

# **California Emergency Medical Services Authority**

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## California Poison Control System Fiscal Review and Performance Audit



**CALIFORNIA EMERGENCY MEDICAL  
SERVICES AUTHORITY**

**November 2018**





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## RESULTS

The California Poison Control System (CPCS) is organized and structured in a manner that allows for consistent and reliable poison control service delivery throughout California. While CPCS complied with most requirements; the audit identified several areas where improvements are necessary to better ensure compliance with contract requirements, American Association of Poison Control Centers (AAPCC) standards, and state regulations. Further, CPCS' operating costs are expected to increase to levels significantly above current EMSA funding, raising concerns about the program's long-term funding.

## BACKGROUND AND PURPOSE

Sjoberg Evashenk Consulting (SEC) was hired by the California Emergency Medical Services Authority (EMSA) to conduct a fiscal review and performance audit of CPCS for the audit period of July 1, 2016 through June 30, 2017.

The objectives of the audit were to assess CPCS' compliance with statutes, regulations, policies, and procedures; the efficiency and effectiveness of its policies, procedures, and processes at meeting program goals and objectives; and internal controls to prevent fraud and other activities incompatible with generally accepted accounting principles, and sound fund management practices.

CPCS is a statewide network of health care professionals that provide free treatment advice and assistance to people over the telephone 24 hours per day, 365 days per year in cases of exposure to poisonous or hazardous substances.

## KEY FINDINGS

- CPCS implemented effective controls over fiscal activities, operated within budget parameters, and took steps to control cost. However, rising personnel costs and diminishing in-kind services resulted in a FY 2019-20 draft budget proposal that significantly exceeded existing funding levels, raising concerns about the program's long-term funding unless additional funding is secured.
- CPCS was organized, structured, and staffed in a manner that allowed it to provide consistent and reliable poison control services throughout California and generally complied with contractual and regulatory responsibilities related to areas such as quality assurance, employee training, outreach, education, reporting, and accreditation.
- CPCS' patient management system provided staff with instant access to case records and poison resources and staff followed established treatment guidelines and protocols.
- CPCS' system network included the necessary controls to ensure sensitive information was secured and disaster recovery requirements were met.
- Opportunities exist to improve CPCS' compliance with contract provisions and applicable poison regulations and standards related to position descriptions; customer surveys and feedback; centralized scheduling using queuing theory software; and employee training monitoring. CPCS should also consider best practices related to operational desktop procedures and succession plans.
- The contract with EMSA did not include expected service levels or goals and targets necessary to measure CPCS' performance.
- State regulations for Poison Control Centers have not been updated since 1992 and do not always align with current AAPCC standards.

## KEY RECOMMENDATIONS

- CPCS and EMSA should work together to identify additional external sources of funding and explore options for generating revenue from other sources.
- CPCS should fully utilize the queuing theory software to project staffing needs and develop a centralized schedule for all call center employees.
- EMSA should work with CPCS to incorporate performance metrics and service-level expectations for call center operations and other services provided into future contracts and work together to propose revisions to state regulations to better align with AAPCC standards.
- CPCS should develop operational desktop procedures detailing current daily processes and practices, and develop formal succession plans for key leadership positions.

## Introduction and Background

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Pursuant to the Health and Safety Code, the California Poison Control System (CPCS) was developed in 1997 to consolidate the previously unaffiliated poison centers in California and provide uniform poison services across the entire state.<sup>1</sup> CPCS is administered through the University of California San Francisco's (UCSF) School of Pharmacy and operates under the authority and financial support of the California Emergency Medical Services Authority (EMSA). CPCS is nationally certified by the American Association of Poison Control Centers (AAPCC) as a regional poison center. Additionally, the CPCS is regulated by California Code of Regulations Title 22 Chapter 9 "Poison Control Center Regulations."

CPCS operates three toll-free, emergency hotlines accessible to the public and medical professionals 24 hours a day, 7 days a week, and 365 days a year:

- Public hotline for poison information and advice
- Medical consultation hotline for health professionals
- Medical consultation hotline for 9-1-1 emergency dispatchers and fire and police personnel

Additionally, for callers that do not speak English, CPCS subscribes to a translation service providing rapid 24-hour assistance in about 250 languages. For callers that are hearing or speech impaired, CPCS provides services through the California Relay Service that provides special TTY connections.

CPCS currently provides poison services through four poison control call centers:

- Sacramento Division located at the University of California, Davis Medical Center
- San Francisco Division located at San Francisco General Hospital, now known as Zuckerberg San Francisco General Hospital and Trauma Center
- Fresno/Madera Division located at Valley Children's Hospital
- San Diego Division located at the University of California, San Diego Medical Center

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<sup>1</sup> California Health and Safety Code (HSC) §§ 1797.97, 1798.180 – 1798.183

## Scope and Methodology

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Sjoberg Evashenk Consulting (SEC) was hired by the California Emergency Medical Services Authority (EMSA) to conduct a fiscal review and performance audit of the California Poison Control System (CPCS) for the audit period of July 1, 2016 through June 30, 2017. Specifically, we were asked to focus on the following objectives:

- Assess CPCS' compliance with statutes, regulations, policies, and procedures;
- Assess the efficiency and effectiveness of its policies, procedures, and processes at meeting program goals and objectives; and,
- Assess internal controls to prevent fraud and other activities incompatible with generally accepted accounting principles, and sound fund management practices.

To meet the audit's objectives, we performed procedures that generally encompassed, but were not limited to the following activities:

- Reviewed in detail pertinent regulatory documents and guidance, including Health and Safety Codes 1797.97, 1798.180 and 1798.182; California Code of Regulation, Title 22, Chapter 9; American Association of Poison Control Centers (AAPCC), Criteria for Certification of PCC; Annual reporting provisions—CPCS Annual Report to EMSA; Agreement between the Regents of the University of California and EMSA for the CPCS; and Collective Bargaining Agreements.
- Gathered and reviewed organization charts descriptions of roles and responsibilities of key personnel, budget and financial information, operations statistics, and other operational data.
- Conducted interviews and process walk-throughs with EMSA, CPCS management and staff, UCSF staff, and other relevant parties to understand program operations and cycles as well as service delivery.
- Conducted a survey of all CPCS hotline employees to gather a broad cross-section of opinions and perceptions from poison hotline staff members about various operational matters. The survey was anonymous and individual results were not shared with CPCS management. Compared results from the current survey to prior audit survey results to determine whether perceptions had changed.
- Researched potential cost savings actions and revenue generating activities undertaken by other poison control centers across the county.
- Obtained and reviewed the relevant policies, procedures, guidance, desktop procedures, memoranda, or other documents or manuals in place over operational functions as well as fiscal, security, or control environment aspects of the CPCS program.

- Obtained any audits, studies, or other work done by UCSF, external or internal auditors, UC Office of the President, state or federal auditors or inspectors, or others that relate to the fiscal processes involved in the CPCS program.
- Identified and analyzed each business cycle involved in administering the CPCS contract.
- Through the activities conducted related to internal controls, assessed the control environment relative to audit risk and opportunity of fraud or abuse and the potential implications on the results of audit work.
- Conducted a “fraud brainstorming session” to assess the control environment, the potential opportunities for fraud, where it could likely occur, any identified weaknesses in the process and the implications of fraud or abuse on the program.
- Identified areas of sensitivity, high volume or costs, program changes, supervisory or management changes, level of oversight or monitoring, external factors influencing the operations of the programs, attitude toward operational management and program performance, knowledge of controls and fiscal matters.
- Determined how funds were accounted for within the UCSF fiscal systems and the segregation of EMSA funds from others.
- Determined if funds were expended at the regional level, through purchase cards, revolving funds, or other methods and if so, controls in place for reporting, recording, authorizing, and validating these expenditures.
- Obtained expenditure data from the accounting system and conducted an analytical review over the one fiscal year audit period to assess patterns and types of spending. Tested a sample of expenditures and related purchase orders, to determine whether established accounts payable and procurement policies and procedures were followed, expenditures were allowable, appropriate authorizations and approvals were obtained, and established internal controls followed.
- Tied general ledger expenditure categories to the invoices charged to EMSA.
- Identified all sources of CPCS funding and the impact of that funding on EMSA and program operations.
- Developed an understanding of the procurement, accounts payable, and receipt cycles related to CPCS activities and conducted appropriate tests of those systems.
- Through interviews and reviews of system documentation, developed an understanding of the payroll and personnel systems used to support the employees staffing the four regional centers and the headquarters, and conducted appropriate tests of those systems.

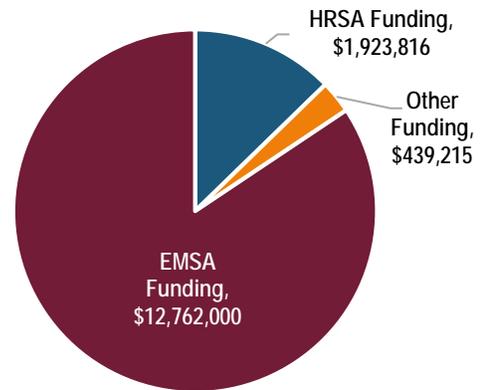
- Reviewed the contract agreements in place related to the funding and assess the provisions of the EMSA contracts and related research to identify any legal, regulatory, or contract stipulations related to the handling and expending of those funds.
  - Evaluated whether the contracts and regulatory materials provided appropriate and adequate guidance for cost management and containment.
  - Researched to find any matching fund requirements and whether these provisions were appropriately met.
  - Analyzed expenses to determine whether overhead, cost allocation, or cost distributions were charged to the program and if such charges were reasonable, equitable, and allowable.

Audit fieldwork was performed between April 2018 and September 2018. On October 3, 2018, a draft of this report was provided to management for review and discussion and an Exit Conference was held on October 16, 2018. Responses and feedback provided by management were considered and incorporated where applicable in the final report. EMSA's and CPCS' official responses are included at the end of this report.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

## Section 1: Fiscal Review Findings and Observations

In Fiscal Year (FY) 2016-17, the California Poison Control System's (CPCS) operating budget totaled \$15.12 million, of which nearly \$12.76 million was funded by the California Emergency Medical Services Authority (EMSA). CPCS also received more than \$2.36 million from other funding sources.<sup>3</sup> Specifically, CPCS received more than \$1.92 million in federal grant funding from the Health Resources and Services Administration (HRSA) to support certain CPCS efforts, including public education and outreach efforts; call center operations; compliance with certification requirements; and development of treatment recommendations for poisonings. Separately, CPCS generated nearly \$440,000 from other funding sources, including the sale of its poison handbook to other poison control centers as well as revenue earned associated with providing poison-related statistical reporting services to other state agencies. In addition, the CPCS received in-kind support from the University of California San Francisco (UCSF) in terms of free use of facility space at local universities and hospitals and free administrative support services for its fiscal activities.



CPCS Funding, FY 2016-17<sup>2</sup>

Overall, the audit found that CPCS established an effective system of controls governing its fiscal activities, with many of the individual controls built into the systems used by the agency. CPCS centrally managed its fiscal activities using UCSF fiscal systems and central services for accounting and purchasing activities. The fiscal systems included functionality that allowed authorized individuals to electronically review and approve most fiscal activities, including payroll, expenditures, and procurement. Additionally, our examination of expenditures found that CPCS adhered to EMSA contract provisions and followed UCSF policies.

While CPCS implemented an effective system of controls over its fiscal activities, the audit also found that personnel costs increased over the last several years and CPCS expects these costs to continue to rise. In addition, subsequent to the audit period, CPCS indicated that starting with FY 2019-20, the in-kind support received will be significantly reduced. As a result, proposed FY 2019-20 budgets significantly exceed existing funding levels raising concerns about the program's long-term funding unless additional funding sources are secured.

<sup>2</sup> Funding based on unaudited financial information reported by CPCS.

<sup>3</sup> Other funding for FY 2016-17 estimated by CPCS due to financial system reporting limitations.

## While CPCS Operated within EMSA Budget Parameters, Growing Operating Costs Raise Long-term Funding Concerns

The audit found that CPCS complied with the EMSA agreement by operating within spending provisions. Although CPCS did not utilize all available funding during the period reviewed, CPCS may be at risk as personnel costs are expected to continue rising and additional funding options are limited. According to CPCS, although they are limited in their ability to control personnel costs, management has taken steps to implement measures to reduce operating costs where possible. Further, EMSA and CPCS indicated they have been unsuccessful in securing additional funding sufficient to improve the program's long-term financial outlook. Adding to these concerns, CPCS reported that the UC system recently established cost recovery rates for facilities and administration costs that will be used for all contracts subject to Assembly Bill 20 (AB20 2009-2010) model contract provisions, including the contract for poison control services. As a result, CPCS' operating costs are expected to significantly increase in the near future.

### CPCS Complied with EMSA Agreement Provisions, Including Operating within Budget Parameters

The agreement between EMSA and CPCS in place during the audit period covered FY 2016-17 and FY 2017-18 and provided up to \$12.76 million in funding per fiscal year from the following sources:

- Funding Source A provided \$800,000 per year from Medi-Cal and was limited to personnel costs.
- Funding Source B provided about \$11.96 million from the Optional Targeted Low-Income Children Program (65 percent of Source B funds) and the State General Fund (35 percent).

While the agreement listed the types of costs by budget category that EMSA funding covered, such as personnel costs and professional fees, the agreement did not include specific provisions that defined allowable and unallowable costs. Further, the contract allowed CPCS to adjust the budget between line items if the cumulative total of the adjustments was less than 10 percent of the budget category. Revisions over 10 percent required a written request from CPCS and advance, written approval from EMSA. Additionally, the agreement prohibited CPCS from rolling over unspent funds to future years and building reserve funds with EMSA funding.

Our review of expenditures charged to EMSA during FY 2016-17 found the \$11.52 million in expenses did not exceed the \$12.76 million total EMSA funded contract budget and did not exceed the individual line item budgets, as shown in Exhibit 1. Additionally, our detailed review of 29 expenditures incurred during the audit period found that costs charged to EMSA were in-line with budget categories established in the contract and CPCS complied with UCSF expenditure and purchasing policies and procedures.

**EXHIBIT 1. CPCS BUDGETED AND ACTUAL EXPENDITURES CHARGED TO EMSA, FY 2016-17**

Expense Category	Funding Source A			Funding Source B		
	Budget	Actual Expenses	Variance	Budget	Actual Expenses	Variance
Personnel & Benefits	\$800,000	\$799,994	0.0%	\$10,578,339	\$9,442,890	-10.7%
Professional Fees				\$480,122	\$475,698	-0.9%
Communications				\$551,111	\$510,435	-7.4%
Materials and Supplies				\$91,450	\$83,026	-9.2%
Memberships, Subscription & Meeting Expenses				\$49,155	\$45,537	-7.4%
Travel				\$105,171	\$61,725	-41.3%
Other Expenses				\$106,652	\$100,631	-5.6%
<b>Total</b>	<b>\$800,000</b>	<b>\$799,994</b>	<b>0.0%</b>	<b>\$11,962,000</b>	<b>\$10,719,942</b>	<b>-10.4%</b>

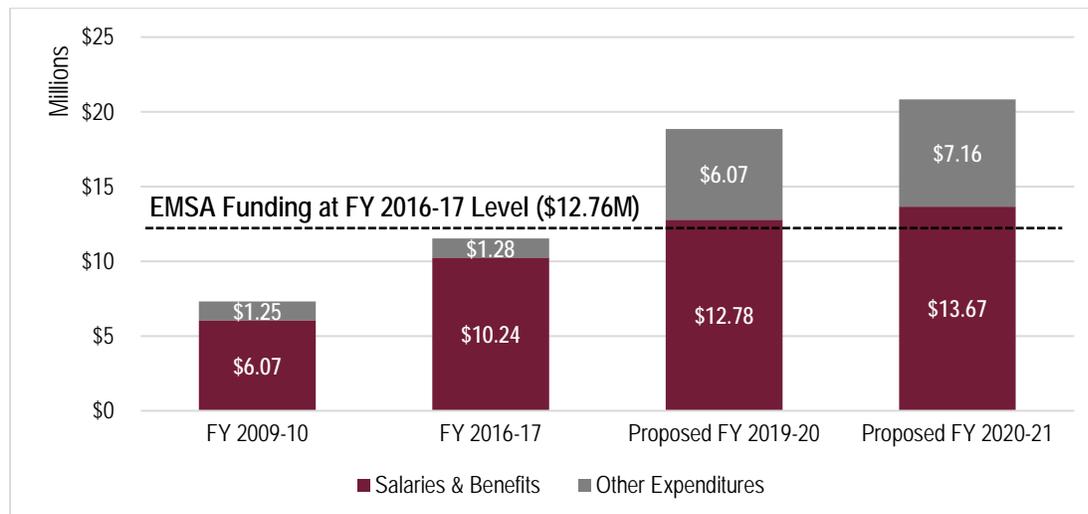
Source: CPCS June 2017 Invoice submitted to EMSA

Of note, while EMSA Funding Source A budget and actual expenses for FY 2016-17 matched, the \$10.72 million in expenses charged to EMSA Funding Source B was well under the established budget of \$11.96 million—a difference of about \$1.24 million, or about 10 percent under budget. According to CPCS, its actual personnel costs were less than budgeted amounts due to difficulties filling staff vacancies and employees on leave. CPCS indicated that if it had been fully staffed, actual expenditures would have been closer to budgeted amounts. While CPCS was able to maintain its operations and services despite the vacancies, maintaining vacancies long-term may impact service levels as CPCS' staffing-to-call volume ratios were on the high-end of the spectrum allowed by AAPCC standards, as discussed further in Section 2 of this report.

**Growing Operating Costs Raise Long-term Funding Concerns**

While existing CPCS funding levels exceeded operating costs in FY 2016-17, funding challenges are likely to occur in the near future. Specifically, although CPCS' FY 2016-17 total annual funding of \$15.12 million (including EMSA and other funding) easily met its total expenditure demand of \$13.98 million, CPCS indicated that it expects personnel costs to continue to increase. As a result of AB20, CPCS expects to begin being charged for facilities and administration costs that were previously provided as in-kind support.

## EXHIBIT 2. EMSA FUNDED CPCS EXPENDITURES AND DRAFT PROPOSED EMSA FUNDED BUDGETS



Source: FY 2009-10 November 2011 audit report, FY 2016-17 CPCS June 2017 Invoice and CPCS Proposed Budget FY2019-21 submitted to EMSA

As shown in Exhibit 2, from FY 2009-10 to FY 2016-17, total expenditures paid with EMSA funding significantly increased from \$7.32 million to \$11.52 million, or 58 percent. Within these expenditures, EMSA-funded salary and benefit costs, accounting for the majority of expenditures, were largely responsible for the surge in costs, increasing from \$6.07 million to more than \$10.24 million, or 69 percent. According to CPCS, actual salary and benefit costs in FY 2009-10 and FY 2016-17 were lower than expected due to several staff vacancies. Further, CPCS' draft proposed budget for FY 2019-20 estimated salaries and benefits costs of nearly \$12.78 million, an increase of more than \$2.5 million, or nearly 25 percent, from FY 2016-17 actual salaries and benefits costs. If EMSA funding remains at the 2016-17 level and no additional funding is secured, CPCS' proposed salary and benefit costs alone will outpace available EMSA funding.

According to CPCS, its ability to control the rise in personnel costs is limited, as several of its employees are members of the following labor unions:

- California Nurses Association (CNA) representing the nurses
- University Professional and Technical Employees (UPTe) representing the pharmacists
- American Federation of State, County, and Municipal Employees (AFSCME) representing the pharmacy technicians
- Teamsters Local 2010 (CX) representing non-supervisory clerical and related positions at UC campuses

As such, their salaries and benefits are negotiated between the labor unions and the UC at a statewide level without input from CPCS. In fact, as shown in Exhibit 2, CPCS anticipates imminent increases in personnel costs as part of current labor union negotiations.

In addition to the risks to the program associated with rising personnel costs, recent discussions between CPCS and the UC suggests that the in-kind support currently provided to CPCS will be reduced in the near future. During the audit period, the UC provided facility space (including maintenance and most utilities) for three of CPCS' four poison control centers on the campuses of the UC San Diego Medical Center, UC Davis Medical Center, Zuckerberg San Francisco General Hospital, and UCSF Laurel Heights as well as its central administrative office on the campus of UCSF. Valley Children's Hospital also provided free facility space for one CPCS poison control center. In addition to free facility space, the UCSF also provided CPCS with free administrative support services for its fiscal activities, such as procurement, general ledger, accounts payable, accounting, and payroll. Although CPCS was not previously required to pay facilities and administration costs, these costs will likely be charged to EMSA in the near future. Specifically, on November 2, 2015, the UC system, California State University (CSU) system, and State of California executed an AB20 model agreement to be used by agencies funding research, training or public service projects performed by campuses—including poison control services. The CSU and UC recently established an indirect cost rate for the recovery of facilities and administrative costs for State of California funding that falls under the AB20 model agreement. As such, CPCS' draft proposed budgets for FY 2019-20 for funding source A and B included total costs of more than \$4.3 million related to facilities and administrative costs. Based on UC guidance, these costs will continue to increase in increments of five percent each year until the full cost recovery rate of 40 percent is reached.

### **CPCS Implemented Several Measures Aimed at Reducing Operating Costs**

According to CPCS management, they have recognized the need to control costs given the program's financial outlook and have taken steps to reduce variable personnel and operational costs, including:

- **Scheduling Changes:** Prior to 2015, scheduling for Poison Information Providers (PIP) was done at each PCC separately, resulting in scheduling patterns that did not meet the business needs of CPCS and premium pay that was built into some location schedules. In August 2015, CPCS implemented a centralized approach to scheduling and moved all PIPs to an eight-hour workday, which reduced costs by eliminating the built-in premium pay. The change also provided an extra shift per work week giving supervisors greater coverage and more flexibility for scheduling time off and covering absences. According to CPCS, these changes resulted in total cost savings of approximately \$30,000.
- **Limited Use of Overtime:** While many of the CPCS employees are classified as exempt, PIPs are paid hourly and, thus, entitled to overtime pay. To help control overtime costs, CPCS management indicated that the use of overtime was limited and during FY 2016-17, CPCS paid for a *de minimis* amount of overtime with EMSA funds. Specifically, EMSA funds were used to support only 49.6 overtime hours totaling \$2,753.12 in overtime salary and benefit costs; accounting for less than 0.03 percent of the total salaries and benefits charged against EMSA funds.
- **Elimination of Animal Exposure Calls:** In the November 2011 audit report of CPCS, concerns were raised that CPCS incurred costs of approximately \$312,000 in 2010 for handling nearly 8,200 animal exposure calls. Since the prior audit, CPCS management implemented a policy to no longer provide poison services for animal exposure calls. Callers are now referred to the two national

organizations dedicated to providing poison control services to animals. Implementation of this policy was confirmed during our site visits to the four poison control centers and through discussions with call center staff.

While the steps taken by CPCS to help control costs may have resulted in some level of cost savings, data was not always available to quantify actual cost savings achieved for all of CPCS' efforts.

### **EMSA and CPCS Have Been Unsuccessful in Securing Additional Funding**

While CPCS secured some funding from other sources, including a \$250,000 grant from the California Department of Health Care Services to develop guidelines for administering Buprenorphine in emergency rooms, management has been unsuccessful in securing additional funding that would help offset rising operational costs, particularly personnel costs. Further, EMSA indicated that it has also been unsuccessful in identifying and securing funding from other sources.

A November 2011 audit of CPCS recommended that it consider implementing revenue generating options used by other AAPCC-certified PCCs across the county, such as:

- Illinois implemented a Fare Share Program, where hospitals throughout Illinois provide funding for general poison center operations.
- Washington implemented a Hospital Fair Share program in which individual hospitals and healthcare systems in the state of Washington make an annual community benefit investment to help fund continued access to poison control services for their institution.
- Indiana collects membership dues from member hospitals and collects consultation fees from non-member hospitals to support its poison control centers.
- Utah collects some funding via a \$0.07 rate per phone line charged to help fund the costs of establishing, installing, maintaining, and operating the University of Utah poison control center.

CPCS had not made changes to its funding model as a result of the 2011 audit recommendation and had not identified any additional sources of funding. While we were unable to determine the amount of revenue the PCCs were able to generate utilizing other funding options, CPCS should consider the feasibility of implementing similar approaches to help offset the impact of its growing operating costs. One constraint CPCS and EMSA will need to consider when identifying alternative funding sources is Health and Safety Code Section 1799.105(a)(3) related to liability limitation, which indicates a poison center that "provides information and advice for no charge on the management of exposures to poisonous or toxic substances, shall be immune from liability in civil damages..."

Overall, CPCS implemented processes to ensure amounts expended were within individual line item budgets established in its contract with EMSA and to ensure established UCSF expenditure and procurement policies and procedures were followed. Although total EMSA funded expenditures for Fiscal Year 2016-17 were within budgeted amounts, concerns remain regarding long-term program funding. Given that state funds available to support CPCS operations are limited and the likelihood that operating costs will continue to increase each year, it is imperative that EMSA and CPCS look into options for

securing funding from other sources. Further, CPCS should continue its efforts to identify opportunities to further reduce costs and improve the efficiency of its operations.

## Fiscal Activities Are Centralized and Internal Controls Are Built into Applications Used By CPCS

In addition to reviewing CPCS' compliance with EMSA agreement terms and the use of funding, the audit also reviewed controls designed to ensure expenditures and procurement activities complied with UCSF policies and procedures and found fiscal activities are centralized and many internal controls are built into system applications. Specifically, CPCS' central office, located at UCSF, oversees all of the CPCS' fiscal activities, including accounting, budgeting, contracts and procurements, accounts payables, and reporting to EMSA, and relies upon a variety of UCSF applications and financial systems to fulfill its responsibilities. According to CPCS, and confirmed by audit testing, the functionality of these systems allowed for electronic review and approval by authorized individuals for most fiscal activities and includes audit logs of system transactions. A discussion of each of the key applications used to support CPCS' operations and related internal controls is provided below:

- **PeopleSoft Financial System:** Web-based financial system that recorded financial transactions and activities, and generated fiscal reports. To track EMSA expenditures by funding source, CPCS utilized two unique project identifiers. Access to the financial system was based on an individual's job title, and access was granted by UCSF. Within CPCS, the Director of Business Operations and the Financial Analyst had access to the PeopleSoft Financial System.
- **MyReports:** Reporting system that pulls information from PeopleSoft to create reports for internal use as well as for monthly reports submitted to EMSA. Access to the MyReports system was based on an individual's job title, and access was granted by UCSF. Within CPCS, the Director of Business Operations, the Financial Analyst, and Central Office administrative support staff had access to MyReports.
- **HBS Timekeeping:** Timekeeping system that was integrated with the UCSF payroll system that tracked both hourly and exempt employees' hours worked and available leave, and required review and approval of the Managing Director at each PCC prior to processing payroll. CPCS began using the newly implemented UCSF timekeeping system which helped address concerns raised in the November 2011 audit report related to controls over timekeeping and oversight of employee leave balances. According to CPCS, all employees had access in the system to their own timesheets; however, access to view and approve other employees' timesheets was restricted to specific CPCS management.
- **MyExpenses:** Travel claim management system where travel claims were submitted and processed. Travel requests were informally authorized by the CPCS Executive Director, and reimbursement requests for travel expenses required approval in the system prior to the travel claim being paid. According to CPCS, access to the system was based on user access levels granted by UCSF.
- **BearBuy Purchasing System:** Online application integrated with PeopleSoft that automated many aspects of the procurement process including, requisition creation and approval, sending purchase

orders to suppliers, invoice approval, and payment. CPCS management was responsible for reviewing and approving requisition requests electronically in the system; however, once approved, a UC purchasing unit separate from CPCS was responsible for processing the requisition and procuring the requested good(s) or service(s). PeopleSoft was integrated with BearBuy and included the functionality for an automated two-way match between the payment voucher and the purchase order. CPCS access to the system was limited to designated employees and access granted was dependent on access roles granted by UCSF.

In conclusion, as discussed throughout Section 1, the audit found that CPCS implemented a good system of controls over its fiscal activities, with many of the individual controls built in to the systems used by the agency; and expenditures charged by CPCS to EMSA adhered to contract provisions and followed relevant UCSF policies. Despite CPCS effective internal controls over its fiscal activities and efforts to control costs, growing operating costs continue to raise concerns about the program's long-term funding unless additional funding sources are secured.

**Recommendations:**

To address concerns about the long-term funding of CPCS operations, EMSA and CPCS should,

1. Work together to identify additional external sources of funding, including grant funds; and should explore options for generating revenue from other sources such as partner hospitals, health care providers, or sales of material and/or services.

## Section 2: Program Performance Audit Findings and Observations

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The California Poison Control System (CPCS) is organized and structured in a manner that allows CPCS to fulfill its contractual responsibilities with the Emergency Medical Services Authority (EMSA) to provide consistent and reliable poison control services throughout the state of California and meet accreditation requirements established by the American Association of Poison Control Centers (AAPCC). For instance, CPCS utilized phone and patient case management systems that allowed the four poison control centers (PCC) to essentially operate as a single call center; established documented treatment and triage protocols and guidelines to help ensure consistent delivery of poison treatment; implemented uniform new employee training; instituted a robust quality assurance program; and conducted a wide variety of outreach that was consistent with industry best practices. In addition, since a 2011 audit of CPCS, it has implemented many of the audit recommendations to improve the efficiency and effectiveness of its operations and enhance internal controls, such as entering into a formal software license agreement for the use of its patient case management system, documenting the review and approval of treatment guidelines and protocols, and implementing a centralized approach to scheduling its poison information providers (PIP).

While CPCS demonstrated many good practices for overseeing and administering poison control services, the audit identified several areas where prior audit findings and recommendations related to CPCS were either not addressed at all or not fully addressed, including the following:

- Establishing formal written agreements with its specialty consultants as required by regulations.
- Submitting a written application to EMSA every four years along with supporting documentation explaining how it continues to meet the provisions of regulations.

In addition, we found additional opportunities to further enhance its operations and ensure compliance with contract provisions, state and federal regulations, and AAPCC standards. In the following sections, we provide a discussion of CPCS' program performance and its compliance with EMSA contract requirements, applicable state and federal regulations, and AAPCC standards, for these operational areas:

- Organizational Structure and Management
- Information Technology Services and Disaster Recovery Planning
- Staffing and Coverage Requirements
- Clinical and Telephone Guidelines, Protocols, and Resources
- Performance Management and Quality Assurance
- Public and Professional Healthcare Education
- AAPCC Annual Recertification and Reporting

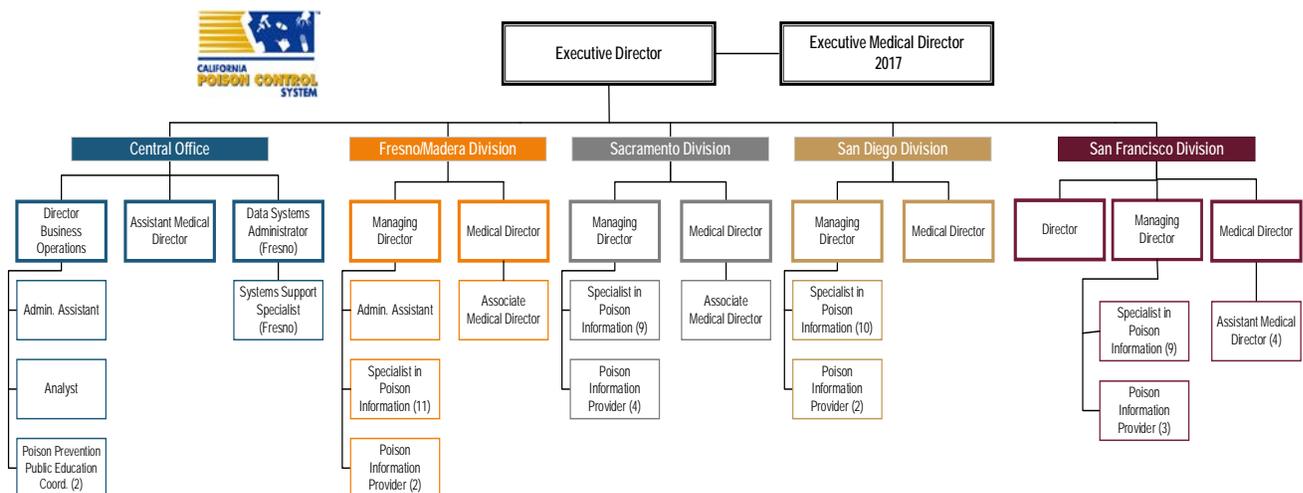
In addition, we discuss instances where the requirements and guidelines established in the California Code of Regulation (CCR) did not align with AAPCC standards.

## Organizational Structure and Management

CPCS, managed under the Department of Clinical Pharmacy at the University of California, San Francisco (UCSF), was organized into four PCCs located in Fresno/Madera, Sacramento, San Diego, and San Francisco, all of which function as a single call center answering poison calls and providing poison services. A central office located at UCSF was responsible for administrative services, such as payroll, accounting, accounts payable, purchasing, and contracting.

As shown in Exhibit 3, CPCS had a clearly defined organizational structure and developed an organization chart that distinctly identified management and staff positions, with an Executive Director providing overall program oversight and direction.

EXHIBIT 3. CPCS ORGANIZATIONAL CHART AS OF JULY 2017



Source: Organization Chart Provided by CPCS and June 2017 Payroll Records

As of July 2017, CPCS reported 75 positions, 73 of the positions were classified as UCSF employees and the remaining two positions, the Medical Directors of the Sacramento and San Diego PCCs, were employees within the University of California (UC) system, but not UCSF employees. CPCS reimbursed the respective UC departments a portion of the salaries and benefits for these two positions for the services provided to CPCS. According to CPCS, several of the positions were vacant during the audit period, including two or three Specialist in Poison Information (SPI) positions and one Poison Prevention Education Coordinator position.

While we found that CPCS established a clearly defined organizational structure and staff held required licenses and certifications, we also identified several areas where improvements were necessary to fully comply with state regulations and improve its organizational management practices. Specifically, we found that CPCS' job descriptions did not include all required components for two positions established in state

regulations and CPCS did not fully comply with specialty consultant requirements established in state regulations. In addition, we found that two of the four Managing Directors did not possess the level of experience required by CPCS. We also found that CPCS had not established formal, written desktop procedures guiding its daily operations and could improve its organizational management by developing formal succession plans.

### **CPCS Staff Met Licensure and Certification Requirements**

As described below, for the individuals reflected on the July 2017 CPCS organizational chart, our review found that CPCS Medical Directors, Managing Directors, and SPIs held the licenses and certifications required by state regulations and AAPCC standards.<sup>4</sup>

- ✓ **Medical Directors:** All Medical Directors, associate Medical Directors, and assistant Medical Directors held current medical licenses required by state regulations and were board certified in medical toxicology, as required by AAPCC standards.
- ✓ **Managing Director:** All four Managing Directors held current licenses as a pharmacist, physician, or nurse as required by state regulation—one was a physician and three were pharmacists.
- ✓ **Specialist in Poison Information:** All 37 SPIs reviewed were licensed as required by regulations—36 were licensed pharmacists and one was a registered nurse. Additionally, at least 50 percent of the SPIs were certified by the AAPCC, as required. Specifically, according to the 2017 Annual AAPCC Compliance Report, 26 of the 37 SPIs, or 70.3 percent, were certified by the AAPCC as Certified Specialists in Poison Information (CSPI). In addition, four SPIs were certified by the American Board of Applied Toxicology (ABAT) enabling these employees to perform clinical supervision. The remaining seven SPIs were hired in 2016 or later and were in the process of accruing hours necessary to become eligible for AAPCC certification.

### **Certain Job Descriptions Did Not Include All Requirements Established in State Regulations, Although Staff Met Requirements**

CPCS developed detailed job descriptions for the four positions included in CCR §100330; however, CPCS' established job descriptions did not include all required components related to experience and qualifications required for the Medical Director and Program Director positions established in state regulation. In the following sections we provide an overview of each key position.

#### Medical Director

CCR §100330(a) requires specific experience and job duties for the Medical Director position. Specifically, the Medical Director must be a licensed physician and surgeon, be on-call to staff, and participate in professional medical education programs. Key required duties of the Medical Director include:

- Assisting SPIs upon request or in accordance with treatment and triage protocols;

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<sup>4</sup> AAPCC standards do not require Poison Information Providers to obtain special licensures and certifications.

- Approving treatment and triage protocols;
- Reviewing the quality assurance program;
- Consulting with physicians on the treatment of poisoned patients as appropriate; and
- Reviewing the poison center specialty consultant(s)' qualifications and approving or disapproving the consultation services applicant(s).

While CPCS' Medical Director's job description included most of the experience and job duties required by the CCR, the job description did not fully comply. Specifically, it did not reference the requirement that a Medical Director must have a minimum of two years' postgraduate training in clinical toxicology and/or a minimum of three years' clinical experience in the last five years in toxicology and/or poison information sciences as stated in regulations. It also did not reference that Medical Directors must spend a minimum of 10 percent of their time treating poisoned patients. Although the position description did not include all required elements, the audit found that all four Medical Directors met each requirement of CCR §100330(a).

#### Program Director

CCR §100330(b) requires specific experience and job duties for the Director position. Specifically, the Director must be a licensed pharmacist or physician and have a minimum of two years training in clinical toxicology and/or a minimum of three years clinical experience in the last five years in toxicology or poison information sciences. Key required duties include, but are not limited to:

- Supervising PCC staff, funding, and quality assurance;
- Determining and ensuring staff availability; and
- Developing and updating treatment and triage protocols and health education programs.

Our review of the CPCS Executive Director position description found that the responsibilities outlined in position were largely in-line with those established in regulation; however, the responsibilities listed in the position statement did not include any of the minimum years of experience and license qualification requirements outlined in the regulation. Although the position description did not include all requirements, the Executive Director had 44 years of healthcare management experience, was a licensed pharmacist with the required toxicology experience, and met all requirements of CCR §100330(b).

#### Specialist in Poison Information

CCR §100330(c) requires specific experience and job duties for the SPI position. Specifically, a SPI must be a licensed pharmacist, physician, or nurse and have training or experience in toxicology or poison information science. Key required duties include, but are not limited to:

- Answering incoming telephone calls, evaluating the poison exposure history, providing management information, and determining the necessity for additional medical consultation;

- Documenting all calls and consultations on standardized medical record form;
- Involved in poison-oriented health education programs, such as developing and presenting lectures and participating in scholarly activities; and
- Responsible for direction of the medical advice provided by students, visiting healthcare providers, SPIs, and PIPs.

The experience and job duties listed in CPCS' SPI job description aligned with requirements established in the CCR §100330(c)

#### Poison Information Provider

CCR §100330(d) requires specific experience and job duties for the PIP position. Specifically, a PIP must be trained in reading, comprehending, and communicating poison information. Examples of key required duties include, but are not limited to:

- Providing initial management advice and follow-up for telephone calls from the public;
- Triageing calls to other staff as specified in the guidelines and policies; and
- Documenting poison information for each case clearly and accurately.

The experience and job duties listed in CPCS' PIP job description aligned with requirements established in the CCR §100330(d).

#### **CPCS Managing Directors Did Not Always Meet Experience Requirements Established by CPCS**

CPCS' Managing Director job description required one year of experience administering a health-related program; however, our review found that only two of the four Managing Directors possessed this level of experience. The remaining two Managing Director positions were filled with internal candidates who were employed as SPIs, but did not have administrative experience. CPCS indicated that the pool of qualified candidates for a Managing Director position that would meet both the criteria of toxicology and administrative experience is extraordinarily small as there are only 55 poison centers in the United States. As such, CPCS recruited and filled two of the Managing Director vacancies with internal candidates already employed as SPIs. CPCS believes that by promoting from within, CPCS is not only able to leverage a pool of candidates with extensive toxicology experience, but is also able to retain institutional knowledge and provide the required administrative experience to both employees in their new roles.

#### **CPCS Did Not Enter into Formal Agreements with Poison Center Specialty Consultants**

As required by CCR §100330(e), CPCS established a list of specialty consultants available to provide specialized toxicology information and advice particular CPCS' service area. Specifically, CPCS' January 2017 central list of on-call consultants reported a total of 37 on-call consultants for 13 specialty areas, such as bioterrorism and disaster management, epidemiology/public health, hazardous materials, snakebites, and infectious diseases. In addition, during site visits to the UC Davis and San Diego PCCs, staff indicated

that additional site-specific on-call consultants were also utilized. During FY 2016-17, consultations (central and site-specific on-call consultants) were used for 5,210 of the 218,001 exposure cases, or two percent.

Although CPCS developed lists of on-call consultants as required, CPCS current practices do not fully comply with state regulations. Regulations require that each specialty consultant have a written agreement with the PCC that is updated yearly; however, CPCS did not establish written agreements with specialty consultants, an issue that was also raised in the November 2011 audit of CPCS. According to CPCS, because it uses toxicology fellows, as well as other specialty consultants, that are affiliated with the UC system; it is not necessary to implement written agreements with these consultants. CPCS indicated that it provided a list of all on-call consultants to EMSA and would work with EMSA to determine whether formal written agreements should be pursued. According to EMSA, if specialty consultants are utilized infrequently, formal agreements are not necessary.

Further, state regulations require that the Medical Director review the qualifications of specialty consultants and approve or deny their applications. According to CPCS, specialty consultants do not submit applications and CPCS has not established any internal policy or guidance defining required qualifications, roles and responsibilities, or CPCS' expectations of specialty consultants.

### **CPCS Did Not Establish Desktop Procedures Guiding Daily Operations**

While CPCS developed and implemented policies and procedures for treatment and poison services provided as discussed later in this section, it had not developed written, formal desktop procedures guiding many of its operational practices, including its management activities and information technology services, as discussed below:

- **Management Activities:** CPCS management at each of the poison control centers is responsible for managing employees' schedules, overseeing staff performance and workload, tracking employee training, and maintaining external partnerships, including partnerships with health care facilities and providers and community-based organizations. However, CPCS has not developed written desktop procedures detailing its management processes and, as such, cannot be assured that informal protocols are consistently applied across its poison centers and expectations are met.
- **Information Technology Services:** Although CPCS' Data Systems Administrator developed and managed CPCS's entire information technology infrastructure and maintained all historical knowledge of the IT systems, CPCS had not established written desktop procedures detailing the responsibilities of the position or the processes required to manage the information systems. As a result, significant institutional knowledge could be lost with a negative impact on CPCS' operations if the Data Systems Administrator abruptly left employment.

### **Opportunities Exist to Improve Succession Planning**

CPCS had not established succession plans for key management positions. When combined with the absence of operational desktop procedures, the lack of succession plans for key management positions raises concerns about CPCS' ability to effectively manage turnover at management levels. When there is turnover among management, CPCS's ability to successfully and expeditiously identify and hire qualified

candidates becomes increasingly important. In addition, when bringing on new management it is important to ensure the smooth transition of both historical knowledge of CPCS's internal operations and relationships with external stakeholders to new management. Succession planning is important because it allows management to identify employees who have the current skills—or the potential to develop skills—that can help them move up in an organization. A management succession plan helps to ensure an agency is prepared to replace its senior executives.

Overall, although CPCS established a clearly defined organizational structure and its staff held the required licenses and certifications, the audit found that its position descriptions did not always include all required elements, two Managing Directors did not possess the experience required by CPCS, and formal agreements had not been established with on-call consultants. We also found that CPCS had not established formal, written desktop procedures guiding its daily management and information technology operations and had not developed succession plans. Without formal, documented policies, procedures, and plans, management cannot be assured that processes are consistently performed at each of the poison centers, that staff understand responsibilities, or that critical institutional knowledge is retained. To improve these areas, CPCS should ensure its position descriptions are updated to reflect requirements, develop operational desktop procedures and formal succession plans for key leadership positions. Additionally, if EMSA believes written agreements with on-call consultants are not necessary, CPCS should work with EMSA to revise state regulations to eliminate the outdated requirement. In the absence of formal written agreements, CPCS should at a minimum develop and provide on-call consultants with guidance defining CPCS expectations of on-call consultants.

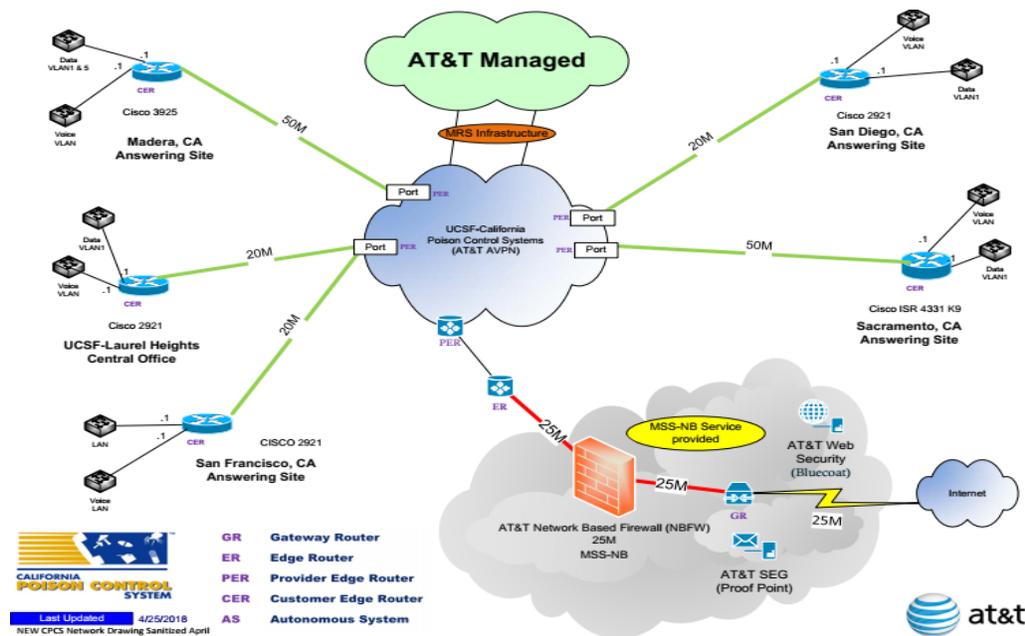
## **Information Technology Services and Disaster Recovery Planning**

We found that CPCS complied with EMSA contract requirements related to information technology services and disaster recovery planning as it implemented a patient management system that collected and distributed poison information data, had system controls and auditing capabilities, and provided the necessary data to actively monitor exposures to identify potential health hazards as part of its Hazard Surveillance Program. We also found that CPCS' patient management system retained patient case data and poison resources necessary to provide poison control services and fulfill internal and external reporting needs. Further, we found that CPCS' updated its information system infrastructure to improve system network reliability and capacity. Finally, although CPCS' call centers are located in four separate geographic areas throughout California, its information system infrastructure allowed CPCS to act as a single call center and enabled calls to be automatically transferred to other sites if one site was disabled in the event of a natural disaster or an emergency.

### **System Network Reliability and Capacity Improved**

In November 2016, CPCS transitioned from a T1 digital transmission service to an optical fiber internet access offered through CALNET 3. According to CPCS, with this transition, CPCS not only improved system reliability and capacity, but also indicated that telecommunication costs have declined. For example, according to CPCS, all calls are now transferred or forwarded through its AT&T Virtual Private Network (AVPN) at no charge. Because the audit period only included one fiscal year, we were unable to determine actual cost savings achieved. Exhibit 4 provides an illustration of the CPCS network.

EXHIBIT 4. CPCS NETWORK DIAGRAM AS OF APRIL 2018



Source: Network Diagram provided by CPCS

## Patient Management System Software Retains Necessary Information to Provide Poison Services and Meet Both External and Internal Reporting Needs

CPCS' patient management system, VDLE, provided instant access to system-wide patient case data and poison resources, including the MIRCOMEDEX POISINDEX system, across the four PCCs and central office. In January 2013, CPCS and WMB Software, the company owned by the CPCS Data Systems Administrator that developed the system, entered into a formal multi-site software license agreement for the use of VDLE where CPCS maintains ownership of all patient data.

All information generated through VDLE is maintained in a data warehouse that allows case record data to be collected and stored in a virtually "paperless" manner, as required by the contract with EMSA. Additionally, the data warehouse provides the information necessary to fulfill external reporting requirements and information requests and to prepare internal reporting and trend analysis for CPCS management. In the following section we provide an overview of reports generated by CPCS from patient data generated utilizing VDLE:

- **Internal Reporting:** CPCS generated internal reports used by management to track staff performance and identify additional staff guidance or training needs. For instance, management received reports with statistics on whether staff collected specific information as expected, including the patient name, age, and phone number.
- **National Poison Data System (NPDS) Reporting:** AAPCC's NPDS reporting system contains more than 62 million exposure case records and data for more than 420,000 products going back to 1983. This data is submitted by PCCs across the country and used to track poison exposure outbreaks across the country. It is also used by the Centers for Disease Control to detect and monitor public health threats, terrorism, and diseases. AAPCC standards require PCCs submit

human exposure data to the NPDS. To comply, CPCS' VDLE automatically uploads case information every thirty minutes to the NPDS reporting system, providing a near real-time snapshot of poison call conditions.

- **EMSA Reporting:** The contract with EMSA requires CPCS to submit case statistics reports annually and several quarterly reports, including an average time to answer report, poisoning statistics reports, and report of services. These reports are generated from the data maintained in the VDLE system and submitted to EMSA.
- **DPR Reporting:** CPCS has an agreement with the California Department of Pesticide Regulation (DPR) to provide automated Pesticide Incident Reports (PIR) and DPR provides CPCS with funding for this effort. Specifically, cases in VDLE tagged as pesticide related included in PIRs and DPR has secure access to log onto the system to download the reports.
- **Other Reporting:** CPCS utilizes the VDLE system to occasionally provide information, reports, and statistics to county health departments and other agencies, when requested. According to CPCS, all personal health information is removed from the data when fulfilling information requests prior to providing the information to the requesting agency.

### CPCS Complied with EMSA Disaster Backup and Recovery Plan Requirements

CPCS' IT system complied with disaster backup and recovery plan requirements established in the agreement with EMSA. Specifically, the contract requires that "communications technology built into the system shall enable all calls to automatically transfer or "roll over" to the other sites if one site is disable." We found that CPCS implemented a phone system that met the requirement. Specifically, calls to the CPCS hotline staff originate from the following three sources:

1. Single National Poison 1-800 hotline public number (800-222-1222) that is managed by the Health Resources and Services Administration (HRSA),
2. California based 800 numbers specific to health care facilities across the State, and
3. California based 800 numbers specific to 911 operators across the State.

Incoming calls are delivered to hotline staff at the four PCCs via a Layer 3 Multiprotocol Label Switching (MPLS) AT&T Virtual Private Network. According to CPCS, the voice and data systems are integrated and utilize the statewide MPLS AVPN network. Further, according to CPCS, call flow is controlled by an "automated call distribution" (ACD) algorithm that routes and/or queues calls based on agent skill set and agent availability." The ACD logic is centralized and mediated through a redundant clustered phone switch in Madera, and the logic is replicated to media gateways at each division.

Although, CPCS is divided geographically between four locations, the system operates as a single call center, routing calls first by location and then by call center staff availability. Calls are distributed to the four PCCs and various hotline workers based on caller location (area code), caller type (public, health care provider, etc.), and staff availability and skill sets. For example, a call originating from San Diego will be routed the San Diego PCC first; however, if there is no staff available with the required skills to answer the

call, the call will be re-routed within 30 seconds to the first available representative at any PCC with the required skill sets, helping to ensure calls are answered timely. The PCCs rotate staffing the overnight shift and as a result, only two centers are staffed on any given night. To accommodate this practice, the ACD system routes calls during the overnight shift to the two centers that are in operation.

While the main network hardware is located at the Fresno/Madera center, each division has identical servers that host VDLE to ensure information flows seamlessly between the locations and to ensure data is protected through redundancy. In the unlikely event of MPLS network failure, each division automatically fails over to a standalone state, ensuring calls are still routed based on the skill sets of local agents and allowing each center to continue to operate locally until the system is restored. Because the four sites are located in distinct regions of the state, it is unlikely that an isolated event would stop service to the entire system. In addition, CPCS indicated that it is currently considering converting the Sacramento PCC into a secondary disaster recovery site.

Further, according to management, the CPCS telephone system answering and messaging system can be specialized for all hazard response, assists in prioritizing calls, and allows for increasing capacity necessary to meet surge demand for emergent events.

### **Controls in Place to Reduce the Risk of Personal Health Information Being Inappropriately Accessed or Shared**

According to the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rules, CPCS is a recognized public health agency as they provide counseling and follow-up consultations with individual providers regarding patient outcomes and treatment and share protected health information. As such, CPCS is required by federal regulation to ensure that protected health information (PHI), such as patients name, address, birth date, is not inappropriately accessed or shared. While a comprehensive HIPAA compliance review was not within the scope of this audit, we performed a high-level assessment of the controls in place to reduce the risk of PHI being accessed or shared inappropriately. Our review found that CPCS implemented a system of controls that helped to ensure its information system network was secure and reduced the risk of sensitive information being inappropriately accessed. For example, CPCS network was separate from the University network and utilized an AT&T Network Based Firewall and VMWare Security Broker to restrict access to its systems. In addition, CPCS established protocols to remove all PHI prior to providing case information to partner agencies.

In conclusion, the audit found that CPCS established a network that allowed for consistent and reliable delivery of poison control services, while implementing controls to ensure sensitive information was secured and not inappropriately accessed or shared. CPCS' patient management system provided instant access to case records and retained information necessary to fulfill both its internal reporting needs and external reporting requirements. CPCS also established an information technology infrastructure that met the disaster recovery and backup plan requirements established in its contract with EMSA.

### **Staffing and Coverage Requirements**

As required by the contract with EMSA, poison control regulations, and AAPCC standards, the poison control hotline receives calls from the general public and health care providers 24 hours a day, 7 days a

week, 365 days a year. In order to provide timely and accurate treatment advice and information, CPCS must ensure sufficient staff is on-hand to meet call volumes that fluctuate throughout the day and over the course of a week and month. To evaluate CPCS' staffing and coverage, we requested CPCS' most recent staffing analysis and examined trends in call volumes and duration.

As discussed in the following sections, although its systems had the functionality to analyze call patterns and perform project scheduling based on queuing theory, CPCS instead applied a manual approach to scheduling that did not fully comply with requirements in its contract with EMSA. Additionally, while we also found staffing levels provided sufficient coverage to comply with AAPCC standards in FY 2016-17, the ratio of calls-per-staff was on the upper end of the allowable range per the standard. Further, although call volume declined over the last six years, CPCS reported that calls received have become more complex increasing the amount of time necessary to provide poison services. Finally, we noted that CPCS implemented processes to track the hours and tasks completed by the Medical Directors to ensure sufficient medical supervision, as recommended in the 2011 audit of CPCS.

### **CPCS Could Not Demonstrate That Its Method to Schedule Staff Fully Complied with Contractual Requirements**

Ensuring that timely and accurate treatment advice and information is provided to callers 24 hours a day requires careful management of staff resources. In order to balance handling efficiency with staff workloads and to prevent potential burnout, analysis of call arrival patterns should be considered when determining staffing levels. Because of the importance of scheduling staff to ensure adequate coverage, the agreement with EMSA specifies that:

“Scheduling patterns shall make use of ACD management and queuing theory software programs such as Erlang C. Time management studies and call arrival pattern data shall be used to further refine project scheduling needs.”

While the audit validated that the software system used by CPCS had the functionality to analyze call arrival patterns and apply queuing theory to project scheduling needs, CPCS did not provide support demonstrating functionality was used as part of its scheduling process during the audit period. According to CPCS management, although staff scheduling was based on manual processes it used enhanced Erlang C protocols to evaluate the schedule globally. However, CPCS did not provide supporting documentation necessary to validate the process described was the actual process in place during the audit period. Due to concerns regarding on-going and protracted labor negotiations, CPCS did not provide any further information. According to CPCS management, once the new labor contracts are in place, CPCS management expects to use the forecasting and scheduling functionality in the system to generate a single centralized schedule for both SPIs and PIPs.

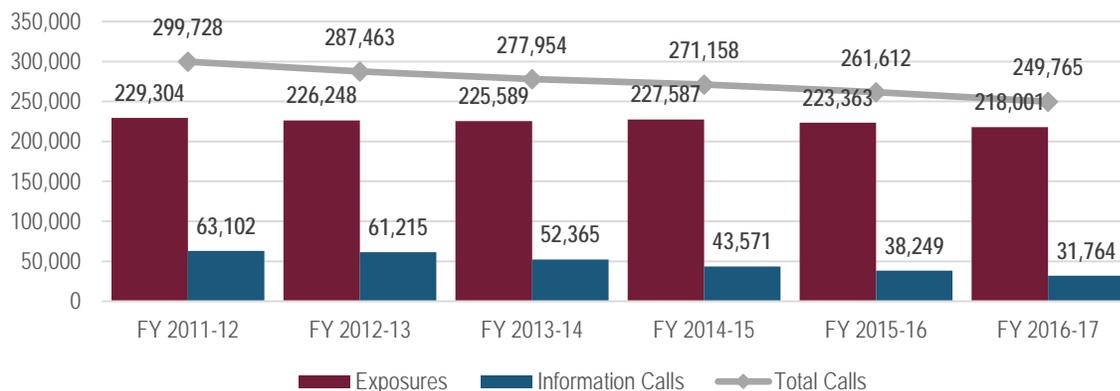
### **Despite Declining Call Volumes, Increase in Complexity of Calls Appears to have impacted the Time Necessary to Provide Poison Services**

During FY 2016-17, CPCS received nearly 250,000 poison hotline calls into its hotline across its four PCCs from the general public and health professionals. Most of the calls, 87.3 percent, related to treatment advice for human exposures and the remaining calls related to general poison information. To assess

whether overall staffing levels adequately supported the annual call volume workload, we requested underlying data supporting aggregate call volumes, call wait times, and staffing information. The data reflected that CPCS' calls were generally answered within 20 seconds and staffing-to-call volume ratios were within the limits allowed by AAPCC standards, although on the higher-end of the allowable range. Additionally, concerns were raised by CPCS staff operating the poison hotline that call wait times during certain times of a day were much higher than average wait times reported; however, we were unable to assess detailed workload call coverage during specific times of the day due to a lack of data provided by CPCS management.

Further, our analysis revealed that despite declining call volumes, an increase in the complexity of calls appears to have impacted the amount of time necessary to provide poison services. As shown in Exhibit 5, the overall volume of calls received by CPCS declined each fiscal year since FY 2011-12, declining 16.7 percent between FY 2011-12 and FY 2016-17 and mirroring national poison call trends.

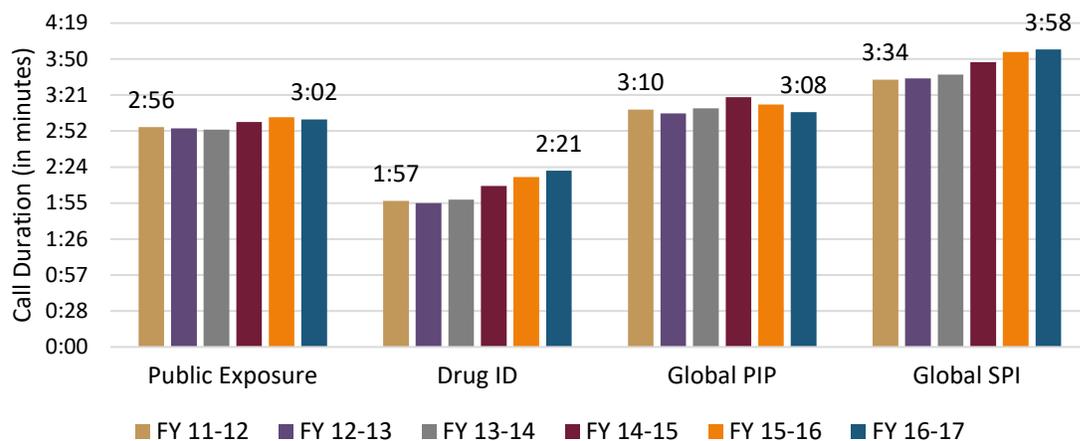
**EXHIBIT 5. CPCS CALL VOLUME, FY 2011-12 THROUGH FY 2016-17**



Source: Summary Call Data provided by CPCS

Although the total number of calls into the CPCS hotline declined since FY 2011-12, our review found that the level of resources required to provide poison services was impacted by factors in addition to call volume. Specifically, we found that while the number of calls declined, the average duration of most exposure-types of calls increased. According to CPCS, although the total number of calls into the hotline declined, largely due to fewer calls related to general poison information (49.6 percent reduction) that is easily accessible on the Internet, the hotline received increasingly more complex human exposure calls over the last couple of years that require more time. For example, the number of calls received by the Global SPI queue handling the most complex human exposure calls increased from 48,707 calls in FY 2011-12 to 59,716 calls in FY 2016-17. At the same time, as shown in Exhibit 6, the average call duration for this queue increased from 3 minutes and 34 seconds to 3 minutes and 58 seconds over the same period, resulting in a 36 percent increase in the total time spent on the phone. However, because CPCS does not track data on call complexity, we cannot determine if the call duration increased due to the complexity of the calls or for other reasons.

## EXHIBIT 6. CALL DURATION BY SKILLSET, FY 2011-12 THROUGH FY 2016-17



Source: Speed to Answer Data provided by CPCS

While CPCS appeared to maintain the level of staffing necessary to meet its aggregate call volumes and adhered to AAPCC standards for staffing-to-call volume ratios, other factors in addition to call volume must be considered when determining the level of resources and efficient staff scheduling, such as service levels and performance goals, as discussed later in this section. To better ensure staffing resources are efficiently utilized, and to comply with contract requirements, CPCS should begin using its ACD management and queuing theory software to develop centralized schedules for PIPs and SPIs.

### Clinical and Telephone Guidelines, Protocols, and Resources

CCR §100329 requires regional PCCs to have poison information resources which include: one or more current product information resources, current texts covering both general and specific aspects of acute and chronic poisoning management available at the central telephone answering site, and a list of poison center specialty consultants available on an on-call basis. Our review found that CPCS provided employees with required poison information resources and sampled clinical protocols and guidelines that included required components and staff followed established treatment guidelines and protocols.

Additionally, to assess whether the training and education provided by CPCS to its staff met applicable requirements, we interviewed management and staff at poison call centers, reviewed training and education materials, and conducted an employee survey. We found that since the prior audit, CPCS implemented a more centralized approach to training and education, and generally complied with contract and AAPCC standard requirements, although opportunities exist to further improve the training program. Most staff surveyed as part of this audit agreed or strongly agreed that CPCS provided staff with necessary poison resources and training.

### Required Poison Information Resources Are Available to and Followed by Staff

Our review found that CPCS generally complied with CCR §100329 requirements related to poison information resources. Specifically, we found that poison information resources and guidelines were available to all staff at each facility, guidelines sampled included required components, and staff followed

established guidelines and protocols for sample cases reviewed. In addition, as discussed earlier in this report, CPCS maintained a list of qualified on-call consultants.

### CPCS Provided Poison Information Resources to Staff as Required

During our site visits to the four PCCs, we observed that poison information resources and guidelines were available to all staff at each facility via CPCS's Intranet, including detailed procedures and protocols for handling the 100 most common types of poison exposures. Most PIPs and SPIs that we interviewed cited the guidelines as helpful resources used when handling calls. In addition, each of the PCCs had a physical library of reference books centrally located with information on various types of poison exposures, such as specialized volumes for exposure to herbal medicines and treatment of poison exposures for pregnant women. CPCS also provided all call center employees with a copy of *Poisoning & Drug Overdose*, a handbook developed by CPCS.

We selected four specific guidelines for detailed review to determine whether the resource documents contained the information required by CCR §100329(5), such as:

- Description and types of exposures that need no medical intervention, may be managed at home by simple therapeutic procedures, or may require referral for medical evaluation and/or treatment, and
- Protocols for initial patient management and patient transport to a facility that reflect the policies and procedures of the local EMS agency.

Although our review did not conclude on the sufficiency of the specific medical advice and procedures, we found that in general the guidelines appeared to include all required components and had evidence of approval by the Medical Director dating back to 2014. According to CPCS, guidelines were reviewed annually; however, the Medical Director only formally approved guidelines when they were amended.

### Testing Revealed Staff Properly Followed Poison Guidelines

To determine staff adherence with CPCS treatment guidelines and protocols, we reviewed the case histories and notes documented in VDLE associated with 40 completed treatment cases covering eight exposure types. To ensure a broad selection, we selected cases with varying circumstances, such as:

- Hotline staff type handling call (Provider or SPI)
- Center location handling call (Fresno, Sacramento, San Francisco, or San Diego)
- Location the hotline call was placed from (Private home or health care facility)

We found that guidelines and protocols were reasonably followed as the case notes complied with SOAP (subjective, objective, assessment, and plan) protocols, the recommended course of action (treat symptoms at home, refer patient to a health care facility) was appropriate, and follow-up calls were conducted to check on the patient's status/condition, when appropriate.

## **New Employee and On-going Training Complied with Contract Requirements and AAPCC Standards and CPCS Worked to Enhance Its Training Program**

Our review found that CPCS complied with requirements related to new employee training, on-going training, and oversight and development of SPI and PIP staff, and over the past several years worked to improve the delivery of its training programs, including developing web-based training modules. However, we found that opportunities remain to better ensure CPCS' training programs are consistently implemented and managed.

### New Staff Orientation & Training

CPCS offered new hotline employees a robust employee orientation and training program that complied with the EMSA contract and AAPCC standards. Specifically, AAPCC standards require PCCs to offer an orientation/training program for new hotline staff providing toxicology information that includes training manuals, written learning objectives, and regular evaluation of progress and competency. Similarly, the contract with EMSA requires that CPCS develop a standard and comprehensive system-wide training program utilized by all four PCCs to ensure that hotline staff is trained to provide consistent and standard services.

According to CPCS, both SPI and PIP trainees receive a variety of educational materials, including a training manual, CPCS triage guidelines and protocols, 'Poisoning & Drug Overdose' textbook, and copies of relevant toxicology articles and other information to keep up-to-date on toxicology topics. In addition, newly hired SPIs and PIPs are required to complete an administrative and technical orientation that includes a review of all CPCS policies and procedures, telephone and patient management systems overview, and available poison resources. SPIs also undergo clinical toxicology training for the first four to six weeks of employment, which includes textbook reading assignments and chapter reviews; problem sets and discussions of answers; and lectures given by directors, fellows, and faculty.

Additionally, SPI and PIP training programs outline training phases and associated timeframes, as well as specific training goals and expectations. For example, after one week of training, SPIs are expected to understand the different toxicological resources that are available, how to use them, and where specific information can be found as well as techniques for effectively communicating with callers. After three weeks, SPIs are expected to have a broader understanding of available toxicological resources, be proficient in communicating with callers, and be able to document case information in CPCS' patient management system.

Further, under the new employee training program, formal evaluations occur after three and six months to ensure trainees were developing the required skills necessary to provide consistent delivery of poison control services. New employee evaluation practices and topics included:

- ✓ Formal evaluation performed by Managing Director, Medical Director, or both
- ✓ Self-evaluation of progress
- ✓ Review of clinical competency, math skills, communication skills, problem solving, and other general topics

- ✓ Review of call volume quality and quantity
- ✓ Review of cases managed by trainee for clinical accuracy as well as documentation and coding accuracy
- ✓ Feedback provided to trainee

To assess SPIs' and PIPs' perspective on whether they believed sufficient resources, training, and oversight was provided by CPCS management, the audit conducted a voluntary online survey and sent requests to participate to all 48 current SPIs and PIPs in June 2018. More than half the staff contacted, 27 of 48, or 56 percent, participated in the survey. As part of the survey, we asked survey respondents if they had participated in the new employee orientation and training program. Of the 27 survey respondents, five (one PIP and four SPIs) had been in their current position at CPCS for less than five years and indicated they participated in CPCS' new employee training and orientation program.

### On-going Training & Education

Both AAPCC standards and the contract with EMSA require CPCS to establish and implement on-going training and educational programs to ensure staff competency and expand staff knowledge base, particularly related to toxicology. Our review found that CPCS implemented a comprehensive, system-wide approach to on-going staff development, as required. In addition, most SPIs and PIPs surveyed indicated that they agreed that CPCS provided staff with sufficient ongoing professional growth opportunities, training, and education.

To comply with applicable requirements, CPCS used a variety of training and educational activities to meet these requirements, including:

- **Grand Rounds and Statewide Rounds:** Each week, CPCS Medical Directors hold a call to discuss the most interesting and complex exposures from each of the four PCCs. Grand rounds typically include toxicology fellows and students doing rotations, with CPCS staff also invited to participate.
- **Journal Club:** As part of the Journal Club, Medical and Managing Directors select recent articles related to poison exposure to discuss in-depth. Although primarily attended by toxicology fellows and students doing rotations, CPCS staff are welcome to attend and are provided a summary of the discussion afterwards.
- **Weekly Email Digests:** Medical and Managing Directors at some of the PCCs send out a weekly email to recap any issues that arose during the week and provide additional guidance to staff, if necessary.
- **SPI Academy:** During the audit, CPCS was in the process of starting the SPI academy—a training program that focuses on staff in their first two to three years on the job. SPIs at all four PCC locations meet monthly via web conference to discuss selected readings, led by an attending physician.

- **Web-based instruction:** CPCS management indicated that they try to develop three to four poison training modules each year, which staff complete through a website hosted by UCSF. Modules can address general CPCS operations or focus on issues related to specific exposures or types of exposures and the treatment protocols to follow.
- **Other Training and Education:** CPCS indicated that staff are also provided information at staff meetings, conferences, and via emails that include information on clinical trends, situational awareness, internal processes, and outbreaks.

### Opportunities Exist to Improve Oversight and Consistency of Training

The audit also found that Medical Directors and Managing Directors at each poison control center were responsible for independently carrying out established training protocols and monitoring employee training and education. As discussed earlier in this report, CPCS had not established formal, written desktop procedures guiding how management fulfills these responsibilities; as such, CPCS cannot be assured that protocols were consistently followed and staff at all poison control centers actively participated in available training and education opportunities.

Overall, the audit found that CPCS provided its employees with poison information resources as required by CCR §100329 and found that CPCS staff followed established treatment guidelines and protocols. In addition, CPCS implemented a comprehensive, system-wide approach to new employee training and on-going staff development, that met the requirements of both the EMSA contract and AAPCC standards. However, we also found that CPCS could further improve the consistency of its training program by working with management to implement a centralized approach to monitoring employee training.

## **Performance Management and Quality Assurance**

CPCS is required to establish a performance management and quality assurance program (QAP). To ensure compliance with applicable standards and regulations, and to ensure treatment advice provided by CPCS is both timely and accurate, the agency implemented a QAP that included processes for monitoring, reviewing, and improving both individual employee performance and treatment protocols and procedures used in the treatment of poison exposures. We found that CPCS implemented a QAP that was consistent with applicable requirements.

Yet, our review of CPCS performance management practices identified opportunities for improvement, such as implementing formal performance goals and targets to measure performance and developing processes to actively solicit customer feedback to improve its operations and services provided. Despite the lack of targets and a mechanism to actively solicit customer feedback, our review found that CPCS services were offered to the public throughout California, as required, and only a small percent of calls received by CPCS related to out-of-state calls.

## CPCS Implemented a Quality Assurance Program Consistent with the Requirements Outlined in Regulation, AAPCC Standards and Contract with EMSA

CPCS' Executive Medical Director oversaw the QAP aimed at improving the quality of service and treatment advice provided by CPCS staff with input and assistance from each of the four site Medical Directors. While each Medical Director implemented protocols at their respective sites to manage day-to-day quality assurance activities, we found that the processes were generally consistent across all locations. Our review found that CPCS' QAP met the requirements outlined in state regulation, AAPCC standards, and contract with EMSA.

CCR §100321 requires PCCs to establish a QAP that includes reviews of all cases with deaths; general case review and critique; screenings of poisoning and exposure cases by type of poison; and either direct monitoring of a sample of calls or tape recording of calls. In addition, Medical Directors are required to conduct quarterly audits and case reviews of poisoning cases. As discussed below, we found that CPCS QAP adequately included the required elements.

- **Case Review of all Deaths:** CPCS Medical Directors review all patient death cases in which CPCS was consulted. Because the cases management system tracks all cases through resolution, CPCS is typically aware when a death has occurred. According to the Executive Medical Director, there are around 100-150 death cases per year. When a death occurs, the Executive Medical Director assigns the case to one of the four Medical Directors to conduct cause analysis and submit a case abstract to NPDS, as required.
- **Case Review and Critique of a Sample of Cases:** CPCS Medical and Managing Directors review and critique cases in several ways. On a daily basis, each of the four Medical Directors and four Managing Directors conduct a review of cases from the previous 24 hours, with a focus on hospital cases. The review conducted by the Medical Directors focused on clinical considerations while the Managing Directors focused on ensuring cases were well-documented and staff followed established policies and procedures. When issues are identified during the daily review, Medical and Managing Directors either follow-up with the specific staff member who took the call or send a CPCS-wide email if the issue is more general. In addition, CPCS also holds statewide grand rounds where a sample of cases from the previous week are reviewed. Grand rounds include the Medical Directors as well as UC fellows and pharmacy students completing rotations, and are open to all CPCS staff. One CPCS site leads each grand round, with leadership rotating between the sites each week.
- **Screenings of Poisoning and Exposure Cases by Type of Poison:** Each year, CPCS selects one or more substances to review as part of its Continuous Quality Improvement (CQI) program. As part of the CQI process, CPCS reviews calls involving the substance, including the documentation of cases, treatment advice provided, and case outcomes. Once completed, the CQI process may result in changes to treatment guidelines or in how cases are documented and recorded. During calendar year 2018, the CQI looked at cases involving Wellbutrin, a common anti-depressant and smoking cessation aid, focusing both on treatment protocols as well as case

documentation by CPCS staff. Previous' years CQI projects looked at calcium channel blockers and ethylene glycol.

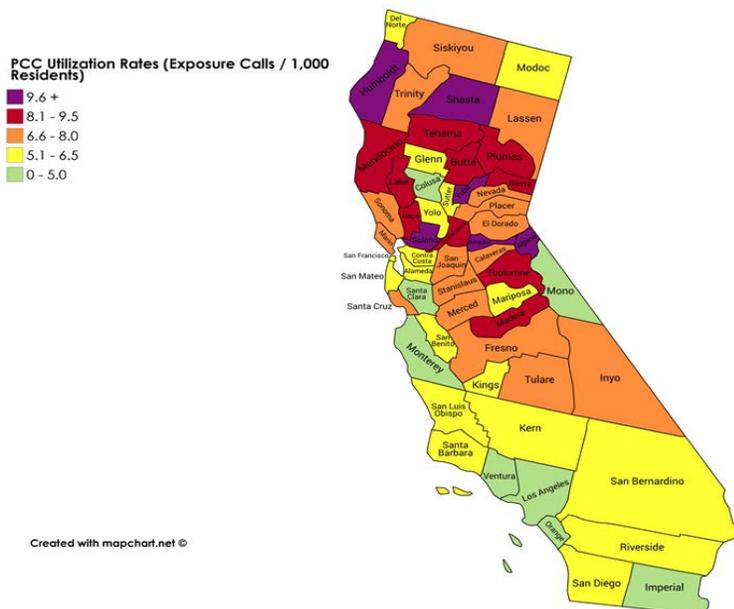
- **Tape Recording of Calls:** All calls to CPCS are recorded and archived for 12 months. CPCS staff link call recordings to VDLE cases records by hitting a button in VLDE while on the phone, and calls can be reviewed as soon as the initial call is completed. Staff can and do review the calls to make sure the necessary details are captured in VLDE. CPCS Medical and Managing Directors review call records both as part of the initial training offered to staff and as part of annual staff evaluations. For the annual review, the Managing and Medical Directors review 6 sample calls for each staff member, reviewing the call handling, case documentation, and treatment advice provided.

### Poison Control Services Offered Throughout California, As Required

As required by CCR §100329(a)(1) and (2), CPCS provided poison control services 24-hours per day, 7-days per week to the public and health professionals located throughout California. To assess whether any counties were underserved by CPCS, we reviewed hotline utilization rates per capita for all counties throughout the state based on information reported by CPCS to the AAPCC for calendar year 2014 as part of the most recent re-accreditation process.

While our review found that all 58 counties in California appeared to have utilized the poison control hotline, utilization rates varied significantly from county to county. Specifically, in 2014, actual human exposure calls into the hotline per 1,000 residents ranged from as low as 3.7 calls in Mono County to as high as 12.2 calls in Yuba County. As shown in Exhibit 7, the counties with the highest utilization rates were concentrated in northern and central California; whereas, the ten southernmost counties in California all reported utilization rates below 6.5 calls.

EXHIBIT 7. 2014 HUMAN EXPOSURE CALLS PER 1,000 RESIDENTS BY COUNTY



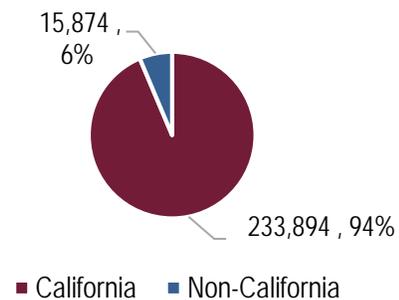
Source: Graphic created on <http://www.mapchart.net> using CPCS 2014 AAPCC Accreditation Application

While CPCS does not capture data on why utilization factors varied by region, there are several factors that likely explain some of the differences, including different environmental hazards, such as poisonous animals, insects, and plants, and demographic differences, such as income levels, education, family size, and age. For example, CPCS may experience higher call volumes in geographical areas where rattle snakes are located. In another example, based on statistical information provided by CPCS, lower income families with children under the age of 18 used poison hotline services most frequently.

### Small Percent of CPCS Calls Originated Outside of California

A national toll-free number (1-800-222-1222) is used by all poison control centers across the United States, with calls routed to local poison control hotlines based on the caller's area code. As a result, when individuals move between states and keep their cell phone numbers, calls into the hotline continue to be routed to the local hotline serving the area code tied to the cell phone number. This results in an unavoidable situation where all poison control hotlines across the country receive calls from individuals located out-of-state, including CPCS. We found that the calls received by CPCS from out-of-state callers accounted for a very small percentage of its total call volume.

CPCS Call Received by Geographic Location, FY 2016-17



During FY 2016-17, approximately six percent of all calls to CPCS originated outside of California. Of the 15,874 calls to CPCS from outside of California, most originated from bordering states, including Arizona, Nevada, Washington, Oregon, and Texas—accounting for 5,870 of the 15,874 out of state calls. According to CPCS, when an out-of-state call is received, staff either triage the call and provide treatment advice or, for more serious calls, transfer the call to the local PCC for treatment and follow-up. Out-of-state calls are flagged in CPCS' patient management system and reported to the National Poison Data System (NPDS).

While data on the number of calls received by other PCCs on behalf of California residents was not available to determine if there was a reasonable offset for the out-of-state calls CPCS handles, according to CPCS, calls related to California cases have often been routed to other states. For example, two major health care providers in California have nurses located in Utah and Virginia that call the national poison hotline for poison treatment advice for their patients. Calls from these nurses were often routed to local PCCs in Utah and Virginia even when the nurses were calling for advice associated with patients located in California. CPCS management indicated that it worked with the local PCCs in Utah and Virginia and provided the health care providers with a direct CPCS phone number for nurses to use when calling the hotline for patients located in California.

### **Agreement Between EMSA and CPCS Could Be Improved to Require Service Level Performance Targets and Goals**

Although CPCS captures a variety of data on its call handling performance, it has not established any associated performance goals or targets. Specifically, while the agreement between CPCS and EMSA includes requirements for handling a minimum call volume and statistical reporting requirements, the

agreement does not include any service level expectations or targets related to wait times, number of dropped calls, speed to answer, average talk time, and employee time spent on active status. Without performance goals or targets, it is difficult to assess program outcomes and determine how well CPCS is performing.

CPCS captures and reports a significant amount of case and workload data, the data that it generates and reports to EMSA annually, including the speed to answer and average talk time by month for each of the ACD skillsets, detailed breakdowns of cases by type and patient age, patient outcomes (for both home cases and hospital calls), the top 10 exposure causes by type (drug related and non-drug related), the route of exposure (inhalation, ingestion, etc.) and the recommended treatment, among other items. While this information demonstrates that CPCS is providing services required by the contract, it does not provide information necessary to demonstrate that the hotline is meeting performance expectations.

### **CPCS Could Not Demonstrate That Caller Satisfaction Was Actively Solicited and Considered**

Both the contract with EMSA and AAPCC standards require CPCS to solicit feedback from callers. Specifically, the contract with EMSA requires that CPCS consider caller satisfaction and outcome evaluations as part of its workload management and staffing processes. In addition, AAPCC standards, required PCCs to assess caller satisfaction at a minimum once per year. According to CPCS, to fulfill these requirements a satisfaction survey is available on its website; however, CPCS indicated that over the years the utilization of the online survey was low. After audit fieldwork was completed, CPCS provided survey results; however, CPCS did not provide documentation demonstrating how caller satisfaction responses received were considered as part of its workload and staffing processes.

Overall, we found that CPCS implemented a QAP that complied with state regulation, AAPCC standards, and its contract with EMSA. In addition, although services were utilized at varying rates throughout California and a small percent of calls originated from out-of-state, CPCS' poison control services were immediately available to the public and health professionals located in all counties throughout the state, 24-hours per day, 7-days per week, as required. However, we also identified two opportunities related to performance management where CPCS could improve its operations. Specifically, although CPCS maintains output data, neither CPCS or the contract with EMSA includes performance goals or targets necessary to measure performance. To strengthen the contract and ensure EMSA is receiving the level of service expected, EMSA should consider incorporating performance metrics and service level agreements into the contract with CPCS. In addition, although required by the contract and AAPCC standards, CPCS did not actively solicit customer feedback annually to improve its operations and services provided. As a result, CPCS does not fully comply with the intent of the EMSA contract and did not comply with the AAPCC requirement. CPCS should implement a process to solicit feedback from callers, at least annually as required.

## **Public and Professional Healthcare Education**

During the audit period, CPCS used a variety of methods and media outlets to raise awareness of the services it offered to educate both the public and healthcare community on poison prevention. CPCS' public outreach program is primarily funded with federal funds; however, a portion of the personnel costs

for the CPCS employees who spend time conducting community outreach and professional education to healthcare providers are also funded with EMSA funds.

Overall, the audit found that CPCS implemented a robust public outreach program and provided education to healthcare providers in compliance with state regulations, AAPCC standards, the contract with EMSA, and in-line with industry best practices. However, requirements related to public and professional health care provider education established in the contract were vague and did not include specific goals and objectives to ensure activities conducted produce the desired results.

### **Robust Public Outreach Program in Place Despite Vague Contract Requirements**

CPCS developed a multi-faceted, well-organized public outreach and education program that focused on improving outcomes during the pre-exposure, exposure, and post-exposure periods, in accordance with industry best practices, contract requirements, state regulations, and AAPCC standards. Specifically, AAPCC standards require PCCs to plan and implement a comprehensive, multifaceted, public education programs that reach targeted populations throughout the PCC's designated service region. In addition, both the contract with EMSA and state regulations require CPCS to provide statewide public education; however, neither provide clear guidance on the level of service CPCS is expected to provide as part of the public outreach program.

- 
- PUBLIC OUTREACH EFFORTS**
- SOCIAL MEDIA, INCLUDING TWITTER & FACEBOOK
  - OUTREACH THRU 6 CONTRACTED COMMUNITY-BASED ORGANIZATIONS
  - RADIO, TV, MAGAZINE, PUBLIC TRANSPORTATION, & BILLBOARD MEDIA CAMPAIGNS
  - TEXT MESSAGE TIPS
  - POISON PREVENTION & CONTROL MATERIALS AVAILABLE IN 10 LANGUAGES
  - LIVE PRESENTATIONS

To comply, CPCS performed a wide range of outreach activities and contracted with six community-based organizations to reach more than 130,000 individuals across California, including targeted outreach in the Central Valley, Los Angeles County, the Sacramento area, and the San Diego area, among others. In addition, CPCS developed and disbursed poison information materials for California's diverse population in 10 languages, including English, Spanish, Hmong, Russian, Armenian, Tagalog, Chinese, Korean, Vietnamese, and Japanese, meaning materials were linguistically available to more than 98 percent of California's age 5 and over population. Our review of materials provided in English found that materials were easy to read and understand, as required by AAPCC standards.

Further, California residents can also order educational materials, such as flyers, refrigerator magnets, posters, wallet cards, and brochures, online at the CPCS website at no charge. CPCS also issued press releases covering a variety of topics, including carbon monoxide poisoning, lead poisoning, poisonous mushrooms, and safety tips regarding poisons and toxins during the holiday season. Finally, CPCS staff attended various community events, such as kid-focused fairs and festivals, to distribute poison educational materials and raise public awareness.

According to the National Center for Biotechnology Information, an effective outreach program focuses on improving outcomes during three key timeframes<sup>5</sup>:

1. **Pre-exposure:** Before an exposure occurs, such as CPCS outreach to spread awareness of the importance of keeping medications out of reach of children and educational materials, such as the Fresno/Madera pill versus candy display box;
2. **Exposure:** When the exposure occurs, such as CPCS distributing poison control magnets with the 1-800 hotline phone number displayed prominently to help ensure quick medical attention; and
3. **Post-exposure:** Responding to public health trends after exposures have occurred, such as when CPCS noted a trend in the consumption of Tide Pods by children and responded with targeted outreach campaigns to help prevent similar exposures from occurring in the future.

The audit found that CPCS' poison outreach program incorporates a multi-faceted approach that focuses on all three of these elements.

Additionally, education activities can be categorized as either primary prevention or secondary prevention activities. Primary prevention activities aim to avoid poison exposures, while secondary prevention activities aim to reduce the severity of poison exposures by improving access to poison control services. A best practice is to target outreach efforts to include both primary and secondary prevention activities. Our review of CPCS education activities and materials found that CPCS targets both.

### **While Professional Education for Health Care Providers Complied with Applicable Requirements; Contract Requirements Could Be Enhanced to More Clearly Define Expectations**

The audit found that CPCS complied with EMSA contract provisions related to providing professional education for health care providers. However, as discussed in the November 2011 audit report, the requirements established in the contract and state regulation are vague and do not provide guidance on the level of outreach expected. Specifically, the contract and state regulations simply require CPCS to provide statewide public education and information through a health education program for the public and health professionals that includes at least physicians, nurses, and prehospital emergency medical services personnel. In addition, AAPCC standards require PCCs to "employ or utilize individuals that are qualified/trained to plan, design, and implement coordinated health care provider education activities at the poison control center and throughout the designated region."

To comply, CPCS provided a combination of regional and local professional education opportunities for health care providers throughout the state. For instance, the Medical Director at the San Francisco PCC coordinated a partnership with UCSF, and the Medical Director at the Fresno/Madera PCC arranged a similar partnership with Valley Children's Hospital in Madera. Through these partnerships, CPCS staff were invited to give lectures at various hospitals to raise awareness of recent trends in poison exposures. Additionally, as discussed earlier in this report, CPCS also invited healthcare providers to attend grand rounds at each of its locations, where poison topics, such as indoor air quality and mold, were discussed.

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<sup>5</sup> National Center for Biotechnology Information: [Forging a Poison Prevention and Control System](#)

Further, health care providers frequently worked with CPCS in varying capacities, ranging from performing rounds with CPCS medical staff and/or doctors, to assigning medical students to perform their clinical placements at one of the poison center locations. Finally, as part of CPCS' 2014 AAPCC renewal application, it provided the AAPCC with a comprehensive list of health care provider education provided, that included a variety of lectures and training opportunities that were offered throughout the state.

Overall, we found that CPCS' public outreach and education program complied with contract provisions, state regulations, and AAPCC standards, and that CPCS should continue its education and outreach efforts to reach a broad range of the California population and continue efforts to reach disadvantaged communities, including low-income populations, refugees, and those who speak a language other than English. Further, we found that CPCS' professional healthcare education program complied with AAPCC standards, and the requirements established in state regulations and its contract with EMSA. However, the contract with EMSA does not include specific outreach and education program goals and objectives and does not provide clear guidance of EMSA's expectations on the level of outreach expected. As such, EMSA should consider incorporating additional language into the contract detailing its expectations for the level of outreach expected for CPCS' public and health care provider education programs.

### CPCS Complied with Most Recent AAPCC Recertification and Annual Reporting Requirements

Our high-level review of documentation submitted by CPCS to the AAPCC found that CPCS met the criteria required for reaccreditation and CPCS complied with annual reporting requirements. Specifically, to be certified by the AAPCC, a poison control center must meet or exceed the accreditation criteria implemented by the AAPCC. Once certified, poison control centers are required to be reaccredited every 7 years, and must submit an Annual Accreditation Compliance Report to AAPCC. CPCS' most recent reaccreditation was approved in February 2016 by the AAPCC.

### State Regulations Do Not Fully Align with AAPCC Standards

California state regulations related to PCCs were last updated in 1992, and according to CPCS, the regulations were established based on the AAPCC accreditation standard in place at the time. However, AAPCC standards have since been updated multiple times, but regulations have not been re-evaluated or revised since 1992 to account for changes in the standards. The audit found several key areas where state regulations and current AAPCC standards were out-of-sync, particularly related to poison exposure guidelines and protocols, position requirements and qualifications, and case review requirements. Exhibit 8 provides a comparison of state regulations and AAPCC standards and notes the key differences.

**EXHIBIT 8. COMPARISON OF CALIFORNIA STATE REGULATIONS TO AAPCC STANDARDS**

	California State Regulations	AAPCC Standards
Poison Exposure Guidelines and Protocols	PCCs must "have written treatment and triage protocols that are developed and updated by the program director and approved by the medical director." (CCR §100329(a)(5))	PCC must utilize patient management guidelines for the assessment, triage, management, and follow-up of poisoning exposures (AAPCC section Patient Management (PM) 1.0).

	California State Regulations	AAPCC Standards
		<p>PCC must regularly use a process for the establishment of guidelines, including time lines for review and updated (PM 1.2).</p> <p>Required documentation of compliance includes a list, signed and dated (list only) by the Medical Director, of all clinical guidelines and requires the PCC to indicate all review dates for these guidelines since last accreditation (AAPCC PM section).</p>
<p><b>Key Difference(s):</b> While both require the development and update of treatment and triage protocols, state regulations require the Program Director update protocols; whereas, AAPCC standards do not specify who is responsible for updating procedures. In addition, state regulations required the Medical Director approve protocols; however, AAPCC standards only require the Medical Director to sign and date a list of clinical guidelines and does not require the Medical Director to approve protocols.</p>		
<p><b>Position Requirements and Qualifications</b></p>	<p><i>Medical Director:</i> Medical Directors must be a licensed physician and surgeon with a minimum of two years of postgraduate training in clinical toxicology and/or a minimum of three years' experience in the last five years in toxicology or poison information sciences, and who devotes a minimum of ten percent of his practice to treating poisoned patients. (CCR §100330(a))</p>	<p><i>Medical Director:</i> Medical Directors must be a doctor of medicine or osteopathy currently licensed in the appropriate state (AAPCC section Leadership and Management (LM) 2.3.2).</p> <p>The Medical Director must be board certified in medical toxicology, or must submit evidence of equivalent expertise demonstrated by training and certification (LM 2.3.3).</p> <p>The Medical Director must have active staff appointments at an inpatient facility; and must be involved in the management of poisoned patients (LM 2.3.4)</p> <p>Establishes a minimum time commitment for medical direction based on the number of human exposure cases per year (LM 4.1)</p> <p>Allows the Medical Director to designate other toxicologist to provide immediate consultation (LM 3.2) and allows one or more toxicologists to share the duties of the Medical Director, provided that all meet the qualifications (LM 2.3).</p>
	<p><i>Program Director:</i> Program Director must be a pharmacist, physician, or registered nurse, licensed in California, with a minimum of two years' postgraduate training in clinical toxicology and/or a minimum of three years' experience in the last five years in toxicology or poison information sciences, and who has at least two years' experience in administration of a health-related program. (CCR §100330(b))</p>	<p><i>Administrative Director:</i> Requires a single individual functioning as an Administrative Director accountable for all operations of the PCC and requires this individual to ensure all other staff members meet qualifications for their designated duties. There are no specific position requirements and qualifications. (LM 1.1-1.2)</p>
	<p><i>Specialist in Poison Information:</i> SPIs must be a pharmacist, physician, or registered nurse currently licensed in California and who has training or experience in toxicology and poison information sciences as defined by the Medical and Program Director of the PCC. (CCR §100330(c))</p>	<p><i>Specialist in Poison Information:</i> SPIs must be either a registered nurse, pharmacist, physician, or nationally certified physician's assistant (PA-C), current or previously certified specialist is poison information as defined by AAPCC CSPI Exam Criteria. (AAPCC section Call Center Staffing (S) 1.1)</p>

	California State Regulations	AAPCC Standards
<p><b>Key Difference(s):</b>  <i>Medical Director:</i> State regulation includes minimum years of experience that are not included in AAPCC standards. Provisions related to the amount of time spent providing medical direction also differ between the two.  <i>Program Director/Administrative Director:</i> State regulations include specific qualifications and experience requirements; whereas, AAPCC standards do not include any.  <i>Specialist in Poison Information:</i> State regulations do not include nationally certified physician's assistants.</p>		
<p><b>Case Review Requirements</b></p>	<p>The Medical Director must conduct an audit and case review of poisoning cases at least quarterly. (CCR §100331(b))</p>	<p>PCC must regularly review its medical records for, at a minimum, the quality of poison information provided and the quality of documentation, including accuracy and completeness (AAPCC section Quality Management (QM) 2.0)  Requires a selection of high-risk or problem-prone cases and those managed in a health care facility and on-site be reviewed internally on an ongoing bases under the direction of a medical or clinical toxicologist (QM 2.2-2.3).  In addition, the PCC must conduct at least one unique quality management initiative every 12 months, at a minimum, exclusive of regular audits (QM 1.3)</p>
<p><b>Key Difference(s):</b> State regulation requires case reviews be conducted by the Medical Director; whereas, AAPCC standards indicate that cases must be reviewed under the direction of a medical or clinical toxicologist. In addition, state regulations require that an audit and case review be conducted at least quarterly; whereas, AAPCC standards require ongoing review, but do not specify a timeframe.</p>		

Although state regulations were established based on AAPCC standards, regulations have not been updated in more than 25 years, while AAPCC standards have undergone revisions and updates. As such, the requirements and provisions established in state regulations do not fully align with AAPCC standards. To ensure established requirements are not contradictory, and to provide a consistent framework and guidance for the designated poison control center, EMSA and CPCS should work together to revise California Code of Regulations Title 22 Chapter 9 to better align with requirements established by the AAPCC. In amending state regulations, EMSA should consider referencing AAPCC standards in lieu of adding specificity into state regulation. This would provide greater flexibility and reduce the need to continuously review and update state regulations as standards change.

In conclusion, as discussed throughout Section 2, the audit found that CPCS was organized, structured, and staffed in a manner that allowed it to provide consistent and reliable poison control services throughout California and generally complied with contractual and regulatory responsibilities related to areas such as quality assurance, employee training, outreach, education, reporting, and accreditation. The audit also found that CPCS' implemented a patient management system provided staff with instant access to case records and poison resources and staff followed established treatment guidelines and protocols. Additionally, we found CPCS' system network included the necessary controls to ensure sensitive information was secured and disaster recovery requirements were met. However, we also identified areas where CPCS should improve compliance with contract provisions, state and federal regulations, and AAPCC standards as well as opportunities for CPCS to further enhance its operations. These areas include

ensuring position descriptions are updated to reflect all qualification requirements and all staff meet requirements; developing operational desktop procedures for daily work processes and formal succession plans for key leadership positions; providing on-call consultants with guidance; monitoring employee training; actively soliciting and considering customer feedback; and utilizing its queuing theory software to develop centralized schedules. Additionally, EMSA should work with CPCS to incorporate performance metrics and service-level expectations into future contracts and propose revisions to outdated state regulations to ensure better alignment with expectations and standards.

## Recommendations

To improve compliance with contract provisions, state and federal regulations, and AAPCC standards as well as further enhance operations, CPCS should:

2. Review and update the job descriptions for the Medical Director and Executive Director to align with requirements established in CCR §100330(a) and §100330(b). Also, review and update its current job description for Managing Directors to prefer, but not require, one year of experience administering a health-related program and ensure staff meet all requirements.
3. Develop operational desktop procedures detailing current daily processes and practices, particularly related to management activities and information technology services, and develop formal succession plans for key leadership positions.
4. Begin fully utilizing the queuing theory software to project staffing needs and develop a centralized schedule for all call center employees.
5. Develop and provide on-call consultants with guidance defining CPCS' expectations of on-call consultants.
6. Implement a centralized approach to monitoring employee training and education.
7. Implement a process to actively solicit feedback from customers and retain documentation demonstrating how caller satisfaction and outcome evaluations were considered as part of its workload management and staffing processes.

To ensure CPCS provides services that meet expectations and comply with regulations, EMSA should:

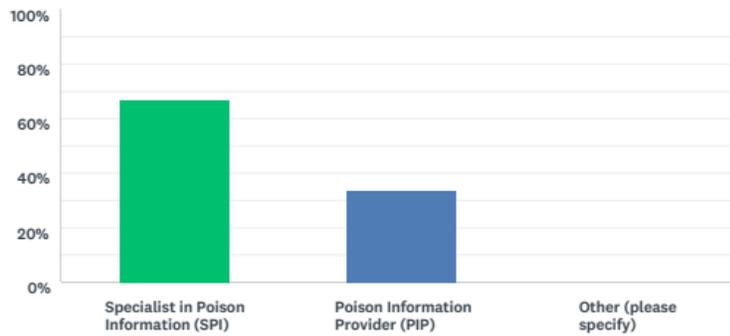
8. Work with CPCS to incorporate performance metrics and service-level expectations into future contracts, clarify expectations related to the level of public outreach and toxicology education provided to healthcare providers, and delineate ownership of guidelines and protocols that have been developed while CPCS has been under contract with EMSA.
9. Work with CPCS to propose revisions to outdated state regulations related to written agreements with specialty consultants, poison exposure guidelines and protocols, positions requirements and qualifications, and case review requirements—consider referencing AAPCC standards in lieu of adding specificity into state regulation to provide greater flexibility and reduce the need to continuously review and update state regulations as standards change.

10. Require CPCS to submit a written application along with supporting documentation explaining how it continues to meet the provisions of regulations every four years, as required by state regulations.

# Appendix A. Survey Results

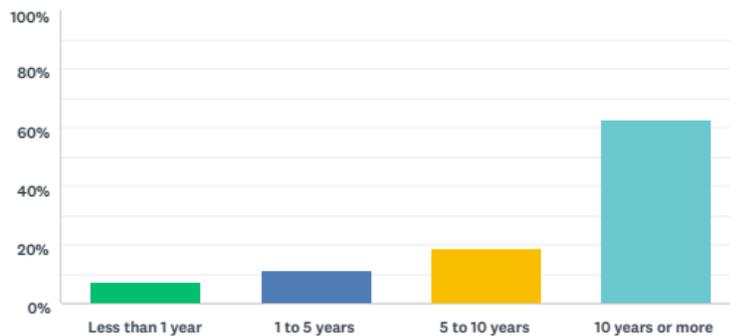
## Q1 Please indicate your current position with CPCS.

Answered: 27 Skipped: 0



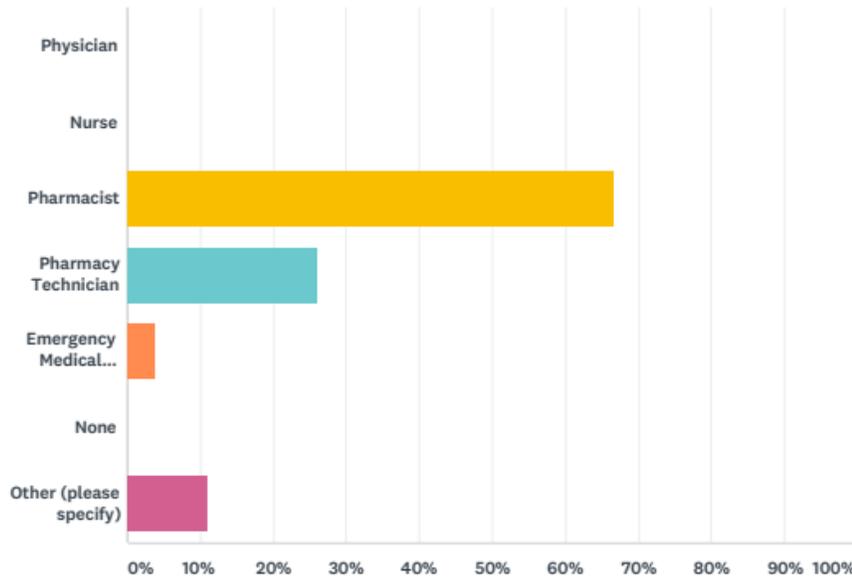
## Q2 Please indicate how long you have been employed by CPCS.

Answered: 27 Skipped: 0



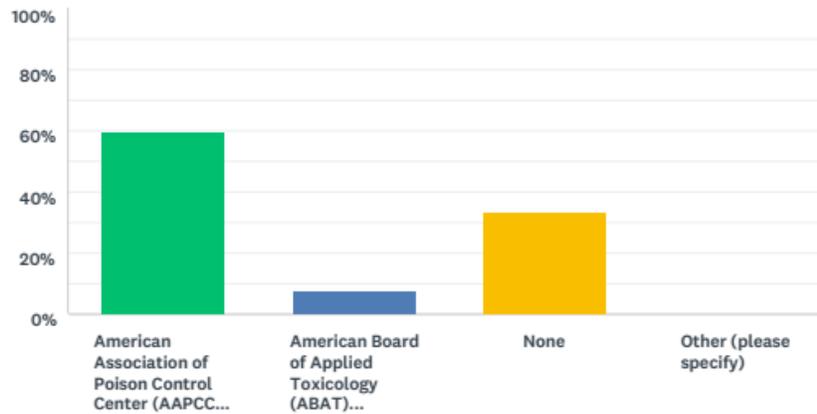
## Q3 Please indicate professional licenses that you hold. Check all that apply.

Answered: 27 Skipped: 0



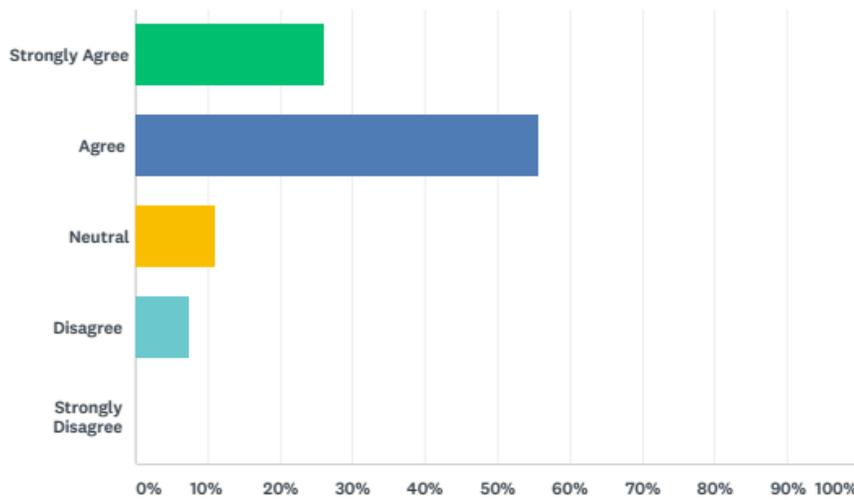
**Q4 Please indicate professional toxicology-related certifications that you currently hold. Check all that apply.**

Answered: 27 Skipped: 0



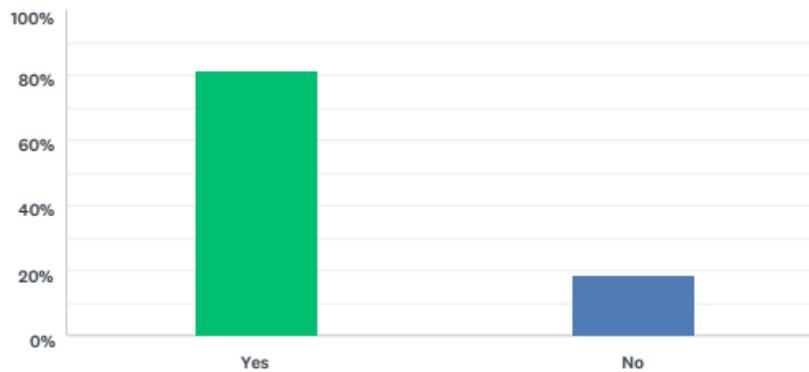
**Q5 I feel confident that CPCS hires hotline staff with sufficient experience, expertise, and educational background to competently carry out the job responsibilities of operating the poison control hotline.**

Answered: 27 Skipped: 0



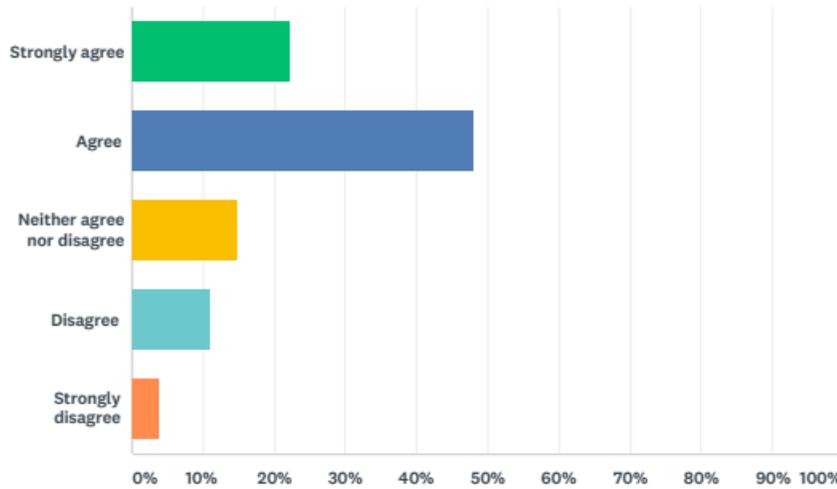
**Q6 Please indicate whether you were provided a written job description that is clear and identifies your roles and responsibilities.**

Answered: 27 Skipped: 0



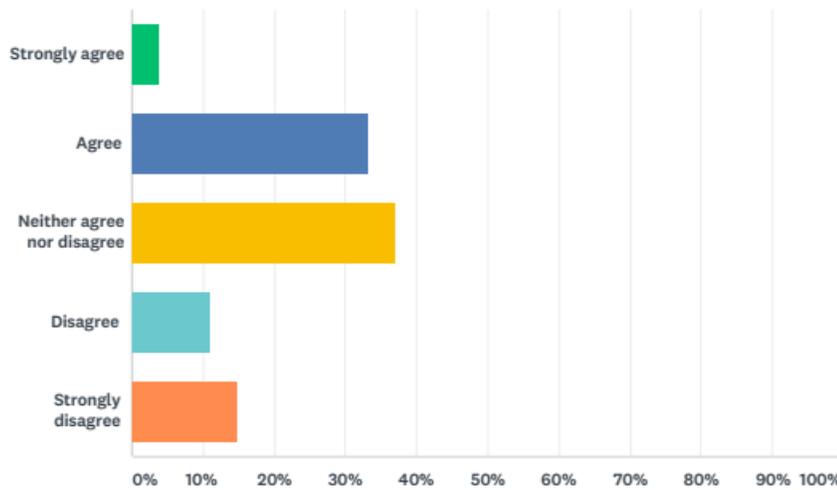
**Q7 I feel confident that CPCS provides its hotline staff with sufficient new employee training and education that adequately prepares hotline staff to competently carry out the job responsibilities of operating the poison control hotline.**

Answered: 27 Skipped: 0



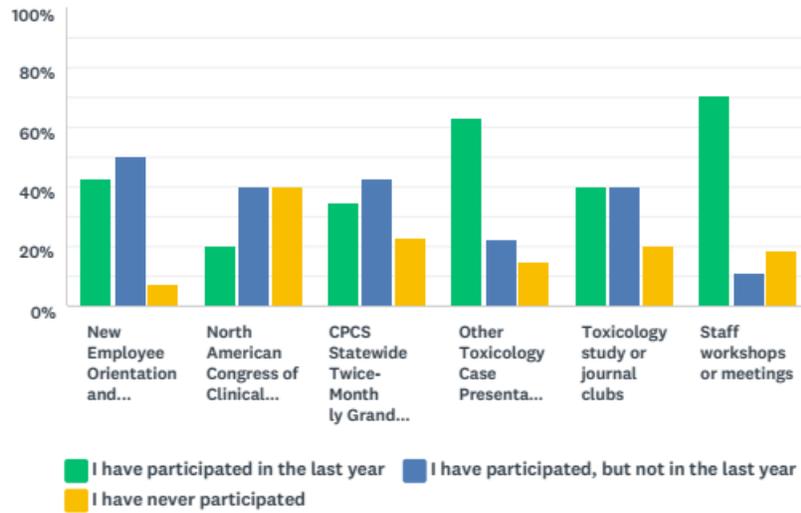
**Q8 CPCS provides its hotline staff with sufficient ongoing professional growth opportunities, training, and education.**

Answered: 27 Skipped: 0



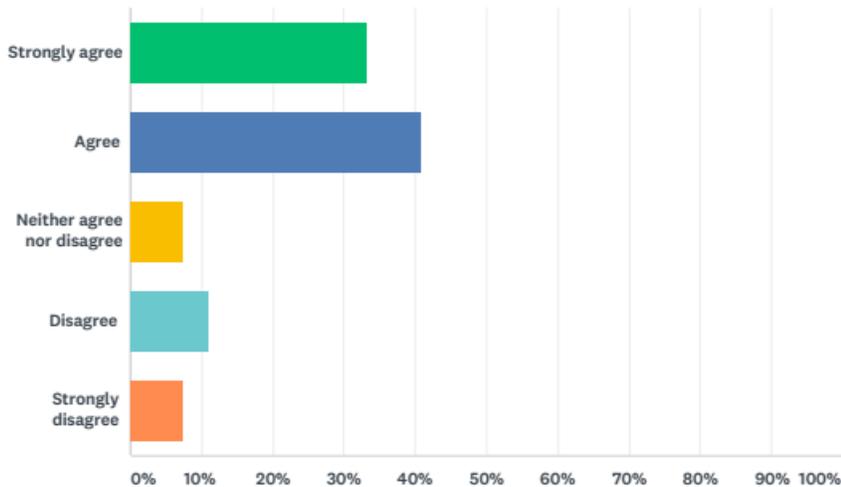
**Q9 Please select the response that most closely reflects your participation in each of the following:**

Answered: 27 Skipped: 0



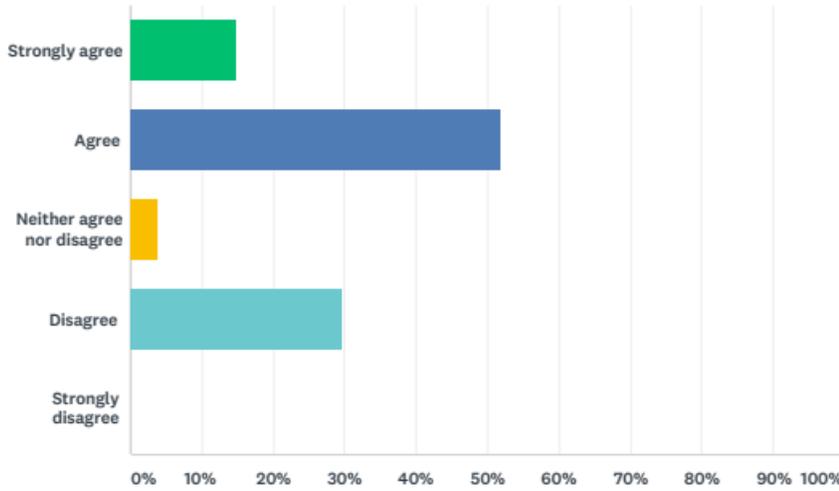
Q10 CPCS provides hotline staff with written summaries of meetings and lectures (i.e. grand rounds).

Answered: 27 Skipped: 0



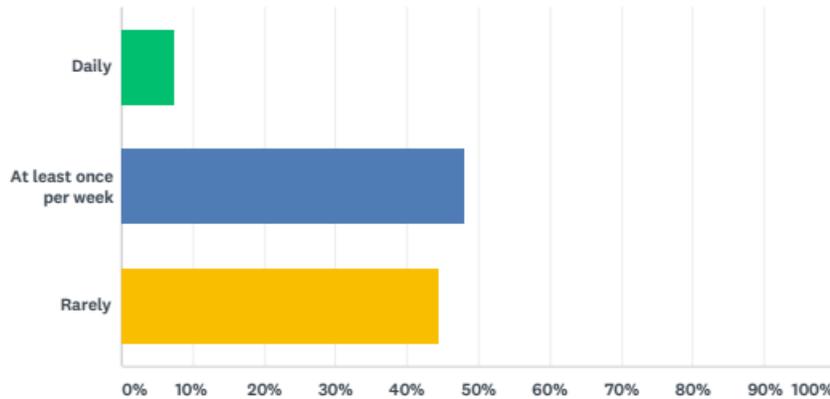
Q11 I feel confident that CPCS provides direct supervision and guidance of its hotline staff to ensure job responsibilities of operating the poison control hotline are carried out appropriately.

Answered: 27 Skipped: 0



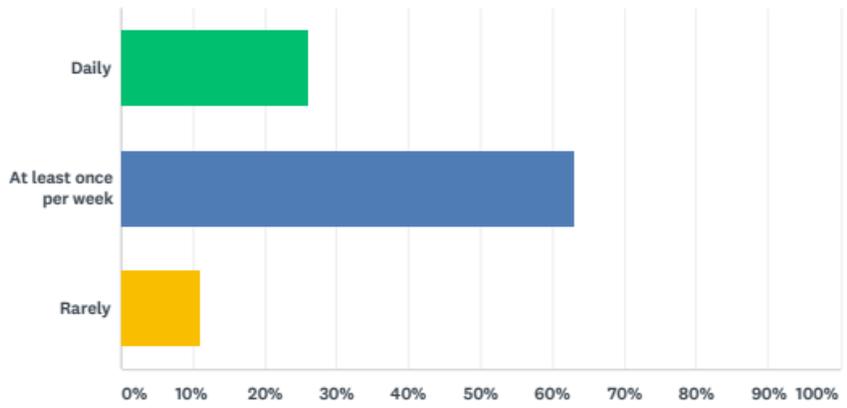
### Q12 How often do you see, speak, or interact with your center's Medical Director?

Answered: 27 Skipped: 0



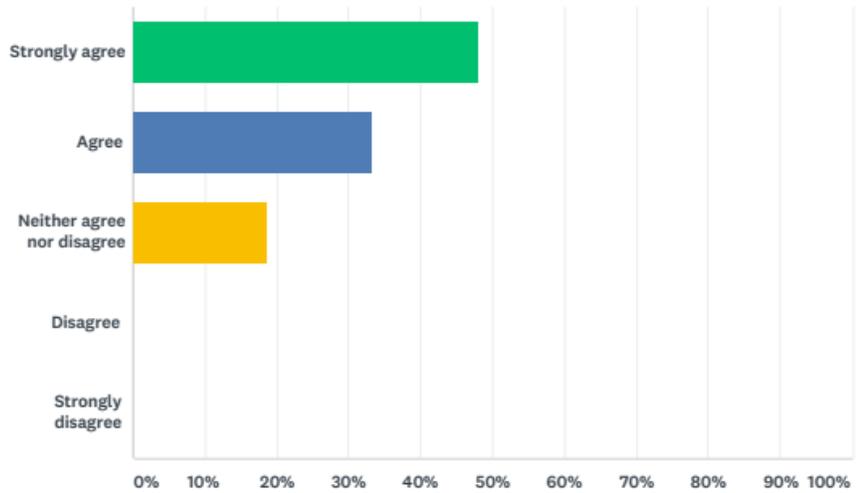
### Q13 How often do you see, speak, or interact with your center's Managing Director?

Answered: 27 Skipped: 0



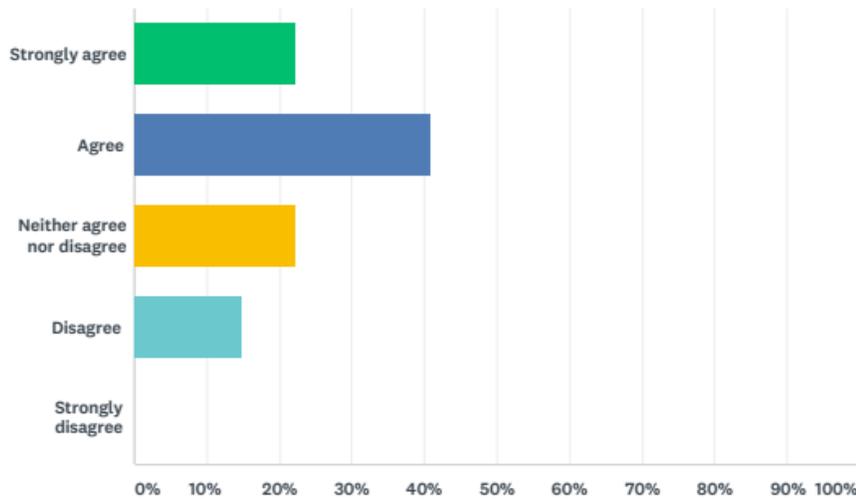
**Q14 I am always able to quickly reach on-call medical toxicology backup when needed.**

Answered: 27 Skipped: 0



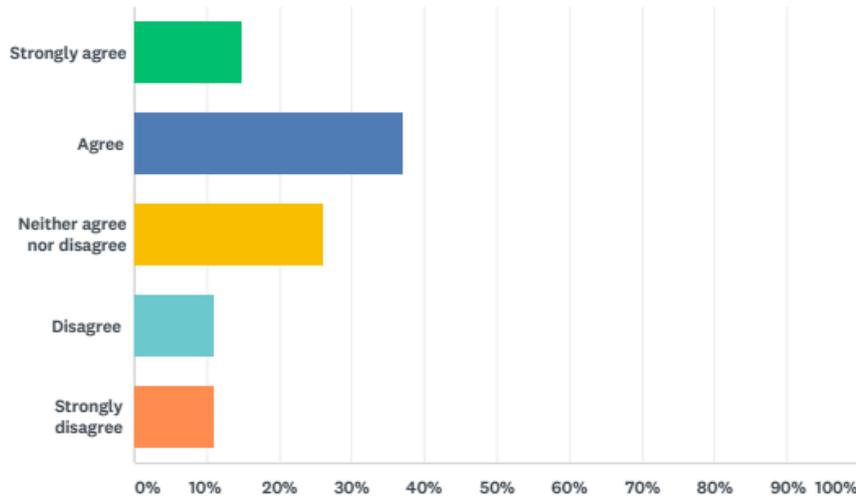
**Q15 My center's management provides sufficient quality control review of hotline poison exposure cases.**

Answered: 27 Skipped: 0



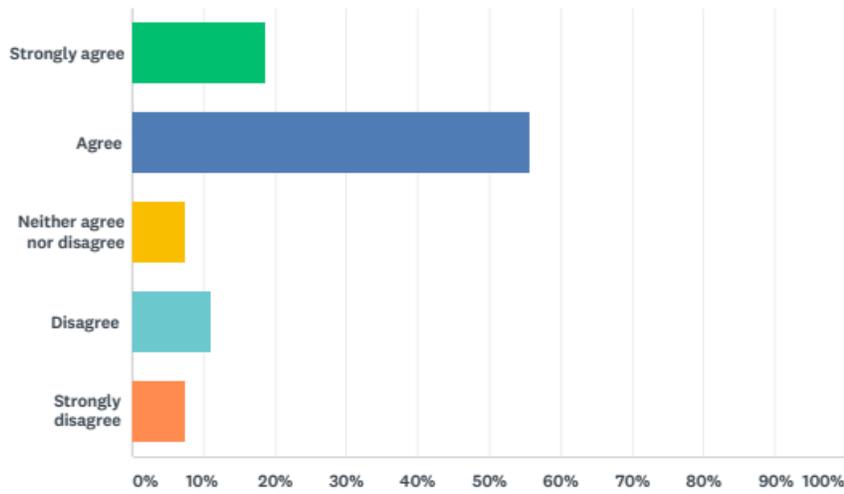
Q16 I feel confident that hotline staff receive timely, sufficient, and constructive feedback as a result of my center's quality control review of hotline poison exposure cases.

Answered: 27 Skipped: 0



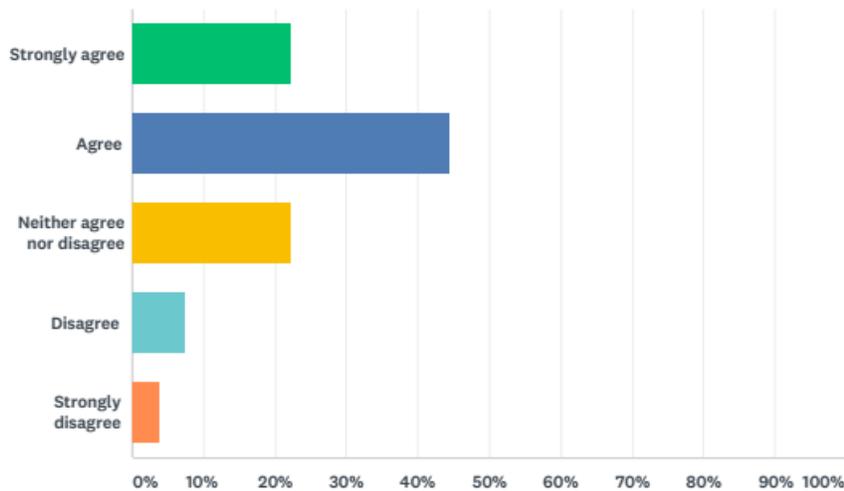
Q17 I have access to the information I need, in terms of policies, procedures, protocols, guidelines, and other written materials, in order to do my job well and thoroughly.

Answered: 27 Skipped: 0



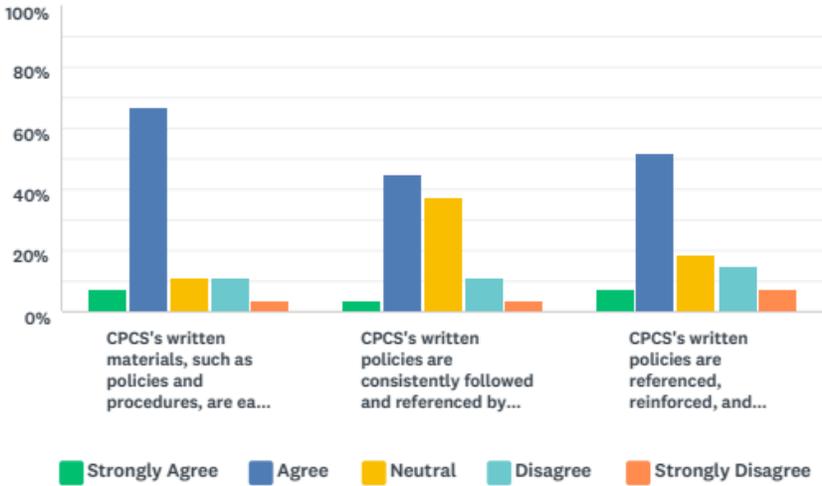
Q18 I am trained in how to access written materials when needed, such as policies, procedures, protocols, and guidelines in order to do my job well and thoroughly.

Answered: 27 Skipped: 0



Q19 Please provide your opinion relative to the CPCS policies, procedures, and guidelines.

Answered: 27 Skipped: 0



## Appendix B. CPCS Response to Audit Report

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November 2, 2018

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Dear Ms. Dyer,

We have reviewed the latest draft of the report of the California Poison Control System Fiscal Review and Performance Audit. We appreciate the opportunity you have extended for comments on sections of the report and the adjustments you have already made and for the very professional approach you and your team have taken for the entire audit process.

We look forward to working with the California Emergency Medical Services Authority (EMSA) in addressing the recommendations in the final report. Thank you.

Sincerely,

A handwritten signature in blue ink that reads "Stuart E. Heard".

Stuart E. Heard, Pharm. D., FCSHP  
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California Poison Control System  
Clinical Professor and Assistant Dean  
Department of Clinical Pharmacy  
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cc: Howard Backer, MD, MPH, FACEP  
Director  
California Emergency Medical Services Authority (EMSA)  
[director@emsa.ca.gov](mailto:director@emsa.ca.gov)

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DEPARTMENT OF CLINICAL PHARMACY  
SCHOOL OF PHARMACY  
University of California San Francisco