

## TYPES OF INJURIES CAUSED BY EXPLOSIVE WEAPONS

There are four basic mechanisms by which an explosive weapon causes harm to the human body: Primary Blast Injury (caused by the shock wave, the force of the pressure impacting the human body), Secondary Blast Injury (caused by flying fragments or debris), Tertiary Blast Injury (caused by the supersonic wind which can pick up and throw anyone close enough to the explosion to feel its effects), and Quaternary (covering all remaining injuries indirectly caused by the explosion, such as burns, crush injuries and choking caused by asphyxiating dust).<sup>120</sup> Not captured in this classification, however, is the psychological impact for survivors, the families of those killed or injured, and affected communities.

See reference notes on page 4.

©Benoit Almeras/ HI - Lebanon, 2017 - Amira and her younger son live in the outskirts of Tripoli. Her oldest son was killed during a bombing in Syria. Traumatized by the war, she suffers from depression: "When I hear planes now, I am gripped with fear."



## Neurological injuries

In emergency conflict and disaster settings, the majority of patients with severe or extensive traumatic brain injuries die, as they do not receive medical care in time, or the available medical resources are insufficient for lifesaving measures. In Syria, multiple anecdotal reports suggest this situation has been worsened by delays in reaching care, including checkpoints and the amount of time it takes to extract people from collapsed buildings. Beyond survival rates, data from military populations returned home show that even those with mild head injuries have significant long-term clinical effects. Long-term behavioral issues, psychiatric symptoms, sleep impairment and other significant impairments are common.<sup>128</sup>

## Thoracic injuries

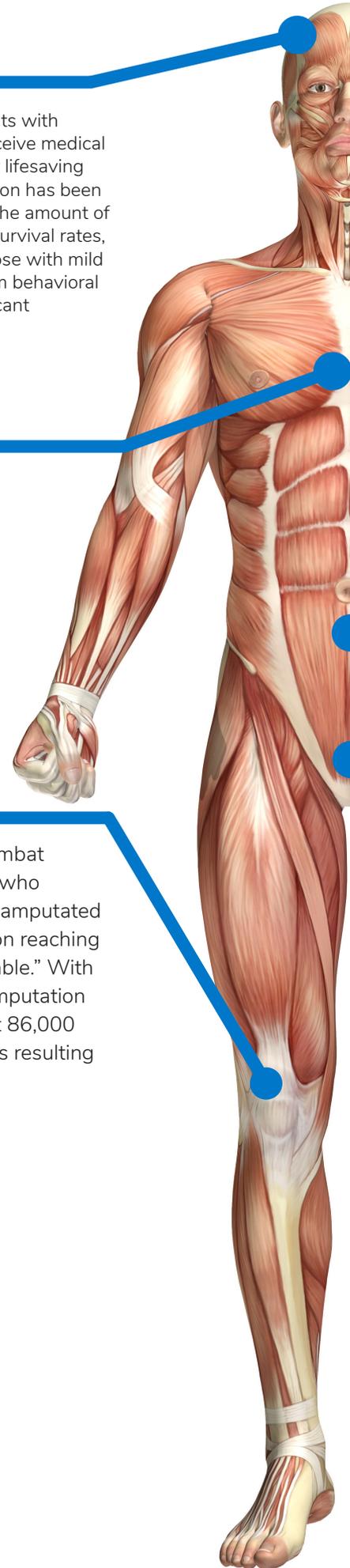
Thoracic injuries refer to any injury to the chest, including the ribs, heart, lungs or diaphragm. One combat hospital which also accepted civilian patients recorded blast mechanism as the most common mechanism of thoracic injury. Fifty percent of all casualties treated were civilians, each of whom required an average of 2.5 thoracic surgeries.<sup>127</sup> Thoracic surgery carries major risk, and requires high specialisation and specialist equipment and follow-up care. In Syria, where civilians cannot easily access the combat hospitals set up by belligerent actors, and crossing contested territory to access national or field hospitals can be impossible, it is highly likely that civilians experiencing similar patterns of chest trauma die before reaching medical care.

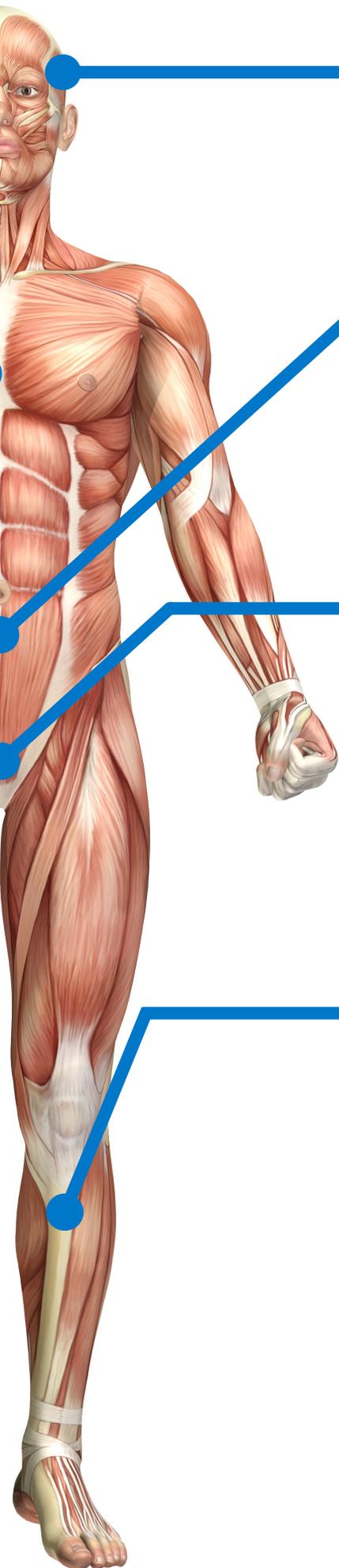
## Amputation

An increase in the use of explosive weapons in modern combat corresponds with an increase in amputations.<sup>122</sup> For those who survive the associated blood loss, if the blast itself has not amputated the limb from the body, amputation may be carried out upon reaching the hospital if the injury has rendered the limb “unsalvageable.” With up to 30,000 people being injured every month in Syria, amputation is a tragically common outcome,<sup>123</sup> and as of 2017, at least 86,000 people in Syria were estimated to have experienced injuries resulting in amputation.<sup>124</sup>

## Psychological conditions & psychosocial consequences

In military populations, post-traumatic stress disorder (PTSD) has been linked to explosion-related injuries, with a higher proportion of persons injured by IEDs showing PTSD compared to those injured by other weapon types.<sup>130</sup> In 2018, over 60% of health professionals working in south Syria stated that PTSD was a moderate or serious problem among their patients.<sup>131</sup> In Jordan, 80% of Syrian refugees injured by explosive weapons expressed signs of high psychological distress, with two out of three unable to carry out essential daily activities due to their emotional state, while two out of three were also so upset that they tried to avoid places, people, or activities that reminded them of the traumatic event.<sup>132</sup>





## The eye

Although the eyeball is tiny relative to the size of the body, injuries to the eye as a result of explosions are common and debilitating, and around 10% of people who survive explosive injuries will suffer trauma to their eyes.<sup>125</sup> The lack of specialist care in Syria for such injuries means the long-term impact in terms of physical suffering and the social and economic impact of decreased or absent sight are significant.

## Soft tissue injuries and wound infection

Blast wounds result in contamination of wounds with debris, shrapnel and dirt, which may require multiple surgeries to excise. Complicated, infected wounds prolong and endanger healing and recovery and put patients at risk of antibiotic resistance.<sup>129</sup> Health partners in Syria have been forced to draft new antibiotic protocols to manage these complex risks.

## Genital injuries

Even within well-staffed and resourced combat hospitals, groin and pelvic explosive injuries frequently result in death. IED victims are twice as likely to sustain genital/ buttocks injuries compared to persons injured by landmines, and pelvic fractures are also more common as a result of IED injury.<sup>126</sup> The practical, psychosocial and inter-personal implications of surviving explosive injuries affecting the groin and genitals are complex, yet statistics for survival and long-term outcomes are rarely collected in Syria.

## Fracture

Long bones such as the femur are particularly vulnerable to fracture due to the energy of the blast. Data from multiple health partners working across Syria show that fractures are the most common type of injury, with around half of all patients experiencing fractures, often as part of complex multi-trauma.<sup>121</sup> Fractures from explosive weapons are often challenging, may be accompanied by nerve damage which, coupled to limited repair and follow up options, can result in lifelong impairment and disability. In conflict settings, complex fractures are more likely to lead to amputation, due to lack of specialist care and high risks of infection.

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