### 1. Objectives

Diagnostic Reference Levels (DRLs) are reference dose values for standard diagnostic examinations or interventional practices against which recorded patient dose values can be compared.

DRLs provide a reference against which clinical equipment operators can compare local dose levels to aid in the identification of higher than expected patient doses and for optimisation purposes.

Employer’s Procedure EP 12 defines how radiation doses delivered to patients shall be assessed for comparison with documented DRLs.

This Employer’s Procedure aims to ensure that NHS Greater Glasgow and Clyde:

* has documented DRLs in place for an appropriate range of diagnostic procedures and interventional radiology practices where appropriate relevant to IRME Regulation 3 that are performed within the organisation.
* undertakes appropriate reviews whenever Diagnostic Reference Levels are consistently exceeded and ensures that corrective action is taken where appropriate.

### 2. Responsibilities

The Head of Health Physics (for standard diagnostic examinations and interventional practices within and standard diagnostic examinations outwith Diagnostic Radiology) and the Head of Imaging Physics (for Nuclear Medicine) are responsible for ensuring that lists of DRLs for standard examinations are prepared annually and presented at meetings of the relevant Radiation Safety Committees for a range of standard examinations.

Directorates carrying out medical exposures for which DRLs are not provided should establish their own DRLs in terms of dose related parameters (see section 3) and establish a system for comparison of these parameters with these DRLs.

The Radiation Safety Committee Chairpersons have responsibility for circulating the lists of DRLs to all relevant departments.

Service Leads (SL) are responsible for selecting DRLs from the approved employer’s lists to cover the range of procedures representative of those examinations performed within the local department.

The relevant Service Lead shall also;

* review DRLs annually in consultation with Medical Physics Experts (MPEs), if there is any requirement to set a different value for any examination because of requirements for the examinations performed on the local patient group.
* initiate appropriate reviews whenever there is evidence that DRLs have consistently been exceeded, and shall ensure that corrective action is taken where appropriate.
* ensure that staff collates necessary information.

The Local Service Lead shall ensure that a list of appropriate DRLs is displayed and readily available to operators performing relevant diagnostic examinations or interventional practices.

#### 3. Establishing DRLs

Lists of DRLs for standard X-ray and nuclear medicine examinations performed within the Diagnostics Directorate will be available on the Q-pulse Quality Management System and Staffnet.

These will be reviewed by the relevant MPEs annually. Revised lists of DRLs will be issued following the reviews by the Head of Health Physics for Diagnostic Radiology and the Head of Imaging for Nuclear Medicine. The revised lists of DRLs will be made available immediately on Q-pulse and Staffnet, and subsequently presented at meetings of the relevant Radiation Safety Committees

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Service Leads (SLs) shall consult with Medical Physics Experts (MPEs) and select DRLs from the approved employer’s lists to cover the range of medical exposures performed within the local department.

DRLs for dental examinations will be revised by the MPEs and circulated through the Oral Health Directorate Managements Structure.

Directorates other than Diagnostics will need to establish their own DRLs for particular procedures that they perform. Lists of suitable DRLs based on national data, where these are available, will be included in the X-ray lists. If there are no suitable DRLs in the employer’s list, the SL should consult with a Medical Physics Expert to set up DRLs that are appropriate for their specialty. These DRLs shall be listed in the relevant procedure for each site.

The procedures shall specify these DRLs in terms of practical quantities, e.g. dose-area product, entrance surface dose, computed tomography dose indexvolume, dose length product, screening time or administered activity.

The standard X-ray and nuclear medicine examinations DRLs adopted will be based on values proposed by European and National professional bodies, other available published data where this is considered appropriate, and results of local dose surveys. DRL values for Interventional radiology procedures will be based on local practice where appropriate.

A list of appropriate DRLs will be displayed and readily available to operators performing relevant diagnostic examinations or interventional procedures in each department.

### 4. X-ray DRLs

X-ray DRLs shall be set either as practical dose measurement quantities for typical diagnostic examinations for average size patients (70 kg), or as variables which relate to dose, such as screening times for fluoroscopy.

If there are not appropriate Health Board DRLs for any examinations performed on a particular X-ray unit, because of the specialist nature of the procedures or the patient cohort, local departmental DRLs should be established. The Service Lead will identify staff to record and analyse dose-related data and establish appropriate local DRL(s).

Advice and assistance in this exercise may be sought from MPEs in Health Physics.

### 5. Nuclear Medicine DRLs

The Administration of Radioactive Substances Advisory Committee (ARSAC) provides DRLs for typical examinations for average size patients (70 kg). DRLs for nuclear medicine procedures in NHS Greater Glasgow and Clyde shall be based closely on those recommended by ARSAC.

Variations and additions to the DRLs used in a department may be derived to suit particular local practices. These DRLs must be agreed with the Service Lead in consultation with the Lead Clinician and the MPE for the area, and documented in the relevant procedure.

Approval must be obtained from ARSAC for any adopted DRL which is greater than their recommended value.