1. Scope
1.1 This clinical guideline outlines the pre-hospital management of common post-operative complications.

2. Background and Definitions
2.1 Post-operative complications may be either general or specific to the type of surgery undertaken, and should be managed with consideration to the patient’s specific past medical history.

2.2 With the rise in the number of day case and short stay surgeries, the likelihood of ambulance clinicians being called to patients with post operative complications continues to increase. The highest incidence of complications occurs between 1 to 3 days after surgery.

3. Guidance
3.1 Post-operative Haemorrhage
3.1.1 Post-operative haemorrhage may be external or internal, gradual or sudden. It could also be intermittent and remote from the surgical site; blood may accumulate in an un-drained compartment such as the abdomen. Patients on anti-coagulant therapy pre and post-operatively have a higher risk of developing post-operative haemorrhage.
3.1.2 There are several common causes of unexpected post-operative haemorrhage:
▲ Inadequate repair of vessels or vascular structure;
▲ Unrepaired injury or damage to organs or structures during the course of surgery;
▲ Vascular damage caused by post-operative infection;
▲ Coagulopathy.

3.1.3 Patients with post-operative haemorrhage may present with signs and symptoms of hypovolaemic shock:
▲ Tachypnoea;
▲ Tachycardia;
▲ Hypotension;
▲ Prolonged capillary refill time.

3.1.4 Other signs and symptoms could include:
▲ Excessive pain;
▲ Reduced urinary output;
▲ Flank bruising;
▲ Abdominal distension;
▲ Swelling to extremities with discolouration.

3.1.5 Often post-operative haemorrhage can only be stopped by returning to theatre (e.g. post tonsillectomy haemorrhage). It is important that ambulance clinicians convey patients presenting with post-operative haemorrhage to the appropriate receiving unit. Where possible, this should be the hospital where the original procedure was performed.

3.1.6 Special Considerations Post Tonsillectomy
3.1.6.1 Tonsillectomy (undertaken for any reason, even inflammation) carries a risk of post-operative bleeding. In some cases, only a return to theatre will stop this. Patients are at risk of bleeding which could occlude the airway.²

3.1.6.2 Post-operative bleeding may be intermittent, so even if no active bleeding is seen, that does not mean it will not start again shortly afterwards. It is possible for the tonsillar bed to bleed without the patient’s knowledge as blood may trickle into the stomach rather than out of the mouth, and for this to be a gradual rather than a sudden process.²

3.1.6.3 All ambulance clinicians are advised, that in the event of encountering a patient with post tonsillectomy complication the above points must be taken into account and the patient should be conveyed to hospital, even if bleeding does not appear obvious at the time of assessment.
3.2 Post-operative Infections

3.2.1 The most common post-operative infections are:
- Respiratory infection;
- Peritonitis;
- Surgical wound infection.

3.2.2 Post-operative respiratory infections are often caused by the inflammation of the lungs from inhaling gastric contents, history of vomiting or regurgitation intra-operatively or reduced mobility following surgery. The identifying features of post-operative respiratory infection include:
- Increased bronchial secretions.
- Mild tachypnoea;
- Mild tachycardia;
- Low grade fever.

3.2.3 Post-operative peritonitis results from bacterial transmission across the surgical site (such as stoma puncture site following gastrostomy) into the peritoneal space, and carries a high mortality and morbidity rate. Chemical peritonitis occurs if enteral feed leaks into the peritoneal space in patients with gastrostomy. The identifying features of peritonitis include:
- Severe abdominal pain;
- Nausea;
- Vomiting;
- Tachycardia;
- Abdominal tenderness;
- Abdominal distension.

3.2.4 The most common cause of surgical wound infection is Staphylococci Aureus, which often presents as:
- Localised pain;
- Redness and swelling;
- Wound discharge.

3.2.5 Patients with severe post-operative infections may present with septicaemia. This is a life-threatening emergency and must be managed according to Clinical Guideline CG19 - Sepsis including Meningitis.
3.3 Post-operative Thrombo-embolism

3.3.1 Post-operative thrombo-embolism is a major complication and may lead to death.

3.3.2 Deep Vein Thrombosis (DVT) is commonly caused by an alternation in blood flow, blood clotting mechanisms, or intra-operative immobility. The identifying features of DVT include:
- Unilateral or bilateral swollen legs;
- Tenderness of calf muscle;
- Increased warmth with calf pain on passive dorsiflexion of the foot.

3.3.3 Pulmonary embolism (PE) classically presents with sudden dyspnoea and cardiovascular collapse with pleuritic chest pain, pleural rub and haemoptysis. Smaller PEs are more common and may present with confusion, breathlessness and chest pain.

3.4 Management

3.4.1 All patients with post-operative complications must be assessed using the Trusts standard CABCD approach, to evaluate the severity of presentation. Ambulance clinicians should gather further information regarding the surgical procedure, which is often present in the form of a discharge summary.

3.4.2 Ambulance clinicians should have a lower threshold of admission for patients who present with post-operative complications. Consider obtaining advice from a senior clinician (ECP, GP or hospital clinician from the service which carried out the original procedure) to inform the decision making process of whether the patient requires conveyance to hospital.

4. Incident Closure

4.1 Patients not requiring conveyance to hospital must be provided with a copy of the PCR and a patient information leaflet. Consider referral to the service who conducted the original procedure, or the patient’s GP.
5. **Documentation**
5.1 In line with Trust Policy, a Patient Clinical Record must be completed and annotated appropriately. Any deviation from this guideline must be recorded, with any potential or actual adverse event reported through the incident reporting system.

6. **References**

2. HM Coroner (2011). Rule 43: Post tonsillectomy bleeding. HMC.
