

# Collective doses of Bulgarian population from Diagnostic Radiology: 2008 update

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# Purpose

- This study was aimed at assessing the frequency of x-ray examinations in 2008 and the resulting collective doses of Bulgarian population from Diagnostic Radiology.

# Method

- The approach traditionally used to collect yearly the number of examinations was applied.
- Every medical center is providing information for the number of x-ray examinations in three age groups: 0 – 17 years; 17 – 45 years; over 45 years, as well as for the distribution by gender.
- Standard questionnaire with 30 entries for most frequent examinations was used.

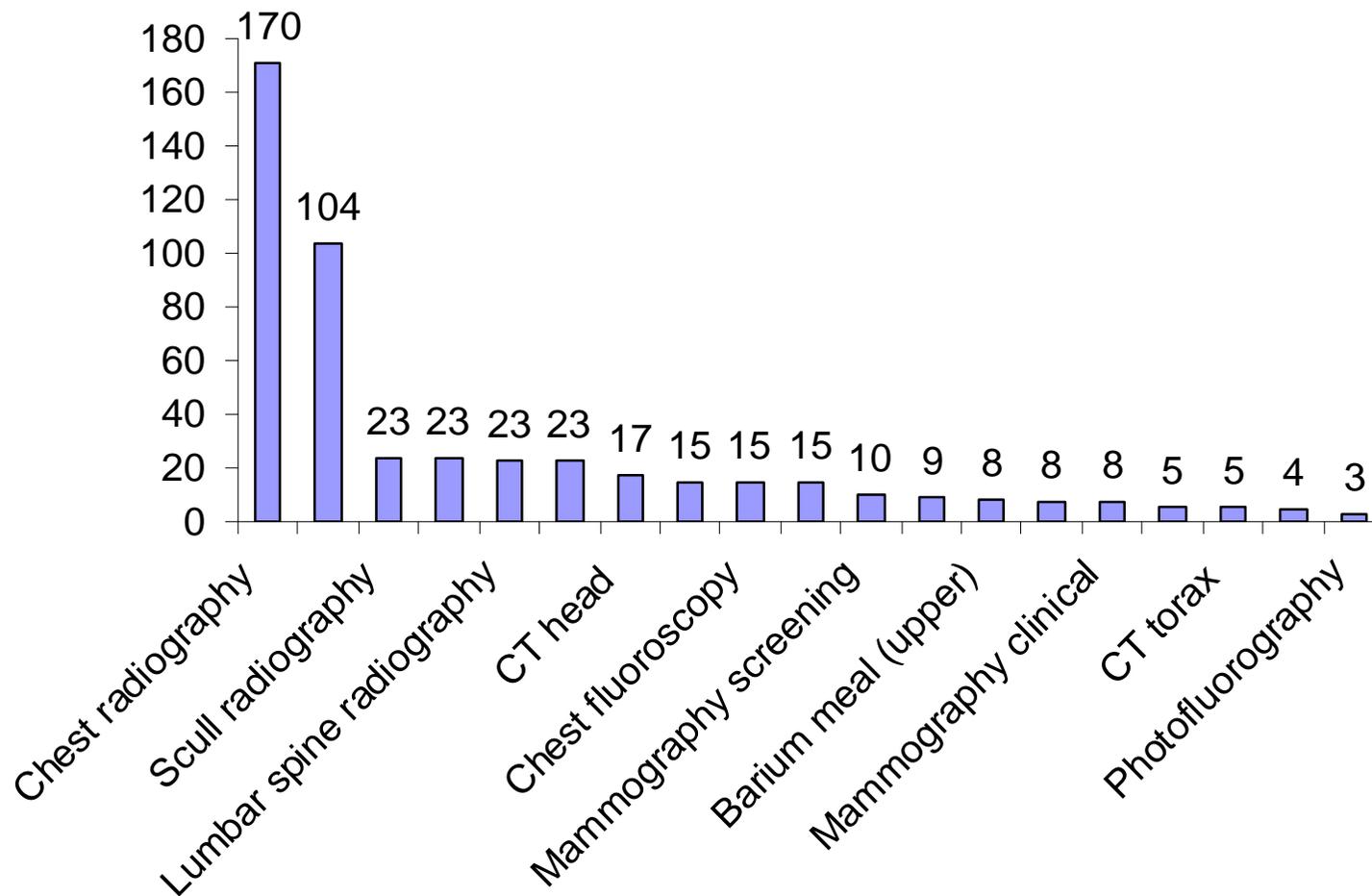
# Method

- Collective doses were calculated applying the recently updated national average effective doses, based on the national patient dose survey and methodology of Radiation Protection 154 (EC).

Examination type	Effective dose, mSv
PCI	14.00
CT abdomen	11.20
Interventional other than PCI	10.70
Angiography other than CA	9.20
Barium enema	8.70
Coronarography	6.40
CT torax	5.50
Urography	4.00
Barium meal	3.10
Cholecystography	2.30
Abdomenal radiography	1.50
CT head	1.30
Lumbar spine radiography	0.85
Photofluorography	0.80
Pelvis and hip radiography	0.70
Chest fluoroscopy	0.70
Thoracic spine radiography	0.50
Cervical spine radiography	0.27
Mammography	0.18
Chest radiography	0.05
Limbs radiography	0.03

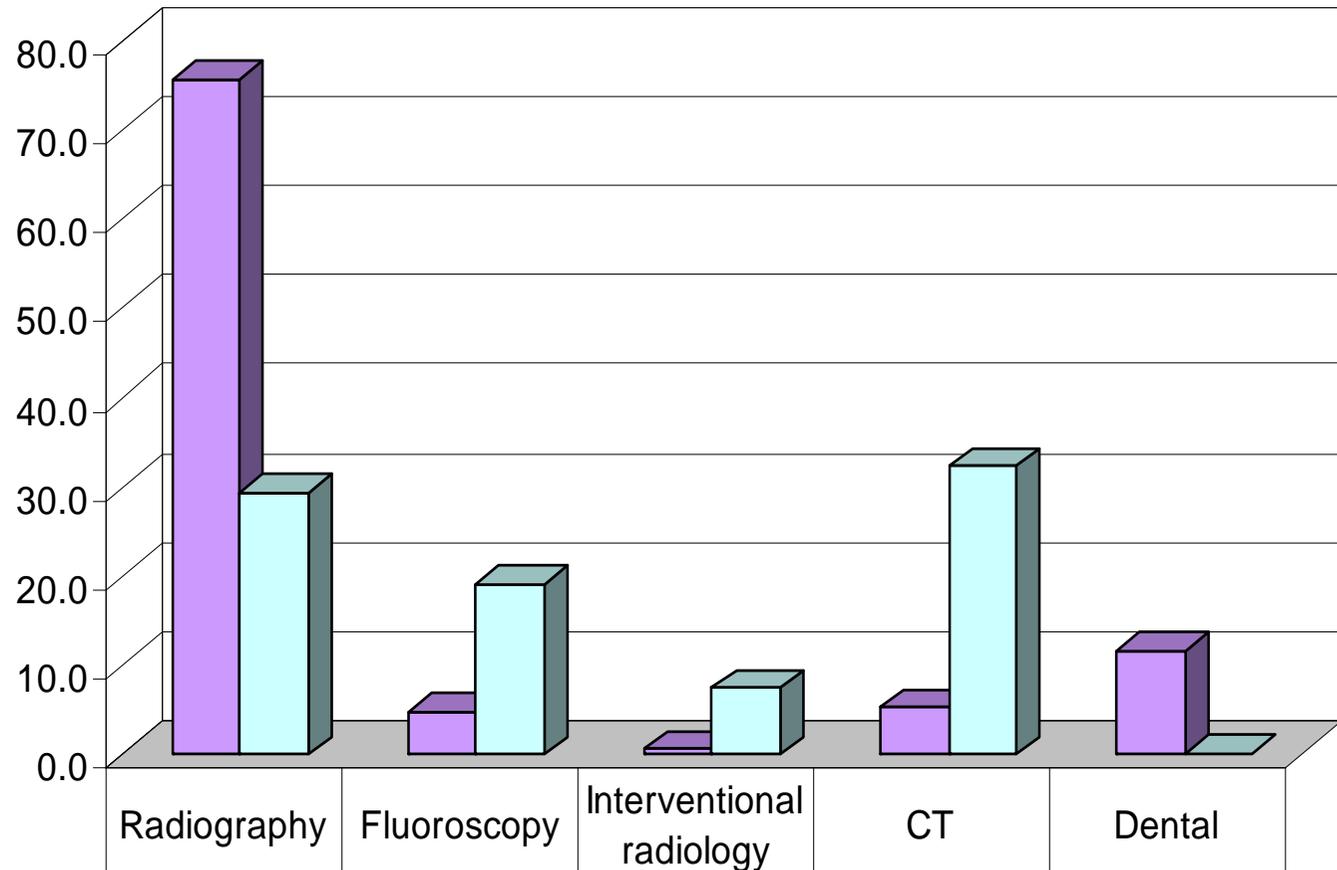
# Results – Top 20

Number of examinations per 1000 of population (without dental)



# Results

## Contribution of main modalities



■ Frequency, %	75.5	4.9	0.6	5.2	11.7
■ Contribution to collective dose, %	29.25	18.96	7.44	32.23	0.15

# Results

- The total number of examinations in 2008 was 4.2 millions, or 570 per 1000 of population.
- The estimated total collective effective dose was 3230 man Sv/y, or 420 mSv per 1000 of population.

# Results

- The main contributor to the collective dose is CT, accounting for only 5.2 % of all examinations but to 32.2 % of the collective dose.
- Interventional radiology still has only 0.6 % frequency and 7.4 % contribution to the collective dose

# Results

- Plain radiography accounts for 75.5 % of all examinations and for 29.3 % of the collective dose.
- Conventional fluoroscopy has still high contribution of 19 % to the collective dose, with 28 exams/y/1000 population .
- Collective dose from dental radiology is negligible, less than 1 %, against the high frequency of 11.7 % of dental exams.

# Conclusions

- The frequency and collective dose per 1000 of population are comparable with those reported in other European countries. The total number of examinations is relatively stable during the last years
- The number of CT and interventional radiology procedures is increasing. The collective doses decreased since 2000 year mainly due to the decrease of the average effective doses per examination