



Estimated Medicaid Costs and Offsetting Federal Cost-Savings of Nurse-Family Partnership

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This memo concisely summarizes the Federal costs and cost-savings of Nurse Family Partnership (NFP) services per child served through Medicaid using data derived primarily from the trial of the NFP conducted in Memphis, TN. The analysis shows that whenever Medicaid provides NFP services to an eligible firstborn, the expected Federal cost savings over a ten-year time horizon exceed the Federal government's costs to provide the services. In Memphis, the family's Food Stamp costs were reduced by 11% and its Medicaid costs by 9%. The program would save the Federal government money even if savings in replication were only 65% of the savings in Memphis.

Additional estimates are provided below by year and for a 5-year time horizon. All dollar figures in this document are in 2006 dollars.

Costs

NFP services for a mother-firstborn dyad cost an average of \$7,200 ($\$4,500/\text{dyad}/\text{year} \times 1.7$ years average enrollment). Two states – CO and LA – use state personnel to provide NFP services and presumably would reimburse 100% of costs through Medicaid if they could to maximize Federal reimbursement of their costs. Elsewhere reimbursement almost surely would be less than 100% of costs. As a benchmark, typically Medicaid reimburses 75%-80% of physician costs. It is unlikely that nursing services would be reimbursed more generously. Conservatively, we assume Medicaid would pay an average of 90% of NFP costs or \$6,480 per firstborn.

The Federal Medicaid Assistance Percentage (FMAP) is the share of Medicaid costs paid by the Federal government. In 2009, FMAPs by state ranged from 50% to 75.84%. The analysis assumes a 60% Federal match with sensitivity analysis at 50% and 75%.

Cost Offsets

NFP services were examined in a randomized trial among low-income families registered in the program in Memphis, TN, in 1990-1991, served for up to 30 months post-enrollment, and tracked for 12 years post-enrollment. The program raised employment and reduced birthrates, resulting in reduced Medicaid (TennCare)¹ and Food Stamp usage and costs among participating families. TennCare services were fully capitated so the savings resulted from differences in eligibility, not differences in health care utilization.

¹ All "Medicaid" savings estimates in this paper include State Child Health Improvement Plan (SCHIP) savings.

In the 10 years following the birth of the first child, because of reduced eligibility, Food Stamp costs for the family were an average of 11% lower for NFP families than for comparison families and Medicaid costs were 9% lower. Over a 5-year time horizon, Food Stamp costs were 9% lower and Medicaid costs were 8% lower. These differences come from data analyses run in 2009 and are statistically significant.

The capitated Federal cost savings by year and cost category in the Memphis NFP randomized trial are shown in Table 1. The savings shown are differences in annual costs for families randomly assigned to receive NFP services versus families randomly assigned to a comparison group. The savings estimates were computed after controlling statistically for minor differences in demographics and resources of the NFP and comparison families at randomization. (Data collected in years 11-12 showed cost savings continued to accrue, but scoring of Federal legislation is restricted to a 10-year time horizon.)

Consistent with the Memphis trial, in an earlier trial conducted in Elmira, NY, Olds et al. (1997) reported even larger effects. Over the 15 years following the birth of the first child, NFP families had fewer subsequent births and longer birth spacings. Months on Food Stamps were reduced by 15% and months on Medicaid were reduced by 13%. Because sample size was relatively small, some of these differences, although large, were not statistically significant. If the Elmira and Memphis data were pooled or analyzed meta-analytically, however, the pooled differences almost surely would be statistically significant. In a subsequent trial conducted in Denver, CO, launched during the economic boom of the mid-1990s, only four years of post-intervention data are available. Closely spaced subsequent births and pregnancies (within 2 years of the birth of the first child) declined significantly, but reductions in Medicaid and Food Stamp usage were not observed over the four-year period following birth of the first child (probably because less than 25% of controls still used these services by year 2 of the Denver demonstration while more than 75% of controls still used them in Memphis). The analysis here relies on the findings from the Memphis trial.

Many government cost savings from NFP are not shown here because they accrue to State government rather than the Federal government. Notably, NFP generated reductions in TANF participation comparable to the reductions in Medicaid and Food Stamp participation. Because reliable data are not available on the effects of NFP on child placement in foster care, we also have not accounted for any change in Federal Title IV-E foster care and adoption expenses.

Net Impact of NFP on Costs

Table 2 uses a ten-year time horizon. It shows the Federal cost per NFP participant and the associated cost savings by Federal Medicaid participation rate assuming effectiveness matched the Memphis trial. Because States share Medicaid costs with the Federal government but Food Stamp cost reductions all constitute Federal cost savings, if the utilization reductions observed in the Memphis trial are achieved, the program will reduce Federal spending quite significantly over a ten year time horizon. Specifically, offsetting Federal savings will be 154% of NFP program costs (yielding a net 54% return on the Federal investment).

Table 2 incorporates savings from two sources:

- The mother, the first-born, and subsequent children are on Medicaid and Food Stamps for fewer months because family income is higher.

- Fewer babies are born to women eligible for Medicaid and Food Stamps and those who are born are more widely spaced (meaning they are Medicaid-eligible for less months over the ten year time horizon).

These findings show the actual Medicaid savings in a capitated care system that did not provide a larger capitation payment for pregnant women. Thus they do not explicitly capture savings from reduced pre-term delivery/low birth weight or the reduction in birth costs associated with wider birth spacing and a reduced birth rate. Conversely, they do not capture the costs of any increased use of preventive health care that results from NFP participation or of any off-setting savings from early detection and prevention. Trying to add those costs to the capitated costs risks double-counting and is inadvisable.

Julia Isaacs of Brookings estimated the Medicaid savings in a fee-for-service system.² She estimated NFP would reduce Medicaid costs by \$1,651 over five years and by \$3,271 over ten years. Those estimates are close to the actual capitated savings of \$2,095 over five years and \$3,567 over ten years. With the Isaacs estimate of Medicaid fee-for-service savings, the return on investment in NFP would be 149% over ten years.

Table 3 is comparable to Table 2 but uses a five-year time horizon. With a 5-year time horizon, 80% of costs would be recovered if effectiveness matched the Memphis trial. With the Isaacs estimates of Medicaid savings, 73% would be recovered.

As any program scales up from a randomized trial, intervention fidelity may be imperfect and staff may be less dedicated to the program. Thus interventions commonly lose some effectiveness in scale-up. With a 60% average Federal share of Medicaid costs, the Federal government would fully recover its investment in NFP services for a child over the ten years following the birth of the child if a scaled up program returned as little as 65% of the benefits observed in Memphis.

REFERENCES

Olds D, Eckenrode J, Henderson C, Kitzman H, Powers J, Cole R, Sidora K, Morris P, Pettitt L, Luckey D. Long term effects of home visitation on maternal life course and child abuse and neglect, *Journal of the American Medical Association*, 278:8, 637-643, 1997.

² Because of data available at the time, the Isaacs analysis excluded the Food Stamp cost savings. It did not adjust down NFP costs to reflect the likelihood that Medicaid would pay less than 100% of these costs. Although not stated in the Isaacs analysis, the Elmira data indicate that prenatal care costs did not differ between the NFP and comparison groups. Finally, Isaacs used the average cost of an Emergency Department (ED) visit in analyzing the cost reduction resulting primarily from reduced ED-treated injuries. The average cost of an ED visit for injury is higher. Thus the Isaacs estimate is probably conservative.

Table 1. Reduction in Medicaid and Food Stamp costs by year of age for a treatment versus a comparison family in the Nurse-Family Partnership randomized trial in Memphis, from birth to the tenth birthday (in 2006 dollars)

Age	Reduction in Medicaid Costs	Reduction in Food Stamp Costs
0 to 1st birthday	\$412	\$93
1	417	308
2	380	286
3	464	559
4	423	610
5	368	663
6	245	240
7	293	294
8	237	344
9 to 10th birthday	328	443
TOTAL	\$3,567	\$3,840

Table 2. Federal NFP costs and cost savings per child served by Federal Medicaid Assistance Percentage over a ten-year time horizon (in 2006 dollars)

Federal Medicaid Assistance Percentage	Cost per Child Served	Medicaid Savings per Child Served	Food Stamp Savings per Child Served	Net Savings per Child Served	% of Costs Recovered
50%	\$3,240	\$1,784	\$3,840	\$2,384	174%
60%	\$3,888	\$2,140	\$3,840	\$2,092	154%
75%	\$4,860	\$2,675	\$3,840	\$1,655	134%

Table 3. Federal NFP costs and cost savings per child served by Federal Medicaid Assistance Percentage over a five-year time horizon (in 2006 dollars)

Federal Medicaid Assistance Percentage	Cost per Child Served	Medicaid Savings per Child Served	Food Stamp Savings per Child Served	Net Cost per Child Served	% of Costs Recovered
50%	\$3,240	\$1,048	\$1,856	\$336	90%
60%	\$3,888	\$1,257	\$1,856	\$774	80%
75%	\$4,860	\$1,572	\$1,856	\$1,431	71%