

Consolidated Academic and Research Exposition: A Pilot Study of an Innovative Education Method to Increase Residents' Research Involvement

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ABSTRACT

Background: Internal medicine residents at the Ochsner Clinic Foundation stay engaged with clinical work and have difficulty initiating and completing research and publishing their scholarly activities. Commonly cited barriers include lack of knowledge about institutional research programs, lack of confidence regarding medical writing skills, lack of time, and failure to understand the value of research. The residency directors at Ochsner initiated the Consolidated Academic and Research Exposition (CARE) program to teach basic research skills and encourage residents' interest and productivity in research.

Methods: The CARE program includes 4 core components: house staff mentoring and the Resident Career Development Program, a journal club, medical writing instruction, and research engagement. Particular emphasis is given to projects that could be completed within a 1-month period and result in publication, enabling residents to use a 1-month elective rotation during their first postgraduate year. The sessions are mandatory for residents, except for those on specified

rotations, including the critical care service and the night float rotation and those who are postcall.

Results: In 2010-2011, 6 residents submitted abstracts to the Louisiana Chapter of the American College of Physicians Associates meeting; 2 abstracts were accepted for presentation. In 2011-2012, there were 14 submissions, 4 of which were accepted for presentation. In 2010-2011, there were 4 submissions to the Southern Hospitalist Conference, which increased to 7 submissions in 2011-2012. The second best presentation award at the Southern Hospitalist Conference was also earned by a resident of this institution. The program saw a 110% total increase in scholarly activity from 2010-2011 to 2011-2012.

Discussion: The CARE program has been in existence for approximately 1 year. Preliminary results were tabulated based on research proposals, posters, abstracts, case reports, and presentations submitted and/or accepted at leading medical conferences over the past year as compared to the same period 1 year ago. Residents, based on the Accreditation Council for Graduate Medical Education Resident Survey responses, were more satisfied with the opportunities provided to them to participate in research or scholarly activities. Our preliminary results suggest that an organized, structured research curriculum in internal medicine residency programs is critical to promoting, initiating, and completing scholarly activity during a residency program.

Conclusion: Ochsner's CARE program has appreciably enhanced internal medicine residents' interest in research-related activity, resulting in a significant increase in resident-authored research papers, abstracts, posters, and case reports being accepted at leading national medical conferences.

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INTRODUCTION

Ochsner Clinic Foundation, one of the largest independent academic medical centers in the United States, trains more than 200 medical residents in 19

programs annually. Employing more than 13,000 employees and more than 850 physicians in more than 90 medical specialties and subspecialties, Ochsner conducts more than 300 clinical research trials annually. In 2011, Ochsner received approximately \$3.4 million in extramural funding for research, and its investigators published nearly 300 articles in scientific and medical journals.¹ Despite the volume of research at Ochsner, contributions from physicians in training are minimal. Commonly cited barriers include lack of knowledge about institutional research programs, lack of confidence regarding medical writing skills, failure to understand the value of research, lack of funding support, unavailability of faculty mentors, and, most important, lack of time.^{2,3} Because research is vital to the success and advancement of the field of medicine, the Accreditation Council for Graduate Medical Education (ACGME) now mandates that all internal medicine residents actively participate in some form of scholarly activity, such as “original research, comprehensive case reports, or review of assigned clinical and research topics.”⁴ However, many residency programs, including the internal medicine program at Ochsner, do not have an organized research curriculum or a network to equip residents with the tools to perform research. Furthermore, the intellectual curiosity and critical thinking that attract medical students to internal medicine are often thwarted by the demands of clinical duties. Understandably, research often becomes a low priority relative to patient care. As a result, the internal medicine residents at Ochsner have difficulty initiating, completing, and publishing scholarly work.

To ameliorate this problem, the internal medicine residency program leaders initiated the Consolidated Academic and Research Exposition (CARE) program to provide basic research tools, structure a research experience within the time constraints of residency, and stimulate medical students’ and residents’ interest and productivity in all areas of research. Under the direction and leadership of Indranill Basu Ray, MD, the CARE program was envisioned as a way to introduce an academic and research environment at all levels of training, from medical students to residents, by combining clinical training with a structured research experience. This pilot project was initially instituted within the internal medicine residency program, but is intended to eventually alter the research and academic atmosphere for all graduate medical education programs. The program involves clinical and translational research training that impacts day-to-day clinical practice, including population-based studies leading to improvement in the quality and delivery of patient care. Another goal of the program is to facilitate a

supportive learning environment provided by monthly research forums for medical students, residents, mentors, and faculty. Table 1 illustrates the research forum’s partial schedule, topics, and speakers. Other advantages afforded by this program include the opportunities to develop productive mentee-mentor relationships, strengthen the residents’ curriculum vitae in preparation for fellowship, explore the possibility of an academic career, complete all the residency program requirements, and foster intellectual curiosity.

METHODS

In addition to monthly research forums to discuss research-related issues, including research methodologies, the CARE program includes 4 core components.

1. House Staff Mentoring and the Resident Career Development Program

Dr Basu Ray serves as the research-related mentor for the internal medicine residency program and pairs residents with faculty researchers based on their specialties and interests. Residents also receive a list of faculty researchers and their current projects and areas of interest to make it easier for residents to identify a mentor in their respective areas of interest. Currently, more than 10 faculty researchers represent multiple specialties, including cardiology, rheumatology, pulmonary and critical care, and primary care medicine. These faculty researchers also serve as mentors and provide guidance to their residents as well as career counseling as appropriate. Residents meet at least once a month with mentors, but are encouraged to meet as often as necessary. Mentors give residents information about the latest clinical topics in research that are presented at the research forums.

Because original research is not always feasible, particular emphasis is given to projects that can be completed within a 1-month period and result in publication. This approach enables residents to use a 1-month elective rotation during their first postgraduate year. Time-limited projects such as secondary data analyses and literature reviews leading to first-author publications are examples of projects that can be completed within 1 month.

2. Journal Club

All residents, even if they are not actively involved in research, are expected to be able to search, read, and critically evaluate medical literature. The journal club meets bimonthly on the 2nd and 4th Thursdays of the month. Topics cover all major medical subspecialties. The residents who lead the discus-

Table 1. Research Forum Meetings—2012-2013 Schedule^a

Date	Speaker	Topic
June 28	Kathleen McFadden Managing Editor, <i>The Ochsner Journal</i>	What Medical Editors Look for in an Article
July 26	Prof. Diann Eley, MBBS UQ Program Research Coordinator	Medical School Research Program
August 30	Adriana Dornelles Statistician	Basic Stats
September 27	Adriana Dornelles Statistician	Research Stats: What To Do or Not To Do in Excel
October 25	Stephanie Gaudreau Ochsner IRB Administrator	Institutional Review Board
November 29	Elizabeth Holt Senior Epidemiologist	How To Do Metaanalysis
December 27	Kelly Fogarty Library Manager	Searching Ovid: How To Make the Most of Your Search
January 31	Pukar Rati Manager, Clinical Trials Unit/Biobank	Human Research and Ethics Part 1 and Part 2

^aPartial schedule.

sions give PowerPoint presentations and discuss updated practice protocols to improve existing patient care. The first 20-30 minutes of the meetings are devoted to reviewing different aspects of research methodologies, such as research design and analysis, how to complete an application to the institutional review board, how to search PubMed or Cochrane, how to access and complete the Collaborative Institutional Training Initiative course on ethics, and how to conduct a metaanalysis.

3. Medical Writing Instruction

Residents attend lectures on how to write grants, manuscripts, abstracts, and case reports.

4. Research Engagement

Residents can choose to participate in a research elective for the duration of 1 month in postgraduate year (PGY) 1 and PGY 3 or up to 2 months in PGY 2. To participate in the research elective, the resident must submit a letter stating his or her desire to participate in either a 1-month research rotation or a continuity experience that could potentially span several months or the entire length of residency. The letter must identify the resident's research mentor and the research topic, outline the research plan, and explain the expected product of the research experience (eg, paper or poster). Also, the resident must submit a letter from his or her respective faculty researcher/mentor stating that he or she has agreed to work with the resident, identifying whether any patient contact will occur during the research rotation,

and agreeing to evaluate the resident at the end of the rotation. The resident usually meets with his or her faculty mentor 2-3 times per week for the 1-month elective experience but must meet with his or her research mentor at least twice monthly for research experiences longer than 1 month for the duration of the research experience.

Evidence-Based Medicine Elective

Residents may also choose the evidence-based medicine elective. This course is designed to further stimulate the appetite for clinical research. It is a new 2-week block elective offered to residents in any year of training, but is preferably for first- and second-year residents interested in learning more about and potentially pursuing a career that includes clinical research and academic medicine. Residents round with a medicine team in the mornings and spend part of the afternoon finding and reviewing the medical literature that supports or refutes a certain medical practice and/or answers clinical questions posed during rounds. The resident gathers the evidence and presents it as a metaanalysis at one of the research forums, discusses it during journal club, and/or submits it for possible publication. The course extends across the spectrum of medical subspecialties. Residents are again introduced to different aspects of clinical and/or health service research, including research design and analysis, epidemiology, outcomes research, biostatistics, and human subject protection (Table 2). Instruction is also given on how to write medical abstracts and give medical

Table 2. Consolidated Academic and Research Exposition (CARE) Program 2011-2012 Speaker Schedule^a

Friday, February 10, 2012	Mentor Talk-Edward D. Frohlich, MD
Friday, February 24, 2012	Mentor Talk-Indranill Basu Ray, MD
Friday, March 9, 2012	Mentor Talk-Leonardo Seoane, MD
Friday, March 23, 2012	Writing an Abstract-Kathleen McFadden/Rita Premo
Friday, April 13, 2012	Guest Speaker-Dr. Larissa Lucas, Editor, DynaMed
Friday, April 27, 2012	What Does a Medical Editor Look for in a Submitted Article? -Kathleen McFadden/Rita Premo
Friday, May 11, 2012	Mentor Talk-Richard Deichmann, MD
Friday, May 25, 2012	Mentor Talk-Joseph Breault, MD
Friday, June 8, 2012	Mentor Talk-Richard Re, MD

^aPartial schedule.

presentations. Residents can also elect to spend time working on other concurrent projects.

Attendance and Survey Responses

All sessions are mandatory for residents except those who are on specified rotations, including the critical care service and night float rotations.

Residents complete the ACGME Resident Survey annually. The survey is an anonymous electronic survey administered in May each academic year that includes questions about multiple areas of the resident's medical education, clinical experiences, adherence to residency work hours, scholarly activity, and interaction with faculty. Of note, the ACGME Resident Survey questions concerning scholarly activity were worded slightly differently in 2011-2012 compared to the 2010-2011 survey, and the answers to the survey were stratified into different degrees of agreement/disagreement. Thus, we combined the *Extremely* and the *Very* results for the 2010-2011 ACGME Resident Survey and set them as equal to the *Yes* and *Agree* results in the 2011-2012 ACGME Resident Survey.

RESULTS

We evaluated the scholarly successes of our residents as evidenced by resident publications, research proposals, posters, and presentations submitted to and/or accepted at both regional and national meetings in the past year as compared to the same period 1 year ago. Also, we studied residency satisfaction scores as primary endpoints. The response rate for the ACGME Resident Survey was 86% in 2010-2011 and 84% in 2011-2012. According to the survey, 80.4% of residents in 2011-2012 versus 62.3% of residents in 2010-2011 answered Agree or Yes to the question "Do the faculty promote an environment of inquiry and scholarship in the residency program?" (Figure 1), an 18.1% increase over 2010-2011 results.

However, as shown in Figure 2, residents' satisfaction with the opportunities provided to them to participate in research or scholarly activities did not differ significantly between 2010-2011 and 2011-2012: 71.7% of residents agreed they were satisfied with scholarly activities in 2010-2011 versus only 63% in 2011-2012.

In 2010-2011, residents submitted 6 abstracts to the Louisiana Chapter of the American College of Physicians Associates meeting, 2 of which were accepted for presentation. In 2011-2012, there were 14 submissions to the same meeting, 4 of which were accepted. In 2010-2011, there were 4 submissions to the Southern Hospitalist Conference, which increased to 7 submissions in 2011-2012. Additionally, the second best presentation award at the Southern Hospitalist Conference was earned by a resident of this institution. At least 4 different internal medicine subspecialties were represented at the 2011-2012 Southern Hospitalist Conference, including cardiology, endocrinology, infectious disease, and gastroen-

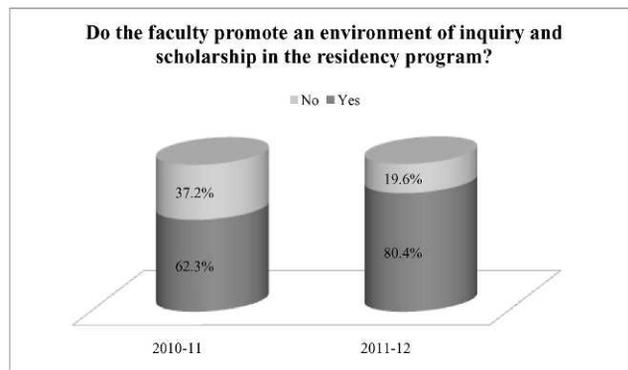


Figure 1. Accreditation Council for Graduate Medical Education Resident Survey comparing 2010-2011 and 2011-2012 results to the question "Do the faculty promote an environment of inquiry and scholarship in the residency program?" (n=53 in 2010-2011 and n=51 in 2011-2012).

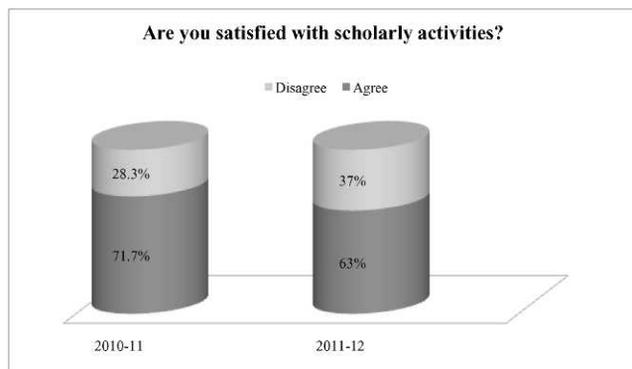


Figure 2. Accreditation Council for Graduate Medical Education Resident Survey comparing 2010-2011 and 2011-2012 results to the question “Are you satisfied with scholarly activities?” (n=53 in 2010-2011 and n=51 in 2011-2012).

terology. Overall, scholarly activity increased by 110% from 2010-2011 to 2011-2012 as displayed in Figure 3: 21 total scholarly activities in 2011-2012 compared to 10 total in 2010-2011.

DISCUSSION

The CARE program has been in existence for approximately 1 year. Results after 1 year suggest that an organized, structured research curriculum in internal medicine residency programs is critical to promoting, initiating, and completing scholarly activity. The ongoing challenge for many residents, specifically for PGY 1 physicians, is budgeting time, particularly in light of the new residency work hour constraints and the fear of committing to a particular project within a medicine field before they are certain of the subspecialty field they wish to pursue.

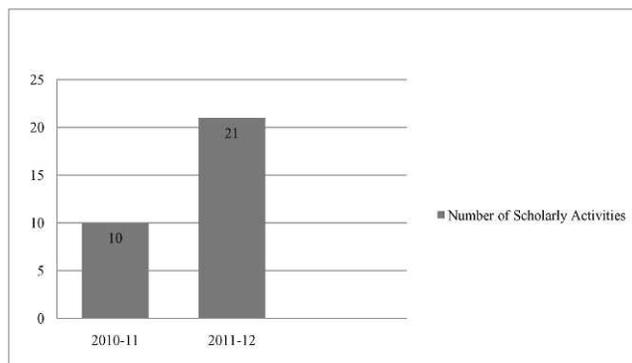


Figure 3. Scholarly activity results based on the number of research proposals, posters, abstracts, case reports, presentations submitted and/or accepted at leading medical conferences in the past year as compared to the same period 1 year ago.

One limitation to this study is that not all residents attended or were required to attend the mandatory sessions or research forums. Residents on a critical care or night float rotation and those who were postcall or off duty in accordance with residency work hour regulations were not required to attend. One way to circumvent this problem that the CARE program advisors are currently facilitating is to videotape meetings and lectures and post them online to be viewed at the resident’s leisure.

The change in terminology in the ACGME Resident Survey from 2010-2011 to 2011-2012 was also a study limitation. We attribute the decrease in satisfaction with scholarly activities shown in Figure 2 to the fact that not all residents were present for many of the mandatory sessions and consequently did not benefit from the research curriculum. In addition to the change in language of the survey, the perspectives about and motivations for research may be different between the internal medicine residents and the medicine preliminary, radiology, ophthalmology, neurology, and anesthesia residents who account for approximately 25% of the internal medicine residency program but are only in the program for 1 year and may continue their training at other institutions afterwards. Another hypothesis is that as residents became more engaged in research and scholarly activities, they also became more aware of their individual and/or institutional limitations and that heightened awareness may have also influenced their responses.

One additional finding that may be problematic in evaluating a medical training program’s research efforts is accurate reporting of resident research. Research efforts can often be underreported if a resident is working in a subspecialty department or any department outside of his or her residency program and subsequently fails to report research or scholarly activity to his or her respective home program. One way to circumvent this problem is to require residents to submit a formal request to conduct any research outside of his or her respective department to more efficiently track all resident research endeavors.

In further evaluating the success of the CARE program, future studies will include the following primary endpoints: the residents’ perceived levels of competence and the likelihood that they will submit scholarly projects and resident surveys given at baseline before matriculation into the CARE program and afterwards.⁵

CONCLUSIONS

Exposure to research and encouragement of scholarly activity are important aspects of medical residency training programs. A structured research curriculum in an internal medicine residency and likely any medical residency program is vital to the success of physician

trainees for both initiating and completing research and other scholarly activities during residency. The CARE program is practical, implemented via a team approach, and can be easily translated into an array of other medical residency programs. Ochsner's CARE program has appreciably enhanced the internal medicine residents' interest in research-related activity and has resulted in a significant increase in resident-authored research paper, abstract, poster, and case report acceptance to leading national medical conferences.

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Epitoma

The phased implementation of the Accreditation Council for Graduate Medical Education's Next Accreditation System will begin in July 2013 for seven individual specialties. Categorization of the Common Program Requirements (CPRs) for the launch of this new program has been completed. One of the essential elements of the new CPRs is the involvement of residents in scholarly activities (CPR IV.B.) The curriculum must now advance residents' knowledge of basic research principles, which when applied to patient care should yield output for scholarly activity such as a peer-reviewed manuscript submission, a poster presentation, a podium presentation, or a published abstract. To this end, the authors of this study have created the Consolidated Academic and Research Exposition program to ensure compliance with this new requirement. The planning and implementation of this program have led to enhanced resident interest and productivity in an internal medicine residency and have yielded improved annual resident survey results pertaining to faculty and staff "creating/promoting an environment of inquiry and scholarship."

—Guest Editor Ronald G. Amedee, MD

This article meets the Accreditation Council for Graduate Medical Education and the American Board of Medical Specialties Maintenance of Certification competencies for Patient Care, Medical Knowledge, Interpersonal and Communication Skills, and Systems-Based Practice.