



# The Assessment and Treatment of Non-visible Blast Injuries: the Need for Education

**Diana Coseglia-Danna DNP, HNP-BC, FP-BC**

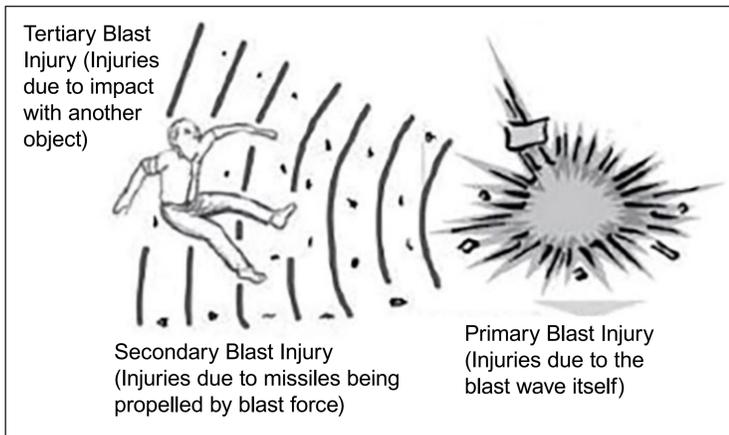
**Introduction: Explosions are the most common cause of casualties associated with terrorism. Explosions produce unique patterns of injury seldom seen outside combat. Few civilian healthcare professionals have experience with explosive-related injuries.**

## Purposes and Objectives

Develop a teaching module for the assessment & treatment of non-visible blast injuries.

Participants are able to:

- Define a blast event
- Classify explosives – high order & low order
- Identify, assess & treat non-visible blast injuries:
  - Tympanic membrane rupture (most common blast injury & is not a marker for morbidity)
  - Blast lung (affects 30% of blast victims & symptoms may be delayed for 48 hours)
  - Abdominal hemorrhage (symptoms may be delayed for 48 hours)
  - Closed brain injuries (affects more than 50% of blast victims)
  - Post traumatic stress disorder (affects victims 4 to 6 weeks post-blast)
- Increase the healthcare providers' knowledge of non-visible blast injuries.



## Methods and Results

Twenty-six Wagner College nurse practitioner students participated in the pre-test, teaching module & post-test. All, but one, completed the demographic information.

Pre- & post-test knowledge was measured and compared using statistical analysis (SPSS, Chicago, Illinois) Average pre-test score 41%; average post-test score 82%.

The P value was not significant except for question 4 of the tests (0.02) due to small sample size, utilization of only one test group, & sample of convenience.

6 of the 25 nurses received prior bomb blast education: 3 as part of their nursing school education and 3 as part of their employers' staff education requirements.

The 6 nurses with prior bomb blast education had been nurses for less than 9 years.

Only 1 of the 2 emergency room nurses had received prior bomb blast education.

Of the 6 nurses with prior bomb blast education, 1 attained the highest pre-test score of 9 correct answers (60%).

The average pre-test score for the 6 nurses with prior bomb blast education was 6 correct questions (42%) – average for all participants was 41%.

The average post-test score of the 6 nurses with prior bomb blast education was 12 correct questions (82%) – average for all participants 82%.

Max Correct Answers	Pre	Post	Improve #	Improve %
390	160	320	160	100%
Avg. Grade	41%	82%		

## Conclusion and References

The results of this study demonstrated the need for non-visible blast injury education.

Disaster preparedness is lacking and needs to be incorporated into the curriculum of medical school education, nursing school education, medical residency programs, first responder education & new hire healthcare orientation education.

Bomb blast drills are needed to improve competency and retention of knowledge.

A disaster response plan is not adequate if responders have not received education specific to disaster scenarios.

Education & practice drills creates muscle memory.

### References

1. CDC (2015). Providers Guide to Blast Injuries. Retrieved from <http://www.cdc.gov/masstrauma/preparedness/primer.pdf>
2. CDC (2015). Blast Injuries: What Clinicians Need to Know (Audio podcast). Retrieved from <http://www.acep.org/blastinjury/2015>
3. Frykberg, E., (2005). Triage: Principles and Practice, Scandinavian Journal of Surgery 94, 272-278
4. New York State Homeland Security and Emergency Services Evaluation and Treatment of Blast Injuries (2015). Retrieved from [http://www.dhss.ny.gov/training/courses/ETBI\\_Saratoga\\_10172015.pdf](http://www.dhss.ny.gov/training/courses/ETBI_Saratoga_10172015.pdf)
5. Stewart C. (2011). Blast Injuries: Preparing for the Inevitable. Emergency Medicine Practice. Retrieved from [http://www.ebmedicine.net/topics.php/paction=shoeTopic&topic\\_id=18](http://www.ebmedicine.net/topics.php/paction=shoeTopic&topic_id=18)
6. Tintinalli, J., Strupczynski, J., Ma, O., Weiss, R., Cline, D., Weiss, M., Cydulka, R., Meckler, G., Beasley, K. Tintinalli's Emergency Medicine: A Comprehensive Study Guide, 8th edition, 2015. McGraw Hill Publishing

EDUCATION = KNOWLEDGE



KNOWLEDGE = POWER

*"Plans are nothing; planning is everything"*  
- Dwight D. Eisenhower