Sample Residency Training Program

University of Colorado Denver School of Medicine

This curriculum provides basic leadership skill training along with customizable training on three different tracks (Leadership in Education, Leadership in Hospital Administration, and Leadership in Research). This curriculum is based on virtual learning, mentorship and hands on experience. We are also expanding this training to junior faculty at the Department of Neurology, University of Colorado.

The leadership curriculum is called LEAdRS reflecting the three main areas of focus: Leaders in Education, Hospital Administration and Research.

The aim for the curriculum is to educate residents in the arts of leadership and practice management by stimulating the development of resident-led initiatives into an Adult Neurology Residency curriculum. This is a longitudinal curriculum that starts in the PGY2 year and ends upon graduation. Residents can chose any of the three tracks (or all of them) and learn by practice-based as they get involved in leadership positions during their training. This will result in an effective way to enhance key aspects of professionalism including effective communication, humanistic and ethical skills. In addition, their skills in practice management, leadership and teamwork will be significantly enhanced at the end of this project. As a consequence residents will get a different perspective on the complexity of our current system, the impact of a collaborative system approach, as well as understand the importance of continuous medical development to ensure high professional standards. The model for this course will keep in mind our resident’s busy schedule. For that, we will develop activities that will foster learning in a dynamic and student-centered fashion. Among the didactic approaches considered for this course, we will include standardize patient encounters, virtual simulation, on-line resources (videos, forums, articles), small group discussions, and peer role-play. The videos included in this portion of the curriculum will follow the format of TED talks where content and knowledge will be presented on an engaging and concept-based short discussion with minimal use of slides. The topics included in this course will include:

- Building Relationships and Trust
- Communication
- Conflict Management and Problem Solving
- Team Building
- Exemplary Leadership
- Creativity and Innovation
- Emotional Intelligence
- Fiscal Management and Fiscal Planning
- Fund Raising Strategies
- Strategic Thinking and Decision Making
- Delivering Bad News and the Terminal Patient Cultural Competency Bioethics
Evaluation of outcomes will include participation, assessment of pre-test and post-tests, surveys and validated self-assessment questionnaires. Among the questionnaires included in this project we will be using Humanistic Teaching Practice Effectiveness Questionnaire, Leadership Skills Questionnaire, Management and Leadership Questionnaire (MLQ30), Clinical Cultural Competence Questionnaire, etc.

In order to organize and measure the application of the knowledge and skills gained after the foundations of leadership portion, the curriculum will continue with active participation in LEAdR curriculum, organized in three main programs: Medical Education, Practice Administration and Quality Improvement and Research. Residents will have the chance to participate as leaders in any of these tracks. Each track will have well-defined set of activities that are independent and specific for each particular area.

“The best leadership development doesn't happen by just going off to a course or a seminar ... The best leadership development happens when people are learning in the context of their own strategic, economic agenda, with the actual people that they are going to influence and lead.” — Roselinde Torres

TITLE: Enhancing Professionalism Among Neurology Residents by Developing a Leadership Curriculum

Research Abstract

Despite multiple published definitions of professionalism, humanism and bioethics, medical educators often struggle to discern and measure non-cognitive humanistic and professional qualities of the trainees. As a result, there are currently no formalized educational tools to educate residents in leadership, humanism, bioethics and/or effective communication skills. In nonmedical domains, effective team leadership has been shown to improve team performance, and improve efficacy. A recent meta-analysis of leadership interventions across all health care settings demonstrated that participation in leadership training programs improved professional outcomes. Not surprisingly, the Accreditation Council for Graduate Medical Education (ACGME) emphasizes the need to develop team leadership and management skills in undergraduate and graduate trainees. We hypothesize that effective leadership will result in enhanced communication and interpersonal skills, and when applied to the field of medicine, will positively impact humanistic and ethical values of the trainees.

The innovative design of this study will include curricular interventions and educational strategies that have been proven to be very effective in leadership training. These include experiential, reflective practice, clinical contact, tutor feedback, problem based learning, role-play exercises, bedside teaching, educational portfolios, videos, workshops, and humanities writing.

Due to recent changes in health care delivery models and the constant increased demand that neurologist will face in the near future, it is imperative to develop programs that will train the
future generation of neurologists to be successful leaders. To our knowledge this is the first attempt to develop a formalized leadership curriculum in an Adult Neurology Residency Program.

Relevance of the project:
Leadership is a critical skill for medical professionals who are key players in achieving safer and more effective health care delivery systems. Current models of post-graduate medical education do not include an organized resident-centered education process that will allow resident to acquire skills needed to become a successful leader in their future careers. This project is intended to provide residents with a progressive involvement in leadership activities that will create the foundation to apply in their future career. This longitudinal intervention will result in a dynamic and active process of acquisition of knowledge and skills, with supervision and mentorship from experienced faculty members. Outcome-based feedback is the basis for the assessment of the acquired skills. Leadership skills will be appraised by active participation in three different tracks: Medical Education; Hospital Administration and Quality Improvement; and Research. In all three tracks residents will have the opportunity to understand and practice the main core professional competencies that this project focus on: **Humanism**, **Communication** and **Ethical** skills.

Hypothesis and Aims:
**Hypothesis**
The development of a Leadership Curriculum will result in an effective way to enhance key aspects of professionalism including effective communication, humanistic and ethical skills. In addition, their skills in practice management, leadership and teamwork will be significantly enhanced at the end of this project. As a consequence residents will get a different perspective on the complexity of our current system, the impact of a collaborative system approach, as well as understand the importance of continuous medical development to ensure high professional standards.

**Aim for the Project**
The aim for the proposal is to evaluate the impact of a **Leadership** Curriculum to improve **Professionalism** by enhancing **Communication**, **Humanistic** and **Ethical skills** among Neurology Residents.

**Methodology**
The members of the Adult Neurology Residency Program at the University of Colorado Denver (UCD) will establish a LEAdR (Leaders in Education, Administration and Research) working group. This group will include faculty members, residents, residency coordinator (RC) and manager for medical education (MME). The members of the LEAdR working group will evaluate gap analysis, identify priorities and resources, develop the activities included in the curriculum, implement and evaluate the progress of the curriculum, as well as establish means for outcome
measurement. The activities included will be organized in a longitudinal experience with a sequential and progressive involvement as residents complete their training.

At the beginning of their training in Neurology (during the PGY2 year) all residents will complete the foundations of Leadership course. This course is intended to cover basic aspects of Leadership including Effective Communication, Humanism and Bioethics. Figure 1 summarizes the foundations of Leadership course.

Figure 1. Foundations of Leadership Course

The model for this course will keep in mind our resident’s busy schedule. For that, we will develop activities that will foster learning in a dynamic and student-centered fashion. Among the didactic approaches considered for this course, we will include standardize patient encounters, virtual simulation, on-line resources (videos, forums, articles), small group discussions, and peer role-play. The videos included in this portion of the curriculum will follow the format of TED talks where content and knowledge will be presented on an engaging and concept-based short discussion with minimal use of slides. The topics included in this course will include:

- Building Relationships and Trust
- Communication
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- Creativity and Innovation
Emotional Intelligence  
Fiscal Management and Fiscal Planning  
Fund Raising Strategies  
Strategic Thinking and Decision Making  
Delivering Bad News and the Terminal Patient  
Cultural Competency  
Bioethics  

Evaluation of outcomes will include participation, assessment of pre-test and post-tests, surveys and validated self-assessment questionnaires. Among the questionnaires included in this project we will be using Humanistic Teaching Practice Effectiveness Questionnaire, Leadership Skills Questionnaire, Management and Leadership Questionnaire (MLQ30), Clinical Cultural Competence Questionnaire, etc.

In order to organize and measure the application of the knowledge and skills gained after the foundations of leadership portion, the curriculum will continue with active participation in LEAdR curriculum, organized in three main programs: Medical Education, Practice Administration and Quality Improvement and Research. Residents will have the chance to participate as leaders in any of these tracks. Each track will have well-defined set of activities that are independent and specific for each particular area. Figure 2 summarize the three main Leadership Programs:

Figure 2. Leadership Programs
Leaders in Medical Education Program:

Formative Process: Educators in Neurology attain a pivotal position of having a tremendous influence on the future development of their colleagues and the field of Neurology. Residents who chose to enroll in this program will have the opportunity to participate in activities intended to improve their skills as educators while actively educating medical students and peers. Effective communication, excellence, scientific knowledge, conflict management and role modeling are key competencies expected to improve as residents complete this portion of the program. During the first semester of their PGY3 year, residents will attend a 4-week course on effective teaching organized by the Academy of Medical Educators at the School of Medicine. During this course, residents will participate in workshops and activities on principles of learning, curriculum development, effective teaching, mastering 5-minute bedside teaching, innovative teaching strategies, assessing student performance, etc. After the completion of this course, residents will be eligible to participate as leaders in a series of roles. Table 2 summarizes the leadership opportunities for residents by level of training.

Objectives:

At the end of this learning program, the resident will be able to...

- Understand concepts of curriculum development
- Improve practice-based learning skills on medical education
- Enhance didactic skills
- Familiarize with innovative effective teaching strategies
- Understand the basics of medical student assessment and compare various tools
- Develop expertise in effective mentorship

Educational Strategies:
Curricular interventions included in this program are intended to support practice-based learning by stimulating active participation in educational activities. Examples of the topics that were chosen for the Leaders in Medical Education Program include:

I. Workshops/Lectures:
The workshops will be led by faculty with experience in each topic. The workshops are designed to be interactive and allow for practicing new skills. Examples include:

1. How Learning Styles Impact the Way You Teach and Learn
2. Teaching at the Bedside
3. Teaching Procedural Skills
4. How to Identify a Struggling Learner
5. Giving an “On the Fly” Lecture
6. Teaching to a Large Group
7. Giving Effective Feedback
8. Your Future Career as a Medical Educator
9. Developing Expertise
10. Mentorship
II. **Teaching Practicum:**
There are multiple opportunities for teaching practicum in the clinic and classroom setting. Teaching practicum opportunities include, but are not limited to:

1. Teaching medical students communication and physical exam skills
2. Leading 3rd and 4th year medical student small groups
3. Bedside rounding
4. Giving morning report or a specialty specific conference
5. Leadership Opportunities (Table 2)

III. **Project:**
Residents and fellows will design and implement a “medical education” project specific to their residency or fellowship program. Trainees will identify a project and project mentor prior to the start of the elective with the assistance of the Academy of Medical Educators and/or their training program. The project will allow trainees to implement their skills in an area of interest. Possible projects include:

1. Designing and giving a conference or workshop on teaching skills for a specific subspecialty in neurology (i.e. teaching procedural skills, giving and receiving feedback, etc.)
2. Developing a workshop for medical student interest groups (i.e., PBL, lumbar punctures, localization courses, neuroanatomy etc.)

<table>
<thead>
<tr>
<th>Table 2. Leadership Opportunities for Residents enrolled in the Leaders in Medical Education Program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Role</strong></td>
</tr>
<tr>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Resident Director of Problem Based Learning (PBL lab)</td>
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<tr>
<td>Assistant for Director of PBL lab</td>
</tr>
<tr>
<td>Chief Resident of Medical Education</td>
</tr>
<tr>
<td>Assistant for Chief Resident of Medical Education</td>
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</tbody>
</table>

**Leaders in Practice Administration and QI Program:**

**Formative Process:**
Graduating neurology residents must be able to navigate a complex medical system. In order to do this, residents should have an understanding of the basis of medical systems, business drivers, and payment methodology. If they are unable to do this, residents run the risk of being unable to maintain a successful neurological practice, and/or inability to improve system processes through appropriate channels.

The Leaders in Practice Administration and QI Program is intended to provide residents with the skills to understand the complexity of medical systems and the challenges of large and small medical practices. Quality Improvement and Patient Safety will be a main component of this program as well. Table 3 summarizes the topics and strategies included in this program. Every resident will attend a series of lecture and educational activities intended to cover topics related to business in neurology, hospital administration, quality improvement, patient safety, etc. Table 4 summarizes the leadership opportunities included in this portion of the curriculum.

Objectives:
At the end of this learning program, the resident will be able to:
- Understand concepts of what drives the business of medicine and healthcare policies
- Understand general payment principles in medicine
- Be able to maximize business revenue, including an understanding about medical billing
- Appropriately discuss medical errors with a focus on creating a just culture
- Recognize a project as quality improvement or research
- Proficiency in PDSA cycles
- Demonstrate general knowledge regarding other quality improvement principles, like LEAN and Six Sigma
- Ability to design and execute a basic quality improvement project, and complete at least 2 cycles of improvement
- Understand the difference between research and quality improvement
- Obtain publication for research projects
- Develop techniques to a successful work/life balance

Table 3 Example of the topics that were chosen for the Practice Administration and QI Program.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Quality improvement methodology introductory didactics</td>
<td>Introduction to quality improvement, methods</td>
</tr>
<tr>
<td>COMIRB or IACUC regulatory requirements</td>
<td>Residents will participate in the regulatory trainings needed for their chosen individual project</td>
</tr>
<tr>
<td>Mandated PGY2 quality improvement experience</td>
<td>Active participation in departmental QI project- ongoing or newly developed by a resident or a group of residents</td>
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<tr>
<td>Mandated yearly patient safety conference</td>
<td>Participation in morbidity and mortality conference, which will focus on patient safety and process improvement events.</td>
</tr>
<tr>
<td>Elective PGY3/4 quality</td>
<td>Participation in a new or existing departmental QI project with</td>
</tr>
</tbody>
</table>
improvement experience | generation of abstract or publication
---|---
Hospital systems introductory didactics | Introduction to research project types, methods. Longer seminar series did not work well in one published study in neurology residents.
Mandatory PGY4 experience | Interviewing skills and contract negotiation session. CV creation session.
Journal club | Monthly journal club with Evidence Based Medicine and Biostatistics course.

**Table 4. Leadership Opportunities for Residents enrolled in the Leaders in Medical Education Program**

<table>
<thead>
<tr>
<th>Role</th>
<th>Post Graduate Year of Training</th>
<th>Number of Positions Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident Director of Continuity Clinic (CC)</td>
<td>PGY4</td>
<td>1</td>
</tr>
<tr>
<td>Assistant for Director of CC</td>
<td>PGY3</td>
<td>2</td>
</tr>
<tr>
<td>Chief Resident of Administration</td>
<td>PGY4</td>
<td>1</td>
</tr>
<tr>
<td>Assistant for Chief Resident of Administration</td>
<td>PGY3</td>
<td>2</td>
</tr>
</tbody>
</table>

**Leaders in Research Program:**

The Leaders in Research Program will establish educational activities to train residents in neuroscience research, clinical translational research. **COMPLETE Table 5** summarizes examples of resident-mentor interaction throughout the duration of the leaders in research program.

**Table 5. Example of schedule of events included on the leaders in research program.**

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Activity</th>
<th>Description</th>
<th>Primary Supervisor</th>
<th>Deliverable</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGY2 Months 6-12</td>
<td>Participation in departmental or divisional research projects</td>
<td>Residents are expected to be involved in one or more aspects of an ongoing project in a project PI or designate (in the case of multiple investigators, one investigator will be identified for this)</td>
<td>CUSOM MOC Meaningful participation in a research project as established by CUSOM MOC Meaningful</td>
<td></td>
</tr>
<tr>
<td>PGY2 Month 6</td>
<td>Meet with Research Council Director</td>
<td>Counseling and guidance re: selection of individual research project</td>
<td>Research Council Director</td>
<td>Residents must identify one track for their participation (see below)</td>
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<tr>
<td>PGY2 Months 7-12</td>
<td>Identification of research mentor and project</td>
<td>Residents will identify research project within their track for PGY3 and 4 participation and choose a research mentor for this project</td>
<td>Research Council Director</td>
<td>Submission of form identifying research project and mentor</td>
</tr>
<tr>
<td></td>
<td>Research methodology introductory didactics</td>
<td>Introduction to research project types, methods</td>
<td>Research Council Director Education Council</td>
<td>Completion of: 1. Introductory seminar within didactic series 2. Assigned readings</td>
</tr>
<tr>
<td></td>
<td>COMIRB or IACUC regulatory requirements</td>
<td>Residents will participate in the regulatory trainings needed for their chosen individual project (see below)</td>
<td>Research Council Director Research mentor Departmental research administration</td>
<td>Completion of assigned tasks Receive regulatory certification for participation in research project</td>
</tr>
</tbody>
</table>

CUSOM: Colorado University School of Medicine; MOC: Maintenance of certification; COMIRB: XXXX; IACUC: XXXX

**Evaluation Process:** After the completion of the Foundations of Leadership program, residents will enroll in any of the three Leadership programs. These programs are elective and residents will have the option to not enroll in any, enroll in some or all of them. As soon as residents chose their preferred program, they will be assigned a faculty mentor. The role for the mentor is well defined and pre-specified.

During their role, residents will have well-defined expectations and will be evaluated in a series of psychometric properties that are common to all three programs. In accordance to published recommendations on how to evaluate non-cognitive humanistic skills and professionalism, we
established a multidimensional approach with a series of instruments that reflect both formative as well as summative assessments. These tools include: Humanistic Teaching Physicians Effectiveness Tool (HTPE), MLG30 questionnaire (Competency Framework), Leadership Skills Questionnaire, Professionalism Mini-Evaluation Exercise: P-MEX, ACGME Milestones, etc. In addition, each leadership program will have specific means of evaluation of resident performance. Table 8 summarizes the specific tools to evaluate leadership skills and resident performance on each of the leadership tracks. In order to include a multisource evaluation medical student, resident, fellows and faculty evaluations will be collected regularly. Residents will also have the opportunity to develop a quality improvement project on medical education as well as participate in scholarly activities related to the field of medical education.

Table 8. Specific tools to evaluate resident performance on each leadership program.

<table>
<thead>
<tr>
<th>Leadership Program</th>
<th>Method of assessment of resident</th>
<th>Criteria to be assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundations of Leadership</td>
<td>• Humanistic Teaching Practice Effectiveness Questionnaire;</td>
<td>Longitudinal change on global and total scores before and after the activities</td>
</tr>
<tr>
<td></td>
<td>• Leadership Skills Questionnaire;</td>
<td></td>
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<tr>
<td></td>
<td>• Management and Leadership Questionnaire (MLQ30);</td>
<td></td>
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<tr>
<td></td>
<td>• Clinical Cultural Competence Questionnaire;</td>
<td></td>
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<tr>
<td></td>
<td>• P-MEX</td>
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<tr>
<td></td>
<td>• Milestone-based evaluation on Professionalism, Interpersonal and Communication Skills</td>
<td></td>
</tr>
<tr>
<td>Leaders in Education</td>
<td>• Direct observation from mentor;</td>
<td>Longitudinal change on global and total scores during the entire length of the program</td>
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<tr>
<td></td>
<td>• Medical/Resident student evaluation on resident performance as educator;</td>
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<tr>
<td></td>
<td>• Quality of the oral and written presentation for curriculum development in Neurology;</td>
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<tr>
<td></td>
<td>• Quality and participation on PBL labs;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Participation on scholarly activities in medical Education;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Milestone-based evaluation on Practice-based learning and Improvement</td>
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</tr>
<tr>
<td>Leaders in Administration</td>
<td>• Direct observation from mentor;</td>
<td></td>
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<tr>
<td></td>
<td>• Multisource evaluation from nurses, administrative personnel in clinic, and residents on performance as administrators;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Milestone-based evaluation on Professionalism, Interpersonal and Communication Skills</td>
<td></td>
</tr>
</tbody>
</table>
- Completion on tutorials and mandatory courses;
- Pre-test and Post-test on COMIRB, IHI and QI project design;
- Milestone-based evaluation on Practice-based learning and Improvement, System-based practice

| Leaders in Research          | Direct observation from mentor; multisource evaluation from peers working with resident in their research projects;  
|                             | Completion on tutorials and mandatory courses;  
|                             | Pre-test and Post-test on GCP, Trial Design, Biostatistics, Evidence Based Medicine;  
|                             | Poster and oral presentation on their research results;  
|                             | Publications and scholarly activities that resulted from their work;  
|                             | Milestone-based evaluation on Practice-based learning and Improvement |
| Longitudinal change on global and total scores during the entire length of the program |

**Subject population:**
All sixteen adult neurology residents at the Department of Neurology, University of Colorado will be eligible to participate in this study.

**Timeline of events and evaluation:**
At the beginning of their PGY2 year, all residents will complete a series of baseline evaluations. These evaluations include: Leadership questionnaires (Humanistic Teaching Practice Effectiveness Questionnaire; Leadership Skills Questionnaire; Management and Leadership Questionnaire (MLQ30); Clinical Cultural Competence Questionnaire), and ACGME Milestone-based evaluation (Professionalism and Interpersonal and Communication Skills). After the completion of the foundations of leadership course and every 12 months from enrollment, residents will complete the same set of questionnaires. In addition, each leadership program will include specific tools for assessment (see table 8 for details). Those tools will be evaluated at baseline and every year from the time of enrollment on each leadership program.

**Data analysis:**
Changes in evaluations from baseline among participants will be analyzed with longitudinal mixed model regression. The mean differences between times will be calculated and tested for statistical significance (α=0.05) using T-tests. If the changes from baseline to end are
comparable to the standard deviations of the scales (7.31 for the HTPE) then at least 13 participants should be adequate to obtain a power of 90%.