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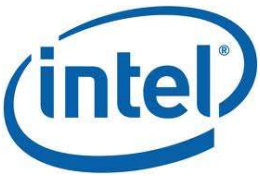
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TIA
ADVANCING GLOBAL COMMUNICATIONS


WelchAllyn

Submitted via http://www.regulations.gov

November 17, 2015

Centers for Medicare & Medicaid Services
Department of Health and Human Services
Attention: CMS-3321-NC
Mail Stop C4-26-05
7500 Security Boulevard
Baltimore, MD 21244-1850

RE: Request for Information Regarding Implementation of the Merit-based Incentive Payment System, Promotion of Alternative Payment Models, and Incentive Payments for Participation in Eligible Alternative Payment Models (CMS-3321-NC)

Dear Acting Administrator Slavitt:

The undersigned organizations appreciate the opportunity to provide input to the Center for Medicare and Medicaid Services' (CMS) in response to its public consultation related to new provisions in the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA),[1] including the Merit-based Incentive Payment System (MIPS), Alternative Payment Models (APMs), and a physician-focused payment model.[2] Specifically, in its consultation, CMS requests input on the potential barriers to successfully meeting the MIPS quality performance category.[3] This is a threshold question that guided our analysis and recommendations below.

We represent an established – and growing – coalition of diverse stakeholders spanning the healthcare and technology communities which hold that telehealth and remote patient monitoring (RPM) solutions improve patient care, reduce readmissions, and improve care coordination. In the context of telehealth, outdated regulations have restricted its use and have long been a hindrance to progress in this space. As notable examples, Section 1834(m) of the Social Security Act has resulted in significant restrictions on telehealth services;[4] further, remote patient monitoring, independent of telehealth services, is unreasonably restrained by CMS' decision to bundle it with other codes, resulting in a lack of reimbursement for remote patient monitoring. We strongly agree that statutory and regulatory restrictions have limited the range

1 42 U.S.C. 1305.

2 *See* 80 Fed. Reg. 59,106 (Oct. 1, 2015) (RFI).

3 RFI at 13.

4 *See* 42 CFR § 410.78.

of telehealth and RPM technologies that may be offered to American patients and have long been a deterrent to advancement and adoption. For example, Medicare coverage for telehealth is shockingly lacking,[5] while support for RPM is non-existent and denies reasonable reimbursement for the monitoring of patient-generated health data (PGHD).

Despite these over-burdensome restrictions, remote monitoring of PGHD is increasingly being proven as an important aspect of any healthcare system. The known benefits of remote patient monitoring services include improved care, reduced hospitalizations, avoidance of complications and improved satisfaction, particularly for the chronically ill.[6] A vivid example of the use of virtual chronic care management is by the Department of Veterans Affairs who reported a substantial decrease in hospital and emergency room use.[7] Telemedicine tools, wireless communication systems, portable monitors, and cloud-based patient portals that provide access to health records are all up-and-coming technologies that are revolutionizing remote patient monitoring (including asynchronous technologies) and the medical care industry, representing a significant opportunity.[8] There is also a growing body of potential cost savings, noted most recently by a study predicting that remote monitoring will result in savings of $36 billion globally by 2018, with North America accounting for 75% of those savings.[9] RPM has the potential to positively engage patients when addressing chronic and persistent disease states to improve management of chronic conditions. The Hackensack Alliance in New Jersey reduced readmission rates from 28% to 5% for congestive heart failure patients.[10] Christus Health reduced the average cost for congestive heart failure readmissions from $12,937 compared to $1,231 per re-admission after implementing a remote patient monitoring system.[11] Further, we have appended to this letter a non-exclusive list of studies demonstrating the value of telehealth and RPM to patients with chronic conditions. A well-established, and ever-growing, body of clinical evidence suggests that interoperable remote monitoring improves care, reduces hospitalizations, helps avoid

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[5] For example, according to the Centers for Medicare & Medicaid Services (CMS), Medicare telemedicine reimbursement totaled a mere $13.9 million in Calendar Year 2014. *See* http://ctel.org/2015/05/cms-medicarereimburses-nearly-14-million-for-telemedicine-in-2014/.

[6] *See* Hindricks, et al., The Lancet, Volume 384, Issue 9943, Pages 583 - 590, 16 August 2014 doi:10.1016/S0140-6736(14)61176-4. *See also* U.S. Agency for Healthcare Research and Quality ("AHRQ") Service Delivery Innovation Profile, Care Coordinators Remotely Monitor Chronically Ill Veterans via Messaging Device, Leading to Lower Inpatient Utilization and Costs (last updated Feb. 6, 2013), *available at* http://www.innovations.ahrq.gov/content.aspx?id=3006.

[7] *See* Darkins, Telehealth Services in the United States Department of Veterans Affairs (VA), *available at* http://c.ymcdn.com/sites/www.hisa.org.au/resource/resmgr/telehealth2014/Adam-Darkins.pdf.

[8] *See* Kalorama Information, *Advanced Remote Patient Monitoring Systems*, 8th Edition (2015), *available at* http://www.kaloramainformation.com/redirect.asp?progid=87656&productid=9123949.

[9] *See* Juniper Research, *Mobile Health & Fitness: Monitoring, App-enabled Devices & Cost Savings 2013-2018* (rel. Jul. 17, 2013), *available at* http://www.juniperresearch.com/reports/mobile_health_fitness.

[10] Use Case Study: Hackensack Alliance ACO - Remote Patient Monitoring for Chronic Disease. HIMSS. 2014

[11] Use Case Study: Christus Health –Remote Patient Monitoring Solution, St. Michael Health System Expansion Program. HIMSS 2015 (demonstrating a return on investment of $9.91 per $1.00 invested in RPM and reduced costs over time).

complications, and improves satisfaction, particularly for the chronically ill.[12] We urge CMS (and other Federal actors) to utilize every opportunity to work towards a connected healthcare system by removing such barriers to the utilization of advanced technologies.

Based on the above, we believe that the implementation of MACRA presents an enormous opportunity for CMS to take meaningful steps to improve millions of American lives through the use of RPM in subsidized medicine consistent with the following recommendations:

I. CMS Should Provide a Bridge to the Full Implementation of MACRA Through the Use of Existing Waiver Authority

Whether a provider takes the route of MIPS or of an APM, and while the MACRA's 2019 implementation will bring greater support of telehealth and remote patient monitoring, we believe that a lack of adequate initial support in the ensuing years for telehealth and RPM will result in a weak foundation for providers leading up to full implementation. With limited coverage of telehealth services and no coverage for evidence-based RPM and a lack of incentive onramps by CMS, there is little motivation for providers to invest in such advances.

CMS is well-positioned to take tangible steps to address this transition in the short-term by modernizing the Physician Fee Schedule. Regarding telehealth, we recommend that the Secretary waive the arduous restrictions in section 1834(m). Further, CMS should, using its existing authority, provide adequate reimbursement for collection and interpretation of physiologic data stored/transmitted by patient/caregiver by "unbundling" relevant CPT codes.[13] Such a practice would align with CMS' established approach to chronic care management in CPT 99490, where, because the challenges of preventing and managing chronic disease caused "the focus of primary care [to evolve] from an episodic treatment-based orientation to a focus on comprehensive patient-centered care management," CMS found that the reimbursement for chronic care management that had historically been included in evaluation and management (E/M) codes was insufficient; as a result, CMS concluded that chronic care management should be separately reimbursed, and noted its anticipation that increased reimbursement for chronic care management (CCM) will be more than offset by the corresponding reduction in more costly services.

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[12] *See, e.g.*, U.S. Agency for Healthcare Research and Quality (AHRQ) Service Delivery Innovation Profile, Care *Coordinators Remotely Monitor Chronically Ill Veterans via Messaging Device, Leading to Lower Inpatient Utilization and Costs* (last updated Feb. 6, 2013), *available at* http://www.innovations.ahrq.gov/content.aspx?id=3006. *See also* an appended list of studies

[13] Medicare considers CPT Code 99091 ("Physician/health care professional collection and interpretation of physiologic data stored/transmitted by patient/caregiver") as "bundled" into payment for other basic services (e.g., an office visit provided the same day or other services incident to the service provided) and therefore does not currently make separate payment for 99091.

II. CMS Should Include Provisions for Telehealth and Remote Patient Monitoring as Part of MIPS Clinical Practice Improvement Activities

By including clinical practice improvement activities as one of the four domains included in the composite performance score under MIPS, Congress has signaled the importance it places on supporting providers through the transition from volume- to value-based reimbursement. The importance of assisted transitions (*e.g.*, fee-for-service payments that reward practice transformation) should be fully appreciated, and we ask CMS to ease the administrative burden associated with fee-for-service care management and provide adequate reimbursement for those services. In addition, we support the inclusion of integrated use of telehealth and remote patient monitoring in providing direct patient care as part of any clinical practice improvement activities, most notably those identified by Congress in MACRA. Furthermore, CMS, through MIPS, should permit Medicare Advantage (MA) health plans to elect to use telehealth and remote patient monitoring services as a basic benefit of service.

We appreciate CMS' request for input on the components that should comprise clinical practice improvement activities for the implementation of MIPS. Initially, we urge for CMS to ensure that its approach focuses on outcomes, rather than giving too much weight to quantitative measures (*e.g.*, hours spent). Further, we suggest that CMS ensure robust inclusion of evidence based consumer-oriented technologies used to monitor patients with chronic disease, care coordination, patient education, health coaching, and patient engagement. Specifically, we urge CMS to provide a menu of remote patient monitoring or consumer oriented information technology categories that primary care and specialties would use for care improvement, which include:

- Screening of patients with chronic conditions to determine if remote patient monitoring would provide benefit. Stratifying risk through data analytics should be used to identify patients most likely to benefit from RPM;
- Use of remote patient monitoring of biometric data for chronic condition management when screening determines it would be effective;
- Technology enabled health education based on condition management;
- Technology enabled communication for health coaching and health education; and,
- Electronic communication between clinical staff and patient to support chronic conditions management.

III. CMS Should Include 'Remote Monitoring of Patient-Generated Health Data' as an Additional Subcategory of MIPS Clinical Practice Improvement Activities

MACRA lists six subcategories of clinical practice improvement activities that contribute to the MIPS composite score: (1) Expanded practice access, (2) population management, (3) care coordination, "including use of remote monitoring or telehealth" (emphasis added), (4) beneficiary engagement, (5) patient safety and practice assessment, and (6) participation in an alternative payment model.[14] In defining the scope of the MIPS clinical practice improvement activity category, CMS should include one or more additional subcategories of clinical practice improvement activities beyond the six identified in the statute, but only if "relevant eligible professional organizations and other relevant stakeholders identify [the additional subcategory] as improving clinical practice or care delivery and that the Secretary determines, when effectively executed, is likely to result in improved outcomes." [15] Based on the above-noted benefits associated with the integration of remote monitoring of PGHD into clinical practices, we strongly urge CMS to include *remote monitoring of patient-generated health data* as an additional subcategory of clinical practice improvement activities.

First, we urge CMS to ensure that the definition of PGHD contemplates advances in electronic remote monitoring technology which will allow for physiological data to be captured, transmitted, and evaluated in near real-time by clinicians who can respond immediately with clinically-guided support such as changes in treatment, medications, and lifestyle.[16] We encourage CMS to share our vision of a continuum of care where this PGHD then can be automatically uploaded by patients and downloaded and stored into providers' networks or electronic health records where the data can be further used to identify trends and to modify the care plan, if necessary.

We recognize that irrespective of a strong evidence base reflecting the positive impact of remote monitoring of PGHD on the quality and cost of care, the new clinical practice improvement activity we propose must be objectively quantifiable to qualify as a subcategory for MIPS.

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[14] MACRA Section 101(c)(2)(B)(iii)(III).

[15] 42 USC 1395w-4(q)(2)(C)(v).

[16] M. Shapiro, D. Johnston, J. Wald, and D. Mon, *Patient-Generated Health Data: White Paper Prepared for the Office of the National Coordinator for Health IT by RTI International* (April 2012) (available at http://www.rti.org/pubs/patientgeneratedhealthdata.pdf) (cited in M. Deering, *Office of National Coordinator for Health Information Technology Issue Brief: Patient-Generated Health Data and Health IT* (December 2013) (available at https://www.healthit.gov/sites/default/files/pghd_brief_final122013.pdf)), defining PGHD as:

> …health-related data—including health history, symptoms, biometric data, treatment history, lifestyle choices, and other information—created, recorded, gathered, or inferred by or from patients or their designees (i.e., care partners or those who assist them) to help address a health concern. PGHD are distinct from data generated in clinical settings and through encounters with providers in two important ways. First, patients, not providers, are primarily responsible for capturing or recording these data. Second, patients direct the sharing or distributing of these data to health care providers and other stakeholders.

Therefore, we propose that in order to determine whether an eligible professional (EP) is adequately engaging in the clinical practice improvement activity of remote monitoring of PGHD (counting towards a MIPS composite score), CMS use a variation on the PGHD measure in the Meaningful Use Stage 3 Final Rule.[17]

To satisfy these Stage 3 Rule requirements, an EP must, among other requirements, meet two of the three measures listed under *Objective 6 – Coordination of Care Through Patient Engagement*. One of the three measures concerns incorporation of PGHD or data from a nonclinical setting into the EP's electronic health record (EHR), with the denominator set as the number of unique patients seen by the EP and the numerator set as the number of patients in the denominator for whom such data is captured in the EHR during the reporting period. To satisfy this measure, the resulting percentage must be equal to or greater than five percent (5%).

For purposes of the remote monitoring of PGHD subcategory of clinical practice improvement activities that we propose, CMS should make specific modifications to this measure to focus on the EP's use of PGHD for clinical decision-making. Such modifications may include, for example, limiting the denominator to Medicare beneficiaries and/or patients with specific chronic conditions, limiting the numerator to PGHD (*i.e.*, not including data from non-clinical settings), or increasing the threshold percentage. In addition to this objective measure, CMS should require a written certification from the EP regarding their use of remote monitoring of PGHD to facilitate clinical decision-making and care coordination.

IV. Telehealth and Remote Patient Monitoring Restrictions Should be Waived for All APMs

We also support Congress' goal of realizing innovative APMs, and continue to work across our diverse interests (*e.g.*, medical specialties) towards eligible alternatives to MIPS. However, at a minimum, we strongly believes that APMs must effect the utilization of telehealth and RPM in a significantly expanded way, which promotes patient engagement, consistent with the above detailed views and discussion. Even today, we are very concerned with the lack of utilization of telehealth and RPM by CMMI in the Medicare Shared Savings Program.

a. The Treatment of Telehealth in APMs

Expanding the use of telehealth services and modern technologies will be an important step forward in improving Medicare beneficiaries' access to quality and cost effective care delivery systems. There is growing recognition among policy makers at the state and federal level that telehealth and related services are particularly relevant in addressing the consequences of health professional shortages, maldistribution, and provider participation in both private insurance, Medicaid and the Medicare program. Despite decades of efforts to entice health professionals to locate in or near underserved areas, the problems have generally gotten worse. The tools of

[17] *See* 80 Fed. Reg 62,851-52 (Oct. 16, 2015).

telehealth, notably "real-time" and interactive "live video" and "video" visits, can be of immediate benefit to Medicare APMs.

Currently, Medicare is failing its beneficiaries by its very restrictive rules concerning telehealth, such as the following:

- Requiring that a beneficiary with severe depression and other mobility-impairing conditions must leave their home and travel to get mental health counseling,
- Not covering a beneficiary in a metropolitan area for getting a time-critical diagnosis of an ischemic stroke so that disability-preventing clot busting medication can be administered merely because the stroke specialist is at a different location,
- Not covering a beneficiary who meets Medicare's definition of "homebound" from receiving any health care services from a physician using video,
- Requiring that a beneficiary needing physical rehabilitation must be at an inpatient facility or travel to an outpatient facility for all therapy services,
- Not covering a beneficiary receiving hospice services at home from receiving pain management or counseling from a physician using video,
- Not covering a beneficiary at-risk with multiple chronic conditions to have key health indicators monitored daily from their home, and
- Requiring that a beneficiary with diabetes travel to a scarce retinal specialist for an annual diabetic retinopathy exam to prevent blindness.

We have no doubt that paying for telehealth within an APM will increase the net savings from APMs for the Medicare program. Paying for telehealth within an APM will be an important step to advance CMS' goals of achieving quality over quantity. Using telehealth is how APM providers can create "value."

We strongly support allowing APMs flexibility from the Medicare telehealth restrictions in Social Security Act section 1834(m). APMs, with their financial and operational incentives, can be prudent demonstrators of the best uses of telehealth tools. For this reason, we find the current restrictions of 1834(m) particularly inappropriate for such Medicare services. As CMS recently authorized in its Final Rule for Comprehensive Care for Joint Replacement (CJR) Payment Model for Acute Care Hospitals Furnishing Lower Extremity Joint Replacement Services to waive the rural geographic requirement and allow telehealth services to be covered in patients' homes or their place of residence, CMS should go further and extend these waivers to APMs across the board.[18] APMs should be given the same flexibility to cover telehealth as has been the long-standing policy for Medicare Advantage plans. From the perspective of wanting to attract participants in the APM program, being able to offer less restricted telehealth can be a reward

[18] This CMS final rule is currently on Public Inspection in the Federal Register, and scheduled to be published on November 24, 2015. *See* https://www.federalregister.gov/articles/2015/11/24/2015-29438/medicare-program-comprehensive-care-for-joint-replacement-payment-model-for-acute-care-hospitals.

and a competitive advantage. In particular, we support a general waiver from the restrictions of 1834(m) for APMs.

Further, we support applying the same regulatory oversight to telehealth and related services that is required of the other similar components of care coordination and APM operations. The APM design and financial incentive structure encourages and promotes use of enabling technologies that create value to the care delivery system and contains the governance, infrastructure and necessary provider oversight to protect Medicare and beneficiaries from fraud and abuse. It is unnecessary and counter-productive to have special operational and data requirements that single out telehealth services and create burdensome regulatory requirements that will stifle innovation and discourage participation by APMs.

Telehealth services are necessary in a number of circumstances:

- Triaging for faster, appropriate specialist care
- Increasing provider productivity
- Relief for provider shortages
- Reduction in disparities to patient access
- Decreasing unnecessary variations in care
- Reducing in-person overuse, such as in emergency rooms and preventable inpatient admissions

We strongly support a waiver for APMs from the following specific, otherwise artificial Medicare restrictions in section 1834(m), up to any overall Medicare coverage limitations:

- Section 1834(m)(4)(C)(i)(II) to permit an APM to provide health services by video conferencing for Medicare beneficiaries who live in metropolitan counties.
- The last sentence of section 1834(m)(1) to permit an APM to provide and bill for health services provided by store-and-forward means (such as transmission of medical images) to beneficiaries who live outside of an Alaska or Hawaii demonstration site as of December 31, 2000.
- Section 1834(m)(4)(F)(i) to permit an APM to provide additional CPT and HCPCS codes for Medicare covered services provided via telehealth.
- Section 1834(m)(4)(C)(ii) to permit an APM to provide for telehealth services originating from a beneficiary's home, a hospice and anywhere else from which a beneficiary seeks service (without regard to an originating site fee).
- Section 1834(m)(4)(E) to permit a beneficiary in an APM to get otherwise covered Medicare services when furnished by physical therapists, respiratory therapists, occupational therapists, speech-language pathologists, audiologists and other health professionals.

If APMs receive waivers from these five specific Medicare restrictions, particularly originating site and geographic restrictions, they can take the lead in demonstrating the value of telehealth remote patient monitoring and other technologies in innovating care delivery and improving access and efficient delivery of care in both rural and urban settings. The APM quality and performance measures and other participation requirements provide protection against fraud and abuse and Medicare's traditional fee for service utilization controls.

b. The Treatment of Remote Patient Monitoring in APMs

Additionally, an APM should have the flexibility to provide other telehealth services, such as remote patient monitoring for beneficiaries with specific at-risk chronic conditions.

In addition to the statutory benefits enjoyed by qualifying alternative payment model participants, including the initial five percent incentive payment under the PFS, CMS should waive specific payment and program requirements for these participants. Specifically, in order to help providers utilizing APMs to meet statutory requirements to reduce total costs, CMS should exercise its statutory authority under 42 U.S.C. 1315a(d)(1) (in the case of CMMI Models) and 42 U.S.C. 1395jjj(f) (in the case of the Medicare Shared Savings Program) to waive payment and program requirements as appropriate to allow for RPM to be used to improve quality while reducing per capita total costs of care. While CMS has expressed reluctance to do this in the past at least in part because of expected overutilization, those using APMs would not utilize RPM services unless total care costs would be reduced. Therefore, CMS' use of relevant waiver authority to allow payment for RPM – including the unbundling of CPT Code 99091 as noted above – would enable the success of APMs.

We look forward to continued engagement with CMS as this important alternative eligibility criteria is defined, including important aspects such as physician-focused payment models.

V. CMS Should Closely Coordinate with the ONC's Ongoing Effort to Develop a PGHD Policy Framework

Recently, the Office of the National Coordinator for Health IT (ONC) announced that it will develop a policy framework for identifying best practices, gaps and opportunities for the use of PGHD in research and care delivery through 2024. We are supportive of this effort within ONC, and encourage CMS to ensure that it closely coordinates with ONC in the development of this framework. The framework should include key standards and best practices, one example being the Continua Health Alliance's Design Guidelines which define the interfaces that enable the secure flow of medical data among sensors, gateways, and end services, removing ambiguity in underlying healthcare standards and ensuring consistent implementation through product certification. However, based on the established benefits of PGHD's inclusion in the continuum of care as well as timeline realities (*e.g.*, MACRA's 2019 implementation), we strongly urge CMS not to defer any activity related to PGHD. CMS' efforts should run parallel to ONC's policy efforts, particularly as the framework is a living document that can and will change through its anticipated completion in 2024.

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The undersigned urge your consideration of the consensus of the broad community of stakeholders which support the wide use of telehealth and remote monitoring solutions to improve the United States' healthcare system, by promoting value, increasing quality, and reducing costs. We welcome the opportunity to work with you and your designees on such timely actions.

Respectfully submitted,

ACT | The App Association
Alliance for Connected Care
American Association for Respiratory Care (AARC)
American Telemedicine Association (ATA)
Baxter Corporation
Biocom
CHRISTUS Health
Hill-Rom
HIMSS
Intel
LifeWIRE
Panasonic Corporation of North America
Personal Connected Health Alliance (PCHA)
Qualcomm
Qualcomm Life
Telecommunications Industry Association (TIA)
Welch Allyn

APPENDIX A: Key Clinical Studies Demonstrating the Benefits of Remote Access Technologies

CHRONIC CONDITION MANAGEMENT

Adam Darkins: Telehealth and the VA FY2013 Report

In FY2013, **608,900 (11%)** of veterans received some element of their health care via telehealth. This amounted to **1,793,496** telehealth episodes of care. **45%** of these patients lived in rural areas.

Home Telehealth Services: Helps patients with chronic conditions

- Provided care for 144,520 veterans
- 59% reduction in bed days of care
- 35% reduction in hospital readmissions
- Saves $1,999 per annum per patient
- 84% patient satisfaction

Store-and-Forward Telehealth: Remote scanning, then send to specialist

- Served 311,396 veterans
- 95% patient satisfaction
- Saves $38.41 per consultation

Clinical Video Telehealth: Real-time video consultation that covers over 44 specialties

- 94% patient satisfaction
- Saves $34.45 per consultation

TeleMental Health

- Over 278,000 encounters to 91,000 patients
- 1.1 million patient encounters since FY2003
- Reduced bed days of care by 38%
- Nearly 7,500 patients with chronic mental health conditions are now living independently thanks to TeleMental Health

The number of veterans receiving care through telehealth is climbing by **22%** each year.

http://ehrintelligence.com/2014/06/23/va-reduces-admissions-by-35-due-to-telemedicine-services/

http://c.ymcdn.com/sites/www.hisa.org.au/resource/resmgr/telehealth2014/Adam-Darkins.pdf

http://www.va.gov/health/NewsFeatures/2014/June/Connecting-Veterans-with-Telehealth.asp

Veterans Administration: Study Size: Over 17,000 patients.
"Routine analysis of data obtained for quality and performance purposes from a cohort of 17,025 CCHT patients shows the benefits of a 25% reduction in numbers of bed days of care, 19% reduction in numbers of hospital admissions, and mean satisfaction score rating of 86% after enrolment into the program. The cost of CCHT is $1,600 per patient per annum, substantially less than other NIC programs and nursing home care. VHA's experience is that an enterprise-wide home telehealth implementation is an appropriate and cost-effective way of managing chronic care patients in both urban and rural settings." "Care Coordination/Home Telehealth: the systematic implementation of health informatics, home telehealth, and disease management to support the care of veteran patients with chronic condition" [Darkins A, Ryan P, Kobb R, Foster L, Edmonson E, Wakefield B, Lancaster AEs, Telemed J E Health. 2008 Dec;14(10):1118-26. doi: 10.1089/tmj.2008.0021.] http://online.liebertpub.com/doi/pdf/10.1089/tmj.2008.0021

> ***Note:*** this specific area has been supplemented with further data from Darkins, available at: http://c.ymcdn.com/sites/www.hisa.org.au/resource/resmgr/telehealth2014/Adam-Darkins.pdf

Primary Care E-Visit v. Physician Office Visit: Study Size 8,000 Office and E-Visits
From The Washington Post, 1/21/2013: "A new study suggests that "e-visits" to health-care providers for sinus infections and urinary tract infections (UTIs) may be cheaper than in-person office visits and similarly effective." [Ateev Mehrotra, MD; Suzanne Paone, DHA; G. Daniel Martich, MD; Steven M. Albert, PhD; Grant J. Shevchik, MD, JAMA Intern Med. 2013;173(1):72-74. doi: 10.1001/2013. jamainternmed.305] http://archinte.jamanetwork.com/article.aspx?articleid=1392490

Randomized Control Trial of Telehealth and Telecare: Study Size 6,191 patients, 238 GP practices

"The early indications show that if used correctly telehealth can deliver a 15% reduction in A&E visits, a 20% reduction in emergency admissions, a 14% reduction in elective admissions, a 14% reduction in bed days and an 8% reduction in tariff costs. More strikingly they also demonstrate a 45% reduction in mortality rates." [Source: "Whole System Demonstrator Programme, Headline Findings – December 2011", Department of Health, United Kingdom] http://www.telecare.org.uk/sites/default/files/file-directory/secure_annual_reports/Publications/Effect%20of%20Telehealth%20on%20use%20of%20secondary%20care%20and%20mortality%20findings%20from%20the%20WSD%20cluster%20randomised%20trial.pdf

HEART FAILURE MANAGAGEMENT

Remote Patient Monitoring of Heart Failure Patients, Meta analysis: Study Size 4,264 patients

"Remote monitoring programmes reduced rates of admission to hospital for chronic heart failure by 21% (95% confidence interval 11% to 31%) and all cause mortality by 20% (8% to 31%); of the six trials evaluating health related quality of life three reported significant benefits with remote monitoring." [Telemonitoring or structured telephone support programmes for patients with chronic heart failure: systematic review and meta-analysis, Robyn Clark, Sally Inglis, Finlay McAlister, John Cleland, Simon Stewart, MJ (British Medical Journal), doi:10.1136/bmj.39156.536968.55 (published 10 April 2007)]
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1865411/

Remote Patient Monitoring of Heart Failure Patients, Meta analysis: Study Size 6,258/ 2,354 Patients

"RPM convers a significant protective clinical effect in patients with chronic HF compared with usual care." [J Am Coll Cardio: 2009;54:1683-94]
http://content.onlinejacc.org/article.aspx?articleid=1140154

Telehome Monitoring Program: 1,000 Patients Enrolled

"Research at the Heart Institute has shown telehome monitoring at the Heart Institute has cut hospital readmission for heart failure by 54 percent with savings up to $20,000 for each patient safey diverted from an emergency department visit, readmission and hospital stay." [University of Ottawa Heart Institute, Feburary 24, 2011, Press Release]
http://www.heartandlung.org/article/S0147-9563(07)00084-2/fulltext

Remote Patient Monitoring at St. Vincent's Hospital:
"Impact: In less than two years, preliminary results show that the care management program implemented by St. Vincent Health and facilitated by the Guide platform reduced hospital readmissions to 5 percent for patients participating in the program – a 75 percent reduction compared to the control group (20 percent), and to the national average (20 percent)." [St. Vincent's Hospital Reduces Readmissions by 75 percent with a Remote Patient Monitoring-Enabled Program, Case Study by Care Innovations, an Intel GE Company]
http://www.careinnovations.com/data/sites/1/downloads/Guide_product/guide_stvincent_profile.pdf

Program Evaluation of Remote Heart Failure Monitoring: Healthcare Utilization Analysis in a Rural Regional Medical Center:
"HF patients enrolled in this program showed substantial and statistically significant reductions in healthcare utilization during the 6 months following enrollment, and these reductions were significantly greater compared with those who declined to participate but not when compared with a matched cohort…The findings from this project indicate that a remote HF monitoring program can be successfully implemented in a rural, underserved area. Reductions in healthcare utilization were observed among program participants, but reductions were also observed among a matched cohort, illustrating the need for rigorous assessment of the effects of HF remote monitoring programs in healthcare systems." [Program Evaluation of Remote Heart Failure Monitoring: Healthcare Utilization Analysis in a Rural Regional Medical Center, William T. Riley, PhD, corresponding author Pamela Keberlein, RN, MSN, Gigi Sorenson, RN, MSN, Sailor Mohler, BS, Blake Tye, MPIA, A. Susana Ramirez, PhD, and Mark Carroll, MD, Telemed J E Health. 2015 March 1; 21(3): 157–162. doi: 10.1089/tmj.2014.0093]
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4365431/

DIABETES MANAGEMENT:

Mobile Phone Personalized Behavior Coaching for Diabetes: Study Size 163 patients over 26 Practices
"Conclusions – The combination of behavioral mobile coaching with blood glucose data, lifestyle behaviors, and patient self-management individually analyzed and presented with evidence-based guidelines to providers substantially reduced glycated hemoglobin level over 1 year." [Cluster-Randomized Trial of a Mobile Phone Personalized Behavioral Intervention for Blood Glucose Control, Charlene Quinn, Michelle Shardelll, Michael Terrin, Eric Barr, Soshana Ballew, Ann Gruber-Baldini, Diabetes Care. Published Online July 25, 2011]
http://care.diabetesjournals.org/content/34/9/1934.long

Mobile Phone Diabetes Management: Study Size 30 patients from 3 group practices
"Conclusions: Adults with type 2 diabetes using WellDoc's software achieved statistically significant improvements in A1c. HCP and patient satisfaction with the system was

clinically and statistically significant." [WellDoc™ Mobile Diabetes Management Randomized Controlled Trial: Change in Clinical and Behavioral Outcomes and Patient and Physician Satisfaction, Charlene Quinn, Suzanne Sysko Clough, James Minor, Dan Lender, Maria Okafor, Ann Gruber-Baldini, Diabetes Technology & Therapeutics, Vol 10, Number 3, 2008, pps 160-168]
http://online.liebertpub.com/doi/pdf/10.1089/dia.2008.0283

CHRONIC OBSTRUCTIVE PULMONARY DISEASE MANAGEMENT

Content-Driven Telehealth System Coupled with Care Management: Study Size Medicare patients enrolled in CMS' Health Buddy Program demonstration from 2006-2010

The Health Buddy Program is a content=driven telehealth system combined with care management designed to enhance patient education, self-management, and timely access to care. "The Health Buddy Program was associated with 23% lower quarterly all-cause hospital admissions and 40% lower quarterly respiratory-related hospital admissions compared to baseline for intervention beneficiaries vs. controls. In subgroup analyses, patients who engaged in the intervention during the study period (n=247) demonstrated significantly lower quarterly hospital admissions for chronic obstructive pulmonary disease exacerbations. The Health Buddy System was not associated with reductions in quarterly emergency department use." "CONCLUSIONS: A content-driven telehealth system combined with care management has the potential to improve health outcomes in Medicare beneficiaries with chronic obstructive pulmonary disease." [David Au, Dendy Macaulay, John Jarvis, Urvi Desai, Howard Birnbaum. Annals ATS. First published online 02 Feb 2015 as DOI: 20.1513/AnnalsATS.201501-04OC]
http://www.ncbi.nlm.nih.gov/pubmed/?term=Au+DH%2C+Macaulay+DS%2C+Jarvis+JL+et+al

MEDICATION ADHERENCE FOR CHRONIC CONDITIONS: 50 patients

"There was a trend toward increased prescription refill rates with the use of the Pill Phone application and a decrease after the application was discontinued" [Case study titled: "Medication Adherence and mHealth: The George Washington University and Wireless Reach Pill Phone Study", Study designed, conducted and analyzed by George Washington University Medical Center; Qualcomm Wireless Reach Initiative was the primary funder of this study]
http://www.qualcomm.com/media/documents/files/wireless-reach-case-study-united-states-pill-phone-english-.pdf