CLINICAL SIGNIFICANCE™

Welcome to this Issue

Clinical Significance™ is a quarterly newsletter published by the Institute for the Prevention of In-Custody Deaths, Inc. (IPICD), with goals of providing timely information about arrest-related deaths, in-custody deaths, legal, scientific, medical, and practical updates, in addition to other timely and relevant topics.

Topics reviewed in this issue include sugary drinks, psychosis after a traumatic brain injury, epilepsy-related psychosis, sample size and statistics, performance-based testing, and potential training liability for employers.

As Editor for *Clinical Significance*™ I encourage you to submit a short article or story. It will be appreciated by everyone who reads the newsletter. Send your feedback, too. Enjoy this issue. *Dr. Peters*

Global deaths linked to sugary drinks

USA Today reported on March 19, 2013 that researchers had linked "sugary drinks" to 180,000 obesity-related deaths. This translates into a global ratio of 1:100 deaths of obese people are blamed on sweetened beverages. Using data collected from the World Health Organization (WHO) in 2010, researchers were able to show that 78% of these deaths were in low- and middle-income countries.

In the United States 2 of every 3 adults (75%) and 1 of every 3 children (33%) are either overweight or obese. According to researchers, there are approximately 25,000 obesity-related deaths in the United States that are blamed on over-consuming sweetened beverages.

The United States ranks 3rd in the world for deaths attributed to over-consumption of these types of drinks.

Often called "liquid candy," do you know how much sugar a typical 20-ounce soda contains? Answer: 15-18 teaspoons of sugar. The huge 64-ounce fountain drinks can pack up to 700 calories. For more information check out: http://www.sciencecodex.com/180000_deaths_worldwide_may_be_associated_with_sugary_soft_drinks-108869 .

Psychosis following Brain Injury

As American military troops return home from fighting abroad, a number of are returning with traumatic brain injury (TBI). NBC News reported that approximately 20% of U.S. troops that fought in Iraq or in Afghanistan may have suffered TBI. A scientific study (n = 3973) of TBI screening of one U.S. Army Brigade Combat Team (BCT) found 22.8% (n = 907) of the soldiers returning from Iraq had TBI. This was "clinician-confirmed".

Individuals who have suffered a TBI, military or civilian, are more likely to report somatic and/or neuropsychiatric symptoms than those individuals who have suffered a TBI. Although psychosis from a TBI is reported to be relatively infrequent, the effects can become potentially serious. A *psychosis* is a severe emotional disturbance.

TBI criteria include, but may not be limited to:

- force applied to the brain that is external;
- person experiences one of the following: loss of consciousness; loss of memory for events immediately before or after the accident;

alteration of the person's mental state (e.g., disoriented, confused, etc.).

Loss of consciousness is no longer a criterion of a clinically-significant TBI.

TBI symptoms include, but are not limited to:

- delusions (grandiose, religious, persecutory, etc.);
- hallucinations (auditory, visual, schizophrenia-like);
- delirium;
- disturbances of the thought process;
- non-fluent speech (disorganized);
- impairment of the executive function of the brain;
- post-traumatic epilepsy;
- disorganized thoughts;
- disorganized behavior; etc.

TBI events have been classified by the IPICD as an Agitated Chaotic Event™ (ACE), and will be seen by first responders who are sent to calls where a person was described to dispatch as "acting weird". Remember: First and foremost, this is a MEDICAL EMERGENCY.

Make sure TBI symptoms are included in your agency's training program.

Epilepsy-related Psychosis

Although epilepsy can be a post-traumatic outcome of traumatic brain injuries, psychosis can also occur following an epileptic event. One study (n = 500) found 12 patients (8 males; 4 females) who suffered from epilepsy-related psychosis. Four of the patients had "post-ictal psychosis"; 7 patients had acute interictal psychosis; and, 1 patient had chronic psychosis. The age of the patients studied ranged from 9 to 78, with 52% being males (n = 261) and 48% female (n = 239).

Many times epilepsy-related psychosis will have the same or similar behavioral cues of excited delirium or other ACE. Regardless of the underlying cause, this is a MEDICAL EMERGENCY and emergency medical service (EMS) must be staged to provide medical intervention after the person has been captured, controlled, and restrained by law enforcement.

Sample Size and Statistics

At the November 2012 IPICD Conference a presentation was made by Dr. Peters regarding sample size and statistics prior to Dr. Douglas P. Zipes', M.D. presentation on sudden cardiac death following TASER® X26™ deployments. Many conference attendees told Dr. Peters the statistical presentation was very helpful to their understanding what researchers, presenters, and other said about research findings, data, etc.

Remember: Statistics apply to groups, not specific individuals. Therefore, to say that 90% of the people studied had no adverse reaction to "X" (whatever "X" is) sounds good, but what if Mr. Smith did have an adverse reaction? Mr. Smith may be in the 10%, or even a smaller subset of people who had a very low risk of developing the adverse reaction. The real issue is whether the study's findings can be *generalized* to people such as Mr. Smith.

The *Theory of Generalizibility* focuses upon the reliability of research findings and how those data relate to the generalized universe. One of the first questions to ask is "How large was the sample size?" A minimum sample size of 50 is usually required to generalize the findings to the population under study. Some texts report a sample size as low as 30 will suffice, but larger is better, especially when generalizing findings to the population. (*Population* is a clearly defined set of objects, people, animals, food, etc.).

Many scientific studies have a sample size that is less than 30 or 50, which classifies them as a *pilot studies*. Pilot studies are often used to investigate a topic to determine if it is worth conducting a larger and more costly study, or the initial funding is not sufficient to conduct a larger study. *Pilot study findings cannot be generalized to the population under study*, because the sample size is too small.

Even when a study has a sample size of 50 or more, its findings may not apply to a specific person, product, food item, etc. The statistical findings may not apply to the person, who may be called an *outlier*.

Regarding statistical data to develop or confirm a theory, *it only takes **1** negative finding to disprove a*

theory. For example, if a person were testing the Theory of Gravity in a room where the atmosphere had not been altered and dropped a pencil from waist height and it did not fall but stayed in the air, the Theory of Gravity would be severely challenged and, most likely, disproven.

Dr. Zipes' methodology included a *review* of 8 TASER® X26™ probe exposures to humans who then lost consciousness (7 died). One case was selected in 2006, 4 cases were selected in 2008, and 3 cases were selected from 2009. After reviewing the data associated with the 8 cases, Dr. Zipes concluded that X26™ stimulation can cause cardiac electrical capture in humans, which can result in ventricular tachycardia (VT) and/or ventricular fibrillation (VF).

This is an example of challenging or disproving a theory (e.g., safety theory) through **negative findings**.

People can challenge a scientific conclusions, findings, and data using a variety of challenges. A challenge may focus on the *limitations of the study*, or on whether the data came from experimentation, quasi-experimentation, case series review, etc.

There are many other issues to examine when evaluating research findings. These include, but are not limited to: research methodology; statistical analysis; sample size; population used; etc.

In short, don't buy into research findings just because they are published or agree with your position on the issue. Carefully review the research methodology, the statistical analysis, the conclusions, the limitations, etc. Doing so in the 1980s may have identified the inherent problems of the seminal research on positional asphyxia and hogtying that have caused many of the restraint issues currently faced by law enforcement.

ExDS APP for Apple Devices: Update

The IPICD excited delirium app for Apple devices was rejected by Apple for being too simple and not requiring more interaction. A challenge was made to Apple but to no avail. IPICD IT Specialist Jason Peters is redesigning the app to make it more interactive. He is hoping for acceptance of the APP by Apple in the very near future.

The Android version of the excited delirium APP has been available and is being used by law enforcement officers across the globe.

Conation: Instilling "Will" in Students

Most instructional designers and law enforcement instructors are familiar with the *cognitive*, *affective*, and *psychomotor* learning domains, but have you heard about *conation*, which is a fourth learning domain? Conation (koh NAY shun) focuses upon activating the *intrinsic motivation* of learning within students. In short, it is learning that occurs when there is no external reward or punishment involved (e.g., higher pay, suspension, or discharge).

Related to the "work domain," conation puts knowledge and feelings into action, which can be said to be linking learning to life. Because people are born with a "will," it is often up to the law enforcement instructor to get his or her students to activate the "will". Many educators report that a person's "will," "determination," or "effort" was diluted or eliminated between taking their first steps and entering school and life.

Attendance ≠ Competence

Too often law enforcement training programs equate *attendance* as equaling *competence*. This is true in other professions, too. However, mere attendance or completion of a training program does not equal competence, especially those involving a psychomotor skill (e.g., handcuffing, baton, defensive tactics, etc.).

Psychomotor domain assessments can focus upon the cognitive, affective, and psychomotor learning domains. The underlying question that instructors need to ask is "How do I know if the students are learning and/or competent?"

One way to measure student competence is through *instructional or performance objectives*. These objectives are measurable, so instructors know whether or not a student has passed the objective and quantifiable objective. Instructional or performance objectives describe for the student and the instructor what kind of performance and to what standard will be expected from the student at the end of the course of instruction.

Think about it. If a student has not been objectively and quantifiably evaluated on, say, how to properly holster a handgun, the instructor cannot objectively prove the student was competent in that skill.

Competency is often the focus in civil litigation where an officer used a piece of equipment (e.g., electronic control device, handcuffs, handgun, etc.) and a person suffered an injury. Many times, lesson plans do not contain objective and quantifiable performance measures that will prove student competency in that piece of equipment.

Failure to Properly Train

The United States Supreme Court held in Canton v. Harris, 389 U.S. 378 (1989) that municipalities have an affirmative duty to train employees in core tasks. Where the "failure to train" amounts to *deliberate indifference*, it could form a basis for a civil rights claim against the municipality.

It is more common to find a civil lawsuit focusing upon *negligent training*, particularly when a person gets injured by an officer who is using a piece of equipment (e.g., electronic control device, baton, etc.) or a tactics (e.g., defensive tactics). The focus of a negligent training lawsuit is generally on the failure to conduct training that the governmental entity knew or should have known was necessary, and more recently on *trainee assessment*.

For example, in Cutter v. Town of Farmington, 126 N.H. 836, 498 A.2d 316 (1985) the focus of the civil litigation was on negligent training. The case focused on the Town of Farmington as the officers' employer.

Focusing on the *Cutter* litigation, Mr. Cutter was arrested, handcuffed, and transported to the police station. The officer who applied the handcuffs as a "special" officer and had not received any training on handcuffing. Additionally, the officer's supervisor who was to instruct him on handcuffing also had not received training on how to instruct handcuffing.

On the way to the police station Mr. Cutter told the officers the handcuffs were applied too tightly, but was ignored. A jury found in favor of Mr. Cutter and against the municipality, and awarded him $55,000. On appeal, the award was upheld.

The New Hampshire Supreme Court noted the lack of training by the Town of Farmington, the employer. The court also cited the incompetence by the Town of Farmington to furnish "dangerous instruments" to their agents.

In short, the identification of core tasks and then training employees in those tasks is only part of the training equation. The employees must also be objectively and quantifiably tested to measure their competence (i.e., did learning take place according to the standard). The employer and/or the trainer will be called upon to objectively prove the employee was competent to use the equipment or tactic alleged to have caused the injury.

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Developing Defendable Psychomotor Learning Domain Assessments is a one-day IPICD program that will qualify attendees in developing objective and quantifiable psychomotor domain assessments. Learn how to objectively and quantitatively prove a person's competence with equipment and tactics. Sign up for the next course: April 22 in CT. For more program information and/or to register for the April 22 program, please visit the IPICD Website: www.ipicd.com

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Editor: John G. Peters, Jr., Ph.D., CLS
Peer-Reviewers: Wayne Schmidt, L.L.M; James Marker.
Publisher: Institute for the Prevention of In-Custody Deaths, Inc., 209 South Stephanie Street, Suite B249, Henderson, NV USA 89012.