



Health Evolution Partners' Outlook

Remote Care Management Services
Investment Value Limited by Slow Adoption

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Health Evolution Partners' Point of View

Like other areas of health services innovation where information technology can substitute effectively for labor, remote care management is an extremely promising opportunity for improved patient care, purchaser value and investment success. However, neither physician managed nor physician independent remote care management will attract substantial investment capital until adoption rates increase in a significant and sustainable manner.

Remote care management services that are physician managed will remain underutilized until significant changes in physician payment occur. Remote care management services that do not rely directly on physician management will see more rapid uptake, but will need to be price sensitive for consumers while demonstrating consistent return on investment for sponsoring agents. One or more trigger events, such as new payment approaches or state-level reform, can catalyze rapid market growth. The new 30-day readmissions policy from CMS may be one such trigger.

As highlighted in the final report of the American Health Information Community (AHIC) Chronic Care Workgroup:

“Approximately 50-60 million Americans live stably with at least one chronic condition -- most have more than one. This 20% of the US population with stable chronic conditions manage a good part of their care themselves while monitoring diets, controlling weight, checking blood sugars, adjusting blood thinners, titrating asthma medications, etc.”ⁱ

Given the fragmented nature of healthcare financing and delivery, and the emphasis of payment for services delivered in a physical setting, it is no wonder that most individuals

with chronic conditions receive suboptimal care, characterized by errors of omission and commission, as well as significant redundancy, excess cost and inconvenience. Not surprisingly, inefficiency and poor quality disproportionately affect the elderly, given their higher burden of illness and the challenges of living independently.

A recent Institute of Medicine (IOM) report, “Retooling for an Aging America”, highlights more than a dozen ways that quality, cost effectiveness or both can be positively affected through the use of straightforward technology-enabled remote care management services.ⁱⁱ In most circumstances, appropriate and timely care can be provided regardless of the patient’s location, so long as appropriate information is available.

There is no standard definition of remote care management, and the range of remote care management solutions is extensive, including remote vital sign monitoring, communication from implantable medical devices, clinical trend analysis and alerts, medication reminders, secure messaging, two- or multi-way communications, video conferencing, computerized health screening and even wearable sensors and computing. However, at its core, remote care management involves the use of technologies in non-clinical settings (such as the home) to significantly improve the care of patients, often focusing on patients with chronic conditions. By its nature it is disruptive to current patterns of care and can be broadly divided into services that require direct physician involvement and those that do not.

The former include weight and blood pressure management by a physician for a patient with congestive heart failure, and blood sugar management by a physician for diabetic patients. Since the condition is managed by a physician, the adoption of such services is heavily dependent on physician reimbursement or financial incentives over and above current office-based payments. In addition to the technology used by the patient, important components of physician-managed remote care management include disease registries, clinical decision support and, ideally, integration into an electronic health record.

Those remote care management services that do not require direct physician involvement may include a health coach, disease management nurse or patient self monitoring. In these cases, adoption is not directly related to physician payment and theoretically should be more rapid. However, to date, most payer-led care management interventions have not included remote patient monitoring systems. While both physician dependent and physician-independent forms of remote care management have shown positive benefits compared to traditional care, at least one modeling study has shown that provider-led forms of care management have a significantly greater impact on quality than patient- or payer-led interventions, with integrated patient-provider interventions showing the greatest impact.ⁱⁱⁱ

Despite the promise of all forms of remote care management, the familiar challenges facing innovations that substitute technology for labor make widespread adoption a long-term proposition. Physician-supported remote care management must address provider workflow concerns, medical licensing restrictions, physician liability concerns and most important, the lack of payment. Of all these, the lack of payment for remote care is the single-biggest adoption hurdle and the rate-limiting step for investment suitability.

The most direct and significant event affecting adoption would be statutory change that allows reimbursement for care provided outside of specific, pre-specified locations (physician office, clinic, hospital, etc.) using existing CPT4 coding. To have a substantial impact, these changes should not be limited by current statutory definitions of allowable telehealth services.

Apart from direct CPT4-based reimbursement for remote care, several other payment accelerators exist, especially if broadly implemented (e.g. by CMS), including pay for performance, care coordination, episode of care-grouping payment, shared savings programs and “medical home” models.

Pay-for-use models, rather than licensing fees or equipment purchase programs, can also help accelerate adoption by reducing implementation costs for providers. In addition, adoption by “at risk” systems, such as staff models and the VA system, and nontraditional insurance products that create new incentives to adopt/embrace nontraditional methods of care, play a vital early-adopter role and have been the proving ground for remote care management.

Patient self-monitoring services or services managed by non-physician agents, such as health coaches or nurse care managers, may represent a more rapid adoption process. In many agent models, consumers do not buy the devices or services and support is provided through the agent, including connectivity, if needed.

Agent-led programs will require a clear return on investment, especially given the mixed experience with traditional disease management to date. Services managed by non-physician agents must also address the legal limitations on medical scope of practice. For services directed exclusively at the consumer, price sensitivity is critical as current home monitoring systems may be five to 10 times more expensive than most consumers are willing to pay.

Finally, all services must address the lack of broadband penetration and patient privacy concerns. Fortunately, experience to date suggests these issues are manageable (or overstated), as will be described.

Facts and Findings

A. Healthcare Spending Factors

The costs associated with the number of individuals with chronic disease will eventually drive innovation in care management, including the greater use of remote care management. However, blunt price and utilization management will be the first-order response of payers rather than innovative care delivery and new physician payment models.

Between 2010 and 2050, the projected growth rate in the population 65 and over will be nearly 150%, far and away the fastest growth of any age category. That translates to 70 million people, or one in five Americans over age 65 by 2030.^{iv}

By 2020, a projected 157 million Americans will have one or more chronic conditions, accounting for 80% of health spending or an anticipated \$4.64 trillion^v. Currently, chronic conditions affect 100 million Americans.^{vi}

- Heart disease, cancer and stroke together account for almost 60% of all U.S. deaths^{vii}
- Cardiovascular disease costs exceeded \$400 billion in 2006^{viii}
- Diabetes results in nearly \$132 billion a year in direct and indirect costs^{ix}
- Arthritis results in nearly \$82 billion a year in direct and indirect costs^x
- Total cost of cancer care in the U.S. in 2005 was \$209.9 billion^{xi}
- Total estimated cost of chronic obstructive pulmonary disease in 2002 was \$32.1 billion^{xii}

Driven by this disease burden, per capita healthcare spending for the population over 65 is 3.3 times the spending of working age individuals and falls heavily on Medicare.^{xiii} Medicare spending is 12% of the entire U.S. Federal Budget and is expected to increase nearly 8% every year between 2007 and 2016, much of that to pay for care for those with chronic conditions. Interestingly, the slowest rate of increase in healthcare costs is the over 85 age group -- largely due to successful efforts to avoid transfer to acute care hospitals and to keep seniors in skilled nursing facilities (SNF).^{xiv}

The cost burden of chronic illness impacts consumers directly. For people with health care expenses, the average share of total health care costs paid out-of-pocket was 25-35%^{xv} in 2004. This suggests that consumers, especially aging consumers with high financial exposure, will take an increasing interest in services that provide cost-effective management of their health conditions.

The good news is that remote care management works. In a comprehensive study of telemonitoring published in 2007, Pare' found that monitoring patients with chronic disease produces accurate and reliable data that is accepted by patients and positively affects their behavior, satisfaction and attitudes. Measures of clinical effectiveness also showed improvement.^{xvi}

In addition, as part of the 2008 Institute of Medicine’s report, “Health Care Workforce for an Aging America”, C. Boulton, MD et al. conducted an analysis of 128 articles related to the impact of new health care services on quality, outcomes and efficiency.^{xvii} The study found more than 15 different clinical models of care delivery that demonstrated positive results regarding quality, cost effectiveness or both in controlled trials. Models included community-based care, transition services between sites of care, institutional care and both physician-dependent and physician-independent models, many of which involved forms of remote patient management.

The list below includes both physician-dependent and physician-independent models, and suggests target populations (such as CHF patients) or target processes (such as geriatric evaluation and management) that are most likely to support sustainable interventions.

Clinical Model	Positive Impact Demonstrated	Diffusion Potential
Interdisciplinary primary care (multiple models, conditions)	Quality and efficiency	More (3 of 8)
Care management for CHF	Quality and efficiency	More
Preventive home visits by nurses	Quality and efficiency	Less
Outpatient geriatric evaluation and management (GEM)	Quality and efficiency	Less
Pharmaceutical care	Quality	More
Chronic disease self management	Quality and efficiency	More
Caregiver education and support	Quality and efficiency	More
Proactive rehabilitation	Quality	More
Transitional care	Quality and efficiency	More
Hospital at home	Quality and efficiency	Less
NP-MD dyads in nursing homes	Quality and efficiency	More
Acute care for elders in hospitals	Quality	Less

B. Physician Attitudes and Preferences

Physicians are not likely to adopt or champion remote patient care management until payment patterns change significantly. Workflow disruption is another major hurdle.

Physician attitudes toward remote care management are highly influenced by payment and workflow considerations. Consumers want their physicians to use information technologies to better manage care, but less than half of physicians communicate with patients

electronically.^{xviii} In part this is because the financial disincentive of substituting a “free” or modestly reimbursed virtual interaction for an office visit charge can be significant. The decline in office visits, one of the advantages for patients with remote care management, can be as high as 10%.^{xix}

At the same time, even current reimbursement levels are being challenged. It is predicted that cumulative reductions in Medicare physician payment rates will be about 40% over the next 10 years and will occur without new legislation, suggesting that capital for new care delivery models for the typical office will likely shrink, not increase. Current federal physician incentives for health IT adoption are focused on electronic prescribing, not care management. These conditions are likely to enable alternative, non-physician-based models, including home health care agencies as providers of chronic care management, retail clinic-based chronic care management and employer-based care systems.

In addition to reimbursement issues, workflow changes and access to data for meaningful physician-patient interactions are challenging, especially for small practices. According to one study, less than 35% of small physician offices are involved in any workflow redesign efforts, and only 10% can generate quality of care data.^{xx} Just as challenging, physician offices that have implemented health IT have yet to see benefits in patient quality compared to those that haven't.^{xxi}

Another challenge is that many patients, both young and old, do not have stable primary care relationships. In a recent study of patients visiting retail clinics, 60% stated they had no existing primary physician. Demographically, this group was much younger (18-44 years) when compared to those using a primary care provider.^{xxii}

On the other end of the age spectrum, seniors with chronic conditions switch primary care physicians frequently. Only 35% of Medicare beneficiaries' visits each year are with their assigned physician, based on claims history. For 33% of the beneficiaries, the assigned physician changed over a two-year period. Twenty-one percent of beneficiaries could not be assigned at all. On average, beneficiaries saw two primary care and five specialists per year.^{xxiii}

There are signs of improvement, however. More physicians are communicating online with patients. The concept of the “Advanced Medical Home”, developed by primary care societies, has raised awareness about physician willingness to embrace new care delivery models, especially for those with chronic conditions. As of June 2008, there were a total of 108 bills introduced in 26 state legislatures and the District of Columbia that mention the “medical home”. Twenty bills in 10 states reflect an attempt to define the concept.^{xxiv}

Most important, while patients who communicate regularly with their physician show significant reductions in blood pressure, lipid levels and cardiovascular disease scores, they do even better when Internet communication is added to regular office visits.^{xxv} Given the cost and organizational challenges of implementing the full medical home model in smaller physician offices, larger organizations will likely need to sponsor implementation -- and seem to be better positioned to do so.^{xxvi}

C. Consumer Attitudes and Preferences

Consumers, either directly or through non-physician agents, will help drive adoption of remote care management services. However, costs, lack of awareness, price sensitivity, privacy concerns and lack of connectivity are key hurdles.

Currently, 88% of consumers say they would be interested in home devices if they developed a condition that required monitoring. Use of home devices correlates highly with age and health status, and seniors are even more interested than the general population. They are highly educated, have unprecedented resources (controlling nearly 50% of the nation's discretionary income) and have higher expectations, especially of access to quality care.

Despite limited awareness of specific technologies, the senior population likes the potential for in-home monitoring devices as part of better care management: 60% would use personal emergency response systems, 47% would use telephone-based health monitoring, 40% would use electronic pill boxes, and 40% would use Web-based monitoring to communicate with their physicians. Further, 75% support a specialist's use of telemedicine to diagnose or monitor a heart condition.^{xxvii}

Seniors also like the idea of remote care management because of the potential convenience of reporting results to their physicians (69%), the ability to help in adjusting medications (67%) and avoiding trips to the physician office (75%).^{xxviii} It has been estimated that over \$1.5 billion could be saved simply by using remote care management services to avoid patient transport.^{xxix}

Non-physician caregivers also say that they would be willing to use new technologies; however, more than eight in 10 think they will have difficulty persuading patients to use these services.^{xxx}

Consumer use of these services is enhanced when the provider system is appropriately identifying candidates; "prescribing" the intervention; supporting it with placement in the home, ongoing communications and troubleshooting; and finally, when organizational incentives for administrators and clinicians are present.

Despite this level of enthusiasm for in-home care management, 81% of seniors are concerned that such technologies would cost too much, with 84% saying they would be willing to pay only \$50 or less to use them. Nearly 80% would expect customer service representatives to be available 24/7.^{xxxi}

Finally, consumers also have concerns about privacy and security of confidential health information, but these concerns have decreased significantly over the last several years.^{xxxii}

D. Regulatory and Payer Factors

Government payers are not taking significant steps toward promoting adoption and payment of remote care management, although many commercial payers are implementing programs that use patient monitoring with non-physician coaches and caregivers.

While several leaders in the U.S. Department of Health and Human Services have verbally supported remote care management, CMS has changed little with regard to payment policies. Currently, less than 1% of Medicare's budget is spent on initiatives related to technology-enabled care management.

While many individual studies have suggested positive benefits of telehealth and telemedicine, the overall evidence is still considered indeterminate by government-sponsored groups such as the American Health Information Community.^{xxxiii} Efforts such as the Medicare Health Support Pilot Program, implemented as a demonstration project, have had mixed results and CMS has delayed action on expanding the program. Recommendations for secure messaging and remote patient monitoring from the American Health Information Community's Chronic Care Workgroup have not led to any changes in payment policies.^{xxxiv}

While there are many forms of payment, reimbursement for services provided is by far the dominant form of physician payment, with CMS reimbursement the single largest source. Because reimbursement coding guidelines followed by Medicare and many commercial health plans still require a physician and patient to be physically in the same location for evaluation and management services to be reimbursed, remote care management is largely still considered a form of telehealth, rather than an extension of office-based evaluation and management. As such, reimbursement is restricted to rural and underserved metropolitan service areas.

Unfortunately, most commercial payers follow CMS payment patterns and definitions, including those pertaining to telehealth regulations, which effectively exclude broad payment for remote care management.

Medical licensure issues preventing physicians from practicing across state borders further limit efforts to expand remote care management. Currently, the agents best positioned for promotion of remote care services are home care agencies, which are the only entities currently capable of managing services in the home and community. Of those, the ones most likely to drive adoption are quasi-capitated and therefore see direct financial advantage in use of the remote technologies.

There are some hopeful developments, however. Recent federal legislation created new payment rules for secure messaging immediately following hospitalization, and Medicare Part D legislation included new category III reimbursement codes (temporary codes for emerging services) for medication therapy management (MTM). These codes allow pharmacists to be reimbursed for consultation services, including medication and disease

management, and have since been made permanent. In addition, the Medicare Medical Home Demonstration Project of 2006 creates a mechanism for testing the concept of remote care management in the home and requires participating physicians to use health information technology. Perhaps the most important recent event is CMS' decision not to reimburse for 30-day readmissions for the same diagnosis beginning in 2009. This has left many care delivery organizations seeking strategies to improve care transition performance.

Several CMS demonstration projects have highlighted the value of gain-sharing arrangements based on patient improvement and total payer spending reductions. Nearly all current CMS demonstration projects and pilots are constructed with gain-sharing components, and several of these demonstration projects highlight provider decisions to use remote care management to help them meet pre-set performance targets.

Potentially as important as Medicare are the roles that private health plans and states play in driving new care delivery models. The state of Minnesota, for example, recently enacted legislation that not only mandates electronic prescribing by 2011, but also will require incremental reimbursement for physician care coordination, a cornerstone of patient self management and the medical home model.

The rate at which payers and disease management organizations incorporate remote patient monitoring into care management processes will be an important bellwether of market growth. Ultimately, payer adoption will be a proxy for employer willingness to invest in sustainable population health management as a core business strategy, since employers are carrying the most significant long-term risk for the health of their beneficiary population.

Employers are moving in this direction. In a 2007 Hewitt Associates survey of 448 executives, the most innovative organizations plan to become more involved in the health of their employees and view a present and productive workforce as a critical business advantage. "Involvement" specifically emphasizes care management strategies. In the Hewitt survey, 87% of responders were currently using or adopting data analysis to determine chronic conditions in their population, and the heaviest interventional focus was on chronic condition management versus health and wellness or productivity.^{xxxv}

The key success factor will be whether "progressive" purchasers (including CMS) insist on programs that include remote patient monitoring in support of care management. With remote services, value will be optimized. Without them, the value and return on investment for disease management will be constrained since the most significant gains will be achieved by displacing expensive physician and nurse time with remote management technologies.

E. Technology Factors

Slow broadband adoption and lack of medical device interoperability theoretically limit the rate of adoption of remote care management services, but these hurdles may be overstated in actual practice. Services that rely on existing home-based communication technologies such as the phone and television -- or “translate” information from current, non-interoperable medical monitoring devices -- may see earlier adoption.

Great technology strides in remote care management have occurred, including improved end-user interfaces and increasing use of consumer-friendly endpoints such as the cell phone or television. However, there is still continued slow adoption of home broadband. The U.S. now ranks in the middle of the pack among developed countries in broadband adoption, with penetration only 42%.^{xxxvi} Nevertheless, remote care management experience in the VA and CMS demonstration projects suggests that broadband penetration need not be a major limitation for most patients, as simple dial-up is sufficient. For moderately high-cost/high-risk cases, however, installing broadband has been cost effective.

Lack of home medical device interoperability, currently being addressed by coalitions like the Continua Health Alliance, is another potential hurdle, especially for patients requiring more than one medical device (e.g., a scale and a blood pressure cuff). An emerging trend addressing this issue is care technologies based on devices that allow multiple, non-communicating devices to use a single, simple user-interface device.

While transmission issues get most of the attention, the critical technology issue for remote care management is not the underlying platform for transmitting clinical data, but the interface between remote monitoring technologies and electronic health records where the clinical information needs to be stored.

Outlook and Insights

The present mismatch between patient value and physician reimbursement patterns is a substantial hurdle in the path of more rapid adoption of remote care management. While the barriers to adoption of physician-independent remote care management are lower, consumers likely will not lead the uptake of these services unless they are accompanied by robust support and minimal cost, and sponsoring agents will need to see compelling return on investment performance.

The actions recommended below, taken together, will maximize adoption of physician-supported remote care management and physician independent remote care management services, creating the best environment for successful investing. Individually, these recommendations define important priorities and assessment criteria for each sector.

Implications for Policy Makers

- Drive statutory changes that allow reimbursement for care provided outside of specific, pre-specified locations (physician office, clinic, hospital, etc.), using CPT4 coding.
- Drive statutory changes to licensing/scope of practice to allow care to be provided – in-person or virtually – by all qualified providers (address stringent scope of practice rules that limit ability of qualified lower-cost providers).
- Ensure that reimbursement is attached to continuing use, rather than solely to initial purchase and installation, of remote care management systems.
- Apply a broader definition of telehealth services, which includes remote monitoring, secure messaging, patient education programs, store and forward and HIT-supported direct care, in any statutory activity. In particular, do not limit reimbursement to current federal statutory definitions of what constitutes allowable telehealth services.
- While supporting reimbursement changes, also promote alternative payment models that require remote care management, including pay for performance, care coordination, episode of care grouping and shared savings models.
- Encourage home care agencies, retail clinics and worksite health clinics to offer remote care management services.
- Focus on reducing concerns about privacy and security for patients receiving remote care.

Implications for Payers

- Promote reimbursement for care provided outside of specific, pre-specified locations (physician office, clinic, hospital, etc.), using CPT4 coding. In particular, this reimbursement cannot be limited by current statutory definitions of what constitutes allowable telehealth services.

- Ensure that reimbursement is attached to continuing use, rather than solely to initial purchase and installation, of care management systems.
- While implementing reimbursement changes, also promote alternative payment models that require remote care management, including pay for performance, care coordination, episode-of-care grouping and shared-savings models.
- Promote awareness of current remote care management services among patients and clinicians most likely to benefit from their use.
- Consider proven models that can be delivered without requiring physician payment.
- Minimize/eliminate consumer costs for the use of remote care, including any equipment, set-up and maintenance fees.
- Implement remote care management services as a complement, or even a substitute, for current disease management approaches.
- Package remote care management services with the “value-added” services consumers say they want the most, including appointment scheduling, access to lab results, prescription refills and communicating directly with their physician.

Implications for Clinicians and other Care Delivery Organizations

- Physicians and other community providers should focus adoption on proven models of innovative care delivery at an acceptable price point to consumers, and should demonstrate the replicability/scalability of workflow changes.
- Package remote care management services with the “value-added” services consumers say they want the most, including appointment scheduling, access to lab results, prescription refills and communicating directly with their physician.
- Hospitals should drive adoption of new remote care services that address non-reimbursement for post discharge, re-admission, complications and “never events”.
- While supporting reimbursement changes, also negotiate alternative payment models that require remote care management, including pay for performance, care coordination, episode-of-care grouping and shared-savings models.

Implications for Entrepreneurs

- Develop services that focus adoption and diffusion on proven models of innovative care delivery. For direct-to-consumer solutions, offer acceptable price points to consumers.
- Demonstrate the replicability/scalability of physician workflow changes involved in adopting proven models.
- Differentiate between physician-dependent and physician-independent services, developing unique sales strategies for each. Ensure any consumer-facing strategies incorporate appropriate price points. In addition, segment employers who wish to drive condition management directly versus those who wish to rely on their health plan or disease management vendors.
- Develop business models based on subscription fees or pay for use, combined with ongoing technical support and free device provision.

- Focus on the self-funded employers who already prioritize total population health and wellness, have an existing group with chronic disease and have direct control of benefit design who will be early adopters. This likely will occur in midsize employers as much or more than large employers, given their more immediate cost issues.
- Leverage alternate care providers, including home health agencies, pharmacists, nurse practitioners, specialty clinics and alternate care settings, such as employer onsite clinics and retail clinics.
- When feasible, package remote care services with the “value-added” services consumers say they want the most, including appointment scheduling, access to lab results, prescription refills and communicating directly with their physician.
- Target initial adoption to states and commercial payers already committed to reimbursement and to large multi-hospital systems intent on driving down readmissions and unprofitable emergency departments and hospital admissions.

Implications for Investors

- Limit investment to companies that focus adoption and diffusion on proven models of innovative care delivery. For direct-to-consumer solutions, offer acceptable price point to consumers.
- Differentiate between physician-dependent and physician-independent services, developing unique sales strategies for each. For physician dependent services, be prepared for a long adoption cycle and significant policy support related to reimbursement, interstate practice of medicine, patient privacy and physician liability
- Expect pay for using pricing models and demonstration of the ability to replicate and scale the implementation. Ensure that the business model bundles ongoing technical support and minimizes/eliminates the end-user device cost to providers and consumers.
- Ensure investments target states and/or purchasers that have already committed to reimbursement for remote care.
- Focus initially on companies that emphasize simple, inexpensive devices that support independent living as much as clinical self management. Technologies that leverage regular phones and televisions as portals may be adopted more easily than Web-based or cell-phone based options.

Physician dependent and independent remote care management services require conditions that value and reward care management in the first place. For patient care to improve, it will take technology, payment changes and care management workflow designs to be implemented together, with the explicit objective of better patient care.^{xxxvii}

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End Notes

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Note: briefing author is a CCWG member
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