

## Health decision making, circa 2015 Visioning Scenarios – Discussion Draft

### Case 1: Physician decision-maker

**Decision maker:** I am a physician in a four-doctor internal medicine practice in a small suburb of a major metropolitan area. We provide care to a very diverse population, about one-third covered by Medicare and the rest by a wide variety of payers. Two of us have been in practice for about 20 years and the other two are only 2 years out of internal medicine residency. We'll be hiring two more junior physicians this year. We are thrilled with the recent surges of physicians going into primary care.

This increase in primary care physicians is the result of a series of factors that have changed how health care is delivered and practiced. The biggest changes in the last 10 years have been that information systems have altered radically the way we practice, offered us opportunities to re-engage as part of a scientific community with other clinicians, and enabled a very different financial model for health care. Our income for managing chronic disease patients has increased between 2 percent and 70 percent depending on how well our practice helps patients achieve the best outcomes.

**Decision tools:** On a typical day I can't wait to get to the office. About half of my appointments are virtual and half in person. Some of my appointments are group visits either in person or online, during which a number of our patients meet and review their progress in managing chronic conditions. I find more and more of my patients with diabetes want to join our practice's Medical My Space; they'd rather "friend us" than visit us.

Each morning I securely log into our information system from my portable device to review a clinical "preview screen" for each of my appointments that day. The preview screen is driven by tailored decision-support logic developed by my professional society. It is really helpful in that it will customize the information I preview based on the patient's current health status, the primary purpose of the visit, my own care plan, and any new data that has been generated by or for my patients since I last saw them (either from other providers or ancillary services). In cases where my patients use a home monitoring device or have a personal health record, my preview screen is populated with any relevant new data, and the underlying details are archived and time-stamped in my electronic health information system.

What I love most about this preview screen is that it does not require me to read through pages of mostly irrelevant information, as I used to years ago. In

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in addition to tailoring the most relevant information that I see, it creates a visual representation by plotting the patient's current information against ideal statistics for patients who have similar characteristics.

Our practice has made significant progress in redesigning our workflow to a point where many of the patient encounters don't involve me directly. Much of the care coordination and patient monitoring are done by my team members (behaviorists, patient care partners, and our clinical care managers) who use the same tools that I use. We have doubled our throughput over the last 5 years, and I spend less time working than in the past. What's not to like?

**Decision case:** Theresa DeAngelis, 60, a retired schoolteacher with Type 2 diabetes diagnosed about 5 years ago, is the patient coming in at 11 a.m. She quit smoking 5 years ago but has a 40-year history of smoking. She takes several herbal supplements in addition to her diabetes medications. She's relatively active socially, and still writes educational materials. She uses a home device to monitor her blood glucose, which she networks to her PHR.

She is coming to see me today to discuss switching to a relatively new oral hypoglycemic that came on to the market about 6 months ago, and for a worsening cough that lingered since a recent bout with the flu.

My team has been working with Mrs. De Angelis for 5 years to keep her sugar in check, and we have done a good job so far with her diabetes. We are all very proud that we helped her quit smoking when she joined the practice. But her glucose control has not been as good lately, and recent studies have shown that certain Type 2 diabetic patients do much better on this new medication if they fall into a genetically determined subset of patients who have specific risk factors. A simple blood test can determine whether she is genetically eligible for the medication, and most health plans and Medicare require the test prior to covering the new medication. But even then, the recent literature suggests the drug will only work in those patients who fit a specific set of characteristics.

Today my preview screen for her indicates that her naturopath has added Vitamin E to her supplements, and her diabetes educator has suggested she see me about the new oral hypoglycemic because we have not been able to achieve her goal levels for the last 3 months. In the preventive screening box, I see a flag that indicates her annual mammography is due.

The bubble chart shows her glucose trended historically comparing her data and the optimal blood sugar control ranges for patients with her clinical profile —

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based on well-accepted regional population data. When she was in better control, it would show me the next goal level to discuss. Her medication adherence rate has been calculated from a smart, network-enabled bottle she uses at home, and her refill history. The display shows the trend between her adherence data and her blood sugar control.

I decide to click on a button in the preview screen prompting me to run a standardized network query to tell me if the new hypoglycemic might be right for Theresa based on looking at available outcome data for people like her.

Since I know that I have been having a hard time achieving good glyceimic control with Theresa, I want to know how I compare to the best physicians in my community. I am able to use a second network query to benchmark myself against other physicians who are treating similar patients. Each month my medical society invites the physicians in my community with the best chronic disease outcomes to create a short podcast of their top recommendations for improving chronic care. My medical society also writes short articles for the community health page, which is picked up by a lot of health plans.

I have been a top achiever for treating new onset asthma in teenagers. This recognition has stimulated a lot of growth in our practice, created a lot of additional revenue for us, and allowed us to tailor some of our relationships to counselors and specialists to cater to this population. The best part about how this works is that — because the outcomes are customized to a patient's clinical profile — when I achieve top outcomes, I am reimbursed at a higher rate.

By the time Theresa walks in to my office, her preview screen has been updated with the results of the two queries I submitted, and we look at the results together. Based on data collected about the drug over the last 18 months from physicians and patients using it, my information system suggests that this medication might work well for Theresa. It's also noted that a statistically significant number of patients taking this drug report fatigue — something that I discuss with her. The finger prick blood test shows she is indeed genetically eligible, so she fits the risk factor profile. I think we have a plan.

I attend to her cough first since she has signs of a respiratory infection. A quick sputum analysis reveals a bacterial pathogen this time, which I assume to be an opportunistic infection following her long bout with the flu. The decision support tool tells me that, based on the pathogen in the sputum, the literature would suggest using Antibiotic A. However, it recommends that I consider the fact that in the last several weeks there have been 115 other cases of pneumonia caused

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by this same pathogen in my community and that patients treated with Antibiotic B have had better response.

Now I turn to a discussion about her diabetes, the new medication, and the reported side effects. I ask her if she would agree to complete a structured questionnaire for the FDA at the time of her next electronic refill that would ask her about her experiences on the drug. She agrees to do so. Because this drug is relatively new to market, my information system will also automatically send the necessary data specified for the appropriate use of this drug as well as follow-up data fields directly to the Community Health Information Exchange Cooperative I participate in.

The system generates a visit summary that I can print out for Theresa, as well as sends a copy to her PHR. Based on her blood glucose levels, her self-reported symptoms and my assessment of her progress, my system will trigger the appropriate time of a follow-up visit sometime in the next 4-8 weeks.

**Trends:** Our use of information systems has radically changed the way we practice. It has offered us:

- More efficient and effective means to interact with patients.
- Fresh opportunities to collaborate as part of the scientific and medical community.
- A transformation of the medical office where we work as a team and find that we can dramatically improve care and improve our own lives.
- Innovative and sustainable financial models for our practice.
- Primary care is experiencing a surge in physician interest as a result of major changes in how health care is delivered.

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### Case 2: Consumer decision-maker

**Decision maker:** Angela Moreno lives in Dayton, Ohio, with her 9-year old son, Martin. Martin has asthma, which has been hard to control and continues to interfere with his school performance and, often, his ability to sleep through the night. He doesn't even bother with sports anymore. Angela needs to find a new family doctor or specialist who's able to help Martin achieve a normal boy's life.

**Decision tools:** She looks at a tool offering robust data integration with an array of national and regional sources, including the local health information exchange organization. After she confirms her identity, the tool asks if she would like to begin her doctor search by uploading data from either the patient's PHR or from a search of the regional medical records systems. On Martin's behalf, she allows the tool to search for his distributed EHR data, which includes physician visits, diagnoses, problem lists, FEV levels, and a medication history — all of which the tool uses to propose a general asthma severity classification for Angela to confirm.

The system notes Martin's "persistent moderate" asthma and allows Angela to indicate which things are most important to her in selecting a new doctor. The checklist includes how important she rates the doctor's:

- Training, including school attended, years in practice, board certification.
- Location, including transportation availability.
- Office capability, including languages spoken, use of e-mail, e-prescribing.
- Pricing and insurance status.
- Rating on patient satisfaction surveys.
- Rating on state patient safety reporting system.
- Performance on following clinical guidelines for pediatric asthma.
- Performance on asthma outcome measures, including symptom control and patient education effectiveness.
- Performance on general primary care indicators.
- Support for networked personal health records.

The system provides an easy online tutorial on each criterion, explaining in lay terms what each of the measures mean and how much variation there is in performance on these measures, nationally, regionally and locally.

**Decision case:** Angela indicates that she'd like to see the patient satisfaction scores based only on Spanish-speaking patients. The performance data are available separately for patients age 0-5, 6-12, and 13-18 (if the physician sees a

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sufficient number of patients in a given age group). Based on her weighted preferences, the system provides her with an ordered list of ten physicians and a button to “schedule initial appointment.”

Next to the names of six of them, there’s a small icon indicating that they have been “reviewed” or had comments added by asthma patients or their caregivers. Angela can click on the icons to read patient and parent comments about each of those six doctors. For any of them, she can send the doctor’s office an email with any special questions she wishes to ask. She is also able to attach a clinical summary about Martin’s case to see if the candidate physician has any special comments. She notes that one doctor is participating in a large clinical trial for a new experimental “customized” pediatric asthma care regimen for children with certain genetic characteristics. Through a secure message, she is able to notify the doctor’s office that she is interested in receiving more information about the trial.

When she visits a doctor, she is invited to return to the tool to rate the visit on a variety of measurements. She can opt-in to allowing Martin’s peak-flow readings to be pooled with other patients on a de-identified basis.

**Trends:** Consumers across the country have a rich variety of tools to help make health decisions for selecting doctors, hospitals, health and pharmacy plans, etc. It’s now uncommon to make a personal health decision without using such a tool. Part of the benefit of having consumers more engaged and empowered with new decision tools is much better matching of patients and providers. Consumer surveys have shown a dramatic rise in satisfaction with doctors, and with their health and health care generally, because they feel they have found the care teams and individual providers that they connect best with. Consumers are an important participant and contributor to the network. They provide feedback of high value to each other, to providers, policy makers, quality monitors, researchers, drug manufacturers, public health authorities and many others. Consumers have a variety of applications through which to access the network. They can select a robust, highly tailored longitudinal application, or they can create snapshot PHR “on they fly” by querying the network when needed. They have online accounts for tracking their health-related expenses, and efficient online mediation tools to handle questions about billing or benefits. Based on detailed profiles, consumers have a rich set of opportunities to opt-in to services and clinical trials. However, they control when and how their data may be used.

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### Case 3: Policy decision-maker

**Decision maker:** Health plans both public and private want to analyze a new, implantable renal nano-device that has recently completed clinical trials and shown great benefit for many patients with kidney failure, preventing the need for dialysis or kidney transplant. The cost of the device and the related surgery and continued monitoring averages \$40,000 per patient per year, and patients must remain compliant with a new oral medication to avoid serious complications.

As many as 12 million Americans could gain some benefit from the therapy, and at least 1 million would promptly gain the potential to leave dialysis or transplant waiting lists. How should the FDA approve this device? Should CMS reimburse all implants? How will private health plans approve or review use?

**Decision tools:** Each health plan technology assessment office can issue a query across the network to determine the number of its members meeting the loose and stringent clinical criteria for use of the device. For example, an office learns that of the total number qualifying, x% of plan members now spend between \$15,000 and 25,000 per year for care, y% spend between \$5,000 and \$15,000 and z% spend less than \$5,000. The office can run scenarios including possible approvals for each cohort of members.

By mapping against the FDA trials' outcomes and the recently launched post-market surveillance database, it can estimate the likely life expectancy and subsequent complication rates for each clinical cohort. The trials data suggests that some patients — those with histories of cardiac rhythm irregularities — are more likely to have late complications. And patients with a history of poor medication adherence also have higher rates of complications. The analyst can run sub-group analyses, indicating how many of the plan's candidates for the new device have arrhythmias, and the rates of medication non-compliance among the candidate population. The analyst can then make accurate projections of the long-term costs of making the device available to each sub-group.

**Decision case:** The plan decides to cover the device but requires all recipients to have PHRs that provide regular feedback on medication adherence and early signs of cardiac problems, and requires the manufacturer to monitor these indicators and provide weekly reports, which are shared with the FDA's pooled transplant registry system.

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**Trends:** It's now commonplace for the network to enable queries across multiple data sources that were once impenetrable silos. Post-marketing surveillance is quite reliable, which has led to both improved safety and shorter time-to-market for useful treatments. Off-label use of drugs is now routinely monitored and reported, which has allowed the research community to conduct real-time clinical trials that aggregate the experience of off-label usage. The innovation cycle has quickened, and promising new uses are quickly diffused through the real-time online Wiki-medical journals and electronic guidelines committees of the specialty societies. At the same time, there has been a dramatic reduction in spurious and unfounded off-label uses; unsafe use is quickly stamped out. And methods that are safe but no more cost-effective than existing therapies are easy to spot quickly and are simply not covered by insurers. The game of innovation has changed: the pharmaceutical and device industry, along with their clinical partners, develop new technology and creative uses of existing technology that are faster, better and cheaper. Marketing is about helping stakeholders with their knowledge management systems, not buying donuts for doctors and nurses in their office. Payers and public policymakers have a much more granular understanding of the effectiveness of certain treatments, and can target provider and patient education interventions much more effectively.