



Childhood Drowning in Pools & Spas

June 30, 2022 CDPH Webinar

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We have no Conflicts of Interest (COI) or financial disclosures.

Project Team

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Childhood Drowning: One More Is One Too Many!

Registration Pre-Webinar Survey

- 1. How is your organization tracking drowning cases among children years of age?***
 - a. Fatal*
 - b. Non-fatal*

- 2. Briefly describe how your organization addresses childhood drowning prevention among children?***



Partners for Childhood Drowning Prevention

AAP-OC

Foundations* Builds on 2012 Drowning of 1-4 Year Old Children in Swimming Pools and Spas Surveillance Handbook

- Focus pool drowning children 1-4 years of age
- Surveillance & Data
- Public Education Campaign, Webinars, Educational Modules, Strategic Policy Plan
- Lessons Learned & What's Next?

**PCDP Foundations: Funded, in part, by the California Department of Public Health Kids' Plate Program*

Advocacy from the medical office to the legislature

- Pediatric Residency Training
- AAP-CA State Government Affairs
- National State & Federal Government Affairs



Childhood Drowning In Pools & Spas Objectives

- List 3 key facts about childhood drowning.
- Explain why pools and spa drowning prevention strategy is so important for California.
- Describe key barrier provisions of the California Pool Safety Law (1996/2017).



Definition of Drowning

The World Congress on Drowning
and the
World Health Organization

in 2002 revised the definition of drowning:

**“The process of experiencing respiratory impairment
from submersion/immersion in liquid.”**

www.pediatrics.org/cgi/doi/10.1542/peds.2010-1264

American Academy
of Pediatrics

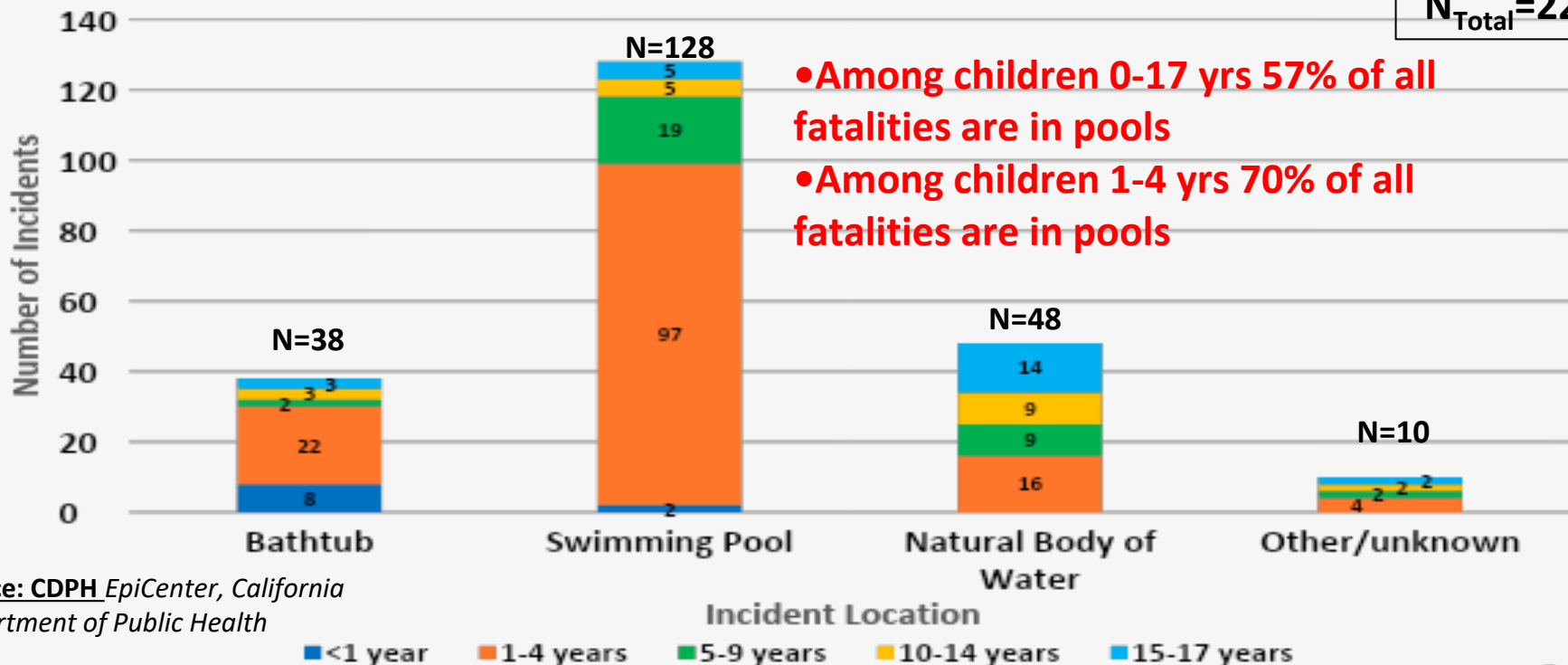


DEDICATED TO THE HEALTH OF ALL CHILDREN™



California **Fatal** Drowning Statistics by Incident Location in Children 0-17 Years of Age (2018-2020)

N_{Total} = 224

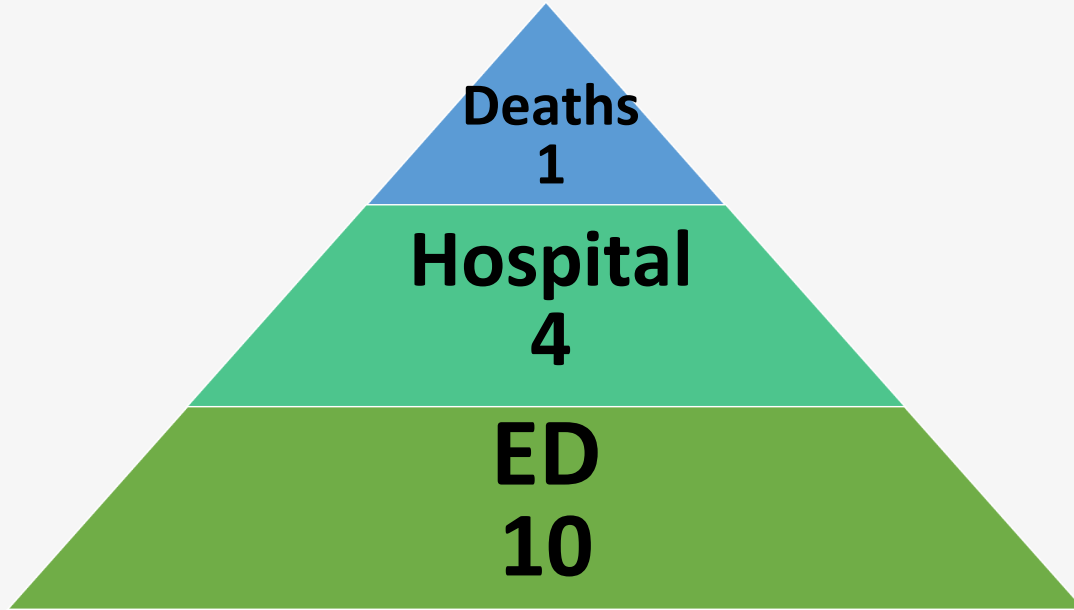


Source: CDPH EpiCenter, California Department of Public Health



Drowning in Children 1-4 Years of Age: California Residents (2018-2020)

N=2,007



**For every fatality among 1-4 year olds,
there are 13 non-fatal cases.**

Key Facts: CA Pool & Spa Child Drownings (2018-2020)

- For each child fatality there are 14 nonfatal injuries.
- Most events occur in swimming pools and spas.
- Children 1-4 years of age are at highest risk for both fatal and non-fatal drowning.



American Academy of Pediatrics: Prevention of Drowning. Policy & Technical Report (evidence-based best practices)


Volume 143, Issue 5

May 2019



FROM THE AMERICAN ACADEMY OF PEDIATRICS | POLICY STATEMENT | MAY 01 2019

Prevention of Drowning **FREE**

Sarah A. Denny, MD ; Linda Quan, MD; Julie Gilchrist, MD; Tracy McCallin, MD; Rohit Sheno, MD; Shabana Yusuf, MD; Benjamin Hoffman, MD; Jeffrey Weiss, MD; COUNCIL ON INJURY, VIOLENCE, AND POISON PREVENTION; Phyllis F. Agran, MD; Michael Hirsh, MD; Brian Johnston, MD; Lois K. Lee, MD; Kathy Monroe, MD; Judy Schaechter, MD; Milton Tenenbein, MD; Mark R. Zonfrillo, MD; Kyran Quinlan, MD

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POTENTIAL CONFLICT OF INTEREST: Dr Quan has provided expert witness testimony in a drowning case in 2018; the other authors have indicated they have no potential conflicts of interest to disclose.

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Pediatrics (2019) 143 (5): e20190850.

<https://doi.org/10.1542/peds.2019-0850>

<https://publications.aap.org/pediatrics/article/143/5/e20190850/37134/Prevention-of-Drowning>


<https://publications.aap.org/pediatrics/article/148/2/e2021052227/179784/Prevention-of-Drowning>



AAP Tool Kit

Home / News Room / Campaigns & Toolkits / Drowning Prevention Campaign Toolkit

f t p in e



Drowning can happen to any family. It's quick, and it's silent. Drowning is the single-leading cause of death among children aged 1-4, and a top cause of death among teens. We can lower these rates if pediatricians, parents and policy-makers work together to implement the types of solutions we know will keep children safe. Please share these resources with parents and caregivers.


#DrowningPrevention

Social Media Graphics <https://drive.google.com/drive/u/2/my-drive?hl=en>

Above Ground Pools

If you have an above-ground pool, add a fence to prevent access during non-swim times. Removing the ladder may not be enough.

Children between 2 and 5 years old can climb into a pool with a 4-foot wall, even if the ladder is removed, according to a study.



Learn more at HealthyChildren.org | HealthSource.gov | American Academy of Pediatrics

Graphic


Select Platform Select Language

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Inflatable Pools

Water Safety Tip: empty inflatable or portable pools after every use unless they are fenced off. Even shallow pools are a drowning risk to children.

Children under age 6 are at a higher risk of drowning when they have unsupervised, unsupervised access to water.



Learn more at HealthyChildren.org | HealthSource.gov | American Academy of Pediatrics

Graphic


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Cooking Dinner?

Cooking dinner? Choose someone else to be the designated water watcher!

One study found that 41% of children drowning were between the ages of 1 and 4, which is the busiest swim time, and when adults may be distracted by meal prep.



Learn more at HealthyChildren.org | HealthSource.gov | American Academy of Pediatrics

Graphic

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TABLE 1 Top Tips for Pediatricians

Assess all children for drowning risk on the basis of risk and age and prioritize evidence-based strategies:

- barriers;
- supervision;
- swim lessons;
- life jackets; and
- CPR.

Pediatricians are front line and 1st line of defense.

Known strategies to reduce drownings

Multiple layers of protection needed as no one method is 100%

WATER SAFETY FOR FAMILIES

DROWNING CAN HAPPEN TO ANY FAMILY. IT IS QUICK AND IT IS SILENT. DROWNING IS THE SINGLE-LEADING CAUSE OF DEATH AMONG CHILDREN AGES 1 TO 4 YEARS OLD.



4-SIDED POOL FENCING

A fence that surrounds the pool is specially designed so that children cannot easily get over, under, or through it.



American Academy of Pediatrics
Orange County Chapter
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LIFE JACKETS

U.S. Coast Guard Approved: Use for open bodies of water and at pools for young children and unskilled swimmers.



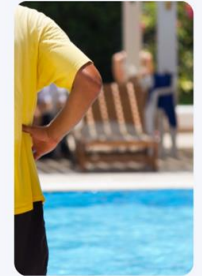
SWIM LESSONS

High quality, low-cost lessons are typically available through your city. Swim lessons can help reduce the risk of drowning for children. Some kids may be ready to start swim lessons after age 1.



SUPERVISION

Be watchful. Keep distractions such as cell phones away and assign a water watcher.



CPR TRAINING

Immediate rescuing at the drowning site. Focus on the airway and rescue breathing before compressions. All parents and guardians should have CPR training.



For more information visit www.aap-oc.org/pcdp or scan the QR Code, save the PDF or screen shot it!

Funded in part by the California Department of Public Health Kids' Plate Program



CA Pool Safety Law: Barriers

- 1996 California Pool Safety Law required **one** barrier.
- 2017 California's Swimming Pool Safety Act SB 442 (Health and Safety Code §§115920- 115929) pool or spa be equipped with **at least 2 of 7** specified drowning prevention safety features at time of transfer of property, construction or remodel.

Survey:

Name 1 of the 7 safety barriers that are written into California law.



Current California Pool Barrier Law

- 1) An enclosure that meets the requirements of Section 115923 and isolates the swimming pool or spa from the private single-family home.
- 2) Removable mesh fencing that meets American Society for Testing and Materials (ASTM) Specifications F2286 standards in conjunction with a gate that is self-closing and self-latching and can accommodate a key lockable device.
- 3) An approved safety pool cover, as defined in subdivision (d) of Section 115921.
- 4) Exit alarms on the private single-family home's doors that provide direct access to the swimming pool or spa. The exit alarm may cause either an alarm noise or a verbal warning, such as a repeating notification that "the door to the pool is open."
- 5) A self-closing, self-latching device with a release mechanism placed no lower than 54 inches above the floor on the private single-family home's doors providing direct access to the swimming pool or spa.
- 6) An alarm that, when placed in a swimming pool or spa, will sound upon detection of accidental or unauthorized entrance into the water. The alarm shall meet and be independently certified to the ASTM Standard F2208 "Standard Safety Specification for Residential Pool Alarms," which includes surface motion, pressure, sonar, laser, and infrared type alarms. A swimming protection alarm feature designed for individual use, including an alarm attached to a child that sounds when the child exceeds a certain distance or becomes submerged in water, is not a qualifying drowning prevention safety feature.
- 7) Other means of protection, if the degree of protection afforded is equal to or greater than that afforded by any of the features set forth above and has been independently verified by an approved testing laboratory as meeting standards for those features established by the ASTM or the American Society of Mechanical Engineers (ASME).

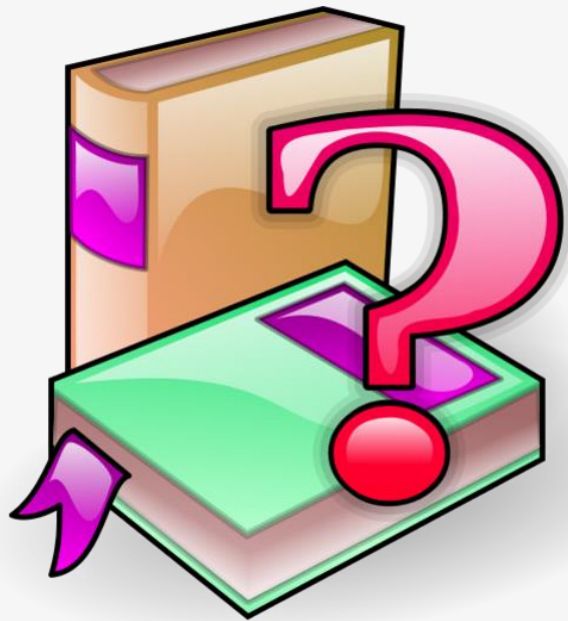


Goal.....

Vision ZERO

**One More Drowning
Is
One Too Many**







Lessons Learned

Surveillance • Changing Norms for Safety • New Approaches

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Learning Objectives

- Discuss some of the “why” that our current drowning strategies are not getting us to Vision Zero Childhood Drownings.
- Review the “Spectrum of Prevention” model.
- List two Action Items that can contribute to the prevention of childhood drowning within your organization’s scope of practice.



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Your Fatal and Non-fatal Drowning Data *(from survey)*

- Excel spreadsheet to track inpatients (unsure of ED tracking practice)
- Report from EHR to capture ED and inpatient admits
- Through mortality data, and EMS data
- We don't track data



Your Drowning Prevention Strategies *(from survey)*

- Social worker and Injury Preventionist speak with admitted patients. Every admitted patient receives “welcome bag” with injury prevention materials included.
- Safety consult by social worker. MDs and nurses review safety information with families and patients prior to discharge.
- Via Federal Grant funding for the County
- Parent education partnering with PHD including social media



Have you heard about?



www.lbc.co.uk/news/swimmer-saved-by-coach-breaks-silence/

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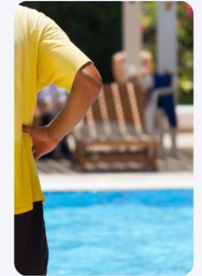
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Haddon Matrix of Injury Prevention for Drowning

INJURY IS NO ACCIDENT

Haddon Matrix for Drowning-Prevention Strategies

	Personal	Equipment	Physical Environment	Social Environment
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Multiple Layers of Protection Are Needed.

Adult Supervision is essential but not sufficient in itself.

Pre-Event: Prevention Education: Children & Adults • Plan for Adult Supervision
• 4-Sided Pool Fence • USCG Life Jacket (PFD) • Swim Lessons • CPR & Lifeguards

Event: Water Rescue → CPR → EMS 911 Response

Post-Event: Prevent repeat occurrence.



SPECTRUM of PREVENTION

- Requires all of these to be addressed for an effective strategy plan to be developed.
- What are **our** roles(s)?
 - *Out of our silos as educators, community, regulatory agencies, policy advocates, etc.*



Fig. 3. The Spectrum of Prevention's multiple levels of intervention used together produce greater results than a single intervention activity (Cohen and Smith 1999).



(2022)

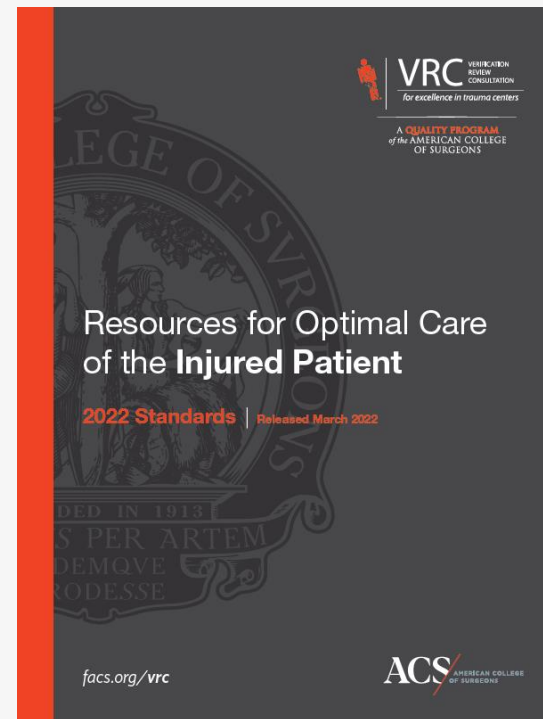


(to follow National Plan)


Trauma Centers

2.12 Injury Prevention Program—TYPE II

- **Utilize available data:** Identify high rates of injury and the populations in which these injuries occur. Analyze data to determine the mechanisms of injury, injury severity, and contributing factors. Utilize multiple injury and death data sources to reflect the true burden of injury.
 - **Target at-risk populations:** Identify, understand, and target efforts toward at-risk populations while being sensitive to generational differences, as well as cultural, religious, and other established customs. Engage target population as a key stakeholder in development, implementation, and evaluation of the intervention.¹
 - **Leverage partnerships:** Make use of other trauma centers, prehospital organizations, public health and violence prevention organizations, law enforcement agencies, schools, churches, and others interested and involved in community injury prevention efforts.
 - **Choose effective or well-informed intervention strategies:** New intervention program development, assessment, and implementation are complex and time-consuming. Not all proven interventions work in every population. Evidence-informed interventions may still require adaptation for demographic and risk factor differences.²⁻⁶
 - **Develop a plan:** Logic models are a best-practice method to plan intervention strategies and should be utilized to outline the intervention effort, including delineating risk and protective factors.⁷
- **Evaluate:** Develop surveillance and monitoring tools to assess not only the available performance indicators of the trauma center's prevention efforts but also the prevention effectiveness. Evaluation efforts should start at program inception with a feasibility assessment and include intermediate and long-term outcomes.
 - **Communicate:** Partner with local print and broadcast media, and be prepared for many opportunities for trauma center leaders to serve as a reliable source of injury prevention information. Understand your stakeholders and the at-risk populations, and articulate your prevention message based upon their vantage point.⁷
 - **Advocate:** Elected and appointed leaders can help implement prevention efforts if the trauma center understands their goals and ways to work with them to create effective laws promoting prevention.



Surveillance

- Data must be accurate and include fatal and non-fatal.
- Policies & Strategies must be data-driven.
 - “Barriers in the political process may inhibit the use of scientific evidence in policymaking,...”
 - www.sciencedirect.com/science/article/pii/S2211335519301755?via=ihub
- Statewide coordinated data collection system
- Statewide strategic plan based on data, evidence, impact and feasibility.
 - Think big 
 - Phase strategies
 - Model Child Occupant Protection- 1st CA Law SB 537 1982. We have come a long way.

Norms for Safety *(not all inclusive)*

- A pool without a fence is like a car without a car seat for the toddler.
 - The only evidence-based barrier in the Pool Safety Law is an isolation fence.
- U.S. Coast Guard approved life vests are life-saving.
 - Floaties are aquatic toys.
- Swimming is a life savings skills for all.
 - Water competency is an equity/health disparities issue.
 - Race/Ethnicity is likely a proxy for social and cultural differences



New Approaches *(not all inclusive)*

- There **MUST** be a plan to address ALL levels of the Spectrum concurrently.
- Social and multimedia are here to stay... we need to partner with our communications expert colleagues.
- We need to share our successes and challenges within the prevention community. (Don't recreate ... down the silos!)

EXAMPLE: Partners for Drowning Prevention is a multidisciplinary collaboration that has created a prevention community that crosses geographic boundaries.



New Approaches

SHARE YOUR VIEWS!



References

AAP Policy Statement, Technical Report and Toolkit: Prevention of Drowning

Sarah A. Denny, Linda Quan, Julie Gilchrist, Tracy McCallin, Rohit Shenoi, Shabana Yusuf, Benjamin Hoffman, Jeffrey Weiss, COUNCIL ON INJURY, VIOLENCE, AND POISON PREVENTION. Prevention of Drowning Pediatrics May 2019, 143 (5) e20190850; DOI: 10.1542/peds.2019-0850

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<https://pediatrics.aappublications.org/content/pediatrics/143/5/e20190850.full.pdf> Technical Report: Prevention of Drowning. <https://pediatrics.aappublications.org/content/148/2/e2021052227>

American Academy of Pediatrics Drowning Prevention Toolkit. <https://services.aap.org/en/news-room/campaigns-and-toolkits/drowning-prevention>

California Department of Education. Child Abuse Identification and Reporting Guidelines.

<https://www.cde.ca.gov/ls/ss/ap/childabuserreportingguide.asp>

CA Penal Code on Child Abuse and Neglect Reporting Act https://california.public.law/codes/ca_penal_code_section 11164-11166.

SB 855 Author (Newman D) Childhood Drowning Data Collection Pilot Program. Sponsors: AAP-CA and CA Alliance for YMCA's. Establish a CDPH statewide drowning data collection system with consistent reporting and analysis



