



## Overview: Management of bloodborne virus (BBVs) risk in bomb blast victims (hepatitis B, C and HIV)

### Background

It is a recognised complication of bomb injuries that implantation of human body projectiles, derived from other victims and from suicide bombers can occur; and that these projectiles create a potential risk of transmission of bloodborne viruses (BBVs).

Analysis of injuries from the London bombings in 2005 showed that victims within 2 metres of the blasts suffered significant human projectile injuries; however, it must be presumed that any person suffering from trauma at a blast scene may have incurred human projectile injury. Most of these implanted projectiles were bone fragments.

### Risk of transmission of BBVs

The prevalence of hepatitis B, C and HIV carriage in the UK population is generally low; with estimates suggesting that the population prevalence of hepatitis B is <1%, hepatitis C <0.5%, and HIV <0.3%. Marked variations from these general population prevalence figures may occur within different groups.

The risk of transmission of these BBVs at such events is unknown; however, the usually accepted risks of transmission per incident following sharps injuries from known infected persons in clinical settings, which may be the closest natural model, is generally quoted as being 1:3 for hepatitis B, 1:30 for hepatitis C and 1:300 for HIV.

### Available post-exposure interventions for the management of BBVs

#### Hepatitis B

The post-exposure management of hepatitis B using hepatitis B vaccine is well described in 'Immunisation against infectious disease' (The Green Book). The rapid schedule immunisation described has few contra-indications; and is known to be highly effective in equivalent situations provided that it is given within 48 hours of potential exposure (although may still be effective, and should be considered, up to

one week after exposure). However, post-exposure immunisation is not perfect and long term follow-up to allow for intervention if established disease is present needs to be considered.

### **Hepatitis C**

There are no current evidence based methods for the post-exposure management of hepatitis C. Current management is based on serial testing in the post-exposure period with treatment of established infection, with a view to preventing the long-term consequences of chronic infection.

### **HIV**

Post-exposure prophylaxis (PEP) for HIV is well described, especially in the context of risky sexual activity and occupational exposure. There is good evidence for effectiveness of PEP, provided that there is good compliance with treatment and prophylaxis is started soon after exposure (<72 hours). However, PEP treatment is not perfect and long term follow-up to allow for intervention if established disease is present needs to be considered.

HIV PEP can be difficult to tolerate and the toxicity of the medicines used is an important consideration in determining whether there is a positive benefit v risk balance for individual patients.

## **Management**

Management of human foreign body implantations needs to be based upon identifying the presence of BBVs in projectile donors, identifying and removing any implanted body fragments in all victims, implementing effective post-exposure treatments (where benefit outweighs risk), and screening survivors for BBV infections where effective post-exposure strategies are not available.

Therefore it is recommended that:

1. All penetrating injuries should be radiographed; and all human foreign body implantations surgically removed urgently
2. Specimens should be collected from the scene, at post-mortems and from survivors to establish the origin of any implanted projectiles, and to test for the carriage of BBVs in the people from whom the projectiles derived if possible
3. Blood specimens from victims with proven or suspected human projectile injury should be taken and stored before any BBV specific post-exposure treatment is instituted

4. An accelerated course of hepatitis B vaccination (0, 1, and 2 months, or, 0, 7, 21 days and 12 months) should be begun within 72 hours of initial injury, but may be started up to 7 days post-initial injury
5. PEP of hepatitis C is not currently available
6. PEP of HIV is available, however, the low prevalence of disease in the community, the low risk of transmission and the relative toxicity of current PEP regimes suggest that this should not normally be given
7. Therefore, patients should be followed up at 3 and 6 months to determine hepatitis C and HIV status and appropriate care of any established infection initiated

Other people directly injured in explosion with penetrating injuries leading to non-intact skin may have been discharged after receiving initial treatment; they must be traced from their care records, reviewed and managed as above for potential BBV exposure within 7 days of the incident.

Some people may have been directly injured in explosion, received penetrating injuries leading to non-intact skin and did not attend A&E, or been indirectly injured (leading to non-intact skin) as a result of providing assistance to victims of the explosion (for example cut from fragments of glass or metal on bodies of victims); these people will not be traceable through care records and consideration must be given to providing public information that will allow these people to self-identify themselves for assessment.

## References

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