Report on the

National Drowning Prevention Symposium

March 13-15, 2013

The 12th Annual National Drowning Prevention Symposium opened for presentations at 0800, March 13, 2013. This is the largest NDPS ever held. Dr. Paula Thaqi, director Broward county Health Department opened the meeting. She welcomed all to Broward County, and spoke of the great job the Ft. Lauderdale and Broward County Lifeguards are doing on the local ocean beaches. Drowning was leading cause of death in Broward County for children ages 1-4 for the past 10 years, but great gains are being made. They have the largest beach and swimming pool exposure in the US. For each child that dies, 3 are hospitalized for submersion emergencies, and 1 of those three suffers some brain impairment permanently. Many steps have been taken to minimize this, including forming of alliances with local schools, pool manufacturers, and beach patrolling agencies.

The opening address was presented by US Congresswoman Debbie Wasserman Schultz. Congresswoman Schultz spoke by video teleconference about water safety and the legislation that is being worked on to make water activities safer. Congresswoman Nancy Graham lost a child to drowning, and sponsored and finally got passed a pool safety bill. Additional layers of protection and promotion of constant supervision have been targeted in the legislation. This of course bleeds over to boating safety, in that most boaters also enjoy water immersion activities. There are 10 drownings in the US per day. 70% of African American children and 60% of Hispanic children today cannot swim. This is a statistic that must be changed. Swimming instruction must be implemented for all children in US schools. The program leader mentioned after her presentation that “near-drowning” is not used anymore, now the correct nomenclature is “non-fatal”.

Mario Vittone, of Mario Vittone and Associates, LLC, presented with the theme “It Will Take All of Us.” After Hurricane Katrina, in Louisiana, he called New Orleans rescue personnel and asked what do you need the most? “Axes”, was the reply. “We can get to the rooftops, but have no axes to get to the people.” The theme of this was this was the first time this mission was attempted. In water safety, we are faced for the first time (finally) with the vital facts, which indicate the high percentage of drowning fatalities, especially among children. Drowning is a quiet national crisis. No long arguments on the senate floor, that there would be for any other national tragedy with this many fatalities. The LUF is a statistic Mario worries about, “Lives Unaccounted For.” There were 2 of these a day last year. The mission of water safety hasn’t been made clear to everyone yet. It’s a very complex issue. The drive to the swim lesson is more dangerous than the pool, is a true statistic. The mission is to get all water safety minded individuals, whether pool administrators or boaters, to think like us, to prevent water fatalities and LUFS. At a break, I was able to talk Mr. Vittone, we traded email addresses and he agreed to confer in the future concerning water safety from the recreational boater’s perspective. He did have interesting nuances to discuss, he suggested. If we all link together, we can be more effective, and do the water safety job cheaper and more cohesively. The mission is out there, we will all get there together, and it will take all of us.

Neal W. Pollock, Ph.D., Research Director Drivers Alert Network from Duke University Center, spoke on the dangers of breath-holding underwater. This is an unexpectedly dangerous phenomenon. He is actively involved in, among other things, diver decompression and astronaut safety, and also the issues of shallow water blackout. There are a variety of ways this is done. Play, personal challenge, exploration, pushing the limits, underwater hockey, underwater rugby, spearfishing, and free diving are some of them. It’s a vital part of the aquatic world right now. Scientifically, there is static breath holding, and moving or swimming breath holding. Record static breath holding time is 11.5 minutes, and deepest free dive has been 702 feet! Excessive hyperventilation is the true hazard. Depth of the water, CO2 levels, and oxygen levels are all important. The problem is misunderstood in that the time between the “urge to breath” kicks in and unconsciousness is the critical moment. Also, many rescuers think that there is an instant where death occurs, and nothing could be done, but that is not true. Hypoxia only occurs with hyperventilation, and that is the true danger. So, hyperventilation is the true key to the dangers. “I do deep cleansing breaths, workup breathing, etc.,” are really hyperventilation. Three to four full capacity lung changes are safe. More than that is unsafe. While it is not a good idea to simply outlaw breath holding sports, that will just drive it underground, it is best to preach safe practices.

An excellent presentation was given by Dr. Dr. Peter Antevey, who is the Medical Director of Davie Fire Rescue, and works a the ER at Joe DiMaggio Children’s Hospital, entitled “Dissecting the Medical Issues in Pediatric Drowning” He cited his own child’s predilection for wandering into the pool, to find a ball or whatnot, as a natural impulse or attraction that kids seem to have even at a very young age, and not having learned how to swim yet. Many young children drowning victims don’t die, they end up with severe brain damage, and many left in a vegetative state. Brain swollen, lungs swollen, the parent’s decision is always not to disconnect life support, leaving a child with severe mental impairments. He gave a mother’s story to that effect. It took 3 weeks for it to sink in. This child suffered a near-fatal drowning in less than 2” of water. Her child can’t walk, talk, hear, and is on a respirator for life. The Dr. urges all parents to take a CPR class, as the damage can be interrupted by getting the heart going and oxygen into the lungs. If a child is in the water less than 5 minutes, the outcome is usually good. Greater than 5 minutes is usually a bad outcome. CPR duration also is very important, the longer it takes, the worse the prognosis. CPR is not performed by family members in a large percentage of cases, (only 20%). If the family does the right things, immediately, then the prognosis is often very good. He played several 911 calls involved in drownings, and it is clear that changes are necessary in the calling center procedures. They waste valuable time getting details that aren’t immediately important. He played a call where a nurse was present, reported a strong pulse, and the operator kept insisting they start CPR. CPR under age one is 15 compressions at 100 times per minute, or 30 compressions if you’re alone. Over age one is twice that. “Staying Alive”, and “Another One bites the Dust” are 100 beats per minute tempo songs. Average EMS arrival times in the US are 8 minutes. Epinephrine is a lifesaving drug in drownings, and is performed after CPR. It needs to be given where the victim is found, not later. And, infants in the US are not even given epinephrine. It must be given within 10 minutes of the cardiac arrest. Survival rates are double where epinephrine is given. This is not an “epi-pen”, it must be given IV or into the bone. It is most important that the child get to the hospital with a heartbeat. In Florida only 32% of child drowning victims got epinephrine. Also, EMS persons are not using the cardiac tapes that they traditionally thought they needed to be using. They don’t use them, too time consuming, doesn’t look good, etc. The top 10 children’s hospitals in the country don’t use the tapes. He used a medic from Broward County to show how the concentrations of the epinephrine are too hard to figure out under stress, and said he has not had one correct answer when asked the volume of the drug to use, for given child’s age, weight, etc. Instead, they just say “good and go” to the driver, and don’t administer the medication that’s so badly needed. Dose has to be known before they step out of the truck. Customize a system based on departmental protocols, so EMS personnel don’t need to do the math. Epinephrine must be given before EMS leaes the scene. “Restart the heart before you depart” is the campaign. He has devised a system that is so simple that his 6 year old child has learned giving the proper dosages. (He showed a video demonstration of this.) Therapeutic Hypothermia is another important issue to consider in pediatric drowning. It keeps the brain cool, therefore the damage is prevented or minimized. He showed a video example of this, where the child arrived at the hospital with no heartbeat, and is now amazingly recovered and doing quite well. This is not the standard treatment in the US yet, but that is changing. In this child’s case, it was started in the ambulance before arrival at the hospital, which is important. Statistically, cold water drownings are much more survivable than warm water drownings. Also, Oxygen is not the best thing to b given to a child drowning victim. Saturations too high will kill. There are almost double fatality rates where 100% oxygen is given over room oxygen rates. It’s the **same** with stroke victims, cardiac arrests, etc. 100% oxygen is bad, bad bad! Room oxygen is much better. Just right is the word, not 100%. This must be changed. We must look at every step, from the 911 call, CPR Early, family and EMS, Resuscitation ON SCENE, Epinephrine ON SCENE, customize resuscitation, limit oxygen toxicity, and Airway Breathing circulation, were the “takeaways” from this presentation.

An attorney, Mike Haggard, of the Haggard Law firm, who has successfully tried many pool drowning and improper drain “entrapment” cases spoke to the group, with the theme “I’d like to put myself out of business.” The pool pump is far too great suction in most pool pumps. Also, there needs to be gate barriers to all pools. After a drowning case that hs firm handled, in Hollywood FL, they pushed legislation in FL to require proper locking gates to all pools. It went through the house fine, but has been killed 5 years in a row by a certain corp. that uses a mouse as a symbol. (The have many time shares with pools, and don’t want to spend the money putting in gate barriers/locks.) Some suction cases are so severe that 8 or more people could not pull a trapped person from them. One case he tried had a child with her intestines sucked out by the pump. Changes must be made in pool design. There have been suction relief valves available for over 100 years. Closer to the recreational boater’s issues, improper supervision of children by adults is a serious issue in child drownings. The typical case is the child wasn’t seen for only 5 minutes. Often the mother is a few feet from the child, reading a book or napping.

Rip currents are a danger very well known to the Great Lakes and Ocean boater and are the number one killers on the coasts of the great lakes and oceans, much higher than jelly fish, shark bites, etc. The breakout session “Rip currents Are Not All Alike was presented by Dr. Stephen Leatherman, Professor Florida international University. They truly are not all the same. Used to be, advice was to float in a rip current. Some say swimming laterally is the answer. Both strategies are sometimes recommended over another, depending on the type of rip current experienced. Look for the conversions of the heads of the competing currents. Some go 500 meters off shore. In a rescue situation, it’s best to have a boat or air support to see what the currents are doing in order to adjust the response. Rip currents are stronger in low tide, since water depth is less then, so there’s less height for water to return to the open sea. Sometimes the waves don’t break exactly over the bar. The less water depth, the stronger the flow was learned from wave tank tests. Undertow is a word that shouldn’t be used, but still is, so now Dr. Leatherman says he accepts it again, although it really is a rip current. Rip Tides are inlets, rip currents channels of flow off the beach, and undertows are best looked at as backwash from waves. But, the undertow cannot take you out further than the bar, and it is usually caused by a plunging breaker wave. If you’re in that situation, best to wave for boater for assistance. People generally pick the clean looking water, which is the “bar gap rip” to swim in, which is the most dangerous place. Water rescue people in attendance said it’s because also the people see the deeper water, and want to go in there. It’s deep but close to shore. If caught in a rip current, let it take you outside the bar, then **swim with the current** across the rip current, and the waves will usually carry you back in, or at least won’t fight you getting back in. I was able to meet with Dr. Leatherman after the seminar, and ask him about “predictors” for where a drowning victim might be found minutes after the event, because in lake Michigan we lose 10-15 swimmers each swim season, (beachgoers and boaters who happened to swim), and the frustration seems to be that the rescuers don’t find them immediately, but only after 2 or 3 days when the body floats up. If there was a way to develop “predictors” (my term) of where to look, then the Coast Guard would be greatly assisted in spotting and rescuing the victim, rather than a recovery effort of a body.

Another breakout session apropos to boaters was the session Moderate River Flows May Cause Drownings. Professor Robert Kauffman of Frostburg University gave an interesting presentation about this issue, whereby they did a study about drownings in even moderate flow rivers. A recurring theme seemed to be that moderate water levels are dangerous and can kill. Things to look for when a river can be dangerous, that look benign but aren’t: Moderate levels, (high levels are obviously dangerous so people stay out, low levels aren’t that dangerous), when the river looks normal, again, floods look dangerous, with dead cows floating down the river, etc., but a normal river doesn’t look so dangerous, but is. A “drowning trap” = depth of the river, + velocity, + deceptiveness. The conclusion is that moderate water level (not flood) drowns most people. On the Potomac River, out of 14 fatal drownings last year, 71% occurred during normal river stage, not during flood events. Temperature was measured too, with the basic conclusion that Spring flows with Summer Temperatures kill people. Where the channel is deeper in the middle, like most are, it will pull a person into the center, where the flow goes to fill the void in the center. A doubling of depth doubles the “pushing over” power of the river. Also, the velocity of the flow similarly increases the dangers linearly. So, double the depth, double the velocity of flow, 4X the danger. I raised the factor of whether a victim is local or not. In 25 years of living on the shore of Lake Michigan, and hearing of over 100 local drownings, I have never heard of a local living individual drowning. Professor Kauffman agreed that this would be an important factor to look at in his studies. Complacency is the theme here, and we must avoid that; users must respect the body of water they are about to enjoy.

Stand up paddle boarding was another session I attended related to boating. NBSAC has examined this issue recently, and hasn’t determined what to do regarding requirements. You have to be able to stand up is about the only physical requirement. Is it safe? I brought up that as a member of the NBSAC, we have been challenged by the USCG with recommending life jacket carriage requirements, wearing requirements, +/- required tethers requirements. This evolved into a very in-depth discussion on how the boards should be regulated, whether they are a vessel or not, and whether carriage/wearing of life jackets, and/or tethers should be required. The moderator scoffed at the idea that the keel of the board will injure someone with a jacket on, because they can’t go down deep to escape it. This was an argument I heard at NBSAC. The force of water at 6mph is 134 lbs. So, the tether is not a very good idea in any type of current. The user just won’t have the strength to pull him/herself to the board to release the leash, then won’t be able to save themselves. A recent drowning occurred in this way, a 10 year old girl ran to safety to get help for her mom who was snagged on brush in the river, the mother drowned. So they now make tethers with quick releases on them. A life jacket at all times worn seems to be the answer, but a stand up surfer doesn’t want to wear a lie jacket. IT’s really a problem that needs lots of examination. Mr. Pratt and I plan to confer at length concerning the issues and a reasonable recommendation for regulation of stand up paddle boards in the near future. This will assist the NBSAC in developing a reasonable workable recommendation to the US Coast Guard by the National Boating Safety Advisory Council, which this author is a council member of. He has great suggestions for what should be required to be worn in what particular situations, but this must be distilled into a workable regulation that could be effectively enforced by law enforcement officers and does not hinder the sport.

Gerald Dworkin, Consultant, Aquatic Rescue Association, spoke on Ice and Water rescue incidents. He does consulting and training programs for public safety and rescue sectors. They hope to save lives and prevent drownings They do “In the News” and “Spotlight On Rescues” on the internet, both of which list various aquatic accidents. There are over 1500 vehicle submersions in the US per year. More people drown in cars in Palm Beach County than in swimming pools each year. They do much education on cold water rescues and immersions. Murphy’s Law always applies to all rescues. Planning for the incident, training for the incident, and acquiring the resources to handle the incident are the only way to prepare. Much junk is being sold to the aquatic rescue community, such as backboards that flex badly, air bag breathing apparatus that is sold “one size fits all”, etc. Pre-pals must be done. Including Standard Operating Procedures that are written in stone, etc. This can be implemented by the recreational boater also. It is not beyond reason that all recreational boaters at least twice in the boating season do “man overboard” and “Fire” drills. This can, and does, happen to anyone. At least one person on board should know and be ready to perform CPR. Prevention Strategies, Early Recognition, and Effective Management are critical. A drowning victim struggles for 20-60 seconds. The ingest water into the stomach. They aspirate water into the airway. There is laryngospasm, so they can’t breathe. They become hypoxic, and become unconscious. They then go into respiratory arrest. They then go into cardiac arrest. When the water is aspirated into the lungs, it creates all sorts of problems. There are wet and dry drowning victims, which results in floating above the water or sinking below the water. Dry drowning can happen hours after the incident, which is why in Broward County all victims must go to the hospital to be evaluated. This means the lungs have been compromised by water. The Mammalian diving Reflex means one gasps in water when hitting cold water, so one should put your hand over your mouth and nose when you know you’re entering cold water. Cold water saps body heat 25 to 30 times faster than warm water. Kids cool faster than adults due to their head size being large in proportion to their body. Many drowning victims though resuscitated, never leave the hospital alive due to the many complications they suffer from.

Again, this was an excellent conference which is not solely boating related, but has much overlap with recreational boating safety, and was of great value in furthering contacts and freindships in furtherance of recreational boating safety.

 Respectfully Submitted,

 Thomas M. Dogan

 Immediate Past President, National Boating Federation Member, National Boating Safety Advisory Council