Asst.let Murtadha Ali Hamoozi Asst.let Ali Hatif Shomraan

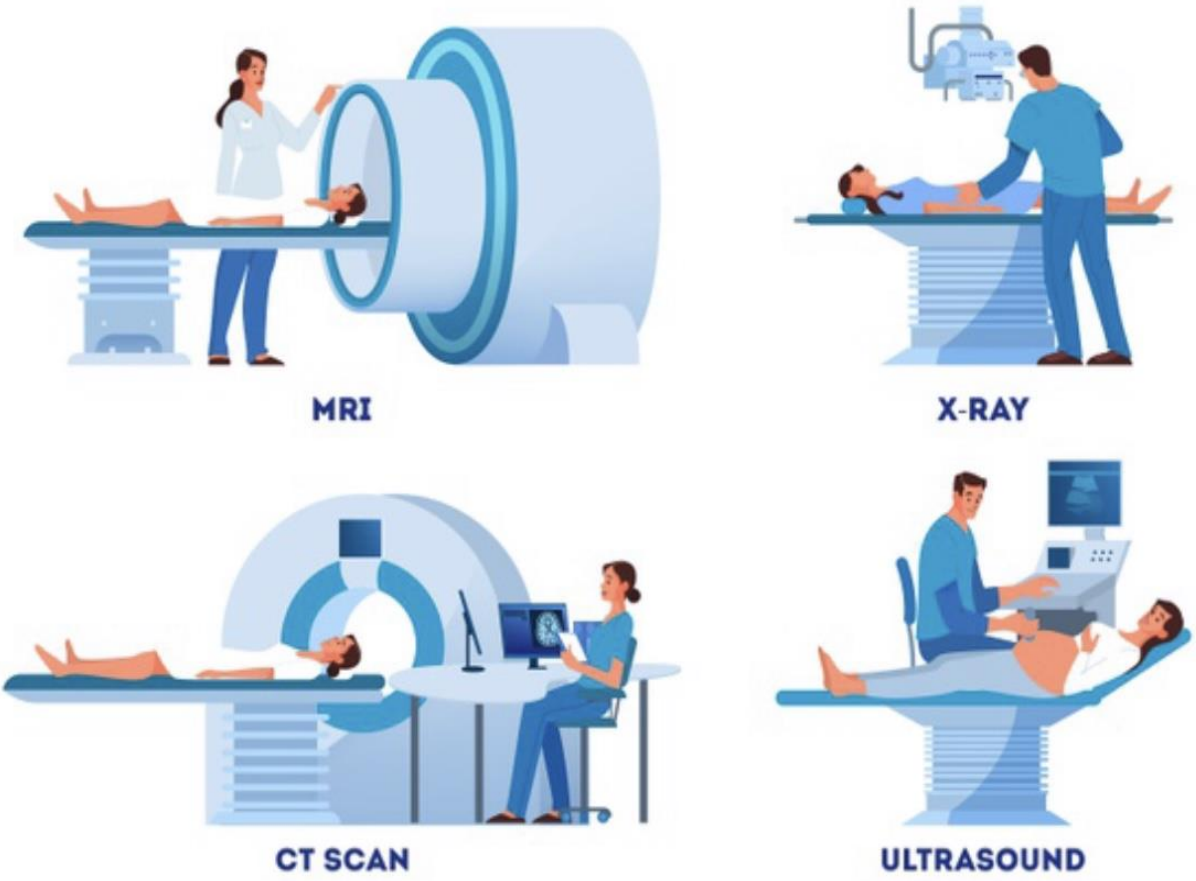
The Islamic University, Najaf

College of Medical Techniques

Department of Radiology Techniques

PRACTICAL RADIOLOGY MEDICAL DEVICE TECHNIQUE

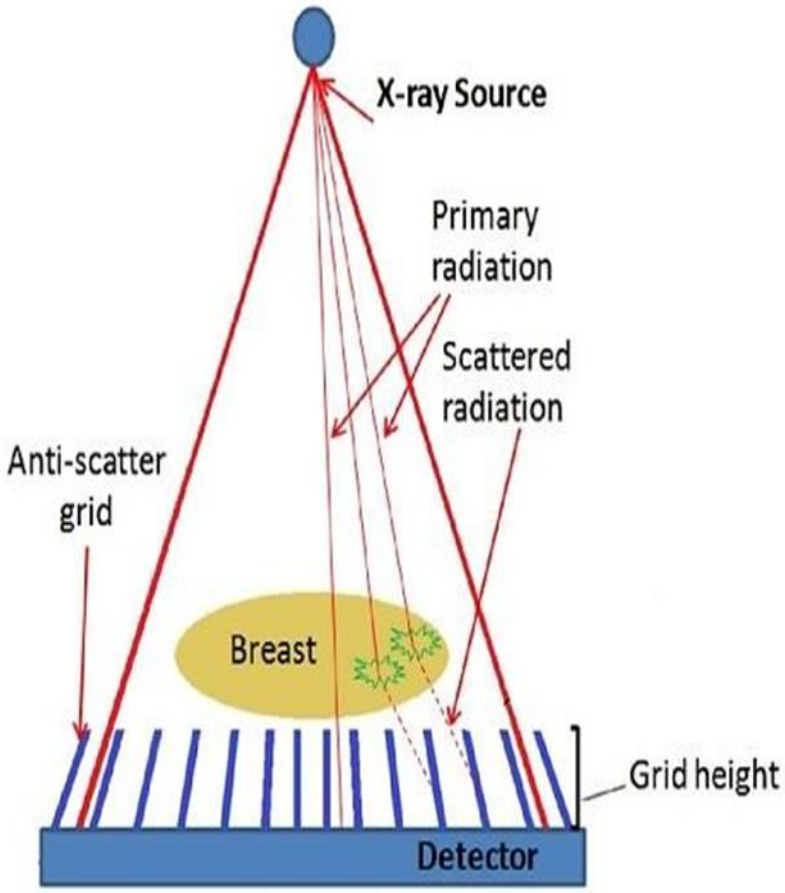
(SOPHOMORE)



The Grids

Grid is a device placed between the patient and film to prevent as much scattered radiation as possible from reaching an x-ray film during the exposure of a radiograph. Grids are very effective device for reducing and "clean up" scatter radiation. A high-quality grid can attenuate 80 –90 percent of scatter radiation. It is positioned between patient and film.

It is a flat plate with a series of lead foil strips that is made in various sizes. Grid strips should be very thin and have high photon absorption properties (Lead).

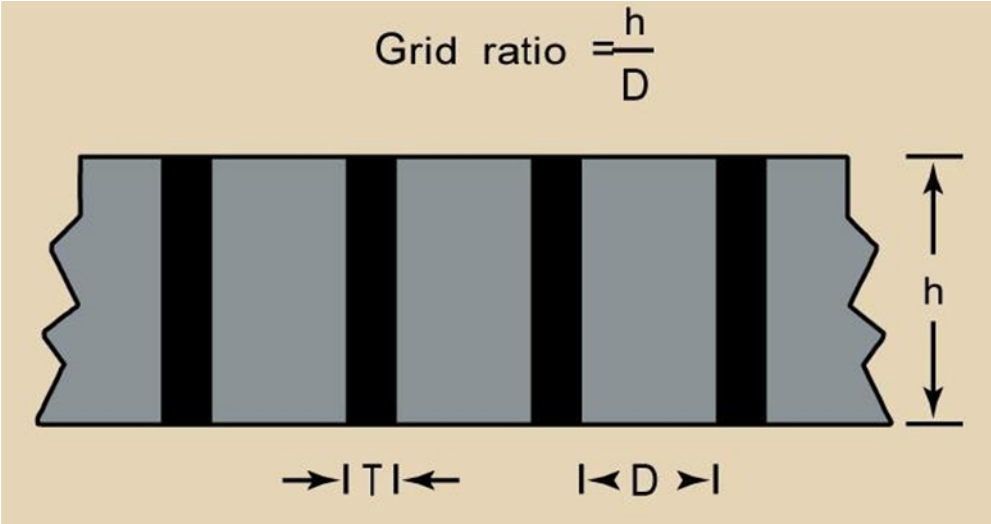


Grid Ratio: Three important dimensions of a grid:

- The thickness of the grid strips (T).
- The width of the interspace material (D).
- The height of the grid (h).

The grid ratio is the hight of the grid divided by the interspace width: Grid ratio = h/D

High-ratio grids are more effective in cleaning up scatter radiation than low-ratio grids.



Grid ratios range from 5:1 to 16:1 that will clean up 85% and 97% respectively. Most common 8:1 to 10:1.

Example:

A certain grid is made of lead 30 μm thick sandwiched between fiber interspace material 300 μm thick. the height of the grid is 2.4 mm. what is the grid ratio?

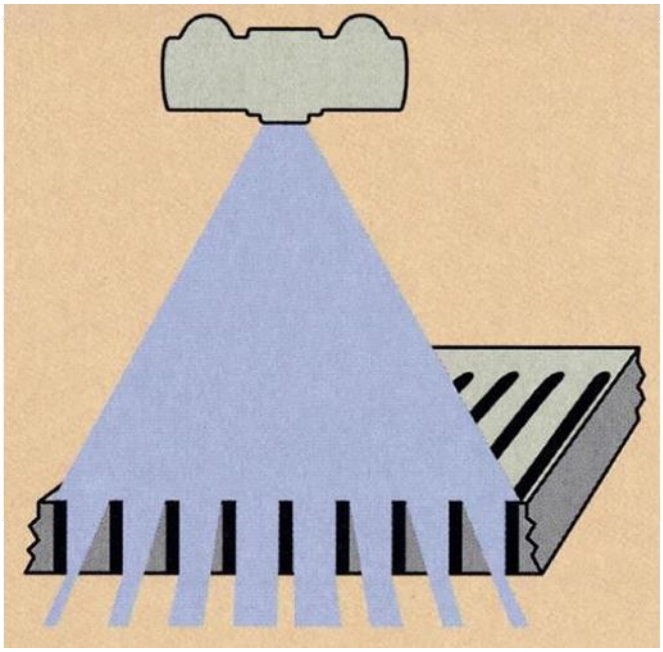
A/ grid ratio = h/D → 2400/300 = 8:1

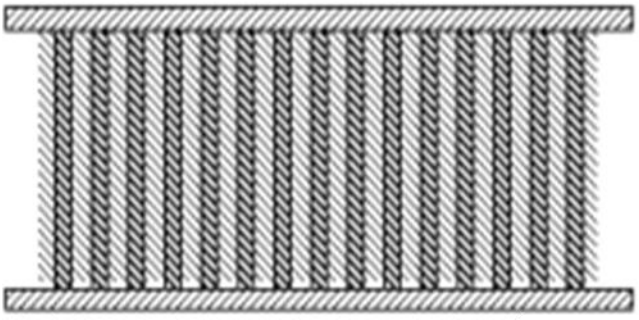
Grid Types:

- **Parallel Grid**
- **Crossed Grid**
- **Focused Grid**
- **Moving Grid**

Parallel Grid:

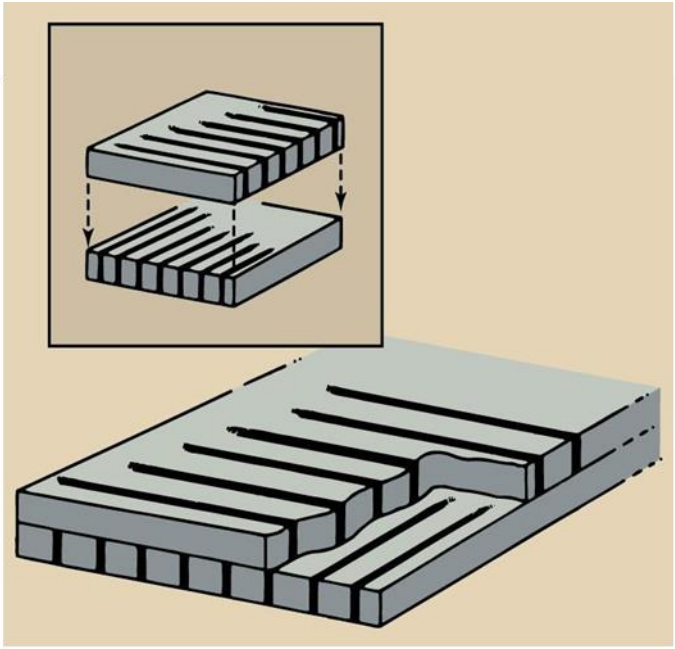
It is the simplest type, in which all strips of lead net are parallel. This type is the easiest to manufacture, but it has some clinically undesirable properties. Unwanted absorption of primary beam X-rays into the grating is grid blackout, grid cut may be partial or complete and result in reduced optical density or complete absence of film exposure.





Crossed Grid:

Cross nets are usually constructed by placing two linear nets one on top of the other with the lead strips placed at right angles to each other. Cross-gratings are more efficient than linear grids in cleaning scattering, with a 6:1 ratio cross-grating cleaning more scattered radiation compared to a 12:1 linear grid.



Focused Grid:

The lead strips are gradually tilted/aligned as they move away from the center to match the X-ray beam spacing. Designed to reduce grid cuts.