

**Connecting Americans to Their Health Care:  
Empowered Consumers, Personal Health Records and Emerging Technologies**  
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**Keynote by Adam Bosworth, Vice President, Google Inc.**

I've come here today to talk about the promise of bringing together information technology, health care and innovation. But before I turn to that, I want to thank those of you here in the medical industry for what you do every day and for what you've done for my family over the past four years.

This is a personal speech. Illness has attacked my family over the last four years. While in the end, the illness took its toll, brilliant medical work coupled with innovations and discoveries that wouldn't have been available even a decade earlier made all the difference in providing years more life than was initially expected. Faced with difficult and frightening diseases, the health industry has done an astonishingly good job discovering and implementing innovative treatments, techniques and cures. And I have hope that over the next decade other life-altering areas such as autism and still-lethal cancers will see similar improvements, particularly given the nascent revolution in genomics.

In addition, as I've been immersing myself deeper in the medical world in the last 12 months, I've seen wonders in hospitals where Computerized Physician Order Entry, Positive Patient Identification, and modern Electronic Medical Records are demonstrating their potential to reduce the transcription errors that can be so devastating. Radiology and Pathology seem to be transforming medicine from a world into which I was born in which operations started by opening you wide open, often with dangerous consequences, just to see what to do...into a world in which tiny incisions, miniature surgical robots and precise operations address the problem with far less patient pain, risk, and trauma.

So let me thank all of you here today for changing our lives dramatically for the better.

I'm proud to say Google has made some small advances in the area of health. Every day an enormous number of people come to Google to understand more about an illness or a drug, trying to figure out what is wrong with them or what the right treatment is for that illness or whether it is normal that the treatment has the side effects that it does. We take this need seriously and want to help people make the right healthcare decisions. We are steadily building into our search the ability to make results more medically relevant, more helpful to users. While this will improve week by week, for the next year to come, it is already significantly better than it was.

How did we accomplish this? We launched Google Co-op as part of our mission to organize the world's information and make it universally accessible. Co-op is a small step in this direction. The idea is that we leverage the expertise of passionate experts, and allow the consumer to tell us which experts they trust the most. We believe this will be a powerful way for individual physicians to help their patients find better quality information on the web. For example, there can be a profile page for my personal physician who uses Google Co-op to indicate which

websites he finds useful for his patients. He then gives me the link to his profile page (or I find it in the directory), I click “subscribe,” and now when I search on Google, his recommended sites get ranked higher. And his name appears next to each one so I know he recommended it.

This means that at least people are getting more helpful medical information in response to their search queries, helping them answer their health questions.

Now let me switch gears and talk about an area that isn't going as well, and where innovation is badly needed. There is no place individuals can go to get a comprehensive set of health and medical information about themselves. Access to this comprehensive information can be vital to proper and timely diagnosis of the patient, to the patient getting the best possible treatment, and, perhaps sometimes overlooked, to the patient getting the best possible ongoing care and support after the initial treatment, especially for chronic illnesses.

We live in a world in which information flows at the speed of light and in which Google can find all the most relevant answers to any query you submit across the entire web in less than one-third of a second and yet, in general, your physician cannot get the lab results from your last specialist without paper and fax. If the information were trivial and irrelevant, this would be at least understandable. It would still be odd in a world in which I can look up effortlessly the local movie schedules or what people think about some cartoon, but it would just be an oddity.

But this information really matters – to use the cliché; it can be a matter of life and death. And the right word to describe our inability to put our hands on it is not oddity – but travesty. Because your physician cannot always reliably and optimally treat you without a comprehensive knowledge of what has been wrong with you in the past, how you were treated, and how you responded to the treatment. The lack of easily accessible, comprehensive medical records results in people being in more pain for longer than they should be. Some people are almost certainly dying unnecessarily. Add to this the fact that, in a vain attempt to catch up and to be “safe” in the absence of shared electronic information, a barrage of unnecessary, redundant and extremely expensive tests are run over and over. Some estimates of the inefficiency in the system put the waste at \$1 trillion, or more than \$5,000 per family. Think what you could do with that money to truly help in health. Or even in education. It could fund well over 10 million teachers a year.

We should not accept this. We should not accept that the institutional barriers of the system cause tens of thousands to die unnecessarily and hundreds of thousands at the very least to suffer without cause while we pay an enormous bill.

So what can be done? We should start at the beginning. Let's put the patients in charge of their health and medical information. Let's build a system which puts the people who are sick in control. For every single medical and health-related event, let's make sure that patients can effortlessly retrieve and share their information in its totality and then use it to ensure that they get the best quality of care possible. It is their health. The people who treat, diagnose, test or dispense medications to patients should be required to deliver, instantly, over the net, at the speed of light, that information to those patients to use as they see fit. If these patients choose to share it with caregivers or health coaches or nursing services, that should be their right.

I hear people saying that there is too much data, that it would cost too much, and that it's impossible to do every time. It is not. Computer software and hardware have advanced to a point where this is very possible today.

I take this very personally. My mother was diagnosed with ovarian cancer a little over four years ago, but nine months after she should have been — despite repeated visits to her doctor, to hospitals, and to her gynecologists. There was no one who had a holistic picture. There was no way to have a health coach look over her shoulder, examine the tests and symptoms and lab results collectively and comprehensively and suggest that she get the CA-125 test.

Once she was diagnosed, it was extraordinarily hard to determine with whom she had the best chance of recovery or remission. While in the end we found an amazing team, it was much harder and scarier for her than was necessary. And recently, as she was dying, there was no way for her physicians, nurses, health aids and hospice workers to collaborate online to ensure that they knew what is happening with her, that the right medicines are being delivered and dispensed, and that she was as happy as she could be. My mother couldn't possibly keep up with all of this, and neither could I. So, for lack of an easy way to find the right specialist and for lack of comprehensive medical information about her that could have been shared between her doctors and caregivers, she ended up being sicker than she should have been and dying sooner than she should have.

Sadly, a solution is possible, but not available today. One part is simply making it easier to find the best specialists and institutions. But more importantly, every ill person needs a "health URL," an online meeting place where their caregivers — with express permission from the ill person — can come together, pass on notes to each other, review each other's notes, look at the medical data, and suggest courses of action. This isn't rocket science. It is online web applications 101. And it would have helped in so many other ways.

When my mother had to step down from full-time work and Oxford became her secondary and Medicare became her primary insurance because of the Cobra rules, she became panicked by huge surprise bills for the chemo because the bills weren't yet switched to go first to Medicare and then to Oxford. Any insurance ombudsman could have helped her out if he/she had had access to my mother's health URL and been able to see the medical information required to help with billing, saving her from fear and worry at the worst possible time.

When the cancer came back and she was in Seattle and we had to get good information from Sloan-Kettering [Memorial Sloan-Kettering Cancer Center in New York] to the Hutch [Fred Hutchinson Cancer Research Center in Seattle] and back, she wouldn't have had to make innumerable calls, plead for CDs for the CAT scans to bring back and forth, and frantically call her oncologist when things went wrong. If only she had had a health URL and could have just asked the people who were taking care of her to put their CAT scans and comments and chemo regimes into it and work together. If startups can offer — as several have — free storage to everyone for their online photos up to 5GB, and others can offer free phone calls and instant messages to anyone in the world, then, working together, we can harness a tiny fraction of the horrendous waste in the current medical system to deliver this sort of control into the patient's hands.

As Google has explored this issue over the past year and we have spoken to leading health providers and institutions from coast to coast, we have heard people say that it is too hard to build consistent standards and to define interoperable ways to move the information. It is not! Ten

years ago, I heard people saying the same things about how hard it would be to build consistent standards for allowing programs all across the world to share data. I set out with a small band of people to build a standard way to share any information, XML. And once we built it, within ten years it had become the lingua franca for computers to exchange data. In general, if you build a place that accepts all data and deliver the value I just described, the standards will work themselves out. The most dramatic example of this, of course, is HTML and the browser. When the value was there, suddenly all the information in the world was in HTML. When we all make this vision real for health care, suddenly everyone will figure out how to deliver the information about medicines and prescriptions, about labs, about EKGs and CAT scans, and about diagnoses in ways that are standard enough to work.

What is needed in the field of healthcare isn't palliatives. We don't need measures that merely help doctors manage their practices or get a few more images into the operating theatre. We need to put control into the hands of the sick and their caregivers and to gently suggest that those who treat them, medicate them, test them, or diagnose them, are out of date if they do not instantly deliver this information to the patient.

Once this happens, we will see truly great decision support systems and specialists and health coaches help the hapless patients much more rapidly determine what is truly wrong with them. Once this happens, we will see patients much more rapidly determine where to get the best treatment for what ails them. Once this happens, we will see patients have an easier time getting the best ongoing support and comfort and advice that they can in their hour of need.

Will it be perfect? Of course not. No system ever is. But such a system would represent an enormous step forward – much like the medical advances you've pioneered in the last 25 years. It is amazing to see what the medical profession, unleashed, can do. What we need to do now is to unleash the patients and their caregivers and advisors as well and then perhaps we'll truly see a more efficient system and a better standard of care. I am a technology optimist: Technology has solved some of the biggest challenges mankind has faced, and we are confident that increased and more targeted use of technology will help improve healthcare for all.

Thank you.