

Neck/Back Statistics, 2000-2010

Submitted by: Sgt. Jamie Falcon



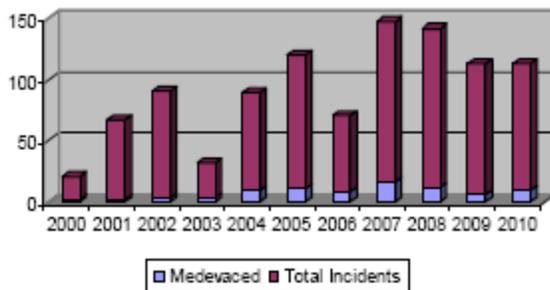
All OCBP new-hires and veterans train intensively in deep-water and shallow water neck/back extractions. In the turbulent environment of the ocean, the spine remains as straight and stabilized as possible. We refer to any potential spinal injury as a “neck/back.” Potential spinal injuries range in symptom from abrasions from the ocean floor on the shoulders or above, to paralysis or death for an unknown reason.

My Ph.D. dissertation topic is related to our “neck/back” that occur in the water along Ocean City. The statistics listed below may, or may not be, included in my dissertation. I have put together these back-of-envelope, simple statistics because, to me, these are very interesting figures. I am fairly sure that some of our newsletter readers will also be interested.

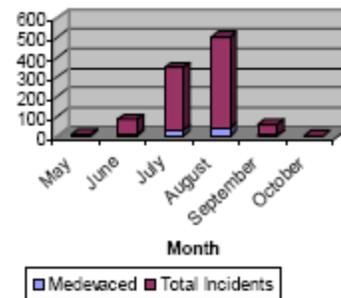
The dissertation will use regression analysis to try to identify some causal relationships and to evaluate alternatives to reduce the incidence or severity of near-shore spinal injuries in Ocean City and coastal resorts worldwide. The data used here come from the incident reports completed from 2000 through 2010.

Total aquatic Neck/Back Incidents from 2000 through 2010: 921
 Medivaced of Neck/Back Incidents 2000 through 2010: 87 patients, 9.5%

**Near-Shore Spinal Incidents
2000-2010**



**Near-Shore Spinal Incidents by Month
2000-2010**



Context

Benchmark Visitors per Season: 4,000,000*

Visitors Involved in Neck/Back Bathing Incident: 921 of 44,000,000, 0.002%

This is 2.093 per 100,000 visitors.

Visitors Medevaced due to Neck/Back Bathing Incident: 87 of 44,000,000, 0.0002%

This is .1977 per 100,000 visitors.

According to a RAND study, the rate of aquatic spinal *injuries* in the US has been .16 per 100,000 residents (Smith, Paulson, & Wiklund, 2003, p.1).

* N. Dobrowolski, January 2, 2007, personal communication.

Ocean City, a coastal resort, has been only .038 incidents per 100,000 people off of the national average, including land-locked areas. I attribute this to our enforcement of the alcohol ordinance, signs and public education.

We cannot say for certain that an “incident” is an “injury.” I make this comparison assuming that patients who are medevaced have a true spinal injury and those transported to AGH or PRMC do not. We know from the letters we receive that this assumption is not always true. At the time of incident, the symptoms that warrant the helicopter are EMS’ best indicator of a spinal injury (MIEMSS, 2010, p. 132). Quad-mount X-ray machines, or smart phone apps, are not yet available.

Patients

Sex

Male Patients: 72.5%
 Male Medevaced: 82.4%
 Male Patients Shallow Diving: 47 of 49, 95.9%

Race

Asian: 2.3%
 Black: 2.9%
 Hispanic: 2.9%
 Other: 2.4%
 White: 81%
 Not Listed: 8.8%

Age and Summary

	All Shallow Diving	Shallow Diving Medevaced	All Body Surfing or Boarding	Body Surfing or Boarding Medevaced	All Medivaced	All Neck/Back Incidents
Median Age:	20	22	21	46	44	28
Average Age:	23	26	28	43	40	21
Minimum Age:	12	16	4	8	8	4
Maximum Age:	53	52	78	74	74	78
Number:	49	17	872	70	87	921
Percent of All Neck/Backs	5.32%	1.85%	94.68%	7.60%	9.45%	100.00%

Shallow Diving verses Body Surfing or Boarding

Activity Identified as Shallow Diving: 49 patients of 921, 5.3%
 Medevaced of all Shallow Diving: 17 patients of 49, 34.7%

Neck/Backs Due to Body Surfing or Boarding (not shallow diving): 872 patients, 94.7%
 Medevaced of all Neck/Backs Due to Body Surfing or Boarding: 32 patients of 872, 3.7%

If Medevaced:

Shallow Diving: 17 of 87: 19.5%

Body Surfing or Boarding: 70 of 87: 80.5%

According to the World Health Organization, striking the bottom while body surfing is the most common cause of aquatic spinal injury in the U.S. (WHO, 2006, p. 23). In Ocean City, body surfing is the activity being done for the vast majority of neck/back incidents that we document (94.7%), but the shallow diving incidents appear to be more likely to be tragic (34.7% of shallow diving incidents/injuries are medevaced; almost 10 times the rate of body surfing incidents/injuries medevaced). Put differently, 5 percent of the incidents, the shallow divers, make 20 percent of the medevaced patients.

Alcohol, Drugs Believed to be a Contributing Factor

Alcohol, Drugs Believed to be a Contributing Factor: 14 patients of 921, 1.5%
 Alcohol, Drugs Believed to be a Contributing Factor of all Shallow Diving: 5 patients of 49, 10.2%

Alcohol, Drugs Believed to be a Contributing Factor of all Neck/Back Due to body surfing/boarding: 9 patients of 873, 1%

Alcohol, Drugs Believed to be a Contributing Factor of all Medivaced: 6 patients of 87, 6.9%
 Of these 6 patients, 3, or 50% were shallow diving.

Alcohol, Drugs Believed to be a Contributing Factor of Shallow Divers Medivaced: 3 patients of 17, 17.6%

It should be noted; if a patient presents a traumatic mechanism that could cause a cervical spinal injury and is suspected of being under the influence of drugs or alcohol then the patient is to be immobilized by protocol (but not necessarily sent to a trauma center) (MIEMSS, 2010, p. 28).

BEACH SAFETY EDUCATOR



**KEEP YOUR FEET IN THE SAND,
 UNTIL THE LIFEGUARD'S
 IN THE SAND!**



One of our greatest defenses against these injuries is education. The patch to the left is earned when SRTs complete the Beach Safety Educator requirement for OCBPSRA SRT II

Equipment

EMS on Scene of all neck/back incidents: 91.7%

Vehicles used to transport patients off the beach:

<u>604</u>	<u>605</u>	<u>606</u>	<u>608</u>	<u>609</u>	<u>610</u>	<u>611</u>	<u>612</u>	<u>614</u>	
20	25	9	45	31	71	43	37	52	
<u>615</u>	<u>616</u>	<u>619</u>	<u>620</u>	<u>621</u>	<u>622</u>	<u>624</u>	<u>625</u>	<u>Other</u>	<u>Total</u>
42	15	9	52	9	12	22	16	4	514

CPR Used (AED Likely)

12 patients of 921, 1.3%

Of these 12, 2 were medevaced.

We could have made good use of the quad-mount X-ray machine or smart-phone app. Either Apple or Google probably already has one in the product pipeline.

I hope to include some regression results in the fall newsletter. I would not be able to write a dissertation on this important topic if it were not for Captain Arbin's insistence on the timely collection of information, Debi Tyler's accuracy in entering the incident reports and the careful attention of the Sergeants, Crew Chiefs, Assistant Crew Chiefs and SRTs that complete the incident reports. Thank you!

References

- Maryland Institute for Emergency Medical Services Systems (MIEMSS). (2010). *The Maryland medical protocols for emergency medical services providers*. Baltimore, MD: Office of the State EMS Medical Director.
- Ocean City Beach Patrol (OCBP). 2000-2010. *Incident reports* [Data files].
- Smith, E., Paulson, C., Wiklund, M. (2003). Review of spinal cord injury statistics related to diving and diving board use. *American Institutes for Research*, Project 01858. Retrieve from http://www.divingboardsafety.net/AIR_report.pdf.
- World Health Organization (WHO). (2006). *Guidelines for safe and recreational water environments: Volume 1: Coastal and fresh waters*. Retrieved from http://www.who.int/water_sanitation_health/bathing/srwg1.pdf.

Captain's Note: Because Education and Prevention are two components of our three-part mission we look at this data to assist us in creating better delivery strategies for our educational outreach programs. This data is not meant to frighten the beach-going public into staying out of the ocean, but rather to help us better understand the dangers associated with the ocean environment and provide them with information to make it safer for them to enjoy the wonderful ocean environment. We also must use caution when using statistics, because a miss-informed public may draw some inaccurate or simply wrong correlations to cause and effect, which just are not supported. If you look at the numbers carefully you see that the ocean, when guarded by trained lifeguards, is really a very safe environment and the chances of a person becoming a victim of a "neck/back" are rather remote. Furthermore, we know from anecdotal data and victim interviews that most of these incidents were easily preventable had the person used proper techniques and a little knowledge of the ocean environment. That is why I am always saying that education is the most important aspect of our mission and why we work so closely with the press and other publications that may help inform our public. But there is always more each of us can do. Make this "the summer of EDU's".

