

# **Health Economics: NIH Research Priorities for Health Care Reform**

Bethesda, Maryland

May 10-11, 2010

## **MEETING SUMMARY**

National Institutes of Health

**For Administrative Use**

August 18, 2010

Members of the NIH Health Economics for Health Care Reform Working Group (see Appendix 2), and NIA special volunteer Barbara Torrey, contributed substantively to the planning of this meeting. This meeting summary was prepared by Rose Li and Associates, Inc. under contract to the National Institutes of Health, contract no. HHSN263200700991P. The statements, conclusions, and recommendations contained in this document reflect opinions of the meeting participants and are not intended to represent the official position of the National Institutes of Health or the U.S. Department of Health and Human Services. We gratefully acknowledge those who reviewed earlier drafts of the report: John Haaga, Katherine Baicker, Martin Brown, Gary Burtless, Amitabh Chandra, Michael Chernew, Janet Currie, Mark Duggan, Mark Freeland, Alan Garber, Dana Goldman, Kenneth Langa, David Meltzer, Nancy Miller, Joseph Newhouse, and Kevin Volpp.

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**Executive Summary**

The recently enacted Patient Protection and Affordable Care Act (PPACA) set in motion significant changes to markets including an expansion of insurance coverage and creation of a new long-term care insurance program. Along with other recent legislation, PPACA encouraged an expansion of health information technology (HIT), because the United States currently lags behind other countries in the use of IT in health care. A major challenge remains to slow the rate of cost growth without jeopardizing improved access to high-value care and technological innovation made possible by revolutions in HIT and genomics. Putting science to work for health care reform is an area of exceptional opportunity for the National Institutes of Health (NIH). The success of health care reform will depend in large measure on the design of payment reform, creation of a culture of efficiency, change in individuals' behavior, and the infrastructure in place to ensure collection of desired data as soon as they are available.

There is a long and substantial tradition of NIH support across several Institutes and Centers (ICs) for economic and other studies relevant to answering questions related to health care reform. The NIH Common Fund, which was created to make it possible to aggressively and collaboratively pursue major opportunities and gaps in biomedical research that no single NIH Institute could tackle alone, is supporting a series of planned activities to identify specific areas of health care economics research in which NIH could initiate programs with high impact on both the management of health care costs and the improvement of patient outcomes. As part of these activities to inform program development, a meeting was held on May 10-11, 2010, in Bethesda, Maryland, to discuss priorities for NIH research in health economics for health care reform. The meeting brought together leading economists, senior NIH leaders, and policy makers to provide perspectives on the current state of knowledge and to identify promising avenues for future research. These areas include comparative effectiveness research; prevention and personalized medicine; behavioral research on the motivations that lead to behavioral change; health disparities research; pharmacogenomics; health research economics; large-scale prospective studies; and health information technology.

This executive summary highlights the research directions that emerged from the 2-day meeting. A fuller meeting report that summarizes the presentations and discussion follows. The meeting agenda, list of participants, and biographical sketches of presenters are included as appendices 1 through 3.

**HIGHLIGHTS OF KEY THEMES**

The pyramid diagram represents levels at which health care research might be conducted. Clinical studies, including of cost- and comparative effectiveness research, are the foundation, but are insufficient without research on how



patients and providers behave, how health plans and other organizations behave, and the market interactions between insurer and provider organizations. The upper levels on the pyramid are more daunting to study. Selection, spillover, and generalizability present challenges to designing research in these areas, particularly when the research focuses on the rate of spending rather than the absolute level of spending. Suggested areas for NIH research priorities cut across all levels of this pyramid.

### **Cost- and Comparative Effectiveness Research (CER)**

Current challenges for CER will include optimizing risk-adjustment, defining and measuring the quality of bundled services, and evaluating the responses to alternative incentives. Cost-effectiveness analyses of the health care delivery system can help improve efficiency by broadening the scope of research—measuring outcomes, prices, and spillovers in the commercial and Medicaid populations; measuring a richer set of outcomes, such as patient satisfaction and outcomes other than mortality for single diseases or episodes. The goal is to reward providers who produce better outcomes, not just those who deliver more services or treat healthier patients. Moving forward will require better studies – perhaps randomized controlled trials – that address whether it is possible to improve provider quality, and how patient health is affected by cost-reducing incentives. Issues of competition on the provider side will be crucial in examining the extent to which prices can be controlled. Specific research directions for NIH to pursue might include the following:

- evaluate the mechanisms behind the rate of price changes over time and understand how to slow the rate of cost increases while improving outcomes and practice patterns;
- identify organizational attributes associated with high quality and low cost care
- investigate how alternative market and regulatory arrangements perform;
- examine the effect of PPACA on labor force participation; variations in part-time versus full-time employment; how early-retirement rates and employers' hiring and wage rates will be affected; the growth of small versus large companies; and insurance-related job-lock and geographic mobility;
- examine supply issues, including and whether sufficient health care providers will be available for future demand; how occupational licensing affects efficiency, productivity, and costs;
- address the fundamental lack of observational data, including longitudinal, on the supply-side or organizational context in which patients and providers operate; and
- contribute to the development of standard measures of quality of care.

### **Technology of Health Care Organizations and Diffusion of Expertise**

The technology of medical treatment has made tremendous strides in the past several decades, but the technology of health care organization has not enjoyed comparable advances, despite its importance for a well-functioning system. Hospital organization appears to be a potential source of large efficiency gains. A basic infrastructure need is the ability to design and carry out experiments in hospitals to assess potential welfare-enhancing innovations and disentangle

spillover effects from a common cause. Other recommended research directions for NIH include:

- personalized medicine and its interaction with policy, particularly CER;
- integration of behavioral, social, and learning theories to improve outcomes and efficiencies;
- how the structure of physician groups, hospitals, and insurance producers influence outcomes and costs;
- how experts reach medical opinions and the use of more effective incentives and disincentives (e.g., policy levers such as coverage, payments, cost-sharing) to increase the breadth and depth of the diffusion of improved practices and to control overuse of technologies in populations for which they have marginal benefit;
- comparative studies on organizational structure with industries outside of health care, internationally, and in different regions of the country;
- upgrading of IT infrastructure in underserved areas to assist with the collection of data from individual providers, including on population health and non-mortality outcomes such as body-mass index or prescriptions; and
- how incremental health care spending competes with other uses of resources.

### **Consumers and Health Behavior**

The field of behavioral economics can be applied to understand the best mechanisms to effect behavioral change so that individuals make better choices for more healthful outcomes. Further research is needed on the effectiveness of behavioral incentives in several areas: habit formation and sustaining behavioral changes; optimal design of incentive programs; comparative effectiveness of various incentive plans; and mechanisms by which social influences and social media might be employed for behavior change. It also can be fruitful to address the reasons that a desired behavior is not already in place. The psychology of behavioral change suggests that arguments, threats, and incentives are not as effective as is altering a person's situation or implementing a favorable default. Other suggested areas for research include:

- subgroup analyses and predictive modeling, links to provider incentives, and ethics of incentive programs;
- assessment of factors related to adherence to medical recommendations, including financial incentives
- assessment of the role of mental health, and the level of patients' understanding of physician directions in influencing patient behaviors;
- identification of the optimal combination of commitment and flexibility to maximize beneficial choices, including the optimal scale of health care exchanges, how to present information that will optimize individuals' choices (e.g., optimal number of choices to offer);

- implications for consumers from changing insurance markets, for example, the functioning (or not) of private insurance markets, and the impact of expanded health insurance and health care reform on financial security;
- whether having health insurance actually improves well-being and/or perceptions of well-being;
- the impact of specific policy changes or proposals (e.g., child-coverage up to age 26; “soda tax”) on long-term health outcomes; and
- how socioeconomic status interacts with the results of health care reform.

### **Health Economics of the Life Cycle**

Research priorities in this area include studying the relative importance of fetal and childhood health insults; pathways by which childhood health affects future outcomes; which childhood health conditions have the greatest long-term impact; what factors are protective; and the most cost-effective ways to prevent health insults and improve health in infants and children. Health economic research priorities include the study of education, health behaviors, international comparisons, and care. Often, the systems that matter are those outside the health system. Accepting that early life interventions can be beneficial, what should be the aggregate distribution of resources between the health care system and these other systems? Specific areas of research interest include the following:

- why dietary supplementation and more basic low-cost interventions that are known to be beneficial are not more widely adopted;
- better summary measures of infant health at birth, perhaps informed by genetic research;
- how life course effects differ by race and socioeconomic status especially in regard to financial and human capital asset accumulation and how this effects investments in health maintenance and health care; and
- potential benefits from reallocating health care resources toward teaching/education (e.g., preschool) in terms of greater efficiency in producing adults who are healthier and less disabled in old age.

### **Design and Analyses of Demonstration and Pilot Projects Included in PPACA**

PPACA might enable more health care experimentation because several aspects of the Act do not go into effect immediately, allowing lead time to gather data and prepare studies. New pilots and demonstrations included in PPACA will need instant, real-time information. The focus should be on ramping up quickly to work with the Department of Health and Human Services to design solid demonstration and pilot projects, and concentrate on those parameters that can inform program design. The research community will need to identify the factors that need to be evaluated—such as prices, administrative costs, co-payments, population health, well-being, and coverage—and then devise a mechanism to evaluate whether PPACA has led to changes. A useful direction for NIH would be to work with the Centers for Medicare & Medicaid Services (CMS) and Agency for Healthcare Research and Quality (AHRQ) to develop a “rapid-strike”

infrastructure with the capacity to quickly implement experiments arising from changing health care conditions. These would require fast-track or pre-approval to avoid delays associated with usual peer review.

The Health and Retirement Study (especially its Internet panel) and the American Life Panel are examples of surveys already in place that might be used as a rapid-response resource for information gathering. The Medical Expenditure Panel Survey (MEPS), the National Health Interview Study (NHIS), and the National Health and Nutrition Examination Survey (NHANES) could support this strategy as well. A “Super-MEPS” or an all-payer database that included clinical data with more diagnoses and as much information as possible from patients’ electronic medical records over as long a time period as possible would be enormously helpful.

Few if any studies to date have evaluated systems in any analogous manner to cohort studies on individuals. It would be worthwhile to begin planning organization surveys, although obtaining an unbiased sample frame will be challenging.

### **Data Needs**

A recurring theme at the meeting was the need for better data to enable health economics research relating to health reform, including access to administrative data beyond Medicare, data on characteristics of provider organizations, longitudinal data, more clinical information, and better health and outcome measures, especially for those currently uninsured and regardless of payer, for smaller geographic areas, and representative of the population of interest. To understand the influence of newly acquired health coverage will require before-and-after data. NIH will need aggressive strategies to develop evidence, assemble expertise, and bring resources to bear to apply lessons learned more quickly than ever before. It will be necessary to identify rapidly which measures to study and capture the data as reform is implemented. Specific suggestions include:

- Develop data that better inform risk-adjustment and measure outcomes, including larger, more powerful databases and high-quality, clinically detailed data linked to a variety of outcomes.
- Develop data that extend beyond Medicare to capture underlying measures of health status, patient incentives, and patient-reported outcomes, as well as characteristics (e.g., education and other HRS-type data) that influence adherence and compliance with medical recommendations.
- Develop data measuring provider organizational attributes that can be linked to economic and clinical outcomes
- Develop low-burden electronic research tools that include socioeconomic measures, care settings, and other information that enables CER, perhaps by linking census and health care data.
- Coordinate data from the states to accelerate research progress. Because Medicare already covers those older than 65, the under-65s will experience the biggest changes as a result of PPACA. But data (e.g., vital statistics, hospital and Medicaid data) on this population are

fragmented and difficult to obtain. It might be helpful to convene a workshop to define a minimal dataset.

- Conduct a random sample of 5 to 10 percent of Medicaid patients, which might enable studies on the efficacy of treatment variations.
- Because data on the uninsured are scarce, link existing data with survey data on the uninsured.
- Develop instruments to measure the effects of payments and incentives on organizations; solutions will have to integrate reduced rates of cost growth with improved outcomes and practice patterns.
- Develop more objective measures of physical activity that apply internationally.
- Develop better measures of psychosocial risk and stressors.

#### **NEXT STEPS**

The shortened timetable for translating research insights into an improved health care delivery system suggests that NIH should consider new modes of research that join economics, legal studies, cognitive science, and sociology to change the manner in which health care is organized. It would be worthwhile to convene a panel of experts in each of these fields for further discussion. A workshop could be held to produce a short paper documenting the health-economic research priorities to encourage cross-agency collaboration. It would also be helpful if this meeting enumerated the benefits to be reaped by other agencies such as the Food and Drug Administration or AHRQ. It can take 10-15 years just to understand what is going on, so the research agenda must be seen as long range.

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**Meeting Report**

Thought leaders in the area of health economics from academia and government joined members of the NIH Health Economics for Health Care Reform Working Group in a meeting sponsored by the NIH Common Fund to discuss research priorities for health care reform on May 10-11, 2010, in Bethesda, Maryland. Presentations focused on priorities rather than summarizing particular projects, and were grouped into six topical areas:

- spending and costs,
- technological change,
- consumers and health behaviors,
- health economics of the life cycle,
- lessons from experiments and payment reform, and
- data needs.

A roundtable of prominent panelists identified broad questions about health care reform for which research is critically needed. A summary of the meeting proceedings follows. The meeting agenda, list of participants, and biographical sketches of presenters are included as appendices 1 to 3.

**WELCOME AND OVERVIEW**

***Francis S. Collins, MD, PhD, Director, National Institutes of Health***

To put the meeting into context, Dr. Francis Collins identified health care reform as one of five areas of exceptional opportunity for NIH, the others being: applying high-throughput technologies, accelerating translational medicine, refocusing on global health, and reinvigorating and empowering the biomedical research community.<sup>1</sup> He charged meeting attendees to address health care reform by maximizing research opportunities to achieve healthier people, affordable care, and broader coverage. Although many health indicators have improved in recent decades, the necessity for health care reform is illustrated by the fact that the United States exceeds England in the incidence of every chronic illness, despite spending significantly more per person on health care. Furthermore, the rate at which health care costs are growing in the United States is unsustainable.

Several areas of study might contribute to achieving progress in this arena, including comparative effectiveness research; prevention and personalized medicine, which incorporates behavioral research on the motivations that lead to behavioral change; health disparities research;

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<sup>1</sup> See Collins, FS. 2010. Opportunities for Research and NIH. *Science*, 327 (January 1): 36-37.



pharmacogenomics; large-scale prospective studies, such as the National Children’s Study and potentially a new longitudinal study of adult onset diseases; and health information technology (IT). Health economics research will be essential to any effective reduction in the excess cost growth of health care, going beyond clinical trials to understand such topics as real-world health care delivery and payment incentives that will reduce costs while improving outcomes.

## **SAVING MONEY AND IMPROVING QUALITY: WHAT IS POSSIBLE?**

### **Delivering the Promise of Comparative Effectiveness Research**

*Alan M. Garber, MD, PhD, VA Palo Alto Health Care System and Stanford University*

Comparative effectiveness research (CER) is defined in the Patient Protection and Affordable Care Act (PPACA) as “research evaluating and comparing health outcomes and the clinical effectiveness, risks, and benefits of two or more medical treatments, services, and items.” The “medical treatments, services, and items” are broadly defined, encompassing all manner of health care interventions, treatments, diagnoses, or prevention of illness or injury. Its implementation might save money for the health care system by shifting to less expensive procedures of comparable effectiveness. This might be accomplished by information dissemination alone (by physicians, patients), coverage decisions, value-based cost sharing such as adjusted co-payments, behavioral interventions or “nudges,” redesigned provider payments, or a combination of any or all of these.

Although the provision of CER information alone may be insufficient to bend the cost curve, success of health care payment reform depends on it. Payment reform may involve shifting from traditional fee-for-service care provided by distinct entities to outcome-linked bundled payments via multiple aligned providers. The current challenge for CER research will be to immediately provide short- and long-term research results, including information evaluating risk-adjustment, defining applicable bundles, measuring the quality of bundled services, and evaluating the responses to alternative incentives.

### ***Discussion***

CER can account for differential treatment responses between patients if the variations are predictable with observable characteristics, but problems arise if the variations are unobserved and predictable (not random or somehow biased). The issue is selection with unobservable characteristics that make some providers worse off than others, and there is no entirely satisfactory way to adjust for this based on current methods. Better risk-adjustment is a crucial issue for health reform not only in this arena, but also in pricing insurance policies.

### **What More Can We Learn from Regional Variations?**

*Amitabh Chandra, PhD, Harvard University and the National Bureau of Economic Research (NBER)*

In the aggregate, the United States appears to be uniquely inefficient compared to other countries – more services are provided and more is reimbursed without regard to value. Similarly, within the U.S. there are huge differences across providers in the efficiency with which health care is provided: that is illustrated by the lack of association between one-year risk-adjusted survival and risk-adjusted costs. The productivity of healthcare spending can be increased by performing cost-effectiveness analyses of the health care delivery system (in addition to cost-effectiveness of

specific procedures, devices and drugs). This effort would require measurement of a richer set of outcomes, such as patient satisfaction and outcomes other than mortality for single diseases or episodes; and improving risk-adjustment. Special attention must be paid to the role of prices, and spillovers between the commercial, Medicare and Medicaid populations. The goal is to reward better providers, not just providers who treat healthier patients. When payments are tied to specific services, providers are incentivized to “upcode” diagnoses and perform tests and procedures that might not be warranted. Moving forward will require randomized controlled trials that test whether it is possible to improve provider quality and how patient health is affected by cost-reducing incentives. Useful information also can be gleaned from comparisons of organizations that work versus those that do not. Understanding the pathophysiology of health care institutions is a key area for NIH to begin evaluating the science of health care delivery.

### *Discussion*

The reasons behind the variations in costs and outcomes are not fully understood, but involve interactions between systems of reimbursement and other factors such as clinical uncertainty about what works and what does not, and the regional variations in the types of providers. The question is how to design reimbursements to be aligned with the right incentives so that tests or treatments are used only on those who really need them, and payments to providers are not linked to the illness of their patients. Outcomes other than one-year survival that might be assessed include measures that doctors might aim to influence, such as blood glucose levels, blood pressure, long-term survival, and patient satisfaction.

### **Bending the Curve(s): Setting the Table**

*Joseph P. Newhouse, PhD, Harvard University*

In the United States, the growth of health care costs has exceeded the growth in gross domestic product (GDP) over the past seven decades, due mainly to income growth and technological change. Although this is the case for all industrialized countries, it is widely believed that improvements in quality of life and mortality rates could have been obtained less expensively. Increasing opportunity costs from devoting more resources to medical care will slow future growth. Reducing the rate of growth of only publicly financed care (so that the disparity between public and private rates grows) is politically untenable, whereas not reducing it leads to implausible tax rates. As a result, the United States may well at some point adopt some type of all-payer regulatory scheme, in Newhouse’s view. In other words, present arrangements (including PPACA) do not appear to be a long-run equilibrium. Most efforts to change the growth of total and publicly financed health care costs have aimed at eliminating inefficiencies; however, this represents a one-time gain and does not bend the cost curve.

Any effort to reduce the rate of cost growth will have a beneficial effect only if it disproportionately does not pay for innovations of relatively low clinical value. Important considerations in formulating such efforts include the entry and exit of insurance plans, providers, and integrated entities; the nature of subsidies, both for insurance and at the point of service; methods of provider reimbursement; the nature of information, such as quality measures, available to consumers; provider regulation through such means as accreditation; and varying degrees of market power in different local markets. Reductions in the growth of publicly funded health care will be informed by the pilot projects and demonstrations included in PPACA as well as the interactions of Medicare and Medicaid with commercial health care.

A potential research area for NIH would be to investigate how alternative market and regulatory arrangements perform. In addition, the research agenda at Agency for Healthcare Research and Quality has largely focused on improved efficiency including safety; given the known inefficiencies, work in this domain should continue.

**Discussion**

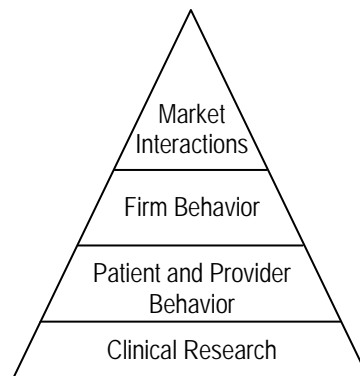
In response to a question about how to address the role of pricing policies in saving money and improving the quality of health care, participants noted that negotiated prices in the commercial sector are closer to market prices than Medicare prices, and extending Medicare to all might not have the desired effect of reducing prices. Further, it is difficult to implement price competition in commercial health insurance when each component of treatment is purchased separately. Bundling might enable more meaningful price competition. It will be important to evaluate the mechanisms behind the rate of price changes over time.

The alternative of simply raising the prices to consumer of low-value services might inspire a great deal of push-back from doctors and patients. Bundling would enable providers to decide what services are necessary in each case. This likely will remain a problem as long as patients believe they are entitled to financing for any service they and their doctor choose, regardless of the likely benefit. The way that prices are set is more important than the level of price.

**Discussant: Michael Chernew, PhD, Harvard University**

Throughout the United States, the levels and growth rate of health care spending vary widely by geography and are not correlated, demonstrating that the factors that lead to inefficiency are not necessarily the same as those that increase the rate at which health care spending rises. Improved efficiency will not necessarily bend or reduce the spending curve. Saving money in all the ways elaborated by the speakers will be essential, but any long-term solution must reduce the rate of growth in spending.

The pyramid diagram represents levels at which health care research may be conducted. Clinical studies, including of cost- and comparative effectiveness research, are the foundation, but are insufficient without social-science research on how patients and providers behave, firm behavior (including Medicare reimbursement policies), and the market interactions between insurer and provider organizations.



The upper levels on the pyramid are more daunting to study. Selection, spillover, and generalizability present challenges to designing research in these areas, particularly when the research focuses on the rate of spending rather than the absolute level of spending. Because the standard of care is always in flux, time-series data are needed.

**General Discussion**

One participant challenged the presumption that any service that is potentially beneficial to a patient should be provided to the patient regardless of cost. The manner in which physicians are paid can affect their personal cost-benefit evaluation. Appropriate physician incentives to be

more fiscally conservative without harm to patients require setting payments at the right level, being able to risk-adjust, and measuring outcomes in the appropriate way. Professional standards in the absence of strong incentives to prescribe expensive procedures tend to reflect reasonable value estimates by physicians. However, it was recognized that physicians operate within a broader political and institutional context, which can constrain their actions, at least in the short run.

Discussion centered on the need for better data to inform risk-adjustment and measure outcomes, with a number of participants calling for larger, more powerful databases than are currently available. Ideally, the data would include clinical details and be linked to a variety of outcomes. Data that extend beyond Medicare and that better capture underlying measures of health status, patient incentives, and patient-reported outcomes, as well as characteristics (e.g., education and other Health and Retirement Study-type data) that influence adherence and compliance with medical recommendations would be particularly helpful. Although data warehouses with clinically detailed electronic databases like those maintained by the Veterans Administration (VA) and Kaiser Permanente are good models, data from much more representative populations are also needed.

Beyond the patient level, there is fundamentally a lack of cross-sectional or longitudinal observational data focusing on the supply side or organizational context in which patients and providers operate, for example, physician groups that use IT or rely heavily on nurse practitioners. Historically, when firms have tried to lower health insurance premiums, they have done so by lowering generosity of coverage. Issues of competition on the provider side will be crucial in examining the extent to which supply-side prices can be controlled.

Another issue to consider is how to assess the influence of the modifications to the health care system included in PPACA. The research community must identify the factors that need to be evaluated—such as prices, administrative costs, co-payments, population health, well-being, or coverage—and then devise a mechanism to evaluate whether PPACA has led to changes. There is an opportunity in health reform, independent of NIH actions, to implement new payment tools more broadly.

An additional consideration will be how to encourage greater competition in delivery systems, particularly in small markets. Every health market is local, and every employer is different. If the proposed excise tax is implemented, it will have a profound effect on the cost of plans. A huge issue for some employers is that they have many employees in monopolistic provider markets. Employers are expected to exert pressure on monopoly providers charging extremely high prices to lower their prices. We also can expect to see more aggressive antitrust enforcement at the federal level, as well as at local and state levels to try to keep costs down.

## **TECHNOLOGICAL CHANGE AND DIFFUSION**

### **The Technology of Medicine**

*David Cutler, PhD, Harvard University*

Health care technology falls into two categories: medical treatment and organization. The technology of medical treatment has made tremendous strides in the past several decades; for example, angioplasty was invented in the mid-1970s and is now performed on approximately 2 million people annually worldwide and yields on average an additional 1.1 years of life at a cost of approximately \$40,000. Not all treatments yield such clear benefits, and in some cases might

be inappropriate. Greater implementation of personalized medicine and better use of clinical data will help ensure more patients are receiving beneficial treatments and fewer are receiving inappropriate ones.

The technology of health care organization has not enjoyed comparable advances, despite its importance for a well-functioning system. Studies show that the most productive industries use information technology extremely well, arrange compensation for value over volume, and engage employees and consumers in continuous quality improvement. Cost savings may be achieved by applying these characteristics to health care organization to better coordinate care, streamline medical practice, overhaul administrative processes, ensure proper care combinations, and optimize information management. A fairly modest increase in productivity from greater organizational efficiency has the potential of cutting government health spending by roughly one-third over the next 20-25 years, and substantially improving patient experience.

### ***Discussion***

Physicians view themselves as professionals, not employees, and might resist organizational restructuring. However, advancing the technology of health care organization should enable the system to make better use of their specialized training and allow doctors to spend more time doing what they are trained to do, that is, apply their expertise to complex situations, while spinning off the tasks that can be handled by others.

Much of the research on the technology of organization is conducted in the commercial sector or academic departments of business, uncommonly by economic departments and rarely with funding from NIH. Part of the problem may be the lack of good jobs in health care organization to attract talent in this area.

### **Technology and Population Health: Health and Fiscal Consequences** ***Dana Goldman, PhD, University of Southern California***

Technology is the predominant driver of health care costs, and in many cases new advances have led to great health benefits. However, consideration must be given to the cost of implementing technologies with unproven health benefits and the cost per life-year of benefit of expensive technologies. For example, a simulation model developed at the National Institute on Aging-funded Roybal Center for Health Policy estimates that the left-ventricular assist device has limited survival benefit and costs on average \$500,000 per additional life-year; use of this device alone could potentially increase medical spending by 2.3 percent.<sup>2</sup> Applying this model to numerous anti-aging, cardiovascular, and anti-cancer technologies revealed that technology will put substantial pressure on medical spending on the elderly. One approach to preventing the predicted cost increases would be greater application of CER and personalized medicine. More work needs to be done to identify whether medical interventions have bimodal effects, performing well in one group and poorly or not at all in another. Straight statistical analysis does not necessarily identify such distinctions. Recommended research directions for NIH include understanding personalized medicine and its interaction with policy, particularly CER, controlling overuse of technologies in populations for which they have marginal benefit, and promoting welfare-enhancing innovations.

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<sup>2</sup> Rose, et al. 2001. Long-term use of a left ventricular assist device for end-stage heart failure. *The New England Journal of Medicine*, 345(20): 1435-1443.

### *Discussion*

Research is needed not only to test for efficacious treatments after a disease has developed, but also for predispositions (e.g., genetic predispositions) to disease in healthy individuals. Another issue relates to intellectual property concerns and the government's interest in promoting use of a test to reduce health care costs. The legislation says any screens must be approved by the U.S. Preventive Services Task Force, and their recommendations generally correspond to cost-effective recommendations.

Although regulations prevent physicians from owning facilities that perform expensive medical tests to prevent conflicts-of-interest, referrals to the facility and from the facility to the physician violate the intent of the regulations. Patients like to believe physicians are acting always in the patient's best interest or for the betterment of society and not for monetary gain. If physicians were paid on a capitated basis for patient health, such conflicts might be reduced. Economists could work on the incentive side in conjunction with ethicists. Kaiser Permanente is an example of an integrated health care system that is considered to have all the features of the right model, with excellent IT, capitated payments for health, and all the incentives properly internalized, but this model has not gained wider adoption.

### **Physicians for the Hospital of the Future**

*David Meltzer, MD, PhD, University of Chicago*

The hospital of the future will be populated by sicker, older patients, will be active 24/7, and stays will be measured in minutes to hours, not days. They will be e-integrated and easily reconfigured to accommodate new technology; payments will be more prospective. There will be fewer hospitals, further apart, and they will be easier or more difficult to enter and exit depending on coverage and fit-for-services. They will exhibit greater organizational complexity, and they will accommodate the growing roles of social science, operations, human factors, and research tools. In response to these changes, the care model is moving from primary care doctors who care for patients in clinics and in hospitals to more specialized care given by hospitalists in hospitals.

The technical nature of medicine and the small scale of hospitals make physician leadership particularly important. Hospitalists tend to play major roles in the improvement of hospital quality, operations, and leadership. On average, hospitalists' patients have reduced lengths of stay. Hospitalists also disseminate knowledge through teaching and diffusion, thus benefiting patients cared for by non-hospitalists. Studies on the spillover of information within a health care workforce show greater uptake of new technologies in groups as physicians consult one another as part of collaborative teams and social networks. Such spillover effects might be used to promote change through the identification of the most effective opinion leadership strategies and the use of hospitalists as opinion leaders.

Hospitals of the future will need to be adapted to changing medical technology and financing; social science tools and physicians will play key roles in improving quality and addressing variations. Knowledge of the social structure of hospitals may be useful in designing interventions for quality improvement. The physician of tomorrow will need to be better trained to address the needs of hospitals, using methods of process and quality improvement as well as focused models of care for increasingly sick and complex patients. General medical care may be tailored to patients such that those with high expected hospital use are seen by comprehensive-

care physicians while those with low expected hospital use are seen by ambulatory-based primary care physicians and hospitalists.

***Discussion***

Incorrect information is disseminated by the same mechanism as correct information. It is challenging to disentangle spillover effects from a common cause; natural experiments are ongoing in hospitals, although better data systems will be required to understand and benefit from them. A basic infrastructure need is the ability to design and carry out similar experimentation in hospitals.

It will be important to predict which patients need the most intensive interventions. The specialization of physicians by discipline (and NIH by disease and organ system) detracts from taking holistic approaches to patients with numerous issues.

The predicted changes might have adverse financial ramifications for hospitals, although this could be mitigated somewhat by bundling. Bundled payments seem to be a mechanism by which politicians hope to cut health care costs, and thus seem likely to be implemented in the near future.

When considering financial factors, both the micro and macro environments must be considered; doctors in some countries are more amenable to considerations of cost when making treatment decisions.

***Discussant: Mark Freeland, PhD, Centers for Medicare & Medicaid Services (CMS)***

Several factors need to be taken into account when considering research priorities and policy actions; only one of these is cost-benefit analysis, which can only be addressed with a range of certainty. When the cost of treatment is not borne by the individual, health care researchers and doctors need to consider the willingness of taxpayers to implement health care technology and its diffusion; such spending might compete with and preclude spending on other perhaps more welfare-enhancing non-health benefits (e.g., education, infrastructure projects). Health policy researchers need to understand how incremental health care spending competes with other choices.

The most important research questions relate not to aggregate health technologies and their costs and benefits, but to microanalyses that underlie these averages. Thus researchers and policy makers need to intensify efforts at the level of differential diagnosis in the context of personalized medicine and CER to root out inefficiencies and ineffective practice patterns as well as evaluate new technologies. This type of analysis might provide clues as to why the United States spends about twice as high a proportion of GDP on health as the average for Organization for Economic Cooperation and Development countries.

An additional area on which to intensify research efforts is on the diffusion of comparative effectiveness research findings and applications, including a greater understanding of how experts reach consensus opinions on comparative effectiveness protocols. Further, researchers need to integrate behavioral, social, and learning theories to improve outcomes and efficiencies, and to develop more effective incentives and disincentives (e.g., policy levers such as coverage, payments, cost-sharing) to increase the breadth and depth of the diffusion of improved practices.

## General Discussion

It will be essential to ensure that any incentives or disincentives implemented are well understood by the target stakeholders; decision makers will need preparation in order to make better decisions in the context of incentives.

There is currently little incentive to develop something that works as well as a product already in use but costs less. Although implementation of some new technologies might reduce health care costs, most do not. However, the effectiveness of new technologies should be measured over time as the cost-benefit calculation will change due to greater experience with the technologies or to extension of the technology to new patient populations.

A significant issue is that no one makes money when a patient is kept out of the hospital; hospital use profits the hospital. This financial arrangement will have to change in order to reduce health care costs.

Several NIH grants have been funded that evaluate innovations in health care delivery, mainly around care coordination, but rarely do their findings affect practice and organization on a large scale. To change this may require NIH to coordinate with CMS to identify more productive innovations, such as bundling of payments. The changes taking place as a result of PPACA may act as natural experiments, opening up a whole universe of opportunities for evaluation studies over time.

Personalized medicine should not be assumed to reduce costs. For example, if a group of individuals is identified who will minimally benefit from a treatment, without incentives or rationing, those individuals and/or their physicians might still choose the treatment.

The structure of hospital organization appears to be a potential source of efficiency gains. Several factors might contribute to the fact that hospitals have not grown more efficient over time: missing knowledge, wrong scale, lack of competition, other perverse incentives, and problems with governance in a system that lacks the hierarchy typical in corporations. Other factors are that those in charge are not necessarily efficiency-minded, or might have difficulty convincing doctors and nurses to alter their behavior. Hospital organization is path-dependent, and it relies on individuals who remain for decades and might not rapidly adapt to changing health care trends. This problem is not idiosyncratic to the health care sector, although health care seems particularly resistant to change. Studies on organizational structure should include industries outside health care for comparison purposes.

## CONSUMERS AND HEALTH BEHAVIORS

### Financial Incentives to Change Adherence and Other Behaviors

*Kevin Volpp, MD, PhD, University of Pennsylvania*

Individual behavior is one of the keys to health, including overeating, smoking, and adherence to medication regimes. Economic incentives are effective means of influencing behavior. In a recent study, compared to the control group, long-term smoking-cessation rates were triple in the monetary-incentive group; however, the quit rate was far below 100 percent.<sup>3</sup> Using social

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<sup>3</sup> Volpp KG, Troxel AB, Pauly MV, et al. 2009. A randomized, controlled trial of financial incentives for smoking cessation. *New England Journal of Medicine*, 360 (7): 699-709. The smoking cessation study relied on cotinine confirmation of self-report. The cost-effectiveness of that intervention is currently under analysis.



norms, peer pressure, and anticipated regret by assigning individuals to groups and allowing greater rewards for greater adherence to behavior change within the group could enhance effectiveness of interventions that simply target individuals. Further research is needed on the effectiveness of behavioral incentives in several areas: habit formation and sustaining behavioral changes; optimal design of incentive programs, including wellness and health promotion as well as insurance design; comparative effectiveness of various incentive plans; and mechanisms by which social influences and social media might be employed for behavior change. Other important areas for research include subgroup analyses and predictive modeling, links to provider incentives, and ethics of incentive programs.

### *Discussion*

Unless turnover rates are very low, it might not be in employers' interest to support long-term programs to promote the health of their employees.

### **The Economics of Instant Gratification**

*David Laibson, PhD, Harvard University and NBER*

Behavioral economics studies psychological and economic factors that influence economic behavior and has revealed that classical economics attributes to the individual too much rationality, too much selfishness, and too much self-control or patience. The model of imperfect self-regulation assumes that to individuals, the future costs or benefits carry less weight than immediate ones. This accounts, for example, for failing to remain on a diet when presented with tasty food, but planning to go back on the diet in the future. Consequently, people tend to avoid and/or delay investment behaviors such as human capital formation, exercise, diet, sexual abstinence, smoking abstinence, medical adherence, and saving. Studies of investment behavior have indicated that people are more likely to invest in savings plans given opt-out enrollment versus opt-in, forced active decisions versus opt-in, and simplified enrollment versus opt-in. In addition, people who are not certain of their self-control will frequently choose options that don't allow flexibility in case their self-control wavers. Behavioral economics indicates that people can be nudged into making better choices, which might be applied to the health domain to encourage beneficial behavior through default well-health and screening appointments, default nutrition in such situations as a workplace cafeteria or vending options, default and active decision immunization, active decisions for good health behaviors, and default medical procedures for individuals with diseases. Thus future research should address whether cost-effective behavior change interventions based on psychological principles might be used to reduce health care costs and improve health.

### *Discussion*

About half of individuals who responded to the active choice chose the less convenient pharmacy pick-up over home-delivery of prescriptions possibly due to security or privacy concerns, or perhaps personal relationships with the local pharmacists.

Default choices work best for situations in which individuals are inclined to choose the beneficial behavior, but simply have not made the time to activate that choice. People make the best choices for themselves when they have to do little or nothing to implement those choices. Research is needed to identify the optimal combination of commitment and flexibility to maximize beneficial choices. Behavioral nudges and economic incentives might be used for behaviors that are not conducive to contracts.

## **Decision-Making and Cost Management in the Patient Protection and Affordable Care Act (PPACA): Policy Problems and Research Questions**

*Daniel McFadden, PhD, University of California, Berkeley*

Although government regulation has had uneven success, PPACA regulatory mechanisms such as insurance exchanges, mandated coverage, and standardized contracts might remedy health-insurance market failure. Medicare Part D, a market-oriented consumer-directed health care approach with limited government involvement and opt-in enrollment involving insurance plans offered by competitive private firms, offers lessons for designing PPACA regulations. It has succeeded in covering prescription drugs for more than 90 percent of elderly consumers at manageable costs; however, adverse selection still appears to be a problem. Gradual implementation of premium increases, which will eliminate coverage gaps, provides an opportunity for research monitoring.

Lessons from Medicare Part D for PPACA insurance regulation include

- premiums increased significantly for people with existing coverage as the benefits offered each enrollee increased;
- minor offsets might be gained through constraints on insurer overhead and profits;
- standardized contracts, with competition on price and service, rather than coverage, will help prevent adverse selection; and
- risk-adjustment will be critical to leveling the playing field. A challenge will be to design insurance exchanges so that they do not become a high-cost public dumping ground for private insurers.

Research, conducted through administrative agencies such as CMS or preferably through NIH and academic institutions, will be needed to monitor, quantify, and predict PPACA implementation, operations, and outcomes.

### ***Discussion***

When a continuum of contracts is offered, the insurance market tends to unravel from the more to the less favorable contracts. Standardized contracts leave companies less room to maneuver, thus reducing adverse selection.

It was predicted that Medicare Part D insurers would offer lowball pricing and then attempt to switch customers to more expensive contracts later; although some companies attempted this, their intentions were foiled because consumers tended not to switch contracts or switched to other low-price contracts.

It is not clear if there is an optimal number of policy choices to offer consumers. McFadden has observed that for Medicare Part D plans, people have tended to choose low-cost policies based on their own past prescription usage; consumers rarely accounted for potential increased future use. Medicare Part D plans have provided more incentives for patients to switch to less expensive medications than traditional employer-provided plans; perceived minimization of cost to themselves likely will draw customers to particular plans within PPACA insurance exchanges. It would be useful to understand now, rather than later, the optimal levels of tiering and numbers of choices to offer. Within the actuarial level of standard benefit design, there was a great deal of variation, which led to much lower cost than would otherwise have been the case. In contrast to

typical employer choices, people will be spending their own money at the margins, which is likely to make them more sensitive about cost and lead to lowered health care spending.

### **Changing Insurance Markets: Some Possible Implications for Consumers**

*Amy Finkelstein, PhD, Massachusetts Institute of Technology, NBER*

One area in which to focus research priorities is in the functioning (or not) of private insurance markets. A primary economic rationale for government intervention in insurance markets is adverse selection and resultant private market failure. Individuals who believe they need it will self-select into insurance, driving up prices and driving healthier individuals out of the market. Individuals and insurance companies might find ways to take advantage of or “game” the insurance market reforms of guaranteed issue, guaranteed renewability, and age-based pricing. The interplay between regulators and responses to regulation, as well as unintended consequences, needs further study.

Another area to focus research priorities is the impact of expanded health insurance. Research to date has focused primarily on the impact of health insurance on health spending and on health. Little has been done to understand the impact of health insurance on financial security; credit-report data might be mined to evaluate indicators of financial strain in conjunction with health care reform. Additionally, research might be performed to evaluate the impact of current and previous health-insurance reforms on the supply side of the health care sector, including the structure of delivery systems, and particularly the impact of technological change.

### **Discussion**

It is not clear whether health care reform will exert pressure to develop cost-reducing technologies.

Although health care exchanges with age-based pricing are designed to be attractive to healthy potential customers, the unintended consequences are unpredictable. Research is needed to understand how to design appropriate regulations that apply to both supply and demand.

Several distortions might result from the PPACA, including influences on the long-term employment, productivity, health, and finances of the previously uninsured.

### **Discussant: Daniel Kahneman, PhD, Princeton University**

An important issue to keep in mind is the emotional state of people and the interaction to individual well-being. Not having health insurance greatly increases the prevalence of negative feelings such as anxiety, sadness, and anger in the uninsured, particularly at times of illness.

Rather than addressing what can be done to encourage change, it can be fruitful to address the reasons that the behavior is not already in place. The psychology of change suggests that arguments, threats, and incentives are not as effective at effecting behavioral change as is facilitating change in the desired direction through changes in a person’s situation or implementing a favorable default. Increasing the salience of the desired behavior, by providing directions and an appointment time, for example, greatly increases compliance. People are more likely to accept one-time changes than changes that take long-term commitments, although long-term change can be aided by attentional cues or situational support. Incentive lotteries help in this instance by providing several incentives over time. Use of a checklist—as a simple, inexpensive procedure applied under predictable conditions—has been identified as an effective

means of encouraging long-term behavioral change once the stakeholders can be convinced to accept the lists. Change that produces losers is the least likely to succeed because individuals who will lose if change is implemented will work harder against the change than individuals who will gain are likely to work for it. Thus, change in the health care realm should be implemented such that the number of losers is minimized, which will prove more costly than has likely been planned.

### **General Discussion**

One means of reducing obesity would be to increase the price of foods that are high in calories and low in nutritive value, although the political will to do so is unclear as is whether consumers and/or providers would opt for other high-calorie alternatives. This would be difficult without the elimination of governmental subsidies in the food pricing system that artificially reduces prices on high-calorie components such as high-fructose corn syrup. Although portion size and portion control have produced promising results, improved food labeling has not. It is not clear how strongly to nudge people in the direction of healthful eating and how viable the nudges will be in the long term. Physical activity has been shown to increase with incentives but to return to baseline over the long term.

Careful consideration should be given to the behavioral changes to be encouraged. Few changes are so clearly known to be beneficial that nudges in their directions are appropriate; nudges only work when the person being pushed agrees with the direction of change. There is the risk of appearing overly paternalistic if behaviors of unknown benefit are pushed. Paternalism is less objectionable in children, and it is childhood that sees the beginning of many adverse behaviors such as poor eating and smoking. Checklists might be applied to children's environments, school lunches for example, to empower children to work toward change. Economic incentives or disincentives might also be implemented, as children are more sensitive to such factors.

Reducing obesity will prove more difficult than reducing the smoking rate because people who give up smoking tend to realize personal well-being and health benefits more rapidly than dieters. Social factors also have played into reduced smoking rates over the past several decades; thus the characteristics of social interactions and pressure should be considered for reducing obesity.

### **ROUNDTABLE: QUESTIONS ON HEALTH CARE REFORM THAT RESEARCH IS NEEDED TO ANSWER**

A meeting similar to this convened recently to discuss overall research priorities for the NIH Common Fund, including a focus on research in service of health and health care reform. In the area of health care, the priorities that were identified included studying performance and disease prevention; understanding variations in medical care systems; evaluating medical-care delivery with goals for system change; using randomization of hospitals, practices, and health plans to assess the effects of health plans on outcomes and costs; doing research with data available through new medical systems and electronic medical records; conducting research with health maintenance organizations' medical operations; understanding the impact of social networking on health; randomizing provider incentive models to assess effects on health and costs; and studying organizational change. At the same meeting, a mechanism was mentioned that would identify areas that are lacking: set up a Web site allowing graduate students and post-doctoral fellows to enter what they wish existed but currently does not.

Development of data that will enable research is also important. While this might take several years, it will build an infrastructure upon which studies may be based over the long term. This is important in considering research covered by the Common Fund; the time for which any particular project will be funded is relatively brief, but building infrastructure will have longer term benefits.

Roundtable participants were invited to suggest the kinds of specific questions, research, and mechanisms that will permit progress in this area.

***Henry Aaron, PhD, Brookings Institution***

Small area variations in health care delivery appear not to have changed since they were first documented in 1973.<sup>4</sup> At the same time, by 2025, the United States will need to have stabilized the debt-to-gross-domestic-product ratio. This suggests a serious disjunction between the timescale over which changes in the health care delivery system have been made (e.g., decline in smoking over the past 40-50 years involving changes in social norms). Between now and 2025 changes in the health care delivery system will have to be made. Accountable care organizations (ACOs) are the leading hope for implementing spending control while maintaining quality, although it is not clear how to bring ACOs into existence due to a lack of organizational and legal expertise on the part of providers and payers. Much the same can be said about bundled payments, the infrastructure to make consumer-directed health care more than a slogan, and implementation of comparative effectiveness research, plus using the full potential of health information technology. The urgency of achieving measurable savings suggests that the sustainable growth rate (SGR) formula should at all costs not be permanently reformed, but at best be fixed probably partially and only on an annual basis so that it can be held out as a strong incentive potentially for physicians to join ACOs.

The shortened timetable for translating research insights into a health care delivery system suggests that NIH should consider new modes of research that join economics, legal studies, cognitive science, and sociology to change the manner in which health care is organized. It would be worthwhile to convene a panel of experts in each of these fields to discuss this.

***David Cutler, PhD, Harvard University***

The success of health care reform will depend in large measure on how to design payment reform, how to create a culture of efficiency, and how to change individual behavior. Payment reform might involve ways to incentivize providers through bundled payments or performance-based payments. A science of medical practice might be implemented to understand and promote efficiency (e.g., whether the checklist is optimally organized). It is not clear how to promote adherence to medical recommendations; a great deal more work needs to be done on incentives, the role of mental health, and the level of patients' understanding of physician directions.

***Mark Duggan, PhD, Council of Economic Advisers***

The Medicaid program currently covers approximately 50 million individuals; this number is projected to grow substantially as a result of the poor economy and especially as a result of PPACA. Because Medicaid is a state-run and not a Federal program such as Medicare, it offers

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<sup>4</sup> Wennberg J and Gittelsohn A. 1973. Small area variations in health care delivery: A population-based health information system can guide planning and regulatory decision-making. *Science*, 193(4117): 1102-8.

50 different “laboratories” among which comparisons may be made for research purposes to evaluate differences in such areas as spending per recipient and the handling of risk-adjustment.

*Alan Krueger, PhD, Department of the Treasury and Princeton University*

Several issues were raised during the debates over health care reform that will need to be addressed, such as the optimal scale of health care exchanges; how people will use exchanges; how to present information that will optimize individuals’ choices; whether sufficient health care providers will be available for future demand; how occupational licensing (e.g., physician versus nurse practitioner) affect efficiency, productivity, and costs. Further, it is not clear what effect PPACA will have on labor force participation, perhaps affecting early-retirement rates; employers’ hiring and wage rates because of the effects on taxation; the growth of small versus large companies; variations in part-time versus full-time employment; and insurance-related job-lock and the resultant geographic mobility. Other areas of potential research include the impact of the “soda tax” on dietary choices and long-term health, how the newly implemented child-coverage up to age 26 will affect health outcomes, and how having health insurance affects people’s perceptions of well-being.

*Mark McClellan, MD, PhD, Brookings Institution*

Payment reform such as accountable care and bundled payments are included as a central part of PPACA although surprisingly little is known about them. Rich data from CMS might be mined in a collaboration between CMS and NIH to understand the outcomes of treatment decisions and the impact of payment reform on cost and quality of care, and why particular payment reforms have the impact they do. The information will be needed more rapidly than is usual for economics research; thus which measures to study will need to be rapidly identified and captured as soon as reform is implemented. Aggressive strategies will be needed on the part of NIH to develop evidence, assemble expertise, and bring resources to bear to apply lessons learned more quickly than ever before.

### *Discussion*

It is not clear how to deal with the enormous market power of the health care industry, how to set up health care organizations, and how to structure reimbursements. To understand the influence of newly acquired health coverage will require before-and-after data; however, data on the uninsured are scarce. Coordination of data from all the states would accelerate research progress; for example, because Medicare covers individuals older than 65, individuals younger than that will experience the biggest changes as a result of PPACA, but data (e.g., vital statistics, hospital and Medicaid data) on this population are fragmented and difficult to obtain. A random sample of 5 to 10 percent of Medicaid patients might enable studies on the efficacy of treatment variations. There also would be benefit to linking existing data with survey data on the uninsured.

Despite the importance of the impact of increased access to health care, this topic might not be a research priority given budgetary and personnel limitations. For some, the focus should be on studying cost containment. A diversity of mechanisms should be evaluated to identify what works in different areas.

Data are needed on organizations to understand the effects of payments and incentives on organizations. There are no instruments to measure this. Solutions will have to integrate reduced rates of cost growth with improved outcomes and practice patterns. Cost limitations in CMS

programs will increase cost-sharing while limiting benefits, which will disproportionately affect vulnerable people; any limitations in access or quality should be shared equitably. Social return on investment might be considered when determining cost controls to prevent long-term diseases, such as Alzheimer's disease, or maintain functioning.

Another area on which research might be focused is health disparities and how socioeconomic status (SES) interacts with the results of health care reform. Public acceptance of cost limits will require information about the impact on quality; this is an area in which NIH can help with the evaluation of quality of care and patient outcomes associated with different treatments, and building of SES measures that can be incorporated into medical records with very little burden. Increasingly complete data from electronic claims records will facilitate such work, as will data collected for PPACA-mandated demonstration of quality and outcomes. However, disadvantaged populations tend to be in areas with poor infrastructure for the collection of such data; thus IT infrastructure will need to be upgraded in underserved areas. This might be covered in part by Recovery Act funding provided by NIH for CER infrastructure projects. More work can be done on population health and non-mortality outcomes such as body-mass index or prescription; IT infrastructure might be added to assist with the collection of such data from individual providers.

NIH might need to fund atypical projects to evaluate the effects of health care reform. It will be useful to implement reporting using standard measures of quality of care. Evaluation of patient selection might be particularly difficult.

One useful area of research will be to learn how to encourage payment for care. ACOs and bundled payments are encouraged because they control spending. A more concise set of channels through which funding flows might enable more effective use of payment formats.

Another issue to address is how to ensure that the infrastructure is in place to collect the desired data as soon as they are available. The datasets tend to be fragmented, and there is little incentive to collect more rather than less. It will be a challenge to design IT to encourage richer data entry.

To obtain Common Fund support, specifics are needed for proposing how funding will transform research in this area. One suggestion is to identify the datasets and resources that will be needed to conduct necessary research; perhaps a workshop might be held to define a minimal dataset. Another is to develop low-data-collection-burden electronic research tools that include socioeconomic measures, care settings, and other information that enable CER, perhaps by linking census and health care data. Examination of data tracking in Massachusetts after implementation of that state's universal health care coverage might offer applicable lessons.

The past two decades have seen better integration of health and economic datasets in projects such as the Health and Retirement Study. A workshop could be held to produce a short paper documenting the health-economic research priorities to encourage cross-agency collaboration; it also would be helpful if this enumerated the benefits to be reaped by other agencies such as the Food and Drug Administration or the Agency for Healthcare Research and Quality.

## **HEALTH ECONOMICS OF THE LIFE CYCLE**

### **Childhood Health and Its Effects on Adults' Lives**

*Janet Currie, PhD, Columbia University and NBER*

Events *in utero* may be associated with future health outcomes. Many studies have shown a link between health at birth and adult economic outcomes. First trimester exposures likely have the

greatest impact, possibly before women know they are pregnant; thus interventions might need to be targeted more generally at women of child-bearing age.

Socioeconomic differences in health grow as children age. Health problems in childhood, particularly mental health conditions, are predictive of worse adult economic outcomes.

Insults to fetal and child health may be important determinants of adult population health and therefore of health care costs. Perhaps “bending the cost curve” will require a better understanding of ways to prevent children from being “programmed” for a life of poor health.

Research priorities in this area include studying the relative importance of fetal and childhood health insults; pathways by which childhood health affects future outcomes; which childhood health conditions have the greatest long-term impact; what factors are protective; the most cost-effective ways to prevent health insults and improve health in infants and children; and how all of the above differ by race, socioeconomic status, and other factors.

### ***Discussion***

It is not possible to precisely determine the proportion of particular ailments attributable to *in utero* or adverse circumstances in childhood of thereafter.

Adequate levels of micronutrients both before and after conception have been shown to have significant effects on physical and mental development; further research in this area would be helpful. Although it is known that folate and iodine supplementation is beneficial, research is needed to understand why supplementation is not more widely implemented. Studies of health care organization might be performed to determine why more basic, low-cost interventions are not performed. Resource allocation tends to be uneven; comparatively little funding would be needed to have a large, positive impact on child health. It is not clear whether spending would be better directed to Medicaid or the Women, Infants, and Children program.

Programs such as nurse home-visits have positive effects in preventing maternal depression, which is known to have negative effects on infants. Little has been done to evaluate the influence of other factors on children’s psychological well-being. Obesity is a growing problem in children; research may be designed to address the correlation between obesity and time spent in front of televisions and computers, along with differences in socioeconomic status and how to promote more beneficial television programming. Interventions outside the health care system might also be investigated, although it is not certain where the line is between beneficial services and price-support-like programs.

### **Why Are Middle Aged Americans So Sick?**

***James P. Smith, PhD, RAND Corporation***

The prevalence of disease and biomarkers predictive of disease are higher in Americans than in Europeans. This cannot be explained by ethnic differences, standard behavioral risk factors such as smoking, drinking, and obesity, self-reporting differences, or access to health insurance. Studies are underway to understand the differences; evidence to date indicates that measures of body shape other than obesity, such as moderate or high waist risk, play a large part. Data on prevalence and incidence of disease across age levels suggest that Americans are getting sicker and getting sicker earlier, although Americans tend to live longer after diagnoses. Perhaps earlier



screenings and earlier diagnoses contribute to these discrepancies. Other factors that warrant examination include environmental influences and psychosocial risk and stressors.

### *Discussion*

Comparisons of life expectancy in the United States and England show that a divergence begins around 1980 with the United States lagging behind England and most other high-income countries; this cannot be attributed entirely to differences in smoking rates. An interesting study might be to likewise compare 20- to 40-million-individual regions within the United States, taking advantage of naturally occurring regional and geographical differences to do CER research.

Cancer rates, similarly, are difficult to disaggregate; datasets with rich personal histories might be needed to enable greater understanding of cancer discrepancies. Cancer registries will be of use by providing information on the incidence of various types of cancer. It is possible that the United States over-screens and over-diagnoses.

It is difficult to compare dietary differences, caloric intake, and physical exercise among countries. More objective measures of these should be developed and applied internationally. Physical activity might account for a great deal of the differences noted and should be a high research priority. In addition, the roots of middle-age cardiovascular disease are planted in childhood, thus early interventions might have the largest economic impact.

### **The CLASS Act: Health Economics Research and Policy Design**

*Richard Frank, PhD, Deputy Assistant Secretary, U.S. Department of Health and Human Services*

The Community Living Assistance Services and Supports (CLASS) Act is a voluntary, long-term care insurance plan based on activities of daily living impairments with modest cash benefits that can be used to support community living or institutional care. The CLASS Act is supported by premium payments; thus it is not an entitlement and is expected to generate Medicaid savings. Although it includes a requirement that ensures program solvency and the Congressional Budget Office (CBO) anticipates that revenues will outstrip outlays, the Act faces tremendous uncertainty going forward: it is not clear what percentage of eligible individuals will participate; the program seems rife with opportunities for gaming the system; and adverse selection is anticipated. Several assessment measures are underway, including a consumer survey on financial literacy, messaging experiments based on survey results, and analysis of partnership data. Issues associated with the opt-out feature, moral hazard, and cash benefits need to be addressed. The experience of similar programs in Europe might prove instructional.

### *Discussion*

Modeling for the CLASS Act relies on CBO life expectancy tables, which are lower than Census life expectancy projections. The offset of disability decline by obesity is also being factored into the model.

Solvency of the program will be problematic if selection is a major factor; for example, a low-income, intellectually disabled individual might pay into the program \$5 per month for 60 months and then collect \$50 per day for life beginning as early as age 23. Despite this, the front-loaded costs might be unattractive to potential participants.

The complexity of the plan might limit participation; this could be ameliorated with use of safe-harbor language to increase interest.

**Discussant: *Kenneth Langa, MD, PhD, University of Michigan***

The apparent “long arm of childhood” suggests that economic and educational policies targeted at women and their young children are essentially health policies. Therefore the education of girls may be especially important for the next generation’s bodies and brains, and re-allocation of health care resources toward education might be more efficient in producing healthier, less disabled adults. Mothers’ educational levels are inversely related to late-life dementia risk in their children, although the mechanism by which this acts is not clear.

While cardiovascular disease and cardiovascular risk factors are higher in the United States than in England, cognitive impairment and depressive symptoms are lower in the United States among older adults. This could be due to differences in childhood health, discrepancies in the aggressiveness of hypertension and depression treatment, or measurement differences. Obesity and diabetes are likely responsible for increases in mobility difficulties and other disabilities in older Americans. Inducing people to engage in more daily exercise might involve employing behavioral economics theories, financial incentives, and re-engineering family, school/workplace, and commuting routines along with redesigning neighborhoods to make walking a default activity.

Given the shrinking informal caregiver pool in the United States, another future concern is the supply of long-term caregivers. The increasing disability of middle-aged adults might lead to a pool of disabled caregivers. It will be challenging to create a financing system to address this issue.

Health economic research priorities include education—causal pathways from education of parents and children to good health and decreased disability later in life; health behaviors—especially physical activity and obesity, as well as healthful behavior change and its impact on the compression of morbidity and disability; international comparisons—to better understand health differences and the impact of health behaviors on health and disability throughout the lifecycle; and care—future supply and demand of informal and formal care for older adults.

**LEARNING FROM EXPERIMENTS AND PAYMENT REFORM**

**What Can, and Can’t, We Learn from Health Reform in Massachusetts?**

*Jonathan Gruber, PhD, Massachusetts Institute of Technology and NBER*

Prior to state health care reform, Massachusetts had low uninsurance and high employer-provided coverage rates with a dysfunctional, overpriced non-group market, and reliance on existing sources of revenue from the uncompensated-care pool and Federal intergovernmental transfers to finance expansions in coverage. Reform included insurance-market changes; a mandate to purchase insurance; subsidies for low-income purchasers; a connector insurance shopping framework; and very modest employer obligation. Reform has resulted in a 60 percent decline in the rate of uninsured, increased access to health care, and increased employer offering and employee take-up of insurance. Reform implementation has been smooth, with 98 percent compliance and low administrative costs. It is also popular, with a 74 percent approval and a 15 percent disapproval rating. Reform has led to a 40 percent decline in premiums for the non-group market (compared to a 14 percent rise nationally) and no change in the rate of premium growth

in the group market. The net cost, \$707 million, is slightly less than the projected \$750 million. The state has 300,000 newly insured individuals at a per capita cost of \$2,350, less than half the cost of newly insured Federal recipients of Medicare Part D (\$5,000). Some remaining unanswered questions are what the health impact of reform will be, why employer offering rose, and whether there will be a shortage of physicians.

Federal health care reform is similarly structured, but with a weaker mandate, smaller subsidies but up to higher incomes, and a greater employer obligation. The Congressional Budget Office predicts there will be a similar reduction in uninsured (58 percent), little change in employer-offered insurance (-2.5 percent), no effect on employer premiums, and a cost of \$3,700 per newly insured individual. It is more difficult to predict the effects on non-group premiums in states without preexisting regulations, the source of required increases in revenue, and the popularity of the mandate, which is important for political success. Cost control presents the most important uncertainty; Massachusetts had none for comparison. Several ambitious new approaches, such as the “Cadillac” tax, insurance exchanges, and numerous pilot programs, will have unpredictable effects. The long-term success of Federal health care reform depends on public perception and marketing and the characteristics of the next round of reform when real cost controls are imposed, which will occur maybe 10 years out.

### ***Discussion***

Massachusetts was able to realize savings by altering the coverage for undocumented immigrants from state-coverage to a private company that agreed to accept this Federally subsidized population as terms of entering the Massachusetts market. Reform was facilitated by a motivated advocacy community, the creative connector staff, and superior advertising with ad time donations from professional sports teams. Assessment of health care networks through information posted online is difficult, although it is clear that Massachusetts plans are increasingly standardized.

Massachusetts did not have vocal groups touting the relative inexpensive cost of noncompliance; however, the Federal plan might see just that from groups opposed to PPACA, which would have the potential of decimating the program. It would be worthwhile for the Department of Health and Human Services to dedicate some implementation funding to comparative effectiveness of various social marketing schema.

Currently each state may decide where in the state insurers may serve, although this might eventually be Federally mandated. PPACA forbids insurers from offering exclusively low-end plans.

### **The Oregon Health Insurance Experiment**

***Katherine Baicker, PhD, Harvard University***

Oregon’s Medicaid expansion program offers a unique opportunity to perform a randomized trial comparing utilization and health outcomes in matched groups of individuals with and without new public health insurance coverage. The Oregon Health Study will measure insurance take-up; utilization of primary care, hospitalization, emergency department, and disease-specific care; health outcomes; and other characteristics pertaining to financial well-being, happiness, and labor market outcomes. Data will be collected from mail surveys, administrative databases, and in-person interviews and physical measurements (including height, weight, waist circumference,

blood pressure, and dried blood spots). Analysis will focus on intent-to-treat rather than treatment on those who actually enroll in health insurance (only one in three selected individuals enrolled). Care will be taken to properly account for multiple inferences and several strategies will be deployed to address the possibility that non-responders differ between the treatment and control groups.

### *Discussion*

The relatively low rate of take-up might be due to changes in applicants' circumstances, a lack of the proper documentation, or having income above the threshold to qualify for public insurance. The primary reason for denial among those who completed applications was income above the eligibility level. Statistical power will erode over time as individuals drop out of the insurance program or are lost to follow-up.

Implementation of health reform was too rapid in Massachusetts to allow for baseline data collection, but it will be possible to collect pre- and post-PPACA data at the Federal level. Meeting participants wished the Medical Expenditure Panel Survey (MEPS), the National Health Interview Study (NHIS), and the National Health and Nutrition Examination Survey (NHANES) had sampling frames that lend themselves to state-level analyses. Some called for a "Super-MEPS" or an all-payer database that included clinical data with more diagnoses. It would be very valuable to include clinical data and as much information as possible from participants' electronic medical records and over as long a time period as possible.

### **A New Major Experiment Like the RAND Health Insurance Experiment?**

*Joseph P. Newhouse, PhD, Harvard University*

The well-designed and executed RAND Experiment influenced real-world outcomes in the short run and is still cited three decades later as the "gold standard" for issues related to cost sharing. However, it cost \$82 million (in 1970s dollars) and took many years to complete. Many factors contribute to considerations whether to initiate a similar study today. Although the RAND cost-sharing results still seem to hold, more information is needed about demand for insurance or particular plan characteristics (e.g., restrictiveness of networks). There is even less empirical evidence about supply-side incentives that might inform, for example, evaluation of largely theoretical arguments in support of mixed payment systems such as partial capitation.

Many mandated demonstrations and pilots in PPACA are aimed at changing supply-side incentives or the organization of care or both, involving accountable care organizations and shared savings pilots, payment bundling, and reduced readmissions. PPACA also includes pilots and demonstrations relating to wellness and prevention; quality-based reimbursement; pay-for-performance programs for psychiatric, long-term care, rehabilitation services; hospice access to Medicare-covered services; home-based primary care teams; payment for complex diagnostic laboratory tests; alternatives to tort; and health care occupational training.

Because the financing and organization of medical care is likely to change greatly over the next several years, now is not a good time for a large project similar to the RAND health insurance experiment. A possible role for NIH would be to participate in the randomization and/or phase-in of the pilots and demonstrations planned in PPACA, as well as their design and analysis.

*Discussion*

A useful direction for NIH would be to work with CMS and AHRQ to develop a “rapid-strike” infrastructure with the capacity to quickly implement experiments arising from changing health care conditions. These would require fast-track or pre-approval to avoid delays associated with usual peer review. Enrollment of willing experimental and control groups might prove difficult, although funding limitations might be used to justify randomization. The Health and Retirement Study is an example of a survey that is already in place and might be used as a rapid-response resource for information gathering. MEPS, NHANES, and NHIS could play to this strategy as well.

Another issue to address will be how to obtain the most useful information from the PPACA changes, regardless of whether the changes were implemented in a manner optimal for experimentation. The focus should be on ramping up quickly to work with the Department of Health and Human Services to design solid demonstration and pilot projects, and concentrate on those parameters that can inform program design.

Medical technology has advanced immensely since the RAND study was conducted, and it is not clear how that affects the relevance of the RAND estimates today.

**Discussant: Gary Burtless, PhD, Brookings Institution**

Social experimentation is significantly more elaborate and complex than the usual types of studies funded by NIH. Social interaction effects and the difficulty of deriving general equilibrium conclusions from small-scale randomized trials make it hard to know whether the effects of full-blown program implementation will be the same as those observed in a social experiment. Welfare reform in the United States exemplifies some of these complexities. Small-scale state programs in the 1980s and 1990s seemed to indicate that work-oriented was superior to non-work-oriented social assistance. That is, experiments with strong job search and work requirements reduced the assistance rolls and boosted employment rates and earnings of former assistance recipients. Policy makers cited this to garner support for implementation of nationwide, work-oriented reforms to the social assistance program. It is not clear whether the policy changes were entirely evidence-driven or whether they were adopted because they conformed with popular opinion. Nonetheless, the work-welfare experiments are widely credited with helping to shape a major shift in U.S. public assistance policy.

After it was implemented federal welfare reform turned out to be more successful than the most successful experiment predicted. Welfare caseloads fell much faster and single mothers’ employment and earnings increased much more than implied by the experimental results. Economists cannot account for this. Perhaps other changes accompanied and influenced welfare changes. Possibly control-group contamination in the initial experiments caused an underestimation of treatment effects, or it could be that the impact of social interactions on human behavior could not be reliably uncovered in small-scale randomized trials.

Likewise, the effects of PPACA cannot be fully predicted based on results from any conceivable set of small-scale social experiments. During the time it takes to conduct randomized trials, changes in other public policies and in popular perceptions will have influenced the behavior of both control and experimental groups.

## General Discussion

It is possible that the public debate in Massachusetts influenced the behavior of employers, accounting for the increase in employer-offered health insurance.

A factor in the success of welfare reform might be the five-year cap on benefits.

PPACA might enable more health care experimentation because several aspects of the Act do not go into effect immediately, allowing lead time to gather data and prepare studies. Pilot studies in the Act that are accompanied by appropriated funding are more likely to be conducted.

## DATA NEEDS

### Prospective Cohort Studies and Health Care Reform

*David Weir, PhD, University of Michigan*

If PPACA is akin to Medicare, which underwent many revisions after initial passage, change will be the norm, reshaping the Act over time. Congress is likely to implement changes, perhaps with little or no evidential basis, and changes to the Act will arise from PPACA provisions for CER and cost-saving experiments. Although not a substitute for experiments or rapid-response studies, prospective cohort studies enable researchers to evaluate overall impact and to study take-up of programs and offerings. They complement administrative data, providing richer observation on health status, functioning, and well-being.

Stand-alone health studies are insufficient. There is a need to understand economic circumstances (e.g., expansion of Medicaid eligibility, other subsidies), economic choices and behavior, and genetics. Standardized provider electronic medical records and/or CMS datasets linked to health and economic information would be valuable for prospective cohort studies.

It is currently difficult to obtain NIH funding for prospective studies, which are often viewed as expensive and less focused on immediate hypothesis testing. The age coverage of the U.S. population in existing nationally representative longitudinal studies is uneven; data is missing on most of the non-elderly adults. To address this deficiency, cohorts from several cross-sectional studies (e.g., NHIS-MEPS, NHANES, CPS, Project TALENT) might be considered for follow-up. Rapid public release of data needs to be an absolute requirement. There is also a need for mechanisms to solicit input widely and for effective management systems.

The Health and Retirement Study (HRS) has provided a great deal of health and economic information. For example, end-of-life spending tends to be greater for individuals who do not have advance directives, and health care spending after the age of 65 tends to be higher for individuals who did not have continuous health insurance prior to that age. The HRS also has provided rich information concerning Medicare Part D: it greatly expanded coverage, and nearly eliminated income inequality in coverage; it is experiencing adverse selection; and its implementation affected primarily individuals' out-of-pocket costs as opposed to prescription use.

### *Discussion*

Depending on the length of the panel to be studied, a refresher study with a constant mix of participants (e.g., a 10-year MEPS panel) might prove as informative as a cohort study. It will be essential to include measures of happiness and well-being in cohort surveys going forward.

It is possible that the HRS has been so successful because of its modest samples size; larger studies sometimes find it prohibitively expensive to accomplish as much.

Health care reform is said to be more about reducing cost than improving health. Likewise, it can be said to be more about systems than individuals. Few if any studies to date have evaluated systems in any analogous manner to cohort studies on individuals. PPACA might produce systems that integrate providers and use information better, although there are no systematic means to measure this, and data are often difficult to access. It would be worthwhile to begin planning organization surveys, although obtaining an unbiased sample frame might be challenging. However, physicians have resisted earlier efforts to undertake an establishment survey, citing concerns pertaining to privacy and confidentiality.

### **Learning from Other Countries**

*David Wise, PhD, Harvard University*

The National Institute on Aging (NIA) has a history of international data collection and comparisons, with HRS-like surveys in many countries. It would be useful to compare these datasets to develop measures of health status that are comparable across countries, although this would not allow comparison of the effectiveness of the delivery systems. An ongoing study of social security systems across numerous countries has shown that the age people choose to retire is closely linked to the age at which benefits begin; a similar study on health economics might reveal the likelihood that people of different health statuses will be employed.

A cross-national health care study would require detailed country data, with careful attention to similarities and differences in how care is provided and the role of government. Such data might require a consortium of teams in several countries, perhaps with the assistance of the Organization for Economic Cooperation and Development (OECD). International data would allow comparisons of different delivery systems that are not possible in any one country, to identify which systems are optimal for delivery of what types of health care.

### **Discussion**

A cross-national study comparing cancer treatments revealed that many countries did not have the quality of data they thought they had, which made meaningful data comparisons difficult. The OECD is considering repeating the study.

Germany has a similar health care system to the United States, except that the government determines the prices, which are significantly lower than those in the United States. The factors keeping costs lower in Germany despite equivalent procedures might include lower doctor salaries and the requirement to provide justification for pricing outside the government guidelines.

### **Can Medicare Claims Data Be Made an Engine for Evaluating Comparative Effectiveness of Procedures, Drugs, Providers, Insurers, Information Programs, and Incentive Mechanisms?**

*Daniel McFadden, PhD, University of California, Berkeley*

Traditional CER involves randomized control trials of a treatment or drug followed by screening for efficacy and market release. Systemized follow-up studies are rarely performed. Retrospective CER might be used to inform diagnostic epidemiology, employing longitudinal

data on treatments and outcomes and a framework for “automatic” data mining and screening to measure *ex post* effectiveness and detect contraindications. This would need an institutional setup enabling timely data preparation, analysis, and dissemination.

Data from electronic medical records from sources such as CMS or employer/insurer claims may be used in retrospective CER. Requirements include reliable, complete medical records over extended periods; data on treatments and conditions that influence treatment assignment; non-specialized populations; and adequate socioeconomic controls. This could provide a comprehensive, reliable, up-to-date system for forecasting future health distributions conditioned on history and treatments.

Click epidemiology, a methodology adapted from signal processing and data mining, might virtually automatically detect phase changes, allowing real-time queries from administrative agencies (e.g., CMS) and researchers. Further refinement to this method is needed to devise mechanisms by which retrospective CER would allow detection and use of patient heterogeneities for personalized medicine; compensation for lack of natural treatment experiments and selection effects; and broad application to study the efficacy of providers, insurers, incentives, information and communication systems, and behavior (e.g., adherence and compliance). The research system will need to balance patient, provider, and insurer privacy against the social value of CER; the research organization will have to maintain a secure data warehouse and continuous monitoring and dissemination of CER results. It might take the form of an NIA Data Center jointly sponsored by NIH and CMS to provide rapid response, continuous monitoring, and opportunities for click epidemiology for the academic community.

### ***Discussion***

CMS has a relational database with 225 billion health care records from the past 10 years that will be available in the end of June for research purposes. Although it has a lag of about one year, this database might be used to help implement health care reform. These data will be linked with census demographic information and death records, and may be converted from billing information to a dataset that is more researcher-friendly.

New pilots and demonstrations included in PPACA will need instant, real-time information. Perhaps intermediaries could be employed to perform usual CMS functions, such as claims payment, to allow CMS to work directly to obtain rapid-response information. CMS is interested in partnering with NIH to establish an incubator laboratory that provides the research community an opportunity to recommend the types of datasets needed.

Delivery system organization was identified as a crucial determinant of the value delivered by the health care system and of the success of reform. Yet there is virtually no data measuring organizational features of the delivery system. Developing such a database is a prerequisite to assessing how reform is affecting providers. If such a database could be linked to care patterns and outcomes it could be a crucial resource for assessing the relationship between delivery system features and outcomes.

### **CONCLUDING REMARKS**

NIH might need to fund atypical projects to evaluate the effects of health care reform. Addressing data needs was a dominant theme in terms of where NIH could add value. The presentations and discussions throughout the two-day meeting also underscored the advantages



of a rapid-response funding mechanism to take advantage of natural experiment opportunities or to quickly collect baseline data in advance of a policy change. A possible role for NIH would be to participate in the randomization and/or phase-in of the pilots and demonstrations planned in PPACA, as well as their design and analysis.

**APPENDIX 1**

**AGENDA**

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*Note: The proposal is for fast-paced sessions with 3-4 presenters for 10-15 minutes each, concentrating on priorities rather than summarizing particular projects, and discussants for about 5 minutes each, with chaired discussion following.*

**Monday, May 10**

**Cabinet/Judiciary**

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8:30      **COFFEE/TEA**

9:00      **WELCOME AND OVERVIEW**

**Francis Collins**, Director, National Institutes of Health

9:30      **SAVING MONEY AND IMPROVING QUALITY: WHAT IS POSSIBLE?**

    Chair: **Thomas Insel**, Director, National Institute of Mental Health

    Drugs, Costs, and Value

**Alan Garber**, Stanford University and Veterans Affairs

    What More Can We Learn from Regional and Institutional Variation in Healthcare Intensity, Outcomes, and Costs?

**Amitabh Chandra**, Harvard University

    Can We Make Health Spending Equal Economic Growth?

**Joseph Newhouse**, Harvard University

    Discussant: **Michael Chernew**, Harvard University

11:00     **TECHNOLOGICAL CHANGE AND DIFFUSION**

    Chair: **James Smith**, RAND Corporation

    Has Technological Change Been Worth the Cost?

**David Cutler**, Harvard University

    What's on the Horizon and Will It Be Worth It?

**Dana Goldman**, University of Southern California

    The Hospital of the Future

**David Meltzer**, University of Chicago

    Discussant: **Mark Freeland**, Centers for Medicare & Medicaid Services

12:30 LUNCH Old Georgetown/Congressional

1:30 CONSUMERS AND HEALTH BEHAVIORS

Chair: **Rick Foster**, Centers for Medicare & Medicaid Services

Financial Incentives to Change Adherence and Other Health Behaviors  
**Kevin Volpp**, Philadelphia Veterans Affairs Medical Center and University of Pennsylvania

Lessons from Behavioral Economics  
**David Laibson**, Harvard University

Part D Enrollment and the Optimal Design of Insurance Exchanges  
**Daniel McFadden**, University of California, Berkeley

How Will Consumers React to Changing Insurance Markets?  
**Amy Finkelstein**, Massachusetts Institute of Technology

Discussant: **Daniel Kahneman**, Princeton University

3:15 BREAK

3:30 ROUNDTABLE: QUESTIONS ON HEALTH CARE REFORM FOR WHICH RESEARCH IS NEEDED TO ANSWER

Chair: **Richard Hodes**, Director, National Institute on Aging

Panelists:

**Henry Aaron**, Brookings Institution

**David Cutler**, Harvard University

**Mark Duggan**, Council of Economic Advisers

**Alan Krueger**, Department of the Treasury and Princeton University

**Mark McClellan**, Brookings Institution

5:15 RECEPTION Concourse Terrace

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Tuesday, May 11

Cabinet/Judiciary

8:00 COFFEE/TEA

8:30 HEALTH ECONOMICS OF THE LIFE CYCLE

Chair: **Richard Suzman**, National Institute on Aging

Childhood Health and Its Effects on Adults' Lives  
**Janet Currie**, Columbia University

Why Do Middle-Aged Americans Get Sicker Earlier than Europeans?  
**James P. Smith**, RAND Corporation

Long Term Care, the End of Life and a CLASS Act  
**Richard Frank**, Office of the Assistant Secretary for Planning and  
Evaluation

Discussant: **Kenneth Langa**, University of Michigan

10:00 **BREAK**

10:15 **LEARNING FROM EXPERIMENTS AND PAYMENT REFORM**

Chair: **Sherry Glied**, Columbia University

Lessons from Massachusetts Health Reform  
**Jonathan Gruber**, Massachusetts Institute of Technology

The Oregon Medicaid Experiment  
**Katherine Baicker**, Harvard University

Lessons from the RAND Health Insurance Experiment and Thoughts  
About a New Experiment  
**Joseph Newhouse**, Harvard University

Discussant: **Gary Burtless**, Brookings Institution

11:45 **LUNCH** **Old Georgetown/Congressional**

12:45 **DATA NEEDS**

Chair: **Richard Frank**, Office of the Assistant Secretary for Planning and Evaluation

Prospective Cohort Studies and Health Care Reform  
**David Weir**, University of Michigan

Details of Internal Hospital Accounting and Pricing: Learning from Health Care Data from  
Abroad  
**David Wise**, Harvard University

Can Medicare Claims Data Be Made an Engine for Evaluating Comparative Effectiveness  
of Treatments, Providers, Insurers, Information Programs, and Incentive  
Mechanisms?  
**Daniel McFadden**, University of California, Berkeley

2:00 **CONCLUDING REMARKS**

2:15 **ADJOURN**

APPENDIX 2  
**LIST OF PARTICIPANTS**

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APPENDIX 3

**BIOGRAPHICAL SKETCHES OF PRESENTERS**

Rev. 5/12/10

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**Henry J. Aaron, PhD** is the Bruce and Virginia MacLaury Senior Fellow in the Economic Studies program at the Brookings Institution. From 1990 to 1996 he was the director of the Economic Studies program. He initially joined the Brookings staff in 1968. From 1967 to 1989 he also taught at the University of Maryland. In 1977-1978 he served as Assistant Secretary for Planning and Evaluation at the Department of Health, Education, and Welfare. He chaired the 1979 Advisory Council on Social Security. He is a member of the Institute of Medicine, the American Academy of Arts and Sciences, the advisory committee of the Stanford Institute for Economic Policy Research, and the visiting committee of the Harvard Medical School. He was a founding member, vice president, and chair of the board of the National Academy of Social Insurance. He has been vice president and member of the executive committee of the American Economic Association and was president of the Association of Public Policy and Management. He has been a member of the boards of directors of the College Retirement Equity Fund and Georgetown University. His publications include *Reforming Medicare: Options, Tradeoffs, and Opportunities* (co-authored with Jeanne M. Lambrew), *Can We Say No: The Challenge of Health Care Rationing* (co-authored with Melissa Cox), *The Plight of Academic Medical Centers*, *Painful Prescription: Rationing Hospital Care* (co-authored with William Schwartz), *Can America Afford to Grow Old?* (co-authored with Barry Bosworth), *Serious and Unstable Condition: Financing America's Health Care*, and *Behavioral Aspects of Retirement Economics* (editor). Dr. Aaron is a graduate of the University of California, Los Angeles and holds a PhD in economics from Harvard University.

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**Francis S. Collins, MD, PhD** is the 16th director of the National Institutes of Health (NIH) and an internationally renowned physician-geneticist most noted for his landmark discoveries of several disease genes and his leadership of the National Human Genome Research Institute (NHGRI), part of the NIH. From 1993 to 2008, Dr. Collins served as director of the NHGRI, steering it from its early beginnings as a Center to a fully funded NIH Institute that met projected milestones both ahead of schedule and under budget, culminating in the April 2003 completion of the much-anticipated human DNA instruction book. Prior to his arrival at the NIH in 1993, Dr. Collins spent nine years on the faculty of the University of Michigan, where he was a Howard Hughes Medical Institute investigator. The Collins laboratory discovered a number of important genes, including those responsible for cystic fibrosis, neurofibromatosis, Huntington's disease, a familial endocrine cancer syndrome, and most recently, genes for type 2 diabetes and the gene that causes Hutchinson-Gilford progeria syndrome. In recognition of his work, Dr. Collins was elected a member of the Institute of Medicine and the National Academy of Sciences. He is a recipient of the Presidential Medal of Freedom (2007) and the National Medal of Science (2009). On April 22, 2010, Dr. Collins was a co-recipient of the Albany Medical Center Prize in Medicine and Biomedical Research. Dr. Collins received his BS in chemistry from the University of Virginia, his PhD in physical chemistry from Yale University, and his MD from the University of North Carolina at Chapel Hill.

**Janet Currie, PhD** is the Sami Mnaymneh Professor of Economics at Columbia University and director of the Program on Families and Children at the National Bureau of Economic Research. She has served on several National Academy of Sciences panels, including the Committee on Population, and was elected vice president of the American Economics Association in 2010. She also has served as a consultant for the National Health Interview Survey and the National Longitudinal Surveys. Dr. Currie is a fellow of the Society of Labor Economists, an affiliate of the University of Michigan's National Poverty Center, and an affiliate of IZA in Bonn, Germany. She is on the advisory board of the National Children's Study and on the editorial board of the *Quarterly Journal of Economics*. Dr. Currie is the author of the book, *The Invisible Safety Net: Protecting the Nation's Poor Children and Families*, published by Princeton University Press. Her current research focuses on socioeconomic differences in child health and on environmental threats to children's health from sources such as toxic pollutants and fast food. She holds BA and MA degrees in economics from the University of Toronto and a PhD degree in economics from Princeton University.

**David Cutler, PhD**, the Otto Eckstein Professor of Applied Economics in the Department of Economics and Kennedy School of Government at Harvard University, recently completed a five-year term as associate dean of the Faculty of Arts and Sciences for Social Sciences. He is also a research associate at the National Bureau of Economic Research and a member of the Institute of Medicine. Honored for his scholarly work and for outstanding mentorship of graduate students, Dr. Cutler's work in health economics and public economics has earned him academic and public acclaim. He has served on the Council of Economic Advisers and as director of the National Economic Council during the Clinton Administration, and he was the senior health care advisor to Barack Obama's Presidential campaign. In addition, he has advised the Presidential campaigns of Bill Bradley and John Kerry. He has also held positions with the National Institutes of Health and the National Academy of Sciences. Dr. Cutler is the author of *Your Money or Your Life: Strong Medicine for America's Health Care System*, published by

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**Mark Duggan, PhD** is currently the senior economist for health care policy at the Council of Economic Advisers, an agency within the Executive Office of the President. He is also a professor in the University of Maryland's Department of Economics, where he has served since 2003. From 1999 to 2003, he was an assistant professor in the University of Chicago's Department of Economics. His primary fields of interest are public finance and health economics. He was a fellow of the Alfred P. Sloan Foundation from 2004 to 2006 and served as a visiting fellow at the Brookings Institution from 2006 to 2007. His research on Medicaid, Medicare, and Social Security has recently been supported by the National Institutes of Health, the National Science Foundation, and the Social Security Administration. Dr. Duggan is a research associate at the National Bureau of Economic Research, and he serves on the editorial boards of the *Journal of Public Economics* and the *American Economic Journal: Economic Policy*. In recent years he has also served as an expert witness for the U.S. Department of Justice on issues involving the Medicaid and Medicare programs. He is the 2010 recipient of the American Society of Health Economists' ASHEcon Medal, which is awarded every two years to the economist age 40 years or under who has made the most significant contributions to the field of health economics. Dr. Duggan received his BS and MS in electrical engineering from the Massachusetts Institute of Technology in 1992 and 1994, respectively, and his PhD in economics from Harvard University in 1999.

**Amy Finkelstein, PhD** is professor of economics at the Massachusetts Institute of Technology (MIT). She is co-director of the Public Economics Program at the National Bureau of Economic Research and co-editor of the *Journal of Public Economics*. Dr. Finkelstein was elected to the Institute of Medicine and the National Academy of Social Insurance and has received honors such as the TIAA-CREF Paul A. Samuelson Award, the Elaine Bennett Research Prize, the Robert Wood Johnson Foundation Scholar in Health Policy Award, and the Ernst Meyer Prize of the Geneva Association. Her two primary research interests are market failures and government intervention in insurance markets, and the impact of public policy on the health care sector. Dr. Finkelstein received her AB in government from Harvard University and an MPhil in economics from Oxford University, where she was a Marshall Scholar. She received her PhD in economics from MIT. Prior to joining the MIT faculty, she was a junior fellow at the Harvard Society of Fellows.

**Rick Foster, MS, FSA, MAAA** has been serving as the chief actuary for the Centers for Medicare & Medicaid Services since February 1995. Prior to this position, he served as deputy chief actuary for the Social Security Administration for 13 years. He is a fellow of the Society of Actuaries and a member of the American Academy of Actuaries, the American Statistical Association, the American Economic Association, the National Academy of Social Insurance, and the Senior Executives Association. He has written numerous articles and reports on Medicare and Social Security issues, including "Level of OASDI Trust Fund Assets Needed to Compensate for Adverse Contingencies" in *Transactions of the Society of Actuaries* (1993), "A Stochastic Evaluation of the Short Range Economic Assumptions in the 1994 OASDI Trustees Report" (Actuarial Study No. 109), and "Trends in Medicare Expenditures and Financial Status, 1966-2000" for the *Health Care Financing Review*. Mr. Foster received an MS in applied

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**Richard Frank, PhD** serves as the Deputy Assistant Secretary for Policy and Evaluation in the U.S. Department of Health and Human Services (HHS). He is currently on leave of absence from his position as the Margaret T. Morris Professor of Health Economics in the Department of Health Care Policy at Harvard Medical School. Dr. Frank is also a research associate with the National Bureau of Economic Research and advises several state mental health and substance abuse agencies on issues related to managed care and financing of care. Dr. Frank previously served on the Congressional Citizen's Working Group on Health Care and was elected to the Institute of Medicine. He was awarded the Georgescu-Roegen Prize from the Southern Economic Association, the Carl A. Taube Award from the American Public Health Association, and the Emily Mumford Medal from Columbia University's Department of Psychiatry. In 2002, Dr. Frank received the John Eisberg Mentorship Award from National Research Service Awards. His book with Sherry Glied, *Better But Not Well: Mental Health Policy in the United States since 1950*, was published by The Johns Hopkins University Press. Dr. Frank received his PhD in economics from Boston University.

**Mark S. Freeland, PhD** is an economist in the Office of the Actuary, Centers for Medicare & Medicaid Services in Baltimore, Maryland. He has held numerous supervisory and technical positions including director of the Division of Health Cost Analysis and deputy director of the National Health Statistics Group. He has published articles on an update framework for the Prospective Payment System, projections of national health expenditures, input price indexes for updating Medicare payment rates, national health accounts, selective contracting for health services, the impact of technology on health cost increases, and uses of Medicare cost reports for updating payment rates. His most recent article, co-authored with Sheila Smith and Joseph Newhouse, is "Income, Insurance, and Technology: Why Does Health Spending Outpace Economic Growth?" (*Health Affairs*, September/October 2009). He received his PhD from the University of Wisconsin, Madison and did postdoctoral work at the University of California, San Francisco in health policy.

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**Sherry Glied, PhD** is professor and former chair of the Department of Health Policy and Management of Columbia University's Mailman School of Public Health. In 1992-1993, she served as a senior economist for health care and labor market policy on the President's Council of Economic Advisers under Presidents Bush and Clinton and participated in the Clinton Health Care Task Force. She has been elected to the Institute of Medicine of the National Academies and to the board of AcademyHealth. Dr. Glied's principal areas of research are in health policy reform and mental health care policy. Her book on health care reform, *Chronic Condition*, was published by Harvard University Press in January 1998. Her book on mental health policy, co-authored with Richard Frank, *Better But Not Well: Mental Health Policy in the United States since 1950*, was published by The Johns Hopkins University Press in 2006. She holds a BA in economics from Yale University, an MA in economics from the University of Toronto, and a PhD in economics from Harvard University.

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