

Case Study & POC & Demos Information

Type: Case Study

Name: IBM Smarter Healthcare

Description:

1. Premises

In the healthcare crisis, globally, aging populations combined with a steady rise in the incidence of chronic diseases have led to healthcare spending that consumes an ever-increasing portion of the world economy. Solutions have been researched and debated for decades, and many health organizations are in the midst of transforming into more coordinated, efficient and purposeful care delivery systems. But the healthcare industry cannot solve the world's health problems alone.

Healthcare is not the only factor that plays a role in a person's health status. Genetics, health-related behaviors and social and environmental factors also contribute to the health of individuals and entire populations. Combating the escalating crisis in healthcare spending and making substantial improvements in the health and vitality of people around the world require both much broader coordinated efforts by many systems and stakeholders.

2. Smarter Healthcare

Health and social care systems are interdependent and each critically affects the other. Yet, a complex matrix of public and private stakeholders dedicated to the health and well-being of individuals still operates largely within silos. They provide separate types of intervention, often with competing objectives and insufficient regard for the outcomes.

As the world grows more instrumented and interconnected, the volume and velocity of data available increases dramatically. As a result, new opportunities arise for observing, analyzing and coordinating the connection between social determinants, clinical factors and lifestyle choices. The ability to transcend these traditional boundaries and work toward the common goal of holistic and individual care is called *Smarter Care*.

Collaborative innovation is happening in pockets around the globe. The world is now at the cusp of creating a type of "system of systems," in which private and public stakeholders are coming together to coordinate resources at unprecedented levels. These stakeholders span industries, governments, cities and communities.

3. Smarter Care in action

The Camden Coalition of Healthcare Providers uses big data to pinpoint “hot spots,” or places with a high density of people with complex medical, social and behavioral needs. The coalition analyzed medical records from three major hospitals in Camden, NJ, from 2002-2011. The coalition found that just 1 percent of the city’s patients generated 30 percent of emergency department expenses and that 20 percent of patients were responsible for 90 percent of emergency department costs. By providing and coordinating the medical care and social services these patients needed, the coalition has been able, in some cases, to reduce the cost of their care by almost half.

Another hot spot that exemplifies the collaboration that is possible in a community is on the west side of Saskatoon, which has:

- The highest rate of new HIV cases in Canada
- Higher than average rates of diabetes, depression, addiction, sexually transmitted diseases and hepatitis C
- An alarming rate of infant mortality

To meet the needs of the community, “Station 20 West,” a \$20 million project was launched, which combines: (1) Affordable housing; (2) A library; (3) Medical offices that include a student-run clinic that welcomes patients after hours and on Saturdays; (4) A grocery store focused on healthy food.

The Castlefields Health Centre in Northern England is taking a more integrated approach to health and social care for the elderly. A district nurse works with a social worker to identify and provide supportive care in a program that has reduced hospital admissions of patients aged 65 and older by 14 percent. This program has also significantly lowered the average length of stay for those elderly patients who cannot avoid hospitalization.

4. Data-driven insights

What is different today is the use of data from new and diverse sources, which helps pinpoint opportunities in a population to transform care for the individuals with the greatest needs. Being able to capture, manage and use all forms of data from all relevant sources is what enables the types of personalized insights and care that can make a difference.

Leaders in health and social care are working to improve wellness in their communities and to operate with greater financial efficiency. Health insurer WellPoint has pioneered the use of cognitive computing systems to encourage use of evidence-based practices in its provider network. Memorial Sloan Kettering Cancer Center and IBM are co-developing cognitive capabilities so that oncologists everywhere will be able to make better informed treatment decisions with their patients.

Developmental Services Ontario, a network of agencies that helps adults with developmental disabilities, relies on more sustainable, community-based support and individualized care plans to improve the health and well-being of individuals.

These organizations and other innovators are focusing on the individual to understand each person’s context and also the population they serve. They are using new and existing data sources and analytic innovations to uncover valuable insights into lifestyle choices, social determinants and clinical factors. With these insights, they are able to create a more

holistic view of the individual and their unique requirements. As a result, they can provide more coordinated and efficient care and advanced care management with a deeper level of engagement that can improve outcomes and lower costs.

4.1. Better care at lower cost

In Europe, the rise in chronic disease in an aging population is consuming an ever-increasing share of healthcare resources. To stem the tide, one healthcare provider in southern Europe is piloting a new program for complex chronic disease management to support elderly patients with multiple chronic illnesses. The system will help nurses, physicians, specialists and social workers coordinate their efforts to provide holistic and individualized in-home support to individuals. The objective of the system is to improve adherence to care programs, quality of life and satisfaction with the healthcare system, all while reducing costs.

A key to the program is the creation of a customized care plan for each individual. A 360-degree view of the clinical and functional information collected from the primary care physician, acute care practitioners, labs and other departments informs the plan. This information was previously segregated in more than 20 different databases and many custom and commercial applications.

4.2. Keeping PACE

Singapore's population of 5.5 million people is among the fastest aging in the world today. In August 2011, a three-year demonstration project called the Singapura Programme for All Inclusive Care of Elders (SingaPACE) launched to evaluate the impact of integrated home and community-based care intervention on older adults. Its goal is to avoid hospitalization and improve quality of life. A collaboration of the Tsao Foundation, Singapore General Hospital and Alexandra Hospital, the program provides comprehensive medical, nursing, health, nutrition and social programs for the frail elderly in Bukit Merah, including a day healthcare center and home care services. Transportation to and from the day healthcare center is provided.

The three-year study will measure the following variables for individuals in the program against standard care for elders who are eligible for but decline nursing home placement:

- Hospital admissions because of accident or emergency
- Admission for acute care
- First admission to residential nursing care
- Patient satisfaction
- Caregiver burden

5. The continuum of care

With context-based insights from social and clinical analysis, care professionals can segment populations by risk profiles, inform care approaches for individuals and proactively manage finite care resources faster and more efficiently. The result is improved outcomes. Identifying specific risk factors for individuals can guide better decision-making at every stage along the continuum of care. Such insights allow for:

- Preventive measures, such as vaccination programs or wellness promotions, and early intervention initiatives
- Routine screenings that can predict disease onset
- Education and incentives that encourage healthy lifestyle choices to help control risks

Smarter Care can help organizations in care-related industries improve health and wellness outcomes for their constituents, while strengthening their own financial performance. Enabled by new technologies, organizations in systems of care are crossing boundaries to share and advance common goals centered on the individual. Taking a holistic approach makes it possible to deliver efficient, integrated services and individualized care that can improve outcomes, lower costs and drive wellness and community vitality.

Smarter Care enables organizations to:

- Synthesize knowledge and analyze large, complex care-related data sets to identify those at risk.
- Manage information that spans multiple stakeholders, including wellness, health and social care organizations.
- Deliver proactive, individualized care that eliminates unnecessary and preventable inpatient hospital admissions and readmissions.
- Highlight the most effective evidence-based care protocols for greater economic value and reduced waste.
- Collaborate over boundaries, including organizational, bureaucratic and technological, to enable individual and population health.
- Provide coordinated care to individuals as citizens, patients and consumers.

6. IBM's leadership in Smarter Care

Improving the way health and social care systems work is not an abstract aspiration but an increasingly urgent imperative. Around the globe, businesses, governments, cities and others can work better together to create communities of care. Taking a Smarter Care approach facilitates the implementation of new business and financial models for the global care industry. These models focus on the critical interdependency between:

- Governments
- Social program agencies
- Medical practitioners
- Hospitals and other healthcare providers
- Insurers
- Employers
- Life sciences companies
- Medical devices and diagnostics companies
- An increasing number of other individuals, groups and organizations

IBM helps these stakeholders collaborate to uncover valuable insights into social determinants, lifestyle choices and clinical factors. These insights can be applied to developing a holistic approach to individual and community care.

Leading, innovative organizations are acting now to redefine the value they bring to their markets, partners and stakeholders. And, technology is enabling their transformation. Data-driven insights and comprehensive population analysis are enabling smarter individual care plans that are coordinated between health and social care systems. These technological advances can lead to improved individual outcomes and population health, all of which are critical factors in economic and social progress.

The demographic challenges of the 21st century demand that businesses, governments, cities and communities articulate a vision, use fact-based decision-making and act with purpose to improve the health and well-being of individuals. For more than 100 years, IBM has been helping healthcare and public sector organizations achieve their goals. IBM has the experience to engage and convene leaders and foster collaboration that crosses all boundaries, all in an effort to meet tomorrow's challenges through relentless innovation.

IBM has deep expertise in managing and integrating complex systems, and IBM specialists have broad subject matter experience in life sciences, bioinformatics, social care and healthcare. By bringing these together, IBM is enabling a foundation for transforming 21st century care systems. IBM has completed more than 3,000 transformation initiatives, ranging from small hospitals to national healthcare projects, and holds more than 500 patents in analytics and more than 600 in healthcare. IBM has worked with social program agencies in 70 countries and has solutions for social program management and health and social care coordination that were designed by health and social care professionals. IBM supports collaboration between the clinical and social worlds. And, IBM® Watson™ cognitive computing capabilities, hypothesis generation and evidence-based learning can support medical professionals in decision making.

6.1. Providing patient-centered team-based care with IBM Care Management

IBM Care Management enables care management professionals to create and administer optimal outcome plans for individuals and their families. By reducing the burden of administrative paperwork, this solution enables care professionals to focus on serving the individual and ascertaining the most appropriate care plan for their individual and specific needs. With IBM Care Management, care providers can design personalized care plans, coordinate care delivery that spans multidisciplinary teams, and engage individuals directly to improve treatment outcomes. *IBM Care Management is designed to support the five activities that are critical to care management:*

6.1.1. Identify

To develop a care plan that fully and adequately meets individual needs, care professionals must determine the complexity of a patient's needs, his or her prior care history, and his or her personal and family support. Financial means, housing, education, safety, employment and nutritional needs are as critical in care plan design as health conditions. These factors all affect the likelihood of successful, sustainable outcomes. IBM Care Management enables professionals to develop a holistic view of individuals by providing access to a synchronized view of data from multiple existing systems that includes *insights from unstructured data*. It

supports goal-setting, integrated service delivery planning, execution and monitoring for health outcomes.

6.1.2. *Assess*

When identified, an individual's needs must be quantified for severity to ensure an appropriate response. An individual's health, social and psychological context, strength, and needs are all considered in *evidence-based* methods. This *outcomes-based assessment* is crucial and can be repeated many times in complex cases. IBM Care Management integrates these assessments into the planning process. After priorities and goals are set, outcome plans with recommended activities can be generated.

6.1.3. *Respond*

A series of planning activities are generated by the initial evidence-based assessment. In contrast to a one-size-fits-all approach, care management workers can use an individual's situation, history and current needs to determine priority for benefits and services to create a unique engagement pathway.

IBM Care Management helps support effective decision-making through a dynamic assessment and decision-making framework. This framework features various functions:

- Intelligent information capture and client evaluations
- Rules-based, assessment-driven recommendations for service plans and key client metrics
- Flexible tools for constant monitoring of client progress toward goals

A care coordinator creates and manages the care plan by selecting the appropriate activities. Those activities might include counseling, physical or occupational rehabilitation therapy, follow-up doctor appointments, filling prescriptions, education, training, or any combination of services.

6.1.4. *Manage*

For a comprehensive care plan to succeed, the care plan should extend beyond a single organization and take into consideration a team of multidisciplinary care workers that span distinct and unique organizations. Together, they promote the delivery of the right services, at the right time, by the right provider, in the right setting to achieve the preferred outcome. Additionally, needed, the care plan can also be modified for a new optimal care pathway.

IBM Care Management supports various functions that enable collaboration and coordination between virtually all parties who are involved with the care process. These functions allow for effective, team-based planning and decision-making with an emphasis on role-based security:

- Simple services selection and scheduling
- Robust service registry and provider information management
- Comprehensive administration of contract and licensing information
- Automated, timely and accurate processing of provider payments and invoices

- Role-based portals that multidisciplinary team members can use to view and update care plans and participate meaningfully in the care process through online discussions and meetings

6.1.5. *Measure*

Outcomes must be measured for individuals, programs and organizations. Outcome evaluations, reports and performance indicators can help inform decision-making at all levels. And, when analytics are applied to them, future needs can be predicted and preventive measures identified. As a result, the development and implementation of care pathways can become an iterative process based on evidence, experience and proven methods.

IBM Care Management provides a role-based ability to view and manage case information, activities, documentation and communications. With this solution, care management providers can schedule and run assessments and reassessments to identify if individual circumstances have improved or worsened.

6.2. **Innovation that matters**

Few areas of health and medicine have gone untouched by the technology, research and innovation generated by IBM over the past century. From the first continuous blood separator that led to treatment for leukemia patients, the first heart-lung machine used to keep patients alive during surgery and the excimer laser used in LASIK eye surgery to technologies of the future that will one day allow nanoscale particles to enter the bloodstream and fight drug-resistant infections, IBM touches more points in healthcare than anyone else.

IBM has created technologies and solutions specifically designed to improve the process of care, diagnostics and treatment of disease, and advancing how medical knowledge is shared. This goes far beyond computers. New areas of research, including breakthroughs in gene sequencing and nanotechnology, and even innovations in chip design, are improving healthcare around the world.

Using principles and technologies from computing, physics, materials science and chemistry, IBM Research has a track record of successfully transferring technology to create new solutions for healthcare. The company spends billions each year on research and has large teams of physicians and other clinicians on staff to ensure it is addressing healthcare's most pressing needs. With 12 laboratories on six continents, IBM Research is working on a range of projects, many of which assist healthcare organizations in achieving better outcomes.

When it comes to big data, IBM is uniquely positioned to address this opportunity with the industry's broadest portfolio of capabilities, including software, hardware, services and innovations developed by IBM Research, such as stream computing and the DeepQA project of the IBM® Watson™ system. IBM provides proven software and services that deliver complete, end-to-end integration of big data and advanced analytics to give organizations the information and intelligence they need to transform to achieve outcomes that matter. With proven expertise in handling complex data and information, IBM software supports the integration of structured and unstructured data from many different sources and locations,

and provides a robust data model designed especially for the healthcare industry that scales to meet the needs of even the largest organizations

6.3. IBM Care Management: Features and benefits

- Builds longitudinal, data-driven, evidence-based care records
- Uses patient information that spans systems and providers to create a complete picture of health information beyond clinical elements
- Helps all care givers collaborate to focus on high-cost, high-need patients and proactively deliver accountable and personalized care
- Supports adaptive, patient-centered care delivery while automating tasks, reducing redundancy and repetitive paperwork and driving efficiency
- Generates data-driven insights that can help decision-making at the point of care
- Improves operational effectiveness by building flexibility and resilience into operations to support cost reduction and excellence in clinical and outcome performance and practices
- Establishes a central record and memory, which can reduce the amount of time and effort individuals need to manage their own care - especially valuable in some instances of elder care and mental illness
- Helps identify new, personalized care management opportunities that move beyond one-size-fits-all medicine
- Enables care providers to spend more time or interact with more people

7. Conclusion

IBM Care Management is an *insight-driven* care management solution that provides a social platform for care givers that can help them to collaborate on how to help their clients avoid the need for emergency care and to otherwise help keep their clients healthy. It is a packaged software application that can help health and social care stakeholders manage care throughout the care continuum. They can identify clients in need of care, assess their needs, establish the appropriate plan to support their needs, manage the care, and monitor results and outcomes. It brings together key capabilities that span data integration, analytics and coordination of care. The result is a business solution that provides a 360-degree view of each person and enables delivery of comprehensive care plans that are person-centric not disease centric.

Organization: IBM

Website:

ibm.com/smarterplanet/us/en/smarter_care/overview/

Related products:

Software and Services:

- IBM DB2
- IBM WebSphere
- IBM Tivoli
- IBM Cognos
- IBM SPSS

Vertical Industries:

- Healthcare
- Education
- Information-based Medicine

Technologies used:

- IBM Care Management
- IBM Watson

Demos: n/a

Related Patents: n/a

Related Standards: n/a