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WHITE PAPER

New Models for Rural Post-Acute Care ::

CRITICAL ACCESS HOSPITALS OPTIMIZE PATIENT OUTCOMES, VALUE, AND FINANCIAL STABILITY

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Foreword ::

"Emulating Mayo's experience of establishing Transitional Care and Ventilator Programs in 11 critical access hospitals (CAHs) in Minnesota, Wisconsin, and Iowa, Allevant Solutions, a joint venture between Mayo Clinic and Select Medical, has developed a highly promising model of coordinating post-acute care that has improved both financial and quality performance in participating hospitals. This important model: (1) demonstrates significant improvement for CAHs in the current reimbursement system; (2) creates a successful mechanism for the rapidly emerging value-based system; (3) provides a means for a mutually beneficial relationship between rural hospitals and traditional medical referral centers; and (4) enables patients to receive care closer to home. CAHs planning to cross the 'shaky bridge' from one payment methodology to another will find value in this innovative model, both now and in the future."

TERRY HILL, M.P.A. ::

Senior Advisor for Rural Health Leadership and Policy for the National Rural Health Resource Center

"We sometimes fail to appreciate the fascinating differences between the quality of urban and rural facilities. These differences prove the power of 'small and known' in patient care, a fact often ignored in the current hospital consolidation craze.

"In addition, we often fail to consider the synergistic power of increasing skills and financial stability that small facilities can realize under the Allevant Solutions model. However, this power can serve to strengthen a fragile rural health network. In addition, CAHs, because of their size and culture, tend to be less bureaucratic and more agile than their larger peers. In a world that changes daily in unknowable, unpredictable ways, CAHs provide an ideal setting for frontline staff-involved, innovative models such as this one.

"Allevant Solutions offers exactly what U.S. healthcare needs: more and better care for patients and families at continually lower cost. It doesn't get better than that."

JOHN KENAGY, MD ::

Principal, Kenagy & Associates, LLC, and author of Designed to Adapt: Leading Healthcare in Challenging Times, *named Healthcare Management Book of the Year by the American College of Physician Executives*

"Allevant's emphasis on establishing pathways for high-quality post-acute care, implementing evidence-based best practices, and providing a template for CAHs to implement programs that have a proven track record and also to improve financial health for these facilities demonstrates significant promise."

JERRY WILBORNE, MD ::

National IPC Director of Post-Acute Care

Executive Summary ::

CRITICAL ACCESS HOSPITALS: ESSENTIAL SERVICES DONE WELL IN A CHALLENGING ENVIRONMENT

Rural healthcare is in crisis. Rural residents have access to fewer healthcare services, lower economic and insurance status, fewer physicians per capita, and higher chronic disease rates than their urban peers. In the past year alone, more rural hospitals closed than in the prior 15 years combined (Morgan, 2014). Maintaining long-term viability of CAHs will be essential for rural healthcare delivery.

CAHs serve as healthcare hubs for large geographic areas by often being the only provider of a wide range of essential services such as inpatient, ambulatory care, labor and delivery, emergency room, general surgery, home care, hospice, ambulance, and post-acute care by utilizing the Medicare swing bed program (National Rural Health Association, 2013). CAH physicians and advance practice providers also staff clinics that provide the bulk of primary care in their rural communities and deliver a local continuum of care with a satisfying personal connection that is difficult to find in urban settings. Effective combinations of modern medicine and trusted country doctors, CAHs truly are the hospital equivalents of general practitioners.

Even though CAHs struggle to find the means to provide their essential services, they provide them well and at lower cost, the very definition of value. Rural CAHs and smaller hospitals outperform urban hospitals in culture of safety survey results from the Agency for Healthcare Research and Quality (AHRQ, 2012) and in all categories in reports from the Hospital Consumer Assessment of Healthcare Providers and Systems (Kentucky Hospital Association, 2013). Additionally, rural hospitals consume fewer Medicare resources per capita and perform better than urban hospitals in cost-efficiency measures (iVantage Health Analytics, 2012). Approximately $6.8 billion per year is the existing and potential differential between Medicare beneficiary payments for rural vs. urban including the opportunity for savings if all urban populations could be treated at the rural equivalent (iVantage Health Analytics, 2014, p. 6).

Around the country, underutilized CAH beds and talented rural healthcare teams await opportunities and new models of care. Fortunately, an innovative model of post-acute care creates a new niche for CAHs and provides a desperately needed solution to address present gaps in our healthcare system.

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Approximately $6.8 billion per year is the existing and potential differential between Medicare beneficiary payments for rural vs. urban including the opportunity for savings if all urban populations could be treated at the rural equivalent.

Executive Summary ::

QUALITY AND PATIENT SAFETY GAPS IN POST-ACUTE CARE ::

An Opportunity

Acute-care patients suffer from complex illnesses and comorbidities resulting in long lengths of stay and excessive acute-care hospital costs. Skilled nursing facilities (SNFs) provide the majority of post-acute care, but therein, significant quality and patient safety gaps continue to exist (American Health Care Association [AHCA], 2011). Over the past decades, hospital readmissions have been on the rise, resulting in billions of dollars of costs and increased morbidity and mortality (AHCA, 2011; Center for Medicare and Medicaid Services, 2012; Lindsay, 2013), more than 60 percent of which may be preventable (Ouslander *et al.*, 2010). While recent data have shown limited improvement in some SNF quality measures, numerous quality and patient safety gaps continue to exist (AHCA, 2010; Bonner *et al.*, 2008).

Over the past decades, hospital readmissions have been on the rise, resulting in billions of dollars of costs and increased morbidity and mortality, more than 60 percent of which may be preventable.

A NEW AND BETTER MODEL ::

CAH and SNF Transitional and Ventilator Care

Mayo Clinic has developed a new model for post-acute care that maximizes outcomes, expands access, and adds value for all stakeholders within the existing CAH infrastructure. Emulating the model of the Ventilator Care Program in a stand-alone Wisconsin SNF that produced better clinical outcomes at lower costs than those reported by other facilities, 11 underutilized Mayo Clinic Health System CAHs implemented a high-quality post-acute Transitional Care program. Two CAHS with attached SNFs also implemented Ventilator Care programs (Lindsay *et al.*, 2004; Lindsay, 2013). Key program components included centralized resources, staff education and empowerment, implementation of respiratory therapy and nurse-directed protocols, multidisciplinary patient- and family-centered bedside rounds, data tracking and transparency of outcomes, care coordination, and promotion of safe transitions with timely follow-up (Lindsay *et al.*, 2004; Lindsay, 2013).

Most importantly, the Transitional Care model represents a win for patients. The program provides care locally and discharges the majority of patients to home with over 90 percent overall satisfaction and a willingness to recommend the facility. The model also represents a win for larger referring acute-care hospitals by providing high-quality discharge options that reduce excessive acute-care hospital stays and hospital readmission rates, a high priority for hospitals that strive to minimize financial penalties.

The Mayo Clinic experience has realized positive results. Referrals to local Mayo Clinic Health System CAHs from Mayo Clinic Rochester acute -care hospitals increased by over 500 percent, resulting in an increase of Transitional Care and respiratory patient days by 200 and 800 percent, respectively, and providing financial stability and enhancement of services over time (Lindsay, 2013).

Executive Summary ::

SYSTEM FINANCIAL IMPACT ::

20:1

The new model resulted in a significant increase in revenue for participating CAHs and notable cost avoidance for referring acute-care hospitals due to reduced Medicare bed days beyond the mean geometric length of stay. Evaluation of the net revenue + cost avoidance/centralized resources found an approximate 20:1 return (Lindsay, 2013).

CAH ::

The Future

CAHs remain the best option for providing rural residents with local access to cost-effective, high-quality care across the healthcare continuum. The infrastructure, facilities, staff, and quality foundations already exist to promote establishment of new high-quality Transitional Care programs to address the quality and patient safety gaps in post-acute care. Future opportunities that recognize the synergies of Transitional Care, hospitalist programs, and telemedicine will positively impact locally provided care, yielding the highest overall value.

Policies and funding that significantly alter the present CAH infrastructure in favor of shifting care to urban areas and skilled nursing facilities with the present quality and patient safety gaps, at best, will create problems and, at worst, could prove devastating.

Future opportunities that recognize the synergies of Transitional Care, hospitalist programs, and telemedicine will positively impact the care that can be provided locally, providing the highest overall value.

Disparities in Rural Healthcare ::

The burden of illness in America is staggering. Skyrocketing rates of chronic disease and an aging population have contributed to escalating healthcare costs in the United States that exceeded $2.4 trillion in 2009, of which 30 percent were hospital related (United States Census Bureau, 2012). Projections expect this trend to continue if left unchecked. While this description characterizes American healthcare overall, rural communities face special challenges. As Congress and others attempt to curb spending, future policies must continue to account for the significant disparities that exist in rural healthcare.

The simple – but often unrecognized – fact is that many rural Americans don't have reasonable access to the healthcare teams and services they need. In the 1930s, only 10 percent of rural Americans had electricity as opposed to the 90 percent of urban dwellers who did. These circumstances seem unimaginable to us in the 21st century, and we would all clearly recognize the disparity (New Deal Network, 2012). Today, 20 percent of Americans live in rural communities, but only 10 percent of physicians practice there (American Hospital Association, 2012; Gorski, 2011). In particular, rural communities lack access to specialty services, such as mental health counseling as well as medical and surgical subspecialty consultations. Broadband Internet access remains less available in rural areas, making health information even more difficult to obtain (Kuttner, 2012). Limited employment opportunities in many rural communities render residents and healthcare facilities particularly vulnerable to policy changes that affect employer-provided, commercial, and government health insurance coverage and reimbursement.

CAHs comprise the lynchpin of the rural healthcare system in America. If policymakers propose a reduction or elimination of the scope of locally provided rural healthcare services, they must take into account the costs and potential deterrents to care of patient travel, the harm and effects of noncompliance, and the total costs for an episode of care across all involved settings. The value equation for CAHs must take into account quality, patient safety, service excellence, and costs (Swensen *et al.*, 2009), and we must assess these measures together, not in isolated segments.

The simple fact is that many rural Americans don't have reasonable access to the healthcare teams and services they need.

COMMON RURAL *Disparities*

- *Advanced age*
- *Increased chronic disease rates*
- *Lower likelihood of having recommended preventive services*
- *Higher likelihood of being uninsured*
- *Often lower income per capita*

CAHs and Swing Beds ::

ESSENTIAL FOR HIGH-QUALITY RURAL POST-ACUTE CARE

Over 1,300 designated CAHs operate in the United States. Since the 1997 Budget Act, these CAHs have received allowable costs plus 1 percent reimbursement from Medicare. With this legislation, Congress made its first effort to stabilize CAH financial performance and reduce or prevent closures of these crucial facilities (Rural Assistance Center, 2013). CAHs must provide 24-hour emergency services, network with an acute-care hospital, participate in quality assurance, maintain an average acute-care bed length of stay less than 96 hours, and maintain no more than 25 acute or swing beds.

CAHs provide essential rural healthcare access, usually as the only local provider of a broad range of services. The Centers of Medicare & Medicaid Services (CMS) created the swing bed program to expand access to rural post-acute care, and indeed, this program provides most of the CAH post-acute care. Swing bed days represented only 3.6 percent of total inpatient revenue reported by 1,228 critical access hospitals in 2009 (Reiter *et al.*, 2011). Although CAHs are licensed for up to 25 beds (acute and swing beds), the national CAH average daily census is just 4.2 (University of North Dakota, 2012).

CAHs are essential for the well being of rural residents and the financial health of their communities.

Numerous examples demonstrate the tremendous value CAHs provide (Casey & Moscovice, 2004; KHA, 2013). Cost plus 1 percent reimbursement has allowed CAHs to implement quality improvement initiatives successfully, to add staff resources, to provide services not otherwise possible, to provide staff training and education, and to procure necessary medical equipment to provide up-to-date care.

Swing bed days represented only 3.6% of total inpatient revenue reported by 1,229 critical access hospitals in 2009.

CAHs are licensed for 25 beds, but the national average daily census is just 4.2.

SERVICES OFTEN PROVIDED EXCLUSIVELY BY C.A.H.S. IN *Rural Communities*

- *Emergency care*
- *Inpatient acute care*
- *Labor and delivery*
- *Ambulatory care*
- *Basic general surgery*
- *Laboratory and imaging*
- *Hospice*
- *Ambulance service*
- *Homecare*

CAHs and Swing Beds ::

ESSENTIAL FOR HIGH-QUALITY RURAL POST-ACUTE CARE

Several studies (Croll *et al.*, 2012; iVantage Health Analytics, 2012; KHA, 2013) enumerate the value of CAHs and how they provide safe, high-quality, cost-effective service to rural communities.

Culture of Safety: CAHs and smaller hospitals outperform urban hospitals in the culture of safety survey analysis performed by the AHRQ; the smallest hospitals (6-24 beds) had the highest positive scores across all patient safety culture composites relative to those of larger hospitals (AHRQ, 2012).

Quality: The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) reports that CAHs outperform larger and urban hospitals in all categories including nurse communication, physician communication, pain control, medicine explanation, recovery information, overall rating, and willingness to recommend.

Cost: Rural facilities consume fewer CMS resources per capita compared to their urban counterparts and perform better in cost-efficiency measures.

CAHs are essential not only for the well being of rural residents but also for their financial health. CAHs make key economic contributions by serving as large employers in their communities and by offering opportunities for skilled employment for new generations of rural professionals. CAHs provide formal linkages to secondary, tertiary, and specialty care and promote local health and wellness.

CAHs make key economic contributions by serving as large employers in their communities and by offering opportunities for skilled employment for new generations of rural professionals.

CAHs and SNFs ::

THE CASE FOR HIGH-QUALITY TRANSITIONAL CARE

Current models of post-acute care fail to provide ideal care or ideal value, and the literature identifies significant opportunities for improvement. National trends to reduce acute-care hospital costs have resulted in reduced acute-care length of stays and an increase in patients discharged to settings of post-acute care. Proposed CMS policy changes may negatively impact funding for the CMS swing bed program with the intention of shifting even more post-acute patients to SNFs with lower costs per day than CAHs. This proposition may prove cost-ineffective after factoring in downstream implications and would actually increase the Medicare inpatient operating cost per diem. Although more than half of the patients requiring post-acute care currently receive care in SNFs, many SNFs do not provide high-quality care or overall value in terms of all costs associated with an episode of illness across settings. Initially, SNF days cost less, but patients admitted to SNFs are at increased risk for costly readmissions, complications, and mortality (AHCA, 2011; Commonwealth Fund, 2006; Carey & Parker, 2003; Cook & Martin, 1999).

These complications prove costly to the system overall, devastate patients and families, and are often preventable. Hospital admissions and readmissions from long-term care and SNF settings are increasing at an alarming rate with a financial impact in the billions of dollars. From 1976 to 2003, hospital readmissions within 60 days of discharge increased from 23 to 31 percent, a relative increase of 25 percent over the 27-year period (AHCA, 2011). Rates of readmission from SNFs back to acute care are highest in the first few weeks after admission to SNFs. One study found that approximately 66 percent of hospital admissions from SNFs might have been avoidable (Ouslander *et al.*, 2010). Factors inherent to the SNF setting that likely contribute to avoidable readmissions include inadequate availability of physicians and other professional services on site, lack of timely administration of intravenous fluid and laboratory studies, inadequate recognition and assessment of acute changes in condition, and inappropriate and futile hospital admissions (Ouslander *et al.*, 2010).

Reductions in or elimination of the swing bed program would place significant financial hardships on many CAHs, eliminate the only access to CAH post-acute care and the associated reimbursement option, and negatively impact the scope of other services provided.

Rates of readmission from SNFs back to acute care are highest in the first few weeks after admission to SNF.

COMMON SNF *Complications*

- *Decubitus ulcers*
- *Adverse drug events*
- *Malnutrition*
- *Delirium*
- *Nosocomial infections*
- *Increased morbidity*
- *Increased mortality*

The Current State ::

POST-ACUTE CARE IS SUBOPTIMAL

Current models of post-acute care provide suboptimal care for a number of reasons, including increasing patient complexity; problems with communication, teamwork, and culture; and nursing staffing challenges in the SNF setting.

INCREASING *Complexity*

Patient discharge from acute-care hospitals now occurs earlier than ever before, which in turn increases the severity and complexity of illness of SNF patients. They have multiple comorbidities, the most common being atrial fibrillation, congestive heart failure, renal failure, hypertension, and urinary tract infection. SNF patients also take a staggering number of medications, adding risk and complexity (AHCA, 2011).

SUBOPTIMAL *Communication, Teamwork and Culture*

Communication and teamwork are necessary for providing high-quality post-acute care. Poor communication contributes to medication errors, increased costs, patient harm, and deaths (Johnson, 2009; Kohn *et al.*, 2000; Rosenstein, 2010 and 2011; Rosenstein & Naylor, 2012; Rosenstein & O'Daniel, 2008; Singh *et al.*, 2007; Tammelleo, 2001). Ineffective and dysfunctional communication remains prevalent across healthcare (Rosenstein & O'Daniel, 2005; Saxton *et al.*, 2009; Vessey *et al.*, 2009).

In 2008, the Joint Commission issued a Sentinel Event Alert and Leadership Standard regarding behaviors that undermine the culture of safety in healthcare (Joint Commission, 2008). Poor and ineffective communication contributed to more than half of the Joint Commission Sentinel Events reported in 2012 (Joint Commission, 2012).

Patients in post-acute care traditionally experience a number of handoffs during an episode of illness, placing them at risk for miscommunication between caregivers. Unfortunately, a review of malpractice claims identified ineffective communication as a

Complexity

- *CMS average length of stay has decreased from 7.76 to 7.15 days.*
- *> 80 percent of SNF patients have nine or more diagnoses.*
- *> 60 percent of patients report taking 11 or more mediations in the last week.*

AHCA, 2011

The Current State ::

POST-ACUTE CARE IS SUBOPTIMAL

significant contributor to harm, especially during handoffs involving multiple disciplines (Singh *et al.*, 2007). Studies of patient safety culture in the United States, Taiwan, and Netherlands have identified handoffs and transitions as the areas with the highest potential for improvement in all three countries (Wagner *et al.*, 2013).

Studies have linked the perception of safety culture to outcome and process measures. The prioritization of safety culture by senior leadership may contribute to improved patient outcomes, greater productivity, and less staff turnover (Brown & Wolosin, 2013). Several healthcare settings suffer from discrepancies in perceptions of teamwork across roles, impeding cross-role consensus on the necessity of cultural change and preserving undesirable fear-based hierarchies (Grant *et al.*, 2006; Thomas *et al.*, 2003). For example, administrators often have higher overall perceptions of safety culture than frontline staff in the same environment.Other Studies suggest a punitive environment for reporting errors often exists in SNFs. SNFs score lower on culture of safety surveys than hospital benchmarks in almost all categories (Bonner *et al.*, 2008; Grant *et al.*, 2006).

The prioritization of safety culture by senior leadership may contribute to improved patient outcomes, greater productivity, and less staff turnover.

NURSING TURNOVER AND *Staffing Levels*

Adequate nurse staffing remains essential for high-quality acute and post-acute care. Studies have associated registered nurse turnover with increased hospitalization and infection (Zimmerman *et al.*, 2002) as well as lower nurse staffing levels and high nurse turnover with increased inpatient hospital mortality (Needleman *et al.*, 2002). The turnover rates in SNFs for nursing staff exceed those in other settings. Overall turnover rates in SNFs are 43 percent for certified nurse assistants, 41 percent for registered nurses, 35 percent for licensed practical nurses, and 18 percent for administration (AHCA, 2010). SNF nursing staff turnover varies tremendously from state to state – from 15 to 72 percent (AHCA, 2011). High turnover affects not only quality of care but costs. Estimates show that the average hospital loses approximately $300,000 per year for each 1 percent increase in annual nurse turnover (Pricewaterhouse Coopers, 2007).

COMMUNICATION, TEAMWORK, *and Collaboration*

- *Higher mortality rates have been linked to low nurse/physician collaboration (Knaus* et al.*, 1986)*
- *Culture, leadership, communication, coordination, and problem-solving capabilities have been associated with a lower risk-adjusted length of stay and higher staff-perceived technical quality (Shortell* et al.*, 1992).*
- *Staff working on ICUs with lower than expected mortality rates perceived higher levels of team function and group development (Wheelen* et al.*, 2003).*

The Current State ::

POST-ACUTE CARE IS SUBOPTIMAL

POSITIVE TRENDS IN

SNF Care

Some SNF quality measures have improved over time, including reducing declines of daily-living activities, pressure ulcers in high-risk residents, use of restraints, and incidents of delirium in short-stay patients. SNF patient satisfaction surveys have also shown some improvement in overall satisfaction and willingness to recommend. Although job satisfaction has improved among nurses and nurse assistants in the SNF setting, overall job satisfaction remains significantly lower than that of other healthcare roles and lower than established benchmarks (AHCA, 2011). In sum, improvements have been modest.

SNF patient satisfaction surveys have also shown some improvement in overall satisfaction and willingness to recommend.

Prolonged Mechanical Ventilation ::

NEW MODELS DESPERATELY NEEDED

Patients requiring prolonged mechanical ventilation are at highest risk for readmission, morbidity, and mortality after discharge from acute care. Ankrom and Barofsky reported that 19 percent of mechanically ventilated SNF patients were alive at 1 year and that only 15 percent of patients weaned from mechanical ventilation (1998). In another study, more than 66 percent of patients requiring prolonged mechanical ventilation were readmitted, and those who survived to discharge had, on average, four transitions of care after discharge from an acute-care hospital with a mean cost per patient of over $300,000 (Unroe *et al.*, 2010).

Researchers have identified transitions as a cause for harm and a likely point for communication breakdown. Predictions anticipate the population of patients requiring prolonged mechanical ventilation to double by 2020, at estimated costs of $60 billion (Zilberberg *et al.*, 2008). The healthcare industry must develop new pathways to care for these patients effectively across the continuum.

Future efforts, policies, and funding must ensure adequate respiratory therapy and nurse staffing, training and education incorporating evidence-based practices, high-reliability operational models, patient-centric and team-centric processes, as well as outcomes tracking and transparency to ensure the best possible outcomes for this vulnerable population (Lindsay *et al.*, 2004; Lindsay, 2013). The present options for high-quality post-acute care for patients requiring prolonged mechanical ventilation remain inadequate.

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A New Model ::

BETTER OUTCOMES AT LOWER COST

WISCONSIN

Ventilator Program

In 1997, a stand-alone SNF in Chippewa Falls, Wisconsin, established a ventilator program. The ventilator model applied evidence-based best practices that emphasized a team based approach, patient centered care, and an innovative method for liberating patients from the ventilator (Dodek & Raboud, 2003; Lindsay *et al.*, 2004; Marelich & Murin, 2000; Young *et al.*, 1998). The team-oriented, patient- and family-involved model provided a structure for success. The program prioritized patient-centered interventions, which included encouraging patients to wear their own clothes rather than hospital gowns, involving patients and families in team rounds, enabling patients to participate in activities in a common space (e.g., board games and communal dining), and including patients in planned shopping excursions and other social activities. This program's promotion of socialization and positive outcomes required portable ventilators and equipment.

The Wisconsin Ventilator Program succeeded in terms of quality, patient safety, and finances. More than 50 percent of admitted patients weaned from the ventilator, surpassing other examples described in the literature, despite the program's management of a higher proportion of patients with neuromuscular conditions, the most challenging population to liberate. This SNF produced these results at costs significantly lower than those reported elsewhere (Lindsay *et al.*, 2004). The program also resulted in improved patient and staff satisfaction. AHRQ culture of safety survey results showed an overall perception of safety of 95 percent and teamwork scores significantly higher than benchmarks. Staff turnover in the program was half that of the host SNF as a whole and much lower than industry benchmarks (Lindsay *et al.*, 2004: Lindsay 2013). Due to the program's success, the unit expanded from a few beds to a 24-bed unit that has logged approximately 70,000 ventilator patient days through 2012. Liberating patients from mechanical ventilation proved to be the most cost-effective care strategy and provided significant satisfaction for the patients, families, and the care team.

VENTILATOR PROGRAM

Key Components

- *Pulmonary physician and nurse practitioner on-site support*
- *Respiratory therapy leadership*
- *Respiratory therapy and nurse-directed weaning protocols*
- *Standardized, portable equipment*
- *Staff education*
- *Bedside rounds with patient, family, and the care team*

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Mayo Clinic Health System ::

THE CHALLENGE OF C.A.H. UNDERUTILIZATION

Prior to 2001, the Mayo Clinic Health System CAHs in Osseo, Wisconsin (population 3,500), and Bloomer, Wisconsin (population 1,700), struggled with low inpatient census. The CMS swing bed program remained underutilized, and the region struggled with inadequate options for high-quality post-acute care for increasingly sick and more complex inpatients from the secondary acute-care hospitals in Eau Claire, Wisconsin (population 66,000).

In response to the success of the Wisconsin SNF Ventilator Program and as part of a strategic effort to provide options for high-quality post-acute care for challenging patient populations (i.e., respiratory, cardiac, orthopedic, neurologic, complex medical, and post-operative patients as well as trauma patients), the leadership of the Luther Midelfort–Mayo Health System (now Mayo Clinic Health System–Eau Claire) supported the establishment of CAH-based Transitional Care pilot programs in Bloomer and Osseo in mid 2001. At the time, both locations had limited resources dedicated for respiratory therapy and rehabilitation therapy (i.e., physical, occupational, and speech). The program focused on implementing many of the same components and concepts that were successful in the SNF-based Ventilator Care program. Marketing and relationship building with referring acute-care hospitals became a new key component.

The pilot was highly successful. Swing bed days increased from under 1,500 to over 3,000 in each location. This growth supported the addition of significant nursing, respiratory therapy, and rehabilitation therapy staff and services in both locations along with training in tracheostomy, noninvasive ventilation, and other complex respiratory patient care. The program placed emphasis on collaboration with referring acute-care hospitals and empowered staff to serve as active, critical thinkers (Lindsay *et al.*, 2005). The growth of the swing bed and inpatient programs provided adequate volume to support development of a hospitalist role in Bloomer and Osseo, a significant satisfier for physicians, nurses, and therapy staff. The CAH in Osseo added a Ventilator Program and 24/7 respiratory therapy services, resulting in liberation of patients from mechanical ventilation and home discharge. The addition of rehabilitation and respiratory therapy staff, additional education, and the hospitalist program significantly increased the CAHs' ability to provide more timely and

IMPACT OF *CAH Pilot*

- *Swing bed days more than doubled*
- *Respiratory, rehabilitation therapy, and nursing services expanded*
- *Hospitalist program established*
- *Ventilator care established on site*
- *Increase in ability of all departments*
- *Improved cash flow*
- *High patient and staff satisfaction*
- *Improved levels of patient function*
- *Lower readmission rates*

The pilot was highly successful. Swing bed days increased from under 1,500 to over 3,000 in each location.

Mayo Clinic Health System ::

THE CHALLENGE OF C.A.H. UNDERUTILIZATION

comprehensive care for respiratory, neurologic, cardiac, and other complex medical patients in the local emergency room, inpatient setting, and outpatient setting. Improved cash flow and the financial performance of the Transitional Care programs supported capital improvement projects to provide necessary hospital, clinic, and emergency room upgrades.

The pilot project resulted in satisfied patients and satisfied staff. More than 90 percent of patients surveyed expressed a willingness to recommend and rated their overall care as "very good" or "excellent." Employee satisfaction at the pilot CAHs scored the highest in the system.

The Functional Independence Measure, one of the early clinical measures tracked in the pilot, showed significant improvement on discharge relative to admission. The readmission rates for acute-care patients sent to Transitional Care programs in Osseo and Bloomer were significantly lower than those of SNFs.

ACUTE CARE-C.A.H. *Collaboration*

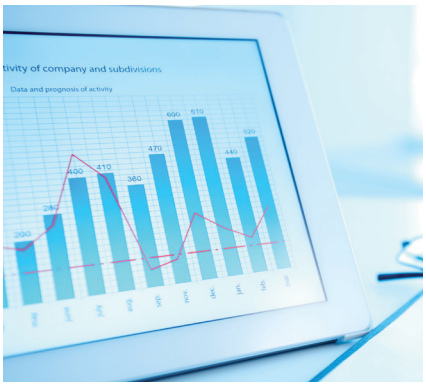
- *Stronger cross-facility teamwork*
- *More timely interventions and seamless transitions*
- *CAH became preferred discharge location for challenging post-acute patients*

More than 90 percent of patients surveyed expressed a willingness to recommend and rated their overall care as very good or excellent.

Financial Impact ::

C.A.H. TRANSITIONAL AND VENTILATOR CARE

The Transitional Care program made a significant, positive impact on the CAHs' financial performance. Prior to the pilot, one location had experienced 10 consecutive quarters of negative net operating income. After establishing the Transitional Care program, it experienced a positive net operating income in nine of the next 10 quarters. After implementation, swing bed revenue per year totaled more than $3 million for both facilities.



The establishment of high-quality post-acute care was the most effective approach for reducing severity-adjusted acute-care length of stay, Medicare bed days beyond the mean geometric length of stay, and hospital readmissions.

Financial benefits extended beyond the CAHs to the referring hospital as well. A financial analysis demonstrated that, in 2003 alone, the Transitional Care pilot and Wisconsin Ventilator Care programs had a positive $2.99 million impact on the primary referring regional acute-care hospital (i.e., the Luther Midelfort–Mayo Health System, now Mayo Clinic Health System–Eau Claire). The establishment of high-quality post-acute care was the most effective approach for reducing severity-adjusted acute-care length of stay, Medicare bed days beyond the mean geometric length of stay, and hospital readmissions – all of which proved beneficial to the referring acute-care hospital (Lindsay, 2006; Lindsay, 2013).

Program Expansion ::

C.A.H. TRANSITIONAL AND VENTILATOR CARE

A proposal was presented to Mayo Clinic leadership to spread the successful Transitional and Ventilator Care models to 11 Mayo Clinic Health System CAHs in Minnesota, Wisconsin, and Iowa.. Mayo Clinic approved, centrally funded, and supported the creation of the Mayo Post-Acute Care Program in 2008.

Mayo Clinic centralized funding was approximately $2,600,000 over 3 years and included a Mayo Clinic Post-Acute Care Program Medical Director; Respiratory Therapy Director; a program nurse leadership role; nurse education; administrative, marketing, and communication support; a database; and quality resources.

Mayo Clinic CAH participation was voluntary, and 11 of the 12 Mayo Clinic Health System CAHs in the Upper Midwest chose to participate in the program. The one that opted out, a CAH in a rural community of over 16,000, maintained a significantly higher census and enjoyed good financial health.

All participating sites agreed to implement all components of the Mayo Clinic Transitional Care Model and make financial contributions to operations. Using the same model, two Minnesota and Wisconsin CAHs with attached SNFs added Ventilator Care programs to provide high-quality post-acute care for patients on prolonged mechanical ventilation, reduce the number of transitions that ventilator patients endured after discharge, and expand the capacity to support the anticipated growth of this vulnerable patient population (Lindsay *et al.*, 2004; Lindsay, 2013; Unroe *et al.*, 2010; Zilberberg *et al.*, 2008). The establishment of CAH Transitional Care programs strengthened teamwork, collaboration, and communication between facilities and resulted in more timely interventions and more seamless care. Patients now transition across the care continuum (SNF, Transitional Care/ Ventilator Care, secondary regional acute care, tertiary facilities) more smoothly and with less risk. In response to the quality outcomes, lower readmission rates, high teamwork scores, overall willingness to recommend, hospitalist program, and employee satisfaction, CAH Transitional Care has become a preferred discharge disposition for the most challenging rural Mayo Clinic patients in post-acute care.

KEY ELEMENTS FOR *All 11 CAHs*

- *Multidisciplinary bedside rounds with patient/family*
- *Rehabilitation services seven days per week*
- *Local program medical director and nurse lead roles*
- *Participation in case review*
- *Participation in all Mayo Clinic Post-Acute Care education and competency assessment*
- *Measurement of Functional Independence Measures upon admission and prior to discharge*
- *Submission of quality dashboard measures*

The establishment of CAH Transitional Care programs strengthened teamwork, collaboration, and communication between facilities and resulted in more timely interventions and more seamless care.

Mayo Clinic Program ::

EVIDENCE OF SUCCESS AND FINANCIAL IMPACT

Between 2009 and 2011, Mayo Clinic CAH Transitional Care and Ventilator Care programs supported incredible growth as evidenced by a more than 500 percent increase in referrals from quaternary Mayo Clinic Hospitals in Rochester to local Mayo Clinic Health System CAHs, a 200 percent increase in transitional care days in participating CAHs, and an 800 percent increase in respiratory patient days. The Mayo Clinic CAH Transitional Care program excelled at helping patients attain optimal independence and health as evidenced by the facts that 72 percent of patients were discharged to their pre-hospital-stay setting, 68 percent of patients were discharged home, only 14 percent of patients were discharged to SNF, and only 6 percent of patients were readmitted to an acute-care hospital within 30 days (Lindsay, 2013).

Patients were satisfied with the care they received in the Mayo Clinic model. In the Transitional Care program, 94 percent of patients rated their care as "very good," and 92 percent reported "willingness to recommend" (Lindsay, 2013). The model also resulted in significant, yet unquantifiable, synergistic benefits. The model allowed for a significant increase in CAH capabilities for managing acute-care CAH admissions, ER patients, ambulatory care, and outpatient care locally. The project and model resulted in a meaningful increase in collaboration between tertiary/quaternary Mayo Clinic hospitals and the Mayo Clinic Health System CAHs.

The programs provided an overwhelmingly positive financial benefit for Mayo Clinic. They resulted in significant increases in swing bed revenue in the Mayo Clinic CAH setting. By reducing Medicare bed days beyond the mean geometric length of stay, the programs realized significant cost avoidance at referring Mayo Clinic acute-care hospitals. Per the following formula, overall Mayo Clinic return on investment was greater than 20:1 in 2011 (Lindsay, 2013).

NET REVENUE + COST AVOIDANCE / CENTRALIZED RESOURCES

Expansion of the program leveraged available Mayo Clinic Health System CAH resources to meet the needs of patients by providing high-quality post-acute care closer to home, reduced hospital readmissions and excessive acute-care hospital stays, and addressed quality and patient safety gaps prevalent in other settings of post-acute care.

Expansion of the program leveraged available resources to meet the needs of patients.

Rural Healthcare ::

DEALING WITH CHRONIC DISEASE

While the healthcare system struggles to address acute and post-acute needs of rural Americans, another specter looms: chronic disease.

As the vanguard against the eventual complications of chronic disease, primary care providers face a daunting task. More than 130 million people in the United States live with one or more chronic diseases, accounting for 70 percent of all deaths and $1 trillion in costs (Center for Disease Control and Prevention [CDC], 2013). Projections predict that, over the next 15 years, that figure will rise to over $4 trillion (DeVol & Bedroussian, 2007). As the physicians and other caregivers that staff the nation's CAHs often provide primary care services in their rural communities as well, closure of CAHs will generally reduce the primary care services available in those same communities.

CHRONIC *Disease**

- *Hypertension is the most preventable cause of morbidity and mortality.*
- *Obesity affects approximately 1/3 of adults and 1/5 youth and is linked to diabetes, hypertension, and cardiovascular disease.*
- *Stroke, pulmonary disease, and mental health disorders are on the rise.*
- *Rural residents have higher rates of chronic disease and health-risk behaviors compared to the U.S. population as a whole.*

CDC, 2013; Eberhardt & Pamuk, 2004; Hartley, 2004; Milken Institute, 2007.

Rural Healthcare Value ::

THE FUTURE

As policymakers consider the CMS swing bed program, CAH designation, and rural healthcare funding, policy decisions must promote the highest quality of locally provided care and address necessary resource and policy needs to minimize rural healthcare disparities. Investment in CAHs is money well spent. CAHs already outperform urban hospitals on a number of key quality measures and provide an alternative that can address current gaps in quality and patient safety in post-acute care, especially for rural residents. Mayo Clinic's experience demonstrates that CAHs can provide the highest-quality post-acute and ventilator care while still meeting the acute-care needs of their communities, resulting in reduced readmissions, patients reaching their highest level of independence, and high patient and staff satisfaction. On the surface, costs per day for caring for patients in SNFs and other settings of post-acute care seem to be lower than those in CAHs, but this view of reality is a myopic one.

Current calculation models do not account for the overall value CAHs can provide to the system due to improved outflow for secondary, tertiary, and quaternary hospitals; lower readmission rates; greater responsiveness to acute changes in patient condition; availability of laboratory and radiology resources on-site; lower staff turnover; improved teamwork; and other intangible yet important factors that impact outcomes, quality, patient safety, and overall costs related to an episode of illness (AHCA, 2011). Policymakers should consider new methods of value assessment that take a systemic approach to measuring value. Patients travel across the continuum of care during an episode of illness, and value should be assessed accordingly.

Investment in CAHs is money well spent.

Doing nothing will be costly.

Doing nothing will be costly. CMS post-acute admissions to SNFs and the explosion of hospital readmissions contribute to significant harm and result in avoidable costs in the billions of dollars (CMS, 2012). Vulnerable patients on ventilators currently receive suboptimal care, often far from home, and ventilator liberation rates remain far below what is possible. Models of team-based care and improvement methods will accelerate efforts to address the gaps in quality and patient safety that continue to exist in SNFs and other settings of post-acute care.

Rural Healthcare Value ::

THE FUTURE

Significant physician shortages exist in rural communities. The present and projected shortages of primary care physicians in rural areas raise many concerns, and new models of care will require a team-based approach to meet the preventive and chronic health needs of rural residents. Future efforts to address population health in rural communities will need to leverage the strengths of the healthcare team with emphasis on staff empowerment, patient engagement, use of population registries, and evidence-based interventions. One method that will help these efforts come to fruition is the use of "bundles."

Future efforts to address population health in rural communities will need to leverage the strengths of the healthcare team with emphasis on staff empowerment, patient engagement, use of population registries, and evidence-based interventions.

PRIMARY CARE BUNDLE

Case Study

Healthcare bundles – are groups of three to four simple interventions measured in an all-or-none fashion at a single point in a patient's course – have driven nationwide improvements in ventilator- associated pneumonia and central line infection rates. Success with bundles requires significant teamwork and collaboration, often resulting in benefits beyond expectations of individual bundle elements (Resar et al., *2012). With the teamwork, trust, and staff satisfaction present in rural CAHs, the bundle approach holds promise as an effective catalyst for rural healthcare improvement.*

A three-element bundle constituted the key intervention in a multi-site Mayo Clinic initiative to improve hypertension control in patients with diabetes at primary care clinics in Minnesota, Arizona, and Florida. Elements included a team-based, physician-signed order set that empowered registered nurses to make evidence-based adjustments to medication. This intervention allowed for timely follow-up with a nurse and more frequent adjustments to medications than had been possible with physician-centric models. Other bundle elements included a standardized blood pressure process and the establishment of a patient-identified goal to engage patients in their care and promote evidence-based behavioral interventions.

Administrators of this intervention measured the success of the bundle, posted the results in patient-care and clinical-staff areas, and thereby increased compliance and promoted positive change through transparency.

After implementing the bundle, three of four locations realized a statistically significant decrease in the proportion of patients with uncontrolled blood pressure ($p < 0.0001$). A survey showed a statistically significant increase in the staff's agreement with the following statement after bundle implementation: "The current process engages patients in their own care (hypertension management)" (Lindsay & Hovan, 2013).

THE FUTURE

TELEHEALTH AND HOSPITALIST

Opportunities

In spite of the shortage of rural primary care, rural areas suffer from far greater disparities in access to specialists and mental health services (CDC, 2013). Telemedicine, one potential solution, can provide rural residents with timely local access to specialty expertise for early diagnosis and treatment. An economic analysis of telehealth services found benefits to having access to on-call specialists (Wade *et al.*, 2010). Investigators have identified successes in connecting specialists to rural outpatient and inpatient care (Wade *et al.*, 2010) and found that the organizational model of care was important in determining the value of services. Telepsychiatry is cost effective, and randomized controlled trials demonstrate that telepsychiatry is as effective as in-person encounters (Bahloul & Mani, 2013). Access to mental health services in rural communities will continue to drive growth in telepsychiatry as an important modality to increase access to quality mental health services.

A study in Oklahoma found that telemedicine helped patients receive care locally rather than traveling 30-116 miles for services (Whitacre *et al.*, 2010). Facilities that enable patients to receive telemedicine services can profit from other billable services supporting the telemedicine encounter (Whitacre *et al.*, 2010). As the technology to support telemedicine becomes increasingly more cost-effective, telemedicine will continue to expand. Teamwork, reliable processes, and continuous improvement will maximize the value of this technology.

Investigators have identified successes in connecting specialists to rural outpatient and inpatient care.

Rural Healthcare Value ::

THE FUTURE

Another expanding role, that of the hospitalist, promotes continuity of care, standardization, efficient utilization of resources, timely interventions, and reductions in mortality, length of stay, and readmission rates (Society of Hospital Medicine, 2013). According to the American Hospital Association, more than 1,000 hospitalists practice at more than 2,000 rural hospitals (2012). The growth of hospitalist models in CAHs has had a positive impact on recruitment, retention of primary care physicians, and patient and physician satisfaction (Casey & Muscovice, 2012).

The significant potential synergies for telemedicine, hospitalists, and Transitional Care could sustain a rural healthcare model that supports primary care, advance practice providers, and the care team in a cost-effective, supportive, satisfying, and balanced way. These patient-centric models increase the system's ability to care for patients locally; to support primary care physicians during the day (hospitalist model) and, more importantly, at night (nocturnist model) through telemedicine; and to attract new providers to underserved rural communities by providing a collegial, supportive medical practice.

The growth of hospitalist models in CAHs has had a positive impact on recruitment, retention of primary care physicians, and patient and physician satisfaction.

A Call to Action ::

Addressing the disparities of healthcare in rural America requires sustained financial support of CAHs. The breadth of services provided by the nation's CAHs and their existing infrastructure position them as the best equipped and experienced delivery model for high-quality rural inpatient, outpatient, emergency room, post-acute care, and other crucial services across the continuum (see Appendix 1), especially for rural patients dependent on a ventilator or working towards liberation.

Although SNFs currently provide a significant amount of ventilator patient care, unfortunately, no other reports of SNF-based ventilator-weaning programs in the literature demonstrate outcomes similar to those of the Wisconsin facilities. With continued support and incorporation of simple, yet effective processes, CAHs could represent the ideal solution for what ails rural America and evolve into an enhanced, pivotal position in the country's healthcare system. Now is not the time to reduce CAH support. Rather, it is the time to expand support to create long-term viability.

With continued support and incorporation of simple, yet effective processes, CAHs could represent the ideal solution for what ails rural America and evolve into an enhanced, pivotal position in the country's healthcare system.

Appendix 1 ::

TRANSITIONAL CARE PROGRAM COMPONENTS IN A CRITICAL ACCESS HOSPITAL

TRANSITIONAL CARE PROGRAM COMPONENTS IN A CRITICAL ACCESS HOSPITAL	
Nursing Ratio	*1 nurse for 3-5 patients, consistent with hospital-level staffing*
On-Site Physician or Advance Practice Provider 24/7	*Most critical access hospitals provide 24/7 coverage on-site.*
Bedside Rounds with Care Team, Patient, and Family	*This important component of Transitional Care allows patients and families to get their questions answered, establishes a care plan, and promotes teamwork to help patients reach their goals.*
Radiology and Laboratory Services On-Site	*On-site radiology and laboratory allow patients to receive follow-up and enable newly ordered laboratory and x-ray studies to be performed 24/7.*
Real-Time Quality Tracking	*YES*
Care Coordination	*Care coordination includes follow-up phone call after discharge, timely follow-up with primary care provider, and confirmation that primary care physician received discharge summary. Care coordination improves outcomes and reduces chance of readmission to hospital.*
Rural vs. Urban	*100 percent rural*
For Profit vs. Not-For-Profit	*100 percent not-for-profit*
Overall	*The components of Transitional Care listed above allow critical access hospital Transitional Care Programs to care for sicker, more challenging patients.*

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