INNOVATIONS in pharmacy

Volume 1 | Number 1 Article 4

6-1-2010

Will Translational Science Help Reduce Costs of Illness?

Guvenc Kockaya

Albert I. Wertheimer

Will Translational Science Help Reduce Costs of Illness?

Guvenc Kockaya, MD[a] and Albert I. Wertheimer, PhD[b]
[a]Istanbul University, Istanbul Medicine Faculty, Pharmacology and Clinical Pharmacology Department
[b]Temple University, School of Pharmacy, Center for Pharmaceutical Health Services Research

The purpose of this commentary is to (1) review the definition and potential benefits of translational science research, (2) comment on funding trends for translational science, (3) pose a question for scientists to discuss, and (4) propose recommendations for such a discussion.

Definition and Potential Benefits of Translational Science/Research

Translational science/research is a new and developing method for improving human health. The meaning of the method is translating scientific discoveries into practical applications. In the beginning, discoveries started at "the bench" with basic research — in which scientists study disease at a molecular or cellular level — then progress to the clinical level, or the patient's "bedside".

This bench-to-bedside approach can be a two way method. One way is from the basic scientist to clinical scientist. For example, basic scientists can find new bio-markers, new ways and new opportunities for clinicians to help patients. In the other direction, clinicians can provide data to basic scientists for developing new opportunities to investigate.

Clinical research is complex and barriers can develop between clinical and basic research. Communication is not always linear or direct. However, such barriers between clinical and basic research can be overcome by the translational approach since basic and clinical researchers work more as a team and use iterative communication strategies while the research is being designed, conducted, and analyzed. We propose that the team model is more effective than a single direction approach and that translational science has become the new engine for developing methods for improving human health.

Clinical and Translational Science Awards

To help foster the translational science approach, the National Institutes of Health (NIH) held the Clinical and Translational Science Awards (CTSA) Consortium in October 2006 for improving the new vision named translational science.[1] The purpose of the CTSA Program, which the National Center for Research Resources (NCRR) is leading on behalf of the NIH Roadmap for Medical Research (http://www.ncrr.nih.gov/), is to assist institutions to forge a uniquely transformative, novel, and integrative academic home for Clinical and Translational Science that has the consolidated resources to captivate, advance, and nurture a cadre of well-trained multi- and inter-disciplinary investigators and research teams; create an incubator for innovative research tools and information technologies; and synergize multi-disciplinary and inter-disciplinary clinical and translational research and researchers to catalyze the application of new knowledge and techniques to clinical practice at the front lines of patient care.[1]

These efforts have resulted in many researchers who are using the translational method in their research. Also the research budgets of institutes are being allocated to translational research projects and this allocation is continuing to grow.

Cost-effectiveness of Translational Science/Research

In light of this new paradigm, we need to ask: "Are translational findings useful and cost-effective for patients and society?" If such an approach is not cost-effective, these budgets will be wasted. On the other hand, if this approach is cost-effective, it would be wise to allocate additional budget amounts into translational science research projects.

For example, if a biomarker for detecting kidney injury caused by diabetes or hypertension in an early phase could be identified, then treatment could be improved[2-5]. However, the question becomes: "Is the bio-marker affordable enough so that it would be cost-effective to screen most diabetes or hypertension patients?"

In order to answer such a question, valid estimates related to prevalence and incidence of disease, treatment costs, screening costs, cost of illness, specificity of bio-markers, rates of inflation, and other factors must be developed. Such an approach would allow the consideration of potential cost-savings through translational science.

Recommendations for Future Discussion

According to the U.S. Congressional Budget Office, there is "a limited amount of evidence available about which treatments

work best for which patients and whether the added benefits of more cost-effective but more-expensive services are sufficient to warrant their added costs. Together, those findings suggest that generating better information about the costs and benefits of different treatment options – through research on the comparative effectiveness of those options – could help reduce health care spending without adversely affecting overall health."[6]

We recommend that comparative effectiveness analysis should be integrated into translational science and research before, during, and after such "bench-to-bedside" research is conducted. We propose an enhanced approach that could be referred to as "bench-to-beside-to-best practices" research. This approach would incorporate basic, clinical, and cost-effectiveness research in an iterative manner so that analysis could be conducted before budgets grow out of control.

We propose several questions and ideas for further discussion in this area:

1. Should NIH expand its support for new projects focused on performing cost-effectiveness analysis of translational science?[7]
2. Should translational science researchers show the impact of a new translational trial with estimated cost-effectiveness or cost-utility figures before getting permission for budget or ethics committee work?[8]
3. Should NIH assign priority for new translational trials? For example; cardiovascular diseases are the most common ailments and at the top of the burden of illness estimates. Should translational research for cardiovascular diseases be given a higher priority rather than other diseases based upon potential cost-effectiveness impact?
4. Translational science/research may help reduce the budgets of drug development. Should pharmaceutical firms contribute more to the budgets of translational science/research?[9]
5. Translational science/research may help reduce the budgets of health insurers. Should health insurers contribute more to the budgets of translational science/research?
6. Should comparative effectiveness be a required part of the drug approval process?
7. Should comparative effectiveness be a required part of the drug formulary decision process?
8. Should government funding support post-graduate programs for training individuals in the conduct of translational science/research trials and comparative effectiveness analysis?

We present these ideas for further discussion. New ideas could be added and some ideas could be ignored. However, science and reality won`t wait. We need to talk about the cost-effectiveness of translational science and how the comparative effectiveness of new treatment modalities affect budgets.

References

1. National Institues of Health Re-engineering the Clinical Research Enterprise http://nihroadmap.nih.gov/clinicalresearch/overview-translational.asp
2. National Diabetes Information Cleraingouse , The Diabetes Control and Complications Trial and Follow-up Study, http://diabetes.niddk.nih.gov/dm/pubs/control/
3. American Heart Association, Statistical Fact Sheet — Disease/Risk Factors 2010 Update, www.americanheart.org/heart/1261003279882FS14HBP10.pdf
4. CDC , Diseases and Conditions A-Z Index, http://www.cdc.gov/DiseasesConditions/az/a.html
5. United States Renal Data System Atlas of Chronic Kidney Diseases, http://www.usrds.org/2009/slides/indiv/INDEX_CKD.HTML.
6. Congressional Budge Office, Research on the Comparative Effectiveness of Medical Treatments: Issues and Options for an Expanded Federal Role, The Congress of the United States, Congressional Budget Office, December 2007.
7. Translational Research, 156: Nr. 1, 1-52, (July 2010).
8. Zerhouni, EA, Translational and Clinical Science-Time for a New Vision, New England J Med., 353: nr. 15, 1621-23, (October 13, 2005).
9. Westfall JM, Mold J, Fagnan L, Practice-Based Research, JAMA, 297: nr. 4, 403-406, (Jan 24/31, 2007).