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Nuclear medicine

Week 3; Lecture 6; Section 2: Overview of PET systems

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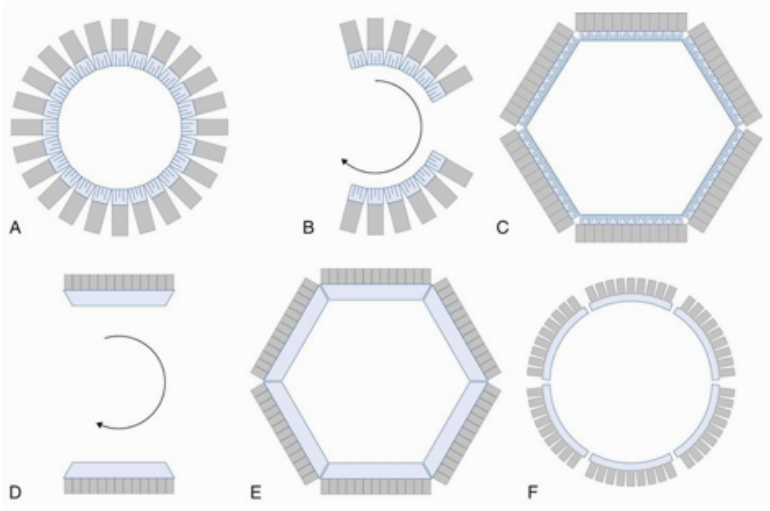
Section 2

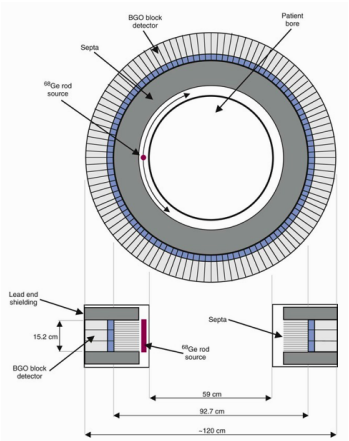
Overview of PET systems

Sample PET scanner geometries



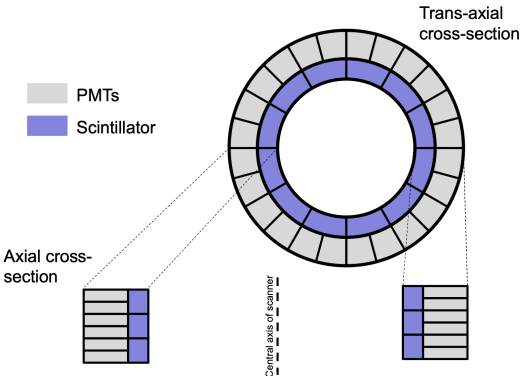
A) Full ring of block detectors
B) Partial ring of block detectors
C) Hexagonal "ring" of quadrant-sharing panel detectors
D) Dual-headed gamma camera
E) Hexagonal array of gamma cameras
F) Ring of curved plates of NaI(T)

With and without septa



^{68}Ge rod for transmission scans to allow absorption correction

Retracted into Pb shield when not in use



Large increase in sensitivity

Increase in ratio of

- scatter to true coincidences
- random to true coincidences

Summary of section 2

Systematic effects are dependent on detector geometry

Correction for absorption can be made using ^{68}Ge rod source that can be retracted into Pb holder when not in use

Relative rate of scatter coincidences compared to true coincidences increased in continuous ring configurations