

Exhibit 12

To Defendants' Memorandum in Support of Motion for
Summary Judgment

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND
(Northern Division)

STEPHEN V. KOLBE, <i>et al.</i> ;)	
)	
)	
<i>Plaintiffs,</i>)	Case No.: 1:13-cv-02841-CCB
)	
v.)	
)	
MARTIN O'MALLEY, <i>et al.</i> ;)	
)	
)	
<i>Defendants.</i>)	

DECLARATION OF EDWARD E. CORNWELL III, M.D.

I, Edward E. Cornwell III, M.D., under penalty of perjury, declare and state:

1. I am over the age of 18 and am competent to testify to the matters stated below.
2. I am the LaSalle D. Leffall, Jr. Professor and Chairman of Surgery at the Howard University College of Medicine and the Surgeon-in-Chief at the Howard University Hospital.
3. I received my surgical training at the Los Angeles County and University of Southern California Medical Center, and my trauma/critical care fellowship at the Maryland Institute for Emergency Medical Services Systems in Baltimore, Maryland. I have over twenty years of experience in trauma and critical care, having been an Assistant Professor of Surgery at the Division of Trauma-Critical Care at Howard University Hospital (1989-1993), Assistant Professor and then Associate Professor of Surgery at the Division of Trauma and Critical Care at the University of Southern California, Los Angeles (1993-1998), Associate Professor and then Professor of Surgery and Chief of Trauma at the Johns Hopkins University in Baltimore (1998-2008), Associate Professor of Anesthesiology and Critical Care Medicine at the Johns Hopkins University (1999-2008), and now in my current positions at Howard. I am certified in both General Surgery and Surgical Critical Care by the American Board of Surgery.

4. In all of these positions I have had extensive first-hand experience treating gunshot wound victims. Over the course of more than 20 years I have treated several thousand gunshot wound victims.

5. I also served as Associate Professor of Health Policy and Management at the Johns Hopkins University Bloomberg School of Public Health (2003-2008).

6. My career interest is in the prevention, treatment, and outcome disparities of traumatic injuries, including gunshot wounds, and their critical care consequences. I have co-authored over 240 articles and chapters and have given more than 330 invited presentations in the field, and have delivered the named lecture or keynote address at 20 institutions and conferences. I am also a reviewer for several surgical journals and am currently deputy editor of JAMA-Surgery. My curriculum vitae is attached to this declaration.

7. I am qualified to offer opinions as to the physiological trauma caused by gunshot wounds and other penetrating wounds, the different mortality rates for single gunshot wounds versus multiple gunshot wounds, and the different medical responses required for treatment of single gunshot wounds versus multiple gunshot wounds.

Gunshot Injuries and Trauma Centers

8. A generation of trauma surgeons, emergency medical service personnel, hospital, public health, and civic leaders have engaged in the evidence-based pursuit of creating trauma systems and trauma centers designed to deliver rapid life-saving care to critically injured patients. As a result, compelling evidence has emerged in the literature suggesting that patients with major injuries taken to designated trauma centers have a better chance of survival than their cohorts (matched for age, gender, and injury severity) taken to other hospitals.

9. It is commonplace for major trauma centers to save over 97% of their patients who do not present as "Dead on Arrival" and surviving to hospital admission. Accordingly, further progress in the reduction of trauma-related deaths must involve pre-hospital factors and preventing injuries from occurring in the first place, or lessening the severity of those injuries so that patients are able to survive to hospital admission. This simple principle becomes exceedingly complex in the national discourse regarding firearm deaths.

Surge in Non-survivable Gunshot Injuries

10. There is no clinical database that accurately documents the proportion of gunshot wounds (GSW) annually that are created by specific types of firearms. However, a study at Johns Hopkins University, a Level 1 trauma center, in the last decade investigated the proportion of devastating and non-survivable gunshot injuries. The

study, which examined the time periods 2000-2003 (the early period) and 2004 – 3/31/2005 (the late period), identified an overall 3.3% mortality rate among the 11,000 patients seen. Penetrating injuries (including GSW and stab wounds) were seen in about 27% of patients, but were responsible for 72% of deaths. Fully 81% of non-surviving patients sustained severe GSW to the head or chest.

11. There was a statistically significant rise in the mortality rate over time (3.0% in the early period versus 4.3% in the late period) that was fully explained by the significant increase in the proportion of patients presenting with GSW to the head or chest that presented dead on arrival (1.7% in the early period versus 3.1% in the late period).

12. The ultimate survival of patients who lived long enough to be admitted to the hospital was virtually identical (98.7% vs 98.8%) throughout the study period. Perhaps the most alarming trend seen in the later period was that 83% of the deaths overall were seen in patients who were shot and were dead on arrival, or were shot in the head, admitted, and subsequently declared to be brain dead.

13. These data suggested that while in-hospital mortality remained constant, the proportion of patients with devastating non-survivable GSW increased. In a mature trauma system, this makes a compelling argument that violence prevention strategies represent the greatest opportunities for further reductions in post-injury death.

Trends in National Data

14. The observation of the pronounced lethality of GSW is similarly demonstrated by an analysis of data collected from hospitals across the United States. The American College of Surgeons aggregates data from more than 900 trauma centers to create the National Trauma Data Bank (NTDB), which contains information on patient and injury characteristics along with information on important outcomes such as survival.

15. Though this dataset is not a population-based sample as it does not include patients treated at every hospital in the country, it does include data from 95% of the approximately 200 Level 1 trauma centers in the United States, which are the centers that care for the most severely injured patients and also serve as a resource for other centers to refer complex cases. The NTDB is thus an excellent source to study trends and outcomes at hospitals that care for the most critically injured patients.

16. Figure 1 demonstrates crude mortality among patients in the NTDB who were either shot or stabbed from the years 2003-2010. Patterns of injury were used to classify types of patients: those who were stabbed (Stab), those who had a single gunshot wound (Single GSW), those who had gunshot wounds in more than one region of the body (Multiple GSW) and those who had gunshot wounds in multiple body regions,

including at least one gunshot injury to either the head, thorax or abdomen (Multiple GSW HTA).

Figure 1. Crude mortality among gunshot wound and stab wound patients surviving through emergency department in National Trauma Data Bank (n=246,184)

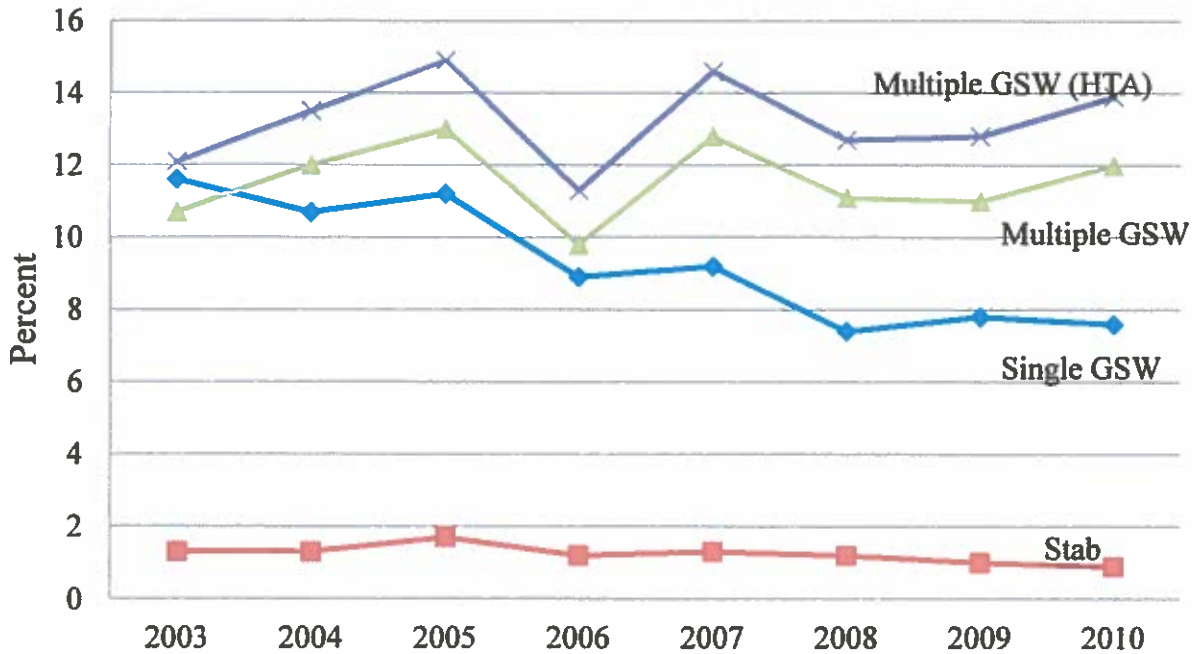


Table 1. Crude mortality among gunshot wound and stab wound patients surviving through emergency department in National Trauma Data Bank (n=246,184)

	Stab wound (n=117,485), %	Single GSW (n=96,813), %	Multiple GSW* (n=31,886), %	Multiple GSW HTA (n=27,737), %
2003	1.3	11.6	10.7	12.1
2004	1.3	10.7	12	13.5
2005	1.7	11.2	13	14.9
2006	1.2	8.9	9.8	11.3
2007	1.3	9.2	12.8	14.6
2008	1.2	7.4	11.1	12.7
2009	1	7.8	11	12.8
2010	0.9	7.6	12	13.9

*multiple GSW includes multiple GSW HTA

17. Crude mortality of stab wounds and Single GSW improved over the seven-year period. However, the mortality from Multiple GSW and Multiple GSW HTA did not. In fact, in 2012 more than 12% of patients with Multiple GSW and nearly 14% of patients with Multiple GSW HTA died, whereas less than 8% of patients with Single GSW and only 1% of patients with stab wounds died.

18. During the 2003 to 2010 time period, about 2.2 million patients were treated at Level 1 trauma centers that contribute data to the NTDB. Approximately 11% of all patients treated at these centers sustained a penetrating injury, which was either a GSW (52%) or a stab wound (48%).

19. A very small proportion of patients with a stab wound were deemed dead on arrival (DOA) or died in the emergency department due to stab wound, not surprisingly, as only a few types of stabs cause early death (such a stab to the heart or carotid vessels). On the other hand, the proportion of patients who were shot and were deemed dead on arrival or died in the emergency department of the trauma center has been increasing (Figure 2). As discussed with the single center data, these patients are so severely injured, frequently with exsanguinating bleeding that they are unable to be resuscitated no matter how much we improve trauma center care. Decreasing these deaths falls squarely within the endeavor of prevention, or at least reducing the severity of injury.

Figure 2. Proportion of gunshot wound and stab wound patients presenting dead on arrival or dying in the emergency department at level 1 trauma centers in National Trauma Data Bank (n=246,184)

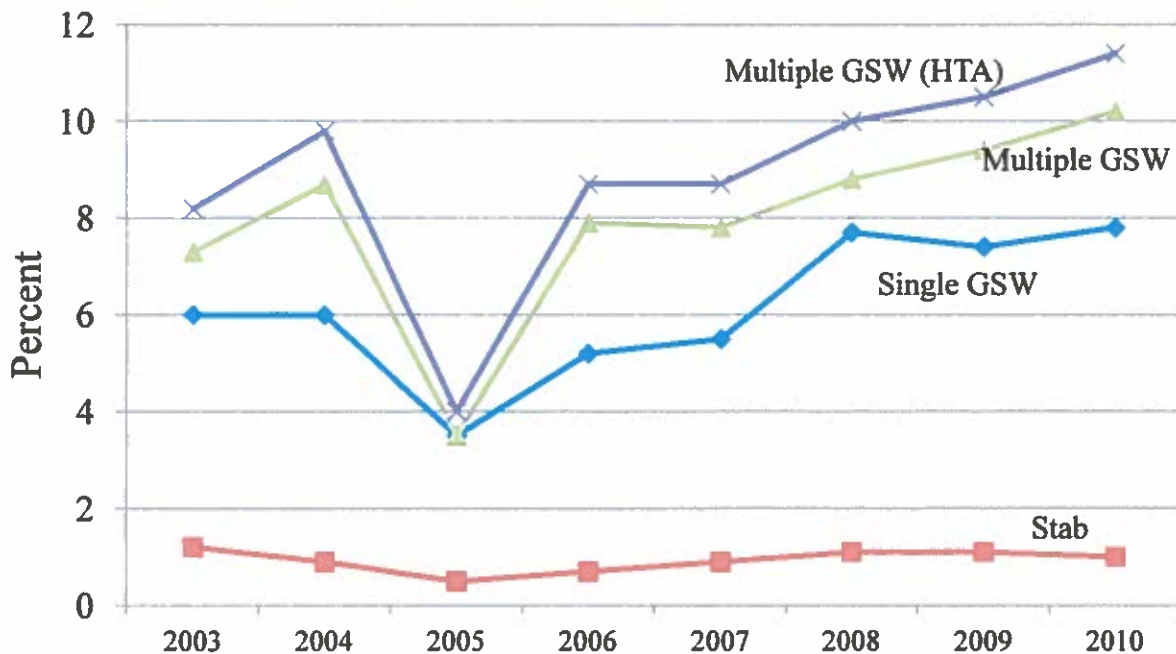


Table 2. Proportion of gunshot wound and stab wound patients presenting dead on arrival at level 1 trauma centers in National Trauma Data Bank (n=246,184)

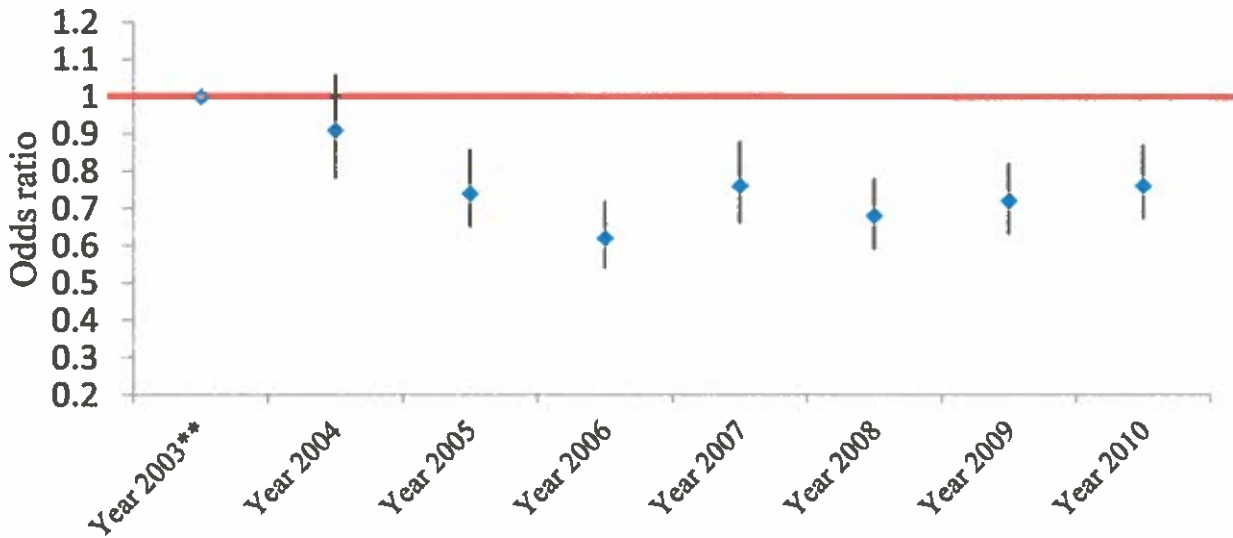
	Stab wound (n=117,485), %	Single GSW (n=96,813), %	Multiple GSW* (n=31,886), %	Multiple GSW HTA (n=27,737), %
2003	0.1	0.9	1.3	1.4
2004	0.2	1.3	2.6	2.9
2005	0.1	0.8	1.8	2.1
2006	0.1	0.6	3.9	4.2
2007	0.1	0.8	1.8	1.9
2008	0.2	1.9	1.6	1.8
2009	0.2	1.7	1.3	1.4
2010	0.2	2.1	2	2.2

*multiple GSW includes multiple GSW HTA

20. Nevertheless, trauma center care and survival has been improving over the past several years. Recently adopted techniques such as damage control surgery, in which operations are paused midway and patients with open body cavities are resuscitated in the ICU, and changes in the components of blood that are transfused to bleeding patients, are known to increase survival after severe injury.

21. Again, analysis of the NTDB offers evidence of this. We conducted a multivariate logistic regression analysis in which we adjusted for a patient's age, sex, race, insurance status, injury severity score, Abbreviated Injury Scale for head, thorax and abdomen and the presence of hypotension on arrival to the hospital, and found that compared to 2003, patients treated in later years had a significantly lower risk-adjusted odds of death when they suffered a Single GSW (Figure 3).

Figure 3. Risk-adjusted odds of mortality among single gunshot wound patients presenting at level 1 trauma centers and surviving through emergency department in National Trauma Data Bank (n=96,813)*

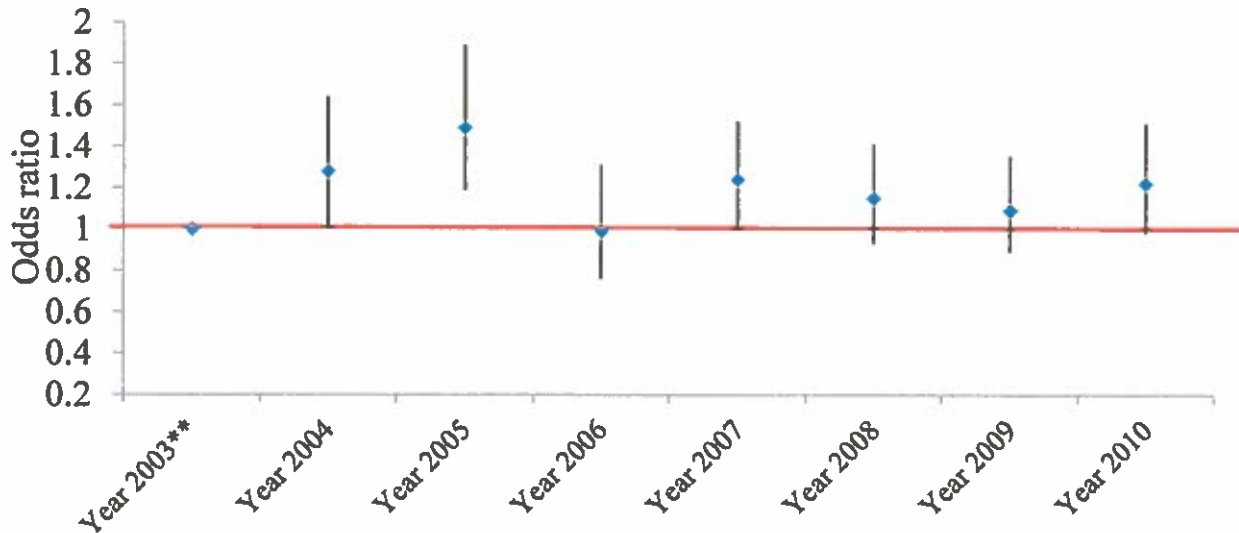


*Adjusted for age, gender, race, insurance status, Injury Severity Score (ISS), Abbreviated Injury Scale (AIS) of the head, thorax and abdomen, presence/absence of shock on presentation

**Reference year

22. However, even these advances in techniques, some of which were adopted from experiences from the US Military (e.g. the changes in blood component therapy, in which now much more plasma and many more platelets are given instead of just red blood cells) have not proven similarly effective against multiple GSW. As is seen in Figure 4, on a similar multivariate logistic regression analysis, in which the same factors are controlled for, no increase in survival was seen for patients with multiple GSW over the past several years at Level 1 trauma centers.

Figure 4. Risk-adjusted odds of mortality among multiple gunshot wound patients presenting at level 1 trauma centers and surviving through the emergency department in the National Trauma Data Bank (n=31,886)*



*Adjusted for age, gender, race, insurance status, Injury Severity Score (ISS), Abbreviated Injury Scale (AIS) of the head, thorax and abdomen, presence/absence of shock on presentation

**Reference year

23. Another important point to note is that deaths due to multiple GSW are a major contributor to health care disparities. It is well known that penetrating injuries and deaths are much more common among minority populations. However, it is also now known that compared to White patients, Black and Hispanic patients have significantly increased odds of death after suffering an equivalent injury. Together, this phenomenon of increased frequency of being shot and being more likely to die from their wounds causes a compound effect that perpetuates health care disparities and contributes to the lower overall life expectancy of injured Blacks and Hispanics in the United States.

Clinical Research to Policy: The Public Health Model

24. The aforementioned studies all suggest that the ceiling is being quickly approached in optimizing the survival of salvageable patients presenting to trauma centers, and that (in accordance with Haddon's matrix) addressing pre-hospital issues and prevention strategies represents the obvious next line of pursuit of further reduction of post-injury death. Implementing strategies resulting from public health studies have resulted in substantial reductions in deaths from drowning, poisoning and motor vehicle crashes. However, the standard model of translating health sciences research into public

policy designed to enhance safety has become impeded by laws designed to inhibit relevant research.

25. Over the last fifteen years, due to Congressional intervention, all Centers for Disease Control and Prevention grantees have been prohibited from conducting funded research that analyzes or supports gun control.

26. As physicians, it is our responsibility to maintain an evidence-based approach in the search for consensus around a comprehensive approach to firearm injuries. The American College of Surgeons has recently updated its long-standing statement on firearm injuries around the principles of: 1) restriction of civilian access to weapons and ammunition designed for military use; 2) need for research and a database on firearm injuries; 3) freedom of health care professionals to fulfill their role in counseling and education regarding prevention of firearm injuries; 4) background checks; and 5) increased access to mental health care.

Conclusions

27. Available data regarding the treatment of gunshot wounds demonstrates that patients with multiple gunshot wounds have a higher mortality rate than patients with single gunshot wounds.

28. Available data also show that while mortality for patients with single gunshot wounds is decreasing, mortality for patients with multiple gunshot wounds has remained consistently higher. The medical advances that are enabling reduced mortality from single gunshot wounds are not able to reduce mortality from multiple gunshot wounds.

29. If further advances in survivability of victims of gunshot wounds are to be achieved, it will most likely need to result from pre-hospital efforts to prevent or lessen the severity of gunshot wounds, including efforts to reduce the likelihood of multiple gunshot wounds.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge, information, and belief.

Date: 2/12/14

Edward E. Cornwell III M.D.
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