California Oral Health Surveillance Plan 2019-2023

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Abbreviations

Abbreviation	Full Name
ASTDD	Association of State and Territorial Dental Directors
BRFSS	Behavioral Risk Factor Surveillance System
BSS	Basic Screening Survey
CA OH	California Oral Health
CA OHSS	California Oral Health Surveillance System
CDC	Centers for Disease Control and Prevention
CDPH	California Department of Public Health
CHC	Community Health Clinic
CHIS	California Health Interview Survey
CMS	Centers for Medicare and Medicaid Services
CORH	California Office of Refugee Health
CSTE	Council of State and Territorial Epidemiologists
CSBHC	California School-Based Health Center
DHCS	California Department of Health Care Services
FQHC	Federally Qualified Health Center
HIPAA	Health Insurance Portability and Accountability Act
HIV	Human Immunodeficiency Virus
HRSA	Health Resources and Services Administration
IPA	Information Practices Act
IRB	Institutional Review Board
KOHA	Kindergarten Oral Health Assessment
LHJ	Local Health Jurisdiction
MCH	Maternal and Child Health
MEPS	Medical Expenditure Panel Survey
MIHA	Maternal and Infant Health Assessment
NSCH	National Survey of Children's Health
NOHSS	National Oral Health Surveillance System
OOH	Office of Oral Health
OSHPD	Office of Statewide Health Planning and Development
WFRS	Water Fluoridation Reporting System
YRBSS	Youth Risk Behavior Surveillance System

Executive Summary

The California Oral Health Surveillance Plan 2019-2023 (CA OH Surveillance Plan) provides a strategic approach for the development and implementation of California's first oral health surveillance system. It is responsive to the California Oral Health Plan 2018-2028[1] and Healthy People 2020 Oral Health Objective 16 - *Increase the number of States and the District of Columbia that have an oral and craniofacial health surveillance system*.[2] The implementation of an oral health surveillance system is important for informing oral health programs, policies, and interventions.

The California Oral Health Plan (COHP) 2018-2028 Goal 5 focuses on developing and implementing a surveillance system to measure key indicators of oral health and identify key performance measures for tracking purposes. In response, the CA OH Surveillance Plan describes the operationalization of the California Oral Health Surveillance System (CA OHSS), identifies the currently available statewide indicators for tracking the burden of oral diseases in California and priority populations, and specifies determinants relevant for oral health, such as access to care, dental workforce, and infrastructure. The comprehensive indicators list represents the oral health data that are currently available to the Office of Oral Health (OOH) and highlights some of the data gaps that continue to exist. Table 1 displays key indicators from the COHP that are crucial to assess progress made in lowering the burden of oral diseases and reducing disparities in oral health outcomes. The CA OH Surveillance Plan 2019-2023 includes a Logic Model, oral health indicators along with data sources for each indicator by life stage and priority subpopulations, and five-year data collection timeline.

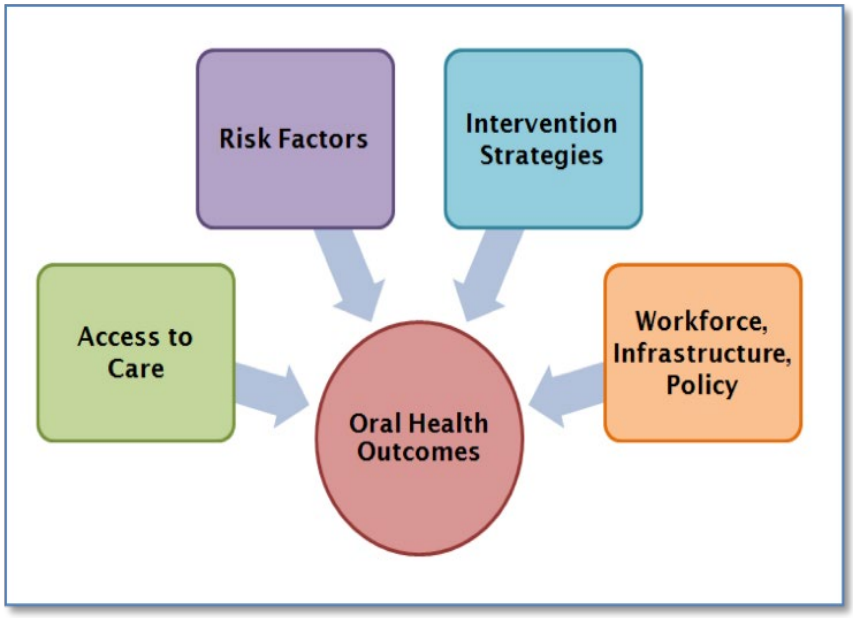
Table 1. Key Indicators for Surveillance of Oral Health in California

INDICATOR	DATA SOURCE
Caries experience -Kindergarten -Third Grade	Kindergarten Oral Health Assessment; Third Grade Basic Screening Survey
Untreated caries -Kindergarten -Third Grade	Kindergarten Oral Health Assessment; Third Grade Basic Screening Survey
Tooth Loss -35-44 years, any permanent tooth loss -65+ years, complete tooth loss	Behavioral Risk Factor Surveillance System
Percent of the population on community water fluoridation	Water Fluoridation Reporting System
Tobacco cessation counseling in dental offices	Survey of dental providers
Preventive dental visit among children in Medi-Cal (0-20 years)	Department of Health Care Services
Emergency room visits for non-traumatic oral conditions	Office of Statewide Health Planning and Development
Number of dentists practicing in dental professional shortage areas	Office of Statewide Health Planning and Development

Introduction

The CA OH Surveillance Plan is the result of a comprehensive review of oral health indicators from various national and state sources as well as published oral health surveillance plans from other states, and guidance documents for surveillance plan development from the Association of State and Territorial Dental Directors (ASTDD)[3] and Council of State and Territorial Epidemiologists (CSTE).[4] As part of the OOH mission to promote oral health and reduce oral diseases through prevention, education, and organized community efforts, the CA OH Surveillance Plan presents a model for monitoring oral disease, identifying emerging oral health issues, and detecting changes in oral health-related practices and access to services. It serves as a tool for developing actionable oral health documents to inform and support stakeholders, and for evaluating effective oral health programs that positively impact high-risk and vulnerable populations. CA OH Surveillance Plan components include: operationalization of the CA OHSS, surveillance system logic model, indicator table along with data sources for each indicator by life stage and priority subpopulations, and five-year data collection timeline.

Figure 1. Factors Impacting Oral Health Outcomes



In the United States, the two most common oral diseases are dental caries (tooth decay) and periodontal (gum) disease.[5] Although less common, cancers of the oral cavity and pharynx, orofacial clefts (cleft lip and cleft palate), malocclusion, oral-facial pain, and other oral health problems can severely affect general health, and quality of life. For example, poor oral health impacts the ability to eat, communicate and learn, and affects how we look and interact with others, sometimes creating low self-esteem or making it difficult to find jobs where public interaction is important.[6] Each oral disease or condition, also referred to as an oral health outcome, is influenced by a variety of factors including access to dental care, individual risk factors and risk determinants, availability of interventions, workforce and financing issues, public health infrastructure and public

policies (Figure 1). Early life circumstances as well as oral health-related behaviors at later ages are important in influencing long-term patterns of oral disease.[7]

California Oral Health Surveillance System

The purpose of CA OHSS is to provide a consistent source of updated reliable and valid information for use in developing, implementing, and evaluating programs to improve the oral health of California residents. As stated in the COHP 2018-2028,[1] assessment is a key objective of California's public health efforts to address the nature and extent of oral diseases and their risk factors by collecting, analyzing, interpreting, and disseminating oral health data. The CA OHSS aligns with the COHP 2018-2028 Goal 5 that focuses on developing and implementing a surveillance system to measure key indicators of oral health and identify key performance measures for tracking purposes.[1] The CA OHSS objectives are to provide current data on oral health diseases/conditions, risk/protective factors, and use of dental services; and to guide oral health needs assessments, policy development, and assurance functions. CA OHSS provides a mechanism to routinely monitor state-specific oral health data and the impact of interventions within specific priority populations over time.

A surveillance system is a critical component for OOH. According to the CSTE, a state oral health surveillance system should provide information necessary for public health decision making by routinely collecting data on oral health outcomes, access to care, risk factors, and intervention strategies for the whole population, representative samples of the population or priority subpopulations.[4] CA OHSS has been modeled according to the recommendations by the ASTDDs' Best Practice Report on State Based Oral Health Surveillance Systems: 1) have an oral health surveillance plan; 2) define a clear purpose and objectives relating to the use of surveillance data for public health action; 3) include a core set of measures/indicators to serve as benchmarks for assessing progress in achieving good oral health; 4) analyze trends; 5) communicate surveillance data to decision makers and the public in a timely manner; and 6) strive to assure that surveillance data are used to improve the oral health of state residents.[3] These analyses will provide actionable data to policy makers and stakeholders around the state. The CA OHSS logic model (Table 2) provides a visual roadmap for oral health surveillance to improve the oral health of Californians by achieving improvements in oral health indicators, oral health knowledge, and integration of oral health data across health care systems.

Table 2. California Oral Health Surveillance System (CA OHSS) Logic Model

INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES
Staff • Epidemiological support • Data management • Information Technology (IT) support • Oral health policy leadership • Data collection • Content experts • Program evaluation • Program Technical Assistance **Data Sources** • State data sources • National data sources • County-level data **Equipment** IT resources **Other** • State Oral Health Plan • Local Health Jurisdictions • National, state, and local partners • Funding • Program champions, community stakeholders, and advocates • Legislation	**Define/Plan** • Develop surveillance plan including flow chart of systems and data collection methods to support oral health program • Establish objectives for surveillance • Select and develop case definitions/indicators, using standard health indicators • Engage partners to build consensus on core set of measures **Assess** • Identify baseline data • Identify data gaps • Collect data to eliminate gaps, obtain community-level indicators, or meet other important data needs **Analyze** • Develop data quality assurance methods • Develop and test analytic approach • Conduct analysis and interpret findings • Assess oral health burden **Disseminate** • Develop written surveillance reports • Develop data dissemination plan • Develop timely and easily accessible oral health data portal, from all public programs **Assure** • Ensure data security and confidentiality • Develop strategies for sustaining surveillance system • Evaluate state surveillance system	**Define/Plan** • Five-year surveillance plan to provide current data on diseases/conditions, risk/protective factors, and use of dental services. **Assess** • State measurement repository • Data resource guide **Analyze** • Updated Oral Health Burden of Disease Report **Disseminate** • Data dissemination plan • Publicly available, actionable oral health data documents to guide public health policy and programs (e.g., data briefs) • Fact sheets/Infographics • Public-use open data portal **Assure** • Protocol for data assurance	**Short-term** • Targeted surveillance • Targeted performance measures • Cyclical process in place to assess and evaluate programs • Streamlined analysis and interpretation of surveillance data **Intermediate** • Ongoing surveillance of trends in oral health indicators • Increase in activities to address oral health needs/disparities • Increase in utilization of data for program decision-making • Local surveillance integrated with state surveillance system • Increased awareness of oral health status among stakeholders, policymakers, health care providers, and the public • A comprehensive, coordinated, and sustainable oral health surveillance system that provides data for evidence-based plans and programs **Long Term** • Improved oral health • Improvements in oral health indicators and oral health knowledge • Integration of oral health data across health care system

CA OHSS Framework

CA OHSS has been developed to support OOH's efforts in addressing determinants of health and promote healthy habits and population-based prevention interventions to attain healthier status in communities and is guided by the National Oral Health Surveillance System.

CA OHSS Oral Health Indicators

OOH assembled a comprehensive list of oral health indicators (Table 3 [pg.10-13]) from various national and state sources including National Oral Health Surveillance System (NOHSS), Healthy People 2020, Centers for Disease Control and Prevention (CDC) Chronic Disease indicators, and Centers for Medicare and Medicaid Services (CMS) and Maternal and Child Health (MCH) performance measures, among others, and integrated them with the measurable objectives that are identified in the California Oral Health Plan 2018-2028.[1] The resulting indicators were then distributed according to their domains, or topic areas: 1) oral health outcome; 2) utilization; 3) prevention; 4) access; and 5) infrastructure (including workforce). In addition to California residents overall, target age groups and high-risk populations were identified for each indicator, based on the 2017 Status of Oral Health in California,[8] burden of disease report, and in partnership with representatives from key organizations and agencies.

CA OHSS Operationalization

Oral Health Data. Existing oral health data sources were identified that are available nationally, statewide, and locally (see data sources in Table 3 and Figure 2 [pg. 14]) and include both primary and secondary data. The existing data sources (Appendix I) in the CA OHSS Indicator Table (Table 3) and the frequency of data collection (Table 4 [pg. 15]) were evaluated and selected according to their: feasibility, flexibility, simplicity, ability to be actionable, data quality, sensitivity, representativeness, timeliness, and stability. Where no data sources existed, gaps in baseline data have been delineated based on feasibility and resource availability. Primary and secondary data will be collected by OOH and continually updated as new data become available.

Data Analyses. For oral health indicators, California estimates will be compared to the goals of Healthy People 2020 and NOHSS and with United States estimates as available. Subpopulations estimates will be compared when demographic and socioeconomic data are available to monitor disparities. Most of the indicators are prevalence estimates, but some are simple counts (e.g., number of dental providers in dental professional shortage areas) and others are rates (e.g., the rate of emergency department visits for non-traumatic dental conditions). When possible, indicators will be estimated by county in California (Table 3). Some of the smaller counties will be aggregated together to obtain stable estimates when required by the data source, while for some indicators several years will be aggregated together or censored due to small numbers in compliance with data user agreements and California Department of Public

Health (CDPH) Data De-identification Guidelines. County-level data will be displayed in maps created in ArcGIS when possible.

Ninety-five percent confidence intervals and coefficient of variation will be calculated for indicators as measures of variability and statistical stability, if appropriate. Credible differences between populations will be assessed using appropriate statistical tests. Significant trends over time will be examined using Joint point Trend Analysis Software.

Data Dissemination. Efficient and timely dissemination of the summarized data is essential to the success and utility of CA OHSS. Data will be disseminated through multiple avenues aimed at a variety of target audiences including Local Health Jurisdictions (LHJs), policy makers, statewide partner organizations, dental public health researchers, and the public. As a part of the OOH partnership with LHJs across California, a high priority will be placed on disseminating county-level data. Possible forms of data dissemination may include data briefs and fact sheets posted on the OOH website, research articles published in peer-reviewed journals, presentations at state and national conferences, and a data portal allowing for customizable data queries. Additionally, OOH will publish a comprehensive burden of oral diseases report on the OOH website, once during the timeframe of this plan. Promotion of these reports and resources will be done through state and local partners. The OOH advisory committee members and LHJ's will be directly contacted to share the reports with potentially interested partners and oral health advocates.

Table 3. California Office of Oral Health Surveillance System Oral Health Indicators

INDICATOR	POPULATION	DATA SOURCE	BY COUNTY
ORAL HEALTH OUTCOME			
Caries experience	Head Start [a, b]	*Data Gap*	N/A
	Kindergarten [a, b, c]	**KOHA**	N/A
	Third Grade [a, b, c]	**OOH Third Grade BSS**	**No**
	Children, 2-19 years [b]	NHANES	N/A
	Newly arrived refugees	CORH	No
Untreated dental caries	Head Start [a, b]	*Data Gap*	N/A
	Kindergarten [a, b, c]	**KOHA**	**Yes**
	Third Grade [a, b, c]	**OOH Third Grade BSS**	**No**
	Children, 2-19 years [b]	NHANES	N/A
	Children/Adolescents, <18 years, with special needs	NSCH	No
	Adults, ≥35 years [a, b]	*Data Gap*	N/A
	Adults, ≥65 years, in long-term care facilities, at congregate meal sites [a]	*Data Gap*	N/A
	Adults, ≥18 years, with disabilities	*Data Gap*	N/A
Urgent dental treatment needed	Head Start	*Data Gap*	N/A
	Kindergarten	*Data Gap*	N/A
	Third Grade	OOH Third Grade BSS	No
Permanent tooth loss	**Adults, 18-64 years** [a, b, c, d]	**BRFSS**	**No**
Complete tooth loss	**Adults, ≥65 years** [a, b, c, d]	**BRFSS**	**No**
	Adults, ≥65 years, in long-term care facilities, at congregate meal sites [a]	*Data Gap*	N/A
	Adults, ≥35 years, with disabilities	BRFSS	No
Periodontitis - prevalence	Adults, ≥45 years	*Data Gap*	N/A

Link to Abbreviations

[a] NOHSS
[b] Healthy People 2020
[c] **CA OH State Plan (items in bold)**
[d] CDC Chronic Disease Surveillance Indicator

INDICATOR	POPULATION	DATA SOURCE	BY COUNTY
Oral and pharyngeal cancer - incidence, stage at diagnosis, type, survival, mortality	**All ages** [a, b, c]	**CA Cancer Registry** [e]	**Yes**
Overall condition of teeth	Children/Adolescents, <18 years	NSCH	No
	Children/Adolescents, <18 years, with special needs	NSCH	No
	Adolescents/Adults, ≥12 years	CHIS [e]	Yes
UTILIZATION			
Dental Visit	Children/Adolescents, <18 years [a, d]	CHIS, [e] NSCH, YRBSS	Yes
	Children/Adolescents, <18 years, with special needs	NSCH	No
	Adults, ≥18 years [a, d, f]	CHIS, BRFSS	Yes
	All ages in Medi-Cal [a, c, f]	**DHCS**	**Yes**
	Pregnant women [a, c]	**MIHA** [e]	**Yes**
	All ages with diabetes [a, b, c, d]	**CHIS, [e] BRFSS**	**Yes**
	All ages with HIV	*Data Gap*	N/A
	Children in Head Start	Head Start PIR	Yes
	Adults, ≥18 years, with disabilities	BRFSS	No
	Homeless, all ages	*Data Gap*	N/A
General anesthesia utilization	**Children, <6 years** [c]	**Dental Office Survey**	N/A
Oral health services by non-dentist provider	**Children, <6 years, in Medi-Cal** [c]	**DHCS**	**Yes**
Patients receiving dental services			
• **At FQHCs**	**All ages** [a, b, c]	**HRSA**	**Yes**
• At CHCs	All ages	*Data Gap*	N/A
Dental treatment (any)	All ages in Medi-Cal [a]	DHCS	Yes
Emergency room visits for non-traumatic dental conditions	**All ages** [a, c]	**OSHPD**	**Yes**

Link to Abbreviations

[a] NOHSS
[b] Healthy People 2020
[c] **CA OH State Plan (items in bold)**
[d] CDC Chronic Disease Surveillance Indicator
[e] County aggregation is typical for smaller adjacent counties due to small sample sizes.
[f] California Wellness Plan Objective

INDICATOR	POPULATION	DATA SOURCE	BY COUNTY
Oral health care system utilization	All ages [b]	MEPS	No
Dental expenditures paid, private insurance, out-of-pocket	All ages [b]	MEPS	No
Child participation in KOHA	Kindergarten	KOHA	Yes
Community Health Workers & Home Visiting Programs that provide oral health counseling & care coordination	**N/A** [c]	*Data Gap*	**N/A**
PREVENTION			
Preventive dental visit	**Children/Adolescents, <18 years, by Federal Poverty Level** [a, b, c, d]	**NSCH**	**No**
	Children/Adolescents, <18 years, with special needs	NSCH	No
	All ages with diabetes [a, b, c]	*Data Gap*	**N/A**
	All ages, low-income [b]	MEPS	No
	All ages with HIV	*Data Gap*	N/A
	All ages with HPV	*Data Gap*	N/A
	Adults, ≥18 years, with disabilities	*Data Gap*	N/A
	Homeless, all ages	*Data Gap*	N/A
	Children, ≤20 years, in Medi-Cal [a, b, c, d, f]	**DHCS**	**Yes**
Dental sealants	**Kindergarten** [a, b, c]	*Data Gap*	**N/A**
	Third Grade [a, b, c]	**OOH Third Grade BSS**	**No**
	Children, 6-9 years, at FQHCs	HRSA	Yes
	Children, 6-14 years, in Medi-Cal [a, f]	DHCS	Yes
Tobacco cessation counseling in dental offices	**N/A** [a, c]	**Dental Office Survey**	**N/A**
Oral cancer screening in dental offices			
• Patient experience	Adults, ≥18 years [b]	BRFSS	N/A
• Dental office implementation	N/A	*Data Gap*	N/A

Link to Abbreviations

[a] NOHSS
[b] Healthy People 2020
[c] **CA OH State Plan (items in bold)**
[d] CDC Chronic Disease Surveillance Indicator
[f] California Wellness Plan Objective

INDICATOR	POPULATION	DATA SOURCE	BY COUNTY
ACCESS			
Dental coverage/insurance	All ages [b, f]	CHIS, MEPS	Yes
	All ages with diabetes	CHIS	Yes
Continuity of dental care for ≥2 years	All ages, in Medi-Cal	DHCS	Yes
CSBHC with an oral health component	Children/Adolescents, 5-18 years [a, b, f]	CSBHC Alliance	No
CSBHC providing dental sealants	Children/Adolescents, 5-18 years [a, b, f]	CSBHC Alliance	No
CSBHC providing topical fluoride	Children/Adolescents, 5-18 years [a, b, f]	CSBHC Alliance	No
FQHCs providing dental services	**N/A** [b, c, d]	**OSHPD**	**Yes**
CHCs providing dental services	**N/A** [c]	**OSHPD**	**Yes**
Indian Health Service clinics providing dental services	N/A [b]	*Data Gap*	N/A
Dentists practicing in dental professional shortage areas	**N/A** [c]	**OSHPD**	**Yes**
Number of counties without a Medi-Cal dentist	N/A	DHCS	Yes
INFRASTRUCTURE			
LHJs with budgets, staff, scopes of work, and oral health action plan	**N/A** [b, c]	**OOH LHJ Survey**	**Yes**
Cleft lip & palate registry/referral	N/A [b]	CA Birth Defects Registry	N/A
Community Water Fluoridation	**N/A** [a, b, c, d, f]	**WFRS**	**Yes**
Payers that implement dental benefit policies & payment strategies for community-clinical linkage models	**N/A** [c]	*Data Gap*	**N/A**
Number of school-based sealant programs	Children, ≥6 years	*Data Gap*	N/A
Number of dentists practicing in California	N/A	California Dental Board	Yes
Number of dental hygienists practicing in California	N/A	OSHPD	Yes

Link to Abbreviations

[a] NOHSS
[b] Healthy People 2020
[c] **CA OH State Plan (items in bold)**
[d] CDC Chronic Disease Surveillance Indicator
[f] California Wellness Plan Objective

Figure 2. California Oral Health Surveillance System Data Flow Chart

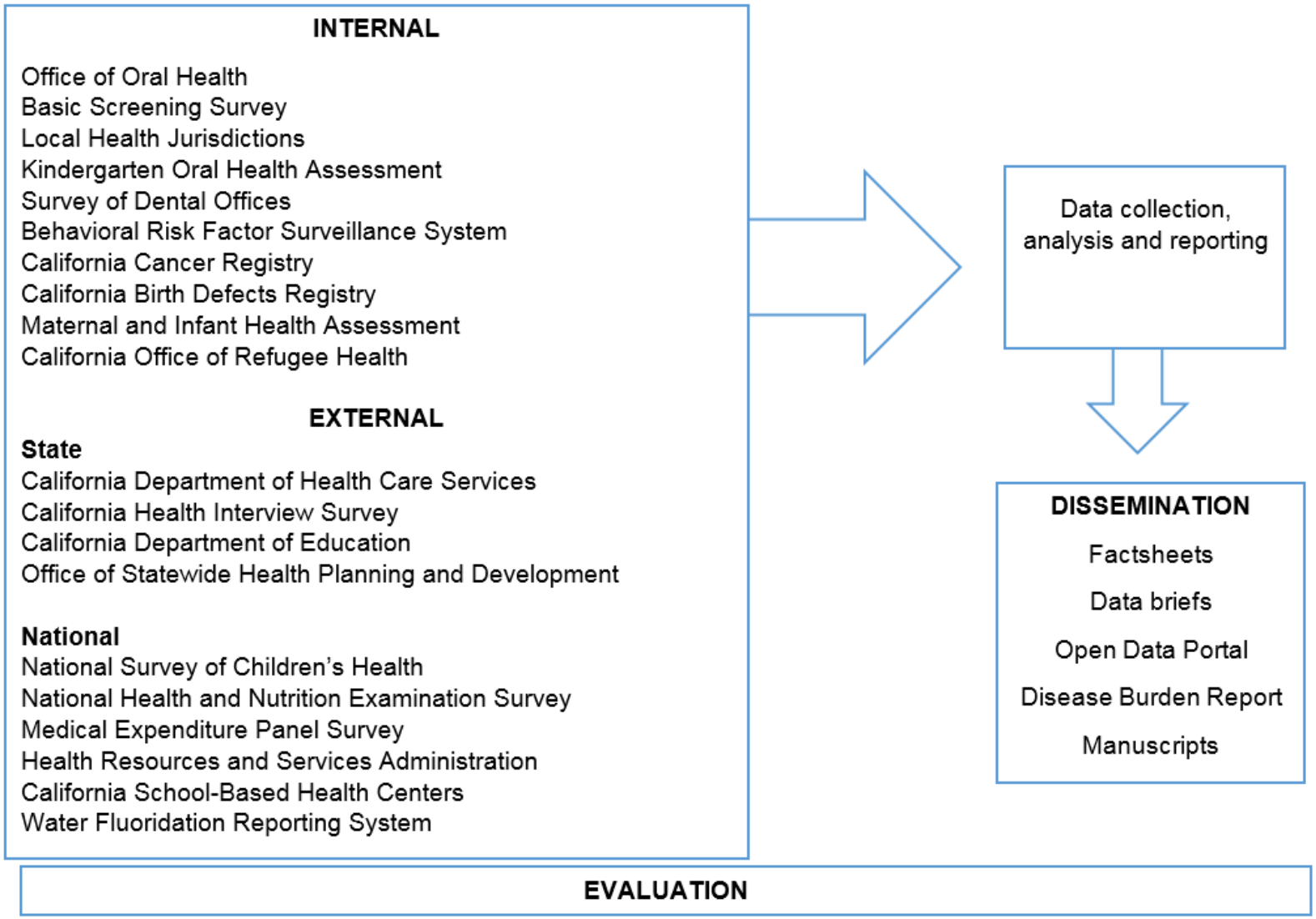


Table 4. California Oral Health Surveillance System Data Collection Timeline

DATA SOURCE	2019	2020	2021	2022	2023
BRFSS	x	x		x	
CA Birth Defects Registry	x	x	x	x	x
CA Cancer Registry	x	x	x	x	x
CHIS	x	x	x	x	x
CORH	x	x	x	x	x
CSBHC	x	x	x	x	x
DHCS	x	x	x	x	x
HRSA	x	x	x	x	x
Kindergarten Oral Health Assessment	x	x	x	x	x
MEPS	x	x	x	x	x
MIHA	x	x	x	x	x
NSCH	x	x	x	x	x
OSHPD	x	x	x	x	x
State BSS-Older Adults			x		
State BSS-Third Grade	x				x
Survey of Dental Offices	x		x		x
WFRS	x	x	x	x	x

Link to **Abbreviations**

CA OHSS Evaluation

On an annual basis, CA OHSS will be evaluated to assess its efficiency, effectiveness, and utility. The following items will be reviewed:

1. Assess the data collection process.
    a. Determine the consistency of data collection.
    b. Examine the timeliness of data being collected or obtained from outside entities.
    c. Examine the efficiency of data collection processes.
    d. Determine if data gaps are being addressed.
    e. Assess data collection for special populations.
    f. Determine if data quality procedures were employed and if they were sufficient.
2. Assess the integrity of data storage and maintenance.
    a. Update confidentiallity agreements and processes as needed.
    b. Ensure all appropriate Institutional Review Board (IRB) approvals are being obtained and all IRB protocols are being followed.
    c. Determine if all personnel working with data have signed the appropriate data user agreements.

3. Assess the flexibility and innovation of the surveillance system.
    a. Determine the extent to which input from expert stakeholders is being obtained about surveillance activities.
    b. Determine the extent to which surveillance activities were tailored to LHJ needs.
    c. Determine the extent to which new sources of data were incorporated into the surveillance system.
    d. Examine the extent to which surveillance data represented vulnerable populations.
4. Assess data dissemination procedures
    a. Assess the extent to which identified indicators have been published for California.
    b. Determine if LHJs are receiving data that are relevant to them in a timely manner.
    c. Assess the regularity and consistency of data dissemination.
5. Assess the outcomes of the surveillance system.
    a. Assess the extent to which disseminated surveillance data are being utilized.
    b. Determine the extent to which OOH is using surveillance data to inform program and policy decisions.
    c. Determine the extent to which surveillance data are addressing the needs of LHJs.
    d. Assess the quality of the third grade BSS data.
    e. Determine if data gaps can be filled by additional data collection.
    f. Assess the utility of questions being paid for in surveys.

OOH will present findings to the Surveillance and Evaluation Workgroup, and with them to determine what aspects of the CA OHSS are working, what areas need to be improved, and what activities are no longer useful.

CA OHSS Data Security

The California Information Practices Act (IPA) and the Health Insurance Portability and Accountability Act (HIPAA) are the legal authorities for California State agency privacy safeguard policies. CDPH policy dictates that appropriate physical and logical layers of security are applied to all information systems. Additionally, all information systems must adhere to the principle of least privilege for accessing information, the principle of separation of duties to reduce the risk of collusion, and the principle of need to know such that information must be necessary to complete one's duties. Sensitive, confidential, and personal information must be protected through administrative safeguards (e.g., information and security training), physical safeguards (e.g., locked cabinets), and electronic safeguards (e.g., full disc encryption, password protected computers). Data will only be presented in aggregate form and suppressed for subgroups with small numbers.

Addressing Data Gaps

There are several data gaps that have been identified (Table 3). Some of these gaps are specific to populations for whom oral health data have not been specifically gathered. Other gaps are national indicators that are not being gathered systematically at the state level. Populations of interest for whom oral health data are not readily available include, but are not limited to, people who are HIV positive, people with HPV, people who are homeless, and American Indian/Alaska Natives. Indicator data gaps include those for older adults such as periodontitis and tooth loss among adults in long-term care facilities. Additional gaps include BSS indicators (caries experience, untreated dental caries, urgent dental care need) for children in Head Start and adults with disabilities, as well as indicators for oral health programs offering oral health counseling and care coordination and payers with policies supporting community-clinical linkages. OOH will work with the advisory committee, LHJ's, and other stakeholders to prioritize critical gaps for assessing oral health in California and strategies to address these gaps. For data that are not made publically available by different organizations that would address one of the data gaps, new partnerships will be explored to attempt to fill the gap.

Appendix I. Primary Data Collection

Third Grade Basic Screening Survey

Every five years, the OOH plans to collect data on the oral health status of third grade children through a standardized methodology. The BSS measures caries (untreated and treated), urgency of need for dental care, and dental sealants of a representative sample of third grade children.

Sample. For this survey the target sample size is 150 schools for non-Los Angeles Counties, and 70 schools in Los Angeles. OOH is conducting this assessment in coordination with Los Angeles County. The Los Angeles County Department of Health Services is conducting the assessment in their county, and OOH is collecting the data for the rest of California. The same consultant and trainer are used by both parties to ensure that the protocols are compatible. Only schools with 25 or more third graders are included in the sample. A systematic probability proportional to size cluster sampling scheme with implicit stratification by geographic region and free/reduced meal program (FRPM) eligibility is used to select a representative sample of schools. The counties, other than Los Angeles, are stratified into six regions to ensure there is geographic representation across the state.

- Northern/Sierra (25)
  - Alpine, Amador, Butte, Calaveras, Colusa, Del Norte, Glenn, Humboldt, Inyo, Lake, Lassen, Mariposa, Mendocino, Modoc, Mono, Nevada, Plumas, Shasta, Sierra, Siskiyou, Sutter, Tehama, Trinity, Tuolumne, Yuba
- Bay Area (9)
  - Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma
- Sacramento Region (4)
  - El Dorado, Placer, Sacramento, Yolo
- San Joaquin Valley (8)
  - Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare
- Central Coast Counties (6)
  - Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz, Ventura
- Southern CA Counties (5)
  - Imperial, Orange, Riverside, San Bernardino, San Diego

Data Collection. OOH partners with the California Department of Education to ensure that schools are engaged. Letters co-signed by the State Dental Director and the Department of Education are sent to the selected schools inviting them to participate in the survey. After obtaining permission from the schools, consent forms are distributed to parents giving them the option to opt their child out of the screening. An optional questionnaire is given to the parents as well, to gather information about demographics, access to oral health care, and oral health behaviors. Dental hygienists are hired and trained to go to schools and perform this assessment. The screening is a visual check of each child's teeth using a dental mirror and a light, and does not involve any other

intervention or interaction with the children. The hygienists record the oral health of each child, and coordinate with school faculty/staff to provide the parents/guardians of the children with the results of the assessment. If a hygienist finds a child with urgent need for dental care (the child shows signs/symptoms that include pain, infection or swelling), they follow-up with the school and the parents/guardians of the child to assist getting care for the child as quickly as possible.

Data Analysis. The survey functions of the statistical software, SAS (SAS Institute, Inc., Cary, North Carolina), are used to estimate proportions and standard errors from the clustered data. Weights are calculated taking into account the unequal sizes of the clusters and the differential response rates from each cluster. These weights are derived from the school class size and the probability that they were selected from the sampling frame.

Kindergarten Oral Health Assessment (KOHA)

In California, a kindergarten dental checkup requirement, Assembly Bill 1433, was signed into law in 2005. It requires children to receive a dental assessment before or during kindergarten. It is currently optional for school districts under the Local Control Funding Formula. Schools enter the data for their children annually into a statewide database. In 2017, an amendment to the assessment, Senate Bill 379, was passed which increased OOH's role in the assessment, updating the data collected by the assessment, and providing schools with permission for passive consent for on-site oral health assessments. The assessment minimally collects data on untreated and treated caries.

Appendix II. Existing Secondary Data Sources

Basic Screening Survey (BSS)

BSS is a standardized set of surveys to determine the oral health status of specific populations typically conducted by dentists or dental hygienists. All participants are assessed for caries experience and untreated caries. School age children are also assessed for dental sealants on permanent molars. Older adults are assessed for dentures, missing teeth, root fragments, periodontal disease, and soft tissue lesions. Self-reported demographics are typically gathered by the screener. Find out more from the ASTDD BSS guidance webpage.

Behavioral Risk Factor Surveillance System (BRFSS)

A state-based survey of health-related information in the adult, non-institutionalized population. The Behavioral Risk Factor Surveillance System (BRFSS) includes information about health behaviors, access to care, health outcomes, and many other topics typically used for research and public health surveillance. It began in 1984, and continues to collect data from all 50 states in the United States, as well as the District of Columbia, Puerto Rico, the US Virgin Islands, and Guam. Every two years, BRFSS includes questions about access to dental care, and tooth loss. Find out more from the CDC's BRFSS webpage.

California Birth Defects Registry

The California Birth Defects Monitoring Program (CBDMP) has been an active ascertainment, population-based registry since 1982 when the California State Legislature authorized the CBDMP to collect data on birth defects, stillbirths, and miscarriages. CBDMP currently monitors over 150,000 births in 10 counties—approximately 30% of the births in California, which are representative of the state's population. The CBDMP registry data are used for ongoing surveillance to monitor rates and trends of select birth defects and to provide outcome data for the pregnancy blood samples included in the California Biobank Program. Find out more from the California Birth Defects Registry's webpage.

California Cancer Registry (CCR)

California's statewide population-based cancer surveillance system, the California Cancer Registry (CCR) gathers data on almost every cancer diagnosed in California. Data are gathered from hospitals, pathology labs, outpatient clinics, physicians, and vital statistics. The data are used to help further our understanding of how to prevent, treat, and control cancer. This registry provides data on the incidence, mortality, and stage of diagnosis for oral and pharyngeal cancer. Find out more from the California Cancer Registry's webpage.

California Department of Health Care Services (DHCS)

The California's Department of Health Care Services (DHCS) manages Medi-Cal (California's Medicaid), the state administered health care safety-net system, and funds health care services for millions of Californians every year. Medi-Cal also has a dental program that offers dental services as one of its benefits. OOH has an agreement with DHCS to receive data annually about the dental services provided to the Medi-Cal population. Find out more from the Medi-Cal Dental Program's webpage.

California Health Interview Survey (CHIS)

A California-specific survey of health-related information in the adult, child, and teen populations, the California Health Interview Survey (CHIS) includes information about health behaviors, access to care, health outcomes, and many other topics typically used for research and public health surveillance. It is the largest state health survey in the United States, covering all 58 counties in California. However, aggregation across smaller adjacent counties is typical due to small sample sizes. Find out more from the California Health Interview Survey's webpage.

California Office of Refugee Health (CORH)

The California Department of Public Health, Office of Refugee Health (CORH) works in coordination with local jurisdictions to provide comprehensive health assessments to newly arrived refugees. The Office publishes an annual report on refugee health in California. In this report, the Office details the most prevalent diseases among new arrivals. Dental caries was the most prevalent disease among newly arrived refugees for each year 2014-2017, according to these reports. Find out more from the California Office of Refugee Health's webpage.

California School-Based Health Center Alliance (CSBHC)

California School-Based Health Center Alliance (CSBHC) collects data on dental services provided at SBHCs in California. Their annual census collects information from each SBHC to analyze the scope and impact of their services and programs. Find out more from the School-Based Health Center Alliance webpage.

California Wellness Plan

The California Wellness Plan is the result of a statewide process led by CDPH to develop a roadmap with partners to create communities in which people can be healthy, improve the quality of clinical and community care, increase access to usable health information, and assure continued public health capacity to achieve health equity. Find out more from the CA Wellness Plan document.

Health Services and Resources Administration (HRSA)

Health Services and Resources Administration (HRSA) is the federal agency responsible for improving health care for vulnerable populations. HRSA provides the grant funding for Federally Qualified Health Centers (FQHC), and collects the required data from them. Along with the FQHC data, HRSA creates the health professional shortage areas including dental professional shortage areas across the United States. Find out more from HRSA's Bureau of Primary Health Care.

Medical Expenditure Panel Survey (MEPS)

Medical Expenditure Panel Survey (MEPS) is a nationwide set of surveys of families, medical providers, medical facilities, and employers. MEPS collects data on use and availability of health services, cost, and health insurance for US workers. MEPS provides the OOH data on dental services and access to dental care in California. Find out more from the Medical Expenditure Panel Survey webpage.

Maternal and Infant Health Assessment (MIHA)

Maternal and Infant Health Assessment (MIHA), the California version of the Pregnancy Risk Assessment System (PRAMS), collects data on health behaviors, access to care, and health outcomes of pregnant women and infants. OOH has an agreement with the Maternal, Child, and Adolescent Health Division of CDPH (which develops the MIHA survey), to annually receive data about dental services during pregnancy and advice received from doctors about oral health. Find out more from the Maternal and Infant Health Assessment webpage.

National Health and Nutrition Examination Survey (NHANES)

National Health and Nutrition Examination Survey (NHANES) is a program of studies designed to assess the health and nutritional status of adults and children in the United States. The survey is unique in that it combines interviews and physical examinations including dental examinations. The prevalence of tooth decay, untreated tooth decay, periodontal disease and tooth loss can be estimated. The California and Los Angeles County NHANES 1999-2006 and 2007-2014 samples are available in the National Center for Health Statistics Research Data Center for obtaining state level estimates. Find out more from the National Health and Nutrition Examination Survey webpage.

National Survey of Children's Health (NSCH)

National Survey of Children's Health (NSCH) collects data on health behaviors, access to care, health outcomes, and many other topics among a representative sample of children nationally. As of 2016, NSCH collects these data annually. NSCH collects data

about dental services provided to children. Find out more from the National Survey of Children's Health webpage.

Office of Statewide Health Planning and Development (OSHPD)

California's Office of Statewide Health Planning and Development (OSHPD) collects data and disseminates information about California's healthcare infrastructure. OSHPD is responsible for collecting emergency room and hospitalization data from all hospitals in the state. Additionally, OSHPD collects data on the healthcare workforce in community health clinics including FQHC. Find out more at from the Office of Statewide Health Planning and Development webpage.

Water Fluoridation Reporting System (WFRS)

The Water Fluoridation Reporting System (WFRS) is a CDC database of water fluoridation levels for all water systems in the United States. Its purpose is to help states manage their quality of water fluoridation programs and to describe the percentage of the population receiving optimally fluoridated water. Find out more from the Water Fluoridation Reporting System's webpage.

Youth Risk Factor Surveillance System (YRBSS)

Youth Risk Factor Surveillance System (YRBSS) Is a state-based survey of middle and high school children that occurs every two years. The survey monitors health risk behaviors, health outcomes, disabilities, and social issues in this population. YRBSS collects data about dental visits among high school students. Find out more from the Youth Risk Factor Surveillance System webpage.

Appendix III. Secondary Survey Data Questions

The following are items funded by OOH for inclusion in BRFSS, CHIS, and MIHA.

Added BRFSS Questions (2018, 2020, and 2022)

1. Dental Insurance: Do you have any kind of insurance coverage that pays for some or all of your routine dental care; including dental insurance; prepaid plans such as health maintenance organizations; or government plans such as Medicaid?
2. Sweet Drinks: During the past 30 days, how often did you drink sugar-sweetened fruit drinks (such as Kool-aid and lemonade), sweet tea, and sports or energy drinks (such as Gatorade or Red Bull)? Do not include 100% fruit juice, diet drinks, or artificially sweetened drinks.
3. Soda Drinks: During the past 30 days, how often did you drink regular soda or pop that contains sugar? Do not include diet soda or diet pop.
4. Oral Cancer Exam: In the past year, have you had a doctor, dentist, or dental hygienist check for oral cancer by pulling on your tongue, sometimes with gauze wrapped around it, and feeling under the tongue and inside the cheeks?
5. What is the main reason you have not visited the dentist in the past year?
    a. Fear/apprehension/nervousness/pain/dislike going
    b. Cost
    c. Do not have/know a dentist
    d. Cannot get to the office/clinic
    e. No reason to go (No problems, no teeth)
    f. Other priorities
    g. Have not thought of it
    h. Other

CDC Core BRFSS Questions (every even year; State added in 2019)

1. Dental Visit: How long has it been since you last visited a dentist or a dental clinic for any reason? Include visits to dental specialists, such as orthodontists.
2. Lost Teeth: How many of your permanent teeth have been removed because of tooth decay or gum disease? Include teeth lost to infection, but do not include teeth lost for other reasons, such as injury or orthodontics.

Added CHIS Questions – Adult Survey (2018 – 2020)

1. Dental Visit: About how long has it been since you visited a dentist or dental clinic? Include hygienists and all types of dental specialists.
2. Reason for Dental Visit: Was [the dental visit] for a routine checkup or cleaning, or was it for a specific problem?
3. Dental Insurance: Do you now have any type of insurance that pays for part or all of your dental care?
4. Condition of Teeth: How would you describe the condition of your teeth: excellent, very good, good, fair, or poor?

Added CHIS Questions – Teen Survey (2018 – 2020)

1. Dental Visit: About how long has it been since you visited a dentist or dental clinic? Include hygienists and all types of dental specialists.
2. Missed School: During the past 12 months, did you miss any time from school because of a dental problem? Do not count time missed for cleaning or a check-up.
3. Condition of Teeth: How would you describe the condition of your teeth: excellent, very good, good, fair, or poor?

Added MIHA Questions – (2019 – 2021)

1. Dental visit during pregnancy: during your most recent pregnancy, did you visit a dentist, dental clinic or get dental care at any other health clinic?
2. Here is a list of some reasons why women don't get dental care during pregnancy. For each one, please tell us if it was a reason for you. (2020 only)
    a. I didn't need to go.
    b. I didn't have dental insurance.
    c. It cost too much to get dental care.
    d. I was too busy.
    e. I didn't have childcare.
    f. A doctor or nurse told me not to go to the dentist during pregnancy.
    g. Someone in a dentist's office told me to wait until after my pregnancy.
    h. I didn't think it was safe to go to the dentist during pregnancy.
    i. Other.

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