Epidemiology of Firearms injuries in the US

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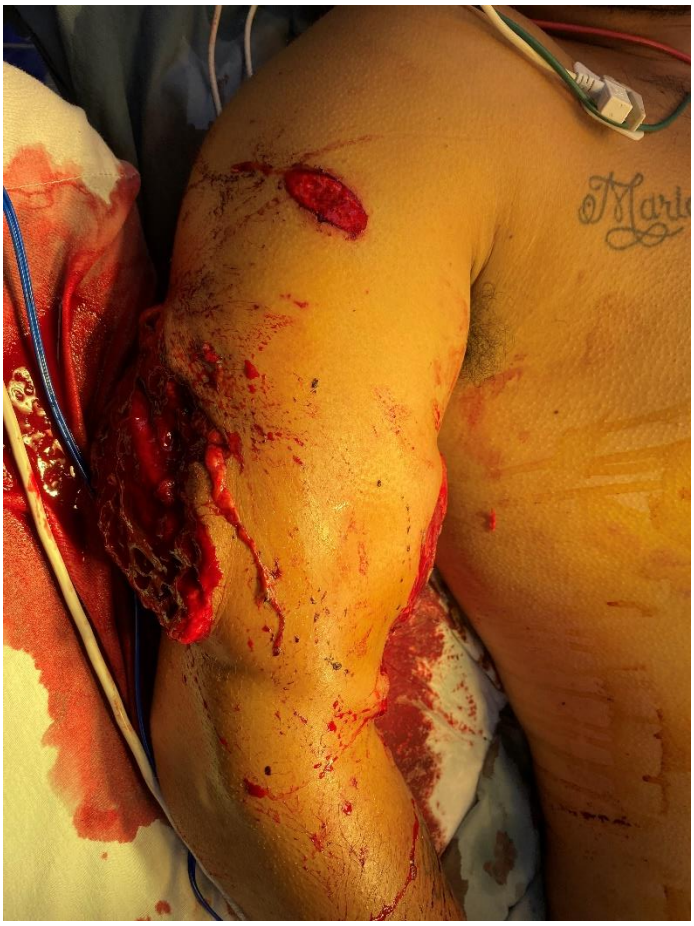
I gained Knowledge on the Columbian Drug war as soon as I joined the Yale-New-Haven Program at Bridgeport and New-Haven in the state of Connecticut. In a short time, I faced the reality of a population at war, a phenomenon that many large cities share, nowadays. It did not take me long after leaving my faculty position at Meharry Medical School to settle in Trumbull CT and assume my responsibility as Chief of Orthopedic Trauma and responsible of the Orthopaedic clinics. I joined the Yale-New Haven trauma system in November 1990. I never knew that I was reaching a battlefield in a non-conventional war. I packed my belongings with wife and kids (2 boys) and headed to the New England area, happy to leave the Mid-West (Murfreesboro and Nashville in TN). My wife was pregnant with our fourth child, a year after we had a stillborn boy following complications associated to an amniosynthese.

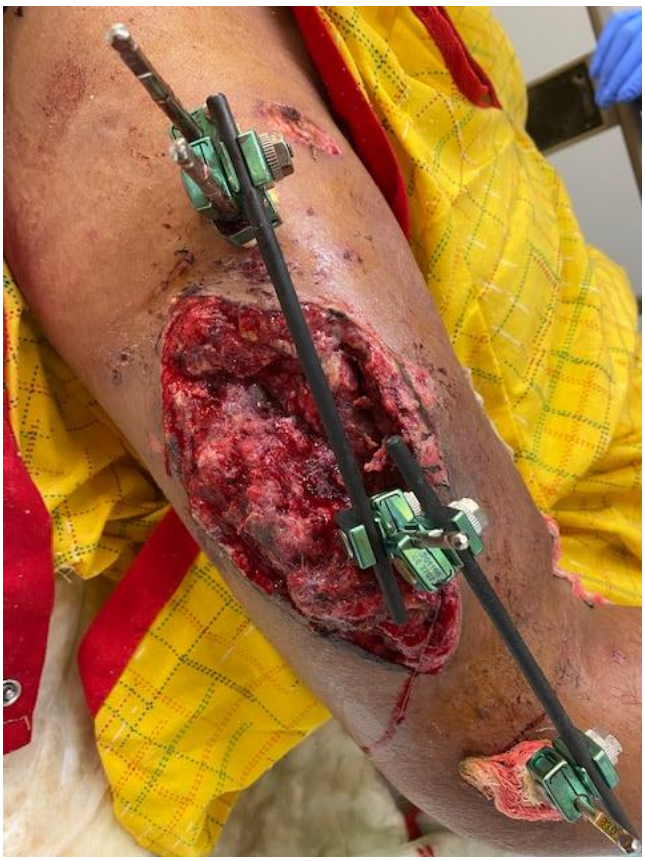
I needed a change in my life. Moving to work at a Level One Trauma Unit, was definitively a challenge that I was ready to take but I did not really understand what was waiting for me in Bridgeport Hospital. It did not take me long to realize that I was in a drug infested area and that I was the only treating physician for a large underprivileged community. The majority of my patients were victims of gunshot wounds related to the diffusion of drugs. The Police, the FBI and all other authorities were questioning on the details of their injuries. In little time, I found myself in the middle of a battlefield where each rival gang member wanted to protect me because I became the only physician taking care of them. Indeed, the only black physician in the Trauma center, capable of handling such injuries. I was told by many that “my back was protected “which mean that, if in the middle of the night, I wanted to have a sandwich or a drink between cases, I was able to do so, walk downtown Bridgeport and be protected. All police officers knew me as the orthopedic surgeon of the community. I felt safe when my kids and wife were home.

It was a time where most gunshot wounds to the extremities needed to be admitted and treated in longitudinal skeletal traction followed by long leg casting

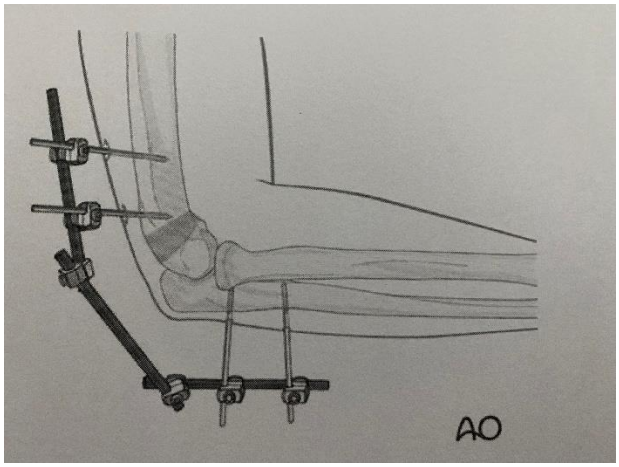
or Spica casting once the fracture site showed sufficient callus formation. Soon after, we opted to be more aggressive and learned how to fix them avoiding a long hospitalization with Intramedullary (IM) Rods or external fixators or plate fixation. I was often in the operating room, morning and evening taking care of anybody involved in the fatalities. I became the one to whom all will turn to for information and care of the victims. The gang members would easily announce the way they would always protect me because I become the only individual physician taking care of their injuries. I was in a certain way in charge of the orthopedic traumatized patients once they become hospitalized or involved in the clinic looking for subsequent care. I will refrain myself for discussing many of the anecdotal tales dating of the time I served as a Traumatologist at the Bridgeport-Yale Health in Connecticut.



High velocity Gunshot wounds with a comminuted fracture of the humerus ready for emergency treatment in the Operating room with Irrigation, debridement and application if an external fixator.



High velocity Gunshot wound with extensive soft tissue destruction, placed in an external fixator.



I would like to take time today in this article to bring the light on the epidemiology of firearm in the United States and especially in this corner of the country, the New-England area during the years 1990 and 2008. It is well known that the USA stands out among developed countries for it high rate of firearms injuries with its

morbidity and mortality, even through there is no comprehensive national data documenting such injuries. The Center for Disease Control and Prevention has tried since, to collect data in 2020 and concluded that 45,222 deaths were recorded in the USA, that year, representing 42.9% (19,284) as homicides while the suicides counted for 53.7% (24,292). The exact number of persons injured each year by firearm, still remain unknown. In the United States, there is not a national surveillance system or mechanism able to track the number of firearms related injuries.

Suicide is seen as the leading cause of death in the USA especially among adults aged 75 and more. Firearm injuries continue to account also for most suicides among adolescents between the age of 1 and 19. It has not been our experience in Bridgeport city, infested drug locality where I practiced there. We saw these statistics changing longtime before the CDC reported a 61/100,000 in 2020 with a ten-fold among black men and boys aged 15-34. The same has been seen with the suicide rate increasing to an 8.1 /100,000. Firearms suicide is more often seen in rural areas with a rate of 11.1/100,000 (8,364 deaths) while the incidence reached 29.0/100,000 (5567 deaths) in older white men after the age of 65. The CDC also suggests that there may have twice as many survivors of firearms injuries as there are deaths. These survivors may have experienced chronic health disorders including physical disability from brain injury or paralysis, mental illness, or stress disorders.

Nowadays, mass shootings account for less than 1% of homicides in the USA. A "Mass shooting" has been defined as a shooting in which 4 and more deaths are recorded although active shooters events has increased around the country like we can see with Highland Park IL, Buffalo N-Y, Connecticut… etc

These mass shootings represent high-profile events which are sharing the front pages of our newspapers and have taken the conversation on firearm violence to another level. Fortunately, they represent only a small fraction of the problem of firearm-related injuries and deaths in the United States. This is not a new problem, but it has been escalating over the past several years. We have certainly seen such trend in the 1990's while involved with the Columbian Cartel gangs in Bridgeport CT but a decrease in the violence was noted as soon as proper measures were taken by the authorities. Unfortunately, years after the doubling of gun-related

homicides, “firearms fever” has reached directly the nation youth aged 1 to 19. Suicides with firearms have also increased. We have witnessed as trauma surgeon, the impact of the firearms on the victims and their family. We made recommendations at the Connecticut Medical society, and the AMA. We also suggested at the Eastern Association for the Surgery of Trauma (EAST) to re-classify semi-automatic rifles as Class 3 weapons and the Academy has intensified efforts to comprehend the problem in the communities and to bring solutions.

The physical consequences among survivors range from graze wounds to penetrating injuries involving multisystem and often the spine with paralysis. It brings also an emotional and psychological aspect to the gunshot wounds triggering anger, flashback and depression to the victims. Recurrent and repeated injuries can also be seen. In the 1990’s the drug Lord will come back to finish his victims or judge that the punishment was not harsh enough for the crime and will impose more physical injury. An example of patient with extremity injury like a femur or tibia isolated fracture or involving many systems, treated expeditiously with an IM rod or a plate may be discharged in 48 or 72 hours. The “punisher” may go to his/her home to “finish the job” or to injure the other extremity, thinking that the punishment was not sufficient or simply lodge a bullet in his/her brain. We have seen individuals, escaping the vigilance of the security guard at the hospital to reach the patient on the floor.

Children and adults may experience psychological trauma when they witness such firearm violence or lose a loved one. This may render them anxious or depressed or simply enrage them for revenge. On another end, the one living in the communities where violence is common, may restrict the children mobility in their neighborhood to avoid any intrusion on their way of living. Many studies have demonstrated that firearm availability in a house increases the risks for suicide. It is why the suicide rate is so high among veterans and older white men. The statistics may be changing because too many people like Black and Asiatic are becoming owner of firearms as well, for defensive means. Politicians believe that keeping away firearms from the homes, can be a solution to decrease the gun violence. Other believe that keeping them locked or in safe may also decrease their usage by children.

Novel proposed legislations are trying to limit ownership of firearms and eliminate their need at home. This way, we would like to believe that firearm suicide may become preventable. This is what is being called the “Lethal Means Safety “(LMS) which represent an evidence-base approach to reducing the suicide rate. Unfortunately, already 40% of US residents live in a home with a gun. Among people who die by suicide in the USA, half have no diagnosed mental illness.

American Indians and Alaskan Natives have also experienced a higher rate of homicide compared to other racial and ethnic entities. Between 2003 and 2018, the CDC has reported data on this segment of the population. The study has been extended for data collection until the year 2026. The reported age-adjusted homicide rate was reported to be 12 / 100,000 population for men and 3.9 / 100,000 for women while black individuals’ homicide rate was found to be 29.1 / 100.000 and whites was 3.0 / 100,000. A firearm was used in half of the homicides involving the Indians and Alaskan populations.

Another known risk factor is being monitored by the CDC since 2013-2014, affecting women being pregnant and women at their six weeks post-partum in the American Indian and Alaskan population. This is related to Intimate Partner violence (IPV). The CDC found it to be essential in preventing homicide in that segment of population. Alcohol and Drugs have also contributed to the rate of homicide and 27.8 % of all the homicide in this segment of population have demonstrated a direct relation to Alcohol and Drugs. A Domestic Violence Criminal jurisdiction was created to monitor violence against women in tribal courts. 109 homicides were discovered but 26% of these homicides involving American Indian and Alaskan women were reported as the result of rape and sexual assault. Violence against women in the Indian and Alaskan population is certainly preventable.

Over the years, progresses have been made to reducing violence in cities but unfortunately, the COVID-19 pandemic has slowed down the efforts, affecting the poorest and most disadvantageous neighborhoods while insecurity and political turmoil has gained ground. The black community is caught between the epidemic of gang violence and the Covid-19 pandemic. There were 45,000 firearms related deaths in 2020 representing 124 persons dying each day, by guns. Numbers are back to what they used to be in the 1990’s.

Indeed, we do have a gun problem in the country when Blacks experience a far greater risk of morbidity and mortality than any other race. Males account for 86% of firearms related fatalities. Many believe that it will require a law to limit the availability of the firearms but it may usurp on the individual liberties. Abolish the gun-show loopholes? Track the illegal guns sale by the suppliers or the manufacturers? Or the illicit sales of guns? etc. For others, gun violence is the "symptom" of a sick society which continue to support the wealth gap. The illegal gun sale needs better tracking…

A growing community distrust for the police force… Applying the law according to the ethnic background of the victims. There are also disparate actions within the law when sanctions have to be applied to a specific minority group like the Blacks, notably obvious abuses of the police forces like in the cases of Georges Floyd and Breonna Taylor, giving the impression of a generalized lack of humanity toward a segment of the population. It means for many that Justice has lost it blindness. It was noted different sentences for the same crime but different punishment for whites and Blacks. More, studies have analyzed actions of the Police department and have discovered racial inequities in which 1 / 1000 lifetime risk for a Black man to be killed by a law enforcement agent compared to 1 / 2000 lifetime risk for any other man from another race.

Death while in custody under physical control or under restrain by a law enforcement officer at a juvenile facility while being detained, death while being incarcerated or detained, death in local jails or federal prisons etc, these deaths seem to look like "judicial executions". Unfortunately, there is no centralized account for such deaths occurring in the custody of the criminal legal system in the United States. It is definitively unacceptable. Although every death in such conditions is duly recorded and a death certificate is issued and signed by the forensic pathologist who performed the autopsy or the lay coroner, the public health infrastructure remains incapable of collecting death data as well as the CDC is capable of collecting births and deaths data. Surely with such capability in collecting information, we should be able to find a solution and resolve some of the issues.

Can we find a way to resolve the problem of firearm related violence and homicide in our communities, as well as the racial inequities in the criminal legal

system? We can definitively prevent death in custody. There is a growing interest among researchers to clarify many of the unanswered questions about violence and preventions in the use of firearms. A 2023 hearing on gun regulations and public safety is on-going over the hill in Washington DC. The question will remain on the way Congress will proceed to find a solution not infringing on the traditional individual rights not challenging the existing laws relating to the second amendment. Certainly, one can argue that unsafe conditions in which many evolve in the country, dictate a reason for each individual to seek for a firearm for self-defense.

As an orthopedic surgeon and traumatologist, I tried over the years in my practice at Bridgeport Yale Health, in Bridgeport CT, to bring comfort and healing to these young 14-16 years old involved in their business of drug, associated to the Columbian CARTEL. I certainly received sufficient help from my co-workers, physician-assistants, nurses and orthopedic technicians to accomplish my work in the best of my ability in almost 2 decades. I hope having made a difference in stabilizing and treating the injuries inflicted to those underprivileged kids. It is my hope that I have not been complicit in creating more harm. I have seen so many of them, homeless kids, heading to jail after the treatment of their injuries, often presenting with mental illness or falling back into the same vicious circles because they had no one around on whom they were able to rely on for advice.

I have also encountered at least 2 patients who converted to Christianism and dedicated their life to preaching the bible to others, following their Jail-sentence. They learned how to become a preacher. I was so lucky to have had the opportunity to meet them while visiting Connecticut years later. Life has taught them lessons which has fashioned better human beings.

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