



# Cost Savings to Medicaid from the Maternal Infant Health Program due to Reduction in Preterm Birth Rate

## RETURN ON INVESTMENT

### THE PROGRAM

The Maternal Infant Health Program (MIHP) is a benefit for Medicaid-eligible mothers to supplement medical (prenatal and infant) care. MIHP provides care coordination and intervention services, focusing on both the mother and infant. Mothers are eligible for nine visits for herself and nine visits for her infant after birth, with additional visits available for infants who are identified as substance exposed.

#### How does it work?

During pregnancy, MIHP staff assist mothers in obtaining prenatal care and in making changes to increase the likelihood that her infant will be healthy at birth (e.g., decrease use of tobacco, alcohol or drugs; seek treatment for depression; improve management of a chronic disease; etc.), providing health education, guidance, and facilitating referrals to other services as needed<sup>1</sup>.

#### Is it effective?

A study comparing MIHP-enrolled mothers who gave birth in 2010 (all of whom registered for the program before their third trimester and had greater than three visits) to a matched sample of mothers found that the excess in preterm births (< = 36 weeks) of non MIHP mothers to be 2.9 per hundred<sup>2</sup>.

### THE EXPENSE

#### How much do MIHP prenatal services cost?

Data on the MIHP program cost per pregnant participant<sup>3</sup> were obtained for mothers in the 2010 study for the prenatal period of their enrollment only. Costs calculations include only those services billed to Medicaid as part of their MIHP services fee schedule and do not incorporate the costs of program administration or other administrative costs (Column A). Average cost of providing prenatal MIHP services to a mother in the study sample was \$517.58, with mothers averaging about five MIHP pre-delivery visits in the course of the program. Average cost was converted to per 100 infants (Column C).

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MIHP Program Costs (prenatal services only billed to Medicaid) <sup>3</sup>	Number of MIHP- enrolled mothers in sample	Average cost of pre- natal program ser- vices per 100 infants
(A)	(B)	(C)
		(C = (A/B)*100)
<b>\$4,225,503.21</b>	<b>8,164<sup>**</sup></b>	<b>\$51,757.76</b>

<sup>\*\*</sup>The sample size has been updated to 8,164 from 7,664, (as was published in Roman, et al, 2014) in order to include all mothers in the 2010 birth cohort (Column B).

### THE SAVINGS

Average addition-  
al expense of pre-  
term birth over  
full-term birth<sup>\*4</sup>

(D)

\*In the first month of life, or initial hospitalization if stay is >30 days

**\$24,612.94**

(preterm and very preterm, excluding those infants who died or transferred to different facility)

Excess preterm births  
per 100 infants of non  
MIHP mothers to  
matched MIHP mothers  
who enrolled early and  
received 3 visits<sup>2</sup>

(E)

**2.9**

Average cost sav-  
ings per 100 infants  
due to reduction in  
preterm births

(F)

(F= D\*E)

**\$71,377.52**

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#### How much does preterm birth cost?

Data on pricing was obtained from the Healthcare Cost and Utilization Project, weighting the sum of average costs of preterm and full-term births (DRG codes 790, 791, 792 and 793, 794, 795, respectively) in the 2010 national cohort for which Medicaid was the expected payer<sup>4</sup>. Costs for preterm birth were computed as an average of these hospitalization costs for the infant only, less the average costs of the hospitalization for a full term infant. Multiplying the average excess cost of preterm birth (Column D) by the difference between the incidence of preterm births in the MIHP (Column E) and matched non-participant samples, we find the average cost savings per 100 infants (Column F).

# THE RETURN ON INVESTMENT

## How much might Medicaid save ?

In total, MIHP participation creates **net savings of \$1,238,569 for Medicaid.**

Using frequencies from the 2010 MIHP mothers and their matched controls, **this savings amounted to \$5,464,072 for one year** (= additional preterm births in the control group [222] \*additional cost of preterm birth [\$24,612.94]). The net savings to Medicaid was calculated by subtracting the program costs from the savings (= \$5,464,072 - \$4,225,503). By multiplying average savings by average program cost per 100 infants, we compute a 138% return on investment for MIHP from the reduction in preterm and very pre-term births.

## ROI

<u>Average savings per 100 infants</u>	<u>Average cost per 100 infants</u>	<u>RETURN ON INVESTMENT</u>
(G)	(C)	(H)
		(H = [G/C]*100)
<b>\$71,377.52</b>	<b>\$51,757.76</b>	<b>138%</b>

For every **\$1** spent on prenatal services for MIHP participant mothers, Medicaid saves **\$1.38** in the costs associated with preterm birth in the first month of life

### Are there other savings?

The estimates of return on investment presented above are conservative by all accounts. This factsheet only examines a very narrow definition of the return on investment of the MIHP program.

Firstly, these estimates only cover costs associated with the first month of the infant's life (or over the course of the initial hospital visit if the stay is >30 days).

**Preterm infants, however, are more likely to require additional and expensive medical attention during the first year of their lives<sup>5</sup>, and are more likely to have developmental disabilities requiring more interventions in subsequent years than**

### full-term infants.

The costs outside of those directly billed to Medicaid are not explored in this report either. **The additional time and resources required to seek adequate care to preterm infants have been estimated as a significant financial burden for parents to bear<sup>6</sup>.**

Furthermore, this analysis only takes into account the savings associated with medical costs of health services provided to the infant. The cost of services to the mother during and following delivery are not negligible, and with **the costs of hospital stays of mothers of preterm infants is higher than those of mothers of full-term infants<sup>5</sup>** the savings to Medicaid from preterm birth

prevention only increase.

Beyond producing a decline in the rate of preterm birth, MIHP has also been found to positively impact other postnatal outcomes for mothers and infants<sup>7</sup> which may result in cost savings to Medicaid later on in the child's life.

Finally, total savings to Medicaid—and number of preterm births prevented—will only increase as more mothers enroll. With Medicaid covering over 40% of the births in Michigan and with only 30% of all eligible mothers participating in MIHP<sup>2</sup>, the potential for greater savings with increased participation is imminent.

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3. 2010 MIHP Reimbursement Codes. MDCH Maternal Infant Health Program Database. [http://www.michigan.gov/mdch/0,1607,7-132-2945\\_42542\\_42543\\_42546\\_42551-151014--,%2000.html](http://www.michigan.gov/mdch/0,1607,7-132-2945_42542_42543_42546_42551-151014--,%2000.html) Accessed November 18, 2014.
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