

CCDEH Excellence in Environmental Health Award 2011

**Innovative Methods to Reduce Drowning Risks at Public
Swimming Pools and Spas**

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A. INTRODUCTION

Environmental Health Services (EHS) of San Bernardino County is tasked with ensuring that public pools and spas are safe for use by the public. Studies have shown small children have a high incidence rate for drowning. The Centers for Disease Control (CDC) estimated in 2007 that, of children 1 to 4 years of age who died from an unintentional injury, 30% died from drowning. Fatal drowning continues to remain the second-leading cause of unintentional injury-related death for children ages 1 to 14 years.

Four years ago, EHS recognized that there was a need to enhance our countywide pool inspection program to further prevent drownings at both public and residential pools and spas. We developed innovative and unique methods to reduce drowning risks. The methods included:

- Utilizing university students to increase frequency of assessments to identify significant hazards
- Restricting access at swimming pools by using plastic zip ties
- Increasing public education by networking and collaborating with community groups.

Through this process minimal additional costs were necessary to enhance our program. The combined efforts of EHS and community groups have made our pools and spas safer. Our innovative methods have influenced pool owners and operators to incorporate life saving measures that will make our County's pools and spas safer for years to come.

B. PROBLEM:

One of the major risk factors contributing to fatal drowning is the lack of physical barriers. Having barriers that are well maintained and functioning properly is important to prevent children from entering the pool area. Gates and doors serve as an access point into a pool enclosure, but are designed to prevent entry to small children. Gates at public pools are required to have self-closing and self-latching devices as measures to prevent accidental drowning. Unfortunately, many pool operators do not routinely repair these components as they wear out or break, leaving an opportunity for a child to enter the pool or spa area. This is an open invitation for small children to "check out" the pool or spa and potentially drown.

EHS inspectors are required to conduct two routine inspections at public pools and spas to evaluate pool operation, safety hazards, and risks during the summer months. Additional inspections are conducted following any significant violations or pool closures that could lead to injury or drowning. However, EHS discovered many pools had reoccurring violations at subsequent inspections. This was of great concern and revealed the need for increased assessments to eliminate safety hazards and risks.

Another major risk factor was the lack of education and understanding among parents and care givers about the inherent dangers of a swimming pool. According to the National Safe Kids Campaign, 86 percent of children who

die from drowning are found after 10 minutes. Nearly all cases that require cardiopulmonary resuscitation (CPR) result in death or are left with severe brain injury.

C. SOLUTION

EHS recognized a need to take proactive measures to eliminate immediate hazards and reduce access to children when pool fencing is found to be in disrepair or when a gate is found to be non-self-latching or non-self-closing. Our pool inspection program was enhanced to help reduce the risks and hazards associated with pools by the following methods which are used today:

Use of Environmental Health University students

Gates and fences require constant repair and maintenance in order to maintain their intended function. To further identify and mitigate hazards at public pools and spas, EHS hires four university students each summer to increase the frequency of assessments at every pool and spa. The primary focus of the student is to identify non-functioning gates, broken fences, and any other major public health hazards by conducting safety surveys. Approximately, 5,600 surveys (see attachment) are conducted to identify pools and spas with immediate hazards or risks which may lead to a drowning. This allows inspectors to effectively prioritize inspections and focus on these facilities. If a student observes a significant hazard or risk such as a non-closing gate, the condition is reported via cell phone to the area supervisor or Recreational Health Lead Specialist to ensure the hazard is quickly mitigated.

Restricting access at hazardous swimming pools by using plastic zip ties

When a violation is observed that cannot be mitigated and could result in drowning, inspectors use plastic zip ties to secure gates and fences to prevent easy access into the pool area. When this occurs, the pool and spa are posted closed. A zip tied gate and posted closure sign by EHS gives a clear understanding that corrective action is needed by the pool operator. Inspectors ensure compliance within 24 hours.

Public education through collaboration and networking

EHS proactively educates both the public pool operators and residents within our communities. Residents are educated through social networking services such as Facebook and Twitter, press releases, and by direct contact through the distribution of educational materials. While conducting surveys or inspections during the summer, EHS staff distributes flyers to public pool owners and operators to educate them on drowning prevention methods.

This past summer EHS and members of the Drowning Prevention Network (DPN) collaborated with the Boy Scouts of America to create an informational door hanger, written in English and Spanish, (see attachment) on drowning prevention. This door hanger was created by the son of one of our EHS employees (see attachment), who then organized his local troop to go door to door to thousands of pool owners in a targeted city. The targeted city had a high drowning rate compared to other cities within the county. The same door hangers were also distributed by EHS inspectors and students to public pool and spa operators.

A Public Service Announcement (PSA) created by DPN titled, "The ABC's of Pool Safety" is broadcasted through public cable television, in movie theaters, the EHS website, and on electronic freeway billboards. EHS also collaborated with one of the County Board of Supervisors to introduce the PSA and discuss various aspects of pool safety. This PSA also airs in County buildings on monitors for viewing by the visiting public.

D. BUDGET / COSTS / SAVINGS:

Through collaborative efforts, there are minimal additional costs to implement these unique methods to reduce drowning risks at pools and spas. Expenses for salaries, mileage, and equipment have been included in the EHS

budget over the past four years; however the cost for the plastic zip ties is an added expense, \$100 for 1000-eight inch and \$100 for 500-fourteen inch plastic zip ties.

The monthly charge for the four cell phones used by the university students to call the Supervisor or Recreational Health Lead Specialist for guidance was \$420 for 3 months. The university students use four county vehicles to conduct the surveys; at a cost of \$8,400.

Printing costs for the survey forms is budgeted for \$120. The four computers used by the university students to enter their daily survey data already exists at EHS, there are no additional costs.

Flyers on drowning prevention are distributed by the students while conducting these surveys so no additional cost is incurred. The flyers were donated by DPN and First 5 organizations.

The “ABC’s of Pool Safety” PSA was created by DPN in collaboration with Loma Linda hospital trauma center staff, First 5, the County Sheriff’s and Fire Department, the County Children’s Network, and various city fire departments which resulted in no cost to the county.

Using existing database software, Envision Connect, EHS is able to keep technological operating costs to a minimum. Since regular staff utilizes the software on a day-to-day basis, no additional training is needed. A short amount of time is allocated to training the university students on how to enter data.

The salary costs for four fulltime students for three months each year is approximately \$23,000. Additionally, 75% of the Recreational Health Lead Specialists time is used during this time totaling \$19,300. Approximately 40% of supervisor’s time is spent providing direct supervision to the students and costs approximately \$15,500.

E. RESULTS / SUCCESSES:

The innovative and effective methods of using students to identify significant hazards, using plastic zip ties, and increasing public education has increased our ability to reduce the potential for drownings at public pools and spas. Additionally, the diligence from university students and the inspectors to quickly respond and follow-up on identifying safety hazards was taken to protect the public’s safety especially that of young children who could gain access to a pool enclosure.

In 2008, an average of 4.15 pool and spa inspections and surveys occurred compared to an average of 4.38 in 2009. The increase in the number of visits was from the additional use of university students. In 2010, the increase in pool and spa inspections and surveys was 4.70 visits per pool. In 2010 university students focused merely on safety hazards which decreased the amount of time spent at each facility therefore completing a higher number of surveys. In previous years the university students surveyed pools and the focus was on water chemistry and safety hazards (see Table 1).

Table 1	2008	2009	2010
# pools under permit	2,688	2,734	2,754
# inspections (routine & re-inspection)	5,954	6,402	5,433
# surveys	5,218	5,596	7,638
# visits per pool (average)	4.15	4.38	4.70

The inspector’s reports are downloaded daily into Envision Connect. From these reports, we can identify and isolate data regarding the number of gate violations and the number of fencing related pool closures. In 2008,

there were 380 gate violations. In 2009, there were 429 gate violations, which decreased to 344 violations in 2010. The number of fencing related pool closures in 2008 was 63, in 2009 there was 205, decreasing to 126 in 2010. Envision Connect was enhanced in 2008 to more effectively track gate violations and pool related closures which further refined data for 2009 and 2010. We believe that the aggressive enforcement taken on violations in 2009 resulted in an increased awareness by pool owners and operators to maintain their pool gates and fencing in 2010. This increased awareness may have led to a decrease in gate violations and subsequent pool area closures in the same year (see Table 2).

Table 2	2008	2009	2010
# of gate violations	380	429	344
# fencing related closures	63	205	126
# pools closed (other violations)	697	815	569
# pools closed total	760	1,020	695

In an effort to actively reach out to the community to increase the awareness for pool owners and operators, four university students handed out drowning prevention literature to every pool that they surveyed, visiting up to 50 pools a day.

The drowning awareness PSA that DPN created and collaborated with the Board of Supervisors is accessible to all visitors through the EHS website. This has extended the reach of our message to thousands and potentially tens of thousands more people.

In 2008 there were 11 fatal drowning's at residential pools and 2 at public pools in the county. In 2009 there were 12 fatal drowning's at residential pools and 6 at public pools in the county. 2010 showed a reduction in drowning, 8 at residential pools and only 1 at public pools. The data presented indicates successful enhancements in our program by focusing on the lifesaving violations at public pools which increased in 2009 and decreased in 2010.

To the best of our knowledge, San Bernardino County was the first county to implement the use of plastic zip ties. Implementing plastic zip ties improved the effectiveness of our pool inspection program by focusing on the most important reason why we inspect public pools; to provide a safe swimming environment for the public that we serve. By bringing the fencing and pool enclosure aspects to the forefront of our surveys, we created a simple but extremely effective solution to mitigate a hazard to secure a gate or fence when observed in disrepair. Timing is of utmost importance when remediating a problem that could ultimately result in death, therefore immediately correcting the issue on-site is a big step towards protecting the public's health and safety.

The collaboration with DPN and the Boy Scouts of America to produce literature in English and Spanish was not only distributed to public pool operators countywide, but also to residents of a targeted city that had 4 drownings two summers ago, two of which were in public pools. This past summer, the city had no drownings which clearly demonstrates the significance and impact of our efforts. Whether public or residential, our concerted efforts addressed the need to increase the public's education. The combined efforts of EHS staff, DPN, FIRST 5, and the Boy Scouts of America has made our pools and spas safer.

EHS is passionate about the innovative ideas put into practice because we believe we have made a difference in saving the lives of children throughout our county.

F. PROGRAM CONTACT:

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In California, the Leading Cause of Death Among Children Under 5, is Drowning.

Keep children safe from the start.

Remember the ABCs of water safety:

A: Active Adult Supervision

Most child victims are supervised by one or both parents when water related accidents occur. In 2009, 77% of child victims were missing for five minutes or less when they were found in the pool drowned or submerged. Children can drown in less than 2 inches of water, so inflatable pools, swimming pools, spas, bathtubs, lakes, buckets and even toilets, can be a danger too. Active adult supervision is maintaining eye contact with the child at all times.

B: Barriers

Use multiple barriers to keep children out of the water such as fencing, gates, latches, alarms, pool safety nets and pool safety covers. Test them out. Children should not be able to get over, under or through barriers.

C: Classes & Preparation

Families should take CPR, learn proper rescue techniques and keep rescue equipment at poolside. Kids can develop swim skills through qualified and on-going instruction. Families can attend a water safety workshop together.

This important safety message, created in partnership with First 5 Riverside, First 5 San Bernardino, the Riverside County Injury Prevention Services Department, SafeKids, the Drowning Prevention Network and Children's Network, was inspired by Taylor Porter, a concerned 16-year-old Eagle Scout from Apple Valley. Porter, his peers and other volunteers have joined efforts to prevent child drowning deaths and injuries. All are helping to distribute door hangers in Riverside and San Bernardino counties.



For more information on keeping children safe and healthy, visit www.first5safety.com or dial 211.

El ahogamiento es la causa principal de la muerte accidental de los niños entre 1 a 4 años de edad en California.

Mantenga a los niños seguros desde el comienzo.

Recuerde el ABC de la Seguridad en el Agua:

A: ADULTO (ACTIVO) SUPERVISOR

100 % de los incidentes de sumersión relacionados con un niño de menos de 5 años ha sucedido con un adulto presente y que es responsable por la supervisión del niño. Asigne a un adulto "Vigilante del Agua", que sepa como nadar, para poder mantener sus ojos en el agua a todos tiempos.

B: BARRERAS

Use diferentes tipos de capas de protección entre su niño y el agua. Estos incluyen cercas, puertas que se cierren y se aseguren solas, alarmas para las ventanas y puertas, sensores de movimiento para la piscina, cubiertas y redes.

C: CLASES

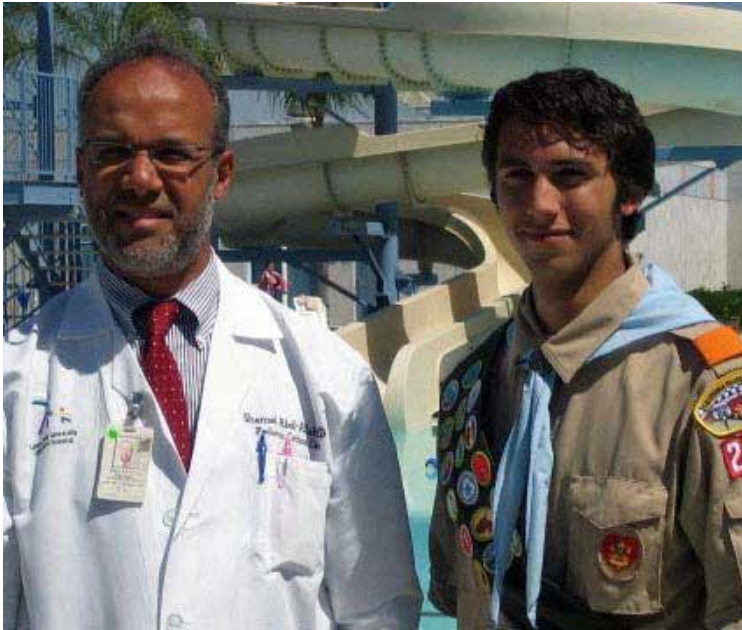
Los padres y cuidadores deben aprender RCP, rescate de agua y los básicos de primeros auxilios y deben de ser nadadores competentes.

Este mensaje importante de la seguridad, fue creado, en sociedad, por Primeros 5 Riverside, First 5 San Bernardino, the Riverside County Injury Prevention Services Department, SafeKids, Drowning Prevention Network y Children's Network, y inspirado por Taylor Porter, Explorador de Águila de 16 años de Apple Valley con preocupaciones por los ahogamientos fatales y lesiones de niños.



Para más información sobre como mantener a niños seguros y sanos, visite www.first5safety.com o marque de su teléfono 2-1-1

Boy Scout Inspires Drowning Prevention Message Across Two County Lines



Dr. Shamel Abd-Allah, MD from Loma Linda University Children's Hospital and Taylor Porter.

By Bonnie Woodrome

May 13, 2010

From the inspiration of a young man and his Eagle Scout project, a major drowning and water injury prevention effort among community volunteers, safety officials and seven community agencies in Riverside and San Bernardino Counties started the summer with a splash. The project aimed at decreasing the number of deaths and injuries of children through age 5, began when Taylor Porter, a boy scout from Apple Valley, learned of a need for drowning prevention in his own High Desert Community. Porter began working with the San Bernardino County Drowning Prevention Network, a collaboration of fire, law enforcement, and community members who work together to promote safety and injury prevention of children.

Porter's project consisted of sharing the water safety message in his hometown area where 4 deaths were reported from drownings last year. Porter and his peers will be informing all families with pools in the Hesperia area of the importance of the ABC's of water safety:

A: Active Adult Supervision Most child victims are supervised by one or both parents when water related accidents occur. Active Adult Supervision is maintaining eye contact with the child at all times.

B: Barriers Use multiple barriers to keep children out of the water such as fencing, gates, latches, alarms, pool safety nets and pool safety covers. Test them out. Children should not be able to get over, under or through barriers.

C: Classes & Preparation Families should take CPR, learn proper rescue techniques and keep rescue equipment at poolside. Kids can develop swim skills through qualified and on-going instruction. Families can attend a water safety workshop together.

The collaboration of partners to take Porter's community project and expand it over two counties include First 5 San Bernardino, First 5 Riverside, SafeKids, the Drowning Prevention Network, Injury Prevention Services of Riverside County, and 2-1-1 of Riverside and San Bernardino Counties. At a special event at Loma Linda University's Drayson Center on Wednesday, Dr. Shamel Abd-Allah, M.D., PICU Medical Director of Loma Linda University Children's Hospital spoke to attendees about the extreme dangers children face when submerged for even just a few seconds. He reminded the listeners of the consequences of lack of active supervision and the need for families to take CPR classes. Porter also spoke at the event sharing the message he will be sharing with his neighbors. For more information on keeping kids safe and healthy, visit www.first5safety.com or dial 2-1-1. Scouts interested in doing a similar project to Porter's can find the information at www.first5safety.com