A Resident-as-Teacher Curriculum for Senior Residents Leading Morning Report: A Learner-Centered Approach Through Targeted Faculty Mentoring

Ariel Frey-Vogel, MD, MAT*

*Corresponding author: afrey@partners.org

Abstract

Introduction: Senior resident-led morning report (MR) occurs in many residency programs, but residents rarely receive training on how to facilitate MR or feedback on their facilitation. I created and implemented a required 2-week resident-as-teacher curriculum pairing senior residents with faculty mentors. Methods: The curriculum allowed individualization to each specific resident's needs. The faculty mentor helped the resident set curricular goals, observed and provided feedback on resident facilitation of four MRs and one noontime conference, and reviewed adult learning principles with the resident. The curriculum guided the faculty and resident pair through leading MR and applied evidence to guide resident teaching. I surveyed resident teachers, the residents who attend MR, and faculty mentors to determine the curriculum's perceived educational impact. Results: Over the 2010-2016 academic years, 124 senior residents participated. Senior residents self-reported significantly more confidence, interest, and preparedness for teaching after the curriculum. Trainees attending MR rated the quality of equal value after curriculum implementation, and responded that senior residents leading MR were more likely to give clear explanations, teach at an appropriate level, and were less likely to run out of time. Faculty mentors enjoyed participating and found the one-on-one mentorship relationship important for their satisfaction with the experience. Discussion: Outcome data suggested that the mentorship relationship was the most important element of the curriculum and that flexibility was key to allowing individual needs to be met. The intervention is applicable to other residency programs and specialties, and faculty mentors are not required to have a medical education background.

Keywords
Resident-as-Teacher, Adult Learning Principles, Morning Report, Case Conference, Mentoring/Coaching, Case-Based Learning, Clinical Teaching/Bedside Teaching, Self-Assessment

Educational Objectives

By the end of this mentored 2-week resident-as-teacher curriculum, pediatric senior residents will be able to:

1. Choose a clinical case for discussion from the cases that are currently admitted on pediatric wards to focus on a specific area of patient work-up or management.
2. Write three objectives for the case-based discussion.
3. Lead a case-based interactive discussion which focuses on the stated objectives and incorporates evidence-based principles of teaching adult learners.
4. Evaluate whether their objectives have been met.

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programs found that only 58% of programs had case-based teaching as a major emphasis of their resident-as-teacher curricula.³

Three published curricula addressed resident teaching in the MR setting.⁴⁻⁶ The first gave senior residents reading materials on how to improve teaching for groups, followed by a workshop on how to effectively lead an MR and key elements of adult learning principles. The residents then led an MR and were given feedback by faculty.⁴ The second curriculum gave residents guidelines and a template for leading MRs; after teaching, a chief resident gave the resident feedback.⁵ The third was a workshop on how to give a case-based presentation and allowed for practice teaching, but did not give residents feedback on real teaching sessions.⁶ All these curricula assist in improving the educational experience of MR and the presenting resident’s skill set. However, none had activities tailored to the specific resident’s goals, strengths, or challenges when teaching large groups. Additionally, many residency programs nationally offer resident-as-teacher electives in which upper-level residents may choose to have an individualized mentored experience to improve their teaching;⁷⁻⁹ our program wanted all senior residents to have this experience. Through pairing residents with faculty mentors and allowing for a flexible, individualized approach, our resident-as-teacher curriculum granted all senior residents the opportunity to be observed leading MR, receive feedback on their teaching, and apply evidence-based principles of teaching adult learners.

**Methods**

**MR Prior to the Curriculum**

Prior to curriculum initiation, pediatric senior residents were assigned one to two, 2-week ward teaching rotations in which they led four, 1-hour case-based MRs based on a case currently on the pediatric wards. Medical students, residents, and faculty attended these conferences. The facilitating resident was told to emphasize their thought processes, but was given no other guidelines or feedback afterwards. Residency program leadership felt the conferences were not meeting their potential, either as educational experiences or for residents to improve their teaching.

**Resident Needs Assessment**

To determine if the program’s concern about resident facilitation of MR was shared by learners, a resident needs assessment survey was sent to all junior and senior residents (22 of 40, or 55%, completed the survey). When asked how they learned to teach, 95% of respondents said they learned from observing others teaching them. Only 43% said they had been formally observed and/or received feedback on their teaching, while 63% thought being observed would be helpful. No residents reported having been taught how to lead a case conference. When asked about potential changes to the rotation, residents rated highest having had an attending mentor help them prior to teaching and give them feedback afterwards.

**Faculty Working Group**

Next, a pediatric faculty working group from varying specialties was formed. The working group advised clarifying the expectations of MR and defined the purpose of MR as the development of resident thought processes necessary to reason through specific elements of clinical cases. The new structure proposed having the resident leading the case:

- Clearly outline the objectives for the conference.
- Focus each conference on one element of an active clinical case.
- Facilitate the case rather than try to be the content expert.
- Actively involve all members of the audience while maintaining control of the direction of the conference.

**Curriculum Sessions**

To meet the needs of the residency program, residents, and faculty, a 2-week resident-as-teacher curriculum was developed to be implemented during the ward teaching rotation. The curriculum had six mentor/mentee sessions and each session contained a feedback component and/or an individualized component. The curricular materials included a faculty mentor guide (Appendix A) and a resident guide (Appendix B). The curriculum goals and objectives (Appendices A & B, p. 2) documented the overall curricular goals and objectives, and a sample schedule (Appendices A & B, p. 4) for the curriculum was included. For each session, the curriculum included a session lesson plan with objectives, handouts, and a reference list. These references can also serve as supplemental reading material for residents interested in engaging in self-directed learning. In the faculty mentor guide, possible answers are provided for all the worksheets. The six sessions were as follows:

**Session 1—Introduction and expectations:** In this session (Appendices A & B, p. 5) the mentor/mentee pair met in person or by phone prior to the resident’s first teaching session. The session goals were for the pair to discuss expectations for the mentoring relationship and for the resident to determine three teaching areas they would like to improve and on which the mentor should focus when observing and giving feedback.
Sessions 2 and 4—Topic of resident choice: There were two of these sessions (Appendix A, p. 13, 24-53 and Appendix B, p. 11, 22-42), one after the first MR and one after the third. In the first portion of the session, the faculty mentor reviewed their observations of, and feedback on, the resident’s teaching. The resident then chose a topic to discuss from a list provided and the faculty led a discussion with the resident on specific ways to apply evidence and best practices for teaching adults the topic. The topics were: (1) choosing a case and writing objectives, (2) preparing for a conference in 2 hours or less, (3) making the best use of your 45-minute conference, (4) resource utilization, (5) managing difficult audience members, (6) enhancing audience participation, (7) facilitating a cold case, (8) concluding the conference, and (9) evaluating the success of your conference.

Session 3—Preparing for a noon conference: This session (Appendix A, p. 14 and Appendix B, p. 13) occurred after the resident’s second MR. In the first portion of the session, the faculty mentor reviewed their observations of, and feedback on, the resident’s teaching. The pair then discussed the resident’s plans for the noon conference. The noon conference could be on any topic and in any format of the resident’s choosing. Example topics included: (1) areas of personal research, (2) cases they have seen abroad, or (3) journal clubs. This session could be a time for brainstorming ideas or for going over an outline or presentation, depending where the resident was in their planning process.

Session 5—Reflections: This session (Appendix A, p. 17 and Appendix B, p. 16) occurred after the resident’s noon conference. The faculty mentor provided feedback to the resident on their noon conference that had just been presented.

Session 6—Wrap up and moving forward: This session (Appendix A, p.20 and Appendix B, p.19) occurred after the resident’s fourth and last MR. In the first portion of the session, the faculty mentor reviewed their observations of, and feedback on, the resident’s teaching. Then, the resident and faculty mentor reflected on their time together, gave each other feedback on the mentorship relationship, and created goals for the resident as an educator moving forward.

Faculty Development
The residency administrative team identified 13 faculty known for their teaching and asked them to participate as mentors for two 2-week resident-as-teacher curriculum sessions each. All faculty met with the curriculum director and reviewed the goals, expectations, and structure of the curriculum, going through the faculty mentor guide (Appendix A) so that all of the faculty understood each of the sessions. The curriculum director led annual faculty development workshops to onboard new faculty and reflected on best practices with returning faculty.

Curriculum Assessment
Prior to, and after, the completion of the curriculum the senior residents were each sent a survey (Appendix C) about their perception of, and preparedness for, leading an MR case conference. This was done to determine resident perceptions of whether the curricular objectives were met. The before and after responses were compared using a two-tailed unpaired t test on Microsoft Excel version 15.31 where p values of <.05 were considered significant. The postcurriculum survey also included quantitative questions about the value of the curriculum and open-ended qualitative questions about the most positive and negative curricular elements. The quantitative questions were analyzed using descriptive statistics. For the qualitative data, the responses to the most positive elements of the curriculum were grouped into themes and entered into WordItOut.com to produce a visual representation of the major themes. The responses to the negative elements of the curriculum were also grouped into themes but not put into a word cloud as there were fewer themes represented.

Resident survey: All residents were surveyed on their perceptions of attending an MR case conference prior to curriculum initiation. It should be noted that the precurricular survey was sent out in October 2010, and the new curriculum was put in place July 2010. Junior and senior residents were asked to comment retrospectively on conferences from the prior academic year to obtain precurricular data. This determined whether resident participants felt that curricular objectives were previously met. This survey was sent out again after the first year of the curriculum to get postcurricular data; the pre- and postresponses were compared using a two-tailed unpaired t test on Microsoft Excel version 15.31 where p values of <.05 were considered significant.

Faculty mentor survey: In the 2013-2014 academic year, faculty mentors were surveyed on their perceptions of the curriculum. While this data did not align with the curricular objectives, it was collected to determine how the curriculum was implemented and how satisfied the faculty were to help determine sustainability and faculty retention. Faculty were asked the following quantitative questions: (1) to what degree they enjoyed their role as faculty mentors, (2) the value of the covered topics, (3) how much time they spent with their resident for each session, and (4) how frequently they completed the curricular activities with their resident. These were analyzed using
descriptive statistics. They were also asked qualitative questions about the most enjoyable elements of their role in the curriculum and areas for improvement. Qualitative responses were grouped into themes.

The assessment of this curriculum was deemed exempt by Partners Human Research Committee, the Institutional Review Board of Partners HealthCare.

Results

Participating Senior Resident Survey

Over the 2010-2016 academic years, 124 senior residents participated in this curriculum. Senior residents were surveyed before and after participation and their responses were pooled. Overall, 68% (n = 72) responded to the precurricular survey and 46% (n = 57) responded to the postcurricular survey. Senior resident perspectives of their teaching improved significantly in every area surveyed (Figure 1) as did their reported preparedness for engaging in various teaching activities (Figure 2).

When asked how helpful various elements of the curriculum were, the three highest rated elements on a 7-point Likert scale (1 = low, 7 = high) were when the faculty mentor observed (M = 6.3), supported from the audience (M = 6.2), and gave feedback (M = 6.2). See Figure 3 for the ratings of all seven elements.

When asked about the most positive element of the curriculum, residents most often named both increasing confidence and comfort in giving case conferences, and feedback from faculty (Figure 4). When asked what should be changed, there were several comments stating that nothing needed to be changed, but the constructive feedback reflected more on the rotation during which the curriculum was implemented than on the curriculum itself. The curriculum was implemented during a rotation in which there were clinical responsibilities and the residents felt there was too much clinical coverage required during the rotation, which led to less time to focus on the curriculum itself. They also would have liked more in-rotation teaching opportunities.

Resident Survey

For our survey of the resident body pre- and postcurriculum implementation, 60% (n = 24) of junior and senior residents responded to the precurricular survey. After implementation, 29% (n = 70) of all residents responded. No significant differences pre- and postcurriculum implementation were

Figure 1. Senior resident self-perceptions about teaching before (n = 72) and after (n = 57) participating in the resident-as-teacher curriculum. Residents rated themselves on a 7-point Likert scale (1 = low, 7 = high). *p < .001, **p < .05; error bars indicate one standard deviation from the mean.
Consider the needs of adult learners

Write objectives

Write an outline

Create safe atmosphere

Appropriate level of discussion

Average Resident Ratings (1-7)

Figure 2. Senior resident self-perceptions of their preparedness for teaching before (n = 72) and after (n = 57) participating in the resident-as-teacher curriculum. Residents rated themselves on a 7-point Likert scale (1 = low, 7 = high). *p < .001; error bars indicate one standard deviation from the mean.

found in how often MR case conferences fill the residency’s stated goals for case conference. Residents responded that senior resident performance had significantly improved in three areas: (1) giving a clear presentation (M = 5.3 vs. M = 5.9, p = .02), teaching at an appropriate level (M = 5.4 vs. M = 6.2, p = .01), and concluding the conference within the allotted time (M = 4.6 vs. M = 3.4, p = .01). Resident satisfaction with the degree of complexity of the conferences remained constant in postcurriculum implementation.

Faculty Mentor Survey

Of the 20 faculty participating in the 2013-2014 academic year, 10 responded to the faculty survey (50% response rate). Comparing mentoring residents on the resident-as-teacher...
curriculum to other elements of their jobs on a 7-point scale (1 = other elements were preferable, 7 = resident-as-teacher mentoring was preferable), the average response was 5.4. When asked how often they engaged in various elements of the curriculum, faculty listed giving feedback after the teaching sessions, setting goals for the curriculum with the resident, and giving end-of-curriculum feedback as the elements they engaged in most frequently. They reported spending, on average, either less than 15 minutes (50%) or 15-30 minutes (50%) with the resident after conference. When asked what they enjoyed about the role, eight responded that they liked connecting with a resident one-on-one; no other answer was repeated more than twice in the free-text response. When asked what was frustrating or what they would change about their role, eight responded that the resident did not have enough protected time for the curriculum within the rotation and no other answer was repeated. When asked what they thought was the most impactful element of the resident experience, five responses mentioned the support of a mentor, four said feedback on resident teaching, three said better organization, and two said increased confidence teaching.

**Discussion**

To improve resident teaching and leadership of MR, I designed a 2-week resident-as-teacher curriculum which pairs residents with faculty mentors who observed and provided resident teaching feedback. This also helped residents apply evidence-based principles and best practices around adult learning to their MR leadership. After 6 years of implementation, our senior residents’ perception of their own teaching skills have robustly improved, the program’s goals for maintaining a high quality MR structure and content have been met, and our faculty mentors have enjoyed the experience. The curriculum has also been feasible to implement. The keys to the success included: obtaining buy-in from key stakeholders, making use of MRs that residents were already leading, and individualizing each learner’s curriculum.

Senior resident perceptions of their preparedness to, and confidence in, leading an MR, as well as their desire to teach after residency all significantly increased after the curriculum. Residents found most helpful the curricular elements that involved their work with their faculty mentor. The most common
resident responses to what was most positive about the experience were an increase in confidence, comfort with leading MR, and the feedback they received from the faculty.

The survey of the resident body pre- and postcurriculum implementation showed no change in resident perception of MR quality. There was initially some concern that by lessening the role of the faculty experts in the room and by sticking to resident-designed objectives, there would be a less rigorous approach to the material and conference quality would decrease. However, this was not the case. Additionally, after the curriculum was implemented, residents were more likely to report that the senior resident gave a clear presentation, taught at an appropriate level, and managed conference time. Overall, this suggests the curriculum helped maintain well-received, educational MRs.

Our faculty mentor survey demonstrated that faculty enjoyed participating and rated the resident-as-teacher curriculum highly compared to other elements of their jobs, even though it required a fairly large faculty time commitment—approximately 8 hours of faculty time over 2 weeks. From verbal feedback at our annual faculty development sessions, we noted that while some adhere to the curriculum structure closely, others pared it down to focus on observing the resident teaching and providing feedback. From the survey, faculty valued the same things about the curriculum that the residents did: having a one-on-one mentorship relationship, having time to focus on teaching, and helping to develop residents as educators. The faculty all reported the curriculum was an enjoyable and highly beneficial experience.

This study has limitations. There was only a 55% response rate of the senior residents who participated in the curriculum and there was attrition in residents who completed the postsurveys. There was no way to compare which groups of residents did or did not fill out the surveys. This could introduce bias as residents with more extreme opinions or those more committed to the curriculum may have been more likely to fill out the surveys. Also, there was no comparison group for the senior residents. It is to be expected that—with or without a resident-as-teacher curriculum—residents will feel more confident and improve their teaching simply by having the opportunity for practicing teaching. Therefore, the current study cannot prove that factors integral to the curriculum improved teaching more than simply experience alone. There also was no pure precurricular survey as the survey went out after the new curriculum was already in place, even though residents were asked to reflect on the prior academic year’s conferences. As well, there was only 1 year of faculty data as faculty were not routinely surveyed as part of the curriculum and only 50% of the faculty responded to the survey. The faculty reported not adhering to all curricular elements, even though they had been trained in its use and application. Lastly, the curriculum was implemented in one residency program and has not been studied in other programs or in other fields.

There were many lessons learned from the creation, implementation, and assessment of this curriculum. Residents and faculty valued one-on-one time together and providing time and a purpose for them to work together was beneficial in and of itself. Faculty found the curriculum feasible and the time with the resident after resident teaching was brief, with 15-30 minutes per session. While having clear and easy-to-utilize guides for faculty to mentor residents was helpful in structuring a mentorship relationship around a resident-as-teacher curriculum, this model will not work for all faculty or residents and there is value in allowing them to adapt the curriculum to their needs, even if it means the curriculum is not implemented uniformly. Furthermore, the optional readings were rarely utilized and were not highly valued, although presumably residents could use them as references as needed moving forward. Residents and faculty found great benefit to the curriculum even though some faculty did not implement it in its entirety.

This curriculum may be used in multiple ways at other institutions. The curriculum can be used in full, with the use of dedicated faculty mentors who meet one-on-one with residents on a teaching curriculum. It could also be used as the foundation around which to design an elective curriculum for a resident interested in medical education and teaching. For programs whose faculty are unable to dedicate the time required to allow for one-on-one mentorship during the experience, different faculty and/or chief residents could share in the mentorship of an individual resident. It is also possible to have the teaching resident receive feedback from a faculty member or chief resident on their teaching and then engage in self-study for the topics of interest; the worksheets have answer keys in the faculty mentor guide (Appendix A) and could be a source for resident self-directed learning. Alternatively, each lesson plan could be used as an individual module for individual or group discussion as part of a program’s resident as teacher curriculum.

The next steps forward are twofold. First, constructive feedback about the rotation in which the curriculum was implemented was that residents needed more protected time with fewer clinical responsibilities. Our residency program has recently changed the curriculum to remove most of the residents’ clinical duties. They can now spend more time concentrating on teaching, both through this curriculum and by working with the medical students.
on our pediatric wards. Second, we plan to objectively measure if the curriculum improves resident teaching. We are working to create a tool with validity evidence for faculty to assess resident-led large-group teaching. It is encouraging that our senior residents perceived many benefits from this curriculum. We hope, in the future, to show that the curriculum objectively improves their teaching.

Appendices

A. Faculty Mentor Guide.pdf
B. Resident Guide.pdf
C. Surveys.docx

All appendices are peer reviewed as integral parts of the Original Publication.

Ariel Frey-Vogel, MD, MAT: Assistant Professor, Department of Pediatrics, Harvard Medical School; Director, Pediatric Education Innovation and Research Center, MassGeneral Hospital for Children

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Ethical Approval
The Partners Human Research Committee approved this study.

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