P4: The Residency ReVision Project

Tufts University Family Medicine Residency at Cambridge Health Alliance

Executive Summary

The *Residency ReVISION Project* will develop a longitudinal, truly competency-based curriculum introducing twelve areas of concentrated learning. In addition, we will add the new curricular areas of Information Mastery and Organizational Effectiveness. These innovations will equip residents with the knowledge and skills required to be leaders in new practice environments that stress both quality and cost efficiency.

1. The Problem Addressed by our *Residency ReVISION Project*

The goal of our *ReVISION Project* is to break away from the models of medical training that have worked in the past but now are not suitable for creating physicians for the future. Despite the advances made following the Millis, Willard, and Merenstein reports,[*] family medicine residency education still primarily occurs in hospitals using an apprenticeship system, taught mainly by specialists from other disciplines. Our aim is to create a learning structure and environment sensitive to the needs of adult learners.[†] We will produce graduates with the skills to be leaders of the new generation of family medicine physicians. We have started with the core principles of family medicine, and, using the principles of adult learning and competency assessment, have developed a new vision to support the development of these principles in our residents.

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[*] American Academy of General Practice. Commission on Education. Graduate training for family practice. (The Millis Commission report.). Kansas City: American Academy of General Practice (American Academy of Family Physicians.), 1967. Willard WR, Rube CHW. The challenge of family practice reconsidered. JAMA 1978;240:454-8. Merenstein JH, et al. Training residents for the future: Final draft report. Fam Med 1986;18:29-37.

[†] Merriam, Caffarella and Baumgartner, Learning in Adulthood: A Comprehensive Guide. Hoboken; John Wiley & Sons; 2006

2. The features of our experiment and how they connect to the new Model Practice.

We have five initiatives that we will implement and test in this project:

1. *The creation of a competency-driven curriculum that will assure that graduates have the necessary tools necessary to provide care that is patient-centered, efficient, and comprehensive.* This curriculum has 24 distinct areas of competency. We are developing goals, measurable objectives, and assessment tools for assuring all of our graduates leave with these competencies.

2. *The development of a longitudinal curriculum that uses competency of the residents as the metric of residency success.* Our use of competency assessment allows us to document resident progression without the reliance on logging of hours or specific patient volume numbers. Our modified longitudinal curriculum will span all 3 years with limited block rotations. Residents will spend 50% of their time in year 1 and 67% of their time in upper years in our office learning with their own patients.

3. *Equipping residents with the skills to manage clinical and patient-based information.* Our graduates will expertly use electronic resources to manage information at the patient, practice, and community level. They will also be firmly grounded and experienced in the theory and practice of information mastery, Bayesian reasoning and clinical decision-making, continuous quality improvement, and self-directed learning.

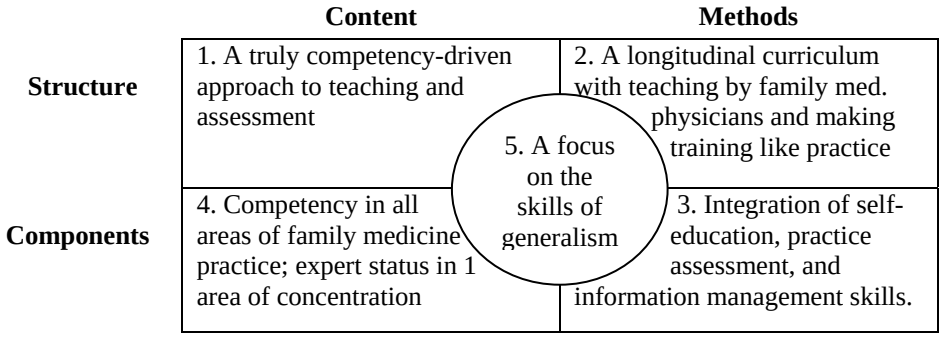
4. *The development of generalists with enhanced skills in one area of practice.* Our curriculum will create well-rounded physicians with additional expertise in a specific area of practice of their choice, thereby enhancing their skills through a high-quality, undiluted experience.

5. *The incorporation of executive skills training into our curriculum.* The complete family physician should have what are often called “organizational effectiveness skills” to be a leader and to understand and facilitate team function.

3. The components of our program.

Our goal is to envision and create a new teaching experience for family medicine residents that will equip them with the skills and knowledge necessary to practice in the new practice environment being created by the TransforMED project. Our five initiatives comprising this new experience are linked in the Figure:

The Residency ReVISION Project



Initiative 1. A* truly *competency-driven approach to teaching and assessment of learning.

The purpose of this initiative is to change the model of residency education that has existed for the past 100 years. Our curriculum moves from an apprenticeship system to a learner-centered competency-based model in which both teacher and learner know what is to be mastered and it uses specific methods of assessment to measure this mastery.

Unfortunately, the ACGME does not have a description of competencies for family physicians. Instead, the accrediting body has issued a set of competency *categories*, leaving it to each individual residency to determine the competencies that fit in each of these categories and to develop methods of assessing these competencies. We have taken on the task of developing a longitudinal curriculum, based on specific learner objectives, that uses direct assessment of competency as the yardstick of the residents' accomplishment and the curriculum's success.

Instructional method: We have grouped family medicine into 24 distinct areas of competency required for family medicine, ranging from "Care of the Child" and "Sports Medicine" to "The Office Practice of Medicine" and "The Wider Context of Medicine." We are on our way to identifying general learning goals for all of these competency areas and then, from these, develop specific, measurable learning objectives. Using these objectives as a guide, we will develop learning opportunities using a variety of teaching approaches to accommodate different types of learners.

This process draws on model curricula and work to identify competencies performed by the Royal College of General Practitioners and the European Academy of Teachers in General Practice. We will use *action learning*[*] methods to create reflective learners with known capabilities.[†] The process requires longitudinal training, with knowledge and skills learned in a progressive fashion over the course of the residency. The learning is learner-centered with comprehensive assessment of the expected results and will create self-directed, lifelong learners.[‡]

Our process of curriculum "merit badges" is based on an achievement model used by the Boy Scouts of America. It has been recognized by the ACGME via their "RSVP" program.[§] This training is longitudinal, assesses competency, requires "reflection on action" and assessment is explicit and separate from learning. Most important, the learning process is self-directed.

To implement this process, we had to redesign the overall curriculum to focus on teaching the objectives. We have developed a culture of continual assessment and continuous professional development. Feedback and evaluation are viewed as complementary but separate

[*] Revans, R.W., Action Learning-Its Origins and Practice, in Pedler, M. (Ed), Action Learning In Practice, 2nd Edition, Gower, Aldershot, 1991
[†] Schon DA. Educating the Reflective Practitioner. San Francisco: Jossey-Bass, 1987.
[‡] Fox RD, Mazmanian PE, Putnam RW. Changing and learning in the lives of physicians. New York: Praeger, 1989.
[§] http://www.acgme.org/outcome/implement/rsvpTemplate.asp?rsvpID=49.

activities. Residents are provided feedback (formative evaluation) on an ongoing basis but complete a separate summative evaluation to assess competency. We know that this process will not measure all aspects of "good doctoring" and traditional methods will also need to be used.

We will create additional room in the education process for more assessment and for self-directed education. This system, already partially developed, includes surrogate as well as outcome measures.

This curriculum will be implemented throughout the residency. The Tufts University Family Medicine Residency is joining the Cambridge Health Alliance in the spring of 2007. The Cambridge Health Alliance is unique in that incorporates public health, clinical care, academics, and research. It is a Harvard University affiliated health system. All of these resources, along with the resources of the Tufts University School of Medicine, are available to us.

Evaluation approach: Residents will be evaluated on a continual basis by residency faculty using appropriate assessment techniques, including learning portfolios, self-directed learning projects, and direct performance evaluation as appropriate. A faculty and resident task force will meet monthly to evaluate the curriculum with the power to change the process as necessary. Both faculty and students will participate in reflective activities such as action learning sets to reflect on the process, made adjustments, and take new action.

Initiative 2. The development of a modified longitudinal curriculum.

We aim to develop a modified longitudinal, competency-driven curriculum that can be exported to other training programs. This approach allows for the full implementation of adult learning principles, relies on teaching by family medicine physicians in real practice situations using the residents' own patients, and fosters the development of self-education skills.

Longitudinal curricula have not flourished, despite repeated calls for them, in large part because of the need for hours-based or numbers-based assessment of competency.[*] Existing longitudinal curricula often simply track the number of patients with a particular illness seen by a resident as a surrogate for assuring competence. Logging training hours or using billing records to document diagnoses does not document the competency of the learners. We propose an approach in which competency of learners is directly assessed.

Instructional method: The objectives we develop (see initiative #1) will guide the teaching process. Approximately 60% of the teaching over three years will occur in the family medicine center or in workshops, demonstrations, and individualized instruction. Block rotations will still be used to develop skills requiring a focused experience or when logistics dictate.

All residents will have an individualized learning plan. We will use an active approach to teach specific knowledge and skills and will continually monitor and adjust individual residents' experiences to meet all of the objectives. Residents will practice in small teams using an open access model. Specialists will provide care to our patients by conducting regular clinics in our office, with the resident joining the patient at their visit to participate with the patient and specialist to address the problem. Residents will be able to be more hands-on with this approach.

The first year of training will be devoted to the development of both the basic clinical and non-clinical skills of medicine. Over the year, residents will complete a total of 6 months of block experience. During the longitudinal experience, first year residents will spend approximately half of this time in highly supervised patient care in the office.

Residents will not progress to the second year of training until they have been attained 27 *"Basic Skills Qualifications"* (BSQ). Each BSQ is a discrete, measurable set of skills in clinical areas such as "Reading a Chest X-Ray" and "Examination of the Shoulder." The goal of BSQs is to

[*] *Weiss BD. Longitudinal residency training in family medicine: Not ready for prime time. Fam Med 2001;33:762-5.*

teach and document specific medical skills, stripped of the cognitive processing associated with the skill. “Scripts” are developed and then are taught in repeated workshops during which the resident focuses on performing the skill and then repeating it until memorized. In this way basic rules can be learned, with “pearls” and “wisdom” taught at a later time. Assessment of the residents’ proficiency is not conducted during these workshops but at a separate time chosen by each resident. The year will also provide learners with a foundation in office practice, information management as described in initiative #3, and executive generalist skills outlined in initiative #5.

Residents in their second and third years will spend about 67% of their time in care of their own office patients. Working in teams, their experience can be continually adjusted to provide them with opportunities to develop the knowledge and skills outlined in the objectives for each curricular area. In the latter half of the second year, residents will declare an Area of Concentration (see initiative #4) and will follow an individualized curriculum to develop focused experiences in that specific area of concentration.

We will move to a new family medicine center in May 2007 that has been constructed specifically with the Future of Family Medicine concepts in mind. The timing of this move presents us with the unprecedented opportunity to start a new residency without a legacy that must be challenged. As a result we will be able to implement the longitudinal curriculum for the first year residents starting July 2007.

Evaluation approach: Residents will work with their advisors, who will help them devise a learning contract[*] that identifies specific goals, learning tasks, outcomes, and resources necessary for them to develop their area of specific competency. The advisors will meet with the residents periodically to assess progress and the learning contracts will be incorporated into

[*] Knowles MS. *The Adult Learner: a neglected species* (4th edition) Houston: Gulf Publishing, 1990.

action learning sets among other residents. Residents will also maintain a learning portfolio, with some of the entries serving as evaluation of specific objectives.

3. A Focus On Creating Family Physicians who are Masters of Information.

High quality clinical decision-making requires physicians to combine information gained from patients with the knowledge gained from medical science, considered in the context of the complexity of the medical care system. Three major changes have occurred in the past 10 years in the processing of information in medicine: the refinement of electronic health record systems to manage patient data; the easy availability of the medical research literature to both clinicians and their patients; and, a push to move away from expert-led medicine to practice directed by patient-oriented, outcomes-based research.

The purpose of this initiative is to create graduates who are expert clinical decision makers able to use the best technologies available to manage clinical and patient information and apply this information to the individual patient through personalized care. We already have an educational process for residents in information mastery,[*] the management of clinical information. The new facility has an electronic health record for patient information management. We would like to enhance this curriculum by adding teaching in formal Bayesian (conditional probability) reasoning, change management, and continuous quality monitoring and improvement using the electronic health record. These additional skills will be essential in the new model of practice as well as for pay-for-performance reimbursement systems and the maintenance of certification process.

[*] Shaughnessy AF, Slawson DC, Bennett JH. Becoming an Information Master: A Guidebook to the Medical Information Jungle. *J Fam Pract* 1994;39:489-99.

Instructional method: These skills will be taught in a concentrated small group process in the first year followed by a longitudinal experience over the next two years. As with all curricular areas, this teaching will be guided by specific objectives. Teaching strategies include; 1) "Look-up Conference," in which residents develop case-based best evidence summaries; 2) development and implementation of continuous quality improvement processes using the Plan-Do-Study-Act (PDSA) format; 3) "Mythbusters," a critical evaluation of the best evidence and formulation of a practice-wide clinical guideline; and, 4) point-of-care information access and application.

Evaluation approach: The program will be evaluated by monitoring residents' meeting the specific objectives for this curricular area. One tool will be the use of the Fresno EBM[*] and the Slawson/Shaughnessy attitude questionnaires,[†] which are validated written tests for evaluating residents' skills, attitudes, and knowledge. In addition, residents will be evaluated in their ability to improve practice quality of their own and their team's practice through the use of conduct of a quality improvement project, using the PDSA process, with an evaluation of both their process and outcome improvements. Long-term measures of success will be graduates' self-report of the use of evidence-based resources and completion of Maintenance of Certification self-assessments and practice improvement.

4. Development of Areas of Concentration.

While preparing residents for all areas of family medicine practice, the purpose for developing areas of concentration is to give them additional education that is formalized and

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[*] Ramos KD, Schafer S, Tracz SM. Validation of the Fresno test of competence in evidence based medicine. BMJ 2003;326:319-21.

[†] Shaughnessy AF, Slawson DC, Bennett JH. Teaching Family Practice Residents to be Information Masters: A Curriculum for the Evaluation of Pharmaceutical Representatives. *Fam Med* 1995;27:581-5.

goal-directed in a specific content area. This approach recognizes what is already happening with graduates of family medicine programs, whose practices reflect the individual physicians' general interests.

Instructional method: Residents will choose one Area of Concentration (AOC) curriculum in their second year: 1) Adolescent health; 2) Care of the older person; 3) Education; 4) Hospital medicine; 5) Integrative medicine; 6) International health, 7) Maternity care; 8) Policy and advocacy, 9) Research; 10) Self-selected; 11) Sports medicine; or, 12) Women's health. We have the faculty with the expertise and the rich medical resources of Boston to provide expert-level training in all of these areas.

Specific curricular tracks will be created by faculty members for each Area and tailored to the specific learning needs and interests of each resident. The AOCs will comply with the final requirements to be developed by the Association of Family Medicine Residency Directors.

Evaluation approach: Residents will be evaluated in the specific content areas as explained above, with specific learning objectives created for each AOC. In addition, the overall success of the AOC approach will be evaluated after two years.

5. A focus on developing *executive* skills necessary for the new model of care.

This initiative is concerned with developing residents' leadership and management skills. It will focus on strategies for facilitating change and organization development on individual, group, and organization levels. The goal of the discipline of organization development (OD) is to develop individual and organization capacity with the objective of improving the organization's ability to meet its goals. In this case, the organization is not just the residency but is the organizations, small or large, that residents will be a part of during their careers.

These competencies, frequently referred to as "generalist skills," include learning how to plan and implement change in an efficient, effective, and ethical fashion.

Some of the competencies that will be addressed in this section include: Complexity; systems thinking; process analysis; emotional intelligence, reflective technologies, interpersonal skills, facilitating relationships, influencing others; group inquiry; collaboration skills; active change management; personal mastery; new models of patient understanding through narrative analysis (hermeneutics) and sense-making; good *followership* as well as good *leadership*; participation and empowerment; teams and teamwork; learning and development; and transformative learning.

These are the skills increasingly being recognized in business and other disciplines as being crucial to good leaders. These skills also form the heart of *patient-centered medicine* described by Brown and Stewart.[*] The self-reflection component of this training will enhance empathy and person-centered care capabilities of the graduates. Since behavioral change is so central to the success of the family physician, transformative learning and coaching skills are directly transferable to the development of the doctor-patient relationship.

Instructional method: Teaching will begin in the first year with a set of group programs co-taught by faculty members and teachers from our System's Division of Organizational Development. These programs are well established and used nationally. The program will use typical OD instructional strategies, including reflective practice, coaching, dialogue, motivational interviewing, personal mastery, interpersonal communication, collaboration, system thinking, and transformative learning.

[*] Brown JB, Stewart M, Weston WW. Patient-centered medicine. Transforming the clinical method. Thousand Oaks: Sage, 1995.

These skills are specific enough to be taught and measured using methods perfected over the past thirty years in organizational development training. These skills are directly transferable to the medical environment and will allow our graduates to develop their ability to enhance teamwork and professionalism.

Evaluation approach: Students will be required to participate in projects that engage them at the individual, group, and organization level. At the individual level, residents will be required to take on an individual change project. The group component will be the ongoing reflective practice and action learning sets.

The organization component will be for the residents to work in small groups to conduct an action research project using the PDSA approach. This activity will also be used as part of the ongoing implementation evaluation. It will also be evaluated longitudinally in our follow up survey and interviews with graduates of the residency.

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Purpose	Instructional Method	Responsible Person	Location	Evaluation Approach	Timing of Implementation
A truly competency-driven approach to teaching and assessment of learning	A residency experience allowing meeting of objectives in 24 "merit badges."	Allen F. Shaughnessy, PharmD	All aspects of the residency	Evaluation will be at the level of the resident 1 year post-residency follow-up using surrogate markets Assessment Action Learning Sets	Already started (July 2006); full implementation by July 2008
A modified longitudinal curriculum that uses competency of the residents as the metric of residency success.	Learning Contract Self-directed learning	Joseph Gravel, MD, Program Director	All aspects of the Residency	Evaluation of learning projects Observation Learning portfolio Teaching Evaluation	Transition July 2007 – June 2008; full implementation July 2008
Equipping residents with the skills to manage clinical and patient-based information.	Longitudinal didactic and experiential curriculum	Allen F. Shaughnessy, PharmD	All aspects of the residency	Meeting objectives PDSA project Long-term follow-up	Already started (July 2005); expansion by July 2007
The development of generalists with enhanced skills in one area of practice.	Additional goal-directed education in 1 of 12 areas of practice for all residents	Andrea E. Gordon, MD	Residency teaching sites with the exception of the international experience.	Evaluation of learning projects Observation Learning portfolio Teaching Evaluation	Implementation July 2007
The incorporation of executive skills training into our curriculum.	Longitudinal didactic and experiential curriculum	Lyle Bohlman, MD, Associate Program Director	All aspects of the residency	Individual change project Action learning sets Action research project Longitudinal follow-up	Experimentation July 2007 – June 2008; full implementation July 2008

4. Hypotheses of this Project

1. Graduates trained in a longitudinal, competency-driven residency can demonstrate a knowledge base equal or superior to block-curriculum-trained family medicine residents.
2. Graduates trained in clinical decision-making, information management can access real-time information and demonstrate the use of the best evidence to make clinical decisions. They will continue to use these skills in practice following graduation.
3. Graduates receiving specific training in an area of concentration feel more capable of practice in their area of concentration and do not feel limited in their abilities as a result of less training in other areas.
4. Graduates trained in organizational effectiveness principles will provide more person-centered, goal-directed care and excel in helping patients change behavior, as well as be better managers and leaders in their organizations.
5. Using a living evaluation approach (see below) results in improved curriculum and outcomes for faculty and students.

5. Testing Our Hypotheses

Laura Bierema, Ed.D., associate professor and program coordinator for the University of Georgia's adult education program will guide our evaluation. While we have several highly qualified educators in the Boston area, we have chosen Dr. Bierema because she has worked with family medicine residencies in the past and is a well-known expert on adult learning, organizational development, and curriculum evaluation.

Residency ReVISION Project Evaluation Plan

We seek a formative and summative evaluation process that is carefully designed into the *ReVISION Project* that allows the ongoing accumulation of information, knowledge, and learning that informs decision-making and action in the project. We will use quantitative and qualitative methods to answer our questions.

The goal of the evaluation plan is to parallel the project vision of developing reflective leaders in new practice environments. Just as the *Residency ReVISION Project* aims to break away from the models of medical training that have worked in the past but are not suitable for creating physicians for the future, so too, our evaluation proposal strives to break away from static evaluations to one that is dynamic and responsive to the needs of its stakeholders. This evaluation plan will evaluate all five initiatives. In addition, we view the evaluation as an ongoing study of curricular innovation.

Conceptual Framework

We envision a "living evaluation" that embraces the tenets put forth by Patton[*] and Preskill and Torres.[†] This evaluation will be a focused "evaluation done for and with specific, intended primary users for specific, intended uses." Using the model of evaluative inquiry, evaluation of

[*] Patton MQ. Utilization-focused evaluation: The New Century Text, 3rd Edition. Thousand Oaks: Sage, 1997.
[†] Preskill H, Torres RT. Evaluative inquiry for learning in organizations. Thousand Oaks: Sage, 1999.

the curriculum will be an ongoing part of everyone's job, reinforcing the idea that ongoing evaluation is an important aspect of any endeavor. We view this evaluation as a learning process in itself that focuses on: 1) content and organizational processes as well as outcomes; 2) shared individual, team, and organizational learning; 3) education and training of faculty and residents in inquiry skills (action learning), collaboration, cooperation, and participation; 4) establishing linkages between learning and performance, searching for ways to create greater understanding of the variables that affect curriculum success and failure; and, 5) using a diversity of perspectives to develop understanding about the impact of this new curriculum.[*]

Evaluation Hierarchy

The evaluation is designed to be a living learning process that will be organized according to Rossi, Lipsey, and Freeman's evaluation hierarchy.[†] The evaluation at each level of the hierarchy will be briefly discussed.

Assessment of Need for the Program. Our needs assessment is currently ongoing and iterative as we prepare to make these changes. Starting with our existing curriculum, we have evaluated our needs by considering the ACGME time-based requirements for family medicine, the Outcome Project competency categories, and the Residency Assistance Program's Criteria for Excellence. We have several teams of residents and faculty members working together to evaluate learner's needs. They are being guided by the needs of current medical practice as well as practice envisioned in the Future of Family Medicine Report, the articles by Whitcomb and others for the P4 Project, and the goals of the *TransforMED* project.

To understand patient needs, we have used the results of a local market analysis as well as feedback gathered at meetings of our practice's Patient Advisory Board. We have also

[*] Preskill H, CatsambasTT. *Reframing evaluation through appreciative inquiry.* Thousand Oaks: Sage, 2006.
[†] Rossi P H, Lipsey MW, Freeman HE. *Evaluation: A systematic approach, 7th Edition.* Thousand Oaks: Sage, 2004

considered service needs and opportunities and have done a faculty self-analysis to create an inventory of our collective expertise. Each of the five initiatives this proposal addresses is grounded in a thorough needs analysis that has involved all of the relevant stakeholders for this residency curriculum.

Assessment of Program Design and Theory. This is a very important aspect of the project's evaluation as we seek to make the curriculum transferable to other residencies. Through this level of evaluation we propose to assess the theoretical and practical frameworks of the model on an ongoing basis.

Our new curriculum approach is based on the theories supporting the value of a longitudinal curriculum and an outcomes (competency)-based approach to education. There are several theoretical benefits of longitudinal training.[*] Learning in an ambulatory setting allows residents to see a primary care population more typical of their future practice, rather than the select population seen by specialists.[†] This model may also foster develop of self-education skills instead of relying on "received wisdom" from consultants. With residents under their supervision more frequently, family medicine faculty can evaluate resident competency *in situ* rather than relying on reports from other teachers.

The Outcome Project of the ACGME is an outgrowth of the outcomes movement in primary and secondary education and the demand by several sectors of society for more accountability by the medical industry. The theory supporting competency-based education is only by actually

[*] Reust CE, Stehney M. Longitudinal family practice residency education: Lessons learned. In Ruest CE, Stehney M, eds. Models of innovation. Longitudinal curriculum in family practice residency education. The Society of Teachers of Family Medicine.

[†] Green LA, Fryer GE Jr, Yawn BP, Lanier D, Dovey SM. The ecology of medical care revisited. N Engl J Med 2001;344:2021-5.

measuring competency can it be assured. This focus on accountability requires residencies to rethink the structure of their learning experiences.[*]

The rigor and relevance of all five initiatives will be under constant review. We will use the methods for instruction and evaluation of residents along with interviews, action learning sets, and observations of residents and faculty to assess whether the program theory, goals, and assumptions match the program's execution. Where it does not, adjustments will be made in the curriculum and method. Such adjustments will be recorded along with lessons learned from possible mismatches in the curriculum. We will analyze these adjustments to look for patterns in the program design that may need to be altered elsewhere.

Assessments will include: how well the intervention meets stakeholder (patients, residents, faculty, institution, society) needs, the degree to which the curriculum is achieving its stated goals, a comparison of research and practice in other innovative residency programs, and observation of how the program theory is meeting needs.

Assessment of Program Process and Implementation. We propose an iterative evaluation of the implementation process based on goals of continuous learning and improvement. We will establish stakeholder groups, train them in skills of inquiry and reflection, and use them on an ongoing basis to provide feedback and improve the process. We also intend to use such methods as instructional techniques (competency driven approaches, longitudinal curriculum, areas of concentration, and executive skills). Evaluation strategies will include action learning groups, focus groups, observation, and assessments of resident performance on a number of established instruments that have been detailed in the proposal.

[*] The ACME Outcome Project. Frequently asked questions. http://www.acgme.org/outcome/about/faq.asp. Accessed December 13, 2006.

Assessment of Program Outcome/Impact. At this stage we will test our hypotheses for whether the targets of intervention have been changed. Data to measure this will be collected before, during, and after the program and incorporate a range of qualitative and quantitative data collection techniques, as well as assessment of performance on each of the five initiatives. We are proposing a longitudinal aspect to the evaluation and will be conducting follow-up surveys and interviews with residents to assess the impact of the curriculum on their medical practice after graduation. Where possible, we will use survey instruments to compare practice of graduates before and after implementation of this Project. We also intend to use the curriculum implementation as a case study of making significant change in residency education and using the evaluation process itself as a vehicle for learning and curricular innovation.

Assessing Program Cost and Efficiency. This new method of educating residents, with a focus on close monitoring and continual assessment, presents financial challenges. We will assess the fiscal cost vs. benefit of this new model to determine its financial viability. We will also monitor other costs, including the impact on faculty skill and satisfaction and the impact on external ratings of quality, such as managed care quality assessment.

6. Theories and principles guiding our Project

The theory and principles of competency-based and longitudinal education are outlined above. In addition, adult learning theory underlies the inclusion of organizational effectiveness education and information mastery into our curriculum.[*] The four assumptions of this theory are: learners must have the need to know; learners must be self-directed; learning is best when combined with a learner's experiences; and, learners must perceive the learning as useful to their life or practice. Our curriculum is designed to give residents the skills to become competent lifelong learners.

[*] Knowles MS. *The Adult Learner: a neglected species* (4th edition) Houston: Gulf Publishing, 1990.

Depending on the skill, knowledge, or practice being taught, we will use a behaviorist, humanist, cognitivist, or social learning orientation.

7. Influence of residents and patients on our ReVISION Project

As described above, residents have extensively involved in the design of our new curriculum and will continue to be involved in its evaluation. They have also been involved for the past 18 months in the development of the learning objectives for the content areas we have addressed to date. As outlined above, both potential and existing patients have been involved in this project via our advisory committee and the market analysis.

8. Altering the Project

Evaluation of the Project, in terms of the process and the outcomes, will be continual throughout its course. The planning and monitoring committee will continue to meet monthly to evaluate the curriculum and suggest changes. Continuous faculty and resident feedback will be solicited regarding the rotations and the office teaching. Although we do not anticipate a change in the overall structure and goals of the Project, we anticipate making many changes to individual aspects of the curriculum as we gain experience with it as well as the new sponsoring institution. For example, the organizational effectiveness curriculum is new and will likely require changes as it progresses.

9. Plans for continuing if the Project is not successful

If our Project does not meet our stated goals, we will need to determine whether the cause of the failure lies with a faulty concept or poor implementation of the concept. The evaluation system

we will have in place should help us make this distinction. We will continue with the longitudinal approach to education. However, we may need to add in more rotations or change our Area of Concentration approach back to the standard approach. We can continue our longitudinal experience and still meet ACGME documentation requirements by using a combination of rotations and generating clinical experience logs of residents through billing data.

10. Assistance, including RRC relief, required for our Project

Our primary need is an evaluation specialist who can evaluate our new curriculum. We anticipate requesting support for an evaluation consultant as well as in-house evaluation management. We will require a waiver by the RRC of all of the hours-based requirements for teaching, since we will be substituting competency-based assessment. We will also require waiver of the maternity care continuity requirements and total number of deliveries requirement for obstetrical care. Although all residents will have some maternity continuity exposure, it will be of two types. They will manage their own pregnant from the pre-conception period through delivery. They will also, as part of a care team, provide only prenatal care to some patients.

Appendix

We have a unique situation in that our residency program was granted initial accreditation as of July 1, 2006 and will be opening a new state-of-the-art, Future of Family Medicine-informed family medicine center on May 15, 2007. Our residents, faculty, and staff have been together for years, however, in a residency program that will be closing on June 30, 2007. Our new sponsoring institution, Cambridge Health Alliance, is a Harvard-affiliated academic public health-oriented healthcare system. We will be the first accredited family medicine residency sponsored by a Harvard-affiliated institution and believe this change will allow us to bring the best of the old and combine it with the best of the new. As a result, we are attaching three documents: the accreditation letter for the "old" program as located at Hallmark Health System, the letter of termination from Hallmark Health System, and the accreditation letter for the "new" program located at Cambridge Health Alliance.

The program at Hallmark Health was accredited for five years, and Hallmark did not correspond with the Residency Review Committee regarding their three citations. Briefly, we have addressed the concerns in the following way:

Citations regarding the Hallmark Health System Residency:

1. Sponsoring institution concerns of the Institutional Review Committee: We have addressed this concern via the move to Cambridge Health Alliance.
2. Maternity care: Before our move we made substantial changes to increase the number of deliveries. Our move to Cambridge Health Alliance will substantially increase these numbers further, since there is a busy family medicine maternity care service at Cambridge Hospital where residents will deliver their continuity patients.

3. Practice Management: This citation was actually due to a lack of clarity in the completion of the PIF. We met the 60-hour (at that time) requirement through specific didactics. In any event, the practice management curriculum has been completely updated and expanded to include new models of patient care. It exceeds the requirement for hours of education. Further, it was one of our first competency-based curriculums and assessment methods are in place to determine the competency of all residents in all areas of the curriculum.

Citations regarding the Cambridge Health Alliance Residency:

The new residency received a two-year accreditation since it has not graduated a class of residents. We were pleased that we received *no* citations for noncompliance in our initial accreditation letter.