



Original Contribution

The value of a poison control center in preventing unnecessary ED visits and hospital charges: A multi-year analysis



Casey R. Tak, MPH^{a,*}, Marty C. Malheiro, MS^b,
Heather K.W. Bennett, MPA^b, Barbara I. Crouch, PharmD, MSPH^{a,b}

^a Department of Pharmacotherapy, College of Pharmacy, University of Utah, 30 S 2000 E, Salt Lake City, UT 84112, United States

^b Utah Poison Control Center, College of Pharmacy, University of Utah, 30 S 2000 E, Salt Lake City, UT 84112, United States

ARTICLE INFO

Article history:

Received 18 August 2016

Received in revised form 15 November 2016

Accepted 21 November 2016

Keywords:

Poisoning

Poison control center

Health care costs

Insurance

Preventive

Value

ABSTRACT

Objective: The purpose of this study is to determine the economic value of the Utah Poison Control Center (UPCC) by examining its contribution to the reduction of unnecessary emergency department (ED) visits and associated charges across multiple years.

Methods: A multi-year (2009–2014) analysis of cross-sectional data was performed. Callers were asked what they would do for a poison emergency if the UPCC was not available. Healthcare charges for ED visits averted were calculated according to insurance status using charges obtained from a statewide database.

Results: Of the 10,656 survey attempts, 5018 were completed. Over 30,000 cases were managed on-site each year. Using the proportion of callers who noted they would call 911, visit an ED, or call a physician's office, between 20.0 and 24.2 thousand ED visits were potentially prevented each year of the survey. Between \$16.6 and \$24.4 million dollars in unnecessary healthcare charges were potentially averted annually.

Conclusions: Compared to the cost of operation, the service UPCC provides demonstrates economic value by reducing ED visits and associated charges. As the majority of patients have private insurance, the largest benefit falls to private payers.

© 2016 Elsevier Inc. All rights reserved.

1. Introduction

Poison control centers (PCC) across the US bring value to the communities they serve [1]. The clinical value provided by PCCs, such as the reduction in hospital length of stay, guiding care given during emergency department (ED) visits, and preventing unnecessary healthcare utilization, contribute to the economic value of PCCs [1]. Previous research demonstrates that PCCs are on par with the cost savings generated from pediatric immunizations, saving \$6.50 for every \$1 spent [2].

Multiple studies have quantified the cost-savings generated by PCCs across different regions in the US [3–7]. To date, however, much of the research assessing value has utilized cross-sectional data. To understand more fully the value that PCCs may contribute economically, it is important to examine data spanning more than one year. This will help account for fluctuations in the data that may occur naturally, such as volume of cases, volume of ED visits, and costs. The purpose of this study is to determine the economic value of the Utah Poison Control Center (UPCC) from the perspective of payers by examining its

contribution to the reduction of unnecessary ED visits and charges across multiple years.

2. Methods

The Utah Poison Control Center is an AAPCC-accredited center that covers the state of Utah. The UPCC responds to more than 40,000 human poisoning exposure inquiries each year, providing health education, medical guidance, and assisting care providers with treatments.

2.1. Survey

Since 2002, UPCC has conducted ongoing customer satisfaction surveys to ensure that it continues to meet the needs of the community. Pharmacy students employed at the UPCC conduct surveys with the individual reporting the poison exposure case. A poison exposure is defined as any contact with a potential toxic substance. Surveys are only conducted when the poison exposure case is managed on-site in a non-healthcare facility. Approximately 6% of cases of all ages are randomly chosen by computer to survey. Every attempt is made to conduct surveys within 2 weeks of the initial contact with the poison control center. An analysis of surveys conducted from January 2011 through

* Corresponding author at: 30 S 2000 E, Rm 4410, Salt Lake City, UT 84112, United States.

E-mail address: Casey.tak@hsc.utah.edu (C.R. Tak).

September 2014 found a median of 8 (IQR 6–10) days from initial contact to survey.

For this survey, the surveyor (pharmacy student) reads the 26 questions to the caller. Most questions are close-ended (e.g. yes/no or Likert scale); however some question are open-ended, which are coded by the surveyor into pre-defined categories. Space is also allowed for free response. Among the questions asked, an open-ended question is dedicated to identify what, if any, action would have been pursued had the UPCC not been available. The original survey included items 1–3 and 10 (see below). In 2014, items 4–9 and 11 were added based on previous verbatim responses. Responses from the survey are aggregated quarterly. Categories for responses are as follows:

1. Call 911
2. Call physician
3. Visit ER
4. Visit urgent care
5. Call pharmacist
6. Call nurse hotline
7. Call family/friend
8. Read label
9. Search online
10. Other
11. Don't know

The survey also collects insurance status of the patient through a close-ended question. Options include Medicaid, Medicare, Children's Health Insurance Program (CHIP), Other State Insurance, Private Insurance, Federal Insurance, Other Insurance, No Health Insurance, Refused, and Unknown. In our analysis, we grouped insurance status into five categories, Medicaid, Medicare, Private, No Insurance, and Other Insurance (including CHIP, Other State Insurance, Federal Insurance, Other Insurance, Refused, and Unknown).

We conducted our analysis using the results from the 2009–2014 surveys. The quarterly results were aggregated, weighted according to number of respondents, and an average annual response rate was calculated. To obtain the proportion of persons with an exposure who would utilize ED services if the UPCC were not available, we combined the proportion of callers who responded that they would have made a “visit to the ED” with the proportion of callers who indicated that they would have called 911 and then been transported by EMS (emergency medical services). This is supported by previous research that suggested the majority of persons who summon EMS for an exposure are taken to an ED [3].

To ensure that we were only including non-healthcare provider callers with an exposure that was managed on-site, an internal report was used to identify human exposure management site and excluded healthcare facility (MD office, acute care, free standing, urgent care and other [group homes]). We obtained the proportion of callers in each year that were managed on-site. For this analysis, it was important to exclude callers who would have needed further medical services as we were trying to examine the value of the UPCC in reducing unnecessary healthcare utilization.

To calculate the number of potential cases prevented by the UPCC, the total number of cases with an exposure managed on-site was multiplied by the proportion of survey callers that indicated they would have used ED and EMS services.

2.2. Financial data

The financial data used for this analysis were obtained from the Indicator-Based Information System for Public Health (IBIS-PH), a statewide public database that collects data on disease prevalence, disease incidence, injuries, and hospital charges [8,9]. Queried data are stratified by geographic location, demographic information (e.g. age, gender, insurance status.) and year, among other potential variables [9]. The most recent year of hospital charge data available was 2014. We

obtained hospital charges related to unintentional poisoning injuries by year and insurance status (Medicaid, Medicare, Private, No Insurance, and Other) for uncomplicated cases treated and released from an emergency department. Hospital charges represent an aggregate of charges originally billed for specific diseases/conditions on all hospital claims in the state and include a median, a mean, and a range. The median value was chosen for this analysis. For the Private Insurance category, the median charge for the largest private payer by volume in the database was used. For the Other Insurance category, the aggregated median charge of all payers was used. All charges were adjusted to 2014 US Dollars (USD) using the personal health care expenditures (PHCE) index [10]. Individual cost data were not available for this analysis.

To obtain the potential charges averted, the median hospital charges were multiplied by the number of UPCC cases who would have visited the ED had the UPCC not been available. This was done for each year in the analysis and stratified according to insurance status. We were able to use aggregated insurance status of patients to get a proportion of each type of insurance. This enabled us to calculate a more accurate representation of the potential charges averted. Insurance status was available starting in 2010. For 2009, we used the proportion for each insurance status from callers from 2010.

To provide a comparison of the relative value of charges averted to operational cost, the 2011 average expenses of poison control centers in the US were inflated to 2014 USD using the gross domestic product (GDP) deflator [1,10]. The University of Utah Institutional Review Board approved this study.

2.3. Other analyses

Our base case examined patients that would have sought care through ED and/or EMS services. In a separate analysis, we included the proportion of patients who indicated they would call their physician. A study by Kearney et al. demonstrated that physicians' offices would recommend “go directly to ED” or “call 911” 64% of the time if PCC services were not available [5].

3. Results

We had 10,656 survey attempts, of which 5018 (47.1%) callers completed the survey over the years of 2009 to 2014. The callers and their responses are summarized in Table 1.

For each year, between 30.9 and 36.9 thousand non-healthcare callers were managed at home (Fig. 1). Using the proportion of those callers who would have visited an ED had the UPCC not been available, we calculated that each year between 14.4 and 16.8 thousand potential ED visits were prevented. Including the proportion of patients who

Table 1

Survey responses of PCC callers of home-managed cases by insurance status and year (2009–2014).

	2009	2010	2011	2012	2013	2014
Total surveyed	2333	1534	1728	1653	1504	1904
Completed surveys	1080	751	831	856	660	840
% Completed	46.29	48.96	48.09	51.78	43.88	44.12
Insurance status (%)						
Medicaid	15.98 ^a	15.98	16.95	16.08	13.48	12.80
Medicare	5.46 ^a	5.46	5.77	7.27	5.60	5.46
Private	58.59 ^a	58.59	58.29	56.48	62.58	67.98
No insurance	9.19 ^a	9.19	9.98	7.54	7.73	4.76
Other ^b	10.78 ^a	10.78	9.01	12.63	10.61	9.01
Responses (%)						
Call 911	24.39	21.14	19.96	24.10	19.99	14.74
Visit ER	21.11	27.92	30.65	28.51	26.93	29.52
Call Physician	31.46	26.84	26.48	28.08	28.14	32.11

^a 2010 insurance status.

^b Represents the aggregated median charge for all payers from IBIS-PH database.

Download English Version:

<https://daneshyari.com/en/article/5650961>

Download Persian Version:

<https://daneshyari.com/article/5650961>

[Daneshyari.com](https://daneshyari.com)