Current Status of Poison Centers in the United States

Jay L. Schauben, PharmD, DABAT, FAACT
Director, Florida/USVI Poison Information Center – Jacksonville
Director, Florida Poison Information Center Network Data Center
Clinical Professor, Department of Emergency Medicine, College of Medicine, and
Department of Pharmacy Practice, College of Pharmacy
University of Florida Health Science Center

Poisoning Facts
- Each year in the U.S. poisoning accounts for:
  - 13,000 fatalities
  - 1.2 million days of acute hospital care admissions
  - 285,000 hospitalizations
- U.S. Poison Control Centers are routinely called by the public and health care providers when confronted with a poisoning emergency
  - Receive approximately 3.6 million calls annually

AAPCC
- The American Association of Poison Control Centers (AAPCC) is a nationwide organization of poison centers and interested individuals
  - Objectives:
    - To provide a forum for poison centers and interested individuals to promote the reduction of morbidity and mortality from poisonings through public and professional education and scientific research
    - To set voluntary standards for poison center operations
  - Activities
    - Certification of regional poison centers and poison center personnel
    - Interaction with private and government agencies whose activities influence poisoning and poison centers
    - Development of public and professional education programs and materials
    - Collection and analysis of national poisoning data

AAPCC TESS
- Toxic Exposure Surveillance System (TESS)
- The only comprehensive poisoning surveillance database in the United States.
- Developed in 1983
- Contains detailed toxicological information on more than 24 million poison exposures reported to U.S. poison centers.
- "WebTESS" access
- Data from U.S. poison centers uploaded every 3-5 minutes
- Automated data mining and alerts trigger manual review by AAPCC and CDC

Survey of U.S. Poison Centers
- 2002 Survey Data
- Currently (2006) 61 poison centers
  - 52 “Certified” Regional Poison Centers
    - Standalone
    - Network systems
  - 9 “Non-certified” Poison Centers

www.aapcc.org
American Association of Poison Control Centers
61 U.S. Poison Control Centers

Poison Centers cover all 50 States, Puerto Rico & the U.S. Territories

U.S. PCC Call Volume (2002)

<table>
<thead>
<tr>
<th>Case Type</th>
<th>Total Calls</th>
<th>Percent of Total Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Exposure cases</td>
<td>2,356,794</td>
<td>64.7%</td>
</tr>
<tr>
<td>Industry cases</td>
<td>29,508</td>
<td>0.8%</td>
</tr>
<tr>
<td>Total HE cases</td>
<td>2,386,292</td>
<td>65.5%</td>
</tr>
<tr>
<td>Animal cases</td>
<td>119,478</td>
<td>3.3%</td>
</tr>
<tr>
<td>Industry Animal cases</td>
<td>10,632</td>
<td>0.3%</td>
</tr>
<tr>
<td>Total Animal cases</td>
<td>130,110</td>
<td>3.6%</td>
</tr>
<tr>
<td>Information calls</td>
<td>1,093,060</td>
<td>30%</td>
</tr>
<tr>
<td>Industry Information calls</td>
<td>24,386</td>
<td>0.7%</td>
</tr>
<tr>
<td>Total Info calls</td>
<td>1,117,446</td>
<td>30.7%</td>
</tr>
<tr>
<td>Confirmed non-exp (Hu)</td>
<td>7,256</td>
<td>0.2%</td>
</tr>
<tr>
<td>Confirmed non-exp (An)</td>
<td>454</td>
<td>0.0%</td>
</tr>
<tr>
<td>Total call volume</td>
<td>3,641,558</td>
<td>100%</td>
</tr>
</tbody>
</table>

U.S. PCC Call Trends 1995-2002

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S. Population Served</th>
<th>Total Calls</th>
<th>Avg cost per human exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>250,875,081</td>
<td>3,574,016</td>
<td>$30.69</td>
</tr>
<tr>
<td>1998</td>
<td>266,051,461</td>
<td>3,652,989</td>
<td>$32.69</td>
</tr>
<tr>
<td>1999</td>
<td>272,436,059</td>
<td>3,305,941</td>
<td>$36.82</td>
</tr>
<tr>
<td>2000</td>
<td>281,164,270</td>
<td>3,158,744</td>
<td>$42.92</td>
</tr>
<tr>
<td>2001</td>
<td>284,746,868</td>
<td>3,452,602</td>
<td>$44.36</td>
</tr>
<tr>
<td>2002</td>
<td>292,227,504</td>
<td>3,641,558</td>
<td>$44.91</td>
</tr>
</tbody>
</table>

U.S. PCC Staffing - 2002

<table>
<thead>
<tr>
<th>Staff</th>
<th>Certified PCC</th>
<th>No-Cert PCC</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managing director FTE</td>
<td>59.4</td>
<td>11.2</td>
<td>70.6</td>
</tr>
<tr>
<td>Medical director funded FTE</td>
<td>41.6</td>
<td>6.2</td>
<td>47.8</td>
</tr>
<tr>
<td>Actual medical director FTE</td>
<td>46.7</td>
<td>7.2</td>
<td>53.9</td>
</tr>
<tr>
<td>Health educator FTE</td>
<td>63.9</td>
<td>9.2</td>
<td>73.1</td>
</tr>
<tr>
<td>Total SPI/CSPI FTE</td>
<td>59.4</td>
<td>6.2</td>
<td>65.6</td>
</tr>
<tr>
<td>CSPI FTE</td>
<td>429.9</td>
<td>42.9</td>
<td>472.8</td>
</tr>
<tr>
<td>Administrator FTE</td>
<td>54.9</td>
<td>7.7</td>
<td>62.6</td>
</tr>
<tr>
<td>Total FTE</td>
<td>874.5</td>
<td>117.1</td>
<td>991.6</td>
</tr>
<tr>
<td>Human exposures</td>
<td>2,142,282</td>
<td>244,010</td>
<td>2,386,292</td>
</tr>
<tr>
<td>Average human exposures per SPI/CSPI/PIP</td>
<td>3,491</td>
<td>3,093</td>
<td>3,420</td>
</tr>
</tbody>
</table>

Staffing Case Workload

<table>
<thead>
<tr>
<th>Human exposures per SPI/CSPI/PIP</th>
<th>% of Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;3000</td>
<td>37.1</td>
</tr>
<tr>
<td>3000-3499</td>
<td>16.1</td>
</tr>
<tr>
<td>3500-3999</td>
<td>16.1</td>
</tr>
<tr>
<td>4000-4499</td>
<td>17.7</td>
</tr>
<tr>
<td>4500-4999</td>
<td>9.7</td>
</tr>
<tr>
<td>5000-5499</td>
<td>1.6</td>
</tr>
<tr>
<td>&gt;5500</td>
<td>1.6</td>
</tr>
</tbody>
</table>
U.S. Nationwide PCC Access

Federal study by HHS shows Poison Centers save $7.00 for every $1.00 invested
Second only to immunization in health care dollar savings

PCC Federal Funding History

1997
- Federal study by HHS shows Poison Centers save $7.00 for every $1.00 invested
- Second only to immunization in health care dollar savings

1999
- P.L. 106-174 authorized $27.6 M for:
  - PCC stabilization and enhancement
  - Implementation of a national 800 number
  - Enhancement in prevention & promotion activities
  - Significant enhancement in real-time surveillance program

2004
- Legislation reauthorized (P.L. 108-174) for $30.1 M
- Congress mandated Institute of Medicine (IOM) study recommends federal funding at a level of $100 M annually to realize governments full healthcare cost savings
- Through a cooperative agreement with CDC, nearly $8 M has been invested in development of Toxicosurveillance Program

Nationwide 800 Number Rollout

Calls on Nationwide Number

Through a cooperative agreement with CDC, nearly $8 M has been invested in development of Toxicosurveillance Program
Calls on Nationwide Number

Who answers the telephone in the Poison Center?

- Core staff per current AAPCC certification criteria
  - Nurses
  - Pharmacists
  - Physicians
  - Certified Physician Assistants
- "Grandfathered" certified staff
  - Paramedics
  - Other biological/chemical science degree
- 24 hour on-call consultants
  - Clinical Toxicologists (ABAT credentials)
  - Medical Toxicologists (ABMT or ACMT credentials)

Poison centers collect case data as they respond to the emergency.

How Surveillance Works

- Specialists in Poison Information manage the case and enters "standardized case data" into local poison center data system
  - Currently four authorized data collection systems
  - TESS AutoUpload
    - 3-5 min lag time for data at local center level to be transmitted to national database and surveillance servers

How Surveillance Works (Cont.)

- AAPCC/CDC surveillance team mines the data for:
  - Increased call volume activity
  - Specific substances or combinations of substances
  - Patterns and combinations of clinical effects suggestive of exposures to various toxins of interest
- The major strengths of this system:
  - 100% coverage of the US, Puerto Rico and other U.S. Territories
  - Near real-time surveillance capability
AAPCC Toxicosurveillance System

- 1983: Data collection for TESS began
- Over 25 million cases available to establish a 20 year baseline incidence
- 1999: Cooperative Agreement with CDC funded project and provided developmental oversight
- 2000: All PCC’s required to electronically submit data via autoupload

2002: Federally funded toll-free nationwide poison emergency number launched to improve access and surge capacity
- 100% of the U.S. and Territories are covered by Poison Centers
- Uploaded TESS data is available for data mining and surveillance in near real-time. (3-5 minutes)
- Existing TESS/surveillance system currently being modernized

24/7 Surveillance

- Detect early indicators of outbreaks
- Rapidly detect and report chemical or biological events
- Continuously search for patterns suggesting covert chemical or biological events
- Identify chemicals, products, environmental agents, and pharmaceuticals with potential public health significance.

Pesticide Exposures by Day

- Detect outbreaks
- Continuously search for patterns suggesting covert chemical or biological events
- Identify chemicals, products, environmental agents, and pharmaceuticals with potential public health significance.
Chem/Bio Terrorism and Poison Centers

2000-2002, Three Years Superimposed: Cough & Cold Medication Overdoses

Cumulative Cases of 5-methoxy diisopropyltryptamine (abuse, suicide) by month, by state. April 2002-June 2003

Flu Season
Surveillance: Unexpected benefits

- Early recognition of new drugs of abuse
- 5-Methoxy-diisopropyltryptamine
- Early recognition of carbon monoxide problem post hurricanes
- Improved interaction between local and state health departments, CDC and DHS.
Objectives of Poison Center Surveillance

- Monitor Statewide exposures to various exposure categories for 30 days prior the hurricane’s landfall and days* following the hurricane
- Detect and prevent additional health hazards
- Target public health messages directly to the county affected by the hurricane

* Depend on the strength of hurricane, area impacted, and length of power outages
Exposures

| Carbon Monoxide | Improper storage, ventilation, and maintenance of generators |
| Hydrocarbon fuels | Gasoline siphoning for fuel and lamp oils for alternative light sources. |
| Batteries and Fire/Matches/Explosives | Dermal injuries related to the use of alternative power sources for lights and electronics |

Exposures

| Bites/Stings, Snakes | Environmental exposure due to the loss of power and restoration of property. |
| Contaminated, polluted or sewage water | Storm surges, excessive rainfall, and power outages can knock out lift stations necessary to transport sewage away from residential neighborhoods, leading to overflows and spills. |
| Food poisoning | Inadequate refrigeration, storage, and undercooked food products |

Frequency of Statewide Carbon Monoxide Exposures following Hurricanes by year

- **2003**: June, July, August, September
- **2004**: July, August, September

Florida Hurricane Landfall dates for 2004 Hurricanes Charley (August 13), Frances (September 5), Ivan (September 16), and Jeanne (September 26). There were no hurricanes in 2003.

Source: Florida Poison Control Data

The distribution of Statewide Hydrocarbon Exposures following each hurricane by year

- **2003**: June, July, August, September
- **2004**: June, July, August, September

Florida Hurricane Landfall dates for 2004 Hurricanes Charley (August 13), Frances (September 5), Ivan (September 16), and Jeanne (September 26). There were no hurricanes in 2003.

Source: Florida Poison Control Data
Frequency of Miami-Dade County Carbon Monoxide Exposures October 2005

Dissemination of Data
- Graphs were posted on the Florida Department of Health secure web-based communication network EpiCom and CDC’s Epi-X
- Florida Department of Health Incident Management team received daily reports
- Media messages
- Local County officials use the information to foster constant awareness of public health hazards before, during, and after landfall of hurricanes

Other Surveillance Uses of FPICN Data
- Use of other FPICN Categories for Infectious Disease or Environmental Health Exposures
  - Regional Food and Waterborne Epidemiologists monitor the Food-borne Illness categories
  - Aquatic toxins uses the information to track Red Tide

Distribution of Red Tide in Florida Counties 05/01/05-10/30/05
Functions of Poison Control Centers

- Emergency Treatment & Triage
- Advanced Treatment Recommendations
- Surveillance: Data Collection & Analysis
- Prevention
- Education & Outreach
- Research

AAPCC Certification Criteria

Certified Poison Center:
- Has a designated region
- Poison information, telephone management advice and consultation on toxic exposures
- Hazard surveillance
- Professional and public education
  - Poison prevention
  - Diagnosis
  - Treatment
- Meets AAPCC Certification Criteria

AAPCC Certification Criteria

Certified Poison Center System:
- Two or more poison centers serving designated region
- Functionally and electronically linked to meet AAPCC Certification Criteria

AAPCC Certification Criteria

Region of coverage
- Determined by State authorities in conjunction with Health Department agencies
- Must provide evidence that it adequately serves entire population base
  - "Unlikely a single PCC can cover > 10 million"
- Demonstrate a minimum average penetrance of 7.0 (human exposure cases per 1000 population per year)
- Note: criterion suspended in 2003

AAPCC Certification Criteria

Regional Poison Information Service:
- Center/system shall be available 24 X 7
- Readily accessible by telephone from all areas within the region and use nationwide number
- Direct incoming and adequate telephone system
- May not impose a direct fee
- Be able to respond in languages other than English
- Provide access for hearing impaired
- Have a natural/man made disaster recovery plan

AAPCC Certification Criteria

Maintain comprehensive poison information resources
- Resources immediately available at all times
- Current comprehensive references covering both general and specific toxic events
- Access to primary information resources
- Evidence of competency of all SPI’s using information resources
AAPCC Certification Criteria

- Maintain written operational guidelines providing consistent approach to evaluation and management of toxic exposures

AAPCC Certification Criteria

- Staffing requirements and qualifications
  - Toxicological supervision – full time
  - Must meet requirements for medical and managing direction
    - Medical direction
      - Board prepared/certified in medical toxicology
      - Hold medical staff appointment in inpatient facility
      - Devote minimum of 20 hrs/week (additional 10 hrs for each 25,000 calls)
    - Managing direction
      - Direct full-time toxicologic supervision and administrative oversight
      - Board prepared/certified in clinical toxicology

AAPCC Certification Criteria

- Specialists in Poison Information (SPI)
  - Must be on duty in certified center at all times
  - Nurse, pharmacist, physician, or certified physician assistant (PA-C)
  - Complete training and pass national CSPI examination within 3 years of eligibility
  - Must be 100% dedicated to PCC activities while on duty
  - Center must have minimum of 50% CSPI’s on staff
  - Center must handle minimum of 2000 human exposure cases per FTE (usually asked to explain if >5500)

AAPCC Certification Criteria

- Poison Information Providers (PIP)
  - Qualified to understand and interpret standard poison information resources
  - Appropriate health-oriented background
  - Able to transmit information to public and health care providers
  - Must be under the on-site supervision of a CSPI, Managing or Medical director at all times
  - No > 2 PIPs per CSPI/Director at any time

AAPCC Certification Criteria

- Specialty consultants
  - List of consultants maintained
  - Qualified by experience or training to provide patient care in area of expertise
  - List should reflect types of poisonings in geographic area
  - Available on-call and on an as-needed basis

AAPCC Certification Criteria

- Administrative staff
  - Qualified by training/experience to supervise finances, operations, personnel, etc.

- Education staff
  - Professional education staff qualified by training/experience to provide lectures to health practitioners
  - Public education staff should have proven skills in communication and program planning/production for public-oriented presentations
AAPCC Certification Criteria

Ongoing quality improvement program
- Implement QA activities using specific monitoring parameters and staff education programs
- Demonstrate that outcomes are monitored regarding high risk, high volume or problem-prone cases documenting corrective actions to improve patient care
- Monitor customer satisfaction and assessment of staff competency

Regional treatment capabilities
- Should be able to identify emergency and critical care treatment capabilities within geographic region for adults and children
- Have a working relationship with treatment facilities and analytical toxicology facilities in region
- Understand/interface with emergency pre-hospital system in region
- Know where critical antidotes are available in region and how they can be transferred

Data collection system
- Shall keep records of all cases handled by the PCC in a form acceptable as a medical record
- Must submit all human exposure data to TESS system meeting specified deadlines and all required data elements
- Shall tabulate experience for regional program evaluation and hazard surveillance at least annually
- Shall monitor the emergence of poisoning hazards and take specific actions to eliminate these hazards

Professional-public education programs
- Shall provide information on poisoning management to health professionals throughout region
- Shall provide a variety of public education activities targeting at-risk populations

Association membership
- Must be an institutional member in good standing of the AAPCC