



Technical Assistance Brief: Estimating the Costs of Early Intervention Program Services Attributed to Lead Exposure

Purpose

This technical assistance brief provides state and local childhood lead poisoning prevention programs with a method to estimate the financial cost of Early Intervention Program (EIP) services attributable to lead exposure in their jurisdiction. This type of information can be useful to programs wishing to make their case about the importance of lead poisoning prevention and the cost burden of lead exposure.

Background

The Early Intervention Program (EIP) provides services to infants and toddlers three years of age or younger who have a confirmed disability or an established developmental delay. The following process for estimating EIP costs attributable to lead exposure was developed by Oneida County in New York State and can be modified for use in other cities and counties where comparable data is available for analysis.

Step 1. Identify existing relationships

Begin by determining whether your state or local lead poisoning prevention program has an existing relationship with EIP. You are primarily seeking information related to referrals and information sharing.

- Does the lead poisoning prevention program make referrals to EIP based on an elevated blood lead level or if nursing case management services suspect a potential developmental delay?
- Does EIP family consent allow for the sharing of information with the lead poisoning prevention program?

Next, ask to meet with a representative from your EIP program to explain the purpose of cost of illness estimates and discuss their ability and willingness to provide EIP information for children receiving services as a result of lead exposure. Ideally, EIP will have the ability to match lead poisoning program information

with their database. Be prepared to discuss various formats for providing and sharing electronic data for matching purposes, including the development of a *Memorandum of Understanding* to share information.

Step 2. Create a data collection spreadsheet

Before gathering the information necessary to complete your analysis, you will need to create a data collection spreadsheet. An example spreadsheet containing the following types of columns is available for download at <https://nchh.org/tools-and-data/technical-assistance/nys-clpppp/>:

- Child information:
 - First name, last name
 - Date of birth
- Blood lead information:
 - Date of first blood lead test and corresponding BLL result
 - Date of highest recorded blood lead level within the period of study and corresponding BLL result
- EIP enrollment information:
 - Date of initial EIP enrollment
 - Length of EIP enrollment in months (calculate using date of most recent or last service)
 - Original reason for referral, if known
- Detailed information on each EIP service received over a defined period (Oneida County used a three-year period):
 - Year service was received
 - Type of service received: speech language pathology (SLP), occupational therapy (OT), physical therapy (PT), special instruction teacher/special education services, or other
 - Number of service units provided for each type of EIP service
 - Cost per unit for each type of EIP service (in some places, the cost per service unit will be the same for each type of service; in others, the cost per service unit will vary by service).
- The value of third-party reimbursement for services (if available).

Step 3. Identify children with lead exposure being served by EIP; collect detailed information on specific EIP services received

Now that you have your data collection spreadsheet, you will need to obtain data from at least two sources

REMEMBER...

This method is a basic example of things to consider when estimating the cost of illness. There will most likely be additional considerations and nuances based on local circumstances. The data will not be perfect and may be questioned. Be prepared to defend your data collection and analysis choices.

to identify children with lead exposure being served by EIP.

Lead

First, to generate a starting potential subject list, you must obtain the child and blood lead information identified above from your state or local lead poisoning prevention program on the following:

- Children less than six years old
- In a given period (such as 2010-2013)
- With levels greater than or equal to 5 µg/dL.

EIP

Second, based on the discussions with EIP completed in Step 1, obtain access to, or information from, your state's EIP database. Ideally, your starting potential subject list can be electronically matched with the EIP database to determine who is being served by EIP. You will match records using the child's first name, last name, and date of birth. The resulting list of children will be your potential subject list.

Once you have matched a record, you may obtain the additional information identified in Step 2 from the EIP database. Depending on how you access EIP database cost and service information, you may choose to obtain the necessary information now or in Step 6 after further narrowing your potential subject list.

Step 4. Determine if children are being served by EIP because of lead exposure

At this point, you need to determine which children on your potential subject list are being served by EIP because of lead exposure. As a conservative approach is recommended when estimating the costs of EIP services as a result of lead exposure, you should include children that are *only* receiving services *because of lead exposure* (i.e., they were not referred to EIP for any other reason). Children referred from another source or for another reason should be excluded from the cost analysis. For example, a child exposed to lead may have been previously referred

to EIP because of a “high risk” determination at birth, such as low birth weight. Due to the original reason for referral, that child should be excluded from the cost analysis.

If the specific reason for EIP referral is not available, the initial date of EIP referral can be compared to the initial date of elevated blood lead level findings to determine inclusion. EIP recipients referred after initial elevated blood lead findings could be included in the cost analysis, while earlier referral dates could be used to exclude individuals from the cost analysis.

Step 5. De-identify the names of eligible children by assigning a unique child ID

For confidentiality purposes, you must now assign a unique ID number to each child you have determined is served by EIP because of an elevated lead level. When creating unique IDs:

- Define and use a consistent format. For example, will the unique ID contain both letters and numbers? How many characters in length will it be? Note that in Excel, leading zeros will be truncated unless you define the field as a text field, so you may want to create a format that does not use leading zeros or format your spreadsheet in advance to avoid this.
- Don’t base the unique ID on personally identifying information. The purpose of the unique ID is to help protect sensitive information. Therefore, including information like date of birth, name, or other personally identifying information is not advised. It can be tempting to embed these fields in a unique ID to make it easier to link back to the original record, but that defeats the purpose. If you can break the code, so can someone else.

Step 6. Obtain missing information

Your spreadsheet should now contain all of the information outlined in Step 1 for each child you have determined is being served by EIP because of lead

exposure. If any of the information is missing, or if you have chosen to wait to obtain full service and cost information for eligible children until this point, you will now need to obtain any missing information to complete the remainder of this process.

Step 7. Create a duplicate spreadsheet

Once your spreadsheet is final, create a duplicate copy and eliminate any personal identifying information so that you have two versions of your data collection spreadsheet. This second version of the spreadsheet will be the nonconfidential spreadsheet used in the cost analysis described in Step 8.

Step 8. Calculate the average cost of EIP services per child to the city/county

You are now ready to calculate the average cost of EIP services per child using the nonconfidential spreadsheet.

If the cost per unit for EIP services is the same for all types of service (Example 1):

1. Total the number of service units utilized by all children receiving EIP services due to lead exposure (and for no other reason) for the defined period; multiply by the cost per unit to obtain the total cost of EIP services due to lead exposure.
2. If available and applicable, subtract the cost of third-party reimbursement from the total to determine the cost of EIP services due to lead exposure directly borne by the city or county. Do not discard this data as it may be useful for further analysis on additional related costs.
3. Divide the total cost of EIP services, or the total cost of EIP services directly borne by the city or county, by the total number of children who received EIP services due to an elevated blood lead level (and for no other reason) during the defined period to determine the average cost per child to the city/county.

EXAMPLE 1

In 2020 in Example County, 20 children received EIP services due to an elevated blood lead level (and for no other reason).

These 20 children received a total of 800 service units, at a cost of \$75 per service unit.

Total cost of EIP services related to lead exposure in 2020:
800 service units x \$75 = **\$60,000 total**

Average cost per child to the city/county:
\$60,000 / 20 children = **\$3,000 per child** in 2020

EXAMPLE 2

In 2020 in Example County, 35 children received EIP services due to an elevated blood lead level (and for no other reason).

These 35 children received a total of 1,100 service units, at costs varying between \$55 and \$125 per service unit.

Cost of individual EIP services related to lead exposure in 2020:

500 service units x \$55 = **\$27,500**

200 service units x \$85 = **\$17,000**

400 service units x \$125 = **\$50,000**

Total cost of EIP services related to lead exposure in 2020:

\$27,500 + \$17,000 + \$50,000 = **\$94,500**

Average cost per child to the city/county:

\$94,500 / 35 children = **\$2,700 per child in 2020**

If the cost per unit for EIP services varies by type of service (Example 2):

1. For each type of service, total the number of service units utilized by all children receiving EIP services due to lead exposure (and for no other reason) for the defined period; multiply by the cost per unit to obtain the total cost of each EIP service due to lead exposure separately.
2. If available and applicable, subtract the cost of third-party reimbursement from the totals to determine the cost of each type of EIP service due to lead exposure directly borne by the city or county.
3. Sum the total cost for each type of EIP service to determine the total cost of EIP services due to lead exposure across all services.
4. Divide the total cost EIP services, or the total cost of EIP services directly borne by the city or county, by the total number of children who received EIP services due to an elevated blood lead level (and for no other reason) during the defined period to determine the average cost per child to the city/county.

Additional related costs

In many jurisdictions, there may be additional programs that could be considered when calculating estimated financial costs attributable to lead exposure within various state and local programs designed to identify and support children with disabilities or development delays.

For example, in Oneida County, the cost of services related to the Child Find program is also tracked. The Child Find program monitors a child's development to identify delays as early as possible and refer to EIP if needed. In Oneida County, when a child is identified in a housing unit served by the Childhood Lead Poisoning Primary Prevention Program, the child is automatically referred to Child Find due to the potential developmental delay that could result from living in hazardous housing. As applicable, costs incurred through the Child Find program can then be considered when generating estimates of financial costs related to lead exposure.

Technical Assistance Brief

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For additional resources, please visit:

<https://nchh.org/tools-and-data/technical-assistance/nys-clpppp/>

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