

MEDICAL DEVICE APPLICATIONS:

UK not wedded to Hg measuring devices for healthcare and has reduced their use in recent years;

But Hg-sphygmomanometers should be available for clinical validation purposes and use by clinicians when automated oscillometric blood pressure monitors are inappropriate;

For example, arrhythmias, pre-eclampsia and certain vascular diseases.

Well known that automated oscillometric blood pressure monitors not appropriate for all patients, particularly those with arrhythmias, pre-eclampsia and certain vascular diseases;

In these patients there is a change in the haemodynamics from the norm and algorithms used to calculate systolic and diastolic blood pressures are of unknown accuracy.

Clinical validation protocols generally select patients with hypertension, but are otherwise normal. This means the majority of blood pressure measurement devices on the market have not been validated for use with patients from special groups.

Current advice from the Committee on Blood Pressure Monitoring in Clinical Practice is to use auscultation (manual sphygmomanometer) or arterial cannulation in those clinical conditions where oscillometry is inappropriate.

In general, this means that either a mercury or aneroid sphygmomanometer should be used in this situation.

However, it is well known that aneroid sphygmomanometers drift out of calibration and the user is unaware of this. There is evidence to show that calibration of aneroid gauges is often neglected.

Hg-sphygmomanometers also used as the reference device for these clinical validation protocols (EN 1060-4, British Hypertension Society protocol and ANSI/AAMI SP10); validation required as part of the CE marking process.

New draft international standards do not specify reference device.

Validation trials can last several months and problems may occur if aneroid sphygmomanometers are used - they drift out of calibration with the user unaware.

Further, displays of digital gauges are difficult to read as the numbers are continually changing during cuff deflation and the ergonomics associated with freezing the display at the correct points are different, leading to errors.

An international consensus is required for the reference device to ensure results are comparable.

Expect demand for Hg-sphygmomanometers in the UK to continue to decrease as their use is governed by COSHH Regulations (Control Of Substances Hazardous to Health). However, clinicians should have access to the device that is most appropriate for their needs.

SCIENTIFIC/INDUSTRIAL APPLICATIONS:

National Physical Laboratory (UK national standards laboratory) states the international temperature scale of 1990 (ITS-90) requires a mercury triple point for a full realisation.

This sets a physical standard, which is a separate procedure from calibration.

An alternative is not available at present, a blanket ban on the sale of Hg-devices would mean that the ITS-90 may not be realisable, certainly not to its full potential.

Hg-manometers also remain essential to the realisation of high precision pressure measurement standards throughout the world.

In addition to instrument manufacturers, there are also very exacting uncertainty demands from aerospace sector, defence and the realisation of other primary measurement units.

Hg-thermometers are extensively used to support Institute of Petroleum standards and in other industries (such as gas), since they require no electric power and so are intrinsically safe in an explosive environment.

SAFETY SWITCHES FOR LIFEBOATS:

These prevent entry of water into the engine should the boat capsize.

Royal National Lifeboat Institution (RNLI) accepts new technology available, but much of its all weather lifeboats still rely on the mercury switch technology.

To switch to solid-state devices estimated to take 5 years to achieve and considerable cost.

RNLI relies completely on charitable donations;

So if required to move too quickly to non-Hg switches, there is a danger that the RNLI could suffer reduction in its rescue capability.