



## **Calibrated Care is Closer to Home:**

**2009 Aging and Health Technology**

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## EXECUTIVE SUMMARY

The one consensus about health care is that its cost growth is unsustainable: according to some estimates, it is expected to reach \$2.5 trillion in 2009 or 16% of GDP. With little general agreement on how to contain costs, some consumers and providers still find ways to get or deliver care outside of the walls of the doctor's office and emergency room. Today home monitoring and telehealth technology markets, self-care technologies, retail clinics, and use of online websites help individuals and caregivers to manage chronic disease. By 2020, providers and patients will willingly participate in a process of *calibrated care* – matching the right level of care at the right time and right place – through lower-cost, technology-enabled and closer-to home interactions.

## WHO SHOULD READ THIS REPORT?

This report looks at the Aging in Place Technology category of Health and Wellness described in the 2009 Market Overview.<sup>1</sup> As follow-on to that overview, it focuses on technologies that help management of chronic disease and specifically the market of technologies that make it easier to deliver and receive care outside of the doctor's office. As such, it is relevant to:

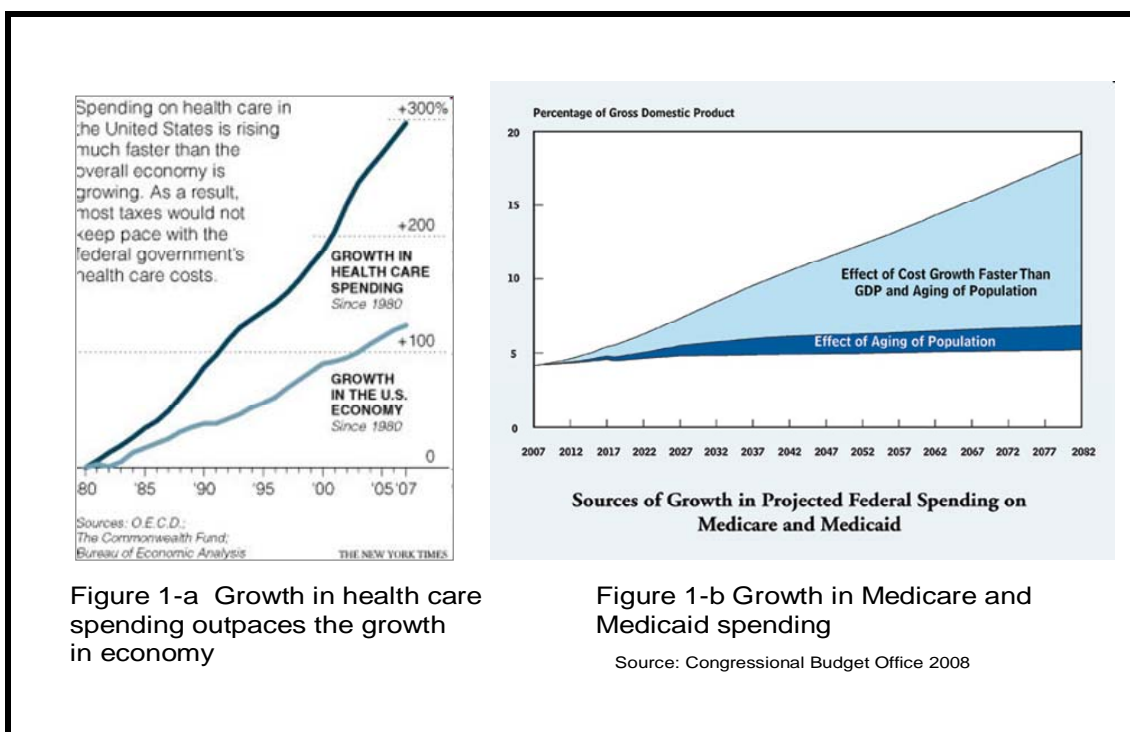
- Vendors within or considering entry into the market
- Home care agencies
- Community health centers
- Geriatricians, physicians, telehealth organizations
- Retail clinic providers
- Hospitals and integrated service delivery networks
- Government agencies and policy makers
- Geriatric care managers
- Caregivers, seniors, and family members



## HEALTH COSTS OUTPACE ECONOMY, DEMOGRAPHICS BUT CHANGE IS AHEAD

At the very least, 2009 will be remembered as the year in which jobs disappeared in most sectors – except in the booming healthcare industry. And it was a year of media obsession with the topic of health – the administration’s proposed health care reform goal, the chaos of congressional bills, and the cacophony of lobbying groups. Sprinkle in new reports about US obesity rates and related and growing chronic disease costs, and we have a recipe for pain as:

- **Current health care cost growth is unsustainable.** First combine the growing percentage of GDP consumed by healthcare in comparison to real income growth (see Figure 1-a). Add the 7.8% annual Medicare cost growth and a future funding crisis (Figure 1-b). Now you have a recipe with pressure and opportunity for change – with or without government action.



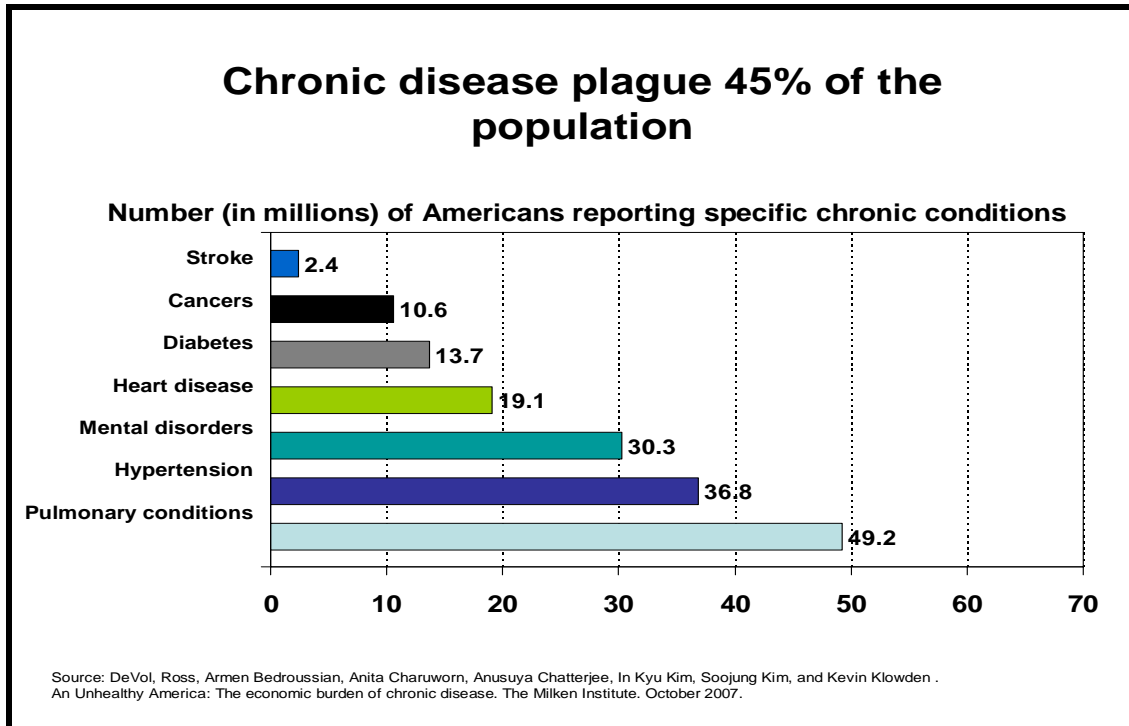
**Figure 1-a, 1-b Healthcare cost, Medicare/Medicaid spending**

- **ER visits depend on fixed infrastructure and generate large and avoidable cost.** There were 119 million trips to emergency rooms in 2006 (up 26%), but most are not ‘emergencies’, according to the Center for Disease Control.<sup>2</sup> The rest were those who lack insurance or access to a doctor, patients with after-hours minor problems, treatment for asthma, those seeking confirmation of self-diagnosis and/or prescriptions. But ERs are the always-on but not always-cheapest solution: an ER visit



averages more than \$1000 in cost (compared to \$150 to see a doctor), and invites utilization of 24x7 availability of test equipment and technicians.

- **Chronic disease drives much of health care cost.** Nearly half of Americans suffering from at least one chronic condition, and 50% of those over age 65 suffer from at least two.<sup>3</sup> These two include diabetes or high blood pressure, ongoing problems that need to be continuously managed rather than allowing them to escalate into incidents requiring a visit to an ER or a face-to-face with a doctor.



**Figure 2 Chronic disease plagues 45% of the population**

### **Chronic Disease Management Is Moving Away From ER and Doctor's Office**

Studies about chronic disease sufferers have shown that many doctors' and emergency room visits provide informational counseling, check on current status, or update prescriptions – activities that could be facilitated through phone calls, e-mail consultations, or camera visits. Today's consumers are willing to explore alternatives as:

- **Monitoring and managing chronic disease at home is now feasible.** By 2010, the global market for home blood pressure monitors will reach \$1 billion, home glucose monitoring \$7 billion.<sup>4</sup> Testing blood coagulation level (PT-INR), for example, can now be done with a home device from **Philips** that retails for \$400; cholesterol testing kits are available for \$10 with results available in 15 minutes. Home blood pressure



cuffs, diabetes monitors, scales for tracking weight, and even home defibrillators are being marketed today.

- **Visiting with the doctor online or in groups begins to be accepted.** Recognizing that they can't continue to manage care exclusively with face-to-face visits, thirty-nine percent of doctors are now communicating with their patients online, up from 16% the year previous.<sup>5</sup> And businesses like **TelaDoc and ConsultADoctor** that offer phone and online visits are thriving – TelaDoc has grown from 300,000 subscribers to over 1 million in a period of 18 months. With recognition of the inefficiency of the 1-1 doctor check-in visit, counseling for diabetes patients is now offered in group visits.<sup>6</sup>
- **Physician consistency for seniors is limited, opening the doorway to alternatives.** By 2006, only 40% of Medicare patients in the hospital received a visit from a doctor they knew, and only one-third saw their primary doctor when they were in the hospital -- 75% were discharged unable to name a doctor who treated them. Consequences of this lack of continuity include poorly understood discharge instructions, medication errors, lack of follow-up appointments, and risk of re-admission.<sup>7</sup>

### **But Most Payers and Providers Seem Stuck in an Office Paradigm**

Health care services for boomers and seniors to date have been largely delivered where the providers are – doctors' offices, clinics, hospitals, and nursing homes. And according to a survey just published by IBM, “most doctors (84%) are not using technology to facilitate more real-time communication with their patients.” Meanwhile, hospital and physician interest in home and remote management of chronic disease is growing, but adoption of telehealth is still limited:<sup>8</sup>

- **Despite burgeoning costs and looming shortages, Medicare is on the fence.** The American Academy of Family Physicians (AAFP) predicts a shortage of 40,000 physicians by 2020. Today CMS provides reimbursement for telehealth episodes, but does not endorse or encourage the use of telehealth care delivery. This is despite proof points from organizations that managing care in home settings supported by technologies is feasible, available, and works.<sup>9</sup>
- **In the midst of shortages, cheap virtual visits have yet to relieve pressure.** In addition to a shortage of doctors, there is also a pharmacy shortage, but pharmacies are less focused on the automation opportunities in pharmacies, instead viewing certification of pharmacy technicians as a way to fill the gap.<sup>10</sup> Shortage of primary care doctors in the US is well understood, but virtual doctors' online doctor visits are not yet filling the gap, even though an estimated 1 in 5 doctor's visits could be



eliminated with online access. And reports encourage online visits, but physicians are still worried about associated risks.<sup>11</sup>

- **Incentives are upside down and providers are cautious.** Some nurses are afraid of being replaced by telehealth – and even when telehealth technology is deployed, it is generally reimbursed for 60 days (an exception is a community based services like Roanoke).<sup>12</sup> And despite the telehealth Medicare reimbursement code, remote and online doctor’s visits have interest, but no widespread adoption – yet. The American Academy of Family Physicians supports the idea, but stresses that only non-urgent medical issues can be handled this way – “E-visits are best suited for people with easy to diagnose aches and pains, or those who need follow-up visits.”

### **Some Providers Do Things Differently to Lower Costs**

Vertically integrated health providers – where hospitals, physician groups, and health plans are owned by a single entity -- are leading the way in use of remote telehealth monitoring technologies and virtual doctor visits.<sup>13</sup> With rising Medicare costs and increased Government oversight, it is likely that reimbursement incentives will increase the availability of these technologies beyond just the vertically integrated, some of which can be used by consumers who don’t want to or can’t get to a doctor, with or without reimbursement from insurance:<sup>14</sup>

- **Veterans Health Administration proved telehealth effectiveness.** With more than 17,000 patients participating in a study of care coordination/home telehealth, the Veterans Health Administration published results in 2008 that were conclusive about the benefits of delivering the ‘right care in the right place at the right time.’ With coordinated care and a variety of technology enablers, participants’ bed days of care dropped 25% and hospital admissions 19%. The cost of \$1600 per year per patient was substantially less than primary care costs of \$13,121 per year or market nursing home care at the time of the study of \$77,745 per patient per year (see Figure 3).



## VA Telehealth Study Proved Reduction in Hospitalization

LOCATION	# PATIENTS	% Decrease in Utilization
Urban	9,880	29.2
Rural	6,782	17
Highly Rural	294	50.1

CONDITION	# PATIENTS	% Decrease in Utilization
Diabetes	8,954	20.4
Hypertension	7,447	30.3
Chronic heart failure	4,099	25.9
COPD	1,963	20.7
Single condition	10,885	24.8
Multiple conditions	6,140	26.0

**Notes:**

- Mean age at study enrollment in 2006 was 65 years, 96% male
- Not all conditions shown

Source: Veterans Administration VHA Care Coordination/Home Telehealth

**Figure 3 Telehealth Study Proved Reduction in Hospitalization**

- Kaiser Permanente proves the cost-saving benefits of email.** A study by Kaiser Permanente in 2007 demonstrated that secure online communication reduced the likelihood of a doctor’s visit by 7-10% and the need for a telephone call by 14%.<sup>15</sup> The organization in some regions reimburses the doctor \$50 for a virtual ‘email visit’ and uses pre-visit e-mails to cut time used (and perhaps wasted) in face-to-face visits.
- Self-care and online visits are acknowledged by some payers and clinicians.** The license process for doctors is now becoming as standardized as the college application. What’s it mean? A standard application process enables doctors who practice across state lines – making licensing easier for telemedicine doctors.<sup>16</sup> As far back as 2001, research has proven that asthma patients can self-test lung function and monitor using an Internet based system.<sup>17</sup> And other insurers have now set prices for online access to a doctor: for example, Empire Blue Cross/Blue Shield’s use of RelayHealth, with a co-payment of \$5 per online visit – using the patient’s own doctor.<sup>18</sup>

### WHAT’S MISSING – CALIBRATED CARE

Despite constant lamenting about ballooning costs, industry participants are tangled in a process that enables and rewards providers and patients to deliver the most expensive care – often for problems that could be addressed with *calibrated care*, defined as:

*Determining and delivering the right level of care at the right time and in the right place*

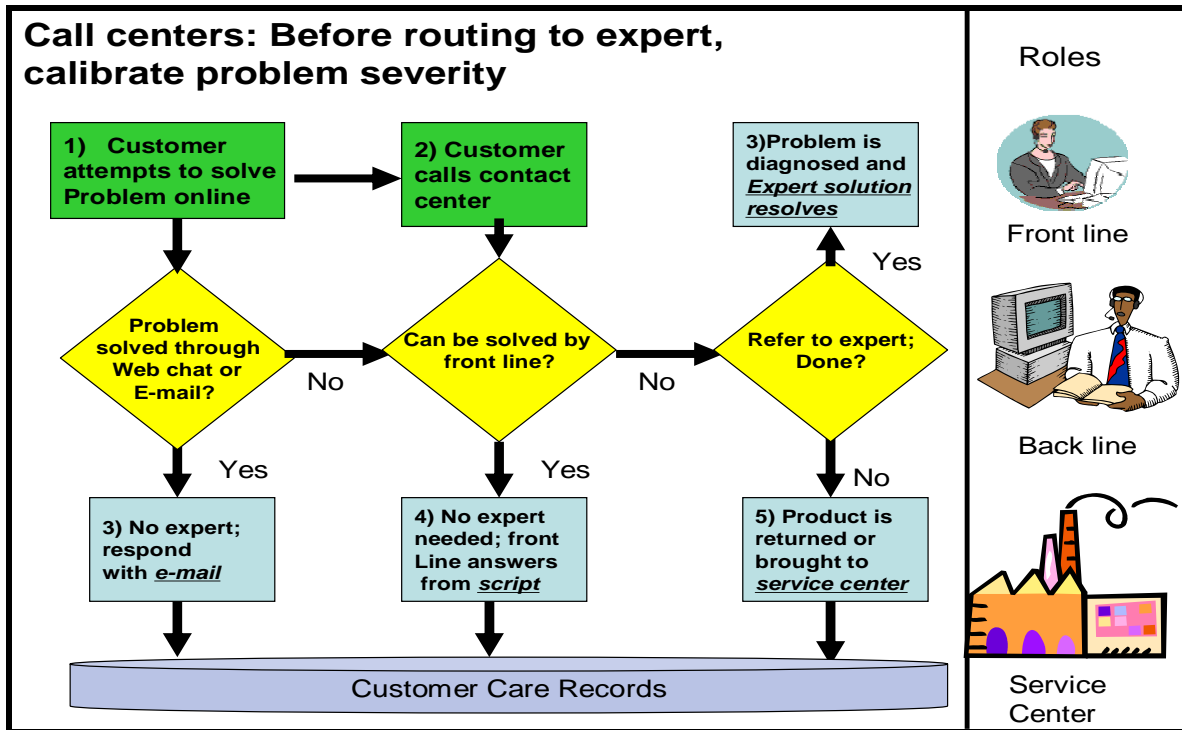


Calibrated care depends on tech enablers for:

- **Assessing a problem in the lowest cost interaction mode.** Today, when you call the pharmacy, the first option presented (“If you’re calling to renew a prescription, press 1”) is the automated interaction. With the right process, providers and patients of non-emergency care can become accustomed to trying the simplest and lowest cost interaction mode first – which may be online.
- **Routing to the right level of interaction.** Based on the answer to a few questions about the nature of a problem, telephone and Internet-based systems can smartly transfer a person to the right interaction that matches the circumstance. For example, software can verify if the described need is urgent, whether it is a new or existing condition, whether you previously discussed it with someone – or whether more information is required.
- **Preserving the data for follow-on and follow-up.** Multiple industries (including vertically integrated healthcare) collect just enough data to use in subsequent steps. This securely managed ‘just enough’ data is useful in the event that you are placed on hold, transferred to a specialist, or your e-mail is evaluated by a more appropriate responder. And if needed, that data can be used to retrieve a more detailed history.

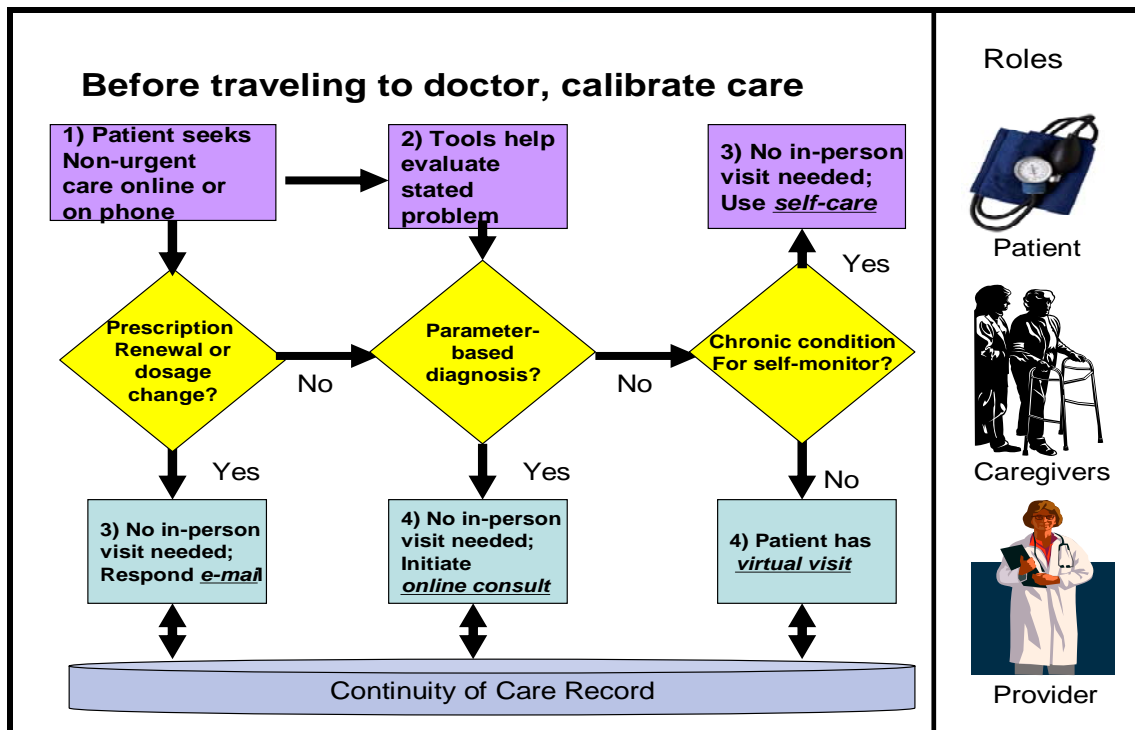
### **Triage of Problem Severity Is Well Understood In Battle and In Customer Service**

Medical triage processes that separated wounded into urgency categories originated on battlefields long before customer service was invented. But today, everyone recognizes the process transformation that has occurred in the customer service world over the past twenty years – where expertise is rationed out through a problem refinement process initiated at the first contact point. Let’s look at that process and how information supports it (see Figure 4):



**Figure 4 Call centers calibrate severity, then route to expert**

- **Calibrate severity of customer problem.** At each level of customer interaction, there is an associated cost– automated lookup has the lowest cost, the most senior expert represents the highest cost. Effective problem identification up front and smart routing helps minimize overall costs – and ideally shouldn’t require the customer to repeat his or her problem if just enough formation is captured and shared across all levels of interaction.
- **Determine expertise requirement.** Once a process can collect information, narrow problem definition, and match resource to problem, industry veterans know that it controls costs and still provides (self or expert) service as required. The benefit is obvious – reduce utilization of costly resources – but the less obvious benefit to customers is being able to use self-service to resolve on their own. Today this has become commonplace for the banking, product support, travel and hospitality industries.
- **Preserve history to improve service.** Although customers complain about the funneling of service needs through qualifying questions and process steps, they – and the industries with which they interact – have adjusted – and are particularly pleased when their prior history is accessed during their next call. The health care industry should use a similar data-driven decision-making process (see Figure 5):



**Figure 5 Decision-making processes to calibrate care**

### Calibrated Care Serves Key Participants

Chronic disease patients and their care providers are an important example of those who need more cost effective care and/or monitoring. These conditions often depend on frequent, small interventions to prevent more aggressive (and expensive) care. Calibrated care depends on a technology-enabled process of deciding whether the next level of care is required – and participants willing to play roles in the process, for example:

- **Patient monitors or seeks care – phone or online.** One reason cited for lack of broad-based deployment of technologies for preventing or mitigating chronic disease is the lack of involvement of individuals in their own disease management. But that may be a myth. Kaiser Permanente’s July 2009 study indicates that 87% of seniors using their MyHealthManager online health record are satisfied.<sup>19</sup> The AARP Healthy @Home 2008 study indicated that 96% wanted to help their doctor monitor their health, and most people were willing to pay for technology – as long as the price was under \$50/month.<sup>20</sup> And the Philips-sponsored 2007 FAZZI study of 1000 home health aides validated that 97% of seniors like the equipment, wanted to keep using it even after their episode of Medicare-funded caregiving has ended, even paying for its continued use.



As Pramod K. Gaur, CEO of **HealthAnwhere**, observed: “We make our solution for the patient/enrollee fit their lifestyle. I travel everywhere, have my BlackBerry and carry my blood pressure monitor with me – I am good to go.”

- **Family caregivers manage care.** The first step of the calibrated care process may be family members in the home or long distance who want to participate in a process where care can be supported more effectively in the home. When caregivers were surveyed in the AARP study, 79% of those caring for an individual who takes six or more prescriptions would be interested in using some sort of home monitoring; and more than 80% believed that personal health devices used by the person they care for could provide the caregiver with greater piece of mind.<sup>21</sup>
- **Professional caregiver manages or initiates care.** A range of professionals, from geriatric care management, to home care agencies, technicians, nursing services, and home health aides, are entering the home of seniors or those with chronic disease at a more frequent rate. This positions them to deploy technologies to help better manage a continuum of care – collecting data in the home to be transmitted to a central location with exceptions assessed by a provider. Or a primary care provider team in the ‘patient-centered medical home model’ could use a calibrated care process to handle most of the care requirements outside the office or hospital emergency room – again, recording actions to help identify needed intervention.

As Bonnie Britten of Roanoke Community Health, a primary provider similar to the VA, noted: “One of our patients had 11 emergency room visits in a 6-month period before we brought a telehealth unit to his home. In this case, we were able to keep it in his home for 9 months, during which time he had no hospitalizations. His comment: this was the first time he thought somebody cared.”

### **How Can Technology Support the Calibrated Care Process?**

Calibrated care depends on technology to support its decision-making steps, including these categories, detailed list of vendors at the end of document (see Figure 6):

- **Home telehealth.** This includes wearable health-specific monitoring – self-care, professional care, remote care, mobile care, devices to track wandering Alzheimer’s patients. This worldwide market estimated at \$8 billion includes kiosks, mobile carts (like **Healthsense’s NurseCart**), remote monitoring, and video conferencing.<sup>22</sup> For example, **Cisco** and United Healthcare’s announced a partnership to deliver a ‘Connected Care’ telehealth network for providers to extend care into rural areas using video conferencing and other technologies.<sup>23</sup>



- Medication management.** It is well known that the number of medications proliferates in relationship to age and chronic disease. Studies reflect \$290 billion per year of healthcare implications of medication non-adherence.<sup>24</sup> and 1 in 10 visits to the hospital resulting from medication mismanagement, vendors have numerous offerings, from simple phone-based reminders through cell phones and PDAs to removable canisters (**MedSignals**), dispensing devices (**Philips**) and even remote reconfiguration of dosages (**InRange Systems' EMMA**).
- Internet-based services.** A Deloitte 2008 study of consumers and healthcare found that 80% of consumers want more Internet-based information about their medical records, test results, and information about treatments, but most don't have this access. This has created an opportunity for the virtual doctor visit (e-mail and telephone) like **TelaDoc**, web-configured condition-specific monitoring like **Diabetesmine.com**, for profit sites, non-profit and chronic disease management sites. According to Alexa.com, there are more than 62,000 health sites received 55.3 million visits per month, 31% of the US audience.<sup>25</sup>

Categories To Support Calibrated Care		
Home Telehealth	Medication Management	Internet-based Services
Personal emergency response devices	Telephone-based reminders	Community websites
Passive remote monitoring with device integration	Electronic pill boxes	E-mail/chat/telephony
Dedicated telehealth remote monitoring, case management	Medication dispensing with remote monitoring	Disease management smart phone applications
Video conference call	Remote medication dosage management	Virtual doctor visit software
Mobile carts	Smart pills	Health platforms
Kiosks	Smart clothing	Social networking sites

**Figure 6 Three categories of technology enable Calibrated Care**

**WHY CALIBRATED CARE WILL BE MAINSTREAM BY 2020**



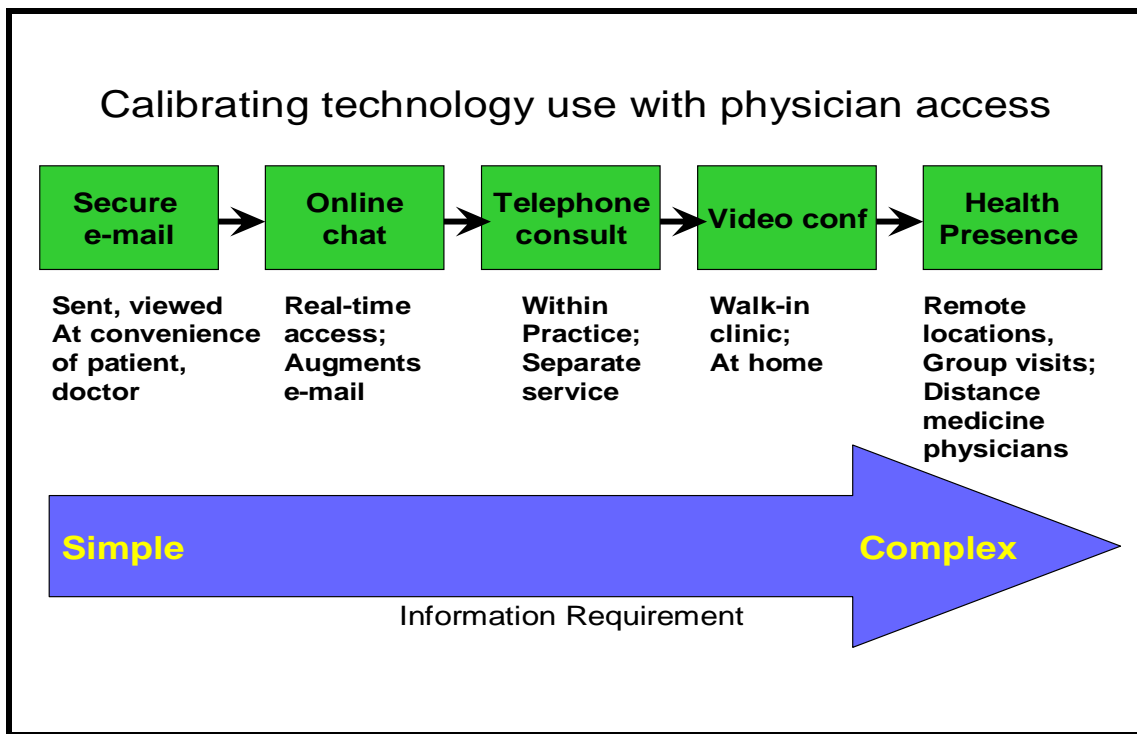
The concept of calibrated care, matching appropriate tools and health care providers to the level of patient problem, seems like a no-brainer. And in vertically integrated health provider organizations, such a process is feasible, supporting it with shared information is likely, and willingness to participate is obvious. For the rest of us, by 2020:

- **Patients will vote with their feet and their wallets.** As the baby boomers become seniors taking their chronic conditions with them as they age, needless long drives and costlier Medigap insurance will encourage them to search for acceptable alternatives.<sup>26</sup> A recent Forrester survey of 4500 consumers already indicates that 40% cut healthcare spending in 2009.<sup>27</sup> They won't want to get into the car to have a sinus infection diagnosed or obtain a dosage change that could be monitored from within the home. Instead, insurance offerings, including Medicare, will use incentives to motivate them to try less expensive interactions as the first step in a process of care that brings them to the doctor's office or ER when really necessary.
- **The medical home model will gain traction in the US, as it has in Denmark.** The 'Patient-Centered Medical Home' concept builds its premise around the locus of the primary care physician (PCP) coordinating patient care (supported by shared information).<sup>28</sup> With growing support by IBM and numerous doctors and associations, it has succeed in lowering costs and improving care in some practices in the US and is particularly striking in Denmark – actually contributing to a reduction in the number of hospitals.<sup>29</sup> It will stem the tide of physician exodus from primary care to better paying specialties. To manage both time and reimbursement, PCPs and their teams will calibrate care and offload to lower-cost technologies and centers outside their offices -- like home testing, pharmacy kiosks, and walk-in clinics.<sup>30</sup>
- **Electronic record keeping will make calibrated care inevitable.** Although the initial and apparent focus of health IT investments appear to be electronic medical records and personal health records, government infusion of cash will be the catalyst for innovation in numerous adjacent health-related technologies – particularly those that seamlessly interface with EMR and PHR software – and implementation of a CCR (Continuity of Care Record).<sup>31</sup> So with PHR, for example, vendors are popping up who sell adjacent disease management software and services that consumers will want – even after the Medicare home rehab periods have expired. And **Microsoft HealthVault** has a growing ecosystem of partners who use it as a foundation for creating applications and connecting devices for use in the home.
- **Call center discipline will right-size the process, supported by just enough data.** Even with likely government incentives, migration to standard electronic health records is a glacial project and its direct connection to cost reduction is over-hyped or unknown. A calibrated care process that redirects interactions to the right level of cost and care cannot operate, however, without shared access to data. This does not mean



rewriting all of the underlying systems, however. Instead, care participants will agree to a standardized interface like the CCR (Continuity of Care Record) to reformat, retrieve, and put back 'just enough' data in a secure, patient-authorized repository. One result: data gathered by telehealth systems could automatically adjust the Frequently Asked Questions (FAQ) to be more relevant.

- **Calibrated care gives technology vendors context for participation.** Technology vendors, whether they want to or not, generate part of the cacophony around health care today – with point solutions, devices, services and systems that appear interesting and useful, but out of context, not clearly seen as necessary -- today. With the world of calibrated care, tech offerings make sense, fitting into and embracing process steps that make them necessary and valuable (see Figure 7).



**Figure 7 Frames Physician Interactions by 2020**



## **WHO ARE THE VENDORS OF TECHNOLOGY THAT SUPPORT CALIBRATED CARE?**

The following *example-only* vendor listing of currently active vendors and is organized by technology category, suggests who will use it, and provides platform and contact:



Category	Sub-category	Purpose	Platform	Contact
<i>Home Telehealth</i>				
<b>Bosch Health Buddy</b>	<b>Home patient monitoring</b>	<b>Monitor status, educate patient</b>	<b>Appliance with telephone or Internet transmission</b>	<b>Healthbuddy.com</b>
<b>Philips TeleStation</b>	<b>Home patient monitoring</b>	<b>Monitor status, educate patient</b>	<b>Appliance, wireless device collection, transmit phone or Internet</b>	<b>Philips.com/healthcare</b>
<b>Viterion V200Telehealth Monitor</b>	<b>Home patient monitoring</b>	<b>Monitor status, educate patient</b>	<b>Appliance with wireless Bluetooth collection, transmit by phone or Internet</b>	<b>Viterion.com</b>
<b>Viterion V500 Telehealth Kiosk</b>	<b>Resident blood pressure, weight monitoring</b>	<b>Multi-user unit for monitoring status</b>	<b>Kiosk appliance</b>	<b>Viterion.com</b>
<b>Intel Health Guide PHS6000</b>	<b>Home patient monitoring</b>	<b>Monitor status</b>	<b>Appliance with transmit by Internet, 3G Cellular, phone</b>	<b>Intel.com/healthcare/telehealth</b>
<b>Cisco TelePresence for Healthcare</b>	<b>Remote doctor interaction</b>	<b>Full video enabled room, cart</b>	<b>TelePresence services</b>	<b>Cisco.com</b>
<b>IBM/Quantum PCMH</b>	<b>Medical information management</b>	<b>EMR-enabled primary care</b>	<b>Patient centered medical home</b>	<b>IBM.com, quantum.com</b>



Category	Sub-category	Purpose	Platform	Contact
<i>Home Telehealth</i>				
Health Anywhere	Mobile telehealth	Monitor chronic conditions	Smart phone, PC, portal	Healthanywhere.com
Zume Life	Mobile telehealth	Monitor health status	Smart phone, PC, portal	Zumelife.com
Cardiocom	Vital sign monitoring	Monitor CHF, COPD, Asthma, Diabetes, etc.	Proprietary device, telephone transfer	Cardiocom.com
InTouch	Remote presence robots	Doctor-controlled remote examination	Wireless, remotely controlled robots	Intouchhealth.com
Healthsense™ eNeighbor™	Passive remote monitoring including vital signs	Resident Monitoring CCRC	Wifi sensor network	healthsense.com
GrandCare Systems	Passive remote monitoring including vital signs	Resident Monitoring CCRC	Wifi sensors connected to a set top box	Grandcare.com
Halo Monitoring	Chest strap for fall detection	Resident Monitoring CCRC	Zigbee body sensor	Halomonitoring.com
Philips PT/INR Self Testing	Blood coagulation meter for Coumadin patients	Home testing	Device	INRselftesting.com



Category	Sub-category	Purpose	Platform	Contact
<i>Medication Management</i>				
Senticare.com	Pillbox with camera image of pills to verify accuracy	Home use	Appliance plus monitoring service and call center	Senticare.com
TabSafe	Multi-dose, multi day medication management	Assisted living facilities	Pharmacy-filled cartridges	Tabsafe.com
EMMA	Multi-dose, multi-day remote medication management	Home care agency for patient home use	Appliance programmed by pharmacist, wireless	Inrangesystems.Com
Philips Lifeline with Philips Medication Dispensing Service	Multi-dose, multi-day canister with dosage cups	Home care agency for patient home use	Appliance with telephone transmission	Lifelinesys.com
MedSignals	Medication dispenser and manager	Consumer, four drugs, voice instructions	Appliance with telephone transmission	Medsignals.com
Med eMonitor	Pill Reminder	Consumer: Portable pillbox	Web	Informedix.com
MedMinder Adherence System	Multi-dose, multi-day container with dosage cups	Consumer, four dosages, 28 compartments	Wireless pill container and notification	Medminder.com
OnTimeRx	Automated reminder software/service	Web, Palm, BlackBerry	Web	Ontimerx.com



Category	Sub-category	Purpose	Platform	Contact
<i>Internet Based Diagnostic and Care</i>				
Microsoft HealthVault	Platform for secure patient health information	Foundation for partner application and device connection	Uses Microsoft data storage, security	Healthvault.com
Mayo Clinic.com	Self-help care website	Medical and self-care information	Web	Mayclinic.com
WebMD	Self-help care website	Medical and self-care information	Web	Webmd.com
PatientsLikeME	Shared disease experiences	Sharing common disease management	Web social network	Patientslikeme.com
Diabetes Mine	Diabetes patients	Sharing, monitoring diabetes	Web social network	Diabetesmine.com
MDJunction	Shared diagnoses	Support groups	Web social network	Mdjunction.com
ConsultADoctor	Telephone, e-mail doctor consultation	24x7 access to a doctor	Virtual doctor service	Consultadoctor.com
TelaDoc Medical Services	Telephone doctor consultation	24x7 access to a doctor	Virtual doctor service	Teladoc.com
American Well (participating health plans)	web, phone, video doctor consultation	24x7 access to a doctor	Virtual doctor service	Americanwell.com



## Contributors

Erin Kinikin, Editor

## Sources

Advanced Warning Systems  
Continua Health Alliance  
Cisco Health Presence  
ConsultADoctor  
HealthAnywhere  
InRange Systems  
IBM  
Intel  
GreatCall  
Healthsense  
Microsoft HealthVault  
Partners HealthCare Home Health  
Philips Lifeline  
Roanoke Chowan Community Health Center  
SeniorMed  
WellAWARE  
Zume Life

Plus:

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Laurie M. Orlov, a tech industry veteran, writer, speaker and elder care advocate, is the founder of **Aging in Place Technology Watch**, a market research firm that provides thought leadership, analysis and guidance about technologies and related services that enable boomers and seniors to remain longer in their home of choice. In addition to her technology background and years as a technology industry analyst, Laurie is a certified long-term care ombudsman, certified in geriatric care management by the University of Florida, and the author of **When Your Parents Need Elder Care (Authorhouse, 2006)**. Her 2009 Aging in Place Technology Market Overview is available online at [www.ageinplacetech.com](http://www.ageinplacetech.com).

In her previous career, Laurie Orlov spent more than 30 years in the technology industry, including 24 years in IT and 9 years as a leading industry analyst at Forrester Research where she was often the first in the industry to identify technology trends and management strategies which have survived the test of time. She has spoken regularly and delivered keynote speeches at forums, industry consortia, conferences, and symposia. In 1996, Orlov was named to **McGraw-Hill/Open Computing's** list of the top 100 women in computing. She is a featured columnist on numerous websites about topics related to boomers and seniors. Learn more at [www.ageinplacetech.com](http://www.ageinplacetech.com).



## References:

<sup>1</sup> 2009 Market Overview at [www.ageinplacetech.com](http://www.ageinplacetech.com).

<sup>2</sup>[http://www.efluxmedia.com/news/CDC\\_Report\\_Emergency\\_Room\\_Visits\\_Up\\_by\\_26\\_Percent\\_in\\_a\\_Decade\\_21690.html](http://www.efluxmedia.com/news/CDC_Report_Emergency_Room_Visits_Up_by_26_Percent_in_a_Decade_21690.html)

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<sup>5</sup> <http://www.medicalnewstoday.com/articles/155975.php>

<sup>6</sup> Group visit for diabetes patients: <http://clinical.diabetesjournals.org/content/26/2/58.full>

<sup>7</sup> AARP study

[http://bulletin.aarp.org/yourhealth/policy/articles/new\\_study\\_finds\\_fewer\\_doctors\\_visit\\_patients\\_in\\_the\\_hospital.html](http://bulletin.aarp.org/yourhealth/policy/articles/new_study_finds_fewer_doctors_visit_patients_in_the_hospital.html)

<sup>8</sup> According to a recent national survey of almost 1,000 home care agencies, only 17.1% reported that they presently use a telehealth system (Fazzi Associates, 2008)

<sup>9</sup> The Future of Home Health Care: Containing Costs While Serving Patient Preferences, The Alliance for Home Health Quality and Innovation, May, 2008  
[http://www.ahhqi.org/download/File/The\\_Future\\_of\\_Home\\_Health\\_Care.pdf](http://www.ahhqi.org/download/File/The_Future_of_Home_Health_Care.pdf)

<sup>10</sup> [Drugstores: What the Future Holds, Consumer Reports June, 2008](#)

<sup>11</sup> <http://www.ihealthbeat.org/articles/2008/8/22/Report-Online-Doctor-Visits-Can-Boost-Access-Concerns-Remain.aspx?topicID=57>

<sup>12</sup> For example, despite having similar patient populations to Medicare, only about half of state Medicaid programs currently reimburse for telemedicine (ICHIP, 2005).

<sup>13</sup> Case Report, Care Coordination/Home Telehealth: The Systematic Implementation of Health Informatics, Home Telehealth, and Disease Management to Support the Care of Veteran Patients with Chronic Conditions, Darkins, Ryan, Kobb, Foster et al, Revised February, 2008 The study included use of videophones,, messaging devices, biometric devices, digital cameras, and telemonitoring devices.

<sup>14</sup> <http://www.aafp.org/fpm/20071000/20virt.html>.

<sup>15</sup> <http://www.healthnewsdirect.com/?p=61>

<sup>16</sup> <http://www.ama-assn.org/amednews/>



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<sup>17</sup> Finkeelstein J., Cabrera, M.R., Hripcsak, G. "Internet-based home asthma telemonitoring: Can patients handle the technology?" *Chest* 2007;117(1): 148-155.

<sup>18</sup> Aetna and Cigna are now reimbursing for 'e-visits'.  
<http://wcbstv.com/local/online.doctor.visits.2.689285.html>

<sup>19</sup> Kaiser Permanente surveyed 4560 seniors about their comfort using computers, Internet use habits, health status, including prescriptions and chronic conditions. [Kaiser Permanente Survey, July 2009](#)

<sup>20</sup> Healthy @ Home Using Technology to Remain Independent. Linda L. Barrett, Ph.D Washington, D.C.: AARP Foundation, 2008

<sup>21</sup> Healthy @ Home Using Technology to Remain Independent. Linda L. Barrett, Ph.D Washington, D.C.: AARP Foundation, 2008

<sup>22</sup> Datamonitor estimated in 2007 that the home telehealth Worldwide \$8 market billion by 2012;  
<http://www.healthcareitnews.com/news/global-telehealth-market-will-expand-report-claims>

<sup>23</sup> Wall Street Journal, July 15, 2009, <http://online.wsj.com/article/BT-CO-20090715-716701.html>

<sup>24</sup> New England Healthcare Institute, <http://bit.ly/b6jGJ>

<sup>25</sup> Health Care Without the Doctor, How New Devices and Technologies Aid Clinicians and Consumers, Mary Kate Scott, California HealthCare Foundation, 2008

<sup>26</sup> The CDC and NIH survey of 23,000 American adults revealed \$34 billion per year is spent on alternative therapies that are not covered by insurance, including acupuncture, herbs, and yoga, up 25% from last year.  
[http://www.usatoday.com/printedition/news/20090731/a\\_cam31\\_st.art.htm](http://www.usatoday.com/printedition/news/20090731/a_cam31_st.art.htm)

<sup>27</sup> Customers Delay Healthcare Due to Economic Woes, Elizabeth Boehm, Forrester Research, March 25, 2009, <http://www.forrester.com/Research/Document/0.7211.53887.00.html>

<sup>28</sup> <http://www.modernmedicine.com/modernmedicine/article/articleDetail.jsp?id=446466>

<sup>29</sup> [http://www.aafp.org/online/etc/medialib/aafp\\_org/documents/press/pcmh-summit/pcmh-pilot-demonstration-report.Par.0001.File.tmp/PilotReportFINAL.pdf](http://www.aafp.org/online/etc/medialib/aafp_org/documents/press/pcmh-summit/pcmh-pilot-demonstration-report.Par.0001.File.tmp/PilotReportFINAL.pdf)

<sup>30</sup> Patient-centered medical home principles as adopted by the American Academy of Family Physicians.  
<http://www.aafp.org/online/en/home/membership/initiatives/pcmh.html>

<sup>31</sup> <http://www.ccrstandard.com/learnabouttheccrstandard>