



Comparative “Penetrance” of a Regional Poison Control Center Versus Emergency Medical Services for Poisoning

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BACKGROUND

- People concerned about potential injury due to poisoning may seek help through a variety of avenues including calling a poison control center (PCC) or activating emergency medical services (EMS).
- The National EMS Information System (NEMSIS) is a national standardized database to allow analysis of EMR data at a local, state, and national level.

OBJECTIVES

- To determine how often residents of eastern Pennsylvania contact the PCC at The Children’s Hospital of Philadelphia vs. EMS for potential poisoning injury
- To determine if this practice varies per geographic region within a state.

METHODS

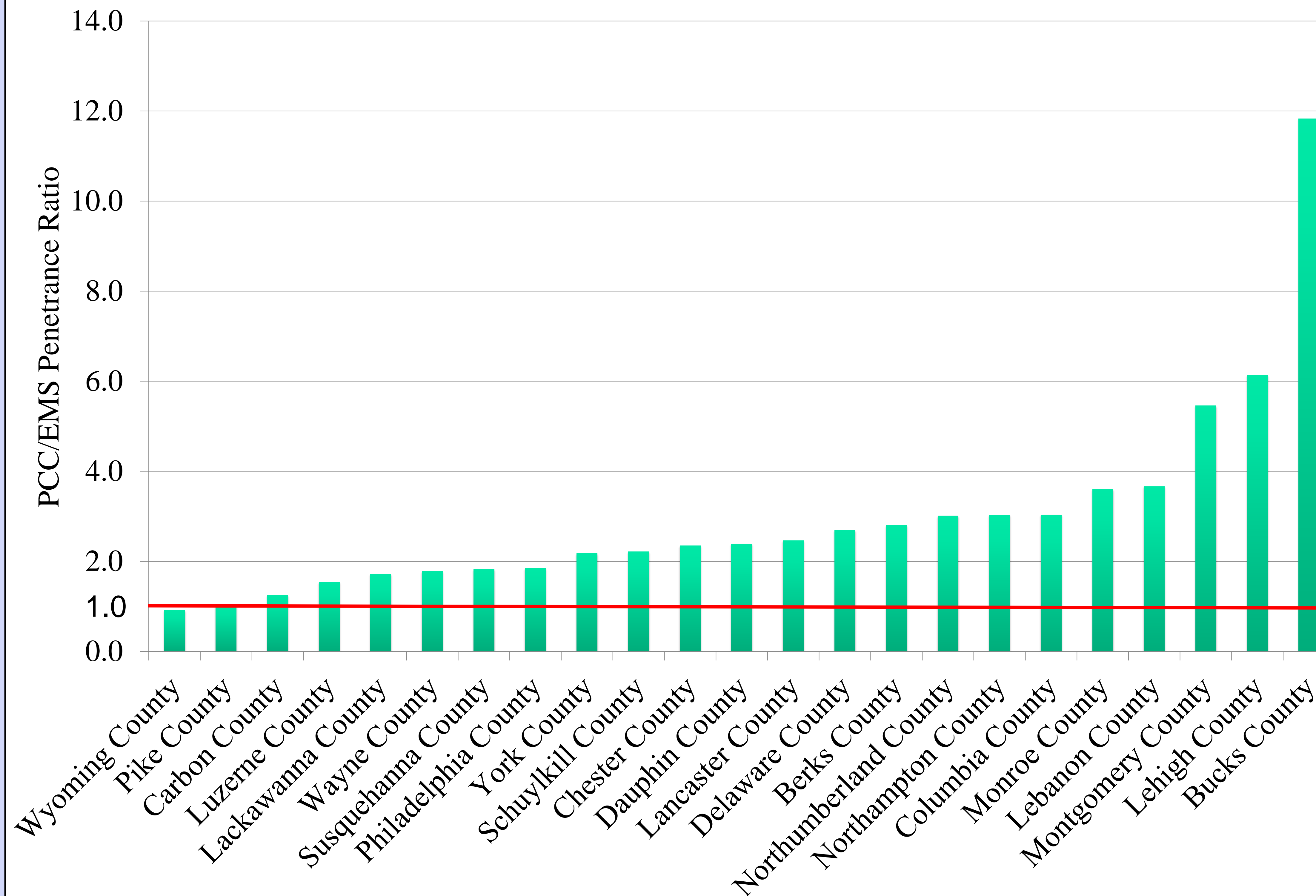
- In this retrospective cohort comparison, PCC exposure data was analyzed for the time period of 2011-2013.
 - Three year PCC data was further represented as average exposure per year by county
- PA EMS data was pulled from National EMS Information System (NEMSIS) for 2012 and 2013 by “E09_15 Providers Primary Impression” listed as 977.90, 989.50, 995.30, and/or 987.90.
- All NEMSIS data was analyzed by county and age for Pennsylvania. Only the data for the 23 counties in the Philadelphia PCC’s territory were further reviewed.
- Penetrance, defined as the average number of cases generated per 1,000 people per year, was calculated for each of the 23 counties in the PCC’s designated region for both EMS and PCC utilization (2010 census data).
- PCC to EMS penetrance ratios were calculated (ratios > 1 signify PCC penetrance higher than EMS).
- Counties were described in terms of educational and income characteristics.

DISCLOSURES

- Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.

RESULTS

PCC/EMS Penetrance Ratio by County



Top 5 Counties Per PCC/EMS Penetrance Ratio

County	PCC/EMS Penetrance Ratio	Median Household Income Level ²	Education (2009-2013) ³
Bucks	11.8	\$74,828	High school graduate or higher: 93.3% College degree: 35.8%
Lehigh	6.1	\$53,541	High school graduate or higher: 86.8% College degree: 28.1%
Montgomery	5.5	\$76,380	High school graduate or higher: 93.5% College degree: 45.5%
Lebanon	3.7	\$52,356	High school graduate or higher: 85.5% College degree: 19.4%
Monroe	3.6	\$56,733	High school graduate or higher: 89.6% College degree: 23.8%

Lowest 5 Counties Per PCC/EMS Penetrance Ratio

County	PCC/EMS Penetrance Ratio	Median Household Income Level ²	Education (2009-2013) ³
Lackawanna	1.7	\$43,673	High school graduate or higher: 88.9% College degree: 25.7%
Luzerne	1.5	\$42,224	High school graduate or higher: 88.3% College degree: 21.0%
Carbon	1.3	\$47,744	High school graduate or higher: 87.4% College degree: 15.1%
Pike	1.0	\$56,834	High school graduate or higher: 91.3% College degree: 22.5%
Wyoming	0.9	\$47,403	High school graduate or higher: 89.2% College degree: 17.4%

DISCUSSION

- This study compares the “penetrance” of the PCC vs EMS with regards to poisoning response in eastern PA.
- The PCC receives more human exposure poisoning contacts than EMS within the region, and this phenomenon appears largely stable on a county-by-county comparison.
- The relative cost-effectiveness of PCCs and EMS systems for poisoning response warrants analysis, and benchmarks for relative organizational penetrance merit establishment.
- Factors influencing public utilization of PCCs vs EMS for poisoning response merit investigation.
- Development of good collaborative efforts between PCCs and EMS may offer a potential for increased efficiency.
- The top five counties with the highest PCC:EMS ratio had a higher annual salary (\$62,768) compared to the lowest five counties (\$47,576).
- Additionally, the counties with higher utilization of PCC compared to EMS tended to have higher percentage of higher education.
- Counties with low PCC:EMS penetrance might be appropriate targets for enhances PCC educational outreach.

LIMITATIONS

- Limitations include selection bias, misclassification, and failure to identify data existing in both databases.
- This study does not account for service consumers utilizing information or medical services beyond the PCC or EMS, such as the internet or hospital emergency department.

CONCLUSIONS

- The PCC has greater penetrance than EMS in eastern PA poisoning response.
- There appears to be a relationship between average household income and education level

REFERENCES

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