

Wiring California's Health Care Safety Net: How Community Health Centers are Using Information Technology to Improve Their Services



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A Progress Report of the Community Clinics Initiative a partnership between Tides Foundation and The California Endowment

I. Introduction

Tides Foundation, in partnership with The California Endowment, created the Community Clinics Initiative (CCI) to build the information management capacity of California's more than 500 community clinics and health centers. These organizations compose a critical element of the California safety net. They provide affordable comprehensive primary health care services to 2.3 million people annually,¹ most of whom have no health insurance.

Strengthening the information management capacity at community clinics is expected to improve the clinic's managerial performance, financial status, patient capacity and quality of care. Effective information management systems directly enhance patient health outcomes by providing automated wellness reminders, improved tracking of patients with chronic diseases, and better coordination of referrals. Expanded IT systems can also improve the quality of health data, which can support improved population health analysis and improved public health policy.

Since the Community Clinics Initiative began in the fall of 1999, it has awarded \$25 million to 83 percent of the licensed community clinics and consortia in California. This report documents the progress achieved under the initiative during its first year and a half of grantmaking. It also synthesizes some of the evaluation's key findings on factors that help community health centers exploit the power of information technology to improve internal operations and health outcomes.

The report will be useful to people involved in planning, research, and policy analysis of the health care delivery system and safety-net providers in California. The findings also will be valuable to community clinics and

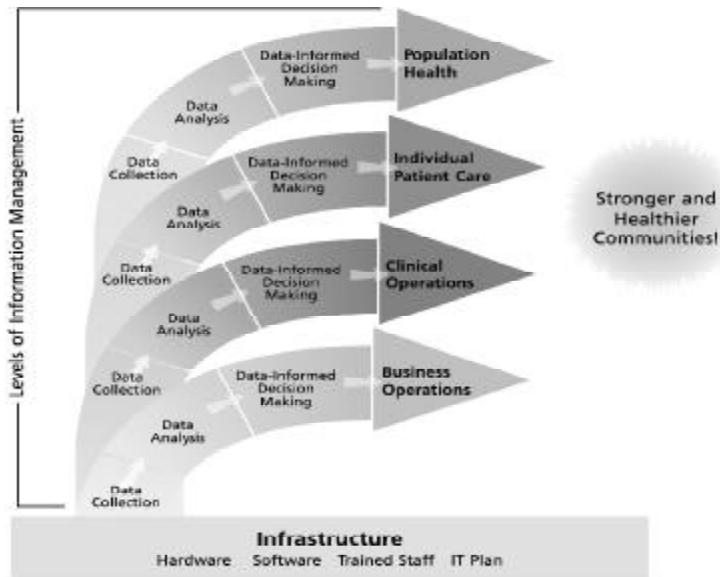
health centers in other states and anyone concerned with the connection between health care and information technology.

II. Conceptual Framework for Understanding Clinic Information Management Capacity

In the context of the Community Clinics Initiative, information management is defined broadly, focusing on how clinics *use* data to guide their operations and decision making as well as the technology that collects that data. An information management system consists of the hardware, software, trained staff, and operational procedures for collecting and analyzing data pertaining to a clinic's business and medical operations. It is useful to analyze a clinic's information management capacity and operations at four different inter-related levels. (See Figure 1.)

- o **Business Operations**
Information management systems that support basic business functions of the clinic, such as accounts receivable and payable, claims, collections, and inventory.
- o **Clinical Administration**
Information management systems that support functions relating to day-to-day non-financial aspects of clinical operations, such as automating registration, scheduling, patient flow information, and provider performance profiling.
- o **Individual Patient Health Care**
Information management systems that support medical providers in delivering individual patient care, such as diagnoses presentation, patient tracking and recall, wellness reminders, and basic medical records.

Figure 1
Levels of Information Management at Community Health Centers



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- o **Population Health Management**
 Information management systems that support clinic staff in collecting and analyzing a variety of health and demographic data that can contribute to the public health knowledge in their community and that clinics can use to apply public health promotion strategies that address the needs of their population.

These functional levels build upon each other. Clinics should think about all four levels when developing their information management plan. However, in general, it is difficult to automate systems to support individual patient care and population health management unless basic clinical and business information management systems are running effectively.

Information management at each functional level happens in three steps:

- o **Step I - Automation and Data Collection**
 Systematically collecting data in an automated format that allows for information exchange and the production of reports within the clinic.
- o **Step II - Data Analysis**
 Analyzing data and generating reports to identify patterns at the clinic.
- o **Step III - Data-supported Decision Making**
 Reviewing trend analysis that compares data across time periods and/or across clinics, especially to

measure progress towards goals and to guide clinic planning.

Technology Infrastructure. Each of these steps reflects the increasing capacity of the clinic to collect, manage, and use data to inform clinic decision making. To support a clinic's progress through the three steps of information management within each of the four components, a technology infrastructure is needed. This infrastructure includes hardware, software, trained staff, and technology plan.

III. Methods for Assessing CCI's Progress

In June 2000 and June 2001 Blueprint Research & Design, CCI's independent evaluator, surveyed the community clinics and consortia grantees to provide Tides Foundation with a comprehensive picture of the information management capacity of California community health

clinics.² Information gathered from the two surveys was supplemented with in-depth case studies of six clinics, selected to represent organizations at different stages of information management development and strategy. Daylong site visits were conducted at each case study clinic during the fall of 2000.

IV. Strengthening Clinics Information Technology Infrastructure

When the grant program started, most clinics had significant gaps in their internal communications networks. About half of the computers in use were older than 18 months. In a climate where money to upgrade computers was scarce, few clinics had a strategic plan for improving their technology.

During the first two grant cycles, almost 90 percent of the grant money went toward strengthening the technology infrastructure of community clinics. Grantees focused on purchasing hardware and software, improving connectivity between clinics sites and to the Internet, and developing information technology plans.

Key indicators of progress include:

- o The proportion of community clinics with dedicated Internet connections grew from 50 to nearly 75 percent.³
- o Clinic corporations with at least one remote site unable to access its practice management system has dropped from 83 percent to 32 percent - a 51

percent decrease.

- o Money from CCI helped 72 percent of the grantee clinics add new IT staff or consultants.
- o Fifty-four percent of grantees purchased or up-graded their practice management software.

Clinics also strengthened their planning capacity.

- o Fifty percent of the clinics currently have a formal information technology plan, up from 30 percent in 2000. Seventy percent of the clinics now include IT goals in their strategic business plan.
- o Medical directors are becoming much more involved in information management planning. The proportion of involved medical directors has grown from approximately one-third in June 2000 to nearly one-half in June 2001. Involvement of medical directors has proven to be a key facilitator in helping clinics apply the power of information technology to the improved clinical operations and patient health outcomes.

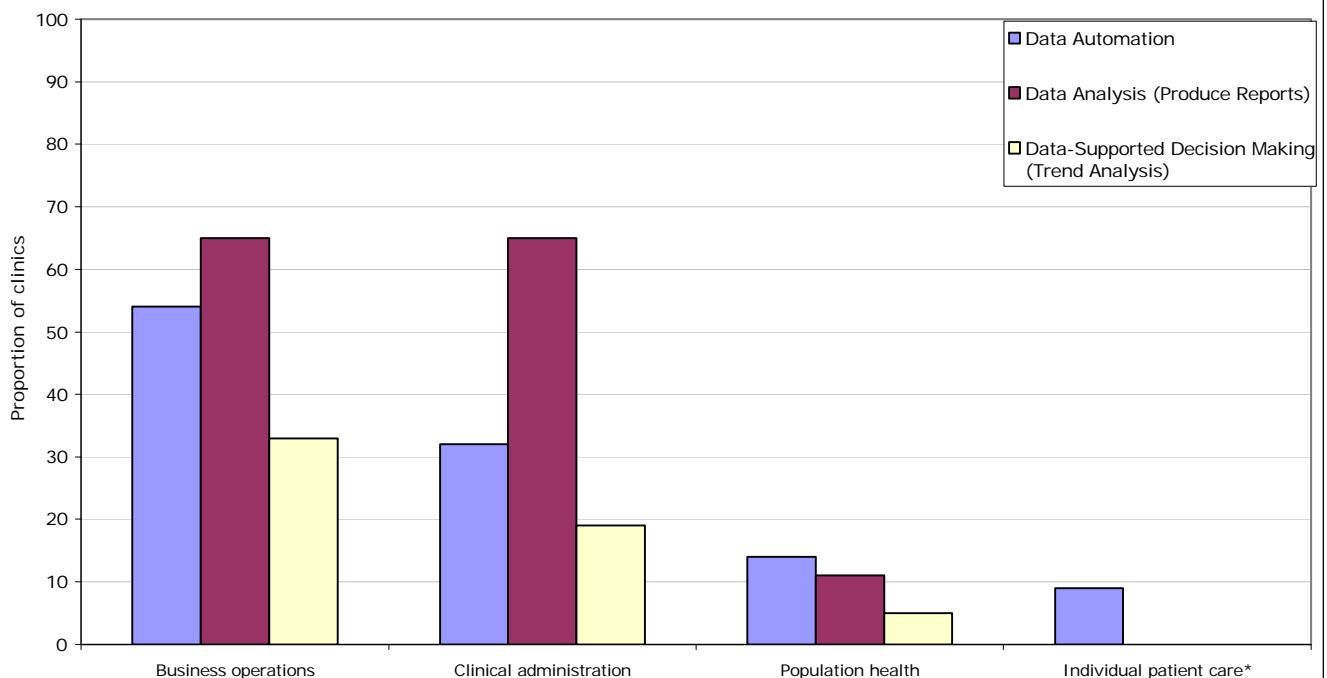
V. Automating and Analyzing Data

When CCI began, most clinics had minimal information management capacity in business operations and clinical administration and almost none used their technology and data to support improved patient care

and population health management. By the summer of 2001, clinics had made progress on the initial levels of building their information management capacity, but there remains significant room for growth.

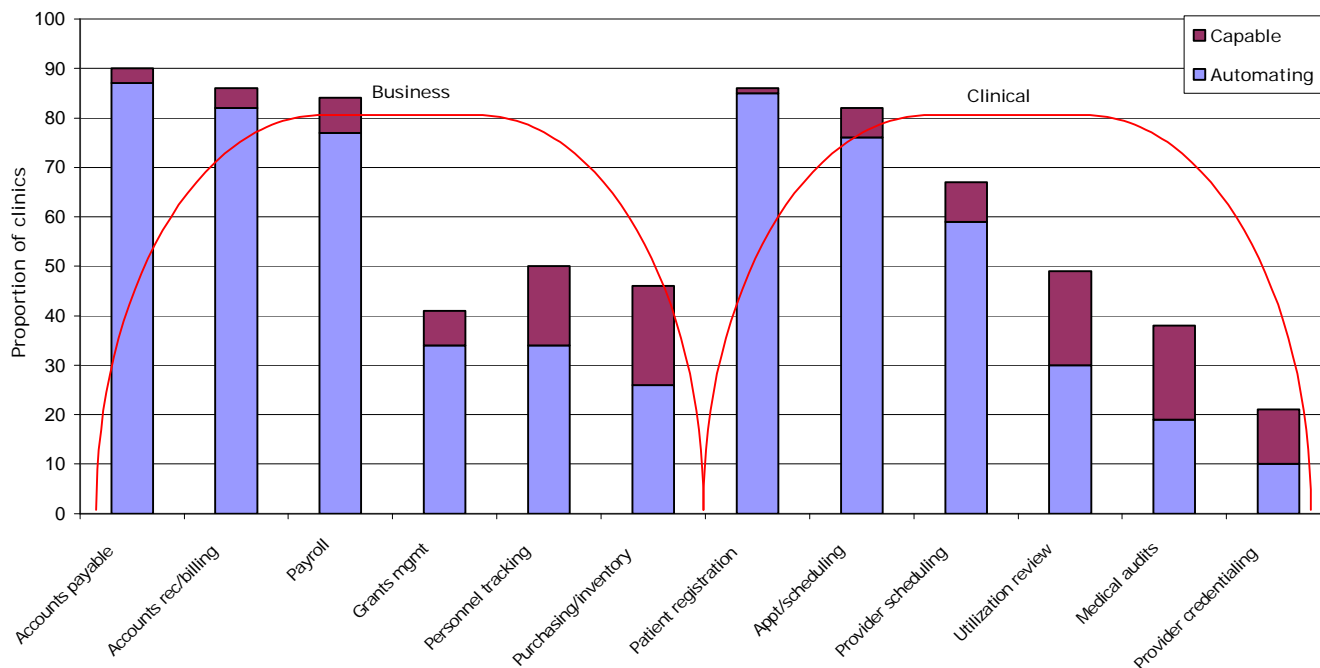
Two-thirds of the clinics surveyed have implemented basic information management systems to analyze their business operations and clinical administration data. One-third still have significant gaps in their systems to operate and analyze basic business operations and clinical administration. (See Chart 1.) Some of this progress on building automation and data collection capacity stems from clinics learning how to use their existing practice management software more effectively. The June 2000 survey showed that many clinics were significantly underutilizing their software. Nearly a quarter of the clinics were not using some of the most basic automation capabilities built into their practice management systems, such as appointment scheduling, patient tracking/recall, and eligibility. The two primary reasons cited for underutilization were lack of training and lack of money to buy additional software modules. By June 2001, less than ten percent of the clinics reported not using their software's capacity for basic billing, registration and schedule. (See chart 2.) About 20 percent are still underutilizing their software's power to automate purchasing and inventory, utilization review, and medical audits.

Chart 1. While two-thirds of the clinics have significant information management capacity at the business operations and clinical administrative levels, few have systems to support population health and individual patient care.



* Individual patient care data analysis and data-supported decision making questions were not asked.

Chart 2. In business operations, clinics are most likely to have automated basic billing systems. In clinical operations, they are most likely to have automated scheduling and registration.



Less than ten percent of the clinics have any significant information management strategies to support individual patient care or population health management. (See chart 1.) The low usage of information technology to support patient care and population health is not surprising, given the gaps in clinics' basic business and clinical administration information systems. Clinics generally need to strengthen their basic technology infrastructure and build their competencies in administrative information management before they can effectively take on automating more complicated functions more directly related to health care. By fall of 2001, most clinics had already strengthened their technology infrastructure and basic business systems. Tides began directing more of its funding towards helping clinics improve their use of technology to support health promotion, disease prevention, and curative systems in order to achieve the goal of improved health outcomes.

Improved training and targeted grant money could spur clinics to improve their uses of automated systems to support individual health care. About one-third of the clinics currently own software that could provide automated support for some of these individual patient care functions, such as automated wellness reminders and patient tracking and recall. (See chart 2.) However,

they lack training to use the software or money to purchase necessary additional modules. Clinics show significant interest in using their data to conduct population health management. While only one-third of the clinics report producing regular disease management reports, almost another 50 percent would like to produce them. (See chart 3.)

VI. Using Data to Inform Clinic Decision Making

Few clinics are effectively using the expanded information from their information technology systems to support management decision making. The most frequently produced management reports are: budget variance, patient demographics, provider productivity, annual reports for the Office of Statewide Health Planning and Development (OSHPD), and administrative cost/overhead. Two-thirds of the clinics regularly produce these reports, suggesting they provide management with the core set of information available to support their decision making. However, that means that the management of one-third of the clinics do not even receive this basic information on a regular basis.

Even when reports are produced, they often are not reaching the managers who could most effectively use them to inform their decision making. Chart 4

compares the percent of clinics producing five key management reports with the portion of key managers receiving those reports. For example:

- o Less than half of the medical directors receive reports on patient demographics or provider productivity, even though more than two-thirds of the clinics say they produce these reports.
- o Only 70 percent of the executive directors say that they review a budget variance report on at least a quarterly basis.
- o Medical directors most frequently review reports on provider productivity, patient demographics, immunizations, and utilization reports. However, less than half of the medical directors receive any of these reports on at least a quarterly basis.

Management reports rarely include trend information to compare current data with previous time periods. A management report is of limited value if the person viewing it has no way to compare the current budget numbers or immunization rates with previous time periods. However, only one-third of the clinics regularly produce this type of trend report for any of their business operations. Less than 20 percent regu-

larly track trends in their clinical administration reports. Almost no clinics produce population health management trend reports. (See chart 1.)

VII. The Impact of Expanded Information Management Capacity on Improving Clinic Operations and Patient Care

The long term goal of the Community Clinics Initiative is for clinics to use their expanded information management capacity to improve the health of medically underserved communities in California. Taking community health clinics from minimal automation of basic administrative practices to using data to design health promotion and disease management systems is a multi-year journey. In fact, 25 percent of the June 2000 grantees reported that, one year after receiving their grant, they had not even completed their initial Tides project to strengthen their basic technology infrastructure. Another 15 percent of the clinics said that their projects involved such basic infrastructure enhancements (such as implementing a local area network or buying a server) that they did not expect to see any direct connection to improved decision making.

Nonetheless, by June 2001, 20 percent of the clinics that received grant money a year earlier were able to provide specific examples of how their expanded information

Chart 3. Many clinics are not using the full capability of their software to support population health management and individual patient care.

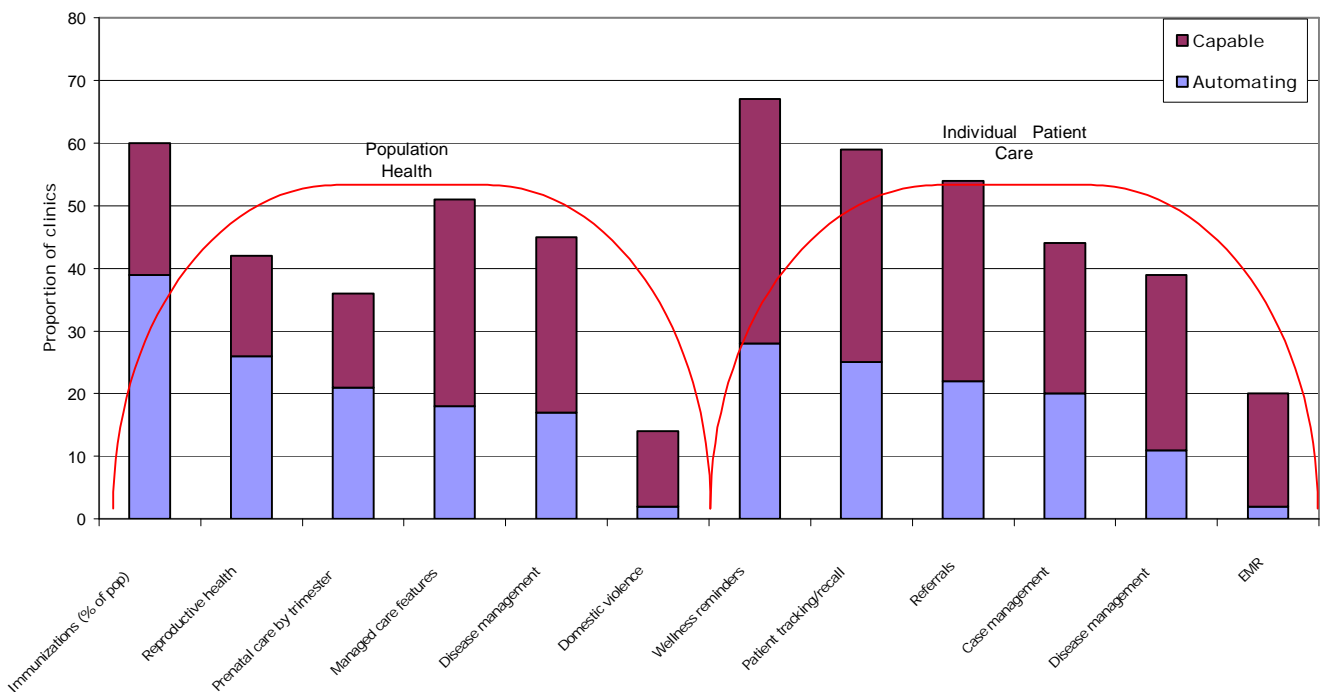
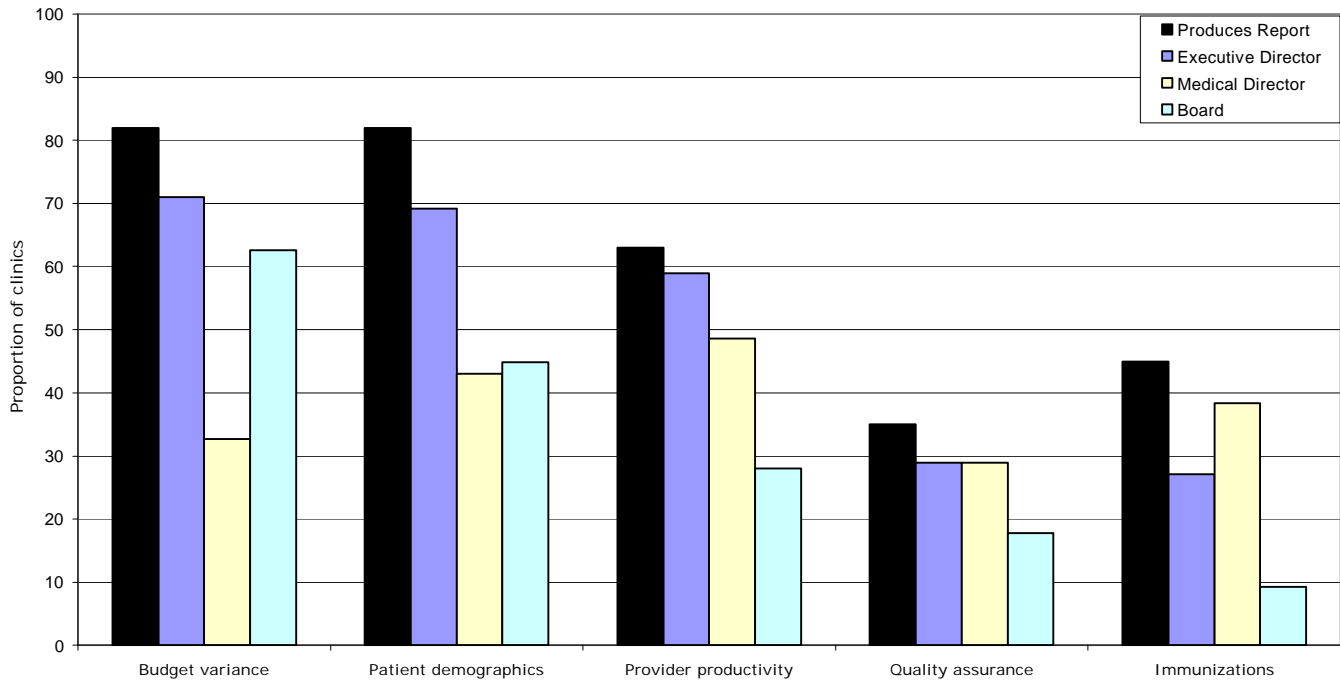


Chart 4. Even when reports are produced, they do not always reach the managers that could use them to inform their decision-making.



technology systems had improved business operations and/or health delivery services. Impacts fell into the following broad categories.

Better analysis of patient demographics and utilization patterns. Clinics reported that their expanded information technology capacity enabled them to get a better sense of who their clients were (in terms of demographic factors), where clients lived, and/or the types of services clients used. Clinics used this new information to hire staff with more appropriate skills, change services, and “adjust the patient mix” to provide a better balance between fulfilling community needs and maintaining financial viability.

Better financial management. Clinics reported that better information technology helped them improve their billing systems and produce more timely financial reports, leading to more accurate pictures of their financial status. In many cases, this new information led to better cash flow management, higher collection rates, and better year-end financial reports; results that clinic staff members believed led to better decision making. One clinic reported that it had begun a data-warehousing project with other clinics in its network to provide blind comparisons on billing and demographic data.

More efficient scheduling. Better scheduling led to

less wait time for patients and the ability to schedule a greater number of patients.

Better patient tracking and recall. Improved technology allowed some clinics to implement or significantly improve their ability to track patients in their system and to recall patients who needed follow-up information. In one case, a clinic began to receive lab results electronically, allowing staff to provide patients their results more quickly.

Enhanced disease management. Ten percent of the clinics described how their expanded IT capacity directly led to improved disease management, generally via tracking patients with chronic diseases and promoting follow-up visits. Two clinics specifically stated that their improved IT capacity allowed them to participate in disease management studies for the first time because of their new capability to track patients and data. One clinic stated that it was now tracking and trending immunization, diabetes and hypertension rates. It should be noted that many of these improved disease management systems employ simple, off-the-shelf database software, such as Access and Excel. However, the data input into the disease management databases were drawn from the clinics’ improved IT systems.

Clinics found other ways that their new technology

could directly support improved patient care. One clinic used its new utilization analysis to identify patients for targeted health education mailings. Another clinic said that its providers were using the new Internet access to get better information on diagnoses and treatment options.

More accurate data. Many clinics also cited improved accuracy and currency of their data as a major result of their CCI grants. This improvement in data quality increased clinic staff's confidence to use their data to inform decisions. Moreover, several clinics stated that the conversations in the field spurred by the Community Clinics Initiative shifted their thinking about data, raising their awareness of the importance of data flow and standardized formats.

VIII. Factors that Help Clinic Managers Strengthen their Information Management Systems⁴

It takes more than an infusion of grant money to build effective information management systems at community clinics. The following clinic characteristics and management practices served as key facilitators in clinics making significant progress.

Comprehensive vision. Top clinic managers need a comprehensive vision of how information systems can support all aspects of clinical operations. Successful clinics have a vision for the role of information technology in their agency-wide strategic plan, rather than a strategic information technology plan developed in isolation of overall clinic goals. Most clinic managers need to become more educated on how information technology can support business and clinical operations. They should focus on gaining conceptual rather than technical knowledge.

Engaged medical director. Qualitative and quantitative data both suggest that clinics with medical directors actively involved in the clinics' information management planning processes can achieve higher levels of information management capacity. Medical directors are best positioned to move the use of information technology beyond billing and scheduling support toward improving medical care for patients.

Thoughtful and strategic technology planning. Good technology planning leads to effective implementation of systems that are more likely to support the overall clinic goals. Specifically, clinics with a strategic IT plan, IT incorporated into their strategic business plan, and/or an interdepartmental IT planning team report higher

levels of automation, report production, and trend analysis. In contrast, many clinics still use information technology as piecemeal support for specific operations, such as billing and scheduling. Clinics without comprehensive plans implemented automated scheduling systems that could not communicate with the clinics' billing and accounting systems, requiring double entry of much of the billing data.

Interdepartmental planning committee. A key component of effective planning is an interdepartmental team managing information systems planning. Ideally, this team should include all key senior management staff (i.e., the executive director, medical director, chief financial officer, director of clinic operations or clinic manager, and head of IT). This approach helps the management team continually assess how information management affects everyone in the organization. In contrast, many clinics viewed information technology planning solely as the responsibility of the IT staff, along with perhaps the finance director or the executive director. However, IT staff members, many of whom are recently hired, do not necessarily understand the intricacies of managing a medical practice or how effective information management can improve patient care.

Continuous training. Comprehensive, continuous, and inclusive training plans are critical to information technology system success. Training plans that involve a wide range of staff positions and occur regularly enhance staff members' confidence in technology and promote the maximization of clinics' practice management systems. Currently, trainings for clinic staffs are typically sporadic, one-time, and targeted at only a few staff members. The most frequently attended trainings in 2001 were practice management software user groups and trainings, HIPAA workshops, and technology fairs. Many clinics have chosen to have in-house trainings, primarily in the peer-to-peer form.

Budgeting for IT as cost center. Clinics should begin budgeting for information technology as an on-going clinic cost center. This information technology budget should include maintaining and upgrading hardware and software, information technology staffing, and regular training for all clinic staff. A comprehensive, cost-center approach to budgeting will support more effective integration of information technology with overall clinic operations. Most clinics currently distribute their information management costs throughout their budgets.⁵ Many costs, such as training, therefore, are hidden and never adequately accounted for in this

budgeting method. Most clinics mistakenly view hardware as a one-time capital expense, to be funded by grants, rather than as part of their information systems' annual maintenance costs.

Effective information management requires a certain scale⁶. The size of a clinic appears to be significantly correlated with the breadth of its information management system. The larger a clinic, the higher its level of data automation and report and trend production tend to be. It appears that the financial, human, and technological capital needed to build an IT system that supports higher-end clinical functions and analysis for health population management is beyond the scope of most small clinics. Sharing IT resources across a consortium may be the only way to help smaller clinics achieve their larger IT goals.

Quantitative data analysis suggests that small clinics involved in consortia are more likely than non-involved small clinics to have strong information management systems. However, the implications associated with consortium membership are mixed for larger clinics. Future CCI evaluation research will focus on the impact of consortia membership on clinics' information technology capabilities.

The scale of work a clinic handles also is a factor. Clinics that handle managed care contracts are more likely to automate functions, produce reports, and analyze trends. Clinics with large-scale operations, such as managed care services, require more robust IT systems to handle the associated reporting and tracking requirements.

Conclusions

CCI has built up significant momentum for improving technology at community health clinics in California. Achieving significant changes in how clinics use information technology to improve patient care and undertake population health management will take several years of sustained effort. Moreover, moving up the ladder from information management that supports administrative to information management that supports improved patient care and health outcomes will require more than money. It will require significant training and capacity building of the clinic managers to use this data effectively.

Key challenges for CCI in the next year include:

- o Understanding the migration path up the

information management capacity ladder towards systems that support improved patient care and health outcomes.

- o Identifying the common characteristics and barriers faced by the one-third of clinics who have yet to achieve basic standards in business and clinical administration. This information is essential to designing targeted strategies to support their unique needs.
- o Exploring how collaborations and consortia can support clinics, especially smaller ones, in expanding their information management capacity.

Notes

¹ Numbers from the Office of Statewide Health Planning and Development.

² The survey included questions about the business, clinical, patient care, and population health functions they have automated, the types of data they regularly collect, the types of reports they produce, the organizations with which they exchange information, the nature of their technical infrastructure, and the impact of any expanded information management capacity on their clinical and business decision making. It included both quantitative and qualitative portions.

The June 2001 survey respondents consisted of three distinct groups: grantees from June of 2000, grantees receiving their first grant in June 2001, and clinics filing a letter of intent for their first grant in June 2001. When reporting on the state of community clinics, surveys from all 112 of these clinics and consortia were used to provide the broadest possible portrait of the field. Report figures that cite progress during the first year of the grant refer only to the 58 clinics that received funding in June 2000 and completed the management assessment survey in both June 2000 and June 2001. These 58 clinics represent 64% of all clinics that could have been monitored over both years.

³ Numbers represent proportion of clinics completing survey.

⁴ These factors are based on information gathered from both the case studies and the survey.

⁵ When asked, 27 percent of the clinics could not provide us with IT budget information; many of the others had difficulty providing detailed IT budget information.

⁶ Overall clinic budget was used as an indicator of clinic size.