



Public Health  
England

Protecting and improving the nation's health

# **General surgery exposure prone procedure (EPP) categorisation**

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

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## Executive summary

This exposure prone procedure (EPP) categorisation list is not exhaustive of all procedures carried out in general surgery, but is to be used as a guide only. Individual variation between surgeons does not allow for a higher EPP risk category to be incorporated in a personal interpretation of a procedure.

If any procedures in this document are semi-laparoscopic, when the hand is inserted into the abdomen via skin incision, then the procedures would certainly be categorised as EPP level 2, or possibly 3. Laparoscopic assisted procedures are likely to be EPP level 3. **Robotic procedures should be categorised the same as laparoscopic.**

In any case of uncertainty about any of the procedures listed here, or procedures that have not been included, please contact the UKAP Secretariat for guidance at:  
[ukap@phe.gov.uk](mailto:ukap@phe.gov.uk)

# 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 safely be performed.

Those procedures where an opportunity for HCW-to-patient transmission of BBV does exist are described as 'exposure prone' procedures (EPPs), where injury to the HCW could result in the worker's blood contaminating the patient's open tissues. This is described as "bleed-back" in this guidance.

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.

The definition of EPPs covers 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 3 categories of EPPs with increasing risk of bleed-back.

It should be noted that the majority of HCWs do not perform EPPs.

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.

Examples: local anaesthetic injection in dentistry, removal of haemorrhoids.

## 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 is 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.

Examples: routine tooth extraction, colostomy.

### 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.

Examples: hysterectomy, caesarean delivery, open cardiac surgical procedures.

### 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. These procedures are considered not to be exposure prone provided routine infection prevention and control procedures are adhered to at all times.

Examples in general surgery:

- flexible colonoscopy ± excision biopsy/destruction of lesion minor surface suturing
- rigid sigmoidoscopy including biopsy
- therapeutic endoscopic operations on pancreas
- endovascular procedures in transplantation

# Breast

EPP Category	Procedure
<p><b>Category 1</b> (Lowest risk of bleed-back)</p>	Subcutaneous mastectomy with immediate implant
	Radical mastectomy (including block dissection)
	Modified radical mastectomy (including block dissection)
	Simple mastectomy (including axillary node biopsy)
	Excision of lesion of breast
	Segmental resection or quadrantectomy
	Wide local excision of breast lesion
	Repeat local excision to clear margins
	Excision biopsy of breast lesion after localisation
	Reconstruction of breast using local flap
	Removal of prosthesis from breast
	Implantation of prosthesis following mastectomy
	Stereotactic/guidewire excision of lesion of breast
	Drainage of breast abscess
	Microdochotomy
	Operation(s) on the nipple (where not included in other procedures)
	Block dissection of axillary lymph nodes (where not included in other procedures)
	Biopsy/sampling of axillary lymph nodes
	Subcutaneous mastectomy
	Skin/nipple sparing mastectomy (including axillary node biopsy)
	Mastectomy for gynaecomastia
	Local mobilisation of glandular breast tissue to fill surgical cavity
	Removal of prosthesis from breast (including capsulectomy)
	Reduction mammoplasty
	Augmentation mammoplasty
	Therapeutic mammoplasty for breast cancer
	Excision of mammary fistula
	Sentinel node mapping and sampling with blue dye and/or radioactive probe for breast cancer
<p><b>Category 2</b> (Intermediate risk of bleed-back)</p>	Mastectomy combined with reconstruction of breast using myocutaneous flap
	Reconstruction of breast using latissimus dorsi
	Reconstruction of breast using TRAMS
	Mastopexy
	Biopsy of internal mammary lymph nodes
	Reconstruction of breast using free TRAM (including delayed reconstruction)
	Reconstruction of breast using deep inferior epigastric perforator flap (DIEP) (including delayed reconstruction)
	Reconstruction of breast using transverse upper gracilis (TUG) flap (including delayed reconstruction and nipple reconstruction)
	Reconstruction of breast using ALT (anterolateral thigh) flap (including delayed reconstruction)
	Reconstruction of breast using deep inferior epigastric perforator flap (DIEP) with vascularised lymph node transfer (including delayed

Please note robotic procedures should be categorised the same as laparoscopic

	reconstruction)
	Reconstruction of breast using SGAP (superior gluteal artery perforator) flap (including delayed reconstruction)
<b>Category 3</b> (Higher risk of bleed-back)	<i>NONE IDENTIFIED</i>

	Procedure
<b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)	Percutaneous biopsy of lesion of breast
	Fine needle aspiration cytology
	Ultrasound guided interstitial laser ablation of breast lesion
	Reconstruction of breast using fat transfer (including delayed reconstruction)
	Percutaneous suction core biopsy
	Nipple areola complex reconstruction +/- liposuction and fat transfer
	Micropigmentation (tattooing) of nipple areola complex
	Intraoperative sentinel node mapping, using One Step Nucleic Acid Amplification (OSNA), for breast cancer



# Endoscopic and laparoscopic gastro-intestinal tract EPP categorisation

## Endoscopic gastro-intestinal tract

EPP Category	Procedure
<b>Category 1</b> (Lowest risk of bleed-back)	<i>NONE IDENTIFIED</i>
<b>Category 2</b> (Intermediate risk of bleed-back)	<i>NONE IDENTIFIED</i>
<b>Category 3</b> (Higher risk of bleed-back)	<i>NONE IDENTIFIED</i>

	Procedure
<b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)	Injection sclerotherapy of oesophageal varices
	Therapeutic oesophago-gastro-duodenoscopy including destruction of lesion, insertion of prosthesis, dilatation, recanalisation of tumour
	Rigid oesophagoscopy ± biopsy/removal/laser of diathermy destruction of lesions
	Intubation for investigation of GIT ± manometry, pH measurement, pancreatic function and jejunal biopsy
	Therapeutic oesophago-gastro-duodenoscopy including removal of foreign body/polypectomy
	Diagnostic oesophago-gastro-duodenoscopy including biopsy
	Intragastric balloon
	Insertion of percutaneous endoscopic gastrostomy, jejunostomy or colostomy (PEG, PEJ, PEC)
	Therapeutic endoscopic operations on ileum through stoma (including dilatation)
	Rigid sigmoidoscopy including biopsy
	Flexible sigmoidoscopy ± biopsy/removal/destruction of lesion
	Flexible colonoscopy ± excision biopsy/destruction of lesion
	Fibreoptic colonoscopy and recanalisation of tumour
	Endoscopic retrograde cholangiopancreatography (ERCP)
ERCP with therapeutic procedures	

Please note robotic procedures should be categorised the same as laparoscopic

## Laparoscopic gastro-intestinal tract

EPP Category	Procedure
<b>Category 1</b> (Lowest risk of bleed-back)	Laparoscopic repair of hiatus hernia
	Laparoscopic vagotomy/seromyotomy
	Laparoscopic gastro-jejunostomy
	Laparoscopic gastrostomy/jejunostomy
	Laparoscopic closure of perforated ulcer of stomach
	Laparoscopic closure of perforated ulcer of duodenum
	Laparoscopic appendectomy
	Laparoscopic colostomy
	Laparoscopic rectopexy
	Laparoscopic cholecystectomy
	Laparoscopic cholecystectomy with intraoperative cholangiogram
	Laparoscopic splenectomy
	Laparoscopic repair of groin hernia
	<b>Category 2</b> (Intermediate risk of bleed-back)
Laparoscopic colonic resection	
Laparoscopic anterior resection of rectum and exteriorisation of bowel	
<b>Category 3</b> (Higher risk of bleed-back)	<i>NONE IDENTIFIED</i>

EPP Category	Procedure
<b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)	<i>NONE IDENTIFIED</i>

Please note robotic procedures should be categorised the same as laparoscopic

# Abdomen (excluding urinary and reproductive organs)

## Oesophagus

EPP Category	Procedure
<b>Category 1</b> (Lowest risk of bleed-back)	Thoracoscopic oesophageal mobilisation via mediastinum
	Thoracoscopic repair of oesophagus
	Thoracoscopic oesophagogastric myotomy
	Laparoscopic repair of hiatus hernia
	Laparoscopic Transabdominal anti-reflux operations
	Laparoscopic Revision of anti-reflux operations
<b>Category 2</b> (Intermediate risk of bleed-back)	<i>NONE IDENTIFIED</i>
<b>Category 3</b> (Higher risk of bleed-back)	Oesophagogastrectomy
	Total oesophagectomy and interposition of intestine
	Open excision/extirpation of lesion of oesophagus
	Bypass of oesophagus
	Revision of oesophageal anastomosis
	Closure of bypass of oesophagus
	Transthoracic repair of oesophagus
	Oesophagocardiomyotomy (Heller's operation)
	Transthoracic repair of hiatus hernia
	Transthoracic repair of diaphragmatic hernia
	Transabdominal repair of hiatus hernia
	Transabdominal repair of diaphragmatic hernia
	Transabdominal anti-reflux operations
Revision of anti-reflux operations	

EPP Category	Procedure
<b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)	Injection sclerotherapy of oesophageal varices

## Stomach

EPP Category	Procedure
<b>Category 1</b> (Lowest risk of bleed-back)	Laparoscopic closure of perforated ulcer of stomach
	Laparoscopic gastric bypass (Roux-en-Y)
	Laparoscopic vertical sleeve gastrectomy
	Laparoscopic Biliopancreatic diversion with duodenal switch
	Laparoscopic adjustable gastric band
<b>Category 2</b> (Intermediate risk of bleed-back)	Gastrojejunostomy*
	Revision of gastro-jejunostomy
	Gastrostomy
	Closure of gastrostomy
	Closure of perforated ulcer of stomach†
	Pyloromyotomy
<b>Category 3</b> (Higher risk of bleed-back)	Pyloroplasty
	Proximal gastric vagotomy
	Selective vagotomy
	Vagotomy and pyloroplasty
	Total gastrectomy and excision of surrounding tissue
	Partial gastrectomy
	Other open operation(s) on stomach
	Open Gastric bypass (Roux-en-Y)
	Open Biliopancreatic diversion with duodenal switch
Gastric bypass revision	
* If endoscopic, then category 1 † If with excisional repair, then category 3	

EPP Category	Procedure
<b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)	NONE IDENTIFIED

## Duodenum

EPP Category	Procedure
<b>Category 1</b> (Lowest risk of bleed-back)	Laparoscopic closure of perforated ulcer of duodenum
<b>Category 2</b> (Intermediate risk of bleed-back)	Bypass of duodenum
	Closure of perforated ulcer of duodenum
<b>Category 3</b> (Higher risk of bleed-back)	Open excision of lesion of duodenum

Category Zero	Procedure
(NOT exposure prone, no risk of bleed-back)	<i>NONE IDENTIFIED</i>

Small intestine

EPP Category	Procedure
<b>Category 1</b> (Lowest risk of bleed-back)	Laparoscopic feeding jejunostomy
	Laparoscopic resection of small intestine
	Attention to ileostomy
<b>Category 2</b> (Intermediate risk of bleed-back)	Excision of jejunum
	Excision of lesion of jejunum
	Jejunostomy
	Open feeding jejunostomy
	Bypass of jejunum
	Intubation of jejunum for decompression of intestine
	Bypass of ileum
	Ileostomy
	Revision to ileostomy
	Closure of ileostomy (in isolation)
	Open operations on ileum (including reduction of intussusception)
Open resection of ileum	
<b>Category 3</b> (Higher risk of bleed-back)	<i>NONE IDENTIFIED</i>

<b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)	Procedure

Large intestine

EPP Category	Procedure
<b>Category 1</b> (Lowest risk of bleed-back)	Laparoscopic appendectomy
<b>Category 2</b> (Intermediate risk of bleed-back)	Appendectomy Drainage of abscess of appendix Bypass of colon Exteriorisation of caecum Closure of colostomy – extra peritoneal Laparoscopic colostomy Colostomy (including revision) Intra-abdominal manipulation of colon (including reduction of intussusception) Laparoscopic colonic resection
<b>Category 3</b> (Higher risk of bleed-back)	Total excision of colon and ileorectal anastomosis‡ Extended excision of right hemicolon and anastomosis‡ Other excision of right hemicolon‡ Excision of transverse colon‡ Excision of left hemicolon‡ Excision of sigmoid colon‡ Excision of lesion of colon (transabdominal) ‡ Closure of colostomy – intra peritoneal
‡ If laparoscopic, then category 2	

EPP Category	Procedure
<b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)	Radiological reduction of intussusception of colon using barium enema

Rectum/Anus

EPP Category	Procedure
<p><b>Category 1</b> (Lowest risk of bleed-back)</p>	Laparoscopic rectopexy
	TEMS resection for rectal cancer
	Full or partial thickness rectal biopsy
	Excision of lesion of anus
	Destruction of lesion of anus
	Haemorrhoidectomy
	Stapled haemorrhoidectomy
	Ligation of haemorrhoids
	Laying open low anal fistula
	Laying open high anal fistula
	Treatment of anal fistula including plug, LIFT and seton
	Lateral sphincterotomy of anus
	Excision of anal fissure
	Chemical sphincterotomy including Botox injection
	Drainage through perineal region (including ischio-rectal abscess)
	Excision of pilonidal sinus and suture/skin graft/flap
Laying open pilonidal sinus	
<p><b>Category 2</b> (Intermediate risk of bleed-back)</p>	Laparoscopic anterior resection of rectum and exteriorisation of bowel
	Transanal excision of lesion of rectum
	Repair of anal sphincter
	Repair of anal trauma
<p><b>Category 3</b> (Higher risk of bleed-back)</p>	Ileoanal anastomosis and creation of pouch‡
	Panproctocolectomy and ileostomy‡
	Excision of rectum‡
	Abdominoperineal pull through resection with colo-anal anastomosis and associated colostomy or ileostomy‡
	Abdominoperineal excision of rectum and anus (including distal sacrectomy)
	Total, anterior or posterior pelvic exenteration
	Anterior resection of rectum and anastomosis of colon to rectum
	Anterior resection of rectum and end colostomy (with closure of rectum and end colostomy)(Hartmann's procedure)
	Partial excision of rectum and sigmoid colon for prolapse‡
	Reversal of Hartmann's procedure‡
	Open excision of lesion of rectum
	Fixation of rectum for prolapse
	Transanal resection for rectal cancer
Repair of faecal fistula (colovaginal or colovesical)	
‡ If laparoscopic, then category 2	

See overleaf for rectum/anus non-EPPs



<b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)	<b>Procedure</b>
	Rigid sigmoidoscopy including biopsy
	Dilation of stricture of rectum
	Injection of sclerosing substance into haemorrhoids
	Banding of haemorrhoids
Anorectal stretch (including EUA and sigmoidoscopy)	

**Adrenal**

EPP Category	Procedure
<b>Category 1</b> (Lowest risk of bleed-back)	Laparoscopic/Retroperitoneoscopic adrenalectomy§
<b>Category 2</b> (Intermediate risk of bleed-back)	
<b>Category 3</b> (Higher risk of bleed-back)	Adrenalectomy Operations on aberrant adrenal tissue
§ <i>If hand-assisted, then category 2</i>	

EPP Category	Procedure
<b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)	NONE IDENTIFIED

## Liver and biliary tree

EPP Category	Procedure
<b>Category 1</b> (Lowest risk of bleed-back)	Laparoscopic liver resection§
	Laparoscopic radiofrequency ablation of liver lesions
	Diagnostic laparoscopic examination of liver (including biopsy)
	Laparoscopic exploration of bile duct
	Laparoscopic cholecystectomy
	Laparoscopic cholecystectomy with intraoperative cholangiogram
<b>Category 2</b> (Intermediate risk of bleed-back)	Radiofrequency ablation of liver lesions
	Open biopsy of liver
	Creation of peritoneovenous shunt (LeVeen/Denver)
	Anastomosis of gall bladder (to another viscus)
<b>Category 3</b> (Higher risk of bleed-back)	Partial excision of liver
	Hemihepatectomy
	Removal of liver tumour
	Repair of liver
	Open drainage of liver
	Creation of portocaval shunt
	Oesophagogastric devascularisation procedure (Sugiura or variations)
	Partial excision of bile duct and anastomosis of bile duct to duodenum/jejunum
	Excision of lesion of bile duct
	Anastomosis of hepatic duct
	Anastomosis of common bile duct
	Open introduction of prosthesis into bile duct
	Repair of bile duct
	Exploration of bile duct
	Sphincterotomy of bile duct and pancreatic duct using duodenal approach
	Hepatopertoenterostomy (Kasai's procedure)
Cholecystectomy (including minicholecystectomy)	
Cholecystectomy with exploration of common bile duct	
§ If hand-assisted, then category 2	

EPP Category	Procedure
<b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)	Percutaneous radiofrequency ablation of liver lesions
	Percutaneous biopsy of lesion of liver
	Percutaneous examination of bile duct

Please note robotic procedures should be categorised the same as laparoscopic

## Pancreas

EPP Category	Procedure
<b>Category 1</b> (Lowest risk of bleed-back)	Minimally invasive pancreatic necrosectomy
<b>Category 2</b> (Intermediate risk of bleed-back)	<i>NONE IDENTIFIED</i>
<b>Category 3</b> (Higher risk of bleed-back)	Total pancreatectomy and excision of surrounding tissue‡
	Total pancreatectomy NEC‡
	Total pancreatectomy with autologous islet cell transplantation
	Pancreatoduodenectomy and excision of surrounding tissue (Whipple's procedure) ‡
	Distal/other partial pancreatectomy‡
	Excision of lesion of the pancreas‡
	Anastomosis of pancreatic duct to another viscus
	Open drainage of cystic lesions of pancreas including abscesses
	Open examination of pancreas‡
	Local resection of pancreatic head with lateral pancreaticojejunostomy (Frey's procedure)
Operations for chronic pancreatitis	
‡ If laparoscopic, then category 2    If laparoscopic, then category 1	

Category Zero (NOT exposure prone, no risk of bleed-back)	Procedure
	Therapeutic percutaneous operations on pancreas
	Therapeutic endoscopic operations on pancreas

Spleen

EPP Category	Procedure
<b>Category 1</b> (Lowest risk of bleed-back)	Laparoscopic splenectomy
<b>Category 2</b> (Intermediate risk of bleed-back)	<i>NONE IDENTIFIED</i>
<b>Category 3</b> (Higher risk of bleed-back)	Open splenectomy (including partial)

<b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)	Procedure
	<i>NONE IDENTIFIED</i>

Major vessels

EPP Category	Procedure
<b>Category 1</b> (Lowest risk of bleed-back)	<i>NONE IDENTIFIED</i>
<b>Category 2</b> (Intermediate risk of bleed-back)	<i>NONE IDENTIFIED</i>
<b>Category 3</b> (Higher risk of bleed-back)	Open cannulation of intra-abdominal artery for infusion chemotherapy
	Creation of portocaval shunt
	Plication of vena cava
	Repair of wound of major artery of vein of abdomen (including aorta and vena cava)

EPP Category	Procedure
<b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)	<i>NONE IDENTIFIED</i>

Abdominal wall

EPP Category	Procedure
<p><b>Category 1</b> (Lowest risk of bleed-back)</p>	Simple excision of inguinal hernia sac
	Primary repair of inguinal hernia
	Laparoscopic repair of groin hernia
	Repair of recurrent inguinal hernia
	Primary repair of femoral hernia
	Repair of recurrent femoral hernia
	Repair of umbilical hernia
	Repair of port site hernia
	Laparoscopic repair of incisional hernia
	Repair of other hernia of abdominal wall
	Laparoscopic repair of abdominal wall hernia
	Laparoscopic repair of parastomal hernia
	<p><b>Category 2</b> (Intermediate risk of bleed-back)</p>
Primary repair of strangulated femoral hernia	
Primary repair of incisional hernia (excluding port site hernia)	
Repair of recurrent incisional hernia	
Resuture of previous incision in abdominal wall (burst abdomen)	
<p><b>Category 3</b> (Higher risk of bleed-back)</p>	Repair of congenital diaphragmatic hernia

EPP Category	Procedure
<p><b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)</p>	<p><i>NONE IDENTIFIED</i></p>

## Peritoneum

EPP Category	Procedure
<b>Category 1</b> (Lowest risk of bleed-back)	Laparoscopic excision of peritoneal lesion
	Laparoscopic biopsy of lesion of retroperitoneal space
	Laparoscopy including biopsy and adhesiolysis
	Suprapubic drainage of pelvic abscess
	Insertion of peritoneal dialysis catheter
	Laparoscopic insertion of peritoneal dialysis catheter
<b>Category 2</b> (Intermediate risk of bleed-back)	Operations on omentum
<b>Category 3</b> (Higher risk of bleed-back)	Laparotomy for post-operative haemorrhage
	Laparotomy and repair of visceral trauma
	Open drainage of subphrenic abscess
	Excision of peritoneal lesion
	Excision of lesion of retroperitoneal space
	Biopsy of lesion of retroperitoneal space
	Excision of presacral tumour
	Freeing of adhesions of peritoneum

EPP Category	Procedure
<b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)	Paracentesis abdominis for ascites
	Percutaneous insertion of peritoneal dialysis catheter



# Transplant

EPP Category	Procedure
<b>Category 1</b> (Lowest risk of bleed-back)	
<b>Category 2</b> (Intermediate risk of bleed-back)	
<b>Category 3</b> (Higher risk of bleed-back)	Abdominal solid organ transplantation (any)
	Living donor operation for transplant (any)
	Removal of transplanted organ
	Anastomotic revisions in transplanted organs

EPP Category	Procedure
<b>Category Zero</b> (NOT exposure prone, no risk of bleed-back)	Pancreatic islet cell transplantation (isolated)
	Endovascular procedures

## Contributors

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