

14 Reflections on Lifeguard Surveillance Programs

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STATEMENT OF THE PROBLEM

Lifeguarding seems to be in a state of change. In the attempt to reduce drowning by training new lifeguards and retraining experienced lifeguards, new perspectives, ideas, terms, concepts, and training programs are constantly being proposed.

Public health officials, lifeguard training agencies, and experts in the field of lifeguarding agree that the recognition of drowning persons is a critical skill lifeguards must develop. Drownings occur in supervised areas because lifeguards lack this skill. Intrusions and distractions, the other two factors shown to be causal elements in these drownings, are presented in the article "The RID Factor as a Cause of Drowning."¹

A New York State Health Department study on the causes of drownings while lifeguards were on duty noted instances when drowning persons displayed the behavior of the Instinctive Drowning Response; however, because of inadequate training, the lifeguards on duty did not recognize the signs of drowning. They dismissed the drowning person's behavior as "someone merely playing in the water."² A statement by the Service National des Sauveteurs (National Lifeguard Service) to a coroner's inquest in Montreal also noted the need to train lifeguards in distressed swimmer and drowning persons recognition skills and cited the role of the RID Factor in drownings.³

The aim of this chapter is to provide the reader with an understanding of contemporary water crisis recognition theory. This understanding is necessary because, in trying to establish patron surveillance programs, professionals often feel they are "drowning" in a flood of confusing terminology and behavioral descriptions. To help the reader evaluate patron surveillance programs, a historical review and critical analysis of the terms *distress*, *drowning*, and *behavior vs. trait-centered recognition concepts*⁴ will be undertaken.

This historical method will provide an organizing scheme for student and professional alike since many of the current "big questions" about water crisis recognition training programs for lifeguards were asked decades ago. This method will help the reader to trace the evolution of this type of training over the past 40 years.

This chapter will not use the traditional lifeguarding term "victim" when referring to a distressed swimmer or a drowning person. Epidemiologists tell us this term

carries a negative connotation. They recommend that the term be avoided when describing or referring to an injured person.

Different uses of the terms *distress* and *drowning* in lifeguard training textbooks have caused unclear references to the behavior that lifeguards should be trained to both recognize and react to. A critical training issue emerges when we frame recognition and rescue objectives for the lifeguard. If there is neither a theoretical difference (both terms mean the same thing) nor a behavioral difference (both behaviors are the same), then only a single term should be used and only one rescue technique taught. Since a dictionary helps systematize the way words or concepts are used in everyday life, this will be the starting point of the analysis.

The following excerpts are from the definition of the word *distress* in *Webster's New Ninth Collegiate Dictionary*.⁵ Distress implies an external and often temporary cause of great physical or mental strain and stress, hence the attachment of the prefix *di* (double) to the root word *stress*, implying double stress. Other definitions include "to subject to great strain or difficulties or to cause to worry or to be troubled." The common themes that recur in the various definitions of *distress* are *physical or mental strain or trouble*.

Using the same dictionary to define *drowning*, a sharp distinction between *drowning* and *distress* emerges. The term *drown* is defined as "to become drowned." The behavioral definition "to suffocate by submersion especially in water" helps us by noting a crucial difference between the two terms. Research by the author has revealed that the actual or perceived feelings of suffocation in the water trigger universal unlearned behavior — the Instinctive Drowning Response — that lifeguards must be trained to detect.⁶

In distress situations, the rescuer looks for an individual experiencing great physical or mental stress or strain in the water. In drowning situations, the lifeguard scans for an individual who is suffocating in the water.

If the differences between *distress* and *drowning* were merely semantic, we would not spend time debating trivial terminology. Underlying the terms *distress* and *drowning* is the primary question of lifeguards' scanning of bathing areas: What behavioral signs must the lifeguards identify?

REVIEW OF LITERATURE

The first published classification of the behavioral differences between *distress* and *drowning* were presented in the lifeguard training film *On Drowning*.⁷ This 16mm documentary film, made at Orchard Beach, Bronx, New York, during the 1970 bathing season, recorded the movements of people drowning and being rescued. A detailed explanation of the differences between *distress* and *drowning* were presented in the 1974 article "Observations on the Drowning of Nonswimmers" in the YMCA publication *Journal of Physical Education*.⁸

Beginning in 1974, references to the original research regarding the difference between *distress* and *drowning* have been incorporated in the following lifeguard textbooks and manuals: *Alert*, the lifeguard training manual of the Royal Lifesaving Society Canada⁹; *The Canadian Lifesaving Manual*, also from the Royal

Lifesaving Society Canada¹⁰; *Modern Concepts in Lifeguarding*, ALT International¹¹; *Lifeguard Training*, The American National Red Cross¹²; *On the Guard II*, the YMCA Society of North America¹³; *Lifeguarding in the Waterparks*, Huint's definitive textbook on the subject¹⁴; *Lifeguarding Today*, The American National Red Cross¹⁵; and the U.S. Lifesaving Association's *Manual of Open Water Lifesaving*.¹⁶ These textbooks point out that distressed individuals were not yet drowning and because of a swimming or floating skill were able to summon help by waving or calling out. Generally, these publications are in agreement that drowning persons are neither able to call out for help because they are suffocating in the water nor able to wave for help because, in their moments of peril, they lack a swimming or floating skill.

BEHAVIOR-CENTERED SURVEILLANCE

These concepts of *distress* and *drowning* are the foundations of bather-centered surveillance. The basic premise of behavior-centered surveillance is that a lifeguard's determination of a person's difficulty in the water must always be based on a person's behavior, not on physical characteristics such as age, weight, or ethnic or racial background. Implicit in this approach is the belief that scanning is a task that requires constant observation and evaluation of the behavior of all bathers.

The most efficient way for lifeguards to maintain surveillance over people at their facilities is to understand the behavior that indicates that a person is in distress or drowning and to evaluate a patron's movements against four target behaviors. The four target behaviors a lifeguard looks for while scanning a bathing area are breathing, arm and leg motions, body position, and movement in the water. The reader is encouraged to read Table 5-1 in *Lifeguarding Today* which compares the movements of swimmers, distressed swimmers, and both active and passive drowning persons.¹⁷

DISTRESS

Lifeguards can recognize distressed swimmers by the way they support themselves in the water and by their voluntary actions. Because of their swimming or floating skills, persons in distress have enough control of their arms and legs to keep their mouths above the surface of the water. Although distressed swimmers may use inefficient swimming strokes and might be unable to move to safety, they can continue breathing in a labored way and may call for help.

Another characteristic that differentiates distressed swimmers from drowning persons is that the distressed swimmers have voluntary control over their movements. Movements that attempt but fail to make any progress toward safety, trying to use another patron for support, and waving or calling out for help all signal the lifeguard — and often other patrons — that help is needed.

It has been documented that in times of acute stress the autonomic nervous system (ANS) causes an increase in pulse rate, breathing rate, and blood pressure. These phenomena generally cannot be observed by lifeguards while they are

scanning a bathing area. It is only when ANS functions lead to observable voluntary behavior such as waving and calling out for help, the inability to swim or move to safety, or grabbing another patron, that the lifeguards react and initiate rescue procedures.

As conditions such as fatigue, becoming chilled, the progress of a sudden illness, or a rip current continue to affect distressed swimmers, they are less able to support themselves in the water. Distressed swimmers most often are found at surf or open-water beaches, and the USLA estimates that rip currents at surf beaches account for more than 80% of rescues at these locations.¹⁸

Anxiety increases as these conditions cause the person's mouth to come closer to the surface of the water. If distressed swimmers are not rescued, they begin to drown.

This description of distressed swimmers' behavior does not mean there is always a transition from *distress* to *drowning* behavior. On the contrary, data indicates that most drowning persons do not pass through the distress stage, but almost immediately go from a position of safety into Instinctive Drowning Response behavior.¹⁹

DROWNING BEHAVIOR

As mentioned earlier, an active drowning person struggles on the surface of the water in a highly predictable, patterned, and — to the trained eye — recognizable way. The Instinctive Drowning Response represents a person's attempts to avoid actual or perceived suffocation in the water. The key concept in understanding a drowning person's behavior is to keep in mind that suffocation in water triggers a constellation of ANS responses that lead to external, unlearned, instinctive drowning movements. Research has shown that this response is present whenever and wherever active drownings occur (pools, lakes, beaches, rivers, and water parks).

The reader must keep in mind that the drowning process starts at the point when persons are no longer able to keep their mouths above the surface of the water. The aspiration of water which leads to a wet or dry drowning occurs at a later point in the drowning process, so it is misleading to tell lifeguards that distress includes all behavior until the aspiration of water occurs, and that drowning includes all subsequent behavior.

CHARACTERISTICS OF THE INSTINCTIVE DROWNING RESPONSE

The following information describes the movements of the Instinctive Drowning Response, explains why certain behaviors occur or do not occur, and offers insights into what physiological processes prompt the drowning person's movements. The Instinctive Drowning Response is a group of signs that collectively indicate an active drowning is occurring and differentiate drowning from the distress.

The first characteristic of Instinctive Drowning Response is that persons who are drowning, except in very rare circumstances, are physiologically unable to call out for help. The respiratory system is designed for breathing; speech is the secondary

or overlaid function.²⁰ This means the primary function — breathing — must be satisfied, before the secondary function — speech — occurs.

The second reason drowning persons cannot call out for help is their mouths alternately sink below and reappear above the surface of the water. The mouths of drowning persons are not above the surface of the water long enough for them to exhale, inhale, and call out for help.

When drowning persons' mouths are above the surface, they exhale and quickly inhale as their mouths begin to sink below the surface of the water. While their mouths are below the surface of the water, drowning persons generally keep their mouths tightly closed to avoid swallowing water.

The second characteristic of the Instinctive Drowning Response is that drowning persons cannot wave for help. Immediately after drowning persons begin gasping for air, they are instinctively forced to extend their arms laterally and begin to press down on the surface of the water with their arms and hands. This response, over which the drowning person has no voluntary control, renders them unable to wave for help.

The arm movements of drowning persons are intended to keep their heads above water so they can continue to breathe. By pressing down on the surface of the water, they lift their mouths out of the water to breathe.

The third characteristic of the Instinctive Drowning Response is that drowning persons cannot voluntarily control their arm movements. Physiologically, a drowning person who is struggling at the surface of the water cannot stop drowning to perform voluntary movements such as waving for help, moving toward a rescuer, or reaching out for a piece of rescue equipment. These actions require a swimming or floating skill, which, using the definition of the term *drowning*, drowning persons do not have.

When a drowning person grabs a rescuer, it is because the rescuer did not provide enough support to stop the Instinctive Drowning Response. Rather, the rescuer only provided the drowning person enough support to use either the rescuer or the rescue device as a base of support to grab the lifeguard. In such cases, lifeguards did not provide the drowning persons enough support to convince them they were no longer suffocating.

The fourth characteristic of the Instinctive Drowning Response is that the drowning person's body is perpendicular to the surface of the water and unable to move in a horizontal or diagonal direction. There is no evidence of a supporting kick.

The fifth characteristic of the Instinctive Drowning Response is that drowning persons struggle at the surface of the water 20–60 seconds. This data was obtained and validated over a 21-year period at Orchard Beach, Bronx, New York, where 40,000 rescues, an average of 2,000 per summer, occurred.

Observations at Orchard Beach also revealed that drowning persons were often surrounded by patrons who did not realize that a drowning was occurring nearby. It is imperative that new lifeguards be trained to recognize and rely upon the signs of drowning to begin their rescue procedure and not wait for patrons or more experienced lifeguards to tell them that a person is drowning.

Because manipulation of variables in my observational drowning studies at Orchard Beach were neither ethically nor morally possible, the only way to obtain this data was direct observation of drowning persons during rescues. This methodology followed the qualitative research methods noted by Patton²¹ and others.

This behavior of drowning persons, originally studied at Orchard Beach in the 1950s and 1960s, and then written about in the 1970s, has been shown to exist in other areas. The confirmation for this conclusion is letters and telephone calls from lifeguards, parents, camp counselors, and park employees who noted that drowning person recognition concepts contained in *On Drowning*,²² *Drowning: Facts & Myths*,²³ and *The Reasons People Drown*²⁴ enabled them to identify a drowning person who was surrounded by bathers who did not recognize the Instinctive Drowning Response.

Further validation of the existence of the Instinctive Drowning Response can be found in the Binghamton Tape,²⁵ a videotape that shows a firefighter being caught in a hydraulic at the base of a low-head dam. Although the firefighter was fully clothed, and alternatively pulled below and recirculated above the surface of the water, the Instinctive Drowning Response was observed as he struggled to stay afloat at the surface of the water.

Another piece of dramatic footage that illustrated the Instinctive Drowning Response was the rescue of an airline passenger that occurred in cold water near Dulles International Airport, in Washington, DC. The arm movements of the person being rescued clearly illustrated the presence of the Instinctive Drowning Response in cold water.²⁶

The final support for the existence of Instinctive Drowning Response can be found in the instructional tape *In Too Deep*.²⁷ Using the documentary style of *On Drowning*, footage of near-drownings and rescues at Dorney Park was recorded.

Having defined behavior-centered surveillance and established the existence of the Instinctive Drowning Response and the characteristics that differentiate it from the behavior of distressed swimmers, the next section of this chapter will examine the ways *distress* and *drowning* are used in other lifeguard-training programs. In addition, trait-centered surveillance, the method of using external characteristics to predict people's behavior and then designate them as "high-risk guests" will be discussed.

In 1983, Ellis & Associates offered a new definition of the term *distress*. Two events — the expansion during the past few years of this program from the water park environment into pools and still water areas and the listing of 10 characteristics of distress — have led to confusion as to which water crisis recognition concepts lifeguard training agencies should use. The confusion is greatest when a lifeguard service has supervisors or staff members whose training backgrounds cause them to use different definitions of *distress* and *drowning*.

In the National Pool and Waterpark Lifeguard/CPR textbook, *distress* describes any individual "experiencing difficulty" in the water. People in distress are given characteristics, categorized as conscious or unconscious, and then found on the surface, just below the surface within arm's reach, or below the surface beyond arm's reach.²⁸

The greatest source of confusion has been this organization's listing of certain Instinctive Drowning Response characteristics under the category of *distress*. This confusion is then compounded by including certain behaviors which persons may be experiencing but which are not observable to lifeguards.

NATIONAL POOL AND WATER PARK DISTRESS CRITERIA

The National Pool and Waterpark Lifeguard/CPR textbook notes one of the first indicators of distress in individuals is eyes wide open or tightly shut. For this characteristic to be useful to lifeguards scanning a bathing area, it must be accompanied by other behavioral descriptors. Lifeguards cannot use this criteria if the persons being observed are turned away from the lifeguards or at a distance where lifeguards cannot, without binoculars, observe the persons' eyes.

Another characteristic of distress presented in this text is that the individual's body may be stiff or tense. It is extremely difficult, if not impossible, for a lifeguard to make this determination when most of a person's body is submerged in the water.

The third distress criteria cited is conscious victims who are in a diagonal or vertical position. This characteristic is consistent with the "a" distress indicator used by other agencies.

The fourth behavior of distressed persons is that "their arms flail up and down or reach and grab." While distressed swimmers may reach and grab for persons and objects, drowning persons, unless incorrectly supported by the rescuer, do not have the swimming or floating skills that enable them to perform these actions. It is incorrect to state that a drowning person is flailing in the water. Drowning persons use the surface of the water to press down upon to raise their mouths out of the water.

The fifth characteristic of distress is "their heads are back with their mouths gasping for air." Published research, which predated the NPWP program by more than a decade, clearly established that feelings of suffocation can sometimes cause this behavior, which is characteristic of drowning and not distress.

The sixth characteristic is that "no leg movement is evident." While this statement is true about drowning persons, distressed swimmers use their legs to support themselves while they wave for help or move toward shore or another swimmer.

The seventh characteristic states that "distressed persons are disorientated." For this characteristic to be useful to lifeguards scanning a bathing area, it must be accompanied by behavioral descriptors.

The next two characteristics of distress are that the persons are "unconscious in either a limp or rigid form" and there is "no body movement." These characteristics describe the behavior of someone suffocating in the water and should therefore be placed in the drowning category.

The tenth characteristic is that the "person may be trying to grasp an object to get support. This may be either a lane line, inner tube, or another guest." This behavior belongs with the distressed swimmer criteria cited earlier.

After listing ten characteristics of distress, the NPWP also notes a person in distress quickly can become a drowning victim who usually follows a pattern of reactions. Knowledge of the factors in the drowning process, specifically the

Five Stages of Drowning, and the difference between wet and dry drownings are thought to help lifeguards recognize a drowning.

Before examining the applicability of using the *Five Stages of Drowning* to teach recognition skills, it would be useful to review the animal research studies that led to the formulation of the five stages of drowning. In his article, *Water in the Lungs of Drowned Animals*, Peter Karpovich, M.D., described the drowning of rats, guinea pigs, and cats in a flat-walled aquarium that facilitated the accurate observation of all stages of drowning.²⁹ He notes that, while the behavior of these animals varied somewhat upon being submerged, he was able to divide the entire phenomenon into five stages. Lougheed, Janes, and Hall described the same five-stage process for dogs.³⁰ In his textbook, *The Pathophysiology and Treatment of Drowning and Near-Drowning*, Jerome Modell, M.D., reviewed these animal studies and noted there was no agreement upon the exact sequence of events during the drowning episode.³¹

A review of these studies shows the investigations reveal the progression of pathological processes that occur after aspiration of water in animal experiments; however, these studies cannot be used to extrapolate data about the surface struggle humans exhibit before submerging.

The five stages of drowning in the NPWP textbook are surprise, involuntary breath-holding, unconsciousness, hypoxic convulsions, and clinical death. The six characteristics of the first stage of drowning, surprise, closely resemble Instinctive Drowning Response behavior.

The use of the term *surprise* appears to have originated from animal studies in which water was introduced into the airway of animals to study the effects on the respiratory and circulatory systems of these unfortunate subjects. While it is understandable that the animal was surprised, no research is cited that quantifies that amount of time to 10–20 seconds for either animals or humans.

It is the author's view that the correct sequence of the stages of drowning in humans is (1) Stage One: surprise or distress; (2) Stage Two: gasping for air; (3) Stage Three: the instinctive drowning response; (4) Stage Four: submersion; (5) Stage Five: unconsciousness; and (6) Stage Six: death. In passive drownings the sequence begins at Stage Four when the person's mouth is submerged in the water.

The first characteristic of *surprise* occurs when the person has recognized the danger and remains afraid for 10–20 seconds. Analysis of *On Drowning* shows that the feelings of surprise are replaced almost immediately, not after 10–20 seconds, by the gasping for air. The actual or perceived suffocation then triggers the Instinctive Drowning Response.

The second characteristic of the *surprise* stage is that the person's body is in a diagonal or vertical position. Here we have an example of criteria that are used in two classifications, *distress* and *drowning*. To be useful to lifeguards criteria must differ from one another.

The third characteristic of *surprise* in the drowning process is: "The person will probably not be kicking or using their legs." This finding is consistent with the research on the Instinctive Drowning Response.

The fourth characteristic describes the arm movements of the drowning person by noting that the arms will be moving at or near the surface of the water in random grasping or flapping movements.

The flapping or grasping movements this text describes as happening randomly are actually instinctive attempts by the drowning person to avoid suffocation. Analysis of the arm movements of drowning persons, which were first described in *On Drowning* (1970), shows these arm movements are designed to lift the mouths of drowning persons above the water to enable them to breathe, and they last as long as 60 seconds.

The fifth characteristic of *surprise* is that the persons' heads will be tilted back with the persons gasping for air. This description is generally accurate for the phase of the Instinctive Drowning Response during which persons' mouths are above the surface of the water.

The sixth characteristic notes that a person may or may not be making any sounds because a person who is drowning is too busy trying to get air to call for help. The physiological explanations provided earlier about the function of the respiratory system detail why the drowning person is rarely able to call out for help.

When these six characteristics are combined it is apparent that the heading *surprise* is not an accurate way to describe the behavior that is occurring. Rather, a term should be chosen which better reflects the three stages or processes which have occurred while the drowning person is attempting to avoid suffocation on the surface of the water: surprise/distress, gasping for air, and the Instinctive Drowning Response.

Stage Two of the drowning process, *involuntary breath-holding*, lasts 30–90 seconds. The victim is not breathing because his or her muscles have taken over the breathing process and are not under conscious control.

Since Stage One, *surprise*, which lasts 10–20 seconds, is followed by Stage Two, *involuntary breath-holding* which lasts 30–90 seconds, the inference can be made that involuntary breath-holding occurs at the end of Stage One and the beginning of Stage Two. The scenes in *On Drowning*, however, show that involuntary breath-holding does not occur within 30 seconds after the drowning person starts to struggle. While the persons' mouths are above the surface of the water, they will attempt to breathe. The breath-holding occurs after the person submerges, but certainly not while the drowning person is struggling on the surface of the water.

Further analysis reveals that voluntary breath-holding occurs in the distressed swimmer who is able to control his/her actions at the surface of the water. *Understanding Drowning*³² depicts a little boy who is ill at ease holding his breath while a friend is looks on.

The last three stages — *unconsciousness*, *hypoxic convulsions*, and *clinical death* — present the physiological progress of a drowning. In the author's view, recognition of these stages would be simplified by using the new American National Red Cross' standard which calls for a lifeguard to respond to any person floating face down or remaining submerged for longer than 30 seconds.³³

TRAIT-CENTERED SURVEILLANCE

The final section of this chapter will examine the appropriateness of using statistical data as the rationale for trait-centered surveillance. Trait-centered surveillance gives lifeguards a set of traits they must look for while scanning their zones. Persons

possessing these traits or features are described as "high-risk guests" who need special attention.

Under this system, lifeguards are trained to look for certain characteristics such as age, gender, body weight, race, or ethnic background and then presumably watch individuals possessing these characteristics more closely than individuals not possessing these characteristics. The database that supports the approach of teaching trait-centered recognition concepts appears to come from statistical studies that show certain groups either drown or experience difficulty in the water more frequently than other groups.

The 1994 National Pool and Waterpark textbook lists ten types or groups of people who are "high-risk guests" at water parks. The reader is then encouraged to use this information by generalizing the findings and applying them to pools and waterfronts. The following is a summary of the individual classifications, an analysis of the criteria individually, and then an evaluation by the author of what he believes to be the deficiencies in using a trait-centered surveillance system.

The first type is "children ages 7-12." According to this publication, these children are at risk because they are smaller, not very strong, and have less skill in the water and less awareness of danger.

The second group is "minorities," which includes African-Americans, Hispanics, Asians, and others. The explanation for the "high-risk" designation is that these groups may have had less opportunity to gain aquatic experience.

While there can be no legitimate objection to targeting aquatic education programs, learn-to-swim campaigns, or other intervention strategies for "at risk" groups cited in sound epidemiologic research studies, we cannot, as aquatic professionals, single out a member of a group for special surveillance or swimming ability testing, based on anything but behavior. Besides drawing incorrect conclusions about an entire group of people, criteria that identify people as "high-risk guests" are absolutely useless when a lifeguard works at a facility that is used primarily by members of a group labeled "high-risk."

For example, attempting to apply "high-risk guest" criteria to teach drowning person recognition concepts to lifeguards at Orchard Beach, Bronx, New York, (where almost 90% of the population is African-American or Hispanic) illustrates the methodological weakness of this approach. While the data may show that African-Americans, for example, drown at statistically significantly higher rates than whites, misuse of the data occurs when all African-Americans are labeled "high-risk guests" who need special attention at swimming facilities. This approach causes resentment by minorities and reinforces racial stereotypes.

The third group is "parents with small children." The reason supplied for the "high-risk" designation is that the parents may lack sufficient swimming skills to support themselves and their children in the water.

The fourth group is "intoxicated guests." Here it is noted that even one drink can slow down reactions and the ability to control movement, balance, and judgment. Without using a Breathalyzer or drawing blood to obtain a blood-alcohol level, lifeguards have no reliable way of knowing a person is intoxicated except for his/her behavior. It is the behavior of individuals that indicates they are under the influence

The fifth group is “obese or overweight persons.” The rationale for their designation as “high-risk guests” is that because fat is very buoyant, obese people have difficulty standing up if they lose their balance.

The sixth group is “guests wearing life jackets.” The explanation given for this designation is that the life jacket may not fit properly, may not hold the person up, or the person, unaccustomed to the feeling of wearing a life jacket, may panic.

The seventh high-risk group is “the elderly.” Elderly people may tire easily or have medical conditions that prevent them from having the strength or mobility of their younger years.

The eighth group is “disabled guests.” Here it is reasoned that disabled individuals may not be familiar with how the facility affects their abilities to move.

The ninth group is “guests wearing clothes.” Clothes, it is noted, absorb water, become heavy, and make movement in the water more difficult. If a guest does not have a bathing suit, it may indicate a low swimming experience level.

The tenth group is “every guest.” The rationale for this high-risk designation is that an unexpected aquatic accident can happen to anyone, regardless of swimming ability or experience.

This last high-risk designation, “every guest,” provides the clearest example of the deficiency of the trait-centered surveillance. Unless there is, within the trait-centered surveillance system, a hierarchy of “high-risk guests” where one is presumably at greater risk of drowning than a member of another group, then the classification system, while useful for data collection and statistical analysis, is of little practical use to lifeguards while they scan their assigned zones.

Analysis of these ten categories prompts several other questions. First, when do lifeguards make the “high-risk” designation? Is it when the person walks into the facility, is out on the deck, or enters the water?

The next question is, once lifeguards have made the “high-risk” designation what do they do with the designation? Asking lifeguards to keep track of designations for what could potentially be hundreds of patrons is an unrealistic expectation.

Finally, the most important reason for not using trait-centered “high-risk guest” surveillance concepts is that they will interfere with the lifeguards’ ability to quickly recognize distressed swimmers and drowning persons. The ten classifications listed will increase the number of variables for which lifeguards have to look from 4 behavior variables to 14 behavior/trait variables. Of the additional ten trait variables, only one — blood-alcohol level — has been shown to be significantly correlated with drowning.

CONCLUSION

It is clear from this discussion that public health and lifeguard training agencies must undertake two tasks. First, a uniform classification of *distress* and *drowning* terminology is needed to help lifeguards during scanning. The author proposes that, whichever classification is adopted by public health agencies that certify lifeguard training programs, the categorical classification be based on criteria that have defining features. The categorical approach to the classification of water crises will work

best when all characteristics of the diagnostic classes of *distress* and *drowning* are mutually exclusive with clear descriptive boundaries between the definitions.

Second, the use of trait-centered surveillance and the depiction of people as "high-risk guests" who need special surveillance, has no place in modern lifeguarding. Just as the concepts of phrenology, the science of skull reading, and physiognomy, a system of using facial traits as clues to a person's inner personality, have been discredited by modern psychologists, so must the use of "high-risk guest" definitions be eliminated by today's lifeguards.

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