SAFETY ACTION NOTICE
By arrangement with the NHS in Scotland, Management Executive

SINGLE PATIENT USE PEEP VALVES:
RISK OF MISCONNECTION

SUMMARY
Failure to exercise care when connecting single patient use PEEP valves can lead to occlusion of the patient circuit and subsequent risk of pneumothorax. Manufacturers’ instructions should be followed closely and care taken to ensure correct direction of flow through the valve.

BACKGROUND
1. PEEP (Positive End Expiratory Pressure) valves may be used during lung ventilation to maintain the patient’s airway above atmospheric pressure during expiration. They may also be used to achieve the elevated airway pressure for CPAP (Continuous Positive Airway Pressure) therapy. A single patient use PEEP valve is generally a spring loaded valve which is attached to the face mask or expiratory limb of the breathing circuit.

2. An incident has occurred in which the outlet port of a single patient use PEEP valve was connected to the ‘T-piece’ in the circuit of an intubated patient receiving CPAP. The patient’s expiratory breathing circuit was occluded, causing a rapid increase in pressure and subsequent pneumothorax.

3. Single patient use PEEP valves are available from a number of manufacturers and are generally of similar design. The valve inlet is normally fitted directly to a face mask but can be connected to the patient circuit using an adapter (supplied) if the patient is intubated. The adapter inlet is a male 22mm connection while the PEEP valve outlet (which is sometimes used for scavenging or spirometry) is a female 22mm. It is therefore possible to connect the outlet of the valve to a 22mm male ‘T-piece’ or into flexible tubing.

4. Some PEEP valves are supplied in externally printed packaging and it is possible to remove the valve but fail to notice the adapter still in the packet.

5. One manufacturer has already modified the design of their valves to reduce the risk of misconnection and will introduce a further modification to allow gas flow in the reverse direction should misconnection occur.

ACTION
6. This notice should be brought to the attention of all appropriate managers, staff and users.

7. When connecting a PEEP valve to a patient breathing circuit, the manufacturer’s instructions should be followed closely. The direction of expiratory flow is indicated on each valve and must be observed.

8. Care should be taken to ensure that both the valve and adapter are removed from the packaging.

9. When administering CPAP, consideration should be given to the use of pressure monitoring and the use of a pressure relief valve in the patient circuit. A second PEEP valve with a higher relief pressure may be used.

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This notice was obtained from the INCIDENT REPORTING & INVESTIGATION CENTRE (public) website

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