The Ochsner Journal 15:297–298, 2015

Ochsner Research Update, 2014-2015

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The 2014-2015 academic year was marked by continued research productivity and growth. Clinical, translational, and health service investigations proceeded on pace, and in addition, a new initiative was introduced in the form of Ochsner participation in the National Patient-Centered Clinical Research Network (PCORnet). The latter consists of a number of clinical data research networks across the country. Ochsner participates in the Louisiana Clinical Data Research Network (LACDRN) that links Ochsner, Tulane University, Louisiana State University School of Medicine, Pennington Biomedical Research Center, PATH (Partnership for Achieving Total Health), and the Louisiana Public Health Institute in a federally sponsored collaboration aimed at developing the means for studying medical questions relevant to the needs of patients by studying patients in real time as they receive care. Dr Sohail Rao, Ochsner System Vice President for Research, serves as Ochsner principal investigator for this effort. Both observational and randomized studies are envisioned as part of the initiative. The essential point is the idea that the local community is to be given input into the subjects that are studied and the research is done at low cost so it becomes an ongoing mechanism for continually improving care. This effort has made great strides. A community board has been established to solicit patient input, and early studies of mechanisms to reduce obesity are already underway. Also, in an effort to develop a mechanism for low-cost clinical research, the LACDRN has developed an electronic tablet application that is linked to patients' electronic medical records and provides patients the opportunity to enroll and participate in clinical trials while visiting the clinic for routine care. PCORnet has also approved the ADAPTABLE (Aspirin Dosing: A Patient-centric Trial Assessing Benefits and Long-term Effectiveness) trial, a prospective study of two doses of aspirin in the secondary prevention of cardiovascular complications. This study will be launched in fall 2015. Taken in its entirety, PCORnet represents a novel and potentially very productive model for the ongoing conduct of clinical research.

During the year, Ochsner translational research efforts continued to make progress. For example, Ochsner scientists, headed by Dr Li Li of the Institute of Translational Research, have established collaborations with Tulane University School of Medicine to investigate the role of cancer stem cells and the tumor-suppressing protein p53 in the treatment of bladder cancer. The goal is to develop effective therapies having low toxicity through an understanding of tumor biology. Dr Hernan Bazan and his team in vascular surgery continue to investigate the role of microRNA regulation in carotid plaque stability and rupture. This effort also involves a collaboration with Tulane University School of Medicine. In another example of ongoing research, the renal group headed by Drs Leonard Meggs and Himanshu Vashistha has continued to make progress in the study of mechanisms involved in diabetic renal disease and in developing regenerative therapies for the control of this disorder. Similarly, Ochsner neurosurgeons, under the direction of Dr Olawale Sulaiman, continue their work to develop regenerative therapies for the repair of peripheral nerve injuries. They currently are investigating the use of adipose-derived cells, either freshly isolated as stromal vascular fraction cells or as culture expanded adipose-derived stromal/stem cells. These cells can express glial-like properties and potentially support effective peripheral nerve regeneration.

Clinical research also made progress. For example, cardiologists directed by Dr Robert Bober studied the use of cardiac positron emission tomography (PET) scanning in the prediction of response to revascularization therapy. Revascularization therapy can at times fail to produce benefit because physicians are unable to accurately assess the physiologic significance of a specific arterial lesion under consideration for intervention. Ochsner investigators are working to develop PET-based methodologies for improving lesion assessment to better choose lesions for intervention. As another example, the Ochsner hepatology group, led by Dr George Therapondos, is investigating the possibility that occult hepatic encephalopathy can exist in liver transplantation patients before transplantation and lead to postoperative neurological sequelae. This suggests the possibility that prophylactic therapy could be beneficial to these patients if provided early in their course. An Ochsner-University of Queensland team headed by Dr Bridget Bagert investigated the pathologic role of a specific antimyelin antibody in multiple sclerosis. This work can potentially identify biomarkers for disease progression and lead to novel treatments for multiple sclerosis. Also during the year, Professor Carlos Salomón, head of the Exosome Biology Laboratory at the Centre for Clinical Diagnostics of the University of Queensland, visited Ochsner. Professor Salomón is an expert in exosome biology and its potential use to generate valid biomarkers for disease. He is collaborating with Dr Sherri Longo of the Ochsner Department of Obstetrics and Gynecology in an exciting effort to identify markers of pregnancy complications. Multiple other examples of clinical research could be provided given that clinical studies are being conducted in virtually every clinical department.

Health service research also made significant progress. In addition to the outcomes studies associated with the PCORnet initiative, the CoSMO (Cohort Study of Medication

Adherence in Older Adults) drug compliance study in hypertensive patients, headed by Dr M. A. ''Tonette'' Krousel-Wood, continued its efforts to dissect the factors that influence medication compliance and the consequences of noncompliance. Interestingly, this group has recently showed a divergence in the effects of poor compliance on blood pressure, mental and physical functioning, and refractoriness of blood pressure. This effort to determine the consequences of nonadherence is important in better tailoring therapies to patients. In addition, Dr Eboni Price-Haywood has joined the Ochsner research team and directs the Center for Applied Health Services Research, a consolidated initiative to conduct outcomes research and apply it to improving patient care within the Ochsner system.

Also during the year, Ochsner Research initiated several competitive funding programs. Grants were awarded to Ochsner scientists for expanding translational research and to Ochsner clinicians to expand clinical research. These seed grants were designed to foster collaborations between Ochsner clinicians/scientists and scientists at the University of Queensland and other research organizations. In addition, 4 postdoctoral research fellowships were awarded to Ochsner-University of Queensland medical students. These awardees work under the supervision of University of Queensland or Ochsner scientists on ongoing research studies.

For the past 30 years, Ochsner has bestowed the Alton Ochsner Award Relating Smoking and Disease to nationally and internationally recognized scientists whose work has produced major advances in the prevention of smoking and the treatment of smoking-related diseases. This award was inspired by the groundbreaking contributions made by Dr Alton Ochsner to understanding the dangers of smoking and to advocating for smoking cessation. An awards committee, under the direction of Alton Ochsner Distinguished Scientist Dr Edward D. Frohlich and consisting of nationally recognized clinicians, scientists, and epidemiologists, annually confers the award that is presented at the national meeting of the American College of Chest Physicians. This year, the awardees were also invited to participate in an all-day Ochsner-sponsored symposium in New Orleans dealing with the problem of smoking. The 2015 laureates, Dr Laura Bierut, professor in the Department of Psychiatry at Washington University School of Medicine, and Dr Charles Hennekens, the first Sir Richard Doll professor and senior academic advisor to the dean in the Charles E. Schmidt College of Medicine at Florida Atlantic University, participated in the event. Each delivered a plenary lecture. Dr Bierut's award-winning work dealt with identifying genes responsible for predisposing smokers to nicotine dependence. Dr Hennekens' classic work dealt with defining the risks associated with smoking, especially stroke, as well as determining the degree to which smoking cessation can lower risk. Their lectures were extremely well-received, and we look forward to next year's award lectures. On the award's 30th anniversary, it is appropriate to recognize Dr Frohlich for his acumen and tireless work in initiating and sustaining the Alton Ochsner Award Relating Smoking and Disease.

As in past years, Ochsner Research Day was a great success. This year's theme was cardiovascular science. One hundred fifty-seven abstracts were accepted for poster presentation, and 16 oral presentations were given. Awards were given in several categories including best presentation by a medical student, by a resident or fellow, by a nurse, and by a pharmacist. The Research Day keynote address was given by Dr Marc Pfeffer, Dzau professor of medicine at Harvard Medical School. Dr Pfeffer has a long and productive record of studying cardiovascular drugs in large populations of patients with heart disease. Dr Pfeffer's Research Day lecture centered on his work demonstrating the beneficial effects of angiotensin-converting enzyme inhibition on ventricular dilatation and failure after heart attack. And as always, Research Day provided the opportunity for clinicians and scientists to interact with potential colleagues at Ochsner, local universities, and the University of Queensland.

In sum, the research enterprise continues to grow, and we are looking forward to continued progress in the coming year.