



DEPARTMENT OF HEALTH
DIRECTORATE: RADIATION CONTROL



GUIDELINES

RADIOGRAPHIC GRID RATIO

1. INTRODUCTION

Grids are used to improve contrast by absorbing scatter radiation before it reaches the film.

2. GRID DESIGN

- 2.1 A radiographic grid consists of lead strips separated by x-ray transparent spacers.
- 2.2 Grid ratio is the ratio between the height of the lead strips and the distance between them.
- 2.3 The effectiveness of the grid is determined by several parameters of which the attenuation of scatter radiation is the most important. This attenuation should be high. It is also important that the primary beam attenuation is low, as this affects the exposure time and the consequent dose of radiation to the patient.
- 2.4 The quantity of scatter radiation generated by various objects and at different voltages plays a major role in the selection of a grid ratio.
- 2.5 Usually 8:1 grids give adequate results below 90 kVp. Above 90 kVp 12:1 grids are preferred.

3. REQUIREMENTS

- 3.1 A grid with a minimum grid ratio of 10:1 is required for a basic radiological system. In certain circumstances a grid ratio of 8:1 may be acceptable.
- 3.2 When only extremities, x-ray examinations below 90 kVp technique and chest examinations are being conducted, a minimum 8:1 grid ratio is acceptable.
- 3.3 In cases where more than one grid is being used the following table can be used as a guideline. It must be used as a guide because there are many variables that will affect the ultimate choice.

Examination	KV limit	Grid ratio
Bone radiography	90	8:1
	110	12:1
	150	16:1
Barium studies	100	8:1
	120	12:1
	150	16:1
Chest radiography	120	6:1
	130	8:1
	150	10:1

References

- 1. WHO: 1994 (RAD/94.1) WHIS-RAD – World Health Imaging System for Radiography
- 2. SMIT X-RAY GRIDS: Influence of Stray Radiation
- 3. Christensen's Physics of Diagnostic Radiology - 4th Edition