



Public Health
England

Protecting and improving the nation's health

Emergency Healthcare Workers, Exposure Prone Procedures (EPPs) and the Exposure Prone Environment

Advice from the United Kingdom Advisory
Panel for Healthcare Workers Infected with
Bloodborne Viruses (UKAP)

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Contents

Executive Summary	5
Exposure Prone Procedures (EPPs)	6
Table 1: Emergency HCW categorisation	8
Box 1: Examples of potential EPPs that may be undertaken outside hospital	9
Background	10
Management of risk of nosocomial infection out of hospital	12

Executive Summary

This paper summarises the background and recommendations by the United Kingdom Advisory Panel on Blood Borne Viruses in Healthcare Workers (UKAP), of the categorisation of procedures performed and of the role of bloodborne virus (BBV) iatrogenic transmissions by infected healthcare workers (HCWs) in the emergency response setting. The concept of the exposure prone environment is introduced along with a classification of emergency HCWs that facilitates the risk assessment process.

In any case of uncertainty about any of the classifications or procedures listed here, or anything that has not been included, please contact the UKAP Secretariat for guidance at ukap@phe.gov.uk or on 0208 327 6074 or 0208 327 6423.

Exposure Prone Procedures (EPPs)

Provided appropriate infection prevention and control precautions are adhered to scrupulously at all times, the majority of clinical procedures (including many which are invasive) in the healthcare setting pose no risk of transmission of BBVs from an infected HCW to a patient, and can be safely performed.

Those procedures where an opportunity for HCW-to-patient transmission of BBV does exist are described as exposure prone, where injury to the HCW could result in the worker's blood contaminating the patient's open tissues. This is described as "bleed-back". The majority of HCWs do *not* perform EPPs.

EPPs include procedures where the worker's gloved hands may be in contact with sharp instruments, needle tips or sharp tissues inside a patient's open body cavity, wound or confined anatomical space, where the hands or fingertips may not be completely visible at all times. However other situations, such as pre-hospital trauma care, should be avoided by HCWs restricted from performing EPPs, as they could also result in the exposure of the patient's open tissues to the blood of the worker.

The definition of EPPs given above embraces a wide range of procedures, in which there may be very different levels of risk of bleed-back. A risk-based categorisation of clinical procedures has been developed, including procedures where there is negligible risk of bleed-back (non-EPP) and three categories of EPPs with increasing risk of bleed-back.

The definitions and examples of categories 1, 2 and 3 are:

Category 1

Procedures where the hands and fingertips of the worker are usually visible and outside the body most of the time and the possibility of injury to the worker's gloved hands from sharp instruments and/or tissues is slight. This means that the risk of the HCW bleeding into a patient's open tissues should be remote.

Category 2

Procedures where the fingertips may not be visible at all times but injury to the worker's gloved hands from sharp instruments and/or tissues are unlikely. If injury occurs it is likely to be noticed and acted upon quickly to avoid the HCW's blood contaminating a patient's open tissues.

Category 3

Procedures where the fingertips are out of sight for a significant part of the procedure, or during certain critical stages, and in which there is a distinct risk of injury to the worker's gloved hands from sharp instruments and/or tissues. In such circumstances it is possible that exposure of the patient's open tissues to the HCW's blood may go unnoticed or would not be noticed immediately.

Non-exposure prone procedures

Non-EPPs are those where the hands and fingertips of the worker are visible and outside the patient's body at all times, and internal examinations or procedures that do not involve possible injury to the worker's gloved hands from sharp instruments and/or tissues, are considered not to be exposure prone provided routine infection prevention and control procedures are adhered to at all times.

Table 1: Emergency HCW categorisation

HCW Class	Definition	Examples	EPP Restriction ¹
Class A	Likely to undertake EPPs and work in exposure prone environment .	Clinicians working on air ambulances	EPP clearance needed for advanced practitioners carrying out invasive procedures in major trauma and medical staff working outside an NHS occupational health (OH) scheme.
		Clinicians working as part of medical emergency response teams	
		Critical care practitioners	
Class B	Unlikely to undertake EPPs but likely to work in exposure prone environments.	Front line paramedics and technicians	EPP clearance of this HCW class would need to be subject to risk assessment by the employer/OH. No restrictions if appropriate PPE worn.
Class C	Unlikely to undertake EPPs and unlikely to work in exposure prone environment.	Emergency care practitioners and others undertaking primary care role	No restriction as EPPs unlikely to be performed.
		Emergency care assistants	
Class D	Will not undertake EPPs or work in exposure prone environments as part of defined role but may incidentally render basic first aid.	GPs undertaking non-emergency calls for ambulance services	EPP clearance not needed.
		Clinicians providing remote advice/support	
		Patient transport service staff	

¹ EPP clearance would need to be subject to the outcome of a risk assessment by the employer/OH of the procedures that the HCW may be exposed to performing in their role

Box 1: Examples of potential EPPs that may be undertaken outside a hospital

Procedure
Packing deep wound in a body cavity (e.g. with haemostatic dressing)
Mouth to mouth resuscitation without pocket mask/barrier device ²
Invasive chest procedures such as thoracotomy and thoracentesis/ chest drain requiring finger sweep

² No cases of HIV or hepatitis B infection transmission have been recorded through this route

Background

The risk of iatrogenic BBV transmission or of such infection from another patient, in the pre-hospital emergency setting is not known. The United Kingdom Advisory Panel on Blood Borne Viruses in Healthcare Workers (UKAP) has received no reports of such infection in this setting, and standard literature searches are inconclusive in quantifying this risk. Nevertheless, there is a theoretical risk of such a route of infection, requiring an approach to risk assessment and mitigation that is both proportionate and practical. For the purposes of risk assessment and management of iatrogenic transmission of BBVs by emergency HCWs, two new concepts are introduced:

- the classification of emergency HCWs according to the risk of iatrogenic transmission, and
- the exposure prone environment

The exposure prone environment is “an environment in which there is a significant intrinsic risk of injury to the healthcare worker, with consequent co-existent risk of contamination of the open tissues of the patient with blood from the healthcare provider”. Examples will include road traffic collisions (RTCs) or domestic/recreational/industrial accidents where sharp surfaces such as glass fragments, sharp metal or stone edges, may lead to laceration of the skin of the HCW, whilst in the process of attending to and/or retrieving a casualty.

Developments in pre-hospital emergency care mean that a wider range of interventions are now undertaken out of hospital, some of which are EPPs (see Box 1).

Any HCW who may be required to undertake EPPs in the pre-hospital environment should have the same health clearance as any hospital-based staff who perform EPPs, and should be managed in the same way.

Because the range of clinical activities undertaken by emergency HCWs and the likelihood of them undertaking work in exposure prone environments is very variable, they should be categorised according to those factors (Table 1). Individuals may switch from one role to another (eg emergency care practitioner switching to front line paramedic) and in such circumstances they should be managed according to the highest level of risk.

Good safety practice is emphasized in all pre-hospital emergency medical training and must include the provision and use of appropriate personal protective equipment (PPE) to minimize the risk of such injury. Provision of PPE may reduce that risk sufficiently to allow re-categorisation of an emergency HCW from Class B to Class C. A “bare below the elbow” policy is not appropriate in an exposure prone environment. “Armoured” or

“needlestick-resistant” clinical gloves should be available for those undertaking work in exposure prone environment situations.

Examples of PPE to mitigate risk in and exposure prone environment include:

- helmet
- visor or goggles
- protective clothing such as a jacket with full sleeve protection, trousers with knee pads, or similar one-piece protective clothing
- “armoured” or “needlestick-resistant” clinical gloves
- protective footwear

Voluntary aid societies should be aware of the risks of the exposure prone environment. Where there is a foreseeable risk of volunteers working in such environments, the society should ensure that arrangements are in place so that volunteers are managed in accordance with these recommendations. Ambulance trusts and other emergency service providers utilising voluntary aid societies or other volunteers, including community first responders (CFRs), should ensure that those volunteers are managed in the same way as other employee groups undertaking that type of work. Others not normally classified as emergency healthcare workers such as police, fire and rescue services, lifeboat, coastguard and onshore/mountain rescue staff, may also assist in casualty management, in which case the same principles should be applied.

Management of risk of nosocomial infection out of hospital

All groups of emergency HCWs should have full access to occupational health services. Where an emergency HCW has been found to be infected with a BBV, the management of the situation, risk assessment and the need for a patient notification exercise should follow the existing national guidelines as applied to all other incidents in a healthcare setting, including obtaining advice from UKAP.

Using the principles of the exposure prone environment and classification of emergency HCWs as described above, the management of this group of HCWs should be as follows:

Class A Emergency Healthcare Workers

These HCWs are likely to undertake EPPs and work in exposure prone environment. They should be managed in the same way as other HCWs undertaking EPPs, including clearance procedures. Where there is evidence of BBV infection, monitoring and decisions regarding fitness to continue practice must follow those same principles. In many cases, such as BASICs volunteers and helicopter and medical emergency response team (MERT) staff, the individuals will be working elsewhere and subject to the recommended controls, and proof of compliance from the primary employer is likely to be acceptable.

Class B Emergency Healthcare Workers

These HCWs are unlikely to undertake EPPs, but likely to work in exposure prone environments. In such situations the risk of iatrogenic contamination should be reduced by careful rescue technique, and avoidance so far as possible of hazards that are likely to predispose to such risk. This will require co-operation between emergency services to reduce the risk of injury to the emergency HCW, as well as proactive and dynamic risk assessment.

If basic health and safety principles and all appropriate measures are adopted, including the use of specifically designed PPE, this group of workers (Class A and B) need not be considered at risk of transmitting BBVs to patients. Where the full range of PPE and other measures is not absolutely assured, this group should be treated in the same way as HCWs undertaking EPPs.

Class C Emergency Healthcare Workers

This group is unlikely to be required to work in exposure prone environments and therefore do not need to be treated as EPP workers.

Class D Emergency Healthcare Workers

This group present minimal risk of occupational iatrogenic transmission of blood borne viruses, and do not need to be managed as EPP workers.