

HOPE FOR NEW JERSEY'S CITY HOSPITALS: THE CAMDEN INITIATIVE

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Introduction

A tiny fraction of patients that consumes a disproportionately large share of medical resources in cities like Camden, NJ, threatens to overwhelm the state's healthcare delivery system. Pursuant to federal law, hospitals and emergency departments (EDs) are required to provide life-sustaining medical care to anyone seeking treatment, regardless of the patient's ability to pay.

This situation is untenable in every respect.

Local coalitions of hospitals, clinics, medical practices, payers, housing advocates, mental health providers, state agencies, and other entities offer the best opportunity to address the issue of excess utilization. None of these actors, individually, is equipped to respond to the demands of a highly mobile group of patients with incredibly diverse medical and social needs. Many of these entities focus on the episodic needs of a single patient for a discrete complaint, rather than addressing needs at a higher public health or systemic level.

Building local coalitions of providers and advocates creates relationships that permit the entire system to respond in flexible ways to the complex and changing needs of the patients who place the greatest demands on the system. These health and social needs can be defined in tangible ways, and clear metrics can be used to measure and quantify program outcomes. Furthermore, the building of local coalitions facilitates the development of additional and expanded partnerships to address issues beyond the local setting.

The Citywide Care Management System, a novel approach implemented by the Camden Coalition of Healthcare Providers (Camden Coalition), an incorporated nonprofit entity, has demonstrated significant results in improving the quality of services provided to so-called super users, while meaningfully reducing the cost of providing that care.

The early findings suggest that expanding this new model for the delivery of care to super users in other areas of the state has the potential to save millions of dollars in medical care resources, while improving health outcomes for the patients it would serve. The Camden Coalition has effectively identified a group of patients that was making a disproportionately large contribution to the problem of healthcare costs and designed an effective intervention to address the problem.

Using readily available electronic claims data (UB-92 data), the Camden Coalition identified a small group of people to target, designed a case management intervention to address their needs outside of the ED setting, and realized significant cost savings while providing higher-quality care.

Fortunately, statewide UB-92 data, which are currently being collected by the New Jersey Department of Health and Senior Services (NJDHSS), could be used to identify similar cohorts of super users in other New Jersey cities.¹ If programs similar to the one implemented in Camden can

be designed and implemented for these cities, they will offer bold solutions to address these potentially devastating problems.

Background

Camden is among the poorest cities in the United States, with roughly 95 percent of the population eligible for Medicaid assistance. In this underprivileged setting, a small group of dedicated primary care physicians established an organization to address the healthcare needs of the city. The Camden Coalition of Healthcare Providers began by collecting and analyzing medical claims data for the hospitals and emergency departments in Camden from 2002 to 2007, examining 387,000 records for 98,000 patients. The data came from three Camden hospitals: Our Lady of Lourdes Medical Center, Virtua Health Camden, and Cooper University Hospital.

The results of the Camden Coalition's analysis were shocking, informative, and instructional:

- Eighty percent of the total costs for treating 98,000 patients were generated by only 13 percent of those patients (see [Figure 1](#)).
- Ninety percent of the costs were incurred by only 20 percent of the patients.
- The top 1 percent of patient utilizers represented a cohort of 1,035 patients that made 39,056 hospital visits in this period. Each of these patients made between 24 and 324 visits between 2002 and 2007, and, most alarming, this small group accounted for approximately 10 percent of all admissions and generated total charges of \$375 million in medical care delivered.
- The patient with the greatest number of visits to the Camden hospitals and emergency departments made 324 visits over five years. Another patient was admitted 113 times in a single year. The most expensive patient incurred \$3.5 million in charges for medical services over five years.

These Camden data compare with a similar analysis of data from 2003 to 2008 collected in Austin, TX, by the Integrated Care Collaboration (ICC). ICC is a nonprofit, regional collaborative of 24 providers (including a hospital system, a nonprofit clinic, a federally qualified health center, and the local health department) who arrange for or provide care for uninsured or underinsured individuals. ICC conducts research, program analysis, and treatment support at the point of care. In its analysis, ICC found that just nine patients made 2,678 visits to Austin-area EDs in that six-year period, incurring costs of more than \$3 million. One patient made 145 visits to Austin EDs in the last year of the study alone.²

Furthermore, a national study reported that the 3.6 percent of Medicaid enrollees with annual per-beneficiary costs greater than \$25,000 consumed nearly 50 percent of total Medicaid spending.³ A study of California's Medicaid beneficiaries found that state had more than 1,000 super users who

each incurred costs of more than \$100,000 in 2007.⁴

The Camden Coalition, using readily available claims data, identified a tiny group of patients who were consuming a disproportionately large quantity of medical resources and limited assets. Using these findings, the coalition designed and implemented an innovative case management intervention to address the specific and chronic maladies suffered by the identified super users. Thus, the Citywide Care Management System (CCMS) was launched in 2007 to address the special needs of this small group.

Using a three-year, \$300,000 grant from the Robert Wood Johnson Foundation and additional funding from other organizations, the CCMS built a “medical home without walls” to reach out to the super users and provide care to them in their homes, in homeless shelters, or even on the street. The New Jersey Department of Health and Senior Services provided financial assistance to help build an electronic health information exchange to facilitate the movement of patient data between participating entities. The Camden Health Information Exchange will permit hospital emergency departments, community health centers, and private physicians to access recent laboratory results, imaging reports, and discharge summaries of the patients served by the Camden Coalition.

This demonstration project is particularly timely because demand for ED services has been growing rapidly. A 2004 study, for instance, reported that ED use had increased 20 percent between 1992 and 2001, while a Texas study found that the number of ED visits rose 28 percent between 1999 and 2005.^{5,6} While demand for ED and hospital care has been rising, New Jersey's allocation to its Charity Care program has been falling, dropping nearly 10 percent from \$718 million to \$649 million in 2008.⁷ It is crucial, therefore, to examine the success of innovative projects such as the CCMS that are designed to reduce demands on EDs and hospitals and lower spending for services provided in those settings.

Data Methodology

The Camden Coalition's health database was started in 2003 as an MD/MPH student research project focused on examining rates of violence and injuries for residents living in the city of Camden. An institutional review board (IRB) proposal was submitted to the Cooper Health System to obtain claims data for a one-year period for every resident who visited the hospital or ED and had an International Classification of Diseases, Ninth Revision (ICD-9) code for an accident or injury. The initial data set included only address, age, gender, type of visit, and ICD-9 code. The data were analyzed in Excel and Access and geocoded using ArcView. It quickly became obvious how valuable this type of data could be for understanding the patterns of complex public health problems like violence and injuries. Unfortunately, most health data are not available below the zip code, county, or municipal level, which renders them useless for community-level health

improvement purposes.

Later in the year, in collaboration with CamConnect, a local, nonprofit data warehouse in Camden, the Camden Coalition submitted an amendment to the original IRB proposal to examine all the claims for every city resident for one year. Once again, the data were analyzed in Microsoft Excel, Microsoft Access, and ArcView and provided crucial insight into the patterns of overuse, waste, and fragmentation within the healthcare delivery system. Reports were produced and circulated throughout the city of Camden, which began attracting the attention and support of key healthcare stakeholders. All this work was done without funding.

As a next step, to enlarge the data set, the coalition sought coinvestigators at each of the other two hospitals in Camden, Our Lady of Lourdes and Virtua. The three hospitals are highly competitive and do not have a history of collaboration. An identical research proposal was submitted to the IRBs at Lourdes and Virtua requesting access to all the claims data for every resident visiting their hospitals for one year. The requested fields were expanded to include name, address, date of birth, date of admission, type of visit insurance, charges, receipts, ICD-9 codes, gender, and ethnicity.

All three IRBs determined that the study did not need consent from the individual patients because it fell under a public health research exemption. There was no risk to the patients from inclusion in the database. The health information management staff at each hospital provided the coalition with the raw claims data, drawn from the billing system at each hospital. The data were filtered based solely on home address for Camden, NJ.

The data are housed on two encrypted, password-protected hard drives. They are locked in a metal cabinet when not being used. All of the work is kept on the hard drives. They are accessible only to a few credentialed researchers, who are named on the study.

LinkageWiz, a probabilistic linkage program, was purchased to link the three databases using name, address, and date of birth as the matching variables. The data from the hospitals are updated every three to six months. The data continue to be managed in Microsoft Access and include 480,000 individual claims for 90,000 patients from 2002 to 2009. The entire database has now been geocoded with approximately 95 percent matching through automated and hand geocoding.

The overall cost to create and maintain the database has been minimal. The data have been incredibly valuable for raising funds, building support from local stakeholders, planning projects, and evaluating projects. As a next step, the coalition is planning to match external data sets into the database using probabilistic linkage, including records from a local homeless shelter and billing data from local primary care doctors' offices. This will enable the coalition to identify the primary care provider for each patient and better understand some of the social dynamics behind ED and hospital use.

The coalition does not use the database to identify clients for enrollment in the Citywide Care Management System. The patients are referred by local social workers, emergency room physicians,

hospitalists, and primary care providers. The individual patients in the care management project do not need to give consent as research subjects because they are enrolling in a community outreach program providing standard and routine medical, social work, and care coordination services. Their ED and hospital claims are examined at an aggregate, public health level through matching to the citywide database.

Medical and social information about the patients enrolled in the program is stored in a Certification Commission for Health Information Technology (CCHIT)–certified electronic health record (EHR) system called SpringCharts, produced by Spring Medical Systems, Inc. Old medical records, obtained to aid in applying for long-term disability benefits, are scanned into the EHR system. All of the staff, including the nurse practitioner, social worker, and community health worker, use the system to document their interactions with the patients.

Project Description

The Camden Coalition's Citywide Care Management System seeks to accomplish a number of tasks in order to reduce burdens and costs for Camden EDs and hospitals. Among these tasks are to use the database—constructed using data from the three hospital systems operating in Camden—to identify super users, to locate the super users and get their consent to join the program, and to extend the necessary services to the super users in their home settings to reduce or eliminate their need to use Camden's EDs for nonemergent medical care.

The CCMS started enrolling clients in September 2007; 115 have been enrolled so far. All the clients have low or no income, many are homeless, and some are uninsured. Many have complex medical needs, including chronic conditions (e.g., diabetes, congestive heart failure, emphysema, and cancer), mental health issues, and histories of substance abuse. Few have the ability to get to a pharmacy, monitor their own blood sugar, or arrange transportation to a follow-up visit with a specialist.

This patient profile is similar to that in the Austin, TX, study cited above, in which of the nine super users described, three were homeless, eight had been diagnosed with drug abuse problems, and seven had mental health diagnoses.⁸ A California study of super users, conducted by the Frequent Users of Health Services Initiative ("California Initiative")—a joint undertaking of the California Endowment and the California HealthCare Foundation, based at the Corporation for Supportive Housing—reported that two-thirds of the patients enrolled in the study had untreated chronic medical conditions, more than half suffered from substance abuse disorders, roughly one-third were diagnosed with mental health disorders, and almost half were homeless. More than a third of these California patients had three or more of these risk factors.⁹

The core service activities of the Citywide Care Management System are vested in an assigned local

care management team. Each team consists of a nurse practitioner, a social worker who serves as case manager, and a community health worker. The community health worker is responsible for patient education, care coordination (e.g., making appointments, arranging transportation), providing emotional support, and making sure clients adhere to prescribed treatment regimens. The social worker focuses on guiding the client through the labyrinth of state and federal benefit systems and helps qualified clients become eligible for public health insurance and other programs, such as drug abuse counseling and housing assistance. The nurse practitioner is qualified to perform patient examinations, write prescriptions, identify additional medical treatment required by clients, and provide follow-up care. The California Initiative also utilized this multidisciplinary team approach.

The local care management team members actively seek out the clients, wherever they are located, rather than waiting for the clients to present at a Camden hospital or emergency department. Client visits generally involve two or all three team members, fostering bonds with the client and facilitating multidisciplinary problem solving. The team member who creates the best bond with the client becomes the lead staff member for that client. Clients have described the motivation they feel to adhere to treatment regimens when they know there are healthcare providers taking an active role in caring for them. The clients engage with the team and become active partners in their own healthcare.

Findings from Other Studies

Okin et al. report positive results in their study of a case management intervention on 53 patients who used the ED five times or more in 12 months in the San Francisco area. Among this group of super users, active case management led to a 40 percent reduction in ED visits, median ED costs were reduced roughly 47 percent, and the program resulted in statistically significant improvements in enrollment in the Medicaid program, as well as a significant decrease in homelessness and the use of drugs and alcohol. The authors concluded that there was a net savings of \$1.44 in hospital costs for each dollar invested in the program.¹⁰

A study of frequent ED users in Scotland also found that a dedicated program of case management for frequent ED users resulted in strongly statistically significant reductions in ED use. For this study, by Skinner et al., frequent users were defined as patients who visited EDs 10 times or more over a six-month period; 57 such patients were identified. The median number of ED visits over a six-month period was 12. In the subsequent six-month period after the case management intervention began, median ED visits fell to six. The overall number of ED visits among the group fell from 720 before the intervention to 499 after, for a significant reduction of nearly 31 percent.¹¹

The California Initiative, described above, reported results in terms of ED use and hospital utilization and charges after one year and two years of intervention. The results are also described in measures of insurance coverage obtained, housing found for enrollees, and patients linked with primary care

providers and behavioral health services. The California Initiative reported that after one year of program intervention, ED visits declined by 30 percent, ED charges decreased by 17 percent, and hospital inpatient admissions fell by 14 percent, while inpatient days and inpatient charges fell more modestly.¹²

While the improvements after one year of the California Initiative were impressive, more dramatic improvements occurred over two years of program intervention, compared to the preintervention baseline. Average ED visits decreased by 61 percent, average ED charges fell by 59 percent, average inpatient admissions declined by 64 percent, average inpatient days fell by 62 percent, and average inpatient charges decreased by 69 percent.¹³ An evaluation of the data indicated that the first year's results were tempered, to a degree, by the impact of many extremely sick patients' receiving the primary and hospital care required to "stabilize" the group of super users. In the first year, many patients required surgery or other expensive and hospital-intensive medical attention. This explained the somewhat less impressive results for the first year in terms of hospital inpatient days and charges. However, the data demonstrated that after many of the super users were connected with insurance, mental health and substance abuse treatment, housing assistance, and income benefits, their overall health conditions tended to stabilize, leading to dramatic reductions in ED visits and charges as well as reduced hospital admissions, inpatient days, and charges.

Results of Camden's Citywide Care Management System

The CCMS matched 36 of its enrolled clients to the original Camden Coalition hospital claims data set. Before the intervention, these 36 super users incurred an average of \$1.2 million in hospital charges each month. Initial data on these 36 clients indicate marked reductions in the utilization of ED and hospital services, as well as improvements in patient outcomes.

Since hospitals lose money on the services they provide to uninsured patients, it helps their bottom line if they reduce the number of such visits they receive. Hospitals can also improve their bottom line if they receive a greater rate of reimbursement for the services they provide to super users. CCMS findings indicate that Camden hospitals are benefiting from both improvements. An additional benefit to hospitals occurs when the EDs are less burdened by uninsured patients seeking nonemergent care. These EDs are then in a better position to treat insured patients with emergency care needs, resulting in greater overall receipts for the hospitals.

The findings from the Camden Coalition indicate that charges incurred per month for the 36 super users fell by slightly more than 56 percent (see [Figure 2](#)) as a result of the program (an absolute reduction of nearly \$687,000 per month for these 36 patients). The number of monthly visits to hospitals and emergency departments for this group of patients declined by roughly 40 percent per month (see [Figure 3](#)), and reimbursement rates to care providers increased by approximately 52 percent (see [Figure 4](#)), as a result of more of the super users' becoming insured. In summary, the

intervention led to less utilization of services by super users, lower incurred charges, and a higher reimbursement rate for the group of 36 super users enrolled in the program. If the experience of the California Initiative holds true for the Camden Coalition, it is conceivable that the second year's results could be even more impressive than the first year's improvements, as the Camden super users' overall health stabilizes after the first year of intensive and costly intervention.

With \$1.2 million of incurred charges per month, each super user on average was consuming \$33,333 of ED/hospital services per month. At a cost of \$150,000 for the first year of the program, CCMS spent roughly \$12,500 per month on case management for these 36 clients, or \$347 per client per month. As a result of the intervention, each super user's average consumption of medical services fell to \$14,250 per month. On average, therefore, total monthly consumption of medical services (both ED/hospital charges and CCMS charges) per client fell from \$33,333 to \$14,597 (\$14,250 plus \$347) per month, or approximately 56 percent. Another way to state the same findings is that for every dollar spent on case management in the CCMS program, monthly ED/hospital charges in Camden were reduced by nearly \$55.¹⁴

Interpretation of this impressive number should be tempered by the understanding that hospital charges incurred and realized receipts are not the same thing. Incurred charges are converted into hospital receipts at a rate of approximately 11 cents on the dollar. Even with this caveat, it is clear that the CCMS intervention is resulting in dramatic reductions in ED/hospital utilization, in a cost-effective manner, for this group of super users.

Conclusion

Overcrowding at Camden EDs is an ongoing problem. Cooper University Hospital's ED, for example, was designed to accommodate 22,000 visits per year, yet had to handle 56,000 visits in 2008, up from 51,000 in 2007.¹⁵ The costs to New Jersey hospitals and taxpayers (in Medicaid and Charity Care expenses) make the current system unsustainable. A major strength of the Camden project design is that it encompasses the whole city and all of its emergency departments and hospitals so that the project's efforts are not fragmented and the three hospital systems have strong incentives to cooperate with each other and to support the collaboration.

The earliest impression of the program's impact was that it dramatically reduced the ED use of roughly half of the enrolled clients, while another fourth of the enrolled clients had moderated their ED use to some extent. A more detailed analysis of the project after a year's time confirms that clients enrolled in the CCMS program made significantly fewer visits to Camden EDs and spent less time in the hospital, and hospitals received more reimbursement for the care they provided.

The Camden Coalition believes a project team has the capacity to manage 150 clients, with additional expenditures for personnel, equipment, and supplies. Assuming that the ED/hospital

utilization and incurred charges of the expanded client group are comparable to those of the first 36 super users, and assuming that the efficiencies demonstrated with 36 patients can be realized when program is expanded to 150 patients, each super user's average monthly charges would be reduced from \$6,039 to \$2,633 per patient per month, for an annual reduction in incurred charges of \$6,130,800 for the 150 super users. The projected budget to expand the CCMS to 150 clients is \$457,100 per year.

To reiterate, this reduction in incurred charges does not translate directly into an additional \$6 million in hospital receipts. It does, however, represent a substantial reduction in the utilization of ED/hospital services that are reimbursed at a very low rate and represent a loss to the hospitals.

As a result of the existing CCMS program, the state has fewer Charity Care receipts to pay for the group of 36 super users, because one of the responsibilities of the social worker is to identify insurance programs for which clients qualify. Many of these clients who have fallen between the cracks qualify for Medicaid/Supplemental Security Income (SSI), Medicare, or veterans' insurance coverage. Because they have been unable to coordinate their own care—and because no one has been specifically tasked with guiding these super users to appropriate insurance programs—these clients present without insurance coverage, leaving the EDs and hospitals to recover whatever they can from the Charity Care program. Once the CCMS team succeeds in enrolling clients in the insurance programs for which they are eligible, hospitals are able to recover more of their incurred charges. As a result of the CCMS intervention, the hospitals are receiving greater reimbursement for the services they render, and demands on the Charity Care program have been reduced.

The three Camden hospitals included in this project have clearly benefited. The case management intervention outside of the hospital setting, for example, has permitted Cooper University Hospital's ED to concentrate more on emergency care and has reduced the number of hours in which ambulance crews were advised to divert emergencies elsewhere because Cooper's ED could not handle any more volume. This has helped Cooper's ED to treat more patients who have insurance coverage and reduce the number of patients who leave the ED before being seen. It is not unreasonable to suggest that this program merits replication in other New Jersey cities with characteristics similar to Camden's, such as Atlantic City, Trenton, and Newark. It is expected that these interventions would have similarly beneficial impacts on the bottom lines of hospitals in those cities.

While the Camden hospitals have clearly benefited from the Camden Coalition's Citywide Care Management System, the super user clients also appear to be major beneficiaries of the program. These clients, by definition, are overwhelmed by the challenges of negotiating the medical care system and the societal safety net in general. Their complex mix of chronic health and mental health problems, substance abuse issues, and limited resources have rendered them incapable of successfully addressing their own medical and other needs, hence their high use of EDs. By getting consistent attention from a trusted group of care providers—who address both their medical and

social needs—these super users receive care in a setting that fosters success, demonstrated in fewer ED visits, reduced costs, and improved health outcomes.

Finally, the benefits of this intervention to the citizens and taxpayers of New Jersey should not be understated. By relocating the super users' care from EDs to outreach settings, the EDs are better positioned to offer true emergency care. Lower incurred costs and higher reimbursement rates ease the burden on shrinking state Medicaid and Charity Care programs. As a result of the CCMS intervention, taxpayers are getting better health outcomes for the patients whose treatment is paid for with public funding. The CCMS program provides demonstrated benefits for taxpayers, healthcare consumers, hospitals, and patients. Expansion of the Camden Coalition's model of constructing a "medical home without walls" to other New Jersey cities should be seriously considered.

A key message for health information management (HIM) professionals is that sometimes the simplest exchange of data, using the simplest technology, at minimal cost, while maintaining privacy and security measures, can lead to the most meaningful use of data to improve outcomes. This research project serves as an important example of how the thoughtful use of health data can facilitate the provision of services if all parties are engaged in addressing the problem. Six years ago, an MD/MPH intern doing fieldwork drove across town, picked up CD-ROMs from IT departments, and—using Microsoft Access and Excel and storing the data on a hard drive locked in a metal cabinet—changed the direction of healthcare delivery in one of America's poorest cities.

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Notes

1. New Jersey hospitals are required to submit UB-92 data to the NJDHSS's Office of Health Care Quality Assessment pursuant to N.J.A.C. 8:31B-2.
2. Yahoo! News. "9 Texas E.R. Patients Account for Nearly 2,700 Emergency Room Visits," April 1, 2009. Available at <http://officerresource.com/forums/f5/9-texas-e-r-patients-account-nearly-2-700-emergency-room-visits-35051> (accessed July 6, 2009).
3. Corporation for Supportive Housing. *Frequent Users of Emergency Departments: Addressing the*

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 8. Yahoo! News. "9 Texas E.R. Patients Account for Nearly 2,700 Emergency Room Visits.
 9. Frequent Users of Health Services Initiative. *Summary Report of Evaluation Findings: A Dollars and Sense Strategy to Reducing Frequent Use of Hospital Services, October 2008*. Available at <http://documents.csh.org/documents/fui/FUHISummaryReportFINAL.pdf> (accessed July 6, 2009).
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 11. Skinner, J., L. Carter, and C. Haxton. "Case Management of Patients Who Frequently Present to a Scottish Emergency Department." *Emergency Medical Journal* 26 (2009): 103–5.
 12. Frequent Users of Health Services Initiative. *Summary Report of Evaluation Findings: A Dollars and Sense Strategy to Reducing Frequent Use of Hospital Services*.
 13. Ibid.
 14. The average monthly cost of the case management intervention was \$347 per patient (\$12,500/36). The average monthly savings in ED/hospital charges per patient was \$19,078 (\$686,087/36). Therefore, for each dollar spent on the case management intervention, there was a reduction of nearly \$55 in monthly ED/hospital charges (\$19,078/\$347).
 15. Hirsch, D. "Coalition Helping Patients." *CourierPostOnline.com*, March 22, 2009. Available at http://www.camdenhealth.org/documents/CourierPost_3.09.pdf?AID=2009903220354 (accessed July 6, 2009).

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