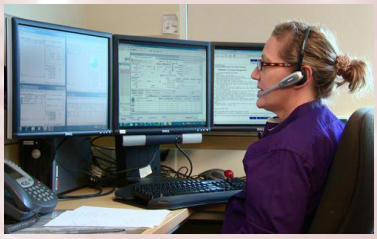
Building a Foundation for Health Information Exchange to Improve Poison Control



Poison control centers (PCCs) offer 24-hour service to advise the public and health care professionals in managing exposure to poisons ranging from carbon monoxide to snake bites to food poisoning. PCCs collect information to assess poison exposure; provide consultation to patients; refer patients to an emergency department (ED) as necessary; and exchange patient information, treatment recommendations, and clinical information with ED care providers. Close collaboration and seamless communication are important factors to effectively manage poison-exposed patients, yet PCCs and EDs currently use a fragmented telephone-based process to communicate and share information.

This verbal and fragmented exchange of information is prone to errors stemming from mis- and inadequate communication. Both ED care providers and PCC specialists experience multi-tasking, shift changes, and patient hand-offs, complicating workflow and creating opportunities for error. Integrating systems to support electronic health information exchange (HIE) between PCCs and EDs could reduce medical error, improve information availability for decisionmaking, reduce time to treatment, and improve continuity of care for poisonings.

Dr. Mollie Cummins at the University of Utah in Salt Lake City assessed the potential role of HIE between PCCs and EDs and identified next steps and barriers to HIE. Using a variety of methods, including interviews with clinicians and analysis of recorded PCC calls, Dr. Cummins and her team described the current processes used by PCCs and EDs to exchange information; identified the requirements for HIE; and identified clinical, operational, and legal considerations related to HIE between PCCs and EDs.

Key Findings from this project to consider as development of PCC–ED HIE moves forward include:

- Collaboration and communication between the EDs and PCCs takes place during multiple telephone calls. Information about the patient is independently documented by both PCCs and EDs into separate and unshared electronic health records.
- Several inefficiencies and safety vulnerabilities exist in the current PCC–ED processes. For example:
  - Ambiguous communication of information ("her labs were fine").
  - The inability of PCC specialists to reach ED care providers.
  - Multiple patients discussed during the same conversation in cases of a multiple exposure ("the carbon monoxide level for the first patient was fine, but a little high for the second").
  - Telephone calls routed through multiple ED staff to reach the appropriate care provider.
  - Exchange of clinical information with non-clinical staff ("the nurse is on break but I think the patient's labs were okay").[1]

A video highlighting the project is available at http://healthit.ahrq.gov/AHRQHealthITSuccessStoriesCumminsVideo.

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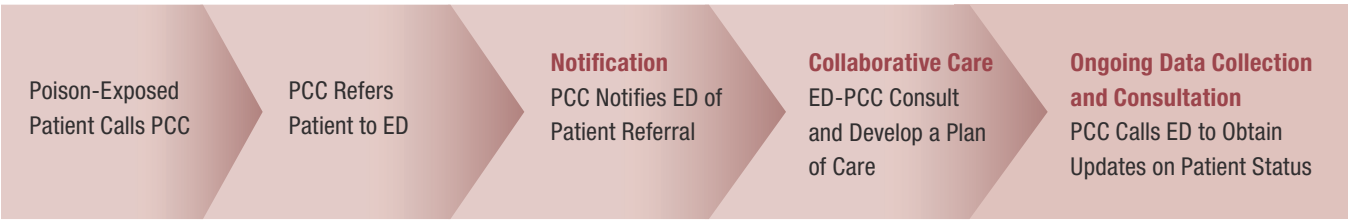

Figure 1. Poison Control Center (PCC)–Emergency Department (ED) Collaboration

PCC and ED Communication and Information Sharing

The current PCC–ED collaboration process involves three phases: *notification, collaborative care, and ongoing data collection and consultation* (Figure 1). After the PCC refers a patient to the ED, *notification* occurs when the PCC calls the ED to notify of the referral and provide information on the patient, the poison exposure, and treatment recommendations. *Collaborative care* begins upon patient arrival at the ED, and the ED provider calls the PCC to consult a toxicologist and confer a plan of care. During *ongoing data collection and consultation*, the PCC continues to follow the case by telephone, checking on the patient's clinical status, lab results, response to treatment, and admission or discharge status.

Dr. Cummins and her project team learned that the PCC–ED collaboration process is hampered by significant variability, inefficiencies and safety vulnerabilities, including: 1) lack of shared documentation among the PCC and ED to support *notification, collaborative care, or ongoing consultation*; 2) absence of routine process for sending information between the ED and PCC aside from verbal telephone communication; and 3) frequent patient hand-offs during the process, potentially compromising patient care.

Next Steps Toward PCC–ED HIE

HIE offers a strategy for improving efficiency and communication between PCCs and EDs, and reducing time-to-treatment and medical errors among poison-exposed patients. Additional research on the development, implementation, and impact of HIE on the PCC–ED collaboration process is needed. First, to build greater support for and adoption of PCC–ED HIE, researchers must demonstrate the impact of HIE on safety, patient outcomes, and workflow integration. In addition, PCC data standards that facilitate interoperability and HIE need to be developed along with establishing funding support to standardize PCC data and the development of HIE.

Dr. Cummins is continuing her work in this area with an AHRQ-funded followup study titled "Electronic Exchange of Poisoning Information." This study will develop, implement, and evaluate a replicable, scalable infrastructure for PCC–ED HIE.

Current PCC–ED Collaboration Case Example:

A grandparent finds a young grandchild playing with a medication box that contained heart medications. The box is empty and it is unclear how many pills were originally in the box and how many the child has ingested. The grandparent calls the PCC hotline and asks for help. The PCC specialist collects information to assess the poison exposure, provides consultation, and refers the child to an ED for further evaluation and treatment.

The PCC then calls the ED to share patient information, initial treatment recommendations, and clinical information with the Charge Nurse at the ED. Both the ED and PCC care providers assess and reassess the situation as new information, such as lab results and ECG results, becomes available. The ED physician and PCC specialist or toxicologist collaborate to develop a plan for treatment or management. The PCC specialist calls the ED throughout the case to obtain updates on the patient's status. Each party documents their information in separate and unshared information systems without the use of a shared system.

1 Cummins MR, Crouch B, Gesteland P, et al. Inefficiencies and vulnerabilities of telephone-based communication between U. S. poison control centers and emergency departments. Clin Toxicol (Phila) 2013 Jun;51(5):435-43.