NATIONAL HEALTH ACCOUNTS GROUP MEETING

DECEMBER 9, 2005

SUMMARY OF CRITICAL ISSUES AND PROCEEDINGS

Submitted to The National Institute on Aging in recognition of their support for this meeting.

Overview and Purpose

This document summarizes a meeting on National Health Accounts held on December 9, 2005 and supported by the National Institute on Aging. The meeting was organized by David Cutler of Harvard University and the NBER and Allison Rosen of the University of Michigan. Among the participants were academic economists, health policy researchers, academic physicians, and members of many government organizations, including the Department of Health and Human Services and the Commerce Department (a full list of attendees is in Appendix A). The meeting included presentations on different aspects of the revised National Health Accounts project, each followed by discussion among the participants.

David Cutler and Allison Rosen opened the meeting with the motivation for the revised accounts. Current accounts to track the health care economy, termed National Health Accounts, are focused exclusively on the flow of funds. Aggregate medical costs are determined and assigned to payers and providers. These aspects are relatively easily to measure, but they are also incomplete. Measuring only costs skews political debate on health care issues towards lowering spending rather than raising value.

The broad goal of the health accounts project, detailed by Cutler and Rosen, is to introduce and produce a new satellite set of National Health Accounts to supplement current measures. These accounts will explicitly measure health in addition to medical spending. To relate health outcomes to costs, the accounts will decompose both health and medical spending by particular diseases. Such accounts would allow researchers to address questions such as:

- How has the population's health changed over time?
- To the extent health has improved, what accounts for this change?
- What is the productivity of medical spending?
- What changes in the medical system would increase the value of the system as a whole?

Conceptually, such accounts would have three parts: 1) a model of population health which can attribute changes in health to particular symptoms and impairments, and ultimately to diseases; 2) a cost model that can attribute medical spending to particular diseases; and 3) a series of disease-specific models that relate risk factors and treatments to costs and outcomes. The models will allow significant questions to be asked about disease-specific changes in health and spending. Linking health and spending together in the aggregate model makes it possible to evaluate the efficiency of the medical system across diseases and treatments.

There was substantial discussion throughout the day about the goal of health accounts and the broad structure of such accounts. There was universal support for the creation of revised accounts, although less of a consensus on whether these efforts should be referred to as 'revised health accounts.' Numerous participants asserted that current measures of health were extremely inadequate and were not tied to spending systematically. They felt this limitation substantially distorted policy. They viewed the development of the accounts as a long-term process to be accomplished in stages – a first development and initiation phase, and then a phase of long-term refinement and analysis. This suggests that the project should be developed, and the pieces should be put together, in a way that allows for future revisions and improvements to the disease models and the

measure of population health. The remainder of the meeting focused on the three broad areas of the revised accounts that Cutler and Rosen identified: health measurement, disease modeling, and cost modeling.

Measuring Health

A key component of the health accounts project is the attempt to measure the benefits from treatment. This requires some method for measuring health so that improvements can be aggregated across different diseases; without a common metric, this would be impossible. Susan Stewart presented ongoing work on measuring health, drawing on impairment data from NMES 1987 and MEPS 2000 and a regression model relating impairments and symptoms to general health ratings.

Health is measured in terms of quality-adjusted life expectancy (QALE); measuring not only the number of years someone lives but the individual's level of impairment. Thus, this measure has two components: a simple measure of life expectancy and a measure of quality that adjusts this life expectancy figure. The first is relatively easy to measure using period life tables; the second is more difficult.

There is no perfect measure of quality of life, so any particular approach will have both flaws and advantages. Participants stressed the importance, considering this limitation, of checking how robust a result is by comparing it to results obtained using different measures of quality of life. They also requested the inclusion of standard errors and other statistical measures when reporting QALE data.

The approach used is to break down the effects of a disease into symptoms and impairments. These impairments, rather than the diseases themselves, then have an

impact upon quality of life. To determine the weight of different symptoms and impairments, regression analysis is used to relate impairments and symptoms to an individual's rating of general health. The results represent the difference in reported health between those with and without a given impairment. A year with a particular impairment is translated into some fraction of a year without that impairment.

Stewart reported that the preliminary finding of these attempts at health measurement is that the population is healthier in 2000 than in 1987, with larger gains for men and blacks. Gains in life expectancy contributed most to the increase in QALE for men, whereas for women, the largest portion of the improvement was from reduced limitations in walking and primary activities.

Health measurement was a subject of vigorous discussion. One concern was the use of binary variables for impairments that did not reflect the severity of the condition. This leaves open the possibility of either over- or under-estimating quality. If a treatment alleviates, but does not eliminate, some impairment, that impairment will end up being reported either as present or absent; if the symptom is reported as present, quality of life will be under-estimated, while if it is reported as absent, quality of life will be over-estimated. However, the use of binary variables also avoids introducing unnecessary subjectivity from participants judging the severity of their own conditions. A compromise is to include variables reflecting different general levels of impairment, such as mild or severe pain.

Further questions arise from the use of self-reported health. It is necessary to have some way of adjusting the number of years lived for quality of life. Discussants addressed several possible problems with self-reported health. Milt Weinstein mentioned

that there are differences in self-reported health, such as those depending on culture and age, which are unrelated to the presence of any impairment. Several discussants addressed the question of what people are actually reporting when asked about general health. Emmett Keeler commented that people might report based not only on their current health but also on their health stock, which includes their general expectations of future health. Milt Weinstein suggested using a utility-based measure of health such as the EQ-5D in MEPS as an alternate indicator of general health in the analyses.

A general consensus from the discussion is that the method Stewart presented was reasonable, and that more benchmarking would be valuable. These comments were met favorably.

Disease Modeling

Following the discussion on health measurement, Allison Rosen and Rebecca Woodward presented an introduction to disease modeling. The purpose of these models is to clarify the interaction between risk factors, diseases and outcomes – for example, to assign the benefits of treatment to diseases and to forecast the impact of changes in risk factors such as lower smoking rates or rising obesity.

Discussants questioned how these models will be built and the degree to which they will rely on new analysis or draw from existing disease models. Many existing models represent the best current knowledge about a disease and are the product of substantial amounts of work by experts on a disease. However, there may be data problems in adapting existing models, since they are not always benchmarked to national

trends. The methodologies of the existing models also vary widely, making them difficult to combine in the full health accounts.

The discussion revealed a rough consensus around several issues. First, people recognized that the disease models would require several iterations. The first set of models will necessarily be crude and then be refined over time, becoming more accurate and detailed. The group encouraged looking at existing disease models, when available, but not just adopting those models reflexively. The group was particularly concerned that the methodology in the models be as consistent as possible, and that the data used in the models adds up to national totals. Discussant Steve Fihn pointed out that if the models do not yield accurate national totals when combined, there is a problem with the models themselves, not necessarily in the way they are combined: each model did not fully capture the interaction with other diseases. The group offered advice there and in the future in building disease models.

Measuring Costs

Following the discussion of disease modeling, Allison Rosen presented the work being done on disease costs. There are two possible approaches to measuring disease costs. The first is to take each medical claim for an individual and assign it the appropriate disease bucket based on the physician's diagnosis. This is the approach that was followed by Thomas Hodgson in a number of studies of both general and disease-specific medical spending. The major problem with this approach is comorbidities – people may see a doctor for multiple reasons. Comorbidities are very common, especially in the elderly. For this reason, the work to date has used a different method.

Individuals are classified as having any of 65 diseases based on a physician's diagnosis. Total medical spending during the year is then regressed on the individual's reported diagnoses and interactions between them, and expected disease spending is the predicted value of the regression.

The formal discussants for this section were complementary. Jack Triplett pointed out that cost of disease accounts, equivalent to the cost accounts used here, already exist in Australia and the UK. He recommended consulting the methodology used to construct those accounts, particularly because they were successful at assigning most medical costs to diseases. If costs are not assigned accurately, a significant portion of medical spending may simply end up in the residual because the method used guarantees that the sum of all disease-specific spending and the residual is equal to total spending. Triplett also pointed out the problem of unpredictable cost synergies for multiple conditions, where costs are non-additive. It may be more or less expensive to treat an individual suffering from multiple conditions than it would be to treat a number of individuals, each suffering from one condition. Further, conditions may together contribute to spending in a way that is difficult to disaggregate; if Alzheimer's leads to a stroke that causes an individual to end up in long-term care, how should those costs be assigned?

Michael Chernew raised similar points, particularly concerning the disease-groupings that will be used and the link between the cost and health data. He asked whether prevalent disease clusters will have their own grouping, separate from each disease in the cluster individually, and whether it will be possible to determine which clusters are important to costs and should be included in this way. He also worried about

how published national health accounts might be presented and understood, with particular concerns about the inclusion of disease interactions and the possibility that a casual observer might interpret the results causally.

In the general discussion, several topics were brought up. Preventive care is one issue. Should preventive care be assigned to the disease it prevents or elsewhere? The general sense was that the best approach is to assign that care to the disease it prevents. Properly assigning costs for medication presents a similar difficulty. In the case of drugs that effect only one condition, the full cost should go to that condition. However, some drugs are used to treat multiple conditions, or the use of a drug for one condition may alter the risk of some other condition. In that case, properly assigning the costs of spending on the drug poses a significant challenge.

Summary and Conclusion

The conference finished with a brief presentation by David Cutler and Allison Rosen, revisiting some themes that had arisen continually throughout the day and discussing how each piece of the project fits into the broad goal of revised national health accounts. Overall, there was a great deal of support expressed for the idea of revised and extended national health accounts, although with some debate about the specifics. One issue the group discussed was the timing of the work. It was thought that a first set of accounts could be prepared in 2 to 3 years and then refined over time, though estimates of a reasonable time frame also varied considerably.

The group also discussed how to ensure that the health accounts are ongoing. Several people expressed the view that the accounts should be maintained by a

government agency and published regularly. Participants from public agencies thought this might be possible, though it was not clear which agency would be best-suited to maintain these accounts. Some discussion focused around what properties are necessary in the revised accounts in order for them to be maintained and published going forward, as well as on whether such regular, revised accounts might have an effect on health data collection; the parallel was drawn to National Income Accounts and their effect on the available economic data.

It was also agreed that the project would benefit from continuing input from the medical, public health and economic communities. One possibility, generally met with agreement, was to reconvene the participants in this conference, in whole and in subsets, as the project continues. Such ongoing feedback is important both in constructing a first set of accounts and in their revision and refinement over time.

Appendix A: Complete List of Attendees

Ana Aizcorbe
Bureau of Economic Analysis

David Blumenthal
Harvard University

Carmen Brauer
British Columbia's Children's Hospital
Harvard School of Public Health

Michael Chernew
University of Michigan

Michael Christian
Bureau of Economic Analysis

Martin Collier
The Glaser Progress Foundation

David Cutler
Harvard University

Steven Cohen
Agency for Healthcare Research and Quality

Steve Fihn
University of Washington School of Medicine

Dennis Fryback (by phone)
University of Wisconsin-Madison

Scott Gazelle
Harvard School of Public Health

Kristina Hanson
Centers for Medicare and Medicaid Services

Rod Hayward
VA Center for Practice Management and Outcomes Research

Emmett Keeler (by phone)
RAND

Lane Koenig
Centers for Medicare and Medicaid Services

Kenneth Langa
University of Michigan

Paul Pirraglia
Brown University

Allison Rosen
University of Michigan

Harold Sox
Annals of Internal Medicine

Susan Stewart
Harvard University

Richard Suzman
National Institute on Aging

Jack Triplett
The Brookings Institution

Sandeep Vijan
University of Michigan

Milt Weinstein
Harvard School of Public Health

Rebecca Woodward
Harvard University

Appendix B: Schedule of Presentations and Discussions

NATIONAL HEALTH ACCOUNTS GROUP MEETING
December 9, 2005

National Bureau of Economic Research, 2nd Floor Conference Room

Agenda

8:30 – 9:00 a.m. Arrival and Breakfast

9:00 – 9:20 a.m. Welcome and Charge to the Group
David Cutler and Allison Rosen

9:20 – 9:40 a.m. **Broad Idea** David Cutler and Allison Rosen

- Overview what project is as a whole; what we want to get out of it
- Measure changes in spending in health; separate out costs and benefits attributed to medical spending
- Assign costs and benefits by sectors; this will be one byproduct; immediate thing government can adopt.

9:40 – 10:00 a.m. Responder, Richard Suzman *(5 minutes)*

Discussion and Feedback (15 minutes)

10:00 – 10:30 a.m. **Health Measurement** Susan Stewart and David Cutler

- How does one measure quality of life?
- Shell
  - factual piece
  - things go in "shell" that get fit all together
- Constraints

10:30 – 11:00 a.m. Responders, Emmett Keeler and Milt Weinstein *(10 minutes)*

Discussion and Feedback (20 minutes)

11:15 – 12:00 a.m. **Disease Modeling** Allison Rosen

- Overview of approach
- Examples of disease models
  - Cancer (Rebecca Woodward)
  - Cardiovascular Model (Allison Rosen)

12:00 p.m. Lunch *(continue discussion over lunch)*

- How disease models go into quality of life model
- How to approach if doesn't fit
- What to do if residual large

1:00 – 1:30 p.m. Responders, Rod Hayward and Steve Fihn *(10 minutes)*

Discussion and Feedback (20 minutes)

1:30 – 2:00 p.m. **Cost Modeling** Allison Rosen

- How does one attribute costs to diseases?
- Expenditure surveys mapped to NHAs
- Disease drivers of costs

2:00 – 2:30 p.m. Responders, Mike Chernew and Jack Triplett *(10 minutes)*

Discussion and Feedback (20 minutes)

2:30 – 3:30 p.m. **Wrap Up** David Cutler and Allison Rosen

- Data issues – current issues and issues moving forward with changes to national surveys
- Unresolved issues from the day's discussion
- Next steps

3:30 p.m. **Adjourn**