2000s

Rust George, et al. "Presence of a Community Health Center and Uninsured Emergency Department Visit Rates in Rural Counties." Journal of Rural Health Winter 2009 25(1):8-16.

> Access to primary care plays a vital role in reducing rates of avoidable and costly emergency department (ED) visits. Additionally, health centers remain an important source of care for the uninsured. Given this context, researchers compared uninsured ED visit rates across rural counties in Georgia between 2003 and 2005. They found that counties with a community health center site had 25% fewer uninsured ED visits per 10,000 uninsured population than those counties without a health center site. Health center counties also had fewer ED visits for ambulatory care sensitive visits – those visits that could have been avoided through timely treatment in a primary care setting. These findings remained statistically significant even after controlling for poverty, percent of African American population, and number of hospitals. Researchers found no significant differences for the insured population. They also note that simple primary care provider to population ratios do not affect uninsured ED visit rates, suggesting that expanding access to care for the uninsured requires adequate capacity to serve them.

Dobson D, et al. "The Economic and Clinical Impact of Community Health Centers in Washington State: Analyses of the Contributions to Public Health and Economic Implications and Benefits for the State and Counties." Dec 2008 *Community Health Network of Washington and Washington Association of Community and Migrant Health Centers*. http://www.chnwa.org/PolicyAdvocacy/ResearchAndReports/Impact%20of%20WA%20CHC%20System%2012-03-08.pdf.

> Authors utilized data from 24 health centers, as well as Community Health Plan and Community Health Network of Washington to identify a $1.2 billion total impact on Washington's economy by the community health center system within Washington State. A strong economic force, Washington's community health center system combined direct and downstream effect creates approximately 8,500 jobs and generates a tax contribution of $176 million. This includes revenues, jobs and services that could not be easily replaced if funding was reduced or eliminated. The report details these impacts at both a state and county level. Additionally, the analyzes how the Washington Community Health Center System is a critical safety net for Washington residents – treating 10% of the State's population, including one in three uninsured Washington residents, with quality, cost-effective care.

Shin, P, et al. "How Does Investment in CHCs Affect the Economy?" *RHCN Community Health Foundation.* February 2008; Research Brief #1.

> Because Community Health Centers are located in regions severely affected by the economic downturn, researchers sought to determine the benefit of expanding their federal appropriations. By building off previous studies, they found that a $250 million increase in appropriations would allow health centers to serve 1.8 million additional patients (a 12% increase). It would also allow them to generate an extra $750 million in revenue – a four–to-one return on investment. The economic gains to the low income communities health centers serve would reach nearly $1 billion in direct benefits, more than $1.1 billion in indirect benefits, and 24,000 jobs. The authors note that these gains justify expanded investment even and especially during economic hardship.

Huang E, et al. "The Cost Consequences of Improving Diabetes Care: The Community Health Center Experience." Mar 2008 *The Joint Commission Journal on Quality and Patient* 34 (3): 138-146.

> This study examines the short-term financial impact of the Health Disparities Collaboratives (HDCs), a quality improvement (QI) program, on health centers. Researchers conducted both a survey of health center CEOs in the Midwest and West Central regions (N=74) and five health center case studies in order to gain insight into the cost consequences of QI programs. The majority of CEOs (72%) report that participation in the HDCs increased costs per patient and overall health center costs (73% reporting). As for the effect of the HDCs on overall finances, CEOs were divided when it came to worsened finances, no change, and improved finances (38% vs 48% vs 14%, respectively). Among the case study centers, HDC administrative costs during the first year ranged from $6 to $22 per patient. None of the five centers routinely and consistently collected adequate funding to cover the full cost of their HDC efforts, and neither reimbursement or payer mix related to HDC patients changed significantly.

National Association of Community Health Centers, The Robert Graham Center, Capital Link. "*Access Granted: The Primary Care Payoff*."August 2007. www.nachc.com/access-reports.cfm.

> This report examines the extent to which Community Health Centers (CHCs) reduce health care costs, and yield substantial benefits to the local economies. Drawing on data from the 2004 Medical Expenditure Panel Survey (2004), the study finds that per-patient medical expenditures are 41% lower ($1,810) among CHC patients compared to patients seen elsewhere. Health centers therefore produce annual savings of between $9.9 and $17.6 billion for the entire health care system. These savings are partially driven by lower ER use. On top of this, the authors calculated health centers' total economic impact nationally, finding that health centers generate$12.6 billion and 143,000 jobs in some of the poorest communities

Huang ES, et al. "The Cost-Effectiveness of Improving Diabetes Care in U.S. Federally Qualified Community Health Centers." May 2007 *Health Services Research* (Online Early Articles) (doi:10.1111/j.1475-6773.2007.00734.x).

Authors conducted a cost-effectiveness analysis on diabetes Health Disparities Collaboratives (HDC) at 17 Midwestern health centers. Between 1998 and 2002, multiple process measures of care improved, including glycosylated hemoglobin testing (71 to 92%), lipid testing (52 to 70%), and ACE inhibitor prescribing (33 to 55 %). Mean cholesterol levels also improved, decreasing significantly (mean difference -13.5). The HDCs also reduced expected lifetime incidence of diabetes complications, reducing the lifetime incidence of blindness (17 to 15%), end-stage renal disease (18 to 15%), and coronary artery disease (28 to 24%). Average annual program cost per patient also declined over four years. Overall, the authors found that the HDC is cost effective, while reiterating that the costs of the HDCs are still borne by health centers. Authors stress that in order to sustain the HDCs' health benefits and cost effectiveness, receipt of basic chronic care services as provided by health centers and covered by Medicaid should be sustained. Moreover, authors note that this analysis underestimates the true benefits of the HDCs because they are designed to improve care across multiple conditions.

McRae T. and Stampfly R. "An Evaluation of the Cost Effectiveness of Federally Qualified Health Centers (FQHCs) Operating in Michigan." October 2006 Institute for Health Care Studies at Michigan State University. www.mpca.net

Authors analyzed 2003-2004 Medicaid fee-for-service claims data in Michigan to compare the total costs of services provided to FQHC patients to those of Medicaid patients who do not use FQHCs. FQHCs patients incur lower total pre-member per-month Medicaid costs than non-FQHC users, even controlling for age and disability status. The study found that health centers save the State of Michigan $44.87 per member per month in Medicaid spending – totaling $17.8 million for the study period.

Cunningham P. "What Accounts for Differences in the Use of Hospital Emergency Departments Across U.S. Communities?" July 2006 *Health Affairs* 25: W324-W336.

This study analyzed data on service use from 60 randomly selected and nationally representative US communities to determine whether differences in populations and health system factors account for variations in emergency department (ED) use across communities. The study found that communities with high ED use actually have fewer numbers of uninsured, Hispanic, and non-citizens compared to communities with low ED use. Longer waiting times for physician appointments and higher numbers of physician visits relative to the number community physicians actually increase ED use, especially among the poor. High ED use for non-urgent problems in some communities may be driven by preference and habit. In fact, people in high use communities receive a larger proportion of their outpatient care at the ER compared to those in low use communities, regardless of insurance, income, and race/ethnicity. The study shows that greater health center capacity reduces ED visits for the low-income, although it was associated with ED visits among higher-income people. This may be due to health centers providing a medical home for the low income, thereby "freeing up" ED capacity for the higher income. Improving access to primary care settings, as well as

expanding the availability of health centers and HMOs for low income people are associated with less ED use, but the effects may be marginal.

Falik M, Needleman J, Herbert R, et al. "Comparative Effectiveness of Health Centers as Regular Source of Care." January - March 2006 *Journal of Ambulatory Care Management* 29(1):24-35.

The reported analyzed claims data from 1.6 million Medicaid beneficiaries in 4 states (Alabama, California, Georgia, and Pennsylvania) to assess the performance of their primary care providers by type of provider. Beneficiaries had a history of at least one ambulatory care-sensitive (ACS) condition and received at least 51% of their primary care from Community Health Centers, office-based physicians, and hospital-based practices. Researchers found when health center Medicaid beneficiaries had one third fewer ACS events compared to other providers (5.7 vs. 8.2 ACS hospitalizations and 26.1 vs. 37.7 ACS emergency department visits, respectively, per 100 persons). Medicaid beneficiaries relying on health centers for usual care were 19% less likely to use the emergency department for an ACS condition and 11% less likely to be hospitalized for an ACS condition than Medicaid beneficiaries using outpatient and office-based physicians for usual care, even after controlling for case mix and other factors. ACS admissions were more likely in the groups who had mixed use (25% or more of their care at multiple provider types) or low use (0 to 1 primary care visits). Health centers were found to be effective regular sources of care, and the authors recommended increasing both the number and capacity of health centers.

Cunningham, PJ. "Medicaid/SCHIP Cuts and Hospital Emergency Department Use." January/February 2006 *Health Affairs* 25(1):237-247.

Using data from recent Community Tracking Study household surveys, the author examines how a sizable but reasonable decrease in Medicaid/SCHIP enrollment would affect utilization of the Emergency Department (ED). The author concludes that a substantial reduction in Medicaid/SCHIP enrollment would not lead to a significant change in overall ED use among the low-income, but it would dramatically augment the proportion of those visits by the uninsured. In other words, EDs may not see any change in ED volume but a higher number of ED visits would be for uninsured patients. Those losing Medicaid/SCHIP coverage are likely to have more health needs than those who are currently uninsured, and losing access to primary care will make them dependent on EDs for care. Any cost savings related to reducing Medicaid/SCHIP enrollment will actually increase uncompensated care costs seen by all safety net providers, including health centers. In fact, reductions in health center capacity resulting from Medicaid/SCHIP revenue loss slightly increases the probability of ED visits for Medicaid/SCHIP adults and children. The author concludes that redirect avoidable ED visits to primary care will create a more efficient health care delivery system, an option that would likely achieve greater cost savings than enrollment reductions.

Proser M. "Deserving the Spotlight: Health Centers Provide High-Quality and Cost-Effective Care." October – December 2005 *Journal of Ambulatory Care Management* 28(4):321-330.

> This article reviews relevant literature examining how health centers improve access to care for hard-to-reach and underserved populations, and how they provide high quality and cost effective care. Described in this study is how health centers generate significant savings and benefits for patients, communities, insurers, and governments. Moreover, the article documents recent studies in South Carolina that compare costs and utilization of diabetic patients treated by one large health center compared to those treated by private family physicians. Between 2000 and 2003, the health center produced significant savings for the state employee health plan by reducing costs for enrollees with diabetes. Over the same time period, Medicaid beneficiaries with diabetes treated by the health center cost the state $400 less per patient when compared to those treated by private family physicians, despite the fact that the health center had higher office visits and more co-morbid conditions per patient. Cost savings were driving by fewer emergency room visits and hospitalizations, as well as lower costs for specialists, lab, and other services.

Hadley J and Cunningham P. "Availability of Safety Net Providers and Access to Care of Uninsured Persons." October 2004 *Health Services Research* 39(5):1527-1546.

> Analyzed access to safety net services in 60 randomly selected and nationally representative communities to determine whether proximity to a safety net provider affects access to care by uninsured individuals. The authors find that uninsured people living within close proximity to an FQHC are less likely to have an unmet medical need, less likely to have postponed or delayed seeking needed care, more likely to have had a general medical visit, significantly less likely to have had an emergency room visit, and less likely to have a hospital stay compared to other uninsured. Thus, expanding health center capacity would reduce unmet need and increase the percent of uninsured with a usual source of care. At the same time, expanding health centers could improve the efficiency of the entire health care delivery system due to their ability to provide timely care and lower hospital and emergency room use, thereby offsetting the costs expanding health center capacity. The study estimates that current efforts to expand the number of health centers could ensure access to care for up to 7.5 million additional uninsured persons – more than half of the uninsured currently without access to a safety net provider. Certain challenges to the safety net, including ability to meet demand, provide specialty services, and staff shortages, likely indicates that a "much larger" safety net expansion than "what is currently being proposed" may be necessary. The authors conclude that significant access disparities would still exist between the publicly or privately insured and the uninsured, so that insurance is also essential for improving access to care.

National Association of Community Health Centers. *Nation's Health at Risk Part II: A Front Row Seat in a Changing Health Care System*. Special Topics Issue Brief #7. August 2004. www.nachc.com

> This report is the second in a series of reports examining trends impacting access to affordable health care in America and straining the safety net. This report describes how health centers delivery high quality, cost effective care to 15 million patients nationally, and how both rising uninsured and limited resources have affected health centers. Specifically, the report reviews literature on how health centers produce significant savings to state Medicaid programs, and potential savings associated with redirecting non-urgent and ambulatory care sensitive emergency room visits to more appropriate settings nationally and for each state. In addition, the report reviews why the safety net is a crucial component of the nation's health care system that will always be needed.

Schmitz R, et al. *The PHS 340B Drug Pricing Program: Results of a Survey of Eligible Entities, Final Report*. Mathematica Policy Research, Inc. Commissioned by the Health Resources and Services Administration, Contract No. 250-1-0013(02). August, 2004. ftp://ftp.hrsa.gov/bphc/pdf/opa/340Bsurveyrpt.pdf.

> A survey of 340B program entities found that health centers are overwhelmingly satisfied in the amount of savings the program produced, and are most likely to use a "significant portion" of the savings to offset the cost of prescription drugs for their patients. Just over half of 340B FQHC users are uninsured, significantly more than any other 340B entity type. FQHCs surveyed report a mean of 28% saved through the 340B program.

Starfield B and Shi L. "The Medical Home, Access to Care, and Insurance: A Review of Evidence." May 2004 *Pediatrics* 113(5):1493-8.

> Authors conducted a review of literature concerning the benefits of having a medical home, and discuss the characteristics of a medical home. Finds that having a regular source of care is a greater predictor of receiving care than having insurance alone. Based on an extensive review of literature, the ability to identify a particular practitioner rather than a particular place as a medical home is generally associated with better utilization and outcomes, including needs recognition, earlier and more accurate diagnoses, reduced emergency room use, fewer hospitalizations, lower costs, better prevention, fewer unmet needs, and increased patient satisfaction. Primary care is particularly important for narrowing disparities among low income and minority communities. Care provided by health centers is associated with better health outcomes when compared to low income communities not served by health centers.

Maeseneer JM, De Prins L, Gosset C, and Heyerick J. "Provider Continuity in Family Medicine: Does it Make a Difference for Total Health Care Costs?" September/October 2003 *Annals of Family Medicine* 1(3):144-148.

Researchers studied total health care costs of adult patients in Belgium with and without family physician continuity over two years. They found that provider continuity was associated with lower total costs of care, even after controlling for morbidity. The authors describe their findings as relevant to the American health care debate.

Hawkins D and Schwartz R. "Health Centers and the States: Partnership Potential to Address the Fiscal Crisis." October-December 2003 *Journal of Ambulatory Care Management* 26(4):285-295.

Reviews the cost effectiveness of health centers through reducing high-cost specialty and hospital care. For these reasons, the authors find that states could save money by increasing their investment in health centers.

Flores G, Abreu M, Chaisson CE, and Sun D. "Keeping Children Out of Hospitals: Parents' and Physicians Perspectives on How Pediatric Hospitalizations for Ambulatory Care-Sensitive Conditions Can Be Avoided." November 2003 *Pediatrics* 112(5):1021-1030.

Upon surveying patients and physicians on avoidable hospitalization conditions among children in Boston, authors found that between 13 to 46% of all hospitalizations could have been avoided through better parent education on their child's condition and appropriate primary or outpatient care. Three quarters of the study subjects were publicly insured and 16% were uninsured, and asthmatic children, adolescents, children from low income working families, and uninsured children were at much greater risks for unnecessary hospitalizations. Moreover, the study found that states could save $17 billion annually by preventing avoidable hospitalizations.

Garg A, Probst JC, Sease T, Samuels ME. "Potentially Preventable Care: Ambulatory Care-Sensitive Pediatric Hospitalizations in South Carolina in 1998." September 2003 *Southern Medical Journal* 96(9):850-8.

Authors examined 1998 South Carolina hospital inpatient data in order to determine personal and community factors that influence ambulatory care-sensitive (ACS) hospitalizations among children under the age of 18. Those most likely to have a ACS hospitalization included children that were younger, male, non-white, Medicaid insured, and those living in counties that were rural, poor, and had a health professional shortage area designation. Counties with a health center had 55% fewer pediatric ACS hospitalizations, demonstrating the importance of health centers. In noting that poverty and the lack of a provider increases rates of ACS conditions, the authors support the President's call to increase the number of health centers to prevent ACS hospitalizations and related costs.

Shin P, Jones K, and Rosenbaum S. *Reducing Racial and Ethnic Health Disparities: Estimating the Impact of High Health Center Penetration in Low-Income Communities*. Prepared for the National Association of Community Health Centers, September 2003. www.gwhealthpolicy.org/downloads/GWU_Disparities_Report.pdf.

> Found that as the proportion of a state's low income population served by health centers grows, the black/white and Hispanic/white health gap narrows (i.e., declines) in such key areas as infant mortality, prenatal care, tuberculosis case rates, and age-adjusted death rates. The study also concluded that Medicaid alone has little direct impact on health disparities, but Medicaid coverage for low income patients is key to health centers' ability to serve more of the low income in states, and in so doing reducing disparities. As evidence of this the GW researchers found that health center penetration (defined as the proportion of state low income served by health centers) had its lowest impact in reducing disparities for heart disease and diabetes related death rates. These diseases disproportionately affect older low income and working-age minority adults, who are the least likely to have Medicaid coverage. Hence, it is the combination of customized, supported health care with comprehensive health insurance that may most effectively reduce health disparities.

National Association of Community Health Centers. "Critical Conditions: State Budget Crisis Threatens to Put Health Centers on Life Support." State Policy Report, March 2003.

> Estimates the amount of Medicaid savings generated by health centers and the potential savings for reducing avoidable hospitalizations by state.

Institute of Medicine. *Fostering Rapid Advances in Health Care: Learning from System Demonstrations*. National Academy of Sciences Press, November 2002.

> Praised health centers for their "strong track record in chronic care management, electronic patient registries, and performance measurement…[that] contribute to providing care that is at least as good as, and in many cases superior to, the overall health system in terms of better quality and lower costs," and recommended them as models for delivery of primary health care.

Porterfield DS and Kinsinger L. "Quality of Care for Uninsured Patients with Diabetes in a Rural Area." February 2002 *Diabetes Care.* 25(2):319-23.

> Compared quality of care for uninsured patients with diabetes in private physician's offices and community/migrant health centers (C/MHC) by conducting a cross sectional medical record review in a convenience sample of eight physician offices and three C/MHC sites in rural North Carolina. They found that the medical records of patients in C/MHCs demonstrated higher rates on four of six process measures of quality of care including measurement of HbA (1c), cholesterol, and urine protein.

Frick KD and Regan J. "Whether and Where Community Health Centers Users Obtain Screening Services." November 2001 *Journal of Healthcare for the Poor and Underserved* 12(4):429-45.

> Upon examining the socioeconomic status of adult community health center users and their use of screening services for secondary prevention, found that users of minority or lower socioeconomic status were not less likely to receive preventive screenings and the screenings conducted were most often at a health center. The study concludes that health centers are indeed providing preventive services to vulnerable populations that would otherwise not have access to certain services.

Carlson BL, et al, "Primary Care of Patients without Health Insurance by Community Health Centers." April 2001 *Journal of Ambulatory Care Management* 24(2):47-59.

> Finds that health center uninsured users tend to live in poverty-stricken areas, are poorly educated, and are African American or Hispanic; yet, uninsured users had more regular contact with a physician and a usual source of care whereas the overall uninsured did not.

Politzer R, Yoon J, Shi L, Hughes R, Regan J, and Gaston M. "Inequality in America: The Contribution of Health Centers in Reducing and Eliminating Disparities in Access to Care." 2001 *Medical Care Research and Review* 58(2):234-248.

> Reviews literature showing that health centers improve access to preventive services, health outcomes, and have been successful in reducing or eliminating health disparities.

Epstein AJ. "The Role of Public Clinics in Preventable Hospitalizations among Vulnerable Populations." 2001 *Health Services Research* 32(2):405-420.

> Preventable hospitalizations in communities served by health centers were lower than in other medically underserved communities not serviced by health centers. Patients in underserved areas served by these centers had 5.8 fewer preventable hospitalizations per 1,000 people over three years than those in underserved areas not served by a health center.

Falik M, et al. "Ambulatory Care Sensitive Hospitalizations and Emergency Visits: Experiences of Medicaid Patients Using Federally Qualified Health Centers." 2001 *Medical Care* 39(6):551-56.

> A study of Medicaid beneficiaries in 5 states in 2001 found that Medicaid beneficiaries who receive care at health centers were significantly less likely to be hospitalized or to

visit hospital emergency rooms for ambulatory care sensitive conditions (ACSCs) than beneficiaries who receive care from other providers.

Klein JD, et al. "Improving Adolescent Preventive Care in Community Health Centers." February 2001 *Pediatrics*. 107(2):318-27.

Evaluated the implementation of the Guidelines for Adolescent Preventive Services (GAPS) in Community and Migrant Health Centers and found that implementing GAP increased the receipt of preventive services at the health centers. After guideline implementation, adolescents reported increases in having discussed prevention content with providers in 19 out of 31 content areas, including increased discussion of topics such as physical or sexual abuse (10% before to 22% after), sexual orientation (13% to 27%), fighting (6% to 21%), peer relations (37% to 52%), suicides (7% to 22%), eating disorders (11% to 28%), immunizations (19% to 48%), and others. The researchers conclude that GAPS implementation may help improve the quality of care for adolescents.

Chin MH, et al. "Quality of Diabetes Care in Community Health Centers." March 2000 *American Journal of Public Health*. 90(3):431-4.

Assessed the quality of diabetes care in community health centers. In 55 Midwestern community health centers the charts of 2865 diabetic adults were reviewed to see if the American Diabetes Association's measures of quality were met. Results found that on average, 70% of patients in Each CHC had elevated measurements of glycosylated hemoglobin (an average value of 8.6%), 26% had dilated eye examinations, 66% had diet intervention, and 51% received foot care. It was concluded that rates of adherence to process measures of quality of were relatively low among community health centers, compared with targets established by the American Diabetes Association.

Ulmer C, et al. "Assessing Primary Care Content: Four Conditions Common in Community Health Center Practice." January 2000 *Journal of Ambulatory Care Management*. 23(1):23-38.

Evaluated the results of medical records reviews assessing the quality of care at Community Health Centers (CHCs) for acute otitis media, diabetes, asthma, and hypertension. It was found that the CHCs meet or exceeded prevailing practices across other health care settings (though some variation existed among sites).

1990s

MDS Associates, Laguna Research Associates "Utilization and Case Mix Among Medicaid Users of Community Health Centers" 1999 Prepared for the Bureau of Primary Health Care, Health Resources and Services Administration.

This study compares Medicaid beneficiaries who received 50% of their primary care from a community health center (CHC users), with other Medicaid beneficiaries who live in the same area and did not visit a health center (Non-CHC users). The analysis used 1992 Medicaid claims data from six states operating fee-for-service Medicaid programs and one, Arizona, with statewide Medicaid managed care. Among CHC-users there was a higher proportion of young children (under age 5) and race/ethnic minorities compared to non-users. In Arizona, per capita expenditures for CHC users were 19% lower than non-users, and this compares to 25% in fee-for-services states. In addition, CHC users in a managed care environment averaged 31% fewer impatient hospital days per 1,000, 12% fewer incidents of emergency room care and 21% fewer professional visits. Results indicate that health centers can reduce expenditures in a mature managed care environment.

Falik M, Needleman J, Korb J, and McCall N. *ACSC Experience by Usual Source of Care: Comparing Medicaid Beneficiaries, CHC-Users and Comparison Groups*. MDS Associates, Wheaton, MD, 1998.

Found that health center patients had hospitalization rates that were equal to patients who saw private physicians and lower than patients who attended hospital clinics.

St. Martin EE. "Community Health Centers and Quality of Care: A Goal to Provide Effective Health Care to the Community." 1996 *Journal of Community Health Nursing* 13(2):83-92.

Finds that incorporating principles of Total Quality Management (TQM) is easy to do in a community health center setting and can enhance the effectiveness of health care delivery to a community and its members.

Stuart ME, et al. "Improving Medicaid Pediatric Care." Spring 1995 *Journal of Public Health Management Practice* 1(2):31-38.

In a review of Maryland Medicaid patient records, health centers scored highest among all providers for the proportion of their pediatric patients who had received preventive services, including immunizations.

Reynolds R. and Javorek F. "Medicaid's Primary Care Physician Initiative and Ambulatory Care Sensitive Hospitalizations." August 1995 Colorado Department of Health Care Policy and Financing.

After reviewing Medicaid claims data from 1990-1992, authors found that Colorado Medicaid beneficiaries have more Ambulatory Care Sensitive (ACS) hospitalizations than the privately insured. However, Medicaid beneficiaries assigned a primary care provider have lower ACS rates than those with no primary care provider. The lowest

aggregated ACS rates were for patients of Federally-Qualified Health Centers, and the highest rates were among patients of hospital-based clinics. Health centers showed a substantial improvement in lowering ACS hospitalization rates during the course of the study. Researchers speculate that hospital-based clinics may have a higher ACS rate because patients come to them after delaying care, and my therefore be in need of hospitalization.

Starfield B, et al. "Costs vs. Quality in Different Types of Primary Care Settings," 28 December 1994 *Journal of the American Medical Association* 272(24):1903-1908.

In a review of Maryland Medicaid patient records, health centers consistently scored at or near the highest in 21 separate measures of quality assessment, even though their costs of care were among the lowest of the various provider types reviewed. Patients in medium-cost community health centers had the lowest total costs, lowest cost per ambulatory visit, lowest incidence of hospital inpatient days and lowest inpatient care costs, when compared with Medicaid patients of 106 private physicians and 19 hospital outpatient departments. Authors concluded that utilization of lower cost providers – such as FQHCs – does not necessarily deteriorate quality care.

Duggar BC, et al. *Utilization and Costs to Medicaid of AFDC Recipients in New York Served and Not Served by Community Health Centers*. Center for Health Policy Studies, 1994.

New York Medicaid FFS patients using health centers regularly in 1994 were 22% less costly than non-users and 26% less when excluding maternity and newborn patients, and had 41% lower total inpatient costs (58% less when excluding maternity and newborn patients); diabetics and asthmatics who were regular health center users had 62% and 44% lower inpatient costs, respectively. Cost savings are a function of lower admission rates, lower lengths of stay, and admissions for less costly DRGs. Savings offset the cost more primary care visits for regular FQHC users. Excluding the most expensive cases, including the medically needy and those with chronic conditions, still yields major savings associated with regular FQHC use. Regular users are also associated with savings in ER use – about 50% less than non-users.

Duggar BC, et al. *Health Services Utilization and Costs to Medicaid of AFDC Recipients in California Served and Not Served by Community Health Centers*. Center for Health Policy Studies, 1994.

California Medicaid FFS patients using health centers regularly in 1993 were 33% less expensive overall (controlling for maternity services), and had 27% less total hospital costs. When including maternity in total costs, regular users were 14% less costly per AFDC case. Approximately half of the savings associated with FQHC regular use is achieved through reduced inpatient care, and the remainder through reduced payments for outpatient care and other services.

Braddock D, et al. *Using Medicaid Fee-For-Service Data to Develop Health Center Policy.* Washington Association of Community Health Centers and Group Health Cooperative of Puget Sound, 1994.

> Health center Medicaid FFS patients in Washington State in 1992 were found to be 36% less expensive for all services than Medicaid FFS patients seen in the private/commercial sector. This comparison also found that health center Medicaid FFS patients used 31% fewer ER services, 34% fewer X-ray and lab tests, 44% fewer prescriptions, and 71% fewer hospital outpatient visits.

Stuart ME and Steinwachs DM. "Patient-Mix Differences Among Ambulatory Providers and Their Effects on Utilization and Payments for Maryland Medicaid Users." December 1993 *Medical Care* 34(12):1119-1137.

> Health center Medicaid FFS patients in Maryland in 1993 had lowest total payments and ambulatory visit cost when compared to private, office-based physicians and hospital outpatient departments even after adjusting for patient mix. Health center Medicaid patients also had fewer incidence of inpatient days and lower inpatient day cost than outpatient departments, and similar incidence of inpatient days and inpatient day cost compared to office-based physicians, after adjusting for patient mix. Health center patients were one-third as likely as hospital outpatient unit patients to be admitted on an inpatient basis and were half as likely to have unstable chronic medical diagnoses as patients of other providers.

Zuvekas A. "Community and Migrant Health Centers: An Overview." October 1990 *Journal of Ambulatory Care Management* 13(4):1-12.

> The per capita cost of care at all U.S. health centers in 1988 was $183, compared to $238 for all Americans below 200% of poverty.

1980s

De Prez R, Pennell BE, Libby MA. "The Substitutability of Outpatient Primary Care in Rural Community Health Centers for Inpatient Hospital Care." June 1987 *Health Services Research* 22(2):207-233.

> Studied 36 communities served by health centers to examine the relationship between outpatient medical care obtained at federally funded rural community health centers and inpatient care. Health center patients and selected groups based on their age, sex, and insurance status (specifically Medicaid or Medicare) had statistically lower rates of hospital admissions and days. Researchers did not detect any differences in hospital use

between health center community and comparison populations, thereby suggesting that treatment, and hospitalization incentives, of health centers may reduce hospitalization.

Fleming G and Andersen R. "The Municipal Health Services Program: Improving Access to Primary Care without Increasing Expenditures." 1986 *Medical Care* 24(7): 65-579.

The Municipal Health Services Program (MHSP) was created by 5 cities as networks of primary care clinics for the underserved. The evaluation found that MHSPs did reach most of the targeted groups, and may have improved improper use of emergency room services. However, MHSP did not provide continuity of care nor high patient satisfaction. Per capita expenditures for medical care for MHSP users were no about the same as for others. However, for Medicare eligible MHSP users, expenditures by Medicare were significantly less.

Grossman M and Goldman F. *An Economic Analysis of Community Health Centers*. National Bureau of Economic Research, 1982.

Communities served by Health Centers have infant mortality rates that are 10% lower than communities not served by Health Centers, and have contributed to lowering the national infant mortality rate. Health Center services have produced improvements in the use of prenatal care and reductions in the incidence of low birth weight.

Freeman HE, Kiecolt KJ, Allen HM 2nd. "Community Health Centers: Making Health Care Less Expensive and More Accessible." August 1982 *Public Aff Rep.* 23(4):7.

Freeman HE, Kiecolt KJ, Allen HM 2nd. "Community Health Centers: an Initiative of Enduring Utility." Spring 1982 *Milbank Memorial Fund Quarterly* 60(2):245-67.

Compared hospitalization rates and emergency room use for patients of health centers in 5 cities at two points in time (1969 and 1975), and found that hospitalization rates declined 44% and ER visits 37% over the period.

JRB Associates. *Final Report for Community Health Center Cost Effectiveness Evaluation*. Prepared for the U.S. Department of Health and Human Services, Contract No. 100-78-0138, 1981.

Found that Medicaid patients of more than 20 health centers in 4 states (Colorado, Kentucky, Michigan and Minnesota) had 30% to 65% lower hospitalization rates, 33% fewer annual hospital days per patient, and 12% to 48% lower total Medicaid costs than a similar group of non-health-center Medicaid patients.

Okada L and Wan T. "Impact of Community Health Centers and Medicaid on the Use of Health Services." 1980 *Public Health Reports* 95(4):520-534.

> Okada and Wan found that patients of at least 11 CHCs in 5 cities (Boston, Charleston, Atlanta, Kansas City and Palo Alto) were hospitalized 34 % less often than users of private physicians or hospital clinics.

1970s

Sussman E., et al. " Can Primary Care Deliver?" August 1979 *Journal of Ambulatory Care Management* 2(3):29-39.

> Use of health centers led to lower utilization of more costly emergency rooms and improved health outcomes.

Davis K and Schoen C. *Health and the War on Poverty.* (The Brookings Institution, Washington, DC., 1978)

> Authors found that nationally:
>
> - The cost of care at health centers in 1975 was $204, compared with $240 for other providers (principally private physicians);
> - The cost of hospital care was $65 lower for health center patients than for those served by other providers; and
> - Health centers had reduced hospital admission rates by anywhere from 22% to 67%, as well as the number of patients admitted and average lengths of stay, compared with patients of other providers.

Sharfstein SS and Nafziger JC. "Community Care: Costs and Benefits for a Chronic Patient." March 1976 *Hosp Community Psychiatry* 27(3):170-3.

> The authors studied costs and benefits of community care for a patient needing chronic care at a neighborhood health center after eight years of hospitalization. Cost comparisons were made between the neighborhood center and a public hospital, the center and a day program of a community mental health center, and the center and the inpatient unit of a community mental health center. Cost of care in the neighborhood health center fell from $2110 in the first year to $640 in the third, while costs in the alternative settings increased substantially. The patient's clinical status was rated "much improved" in the community.

Gold M. and Rosenbur, R. "Use of Emergency Room Services by the Population of a Neighborhood Health Center." January-February 1974 *Health Services Reports* 89(1):65-70.

Use of health centers led to lower utilization of more costly emergency rooms and improved health outcomes.

Zwick DI. "Some Accomplishments and Findings of Neighborhood Health Centers." October 1972 *Milbank Memorial Fund Quarterly* 50(4):387-420.

Zwick found that the annual hospital use rate for patients of a CHC in Chicago was reduced from 1000 days/year to 750 days/year over 3 years.

Sparer G and Anderson A. "Cost of Services at Neighborhood Health Centers. A Comparative Analysis." 8 June 1972 *N Engl J Med.* 286(23):1241-5.

Sparer and Anderson found that, for 6 health centers studied, the cost of care and cost per registrant was comparable to that for prepaid group practices.

Moore G, Bonnano R and Bernstein R. "Effect of a Neighborhood Health Center on Emergency Room Use." May-June 1972 *Medical Care* 10(3):240-247.

Use of health centers led to lower utilization of more costly emergency rooms and improved health outcomes.

Hochheiser LI, Woodward K, Charney E. "Effect of the Neighborhood Health Center on the Use of Pediatric Emergency Departments in Rochester, New York." 15 July 1971 *N Engl J Med.* 285(3):148-52.

Found that pediatric patients of 4 health centers in Rochester, NY, had 38% lower hospitalization rates and fewer days than non-health-center-patients living in the same area.