Home. Accessed January 17, 2017.
7. Frank JR, Snell LS, Cate OT, et al. Competency-based medical education: theory to practice. *Med Teach*. 2010;32(8):638–645.
8. Holmboe ES, Sherbino J, Long DM, et al. The role of assessment in competency-based medical education. *Med Teach*. 2010;32(8):676–682.
9. Ericsson KA. Deliberate practice and acquisition of expert performance: a general overview. *Acad Emerg Med*. 2008;15(11):988–994.
10. Dreyfus SE. The five-stage model of adult skill acquisition. *Bull Sci Technol Soc*. 2004;24(3):177–181.

http://www.bumc.bu.edu/facdev-medicine/files/2012/03/Dreyfus-skill-level.pdf. Accessed January 17, 2017.
11. Driessen E, Scheele F. What is wrong with assessment in postgraduate training? Lessons from clinical practice and educational research. *Med Teach*. 2013;35(7):569–574.
12. Dudek NL, Marks MB, Regehr G. Failure to fail: the perspectives of clinical supervisors. *Acad Med*. 2005;80(suppl 10):84–87.
13. Delva D, Sargeant J, Miller S, et al. Encouraging residents to seek feedback. *Med Teach*. 2013;35(12):e1625–e1631.
14. Sargeant J, Eva KW, Armson H, et al. Features of assessment learners use to make informed self-assessments of clinical performance. *Med Educ*. 2011;45(6):636–647.
15. Telio S, Ajjawi R, Regehr G. The "educational alliance" as a framework for reconceptualizing feedback in medical education. *Acad Med*. 2015;90(5):609–614.
16. Sargeant J, Lockyer J, Mann K, et al. Facilitated reflective performance feedback: developing an evidence- and theory-based model that builds relationship, explores reactions and content, and coaches for performance change (R2C2). *Acad Med*. 2015;90(12):1698–1706.
17. Rogers CR. *Freedom to Learn: A View of What Education Might Become*. Columbus, OH: CE Merrill Publishing Company; 1969.
18. Sargeant J, Armson H, Cheluk B, et al. The processes and dimensions of informed self-assessment: a conceptual model. *Acad Med*. 2010;85(7):1212–1220.
19. Cane J, O'Connor D, Michie S. Validation of the theoretical domains framework for use in behaviour change and implementation research. *Implement Sci*. 2012;7:37.
20. Sargeant J, Armson H, Driessen E, et al. Evidence-informed facilitated feedback: the R2C2 feedback model. *MedEdPORTAL Publ*. 2016;12:10387. http://dx.doi.org/10.15766/mep_2374-8265.10387. Accessed January 17, 2017.
21. van Nieuwerburgh C, ed. *Coaching in Education: Getting Better Results for Students, Educators, and Parents*. London, England: Karnac Books; 2012:17.
22. Collins A, Joseph D, Bielaczyc K. Design research: theoretical and methodological issues. *J Learn Sci*. 2004;13(1):15–42.
23. King N, Horrocks C. *Interviews in Qualitative Research*. London, England: SAGE Publications Ltd; 2010.
24. King N. Template analysis. In: Symon G, Cassell C, eds. *Qualitative Methods and Analysis in Organizational Research: A Practical Guide*. Thousand Oaks, CA: SAGE Publications Ltd; 1998:118–134.
25. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77–101. http://eprints.uwe.ac.uk/11735/2/thematic_analysis_revised. Accessed January 17, 2017.
26. Gawande A. Personal best: top athletes and singers have coaches. Should you? *The New Yorker*. October 3, 2011. http://www.newyorker.com/reporting/2011/10/03/111003fa_fact_gawande. Accessed January 17, 2017.
27. Heen S, Stone D. Find the coaching in criticism. *Harv Bus Rev*. 2014;Jan–Feb:108–111. https://hbr.org/2014/01/find-the-coaching-in-criticism. Accessed January 17, 2017.
28. Lefroy J, Watling C, Teunissen PW, et al. Guidelines: the do's, don'ts, and don't knows of feedback for clinical education. *Perspect Med Educ*. 2015;4(6):284–299.
29. Archer JC. State of the science in health professional education: effective feedback. *Med Educ*. 2010;44(1):101–108.
30. Brehaut JC, Colquhoun HL, Eva KW, et al. Practice feedback interventions: 15 suggestions for optimizing effectiveness. *Ann Intern Med*. 2016;164(6):435–441.

All authors are with the Faculty of Medicine, Dalhousie University. **Joan Sargeant, PhD,** is Professor and Head, Division of Medical Education; **Karen Mann,† PhD,** was Professor Emeritus, Division of Medical Education; **Sarah Manos, MD, FRCP(C),** is Assistant Professor, Department of Pediatrics, and Postgraduate Medical Education Program Director, Pediatrics; **Ian Epstein, MD, FRCPC,** is Assistant Professor, Department of Medicine, and Postgraduate Medical Education Program Director, Internal Medicine; **Andrew Warren, MD, MSc, FRCPC,** is Associate Professor, Department of Pediatrics, and Associate Dean, Postgraduate Medical Education; **Cindy Shearer, PhD,** is Evaluation Specialist, Postgraduate Medical Education; and **Michelle Boudreau, MA,** is Evaluation Specialist, Continuing Professional Development.

Funding: The authors report no external funding source for this study.

Conflict of interest: The authors declare they have no competing interests.

Corresponding author: Joan Sargeant, PhD, Dalhousie University, Division of Medical Education, Faculty of Medicine, PO Box 15000, Halifax, Nova Scotia B3H 4H7 Canada, 902.494.1995, joan.sargeant@dal.ca

Received July 5, 2016; revision received November 2, 2016; accepted November 25, 2016.

†Died November 28, 2016.