

The Hawaii Poison Center: What's It Worth to You?

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Benefits of the Hawaii Poison Center (HPC) to the public, providers, and third party payers are enumerated. Financial advantages to third party payers during 1996-7 were quantified by comparing costs for the home management of poisonings with alternative sources of care reported by callers, if the HPC were closed. The value for third party payers exceeded \$2.5 million, greater than eight times the investment in operating the HPC, similar to national data. Since third party payers are the most visible beneficiary of cost savings, a case is made for their financial support of the HPC.

Introduction

The Hawaii Poison Center (HPC), like all of the Nation's poison control centers (PCCs), saves lives and money by providing 24-hour telephone hotline services, provider consultations, community education, professional education, and community surveillance.^{1, 2, 6} These activities offer health and/or economic benefits to the general public, health care providers, and especially to third party payers of health services.³⁻⁷ Figure 1 specifies HPC services and their advantages for each beneficiary.

After a cutback in State funds at the end of 1995, the HPC also shares with most PCCs the lack of a permanent source of financing for its operation. While everyone benefits from economic public goods, like this community service offered free of charge, no one individual entity bears the responsibility nor assumes its costs. If PCCs were closed, according to the literature, both private and public third party payers would experience a substantial financial impact.^{5, 10} The purpose of this article, therefore, is to review what the HPC is worth to all of us, and to specifically calculate its cost savings for the major third party payers in the State.

Figure 1.—PCC Services and Benefits by Beneficiary

Beneficiary	Services	Benefits
Public	24-hour free telephone hotline for immediate assessment, triage, referrals, treatment, monitoring, information; prevention, community education, epidemiologic surveillance	Reduced poisoning morbidity, disability, and mortality; reduced poisoning incidence; reduced unnecessary medical spending, reduced time and transportation costs; reduced lost work days
Providers	24-hour free telephone hotline consultation for diagnostic, treatment, and referral advice; professional education, toxicology databases	Improved patient care; decreased burden on emergency medical system and emergency departments; reduced practice costs
Payers	Home management of non-toxic or low toxic human exposures through counseling, first aid advice, and follow-up; early diagnosis and treatment of serious exposures	Reduced unnecessary or inappropriate emergency department visits, physician office visits, hospital admissions, laboratory testing, ambulance transport; decreased length of hospital stays and fewer complications; reduced claims processing costs and claims payout

Literature Review

PCCs are said to decrease injury, illness, and death due to poisoning, as well as reduce the number of new poisonings.³ The focus in the literature, however, has been on their economic benefit in terms of health care cost savings. The reason for this emphasis, in addition to the technical difficulties of measuring poisoning outcomes, has been the critical financial condition of PCCs and the threat of their closure.² As a result, studies have provided evidence on the cost-effectiveness of PCCs, in terms of health care cost savings, to advocate for funding by continuing or new sources.⁸⁻¹¹

The most recent research, by Miller and Lestina, analyzed costs and benefits from a comprehensive, societal perspective.^{10, 11} They estimated that lifetime losses from 1992 poisonings were about \$50 billion in the U.S., which includes \$3 billion in medical spending, \$12 billion in lost wages and housework, and \$35 billion in lost quality of life. Their research also demonstrated that every \$1 spent on a PCC saves almost \$6.50 in health care spending—comparable to the savings from immunizations.

Three earlier studies focused on the payer's perspective and

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contrasted differences in health services utilization and related health care expenses between PCCs and alternative sources of care.^{8, 9, 5} The economic impact documented in these studies is primarily derived from the ability of PCC staff to manage nearly 75 percent of poisoning cases entirely by telephone, substituting for the use of more costly resources, such as emergency department visits and ambulances.^{2, 3, 8, 10}

In King and Palmisano's study, the State of Louisiana was compared with Alabama, which had similar triage patterns before the closing of the Louisiana PCC.⁸ After closure, their results showed that Louisiana had less than half the rate of home management and four times the rate of self-referrals to more expensive health services than Alabama, costing more than three times the annual PCC Louisiana appropriation.

Mvros et al. surveyed PCC callers about their health insurance coverage and hospitals about their emergency department costs.⁵ They concluded that the State government and private payers are the financial beneficiaries of PCCs, which saved several times their operating costs.

Kearney et al. compared the operating costs of a regional PCC with hypothetical alternative sources of advice and care by surveying recent callers.⁹ After discovering that the majority of respondents would have sought assistance from emergency department or emergency medical systems, their results showed that direct public access to PCCs lowers health care costs by reducing the use of these emergency resources.

Methods

This descriptive study adopted the research strategy of Kearney et al. Costs were compared between home management of suspected and actual poisonings by HPC staff and hypothetical alternative sources of care reported by callers. Unlike the special data collection required for the Kearney et al. study, callers to the HPC are routinely asked about hypothetical alternative sources of care during a follow-up call to monitor their home management.

Direct health care cost savings were then estimated for each alternative source of care to determine the financial value of the HPC. Finally, total health care cost savings for each major third party payer that has beneficiaries who use HPC services, were calculated, similar to Mvros et al.

The study population included all incoming calls to the HPC about human exposures from July 1, 1996 to June 30, 1997. The major data sources on caller utilization, hypothetical alternative sources of care, and health insurance coverage are the 1996-7 annual report and the HPC database.

Results

Caller Analysis

The HPC received 11,963 incoming calls during 1996-7, of which 8,666 were for human

Table 1.—Alternative Sources of Care to HPC by Frequency and Percentage


Alternative Sources of Care	Frequency	Percentage
Go to Emergency Room	476	7%
Call Emergency Room	2,081	32
Call 911	574	9
Call Physician	2,547	39
Call Another Advice Line	620	10
Watch and Wait at Home	202	3
Total	6,500	100%

exposures. (The HPC also receives calls about animal exposures and general information calls that are counted into the total call volume). The recorded number of incoming calls received by HPC is only an estimate of the actual number of poisoning events occurring annually throughout the State. The actual number of poisonings in the U.S. and in the State is unknown, but the literature does suggest that fatal cases, in particular, are underreported to PCCs.¹²


Seventy-five percent of calls to the HPC for human exposures (6,500) were managed over the telephone in the callers' own homes. These poisoning cases were either non-toxic or low toxic exposures.¹ The rate of home management for calls to the HPC was identical to the estimates reported about other PCCs in the litera-

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Table 2.— Frequency of Alternative Sources of Care and Their Costs

Alternative Sources of Care	Number	Costs
Emergency Room	3,790	\$2,274,000
Emergency Medical Service	402	180,900
Physician Visits	1,020	122,400
Total	5,212	\$2,577,300

ture.^{3,5,9}

Information was obtained from 5,079 (78%) of the callers who were managed at home about what they would have done if the HPC had been closed. Sixty one percent of these callers identified an alternative source of care. Their selections included 1) going to an emergency room (4%); 2) calling an emergency room (17%); 3) calling 911 (5%); 4) calling a physician (21%); 5) calling a pharmacist (9%); 6) and, calling another telephone advice line (5%). According to data not reported in the HPC's annual report, 37% (1,871) did not know what they would do and 2% (80) said they would have just waited and watched at home.

Estimates were calculated for the 1,421 callers from whom no actual data on alternative sources of care were collected, because there had not been any follow-up calls, and the 1,871 callers who didn't know what they would do if the HPC closed. It was assumed that each of these groups of callers would have selected the same alternatives as those reported above. It was also assumed that the 951

Table 3.— Percentage of HPC Callers by Major Payer Category (Ranked by Cost Savings)

Major Payer Ranked by Cost Savings	Percentage of Callers	Cost Savings
HMSA	27.0%	\$695,871
Department of Defense	18.0	463,914
Kaiser Permanente	16.0	412,368
Other Private Payers*	14.0	360,822
Uninsured Indigent (including Visitors)	13.0	335,049
Medicaid (Federal Share)	5.5	141,752
Quest (State)	5.5	141,751
Medicare	1.0	25,773
Total	100%	\$2,577,300

* Other private payers includes the following categories of insurance: Other insurance (5%); Queen's (2%); PGMA (2%); HMAA (1%); Straub (1%); HDS (1%); Kapiolani (1%); Island Care (>1%); Pacific Health Care (>1%); Travellers (>1%); Aetna (>1%)

callers who reported pharmacists as an alternative source of care would have been referred to a different source by pharmacists, because of liability concerns. As a result, this category was also eliminated and distributed according to the percentages of answers in the remaining classes of answers. The final adjusted figures are displayed in Table 1.

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Cost Savings Analysis

The 1996-7 financial report indicates that total expenses for the HPC were \$293,122. The HPC spends 90 percent of all dollars on direct services, compared with 70 percent by all PCCs, reported in a 1993 survey by the American Association of Poison Control Centers.³ Labor represents almost 90% of these direct costs, a more efficient use of expenditures by the HPC, than the Nation's PCCs as a whole.

The cost per home-managed case was estimated by dividing the total number of incoming calls into operating expenses for 1996-7, similar to the methods used by Miller & Lestina and Kearney et al.^{9,10} The cost per case at the HPC was \$24.50, similar to other published rates.^{3,9,10} The total cost for all human exposures managed at home by the HPC was \$159,250.

Table 2 examines the frequency of alternative sources of care if the HPC were closed and their costs. The table further consolidates the frequency data from Table 1 into emergency room visits, 911 calls, and physician office visits, alternative sources of care for which there would be charges. It was assumed that there would be no charge for using another advice line.

Because of liability concerns, all callers to emergency rooms would be requested to visit in person. Based on local facility experience, 80%

of all callers to emergency rooms, who are requested to come into the emergency room, actually show up. Also, 30% of 911 callers, based on the experience of the City and County of Honolulu, refuse treatment and transportation to emergency rooms. The conservative assumption is made here that personal transportation is not used and those cases do not result in an emergency room visit.

Based on HPC data, it is assumed that 11% of all cases managed by physicians are non-toxic exposures, for which there are no office visits. It is also assumed, from HPC data, that approximately 55% of all poisoning calls are after physician office hours and callers would be referred to the emergency room.

The costs of alternative services were based on actual local 1997 charge data for an emergency room visit, ambulance transportation, and a physician office visit. Emergency room visits ranged between \$500 and \$700 and a mean of \$600 was used in this analysis. The charge by the City and County of Honolulu for ambulance transportation is currently \$450 and an emergency room visit fee was added to transportation for the total cost of 911 calls. A fee of \$60 was used for physician office visits.

The total cost for the hypothetical alternative sources of care was \$2,577,300. Over 95% of these costs were for emergency room visits and emergency medical services utilization. According to the literature, PCCs save money by avoiding use of these services.³ For every dollar spent, the HPC returns over \$8 in cost savings to third party payers, at the higher end of the \$4 to \$9 range reported by national studies.³

Table 3 presents third party payers by the reported insurance of HPC callers and cost savings. Costs savings are greatest for the largest payers—HMSA, the Department of Defense, and Kaiser Permanente. The costs of care for the uninsured indigent, including visitors, if the HPC closed, would be borne by hospitals with emergency rooms.

Discussion and Conclusions

Third party payers, as shown here, avoid a significant amount of cost through the operation of a PCC, such as the HPC. Specifically, the HPC saves 8-9 times the amount of dollars invested in its operation, similar to national studies.^{2,9,10} Prompt telephone advice from a PCC and home management of non- or low toxic cases can often obviate the need for an emergency room, physician visit, or an ambulance run, all of which result in expense to third party payers.

Even when additional care is advised through the PCC telephone consultation, third party payers are reasonably assured that the care recommended will be at the most appropriate, and consequently, most cost-effective level. Immediate referral to the most appropriate entry point to the health care system should also result in advantages to the patient that mutually benefit third party payers in the form of

fewer hospital admissions, shortened hospital stays, and fewer complications. Because PCCs do not bill third party payers for their services, the payers are once again the fiscal beneficiaries, avoiding claims processing and record-keeping costs.

The HPC potentially serves all the people in the State of Hawaii, regardless of their role in the health care system. A regional poison center has been justified on the basis of the importance of expertise about indigenous marine, animal, and plant species, knowledge of local emergency resources, and the ability to interact with a multicultural population. These features enable the general public and their health care providers to have ready access to resources that are responsive to local needs. The HPC also educates the public to prevent poisonings and collects data to identify patterns of poisonings that require public health interventions. These activities and their obvious benefits have not been converted into monetary value, but are as compelling as the financial ones focused on here.

More enlightened third party payers have supported PCCs financially in the form of community service grants or outright operations funding, but it is puzzling that given the significant savings derived from a PCC, all third party payers have not rushed to their aid. That third party payers have stood by while some PCCs have closed due to lack of funding, leaving parts of the country underserved or unserved, makes no sense even considered on purely economic terms. Since losing State funding in 1995, the HPC has been working on developing private funding sources, which comprised about 23% of its revenues during 1996-7. It is hoped that awareness of the multiple benefits shared by the public, providers, and third party payers will encourage ownership, especially by direct fiscal beneficiaries, to ensure that this valuable asset remains available to all in our community.

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