

Immunization Policies and Funding in North Carolina

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OVERVIEW

Despite comparatively low scores on a variety of measures of child health and well-being, North Carolina immunization rates as measured by the National Immunization Survey (NIS) are above the national average—84.1% up-to-date at 2 years of age for the basic 4:3:1 series compared with 80.6% nationally (see Figure 1). A universal purchase state since 1994, over the past 6 years North Carolina has devoted more than 80% of state-source revenues spent on immunization services to vaccine purchase.¹ Overall, state appropriations for immunization activities rose from \$2.82 million in 1992 to \$8.69 million in state fiscal year (SFY) 1994, to roughly \$12 million in each SFY 1997 through 2000 (see Figure 2).

In terms of general health financing coverage of low-income children, North Carolina has expanded rapidly over the past decade. Enrollment in Medicaid more than doubled between 1988 and 1997, and the State Children's Health Insurance Program (SCHIP) reached 61% of its target population, enrolling almost 44,000 children in its first 6 months of operation.² The primary locus of immunizations in North Carolina has shifted from public health departments to private practitioner and health plan settings. This is largely a result of the relatively favorable provider payment policies of the state's universal purchase and Medicaid programs, policies that, in part, have been enabled by the federal Vaccines for Children (VFC) program. Local health departments still deliver about 30% of the childhood immunizations in the state and have increased their activities in monitoring immunization rates and in following up underimmunized children. Some of this follow-up consists of completing immunizations, while in other cases it amounts to completion of documentation.

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ABOUT NORTH CAROLINA

North Carolina ranks eleventh in size among the states, with 7.4 million residents, including 1,873,000 children under the age of 18.³ Well over 100,000 babies are born each year—107,000 in 1997—each requiring the initial series of immunizations within months of birth.⁴ The state's population is somewhat older than the U.S. average as North Carolina has become popular with retirees. Approximately one-fourth of the children in the state are black; two-thirds are non-Hispanic white; and the remaining fraction is Hispanic, Native American, and Asian. Slightly more than one-third of residents live in rural areas which makes North Carolina the largest non-metropolitan state population in the country. Charlotte is the state's largest city, with a population of approximately 429,000. All other sites are well below 200,000, and most are under 100,000.

Over the past 30 years, North Carolina has been transformed from a largely agricultural economy to one that is increasingly diversified, with significant manufacturing and service industry components. The income distribution within the state closely mirrors the nation's; the median income of families with children was somewhat below the national figure for 1996 (\$38,400, compared to \$39,700). Although the average hourly earnings of manufacturing workers in the state are significantly below the national average (\$10.96 vs. \$12.78 for 1996), North Carolina experienced the highest annual increase in this measure of all the states between 1990 and 1996 (4.1%, compared to 3.0% nationwide). The state's unemployment rate is lower and its labor force participation rate higher than the national averages.⁵

North Carolina has relatively high taxes for a southern state but underwent the second largest reduction in tax collections as a percentage of base year collections between 1990 and 1996.⁶ State and local government employment is near the average for the United States as a whole. North Carolina counties function quite independently from the state government apparatus.

On one measure of fiscal effort, the state's willingness to spend its own revenues on children's programs, North Carolina is slightly above the national median effort.⁷ In terms of total (federal and state) Medicaid spending for children, the state's fiscal effort "score" is somewhat higher than the national mean: 114 on a national scale extending from a high of 170 for New York to a low of 53 for Idaho and New Jersey.

The state's health programs have had unusually stable policy and leadership over the past 15 years, through both Republican and Democratic administrations. This reflects a bipartisan agreement on matters of health policy, particularly for low-income people.⁸ On one index of overall child health and well-being, North Carolina ranks 37th among the states.⁹ Notably, 84.1% of the state's 2-year-olds had up-to-date immunizations (one of the health indicators factored into the Casey index) in the most recent survey (1998), compared with 80.6% nationally (NIS; 4:3:1 series).

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HEALTH CARE ENVIRONMENT

Over the past 20 years, the proportion of North Carolinians without health insurance has been roughly comparable to the national rate. While 63% of children in the state have employment-related health insurance, only one-third of children in families with incomes below 200% of the federal poverty level (FPL) have such coverage. Both of these figures reflect the national average. Although North Carolina's Medicaid program covers nearly all optional groups, its income eligibility standard for AFDC (Aid to Families with Dependent Children, now Temporary Assistance for Needy Families [TANF]), a program that automatically qualifies beneficiaries for Medicaid, is quite low—50% of the FPL—and this standard constrains eligibility for the medically needy as well. Still, with federally mandated and optional Medicaid program expansions for pregnant women and children beginning in the late 1980s, total state Medicaid enrollment grew from 481,000 in fiscal year (FY) 1988 to 1,192,000 in FY 1997, an annual growth rate of 10.6%.¹⁰ Between 1997 and 1998, however, North Carolina's Medicaid enrollment grew minimally, by only another 5,000 persons. Between 1990 and 1995, the number of children eligible for Medicaid more than doubled, from 244,000 to 537,000, and total Medicaid spending for children increased from \$253 million to \$688 million.¹¹

In 1996, 27% of the state's children were covered by Medicaid or other public sector health insurance (e.g., CHAMPUS [Civilian Health and Medical Program of the Uniformed Services]), slightly higher than the 25% rate for the nation as a whole. Of the babies born in North Carolina in 1996, 44% were covered by Medicaid, notably higher than the national average of 38%.¹²

Medicaid's eligibility criteria make it more likely that newborns and infants are covered than older children—hence, the higher proportion of Medicaid for the annual birth cohort.

Estimates of the fraction of the state's children who lack health insurance for a year range from 9 to 15%.¹³ Alternative models have yielded widely ranging estimates of children in low-income families (below 200% of the FPL) who may be eligible for Medicaid but are not enrolled in the program—from 7,000 to 72,000 children.¹⁴ Between October 1998 and April 1999, however, the number of children enrolled in Medicaid in the state increased by 29,500 more than expected, most likely due to Child Health Insurance Program (CHIP) outreach and public information campaigns to increase awareness of these programs (N.C. CHIP program information). The number of children newly enrolled in Medicaid suggests that the lower limit to the eligible-but-not-enrolled figure (7,000) that had been estimated earlier was far too low.

The state's Child Health Insurance Program, called "NC Health Choice for Children," is targeted at an additional 71,000 uninsured children who are not eligible for Medicaid but whose families have incomes less than 200% of the FPL. Since October 1998 when the program became operational, 43,770 children, 61% of the target population, have been enrolled (N.C. CHIP program). An additional 64,000 children in families with incomes above the CHIP eligibility cutoff also lack health insurance.¹⁵

Under NC Health Choice for Children the state is contracting with the State Employee Health Plan/Blue Cross–Blue Shield to provide enrollees with a benefit package that is similar to Medicaid. Families with incomes above 150% of the FPL must pay enrollment fees of \$50 per child or a maximum of \$100 for two or more children and may be charged copayments for some services. Copayments for preventive health services, including immunizations, are prohibited. The amount of the federal grant available for the CHIP program in the first year is roughly \$80 million; the state must match this amount with \$28 million in state funds.

As part of the CHIP legislation, North Carolina enacted a tax credit of up to \$300 for families above the CHIP eligibility standard but below 225% of the FPL for private health insurance costs for their children. For families above 225%, the tax credit is \$100. This could be used by an estimated 405,000 families in the state and is projected to cost the state \$64.5 million annually in forgone tax revenues.

North Carolina is 1 of the 14 states that requires local contributions to funding the state share of Medicaid costs. County tax revenues cover 15% of the nonfederal share of Medicaid expenditures.¹⁶ It is also one of the small number of states that lacks a statutory guarantee of access to health care for indigent persons. As a matter of state law, every North Carolina county must provide public health services, but only communicable disease control and vital records registration must be conducted directly. Other services, such as public laboratories, family planning, dental, and maternal and child health (MCH), may be provided under contract, or not at all if the county can persuade the state that other entities in the area are providing them. The state directive for county spending on health requires only that funding be "sufficient to support the mandated services."¹⁷

Still, safety net providers offering primary care services for those unable to pay include 170 federally qualified health centers (FQHCs) and rural health clinics in the state, 120 of which receive federal or state funding. Of North Carolina's 100 counties, 79 have individual health departments, while the remaining 21 counties participate in a total of seven consolidated health districts. These local health departments (LHDs) provide MCH-funded primary care services, as well as immunization services financed from multiple sources. By state law, local health departments must provide immunizations free of charge.

Managed care enrollment in North Carolina has lagged behind national trends. In 1996, health maintenance organization (HMO) penetration was just half the national rate of 24% of the population with any kind of health benefits. Managed care enrollment within the state's Medicaid program is slightly lower than the national average (37% compared with 40% nationally in 1996). Most of this enrollment is through primary care case management contracts rather than full-risk capitation arrangements. In some cases, local health departments serve as primary care case managers for Medicaid enrollees.

Medicaid payments for services in LHDs rose rapidly in the first half of the 1990s, from \$8 million in SFY 1991 to \$46 million in SFY 1994. Yet this increase in revenue-generating services within LHDs has proven to be a mixed blessing. As one observer of these trends in North Carolina points out:

“The availability of revenue from fees in some programs and not in others can change the balance of health department activities between clinical services and other programs . . . in which fees are available and communicable disease control, health education, environmental monitoring, collection of data on health and other activities not supported by fees. If fee income becomes the only way for a local health department to expand and improve its services, generating receipts could become the priority for the health department (or for the county commissioners), instead of responding to the most pressing public health needs. . . . And big increases in health department budgets in fee-generating programs make it harder for commissioners, other department heads, and the public to accept proposed increases in other health department programs.”¹⁸

In addition, this growth in receipts is threatened by the expansion of Medicaid and CHIP managed care arrangements, which, unless the LHD is the primary care case manager as it is in some cases, discourages the use of providers outside the capitated plan. By SFY 1999, revenues from Medicaid to LHDs had decreased to \$34 million.¹⁹

North Carolina has the highest physician payment rates offered by commercial insurers (relative to Medicare payment levels in the state) in a survey of 21 states.²⁰ Likewise, while Medicaid's payment rates are just 70% of private insurance payment rates, they are essentially on a par with Medicare's federally established physician payment rates in North Carolina, and thus quite high compared to Medicaid fees set by neighboring states.²¹

In 1993, North Carolina's Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) program was revamped as Health Check, with the objectives of providing enhanced consumer education and information, simplified paperwork, and improved payment to increase private practitioner participation. An automated information system (AINS) for program management data and mailings to clients was introduced. This program was operational by mid-1994. By 1995, 49 counties had also been staffed with Health Check outreach coordinators. In a study of 1,200 children who were enrolled for at least part of their first 2 years of life in 1994 and 1995, children who were continuously enrolled in Medicaid in the latter year (when Health Check was fully implemented) had a higher rate of completed immunizations than those in the prior year: 85% vs. 76%.²² The presence of an outreach worker in the county was positively correlated with immunization rates.

VACCINE FINANCING AND VACCINE ADMINISTRATION FEES

Medicaid Replacement Program. For 9 years (prior to 1994, when universal purchase [UP] for vaccines administered to children began) North Carolina conducted a Medicaid replacement program, whereby physicians could replace stocks of vaccines dispensed to children enrolled in Medicaid and to those in families with incomes below 185% of the FPL. As of 1993, just 150 of

the 1,700 physicians offering immunization services participated in the vaccine replacement program.²³ A third of the state's primary care physicians reported that they were unaware of the program. Physicians responding to this survey cited excessive paperwork, the difficulty of maintaining distinct vaccine inventories, and insufficient reimbursement for supplies and staff time as reasons for not participating.²⁴ The dispensing fee paid to physicians by Medicaid under the replacement program was \$7.00 per visit, regardless of the number of doses administered.

Universal Purchase for Pediatric Vaccines. On January 1, 1994, North Carolina became a universal purchase state, picking up the vaccine costs of all vaccines administered to children within the state. The state legislature appropriated \$11 million for that first year.²⁵ More than 500 providers enrolled in the UP program in the first 9 months of its operation. Under the state's UP program, providers were allowed to charge patients an administration fee of up to \$15.00 for one immunization, \$20 for two, and \$25 for three or more doses. Medicaid, however, continued to reimburse providers at \$7.00 for any vaccines administered during a visit until the VFC program began.

The proportion of children's immunizations administered in the public sector decreased from 50% before the inauguration of UP to 30% after.²⁶ Some evidence suggests that many of those parents who continued to take their children to public health departments for immunizations did so for cost reasons. Of 64 respondents interviewed in 11 public health department clinics, two-thirds of the parents who sought immunization services from public health clinics after the institution of the UP program cited the cost of services as a reason.²⁷

For families that routinely obtained immunizations from private practitioners, the UP program reduced their out-of-pocket costs for these services. This was the case whether they were fully insured, underinsured, or uninsured.²⁸ For some families, however, the institution of North Carolina's UP program increased their out-of-pocket costs for immunization services. This would be the case if they had been receiving immunizations in free public clinics and then, after UP began, switched to receiving them in their private provider's office. The private provider could charge a vaccine administration fee; if the child had no insurance coverage for this service, the fee would constitute a new out-of-pocket expense for the family. Although the state UP program and the federal VFC program require providers to waive the vaccine administration fee upon request if the family is unable to pay it, surveys both of providers' offices and of patients seeking immunizations in public clinics suggest that this option is not well known by families that might benefit from it.²⁹

The Federal Vaccines for Children Program. When VFC began October 1, 1994, the federally set vaccine administration rate allowed under the program was \$13.71 per immunization. The state allowed double that amount for two or more vaccines, somewhat more than the initial UP rates. With the introduction of VFC, the demands on the state's UP program were reduced by that fraction of the state's children (those in Medicaid, uninsured, some underinsured, and Native Americans) who were entitled to the federally purchased vaccines. The state legislature did not, however, substantially reduce its funding for vaccine purchase; its appropriations for SFY 1994 through 1998 were \$6.8 million, \$7.9 million, \$6.8 million, \$9.7 million, and \$10.7 million, respectively. Some of these monies were spent on extending the scope of vaccines provided to hepatitis B for adolescents, measles-mumps-rubella (MMR), and tetanus and diphtheria toxoids (Td).

Provider Participation and Perceptions. The UP program, including the VFC component, enjoys broad support from providers in North Carolina (see Figure 3). Provider participation in both programs is over 90%. After initial opposition to the UP program, vaccine manufacturers

have, in part, accepted it because of its popularity in the provider community. Recently, the state legislature enacted a requirement that physicians participating in the UP program repay any “excessive” wasted or expired vaccines. This requirement responded to a single publicized instance of negligent handling of a vaccine delivery and has resulted in some physicians who are low-volume vaccination providers ending their participation in the program. On the other hand, the state immunization program reports that the VFC program’s efforts to educate providers in vaccine management and handling have resulted in better performance and provider satisfaction with this aspect of the program than had existed prior to VFC.

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STATE IMMUNIZATION POLICIES AND PROGRAMS

Public Sector Provision of Immunization Services. North Carolina developed an 8-year Immunization Action Plan (IAP) with Section 317 grant funds in October 1992. Figures 4 and 5 display Section 317 expenditures, and 317 financial assistance (FA) awards and carryover amounts, over the past decade. Between 1992 and 1995, LHD staffing more than doubled as part of both federal and state initiatives to provide more direct immunization services, largely through extended clinic hours. LHDs also increased monitoring and follow-up efforts, identification of high-risk children, and community-wide assessments.³⁰ The state immunization program argues, in its calendar year (CY) 1995 grant application to the Centers for Disease Control and Prevention (CDC), that North Carolina undertook its universal childhood vaccine purchase program with the intent of shifting service delivery to the private sector, which would thereby free county public health workers’ time for tracking and follow-up of children at high risk for underimmunization.³¹

The share of immunizations administered in the public sector has diminished since the advent of the state’s UP program, and VFC shortly thereafter, from 50% to roughly 30%. Even so, the level of state support for local health departments’ immunization assurance activities has been fairly consistent over the years. “Aid-to-Counties” expenditures by the state, including both federal and state source funds, and covering both assurance and direct services activities, has amounted to roughly \$4.6 million for each SFY 1996 through 1998. When federal and state funding of vaccines and infrastructure increased substantially in 1994 and 1995, the state health department established a financial award to each local health department that has been maintained as a funding base in the years since. Funds additional to this base allotment per local health department are awarded subject to availability. One-third of North Carolina’s Section 317 FA grant has, in recent years, been spent on contracts with county health departments and consolidated health districts for direct provision of immunization services. During SFY 1999 (July 1998 through June 1999), local health department contracts received 44% of FA funding; other state immunization activities were limited in order to maintain local contracts at the base amount.

There has been a shift in the activities of LHD staff as the volume of direct services provided has diminished. Assurance and follow-up of underimmunized children have become more prominent in the array of LHD activities. In addition, LHD staff are responsible for entering immunizations into the state registry, including the doses administered by private physicians, which are reported to them in hard copy.

For the first time in its CY 2000 immunization grant submission to CDC, North Carolina projected LHD spending for immunization activities. Local health departments expect to spend \$5.55 million in total on immunization efforts, of which \$3.44 million (62%) will be devoted to direct services. Expenditures for direct service provision among the North Carolina LHDs range from 44% of the overall budget in Cleveland County to 83% in Hoke County. Both of these

counties are very small; counties with larger budgets and population tend to vary less and spend about 60 to 66% on direct services.³²

Coordination with the Medicaid, Women, Infants, and Children (WIC), and Head Start Programs. The state immunization program reports that it has collaborated well with the Medicaid program over the past decade, working to increase the scope of Medicaid reimbursements for both outreach and direct services provided by safety net providers, including health departments; community, rural, and migrant health clinics; and Indian health services. North Carolina's EPSDT program, Health Check, has provided outreach services that encompass immunizations. Medicaid reimbursement to local health department clinics for direct services was estimated at \$34 million in SFY 1999, of which \$2.3 million was for outreach services to mothers and children. To date, the Medicaid program has not contributed to the costs of the state's immunization registry, although this may be addressed collaboratively in the future. The two programs' staffs meet monthly to review issues and policies of mutual concern.

WIC program coordination has proven to be a more complex issue for the state immunization program. In the early 1990s, the national WIC and immunization programs agreed that WIC would screen immunization records and refer patients to immunization providers. Soon after this policy was established, North Carolina's WIC agency and its immunization program included mutual referral services between the two programs in their contracts with local service providers. (Health departments serve as WIC agencies in most counties.) These local agencies had varying degrees of success in screening and referral for immunization. Since 1994, funding has been made available for the less successful WIC agencies to increase their staffing. For SFYs 1997 and 1998, \$500,000 was provided by the state immunization program through its Section 317 FA grant to all local WIC programs for screening, referral, and outreach services. Because of reduced funding in FY 1999, the immunization program eliminated this contract. The 1998 rate of up-to-date immunizations for WIC clients was comparable with that for local health department patients, approximately 70%. The state's immunization registry reveals that about 60% of all children born in a given year in North Carolina are enrolled in WIC at some time during their first years of life.³³

Head Start is a federal program of grants to local public and private nonprofit agencies that provide a range of child development services for low-income children between 3 and 5 years of age. One of the program's contractually binding performance standards requires grantees to ensure that all Head Start enrollees have completed age-appropriate immunizations. Grantees must also maintain health records, including immunization information, for their enrollees. In North Carolina, Head Start programs, like day care providers, must make annual reports to the state immunization program. Immunization coverage for Head Start enrollees has remained consistently high over recent years at 97–98%.³⁴ Only 7,000 North Carolina preschoolers are enrolled in Head Start, however, compared with more than 100,000 in licensed day care settings.³⁵

Pockets of Need. North Carolina has funded one project that targets three ZIP code areas in Charlotte, the state's largest city. The targeted area had documented immunization coverage levels of less than 40% in the first year of the project. The interventions employed in this initiative include using WIC clinics to identify, assess, and immunize children; providing staff to follow up with children behind in their immunizations; conducting weekend immunization clinics and an automated telephone reminder service; and using an immunization task force to increase parental awareness of the importance of immunizations.³⁶

Immunization Registries and Provider Reporting. North Carolina has a statewide immunization registry operating within its public health departments and clinics. It began its registry de-

velopment in 1992 with a Robert Wood Johnson Foundation (RWJF) grant and state funding. All births after January 1, 1994, were to populate the registry. The North Carolina Immunization Registry (NCIR) works off of the Health Information System, a patient-management system used by LHDs. This database now has more than 2 million patient records, half of which are for children up to 18 years of age.³⁷

It has not been feasible for the automated registry developed for the public sector, which uses a mainframe computer that has been overtaken by advances in information technology, to be connected with private providers' offices. The state is developing requirements for an immunization information system that will incorporate vaccine inventory and accounting reporting as well. State staff are currently evaluating existing registry systems for application in North Carolina. Ultimately, the goal is to create information linkages between those using the current automated data system, the state, and private immunization providers in the state.

As of September 1999, all private providers participating in the UP program were required to complete a personally identifiable record of each immunization they administer on a triplicate paper form. One copy is to be sent to the local health department for entry into the immunization registry; the second copy is to be sent to the state for vaccine inventory purposes; the provider retains the third copy. This system is being pilot-tested in 13 counties at the present time and has been received favorably by the providers using it in lieu of previously required VFC reporting forms.

Immunization Enforcement and Surveillance. North Carolina has had civil laws requiring immunization for school and day care entry for more than 20 years. Enforcement of these entrance requirements is a shared responsibility of school principals, day care and Head Start directors, and local and state health departments. School principals and day care providers make summary reports to the state regarding the immunization coverage of their enrollees. They are expected to work with local health departments to ensure completion of immunizations for those children who are not up-to-date. The state immunization program validates local enforcement efforts through a sample audit of their records. North Carolina law allows for the exchange of personal immunization record information between schools and public health departments.

North Carolina also has a law requiring age-appropriate immunization as recommended by the public health service. This law allows criminal misdemeanor charges and injunctions to be brought against parents who fail to immunize their children on time, with exemptions allowed for religious and medical reasons.³⁸ Prosecutions under this statute have been rare. Day care entrance requirements are only partially effective in ensuring age-appropriate immunizations for preschoolers because only a fraction of them (nationally, 15% of those under age 2) are enrolled in licensed day care settings.

At least annually, every local health department is audited by the state immunization program through an immunization registry review that determines the clinics' rates of up-to-date immunizations for 2-year-olds. Those health departments with low levels of completed immunizations (less than 85%) are reevaluated at six-month intervals. Because automated registry information is now used for this review, state staff who previously had been responsible for conducting these health department audits have reprogrammed their efforts to conduct 250 annual site visits to private providers for professional development and quality assurance.³⁹

North Carolina law also requires that the immunization status of students newly entering colleges and universities be reported within 60 days of the new school year. Students must demonstrate that they are immunized against measles, rubella, tetanus, and diphtheria. These immunization assessment data are validated through record reviews at randomly selected institutions

each year. The state immunization program provides MMR and Td vaccines to colleges and universities through its UP program.

1 ADULT IMMUNIZATION POLICIES AND PROGRAMS

Adult immunization activities represent a small fraction of the state immunization program's efforts and have consisted primarily of information and education campaigns through local health departments. The Immunization Section of the Health Department collaborates with the Division of Adult Health Promotion to disseminate consumer and provider health educational materials about immunization standards for influenza, hepatitis B, pneumococcal disease, measles, mumps, rubella, diphtheria, and tetanus and to increase awareness of Medicare coverage for certain vaccines and publicize their availability. The state program has set immunization goals of 60% coverage for the population 65 years and older for both influenza and pneumococcal immunizations. The state program promotes immunizations in nursing homes and congregate living facilities, and encourages the use of standing orders in nursing homes for annual influenza vaccinations, and for pneumococcal pneumonia vaccination as needed. Still, the spending on adult-related efforts is minimal: personnel and contracts in the area of adult immunization accounted for roughly \$60,000 in SFY 1999, and the state requested \$67,000 from CDC in Section 317 FA monies and projected spending \$8,000 of its own funds on promotion of adult immunization in its CY 2000 grant proposal.

2 STATE AND FEDERAL FUNDING FOR IMMUNIZATION PROGRAMS

VFC now accounts for 44% of all publicly purchased vaccines in the state, Section 317 for 19%, and state funds for the remaining 37% (see Figures 6 and 7). At the state level, 10.5 full-time-equivalent (FTE) staff and manage the vaccine ordering, accountability, and distribution system. At the beginning of the UP program, 6.5 FTEs performed these functions. As the volume of vaccines and the complexity of the program changed with VFC, staffing has increased. The various funding sources (Section 317, VFC, and the state) share in these vaccine management costs roughly proportionally to the share of vaccines paid for from each source.

The state share of immunization program costs is somewhat lower than that for vaccine purchase (compare Figures 8 and 6). For 1995 through 1997, North Carolina's Section 317 FA total annual *award* averaged \$9.63 million (Figure 5). The state's annual *expenditure* of Section 317 FA funds over this time averaged \$6.65 million (Figure 4). Both state funding and infrastructure spending were less variable than the Section 317 FA award over this period. In 1998, the total annual award dropped to \$4.29 million, of which the state expended \$4.14 million. The projected total Section 317 FA award for North Carolina in 1999 was \$3.69 million, an 11% reduction from the previous year's spending.

In the face of this reduction, North Carolina has eliminated a \$500,000 contract for outreach, monitoring, and service delivery with WIC programs (noted above) and its University of North Carolina (UNC) nursing training and service delivery grant. Aid-to-County funds that would have been applied to immunization follow-up, public information and education, and registry development have also been reduced. Funding for direct services to local health departments remains, as noted earlier, one of the state program's highest priorities, as evidenced by the increased proportion of the Section 317 FA grant that can be accounted for by Aid-to-County allocations (44% compared with one-third in earlier years.)

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SUMMARY

North Carolina, largely due to its commitment to a universal purchase program for pediatric vaccines, contributes substantially to the overall immunization effort within the state. The UP program, with VFC incorporated into it, enjoys widespread professional support, although vaccine documentation requirements and use of the state immunization registry continue to pose challenges for both private practitioners and the state immunization program. A relatively generous Medicaid vaccine administration fee and relatively high Medicaid physician fees for well-child care have also enhanced providers' support and participation. During the high points of Section 317 FA funding in the mid-1990s, North Carolina expanded direct services through increased staffing and clinic hours, and purchased contract services including promotional activities, training, and direct services, initiatives that were discontinued once Section 317 FA was reduced.

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Any omissions or errors are my own.

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