

# Official Summary of the Autopsy Reports Following the Death of Nicholas Mevoli



AIDA INTERNATIONAL December 2015, Dr. Per Vestin, Medical and scientific officer.

During the Vertical Blue competition on Long Island, Bahamas on the 17<sup>th</sup> of November 2013 at approximately 12.30 pm, Nicholas Lawrence Mevoli III made a competition dive in the discipline 'constant weight no fins' to a depth of 72 meters. After ascending from the depth, he lost consciousness. Resuscitative efforts were unsuccessful and he was brought to the nearest hospital. His life could not be saved. Nicholas was pronounced dead in the Deadmans Cay Clinic, Long Island, Bahamas on the 17<sup>th</sup> of November 2013 at 1.48 pm.

Two autopsies were conducted. The primary autopsy was carried out on the 20<sup>th</sup> of November 2013 by Dr. Caryn O Sands, pathologist at the Rand Pathology Laboratory, Princess Magret Hospital. A second, private autopsy was conducted on the 30<sup>th</sup> of July 2014 by MGF Gilliland, Brody School of Medicine. The autopsy reports were shared with the diving community, AIDA International, with the kind agreement of the family.

This is a short summary of the relevant findings of the autopsy reports. For information on the accident analysis and resuscitation attempts, please see previous reports.

## Results

The results of the two autopsies were coherent and conclusive. The cause of death was found to be pulmonary hemorrhage due to barotrauma. Blood was found inside the alveoli and areas of patchy alveolar enlargement were found. Gross and microscopic examination of the respiratory system identifies the source of the blood as leak from the capillaries at the periphery of the lungs. Other components of the respiratory system show no evidence of injury.

There was also evidence of recurrent hemorrhage. Macrophages containing hemosiderin, an iron containing molecule found in red blood cells, was found inside the alveoli and is evidence of previous hemorrhage. Other signs of old damage were fibrous repair as well as interstitial fibrosis, suggesting healing of previous damage. There were no signs of acute capillaritis or diffuse alveolar damage, two common reasons for pulmonary hemorrhage associated with illness.

The right ventricle of the heart was found to be mildly hypertrophic. Also arterial fibrointimal thickening was present. This finding is consistent with pulmonary hypertension.

Mild chronic obstructive pulmonary disease was also found as a preexisting condition.

## Discussion

The autopsies conclude that Nicholas Mevoli was in good overall health prior to the dive with no preexisting acute or chronic diseases contributing to the accident. The cause of death was pulmonary hemorrhage due to barotrauma, among divers commonly referred to as 'squeeze'. It was evident from the examinations that he had squeezed on several occasions before his fatal dive. Reports and video evidence show bleeding from the airways on the fatal dive as well as on a dive on November the 15<sup>th</sup>.

It can be speculated that recent and recurrent squeeze made Nick more prone to further squeezes and were strong contributing factors to the severity of the acute damage. Therefore, we strongly suggest proper and full recovery before diving again after a squeeze.

Dr. Gilliland suggests in her report that the signs of pulmonary hypertension were a physiologic response to the stress of repeated barotrauma. This finding is neither believed to be a contributing factor to the outcome of the accident, nor a reason for it. Another interesting thought on this subject is that pulmonary hypertension is a physiological response, or adaptation, to intensive breath hold diving and apnea training. This is something that will be interesting to investigate further.

After this accident AIDA International started a project to improve the safety standards on the platform, a work still in progress. Quality standards on medical equipment as well as on medical personnel are being incorporated in the rules. Rule changes has also been made, giving the platform doctor and the safety team the authority to monitor athletes post performance and to stop individual athletes from further competition if signs of pulmonary edema is evident or for other relevant medical reasons.

It is not totally clear why squeezes occur and genetic factors are probably one reason why some squeeze easily and others don not. The general opinion in the diving community is that `squeeze´ is a result of increasing pressure at depth and that the susceptibility of the athlete is highly individual. Adaptation, proper relaxation and training are important factors to minimize the risk of squeeze. This is why AIDA is putting a limit on depth announcements in competitions depending on recent competition or training results.

Funded by AIDA International, a small pilot study on squeezes and O<sub>2</sub>-saturation has recently been conducted by Prof. Erika Shagatay and is ready for publication. Scientific reports from Dr. Thelaus and Dr. Hollowell are also ongoing. Further research and discussion on the subject is needed and warmly welcomed.

This was the first fatal accident in a competition sanctioned by AIDA International. The diving community was left in shock and sorrow and is still recovering. Finally, as a reminder, we kindly ask every diver to dive with responsibility and to listen to the body to prevent cases like this.

Dr. Per Vestin, Medical and scientific officer

#### References:

- Official autopsy report; Dr. Caryn O Sands, pathologist , Rand Pathology Laboratory, Princess Magret Hospital.
- Private autopsy report; MGF Gilliland MD, Brody School of Medicine

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