Notes of the Health Policy Special Interest Group Meeting
Sunday, July 29, 2007
Gary Hirsch and Jack Homer

The theme of the meeting was chronic illness. Its purpose was to share chronic illness work people are doing, organized in three clusters: diabetes and its risk factors such as obesity, cardiovascular disease and risk factors including smoking, and mental illness and dementia. There was also a discussion of System Dynamics and other systems approaches in the context of health care policy. 39 people were in attendance.

Diabetes and Obesity

Gary Hirsch opened the meeting and began the discussion of diabetes with an account of modeling work done in Whatcom County, Washington. He also indicted that a similar project is underway in El Paso County, Colorado. Modeling in both of those communities has helped them plan multifaceted diabetes programs. Jack Homer then described how the Whatcom county work had been extended in an effort for the US Centers for Disease Control and Prevention (CDC) and how the model developed was used as the basis for "Diabetes Action Labs" at the state level. He also described obesity modeling done for the CDC. Philip Gandar described a series of diabetes modeling efforts going on in New Zealand. He used a generic health stock-flow diagram to indicate various policy focus areas of the modeling efforts. These models all simulate over a span of 25 years and are broken out by age, sex, and ethnicity.

Nate Osgood then described two diabetes modeling efforts going on in Canada. The first model combines ideas from CDC model and NZ model to project diabetes health services demand in the Saskatoon Health Region. The second model focuses on the aboriginal population and reflects the hypothesis that increased gestational diabetes (due to more westernized lifestyle) in young women is leading to larger infants who are then more likely to develop diabetes as adults (an intergenerational effect). This also leads to the women themselves being more likely to develop Type 2 diabetes 10 or so years later. Nate found it important to disaggregate by age; otherwise it's possible to get anomalies e.g. in death rates for diabetics vs. non-diabetics.

Eric Weinberger briefly described work underway with the Milwaukee Veterans Administration Hospital with a focus on diabetics who are far out of control (HbA1c>9). A problem being examined is that the standard procedure is to give them insulin, but the side effect of insulin is greater fat formation and obesity. In the ensuing discussion, James Melhuish noted an article by Christakis in the New England Journal of Medicine (NEJM) suggesting spread of obesity through social networks and asked whether this could be a useful perspective for us to explore further.

CVD and Risk Factors

Gary Hirsch gave some historical background by citing studies in the 1970s and 1980s in the state of Indiana, for the US as a whole, and in the Netherlands. These studies all

utilized stock-and-flow structures representing multiple stages of cardiovascular disease and illustrated the benefits of preventive efforts focused on early stages. He also described a recent model that utilized a similar structure to examine potential leverage points for reducing the cost of cardiovascular disease and making the best use of health care resources. Jack Homer described a cardiovascular risk model currently being developed for the CDC. Nate Osgood discussed a tobacco policy model developed about six years ago at University of California at Irvine. This was initially a Markovian model with age and sex breakouts that permitted analysis of the cost-per-QALY (Quality Adjusted Life Year) for various types of intervention. The model later incorporated an intergenerational link from female smoking to children and effects of peer pressure.

David Lounsbury indicated that he is working with New York State Health Department, studying several modalities for tobacco control. Specifically, he's working in Queens, where he is trying to understand the effects of asking primary care practitioners (PCPs) to be more proactive on smoking cessation with their patients. David wants to model a PCP practice and ask whether a more proactive approach might cause the loss (non-retention) of some patients or might encourage more effective communication.

Mental Health

Douglas McKelvie described several mental health modeling efforts going on in the UK. He and his colleagues have models of services for drug addiction, personality disorders, depression, and psychosis. They are working with clinicians to study stages of development of mental illness including the possibility of backwards movement and the idea that progression is not inevitable. In this work with clinicians, they have found that diagrams can be helpful even without simulation. Douglas and his colleagues are starting to model conditions as well as service pathways   Managers relate more readily to these pathways and concerns such as about bottlenecks and blockages, but need to understand how these service delivery problems relate to the dynamics of particular conditions when, for example, care is delayed. The modeling work has helped to identify "Stepped Care" as a good approach, and various regions now picking it up. Other questions being examined include whether some personality problems are being handled appropriately or being treated harshly with long sentences in the criminal justice system. They are also modeling and evaluating the effects of new clinical guidelines.

Peter Hovmand then discussed his work with mental health transformation in Missouri which is one of nine states with federal funding to study mental health services integration with health care. The work is motivated by the fact that the mentally ill have an average longevity that is 25 years less than the rest of the population, partly due to increased CVD risk factors, partly due to side effects of medications taken for mental illness. The work in Missouri is looking at a matrix of conditions and service pathways and studying questions of access to care.

Geoff McDonnell described work on dementia going on in Australia. Geoff is interested in individual-based modeling a la David Eddy and his Archimedes project, but there is a data issue: how to model the people you don't see (measure)? Individual-based models

can provide visualizations that are persuasive to decision-makers. Other interests include service chains and co-morbidities, models looking at both cognitive and behavioral factors, and clinical decision making and system change. Some of these will be discussed at the multi-scale modeling workshop on Thursday.

Nate Osgood commented on the value of individual-based modeling. It makes sense if one is studying an intervention that focuses on a subset of a network. Multi-scale models allow one to build up from individual conditions to aggregate service loads.

Other Work

Kristen Lich reported on her work with smoking and TB based on her U of Michigan doctoral thesis (she's now an Assistant Professor at U of North Carolina at Chapel Hill). Kristen indicated that TB control people don't know about the smoking link. Her meta-analysis finds smoking confers higher relative risks: 1.7 for TB acquisition, 2.7 for pulmonary disease, and 2.4 for death. With her model, she can show that indirect effects double population-attributable risk. This is because smokers have more infectious forms of TB, are more susceptible to acquisition, cough more, and smokers congregate with smokers. She described a case study of India where tobacco control could have sizable effect on TB endpoints (13% reduction) over a long time, comparable in magnitude to traditional TB treatment approach of directly-observed therapy short-course (DOTS; 16% reduction). A big concern with smoking in India and other developing countries is that while smoking has been mostly confined to men, now women are starting to pick it up. Also, India is a big tobacco producer, and declining demand overseas means more need to sell it domestically. She would like to extend this work to look at other risk factors for TB.

Jack Homer mentioned other modeling involving illness dynamics and health care economics that will be presented at a parallel session on Tuesday.

Modeling and Policy

Bobby Milstein discussed modeling with regard to the CDC and a broader view of public health.   He indicated that there is not much real systems modeling yet, but an ecological view has been adopted broadly. This view is mostly reflected in "multi-level" regression analysis, but is lacking in dynamic perspective. In the last five years, there has been increasing interest among government agencies and foundations in methodologies: network analysis (descriptive), agent-based modeling, Markov modeling (point prediction, but not policy analysis), and policy models (e.g. for studying infectious disease and STDs). There was a call from Julie Gerberding, Director of the CDC, for whole systems analysis. The March 2006 special issue of the American Journal of Public Health (AJPH) focused on systems approaches to public health. Other evidence of interest includes a U of Michigan Complex Systems Applications to Public Health (CSAPH) meeting last month. They expected 50 people and got 250. There are also networks of modelers forming around particular health problems such as cancer (CISNET), tobacco (ISIS), and obesity (COMNET).   Bobby also indicated that preparedness is a natural and growing

area for simulation because of the great uncertainties involved.   There is a lot of funding, but the challenge is to translate models for ordinary people in forms such as games and interactive role play.

Patty Mabry of the National Institutes of Health (NIH), Office of Behavioral and Social Science Research (OBSSR) described the interests of her office in complex systems. Its purpose is to give direction on behavioral issues to individual Institutes, which gives it a good deal of leverage. The strategic plan for OBSSR includes systems thinking and looking at complex, seemingly intractable problems. They understand the need for new methods and are attempting to spur awareness through training and education of social scientists, journal editors, and NIH staff. They are also funding programs to study difficult problems.

Patty mentioned a webcast symposium series they have produced (4 this year; archived):
- Introduction with John Sterman and Ken McElroy,
- Network Analysis,
- Agent Based Models,
- SD with George Richardson and Jack Homer.

Other efforts she mentioned included:
- NCI/ISIS monograph available: "Greater Than the Sum".
- Summer Institute 2008: 3 tracks including SD at which they expect 50-60 people (and for which they need instructors).
- A Policy Resistance workshop for about 25 people (academics, foundations, legislators, journalists) by invitation.
- Funding for work on health disparities (with CDC), looking for systems methodologies.
- Terry Wang at NIHHD: meeting on obesity; multi-level "from cells to society".

Another effort mentioned involves studying offender management in the UK. Advice from that effort was that it is good to start small, find a problem, advertise, and bring people in over time. Geoff McDonnell mentioned that New Zealand is currently looking to restructure its National Health System and has picked SD as a strategic planning methodology. They are looking for success stories about using systems approaches for strategic planning.

Business Meeting: Election

David Rees was elected President (current Vice President; not able to attend this year.)
Eric Weinberger (Milwaukee, new member!), volunteered for Vice President