The Effect of Community Health Centers on Healthcare Spending & Utilization /

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Executive Summary

The National Association of Community Health Centers asked Avalere to conduct a literature review of studies that examined the impact of Community Health Centers (CHCs) on healthcare spending and utilization. Nearly all of the studies we examined found that the use of CHCs was associated with lower healthcare costs or less acute care utilization. The estimated impact of CHCs, combined with their emphasis on effective provision of primary care, has led some policymakers to discuss them as an example of the patient-centered medical home initiative. This report highlights the findings of studies examining CHCs' effect on health spending and utilization, and discusses their methodological strengths and limitations.

We identified peer-reviewed articles through PubMed and used the articles' cited references to locate related white papers. All five studies that compared the direct cost of healthcare for patients treated in CHCs to those receiving care in other settings found that CHCs are associated with lower healthcare spending. Many studies attributed the cost savings, in part, to a reduction in emergency department visits, fewer inpatient hospital admissions, or shorter inpatient length of stay. Two studies used the estimated per-patient savings to extrapolate a national savings associated with CHC use, finding that CHCs save between $9.9 and $24 billion annually. Six studies focused exclusively on avoidable utilization and found that CHCs help patients, especially those with chronic conditions, to avoid unnecessary complications and acute care treatment.

There may be multiple reasons why CHCs were associated with lower healthcare spending, though our literature review did not isolate the effect of any specific factor. Some observers attribute CHCs' success to the primary care model, patient-centered medical home, or coordination of care. Others assert that the availability of CHC services improves access to appropriate care for the uninsured and underinsured population. Additional research on the impact of key aspects of CHCs would add to the body of evidence regarding their association with lower healthcare spending and reduced acute care utilization.

Introduction

Community health centers (CHCs) were established over forty years ago to improve access to care for underserved populations. CHCs, also known as Federally-Qualified Health Centers (FQHCs), are located in or serve one of the 4,000 designated Medically Underserved Areas (MUAs) or Medically Underserved Populations, have a governing board, and provide services with fees adjusted based on the patient's ability to pay.[1] CHCs receive funding from project grants, cost-based reimbursements for services under Medicaid and Medicare, and some payment from private insurers.

Approximately 1,200 CHCs currently serve 20 million people in over 7,500 rural and urban areas of United States and territories.[2] In 2008, 38 percent of health center patients were

uninsured, and 36 percent were Medicaid beneficiaries.[3] The remaining patients are insured under Medicare, private insurance, or other public insurance programs. Minorities make up approximately two-thirds of the CHC patient population.[4]

As policymakers search for ways to maximize efficiency in healthcare spending, some emphasize the importance of primary care. Policy proposals that promote primary care have been presented as possible models of comprehensive quality care delivery that can help prevent unnecessary hospital visits and decrease utilization of other healthcare services. Due, in part, to the emphasis on primary care, CHCs have been discussed as an example of the patient-centered medical home model. Some policymakers look to CHCs as a mechanism to improve access to primary care providers, reduce unnecessary hospital visits, and lower overall healthcare spending.

To gain an independent assessment of the savings CHCs provide, the National Association of Community Health Centers (NACHC) asked Avalere to conduct a literature review of studies that examined the impacts of CHCs on healthcare spending and utilization. We identified a number of studies that estimated the direct financial savings associated with care provided in CHCs, and others that examined the impact CHCs had on utilization of certain services. When seen together, the studies provide evidence that CHCs were associated with lower overall healthcare costs, fewer avoidable hospitalizations, and more preventive care.

Methodology

We conducted a review of the literature to evaluate published studies related to cost-effectiveness of CHCs and using data from 1986 to the present. We utilized PubMed to search for articles using the terms such as cost-effective, quality, or utilization and community health center or federally qualified health center. We selected peer-reviewed articles that entailed quantitative analyses comparing healthcare spending and utilization of CHC users to non-CHC users. Our initial search yielded approximately 50 articles. We then excluded studies that focused solely on quality measures such as patient satisfaction, management best practices, or CHC-like entities in other countries. After retrieving the relevant articles, we further examined the studies' cited references to identify other applicable peer-reviewed articles and/or white papers.

A summary listing of the studies examining the cost-effectiveness of CHCs can be found in the appendix. The list includes five studies assessing differences in cost of healthcare and six studies measuring the impact of CHCs on avoidable acute care utilization of healthcare services. This report highlights the findings of these studies and examines their methodological strengths and limitations. In addition, a total of four published reviews of the literature were included in our assessment of CHC studies.[5, 6, 7, 8] We have incorporated applicable studies from these reviews in our report.

Impact of CHC on Healthcare Costs

We identified five studies that examined the effect of CHCs on healthcare costs. These studies applied an array of methodological techniques to either national survey data or localized Medicaid claims data. All five studies found that CHCs were associated with lower healthcare costs. Some cost studies also examined the effect of CHCs on utilization and found that CHC users had lower rates of emergency department (ED) visits and inpatient hospitalizations.

In a published white paper, Ku et al. (2009) used the 2006 Medical Expenditure Panel Survey (MEPS) to conduct a regression analysis to find the savings associated with CHC users as compared to non-CHC users.[9] The regression model developed by the authors controlled for demographic differences such as age, gender, income, insurance coverage, and self-reported health status. Expenditures included amounts paid by insurance, donated, and paid out-of-pocket. The authors found that total annual expenditures for CHC users were $1,093 lower than for non-CHC users. Ambulatory care expenditures and inpatient hospital expenditures were $402 and $218 less (respectively) for CHC users as compared with non-CHC users.

The authors used the national MEPS dataset to build on the estimated per-person cost savings and extrapolate nationwide savings associated with CHC use. They estimated that existing CHCs will save the health system $24 billion in 2009, serving 19 million individuals. The authors found that enacting health reform to reduce the number of uninsured and implementing policies to expand CHC capacity would enable them to serve an additional 20 million patients by 2019. As a result of these policy changes, the authors estimated that CHCs could provide the country $212 billion in additional savings over ten years, with $59 billion in savings specific to the Medicaid program. As noted by the authors, the estimates may not fully account for potential differences in risk characteristics of new CHC users in comparison to current CHCs users.

Researchers from the Robert Graham Center and NACHC (2007) also used MEPS data to publish a white paper estimating differences in healthcare costs for CHC users and non-users.[10] The analysis was based on 2004 data and did not adjust for differences between CHC users and non-users in areas such as burden of disease and geographic location. The researchers concluded that CHC users' total per-person expenditures were 41 percent lower than non-CHC users ($2,569 vs. $4,379). This $1,810 difference reflects average savings in total health spending, including inpatient hospital visits, ED visits, medication, and out-of-pocket spending. Medicaid and low-income CHC users had a lower likelihood of an ED visit relative to CHC non-users (21 percent vs. 14 percent and 24 percent vs. 16 percent, respectively). Individual subgroup analyses controlling for age, race, income, health status, or insurance status also demonstrated statistically significant differences in health spending between CHC users and non-users. Because the analysis did not include a calculation controlling for demographic and health status characteristics simultaneously, it is not clear how much of the $1,810 difference in health costs can be attributed to the use of CHC care.

Like Ku et al., the Graham Center and NACHC built on the estimated per-person cost savings and found that CHCs save the national health system between $9.9 and $17.6 billion each year. The authors projected that enacting legislation to expand CHC funding would increase the number of CHC patients by 14 million in 2015 and national savings would rise to $22.6 to $40.6 billion annually. The authors did not explore how demographic differences between current and future CHC users would affect the estimated savings.

Duggar et al. (1993, 1994) published two white papers describing analyses based on Medicaid claims data.[11, 12] The studies examined New York and California Medicaid costs for Aid to Families with Dependent Children (AFDC) recipients (the aid category now known as Temporary Assistance for Needy Families). Applying similar methodologies in both studies, the researchers compared total Medicaid payments for the AFDC beneficiaries who received a majority of physician visits at a CHC to beneficiaries who did not. In the New York analysis, total per-person Medicaid payments were 26 percent less for regular CHC users when maternity cases were excluded ($1,285 per year vs. $1,735). The California study showed that total per-person Medicaid payments were 33 percent less than for non-CHC users ($548 per year vs. $813), again excluding maternity and newborn cases. Both studies found that inpatient hospital admission rates and lengths of stay were lower for CHC users compared to non-users. The authors also conducted regression analyses but did not report the results beyond mentioning that the analyses confirmed the papers' reported findings, even after controlling for age, sex, race, maternity, selected chronic diseases, and geographic location.

McRae et al. (2006) published a white paper describing an analysis based on Michigan Medicaid claims data from 2003 and 2004. Comparison groups included FQHC users and non-FQHC users that were under or over age 18 and disabled or non-disabled, but the authors did not control for other factors such as race or disease burden. Each comparison demonstrated that CHC users had lower healthcare costs than non-users. Overall, the cost per member per month for Michigan FQHC users was $388 compared to $433 for non-FQHC users.[13] Unlike other cost-effectiveness studies examined in the literature review, this analysis defined FQHC users as patients using an FQHC for at least one preventive or routine office visit within the study period rather than for a majority of their ambulatory care visits.

The authors also found that, across the total study population, FQHC users had slightly fewer inpatient hospital visits than non-FQHC users. However, some subgroup analyses yielded different results. Beneficiaries over 18 years of age and utilizing FQHC facilities had only small differences in inpatient and ED visits relative to comparable non-FQHC users. Non-disabled patients under age 18 that used FQHC facilities had just as many inpatient and ED visits as non-FQHC users. Disabled FQHC users had slightly more inpatient and ED visits compared to disabled non-FQHC users.

Impact of CHCs on Avoidable Acute Care Utilization

We identified six studies examining the effect of CHCs on potentially avoidable acute care utilization, defined as inpatient hospitalization visits, days of hospitalization, and ED visits. Nearly all studies found that CHC use was associated with a lower rate of avoidable acute care utilization. The most rigorous studies applied robust methodologies to representative datasets. No study quantified the effect of fewer hospital visits on healthcare costs, though the results could be useful inputs to extrapolate a cost-effectiveness measure of CHCs.[14]

Falik et al. published two peer-reviewed studies based on Medicaid claims data and focused on ambulatory care sensitive conditions (ACSCs).[15, 16] ACSCs include chronic conditions such as asthma, diabetes, and hypertension and acute conditions such as gastroenteritis and severe ear, nose and throat infections. These are conditions for which effective outpatient care and early intervention can potentially avert hospitalization to treat complications.[17] Both the 2001 and 2006 studies used multivariate regression models to adjust for differences in the following demographic variables: case-mix, cash assistance welfare status, months in the sample, and residency between CHC and non-CHC users. In addition, the authors included Medicaid claims data from at least four states to ensure the results were not specific to one locality.

In the 2001 study, the authors found that Medicaid FQHC beneficiaries were less likely to be hospitalized or seek ED care for ACSCs than those who did not access care from a FQHC. They also found that the likelihood of FQHC patients experiencing repeat admissions for ACSCs was significantly lower as compared to non-FQHC patients. In the 2006 study, the authors focused on the comparative effectiveness of CHCs as a regular source of care for Medicaid beneficiaries with at least one diagnosed ACSC. In this study, patients were categorized as CHC users if CHCs provided at least 75 percent of their primary care and preventive services—a higher threshold than most other CHC studies. Even with this change in definition of a CHC patient, the results were consistent with the 2001 work.

Probst et al. (2009) published a peer-reviewed article that was the most geographically representative of all claims-based studies in our review.[18] The researchers examined county-level hospitalization discharge data from eight states, representing all four major Census Divisions. The analysis controlled for several county characteristics such as differences in resource levels, demographic statistics, and death rates. They found that the presence of a CHC in a county is associated with lower ACSC hospitalization rates for adults. However, county-level data limited the researchers' ability to directly address the impact of CHCs on individual ACSC admissions.

Rust et al. (2009) published a peer-reviewed study of county-level data, but limited it to rural counties in Georgia.[19] The authors compared rates of ED visits of uninsured populations in rural counties that had a CHC to counties that did not. Using data from 2003 to 2005, the authors found that rural counties without CHCs had a 33 percent

higher rate of uninsured ED visits compared with counties with CHCs. Insured persons' ED visit rates were not significantly higher in counties without CHCs versus those with CHCs.

Starfield et al. (1994) published a peer-reviewed article examining more than 2,000 Maryland Medicaid outpatient medical records for patients seen in CHCs, hospital outpatient clinics, and physicians' offices.[20] Aiming to compare quality of care, the authors examined patients in the three settings using a series of 21 quality measures, including hospitalization and ED visits for patients with asthma and diabetes. The study found few systematic differences in overall quality scores for patients treated in CHCs, hospital outpatient clinics, and physicians' offices. A less prominent finding was that CHC patients had fewer ED visits and hospitalizations than patients seen in hospital clinics.

Epstein (2001) published a peer-reviewed study examining Virginia hospital discharge data for elderly and low-income patients from 1995 to 1997.[21] A regression model was constructed to control for many factors, including supplemental data from the 1990 Census, the 1998 Area Resource File, and the 1996 American Hospital Association Survey. The author found that populations in MUAs who received treatment from a FQHC had significantly lower rates of preventable hospitalization than did other MUA residents. In this analysis, preventable hospitalizations were defined as hospitalizations that, had the patient been treated appropriately in the outpatient setting, would not have resulted in an inpatient admission.

Discussion

Nearly all studies we examined found that the use of CHCs was associated with lower healthcare costs or less acute care utilization. Some cost studies looked at both cost and utilization using the same dataset and indicated that the cost savings could be attributed to reductions in ED visits, inpatient hospital admissions, or shortened inpatient length of stay. Other studies focused exclusively on avoidable utilization and found that CHCs help patients, especially those with chronic conditions, to avoid unnecessary complications and acute care treatment.

To assuage concerns that cost savings may also be attributed to reductions in appropriate and valuable care, studies of preventive services have found that CHC users in fact receive more disease screenings, better monitoring and treatment of chronic disease, and improved frequency and timing of well visits.[22, 23, 24, 25] Additional preventive care raised health spending in the short run but likely reduced overall health spending by avoiding unnecessary treatment. Future research could estimate and incorporate costs or savings related to preventive care into a calculation of healthcare savings associated with CHCs.

There may be multiple reasons why CHCs were associated with lower healthcare spending, though the literature review did not isolate the effect of any specific factor. Some observers attribute CHCs' success to the primary care model, patient-centered medical home, or coordination of care. Others assert that availability of CHC services improves access to appropriate care for the uninsured and underinsured population. Additional research on the impact of key aspects of CHCs would add to the body of evidence regarding their association with lower healthcare spending and reduced acute care utilization.

Appendix: Literature Review Table of Studies Examining the Effect of CHCs on Healthcare Costs and Utilization

Author and Date	Study Population		Control Group Mathematical Technique	Methodology			Outcomes Evaluated and Findings	
	Definition of CHC Patient	Inclusion/ Exclusion Criteria		Control Factors	Data Source		Changes in Cost of Care	Changes in Utilization
Duggar et al., 1993	4,445 Medicaid recipients eligible for AFDC and living near studied CHCs (2 urban, 2 rural) with 50% or more of primary care visits provided by CHC	Excluded beneficiaries with: 1) less than 6 months of eligibility, 2) 3-party payment for healthcare, 3) participated in Medicaid capitation program, 4) institutionalized, or 5) no outpatient paid claims	19,979 CHC non-users and 2,260 occasional CHC users that were 1) Medicaid recipients, 2) eligible for AFDC, 3) living near studied CHCs, and 4) with 0 or 1 CHC visit but less than 50% of visits provided by CHC	Unadjusted differences in mean health care expenditures and utilization. Regression conducted but results not reported	Sex and maternity. Regression controlled for demographics, maternity, chronic diseases, and geography	1989 CA Medicaid paid claims and eligibility files	Average of 33% cost saving to Medi-Cal per regular CHC user, excluding maternity visits	CHC users had 38% lower inpatient hospital admission rates, excluding maternity. Inpatient days lower, with and without maternity

Author and Date	Study Population		Control Group Mathematical Technique	Methodology			Outcomes Evaluated and Findings	
	Definition of CHC Patient	Inclusion/ Exclusion Criteria		Control Factors	Data Source		Changes in Cost of Care	Changes in Utilization
Duggar et al., 1994	17,290 Medicaid recipient eligible for AFDC living near 6 studied CHCs with 50% or more of primary visits provided by CHC	Excluded beneficiaries with: 1) less than 6 months of eligibility, 2) a 3-party payment source for healthcare, 3) participated in Medicaid capitation program, 4) institutionalized, or 5) no outpatient paid claims	31,978 CHC non-users and 6,931 occasional CHC users that were 1) Medicaid recipients, 2) eligible for AFDC, 3) living near studied CHCs, and 4) with 0 or 1 CHC visit but less than 50% of visits provided by CHC	Unadjusted differences in mean health care expenditures and utilization. Regressions conducted but results not reported	Sex, maternity, and newborn cases. Regression controlled for demographics, maternity and newborn cases, chronic diseases, and Medicaid eligibility	1991 NY claims data special reporting file	CHC users cost NY Medicaid 26%, excluding maternity and newborn	Cost savings for CHC users due to lower inpatient admission rates, shorter lengths of stay, admissions for less costly DRGs, 50% fewer ED visits. Savings offset by more primary care visits
Epstein, 2001	Low income or elderly populations in MUAs served by FQHC	Excluded patients with private insurance, not receiving care for at least one ACSC, or transferred from another health care facility.	No FQHC available in MUA	Multiple linear regression	Age, gender, income, education, minority status, and availability of hospitals, physicians, and ambulatory clinics	1995-1997 VA hospital discharge data, 1990 Census, 1998 Area Resource File, 1996 American Hospital Association survey	N/A	FQHC MUAs had 5.8 fewer preventable hospitalizations per 1,000 people over three years*

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	Definition of CHC Patient	Inclusion/ Exclusion Criteria		Control Factors	Data Source		Changes in Cost of Care	Changes in Utilization
Falik et al., 2001	16,145 Medicaid beneficiaries received more than 50% of preventative and primary care from FQHCs	Excluded beneficiaries: 1) enrolled in managed care, 2) over age 65, 3) dual eligibles, or 4) institutionalized	32,593 Medicaid beneficiaries received no care from FQHCs and obtained at least one preventive or primary care service from other provider	Logistic regression	Case-mix, age, gender, race, cash-assistance welfare status, months in the sample, and residency (state, urban/rural)	1992 State Medicaid Research Files for KY, ME, MO, PA, and WA	N/A	FQHC users less likely to be hospitalized (OR=0.80), seek ED care (OR=0.87), or have readmission (OR=0.43) for ACSCs*
Falik, et al., 2006	37,639 Medicaid beneficiaries with at least one diagnosed ACSC living within zip codes of 59 health centers and receiving 75% of preventive and primary care at health centers	Excluded beneficiaries who: 1) were over age 65, 2) were enrolled in an HMO or managed care plan, 3) were dual eligibles or institutionalized, or 4) had fewer than 6 months of eligibility (except newborns)	939,901 Medicaid beneficiaries receiving 75% of primary and preventive care from other providers, 275,287 beneficiaries had mixed use of health centers and other providers, 138,661 had low use, 192,367 had no regular source of care	Logistic regression	Demographics, months of Medicaid eligibility, welfare and disability, geography, and case mix	1994 and 1995 state Medicaid research files for CA, AL, GA, PA	N/A	Health center users less likely to experience ACSC admission (OR=0.89) or ED visit (OR=0.81).* Outpatient visit rate 17% lower

Author and Date	Study Population		Control Group Mathematical Technique	Methodology			Outcomes Evaluated and Findings	
	Definition of CHC Patient	Inclusion/ Exclusion Criteria		Control Factors	Data Source		Changes in Cost of Care	Changes in Utilization
Ku, et al., 2009	588 respondents receiving majority of ambulatory care at health centers	No discussion of exclusion criteria	22,645 respondents not recieving majority of ambulatory care at health centers	Logit models and Log-transformed ordinary least squares models	Age, gender, income, insurance coverage, and health status	2006 Medical Expenditure Panel Survey	Health center users' total health spending was $1,093 less per person per year, ambulatory care $402 less, and inpatient hospital expenditures $218 less.* Extrapolated $24 billion savings for the health care system in 2009	N/A
McRae and Stampfly, 2006	13,084 Medicaid beneficiaries used FQHC for routine or preventative office visit	Excluded beneficiaries who: 1) were dual eligibles, 2) were enrolled in a Medicaid HMO, or 3) did not have a doctor's office visit during the study period	100,214 Medicaid beneficiaries did not use FQHC	Unadjusted differences in mean health care expenditures and utilization.	Subgroup analysis controls for age and disability	2003 and 2004 MI Medicaid claims data	CHC PMPM costs lower ($387.71 vs. $432.58)	Average utilization by FQHC user vs. non-user includes: 1) 3.9 vs. 5.0 office visits 2) 2.6 vs. 2.4 ED visits 3) 7.4 vs. 8.3 outpatient hospital, 4) 1.3 vs. 1.4 inpatient hospital visits, 5) 21.1 vs. 25.1 Rx filled, 6) 36.8 vs. 43.2 total services

Author and Date	Study Population		Control Group Mathematical Technique	Methodology			Outcomes Evaluated and Findings	
	Definition of CHC Patient	Inclusion/ Exclusion Criteria		Control Factors	Data Source		Changes in Cost of Care	Changes in Utilization
Probst et al., 2009	59 counties in 8 states with CHC and no RHC, 139 counties with RHC and no CHC, and 27 counties with both	Excluded counties with fewer than 1,000 resident In the child or working age categories or 500 residents over age 65	354 counties in 8 states had neither facility	Multivariate Poisson analysis	Demographics of county population and death rate due to 4 ACSC	2002 State Inpatient Databases for CO, FL, KY, MI, NY, NC, SC and WA	N/A	ACSC hospitalization rate for working age adults in CHC counties was 14% lower than that of counties without CHC or RHC. Rate in counties with CHC but no RHC 16% lower than counties without CHC or RHC*
Robert Graham Center and NACHC	3.21 million patients receive majority of office-based visits at CHC	Excluded Medicare beneficiaries	Patients with majority of office-based visits outside CHC	Unadjusted difference in mean health care expenditures	Subgroup analysis controls for race, income, insurance type, report health status, and age	2004 Medical Expenditure Panel Survey	CHC users had 41% lower ($1,810) annual medical expenses for patients and payers.* Cost differences for each subgroup comparison by age, race, income, health status, or insurance status.* Extrapolated 2009 healthcare system savings of $9.9B to $17.6B	CHC users had 35.5% fewer ED visits for Medicaid beneficiaries and 31.6% fewer ED visits for low income beneficiaries*

Author and Date	Study Population		Control Group Mathematical Technique	Methodology			Outcomes Evaluated and Findings	
	Definition of CHC Patient	Inclusion/ Exclusion Criteria		Control Factors	Data Source		Changes in Cost of Care	Changes in Utilization
Rust, et al., 2009	Patients ages 18-64 in 24 rural counties where a CHCs was available	Patients younger than 18 or older than 64	Patients ages 18-64 in 93 rural counties without CHC available	Multivariate Poisson regressions	Percentage of black population, poverty level, number of hospitals, and overdispersion of variance	2003-2005 GA ED visit data from Georgia Hospital Association	N/A	Rural non-CHC counties had 33% higher rates of uninsured ED visits per 10,000 uninsured people. Uninsured ACSC ED visits significantly higher in non-CHC counties (RR=1.22).* No significant difference in ED visits for uninsured

Author and Date	Study Population		Control Group Mathematical Technique	Methodology			Outcomes Evaluated and Findings	
	Definition of CHC Patient	Inclusion/ Exclusion Criteria		Control Factors	Data Source		Changes in Cost of Care	Changes in Utilization
Starfield et al., 1994	240 Medicaid beneficiaries use CHCs as usual source of care for otitis media, asthma, hypertension, diabetes, and well child care.	Excluded beneficiaries who: 1) were dual eligibles, 2) did not use HMO as a usual source of care, 3) over age 65, 4) not continuously enrolled in the Medicaid in 1988, 5) did not seek care for one of six specified conditions, or 6) not enrolled in AFDC, SSI, or public assistance	Medicaid beneficiaries using office-based physicians (1,095) or hospital outpatient facilities (689) as usual source of care for one of six conditions	Means and confidence intervals based on a simple random sample design	Case-mix, resource use groups (high, medium and low cost)	1998 MD Medicaid claims data	N/A	Quality scores include utilization for asthma and diabetes patients. Fewer ED visits and hospitalizations for patients in CHCs than hospital clinics

*Statistically significant results

ACSC= Ambulatory Care Sensitive Conditions, CHC= Community Health Center, ED= Emergency Department, RHC=Regional Health Center, PMPM= per member per month, AFDC=Aid to Families with Dependent Children

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