

Brown to establish Center for Evidence-Based Medicine

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The difference between abundant information and useful knowledge is a problem in many fields including health care, where life and death can depend on the decision to prescribe a drug or perform a surgery. A new center at Brown University, led by a team of five experts in evidence-based medicine, will advance the study of turning heaps of data in research papers into a powerful understanding that doctors and scientists can apply.

"Evidence-based [medicine](#) will be extraordinarily important as we move forward in a new health care environment," said Dr. Edward Wing, dean of medicine and biological sciences at Brown. "Clinicians and hospitals will depend on this kind of research and analysis to provide the highest [quality care](#). Furthermore, the expertise of these individuals will be important resources for many faculty across the Brown campus. Evidence-based medicine is the core of good quality care."

The new faculty members include Dr. Thomas Trikalinos, Dr. Joseph Lau, and Prof. Christopher Schmid, a highly regarded trio currently based at Tufts University Medical Center in Boston. In addition, their close collaborators Dr. Issa Dahabreh, a physician, and Byron Wallace, a computer scientist, will also come from Tufts for appointments as research faculty members. Trikalinos, who will direct the new center, will arrive at Brown in mid-March, while Schmid, Dahabreh, and Wallace will follow in June; Lau will arrive in the fall.

Trikalinos said coming to Brown will place the team in a broad and

multidisciplinary academic environment, with a focus on research and students. That will allow for an expansion of the researchers' work on meta-analysis and systematic review into new directions, both academic and applied.

"The aim of the center is to advance the methodology of research synthesis, and knowledge synthesis and integration," said Trikalinos, who, like his colleagues, blends computer science and mathematics into his work. "We also want to get into the broader areas of nearby disciplines such as decision analysis and economic analysis. At the same time we want to tackle applied problems, particularly in biomedicine, which is our forte, but also [expand into] other disciplines."

Evidence-based medicine and science

A central tenet of evidence-based medicine — that doctors should base treatment decisions on what rigorous quantitative research has found to be the most likely outcome for patients — is a simple one. Actually determining what the medical literature has to say about a treatment, not just in one study but in many, is a complex scientific endeavor that is still a growing area of study, said Terrie Fox Wetle, associate dean of medicine for public health. The new center will be based in Brown's Public Health Program.

Increased use of evidence-based medicine is a major emphasis of health care reform under the Affordable Care Act passed in 2010.

But much like many consumers puzzle over seemingly different but related studies about the supposed health benefits from a particular food or dietary supplement, doctors too are confronted with many studies about treatments. The research team develops the sophisticated analytical methods necessary to reconcile those individual findings so that doctors can draw a more definitive and reliable conclusion.

About 20 years ago, Lau wrote one of the first computer programs to aid in such "meta-analyses" of study data and co-authored a landmark set of papers in the *New England Journal of Medicine* and the *Journal of the American Medical Association* applying the techniques to studies of heart attack treatments.

Since then the group has continued to develop mathematical and computational methods for selecting and comparing studies, then synthesizing information from those studies to aid in medical and other decision making. They have also won grants to develop software that can make such analysis easier for others to conduct and to develop databases to ensure that researchers distributed around the world don't needlessly duplicate efforts.

Research to develop evidence-based medicine methods has value beyond determining the comparative effectiveness of treatments. Another important aspect of the work is helping to explain why similar studies sometimes find notably different results, Trikalinos said. Sometimes a sophisticated analysis of several studies can identify bias that wasn't easily apparent in one study alone.

Schmid also said that scientists often have questions that are surprisingly similar to those faced by doctors, offering important opportunities to expand the methods into other fields. Consider the parallels between choosing the best treatment for a patient's infection and choosing the best approach to combat an ecosystem's invasive insect problem.

A new center at Brown

At Brown, the new researchers will team up with the broader community of public health, medical, and scientific researchers at the University to advance their studies and to engage them more deeply with clinical practice in Rhode Island. The researchers frequently team with

practicing physicians when working with the evidence about a particular clinical treatment and look to [computer scientists](#) and mathematicians for insights into basic methods.

"We have already been making contacts with folks at Brown and people at its affiliated hospitals," Lau said.

The new researchers will also advise doctoral and masters students and teach classes.

"There are only so many of us coming and I think the need is large," Lau said. "What we want to do is begin training a generation of clinicians and methodologists who will be able to disseminate these methodologies."

Provided by Brown University

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