

**FRIENDS**  
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**RESEARCH**



# Improving Medical Decisions Using Comparative Effectiveness Research



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**HEALTH SCIENCES**

June 2010 Forum Proceedings and Commentary

FRIENDS OF CANCER RESEARCH FORUM

## Improving Medical Decisions Using Comparative Effectiveness Research

**Comparative Effectiveness Research (CER), as defined by the United States Department of Health and Human Services**, is the conduct and synthesis of systematic research comparing different interventions and strategies to prevent, diagnose, treat and monitor health conditions. The purpose of this research is to inform patients, providers, and decision-makers, responding to their expressed needs, about which interventions are most effective for which patients under specific circumstances. To provide this information, comparative effectiveness research must assess a comprehensive array of health-related outcomes for diverse patient populations. Defined interventions compared may include medications, procedures, medical and assistive devices and technologies, behavioral change strategies, and delivery system interventions. This research necessitates the development, expansion, and use of a variety of data sources and methods to assess comparative effectiveness.

This document contains commentary on the topics addressed by each panel as well as a modified transcript of the discussion. In some cases, panelists remarks have been summarized and should not be considered direct quotes.

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FRIENDS OF CANCER RESEARCH FORUM

## Improving Medical Decisions Using Comparative Effectiveness Research

Friday, June 18, 2010

Friends of Cancer Research convened a forum in June of 2010 after monumental health reform legislation had passed, and Comparative Effectiveness Research (CER) received its most significant federal commitment ever through the formation of the Patient Centered Outcomes Research Institute (PCORI).

This meeting follows the 2009 Friends of Cancer Research (Friends) forum in Washington, DC held in conjunction with the release of a white paper authored by an independent committee of 25 leading advocates, researchers and health practitioners, entitled: **“Improving Medical Decisions Through Comparative Effectiveness Research: Cancer as a Case Study.”**

The report described the experiences of the clinical and research oncology communities with conducting comparative effectiveness research in the United States. It included recommendations for developing a comprehensive CER program that expands and harmonizes data collection across public and private entities, supports “personalized” medicine, and efficiently integrates CER findings into both standard clinical practice and patient/family decision-making.

At that time, CER was a challenging and politically charged topic. Still today, as the U.S. expands the federal capacity for comparative effectiveness research and builds upon the \$1.1 billion of funding from the American Recovery and Reinvestment Act (ARRA) designated for CER, it remains a point of great discussion and debate of how to establish a robust CER program that can scientifically generate medical evidence and effectively implement findings into clinical practice.

As CER continues to be conducted and expanded upon, it will be vital to draw on the experience and expertise of the numerous federal agencies involved in obtaining better information to direct health decisions. Many agencies under the U.S. Department of Health and Human Services have been engaged in forms of CER for decades, including NIH, FDA, CMS and AHRQ.

The next step for expanding CER is the formation of the Board of Governors of the Patient Centered Outcomes Research Institute in September 2010 and subsequently when the nominations for the Methodology Committee begin to be considered (See Pages 24 & 25 for charts outlining the structure of the Board of Governors and funding for PCORI).

At the 2010 forum *Friends* brought together representatives from several of the agencies that will play integral roles in conducting and using the evidence generated from this research.

**This included an opening discussion with the only two pre-designated members of the PCORI Board:** Dr. Francis Collins, Director of the National Institutes of Health (NIH); and Dr. Carolyn Clancy, Director of the Agency for Healthcare Research and Quality (AHRQ).

During the discussion it was agreed upon by Dr. Collins and Dr. Clancy that the PCORI Board needs to promote transparency, credibility and inclusiveness in the processes of identifying the best choices for patients.

Both agreed that getting meaningful use out of today’s wealth of data is a major priority. This included the importance of establishing a robust infrastructure to support ongoing CER.

The discussion concluded with a conversation regarding the compatibility of CER and personalized medicine. Both agency directors suggested that the two are complimentary.

## A Perspective from Oracle Health Sciences

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# A National Priority: Information Based Comparative Effectiveness Research and Personalized Medicine

Much of the dialogue around personalized healthcare and comparative effectiveness research focuses on the scientific and biotechnology breakthroughs we have witnessed in recent years, as well as the ethical, regulatory and reimbursement challenges facing organizations commercializing these breakthroughs. We have seen great strides in the molecular understanding of disease, resulting in many new diagnostics, therapeutics and treatment regimens impacting quality of life for many. But we have not witnessed nearly as much progress in fundamentally changing the current course and cost structure of our healthcare system. Comparative effectiveness research holds the promise to have this systematic impact on the healthcare system, leading to a more personalized, value-based healthcare system.

However, achieving the promise of CER is about fundamentally transforming healthcare. This transformation is only possible through the synergy of healthcare information technology (HIT) with scientific breakthroughs in the molecular understanding of disease, novel therapeutics and diagnostics, as well as a fundamental redesign of our healthcare delivery models. Leveraging data from multiple sources and diverse populations- in particular our new wealth of outcomes information - from across the healthcare system will be essential. Not only is this approach necessary for providing the “best care for the right patient”, but it has major business model implications for many constituents in the healthcare ecosystem including pharma/biotech, health providers, PBMs and payers, and as a result, their IT strategies.

Under this new paradigm, successful organizations will be differentiated not by the existence of core transactional electronic systems, but by their ability to manage, integrate, analyze and leverage clinical, biomedical, financial, claims and other information from across their enterprise as well as external to their enterprise. Leaders will successfully use that information to improve quality of care, understand what value means in healthcare and accelerate the translation of research discoveries into practice by providing physicians, researchers, administrators and consumers with actionable data at the right time and place.

In other words, the secondary use of data captured in transactional systems across the healthcare ecosystem – electronic health records, claims / billing systems, clinical trials systems, research databases, and personal health records – will be essential to support a paradigm of CER that leads to continued innovation and ultimately personalized medicine.

In this paradigm, the core transactional systems, which are the focus of much of the Healthcare IT debate today, become a necessary but insufficient step to support a rapid learning, value-based, personalized healthcare paradigm. Data integration across these disparate systems, and more importantly, the analytics to make sense of the information in various contexts become the central transformative systems needed to support the new paradigm of care. This has implications not just for healthcare providers but for insurers, pharmaceutical and biotech companies, patients as well as policy makers.

## A Perspective from Oracle Health Sciences

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Unfortunately, today's healthcare integration infrastructures typically fall short in their ability to support this new paradigm of healthcare. They fall short on multiple fronts. Often, they not only fail to collect the necessary information in the right context, but in their ability to provide the necessary linkage between clinical, operational and financial processes. In today's multi-vendor transactional system environment, integration standards and reproducible process are critical to providing adequate data management capability. Building the right infrastructure to support data collection, integration and transformation is essential to establishing a strong foundation that supports the types of analytics solutions that will enable innovation sustaining comparative effectiveness research.

In conclusion, our country is faced with an interesting challenge and a vexing paradox. We sit at the precipice of arguably the most exciting time in scientific and clinical innovation that can have a meaningful impact on human health, while at the same time are staring down challenges in our healthcare system that threaten to bring continued innovation to a halt, consume our GDP and therefore threaten the global economy, and exacerbate existing health disparities and access. Comparative effectiveness research done right has the potential to preserve and even accelerate innovation while addressing the cost/quality challenges the broader systems faces. However, we need the right information infrastructure across the entire healthcare ecosystem to achieve this goal. Today's healthcare IT systems will not be enough to support this new paradigm, and all stakeholders from policymakers, healthcare providers, payers, to industry need to begin to examine their vision for healthcare IT systems by promoting the proper environment for secondary use of health data to support comparative effectiveness research.

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## Moderated Conversation on CER

**Moderator:** Ramsey Baghdadi, Managing Editor, *The RPM Report*

- **Dr. Francis Collins** – Director, National Institutes of Health (NIH)
- **Dr. Carolyn Clancy** – Director, Agency for Health Research and Quality (AHRQ)

Thank you to Friends of Cancer Research for organizing this forum.

Friends of Cancer Research is “one of the finest advocacy organizations in Washington.” Two important characteristics set it apart. They understand the issues, and they want to address them as part of a collaborative effort.

Directors Clancy and Collins are two of the most important figures in CER. They are the only two designated members of the 19-member Board of Governors of the Patient Centered Outcomes Research Institute. This Institute, with Clancy and Collins, will be playing a pioneering role as part of health care reform legislation, which established the Institute and Board of Governors.

**As founding members of this new board, what do you see as your goals for the board?**

**Collins:**

We have been working together on CER and establishing this board for more than a year. We’re already calling it by the acronym PCORI.

For the government, the Institute and board is an “unusual way of getting things done.” It sets up a 501(c)3 whose mission is to first survey the landscape and then make funding decisions. That’s an “unusual format.”

The Government Accountability Office (GAO) will be taking recommendations and then appoint board members. NIH will be making recommendations for the board.

The process used by the Institutes of Medicine (IOM) is a comparable effort.

In 2009, IOM was charged with coming up with 100 top priorities for CER. NIH was already conducting research on 88 of the 100.

Science is moving very quickly, and that will have an impact on these priorities.

Congress needs to survey the environment.

There is not much of a description of what the charter is for the new Institute and board, so details will have to be worked out by the board.

**Clancy:**

Thank you to Friends of Cancer Research for organizing the event.

If we embrace CER and the Institute, we will be “rich” contribution to medicine.

I want to echo what Francis said.

The “script” of the new Institute presents a new model.

It’s important that the Institute is inclusive, including an array of disciplines, including health economics. Statistics will be especially important.

For the board and the Institute, it's important to be transparent, credible, and to ensure that people have access to its work and findings.

It's important to give patients options. We must identify the best choices for them to help them fill in the gaps in making difficult decisions.

**Moderator:**

**As you determine priorities for CER, how will you consider ongoing research?**

**Collins:**

Dr. Clancy and I just co-authored a paper which talks about this issue. NIH and AHRQ have built a very successful collaboration on the strengths of both organizations.

The staff of the Institute will be on the leading edge of new discoveries. For example, we currently have a study on PSA (prostate-specific antigen) testing. Using CER, we could create diagnostics using biomarkers for prostate cancer. With this information, we can see who is more susceptible to having prostate cancer in their lifetime.

NIH has been doing CER studies for a long time, and it will continue to do so. So, ongoing research is important.

But this is a "special moment."

**Clancy:**

It's important for the board to be flexible.

We have never done CER on a longitudinal basis. It will be exciting to be able to do so.

AHRQ has an interesting challenge between depth of an area vs. breath of an overall portfolio.

I'm excited that the legislation creating the Institute explicitly recognizes the need for an array of methods, as well as the development of new approaches to conduct CER.

We need to look at the "state of the science." Colorectal research is an example. We are doing a systematic review for NIH now.

There are new innovations in methods development. Today, data is no longer scarce. It's everywhere. Getting meaningful use out of the large volume of data is the key.

**Moderator:**

**The 2009 recovery act package included about \$500-600 million a year for CER totaling \$1.1 billion. Is the additional annual funding provided by the health care reform legislation enough to build on the original investment?**

**Collins:**

It's a lot of money. But it's money well spent.

We will look at the list of priorities and see what the priorities are for funding. NIH will seek ways to fund research projects if they're good.

**Clancy:**

Capitol Hill faces growing concerns about the budget deficit and spending. The \$1.1 billion budget is superimposed on other research funding. There is other HHS funding.

This should help build a better infrastructure to accommodate other studies. Because clinical trials are enormously expensive, we need to create and build a “reusable infrastructure,” with better training, method, and data to accommodate other studies and create more efficiency.

**Moderator:****Do you worry that CER and the Institute will be overly politicized?****Collins:**

Politicization is always a worry when it comes to research. But NIH has been fortunate. Advocacy groups have been good about recognizing that NIH doesn't have earmarks. At NIH, our priority setting can be trusted.

Mike Lauer (NHLBI) and I co-wrote an article in the July 2nd issue of JAMA on CER (Using Science to Improve the Nation's Health System: NIH's Commitment to Comparative Effectiveness Research) discussing our involvement in setting priorities across institutes on CER, and this process will continue.

**Audience Question:****Statement about the Office of the National Coordinator and electronic health records as a potential data source for CER studies.****Clancy:**

The issue of electronic health records was the focus of an entire subgroup of the Federal Coordinating Council.

AHRQ has been involved in this issue on an on-going basis. Data sets could be populated by health records. We are considering potential uses where the data stays with the provider, but can be used across the research community.

One aspect of health care reform that I find intriguing and see as an opportunity is that strong priorities align with quality strategies.

In regards to the PCORI program in the Affordable Care Act, the program allows priorities to be developed by the board. Also the Secretary of Health and Human Services will create a National Quality Strategy in the Affordable Care Act. A version 1.0 of this strategy will be given to Congress by (January 1st) next year, by the Secretary of HHS.

This is a “transitional path” in which we need to look at care in particular settings, patient-centered care, and HIT.

**Collins:**

One idea is to tap into HMOs, which are already using patient data. And they have data on 13 million patients. We don't have to wait for additional electronic medical records or for those issues to be resolved.



**Audience Question:**

**A significant problem we face today is that various types of data, from various sources, don't link well together. There are also problems using information from medical charts. But the real challenge is to integrate different types of data together.**

**Clancy:**

This points to the fact that figuring out these problems with data is hard work. It's not glamorous work. But it's very important.

It is important to understand the "process of care" and glean information from that understanding. We have little information but we are making progress. For example, through some of the ARRA dollars, the Center for Disease Control (CDC), which oversees the cancer registries, is working on studies to disseminate how patients are getting treated.

**Moderator Question:**

**Can you talk a little bit about how information from the Institute will be disseminated?**

**Clancy:**

Information dissemination will be very important. Ultimately, the impact of our work will be judged on the impact we have on patient care – not on whether we publish an interesting research paper. If we can't say it leads to better patient-centered care, we haven't been successful. We must be focused on providing better information for patients and consumers.

AHRQ has a center that works on information dissemination. We are studying how to get information to patients when they need it. They need to get information at the right point in time – not after they've made a decision.

Sixteen percent of the CER annual funding provided in the Affordable Care Act is for dissemination.

**Collins:**

There has been work that was done in the past which wasn't adopted. For example, the treatment of schizophrenia using generics ended up being just as effective as patented products from the pharmaceutical industry. The need for effective educational effort and disseminating research information is great.

**Audience Question:**

**How do you avoid duplicate studies?**

**Clancy:**

First, it's important to clarify that the issue really is avoiding "unplanned duplication." Sometimes duplication is helpful. Institute of Medicine's (IOM) identified priorities are an example of where duplication of studies is necessary and good research.

To help avoid duplication, AHRQ is now doing an inventory of CER research, including prospective research. We will have a web site containing that inventory. It will be in conjunction with [www.clinicaltrials.gov](http://www.clinicaltrials.gov).

**Collins:**

One reason NIH and AHRQ are on the Institute's Board of Governors is to avoid duplication.

**Dr. Ellen Sigal, Chair, Friends of Cancer Research**

Some agencies that are involved in CER will not formally be apart of the Board of Governors. How will the Institute's efforts be coordinated with agencies that aren't represented on the Board?

**Collins:**

We now have some experience in coordinating CER efforts across various agencies. The recovery act encouraged collaboration. Collaboration is very important within the Obama Administration. The Administration doesn't tolerate stove-piping. It's a priority for Secretary Sibelius, but also for other agencies as well, such as the Department of Veterans Affairs.

This provides a new opportunity for collaboration.

I want to echo what Carolyn said about the need to find the "sweet spot" for when research is relevant versus just producing another report to sit on a shelf.

**Clancy:**

This collaboration is part of the opportunity for serving on the Board. It's a good opportunity for getting input, especially in the methodology committee.

Involving various agencies is aided by this Administration having a much stronger focus on scientific research. It's a higher priority throughout the Administration.

**Moderator Question:**

**There are two major trends frequently discussed as parts of the future of healthcare: CER and personalized medicine. Can we do both?**

**Collins:**

They are complimentary. CER can embrace personalized medicine.

An example is research on the behavioral methods to help people stop smoking. There is new genetic research on tobacco cessation that is identifying those genes that indicate the highest risk of addiction, as well as the highest risk for developing cancer. The effectiveness of behavioral interventions that work for those individuals may be different than those that work for others in the population.

**Clancy:**

Identifying which treatment is more likely to work and gaining more and more refinement into different subgroups is also very important. For example, IOM is examining ways in which genetic biomarker test can be included in future studies

CER is an important path for moving forward toward personalized medicine.

## Coordination and Use of CER Studies by Federal Health Agencies

The establishment of an independent institute to conduct comparative effectiveness research (CER) passed into law in March of 2010 brings new opportunity for the many components of the U.S. healthcare system. This includes the numerous federal health related agencies that play critical roles in research, regulation, and delivery of health care. The statute requires that the Directors of the National Institutes of Health (NIH) and Agency for Healthcare Research and Quality (AHRQ), as well as the potential for two other federal agency leaders, be members of the newly-created Board of Governors of the Patient Centered Outcomes Research Institute (PCORI). Whether or not direct board representation is provided, multiple federal agencies will be involved with conducting CER studies and will be impacted by the results of the research.

As the U.S. continues to expand CER activities, it will be important to consider how evidence will be utilized by multiple federal agencies that play different roles in the healthcare enterprise. For example, study results may affect elements of product labeling by the Food and Drug Administration (FDA), and therefore, impact how emerging information about medical interventions is able to be communicated. While most CER studies funded through PCORI are unlikely to be intended for registration or supplemental approval by FDA, if a CER study appears to demonstrate that one option is of greater benefit than another there will be a desire to communicate those results. However, if the study design is not considered adequate by FDA to support a superiority claim there may be conflicting or confusing evidence for patients and health care providers. Therefore, in order to maximize the utility of CER studies, considerations regarding the level of evidence required by the FDA and the desired use of new data should be considered early on in the study design processes.

Similarly, the results of PCORI conducted research may add to the body of evidence used by the Centers for Medicare and Medicaid Services (CMS) when determining the coverage of different medical interventions. While the law states that items or services should not be denied coverage based solely on a CER study, it doesn't prevent the research from being used in context with all available information in order to make a determination. Conversely, the results of a CER study may indicate that coverage of a product or service should be expanded, such as an off-label use of an anti-cancer agent that has been approved by the FDA for a different cancer or stage of disease.

In addition to considering how different federal agencies may apply CER and health outcomes research, the potential for various agencies to contribute valuable data for such research should be explored. Two previously mentioned agencies, FDA and CMS, are very different but valuable data repositories. The FDA has a unique data base from previously submitted trials that with the proper resources could be utilized for activities such as generating longitudinal information about multiple drugs in the same class. CMS, being the nation's largest payer, is a major source for health data on millions of patients. While it is designed mostly for administrative uses, it can also be a valuable research tool to assess patterns, such as prescription drug utilization or comparative outcomes, in a large population over time. While publicly available data generated by CMS is largely in summary form, detailed clinical data sets could be used for CER in collaboration with the Veterans Health Administration (VA). The VA has experience in conducting CER clinical trials as well as with health information management through the development of one of the largest existing network of electronic health records.

Many of the federal health agencies mentioned, as well as private research entities, are already conducting CER. However, the existing challenge is to coordinate on-going CER activities that may involve multiple organizations. CER priorities and questions that have been identified by the Institutes of Medicine and others may require more than a single study or analysis to provide the most useful evidence about different outcomes in diverse populations. It is possible that an initial

CER study could actually generate additional questions that require further study. In order to develop clinically meaningful information through federally-funded CER a clear, step-wise process for generating the evidence desired should be established.

Such a process would include:

- The development of priorities and hypotheses for research;
- Identification of the most appropriate agency/organization to conduct the research;
- Providing the resources necessary for both the initial and required follow-up studies.

A successful example of what this type of coordination would look like was the Federal Coordinating Council (FCC), established through the American Recovery and Reinvestment Act of 2009 (ARRA). The FCC was instrumental in gathering consensus from not only federal agencies, but the public and private sectors, to coordinate research and guide investments in CER funded by the ARRA. While the FCC was terminated through the Affordable Care Act, the PCORI board of governors will in some ways fulfill the same role on a long term basis.

The complexity of the types of studies identified by the FCC, or potentially PCORI, should not be underestimated. Therefore, it remains vital that methods being developed for CER are scientifically rigorous and capitalize on the resources and expertise of existing agencies.

**PANEL 1:****Coordination and Use of CER Studies by Federal Health Agencies****Moderator:** Ramsey Baghdadi

Panel:

- **Stephen Cha**, House Committee on Energy & Commerce
- **Jesse Goodman**, Chief Scientist & Deputy Commissioner for Science and Public Health (Acting), (FDA)
- **Richard Hodes**, Director of the National Institute on Aging (NIH)
- **Andrew Hu**, Senate Committee on Finance
- **Louis Jacques**, Director Coverage & Analysis Group (CMS)
- **Jean Slutsky**, Director, Center for Outcomes and Evidence (AHRQ)

While the health care reform law and the funding it provides for CER are new, CER is not new. This panel will provide the perspective of key agencies and players on Capitol Hill about moving forward with CER.

Was it reassuring to hear what Directors Collins and Clancy had to say?

**Goodman:**

Yes. We are all enthusiastic at the FDA about CER and the new Institute.

The overarching theme is the importance of science and rigorous interpretation of methodology.

We shouldn't overestimate the ease of doing this. It's very complicated.

We can only get so far in looking at health records.

**Hodes:**

NIH and the National Institute on Aging has input into this new initiative. The sharing of information is already taking place. We are monitoring all agencies. We have coordinating committees with other agencies, such as the VA and CMS.

**Moderator:****How do you define CER?****Jacques:**

CMS defines CER the same way as others do.

CMS faces some unique challenges. We need to determine if we want to disseminate findings to the country. And if we would adopt pay differentials based on CER.

Public literacy on CER is quite limited.

Transparency issues are very important.

**Slutsky:**

CER information must be filtered through decision makers.

There is not one study, but many.

We must share information through the lens of people who need it.

**Hodes:**

The opportunity for collaboration is “exciting.”

**Goodman:**

We helped develop the definitions.

At the end of the day, we are trying to improve patient outcomes.

Questions develop in the communities where people use the information. We must make information relevant to these communities.

We should recognize that most doctors try to do the right thing.

The key thing is to capture and analyze information, but also to then translate it so people can understand it. Remember, statisticians and clinicians don't understand each other. Think about the public trying to understand it.

**Moderator:**

**For the congressional staffers, what fixes are you contemplating for the bill?**

**Hu:**

We worked with many groups to ensure that definitions in the legislation and the budget were appropriate.

We'd like to give the Institute a shot to do its job before considering changes.

At this point, Congress' role is to do oversight.

**Cha:**

We have a structure that is robust and should work for years to come.

The issue was to ensure the independence of the Institute and the independence of the scientists.

The Institute is designed to answer questions. We want a forward thinking Board.

To a degree, the Board will help determine what the appropriate role of the Board is. There is the Board, a methodology committee, advisory boards, etc. And we must think of the structure and how it'll work. There are questions about the relationship of researchers to the Board.

We need “clear lines of science done in a credible fashion.”

**Moderator:****Was the Board a major issue when developing the CER provisions of the legislation?****Hu:**

We want a stakeholders' Board, a consensus Board. We gave a lot of thought to the Board, and designed it so it is not captured by any one interest.

**Cha:**

I think the GAO structure makes sense.

We need stakeholders to come forward and bring their interests to the Board.

But the Board must say how it can be successful for all of us.

**Moderator:****What type of CER research projects would you like to see?****Goodman:**

We ask the questions of what the likely impact of the research is and where we can have the biggest impact. This needs to be a dynamic process. Things are moving fast. We should also look at what communities think is important.

One benefit of the research is how it relates to the personalized-medicine issue. We may find examples of things that don't work. There may be non-responders.

A question that remains is what CER studies should we be asking sponsors to do?

**Hodes:**

Translation and intervention are important. We shouldn't ignore newly developed intervention and just look at older existing ones. It's important to include new ones.

**Jacques:**

It's important to recognize that the elderly have special concerns. Often the care they receive is in the home. For example, is a particular intervention as effective if administered by caregivers in-home?

Orphan topics should not be ignored. Heart disease and cancer are hot topics, but there are other important topics too, such as wound care and chronic lymphoma.

A key question is how to run clinical trials when all people are different. This points to the importance of personalized medicine.

**Slutsky:**

We need to keep an open mind about different interventions, different populations, and the spectrum of care.

This should be a dynamic and inclusive process.

We should stay focused on ensuring that the initiative is having an impact.

**Moderator:**

In putting together the health care reform legislation, it was important to make sure there was no direct link between CER and government coverage decisions. It was a complicated process of delinking the two. Can you talk a little about that?

**Cha:**

Delinking was key. We designed a process to get the best science. The Senate was very concerned about how to delink the two.

**Hu:**

The Institute is all about science. Coverage should never be an issue for the Institute.

There is a nuance here, however. How does what the Institute does effect the coverage decision-making process?

We don't proscribe coverage changes, but we don't prohibit it either. People can use the Institute's CER findings. After all, what's the point of having science if we don't use it?

I think we did a good job of balancing this issue.

**Moderator:****Should CER research and coverage decisions be linked?****Jacques:**

It would be odd to say we want good information, but then prohibit people from using it. We need a broader look at the evidence and be transparent. There's enough room for appropriate use of information, as long as we look at everything.

**Audience Question:**

**There are only three patient representatives on the 17-person Board. This is troubling when the whole effort is supposed to be about patients.**

**Slutsky:**

We need to include patient input in the research. To do so, we need to train patients so they don't feel like they're competing with scientists. We are having a patients forum on CER.

It's also important to remember that patients are different from consumers.

A percentage of the budget is for dissemination, so we'll get information out to people.

**Jacques:**

CER is complicated. For example, when we look at neurological rehabilitation strategies, we found there are 46 different ways to measure walking.

We need to consider what's most important for caregivers. We need to look at what patients value most. It's often different than what we assume.



**Cha:**

If the Institute doesn't meet the challenge of having an impact on patient care, then Congress will need to reevaluate the whole project.

**Hu:**

We did require patient input and participation.

**Audience Question:**

**We need to be encouraging simpler clinical trials. We should think about eligibility criteria. Are agencies thinking of ways to simplify participation in clinical trials?**

**Jacques:**

CMS is in a "paradoxical situation," especially when it comes to cancer therapies. We want clinical trials to happen, but it's difficult to encourage people to participate in them when patients want treatment, even experimental treatment, without trials.

**Audience Question:**

**How will the research be rolled out? Funding will drive the research process.**

Today we can develop rigorous RCTs (randomized trials). Will this be a separate track for CER? Or will we see system-wide change?

**Hodes:**

I hope we don't have two parallel tracks. I don't think CER reduces the rigor of studies.

We are doing our best to develop priorities and hope they line up with CER. We hope CER is subjected to the same rigor of evidence and peer review.

There is a challenge to methodology. But methodology can't be the sole standard for judging CER research.

There is new science emerging.

**Slutsky:**

We need to keep funding all kinds of research.

One of the most interesting aspects of CER is how to design the research. There are various methodological infrastructures.

**Goodman:**

The requirement should be how usable the research is and how it engages patients.

**Audience Question:**

**It is now hard to track everything going on with CER. Can this be captured in one place?**

**Slutsky:**

The Secretary of HHS has an initiative to create an inventory of CER studies. AHRQ and NIH have an inventory.

**Hodes:**

It's important to include international studies as well.

**Dr. Ellen Sigal, Chair, Friends of Cancer Research**

How do we get to diagnostics issues?

**Goodman:**

We are trying to do research into this area now. We are working with NIH to bring the data together.

**Hodes:**

The FDA and NIH are working together on this.

**Moderator:****Will the FDA be able to use CER research?****Goodman:**

Everyone is interested in patient outcomes.

I think that if effective uses are found, that should be on the label.

For CER, it's important to ask: Did we ask the right questions? What is the quality of the research? How generalized can it be? How do we communicate it?

We need to develop what our framework is for evaluating this CER information.

A lot of this is not solely about therapies, but about making patients healthier. If more drugs don't help, we should know that.

**Moderator:****How would you characterize the importance of the advisory committees? What was the intent in creating them? How do you think they will play out?****Hu:**

The advisory committees are very important. The Board's expertise is limited, especially related to rare diseases. We need to make sure that we have the best people advising the Board.

**Goodman:**

Having diverse input is very important. If we spend lots of money without patients and providers weighing in, it won't be good use of the money.

**Slutsky:**

There are two levels of engagement: the care level and the study level.

Plus, it's important to have advice from those who are going to use the research.

**Moderator:**

**How should the money be divided? How much, for example, should go to clinical trials versus other types of research?**

**Slutsky:**

The research questions should determine the type of study funded.

**Hodes:**

The research priorities have to determine the methodology used.

**Goodman:**

We should consider the range from patient intervention to outcomes. What works within that continuum? Where does the system break down?



## Development of a Linked Health Data Network

A key component of the efforts to reform the United States healthcare system is the expansion of comparative effectiveness research (CER). The hope is that additional CER for existing medical options will alleviate gaps in evidence surrounding their use, and ultimately aid decisions made by patients and their care providers. However, significant debate has been generated across the healthcare community about how to conduct CER studies in a way that provides the most meaningful data.

In order to begin to address this challenge, the establishment of the Patient Centered Outcomes Research Institute (PCORI) includes the formation of a Methodology Committee. This committee is charged “to develop and improve the science and methods of comparative clinical effectiveness,” including the development of methodological standards. Like many expert bodies previously convened, the PCORI Methodology Committee will likely identify the values and limitations of existing study methods, such as randomized control trials (RCT), observational studies, or systematic literature reviews. In addition, this committee will begin to examine new methods for generating the desired comparative evidence.

The work of this committee will be critical in helping determine the best approach to complex questions, as well as determining what the initial scope of work can be from a resource and feasibility perspective. For example, while the highest level of evidence through an RCT is desired, in some cases the conduct of such a trial may be unethical or simply impossible to enroll the number of participants if the required study size is determined to be so large in order to meet statistical standards. This raises the importance of examining what can be achieved through the secondary analysis of existing data sets.

Currently, there are numerous efforts to capitalize on the opportunities of electronic health data capture. In the field of oncology, programs like the Cancer Biomedical Informatics Grid (CaBIG™) have helped to develop standards, tools, and information systems for the management of clinical and research activities. Similarly, the NCI's HMO Cancer Research Network (CRN) has developed a large repository of administrative and clinical data to be used as a research tool to evaluate many aspects of cancer prevention, control, and treatment. Efforts like these have already been modified for use as a resource for similar efforts in cardiovascular and other diseases.

In addition to government sponsored data aggregation and research, numerous private health insurers, hospitals, and health systems have created their own data repositories that are now being used for secondary analysis. The amount of available information is about to exponentially increase with the widespread promotion for use of electronic health records (EHR). As a part of the American Recovery and Reinvestment Act, approximately \$19 billion was allocated for health IT, mostly for Medicare and Medicaid incentive programs for the adoption of EHRs. In order to capitalize on this investment it will be important to develop means for the information contained in EHRs to be used in an appropriate capacity for research.

A major challenge with developing an improved electronic-based infrastructure for research is that data is currently being captured for many different uses and by numerous entities. Examples of data sources that have been identified for use in observational studies include records from hospital and outpatient information systems, laboratory data, retail pharmacy data, practice data from health information exchanges and insurance claims data. Because these records are collected for different primary uses, they were not originally intended to be readily combined with other data sets. For example, different types of data sources frequently have different data elements included as well as different quality control standards in place to ensure their accuracy.

While the challenges associated with aligning diverse data sets should not be underestimated, new approaches and policies should be examined to capitalize on technology capabilities to link currently isolated data collection efforts. With the necessary infrastructure in place, the formation of a

distributed, multi-source network would present new opportunities beyond that of individual, single-purpose data repositories. This would allow for common data elements to be continuously aggregated into a larger network that can be utilized for large population studies and longitudinal research over time. A linked network capable of compounding data would help ensure that usable data is generated as a routine byproduct of care.

A multi-source network should not be viewed as a replacement for all other databases because the level of detail included in some sources, such as data intended for administrative use, is not to the same detail as other sources, such as clinical trial databases, which may include genomic or molecular data that is vital for primary analyses. However, the establishment of a multi-source network could aggregate common data elements on a continuously enrolling population that would serve as a valuable research tool for many investigators. While this type of secondary analyses is unlikely to create the desired level of evidence to establish complete medical conclusions, it would help identify characteristics that potentially impact differential outcomes to an intervention (i.e. age, race, ethnicity, sex, etc), and generate new or refined hypotheses for additional studies. This type of research activities will help inform and prioritize future resource intensive primary research, such as RCTs.

By first targeting large, concentrated sources of information, such as the Centers for Medicare and Medicaid Services, Veterans Administration, large academic medical centers, and other participating institutions, data access through services aggregation can be made efficient and valuable immediately. This may require the implementation of additional and/or revised data standards over time, and will need appropriate security, intellectual property, and HIPPA safeguards.

PCORI is positioned to be an ideal entity to oversee the establishment of a large-scale multi-source data network, or at least a common ground to begin to link the many disparate projects already underway. Both the Federal Coordinating Council for CER and the Institutes of Medicine has acknowledged the need to enhance the research infrastructure for CER and outcomes analysis. In agreement with that need, the PCORI statute requires that 4% of all funds transferred from the PCORI trust fund be utilized for building the capacity for research – including “the development and use of clinical registries and health outcomes research data networks, in order to develop and maintain a comprehensive interoperable data network to collect, link, and analyze data on outcomes and effectiveness from multiple sources.”

Building an enhanced research capacity is one of two activities required by statute to be funded through PCORI, the other being dissemination of evidence. Therefore, given the financial structure of PCORI, a dedicated source of funding that is independent of the annual appropriations process is allocated for the ongoing development and maintenance of a data network. While this may need to be supplemented by additional resources and closely coordinated with the contributors of data to develop linkages, the steady stream of funding through PCORI could serve as the foundation upon which an advanced infrastructure for research can be built.

Additionally, as a public-private partnership, establishment of linked data network managed by PCORI would minimize political concerns of centralization of data within a single government entity, allow for information to be appropriately placed in the public domain and be made available to researchers, patients, practitioners, and policy makers. It would also provide the incentive for private industries to participate and contribute their data because they would also be able to access the network to assist in developing more effective products and services that facilitate optimal diagnosis and treatment protocols, as well as CER.

The expansion of CER in order to generate additional, usable information about medical options is a critical step to improving the U.S. healthcare system. However, the sustainability of such research activities should also be examined. Creating a robust, interoperable data network through PCORI as a starting point to CER would provide the necessary infrastructure that is reusable for a variety of research activities.

**PANEL 2:****Development of a Linked Health Data Network****Moderator:** Michael McCaughan, Senior Editor, *The RPM Report*

Panel:

- **Jeff Allen**, Executive Director, Friends of Cancer Research
- **Bob Croyle**, Director, Division of Cancer Control & Population Sciences (NCI)
- **Bill Dalton**, Director, H. Lee Moffitt Cancer Center & Research Institute
- **Brett Davis**, Senior Director, Oracle Health Sciences
- **Kim Lyerly**, Director, Duke Comprehensive Cancer Center
- **Amol Navathe**, Medical Officer, U.S. Department of Health and Human Services

I always find CER to be interesting, but a bit nebulous. During this panel, we'll drill down more.

There's a myth that once a drug is approved, then the research process is over and use begins. But after approval the process really begins. Treatment begins.

Real efforts need to be made to capture data and use it.

The goal should be to get people to understand CER findings. What will it take to get from here to there?

**How important are data aggregation efforts?****Croyle:**

It's important. There's now a consensus that it is important. Now we need to balance several things: infrastructure development, standards development, grow-your-own development.

We now have a comprehensive heterogeneous mishmash of all of them. We now need to put more emphasis on methodology development.

It's OK that people are looking at different parts.

On getting patients' views, it's OK to put them on advisory boards, but we need to use patient-reported data. There should be another strategy for getting patients to the table.

We have a "data smog problem" from the patient's perspective.

**Lyerly:**

When it comes to CER, it's important to remember that cancer is still an outlier. Fifty percent of cancer patients will be dead in five years. Therefore, the challenge for patients is finding anything that works. Our challenge is disease management. It's how to reduce over treating. What patients want to know is how much better treatment can make their lives.

**Dalton:**

The patient's role and involvement is home base. I hope we can create a system where that's the case.

Clinicians need information to advice patients.

The question is how to involve patients themselves. We need to ask their permission to use their data, follow up with them, and give them access to the data.

Now when a cancer patient has been diagnosed, he or she goes to Google to find out about treatment and research, and they get 100,000 responses. We need a portal to data warehouses.

But the issue is really how to make information not only accessible, but present it in a way that can be used.

The Florida Institute of Human & Machine Cognition is doing work in the area of how to apply research. We are working with them on research projects.

**Moderator:**

**I assume all of you would love to link data together.**

**Davis:**

We're at the beginning of developing methods to link data together. We need a reality check on where we are.

In health care, most IT systems are 15 years old, using technology that was developed 25 years ago. We're in the infancy of the use of data. We're spending a lot on HIT, but I think it's "cash for clunkers." Health care providers operate on the margins. They spend a lot on HIT, but they have to keep it for five years.

For the issue of linking data, the devil is in the details. We need to get to "information liquidity."

Linked data is important, but there are many other important issues related to data.

**Navathe:**

Yes, linking data is a priority for the government.

There's other data besides EHR data. We don't want to put all our eggs in one basket when it comes to CER.

We are trying to balance long- and short-term visions and goals.

We are working to bring together claims data, but we understand the value of EHR.

**Davis:**

I'm encouraged about the ability for secondary use of data due to the federal government's focus on Health IT. We will see innovation in this area.

**Moderator:**

**What do you see as the federal government's role in CER?**

**Allen:**

The federal government's role is as a convening entity.

We need to look at the needs of individual government agencies, as well as patients. Each agency has changes it could make to ensure CER is incorporated. For example, encouraging standardized electronic submission of new drug applications at FDA could help create a research tool to examine characteristics of response across classes of drugs.



**Croyle:**

\$1.1 billion has a lot of convening power.

There has been a cultural shift related to CER. CER has helped us look at the interplay between research and patients.

**Moderator:**

**Is capturing knowledge in real time an issue?**

**Lyerly:**

One of the things we can look at is patient data. It's as important as genetic data. Why don't we elevate those patient-reported data as high as other types of data and make it the centerpiece?

**Moderator:**

**How do you capture patient data? Are you working on it at Duke? How much will this advance in the next few years?**

**Dr. Amy Abernethy, Director, Duke Cancer Care Research Program**

We found that among the top five concerns of patients was "sexual distress." We are studying the impact of distress.

**Davis:**

We are starting to marry various kinds of data – patient-reported, claims data, etc. Advances are being made in rich data sources.

**Croyle:**

That's a huge need – to make claims data more useful. We need to show how to use it, but also what its weaknesses are – what it can't do.

**Navathe:**

HHS recognizes the need to catalyze a new market. We have a Community Health Data Initiative. Secretary Sebelius wants to unleash the entrepreneurial sector to create new markets.

**Moderator:**

**Are you worried about many chefs working on CER?**

**Allen:**

We need to take a clear inventory of outcomes research related to CER. Having many chefs may help design better studies.

**Davis:**

We haven't heard from the bio-pharmaceutical-technology industry. They have lots of interest in collaborating. In New York, for example, multiple pharmaceutical companies and providers are sharing data now.

**Audience Question:**

**I want CER to be patient-driven and for you to encourage patient participation. I don't like all this talk of "markets" and "entrepreneurial forces."**

***Dalton:***

That's the crux of it – how to serve patients. We need to identify the scope of patient needs.

With CER, most patients know it won't be of immediate benefit to them, but they want it to be put to good use for others.

We've found that patients (at the Moffitt Cancer Center) say they'd like their data back in a way they can use. The question for us is how to put it into a useful format for patients. How do we create a way they can query?

There is by nature an altruistic sense among patients. They want to help others.

***Moderator:***

**Is it premature to talk about federal standards and policies?**

***Dalton:***

Definitely not. But it must be in the context of what patients want.

***Croyle:***

Public and patient participation is important even if the outcome is the same.

**Audience Questions:**

**How do you balance commercialization with the need to involve patients?**

***Dalton:***

The key is transparency. That's the bottom line. You have to tell patients exactly what you're doing with the data.

***Dr. Ellen Sigal, Chair, Friends of Cancer Research:***

Clearly, active engagement of patients is critical. How do we engage and recognize the diversity of patients, such as minorities?

***Croyle:***

We have been doing research on community engagement to diverse populations lately. There has been lots of duplication in research in this area.

Among the lessons we've learned is that individual trust of physicians is higher than ever. Distrust of the Internet and government, for example, is growing. But doctors are the most expensive and least efficient way to deliver information.

***Dalton:***

As we build an infrastructure, we must get out of our silos. Data collection must be a grassroots effort. How are we going to capture data from the grassroots?

**Audience Question:**

**Do we have the capability to allow more integrated research? If only we could link EHR and claims data.**

**Croyle:**

Dr. Collins is close to releasing funds related to integrating data.

There are issues related to data that is identified and data that has been de-identified. How do we link them?

We are working on “proof of principles projects” and now have some foundations and NGOs funding these projects.

**Navathe:**

We all agree that linked data would be valuable.

But the government is mindful of the public’s distrust of government. Privacy and the security of data is a priority. Plus, there are also technical challenges. And it’s also difficult to align incentives.

HHS is trying to make investments to address all of these challenges.

**Davis:**

The misalignment of incentives for sharing data is a big issue. The government is trying to change incentives. We are working on a business model for sharing data.

**Navathe:**

Yes, we are looking at incentives for sharing data. At the end of the day, different entities have different incentives. Across the board of HIT it is a challenge to create a case for sharing data.

**Croyle:**

There’s lots of data on cancer that doesn’t have privacy concerns.

**Navathe:**

HHS is trying to encourage the use of de-identified data that exists.

**Audience Question:**

**A big problem is the inability of researchers to access data that’s there already. We need technologies to work with data. How do we make data available?**

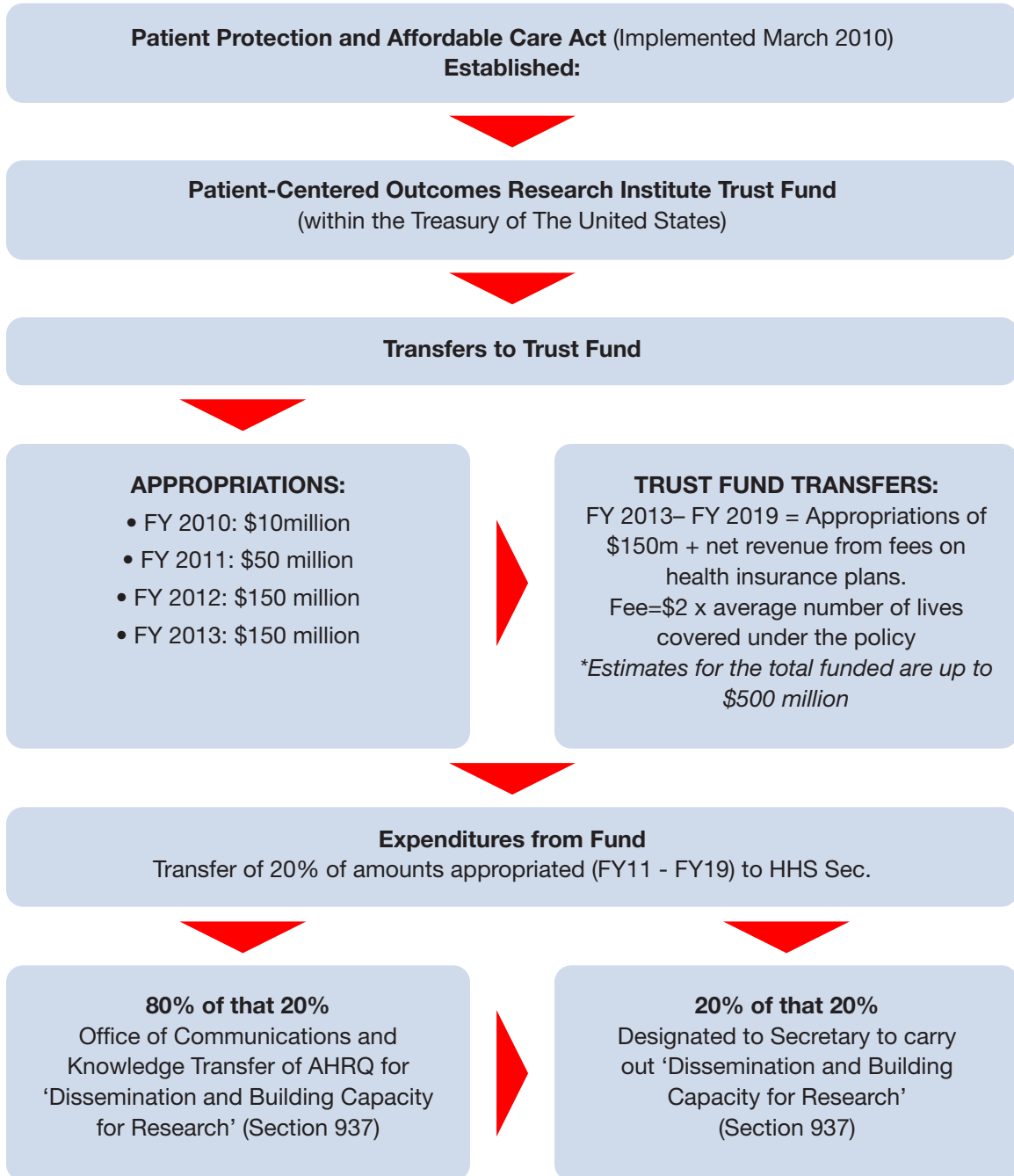
**Davis:**

We haven’t seen companies investing in HIT because there hasn’t been a market for it. But we should see some advances there soon.

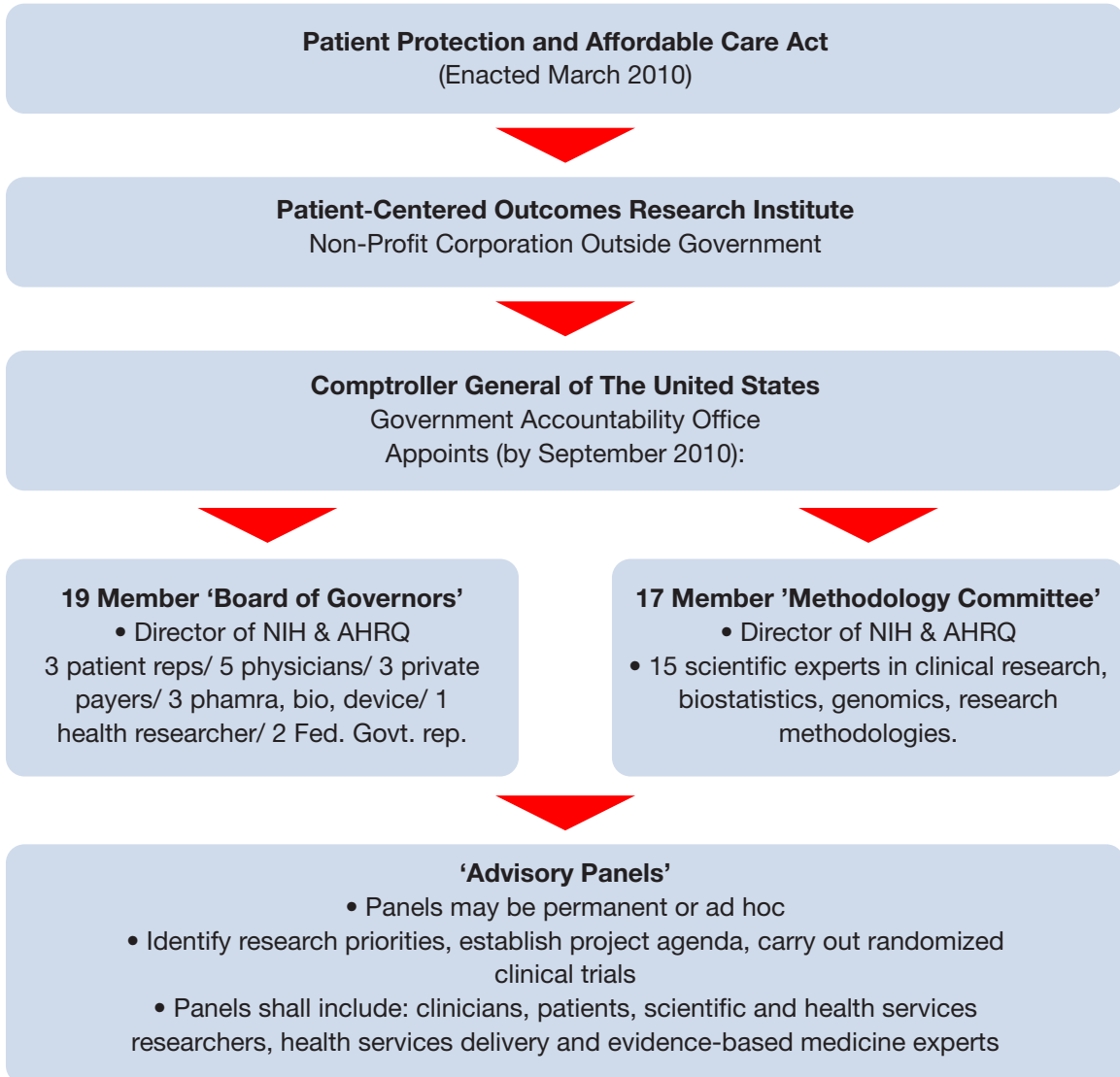
**Croyle:**

We’ve barely scratched the surface of data, including tools and how to present it.

## Comparative Effectiveness Research (CER) Implementation Funding



## Comparative Effectiveness Research (CER) Implementation







For more information please contact Friends of Cancer Research at:  
info@focr.org or 703.302.1503