TWO DIFFERENT APPROACHES TO DIGITAL MAMMOGRAPHY

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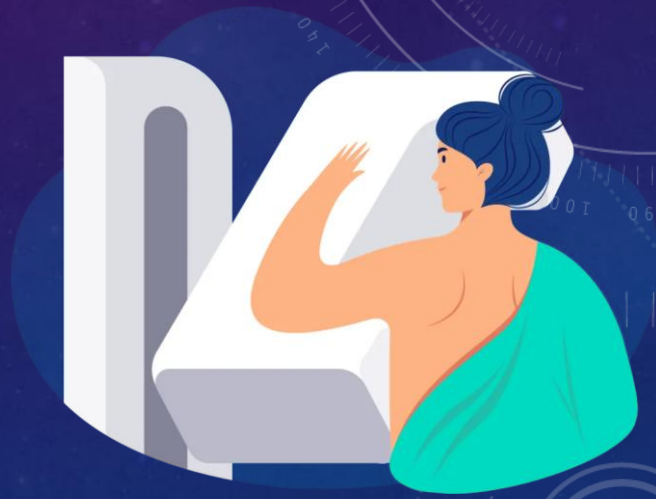
INTRODUCTION

- In 2025, new DRLs came into force for a fairly wide variety of types of radiological examinations with ionizing radiation, including digital mammography with tomosynthesis (3D) and digital mammography without tomosynthesis (2D)

- According to the legal provisions for the implementation of DRLs in practical activity, each healthcare unit must estimate quarterly the average values of the dose amounts for each type of radiological examination with ionizing radiation

- In order to optimize patient protection in medical exposures, each healthcare unit must annually analyze the quarterly values obtained in relation to the DRLs established at national level for the respective types of examinations



METHODOLOGY

- The data analyzed in this study come from two healthcare facilities:
  - ❑ Hospital A in the private sector, with a Mammomat Inspiration Siemens equipment
  - ❑ Hospital B in the public sector with a Selenia Dimensions Hologic equipment

- Both healthcare facilities belong to the category of medium hospitals, with 100-200 bed capacity, such as municipal or specialized hospitals, capable of serving a significant local population

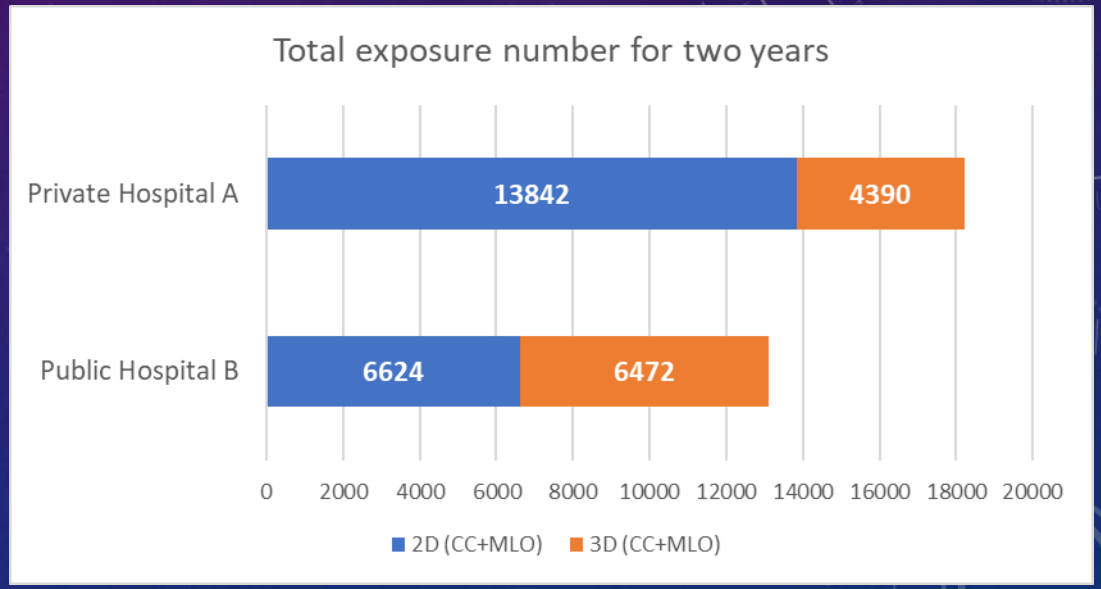
- Aspects regarding the number of mammographic exposures with and without tomosynthesis and the average doses obtained quarterly were analyzed, for a period of 8 quarters, respectively the years 2024-2025, so that the specific trends observed were consistent

METHODOLOGY

- The average MGD values and the number of exposures performed for both hospitals were determined for periods of 3 months, and the dose values were compared with the national DRLs:
  - 2.65 mGy for digital mammography with or without tomosynthesis, the value being valid in both situations for a single exposure only, in CC or MLO incidence
  - 10.73 mGy in the case of digital mammography with tomosynthesis, the value referring to the total medium glandular dose MGD obtained through four exposures, two in CC incidence and two in MLO incidence, in the case of bilateral mammography

RESULTS

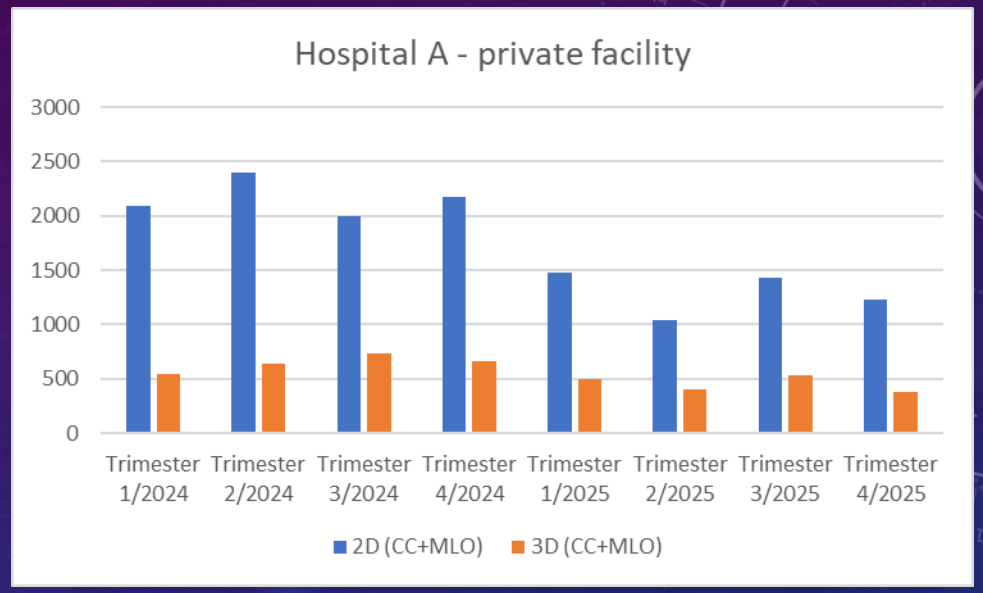
- For the 2-years period studied, a general trend of a slight decrease in the number of medical exposures is observed, valid for both hospitals
- The total number of exposures is much higher (~40%) in Hospital A compared to Hospital B, although from the point of view of hospital capacity, the situation is the opposite
- Hospital A presents an almost double number of 2D exposures compared to Hospital B

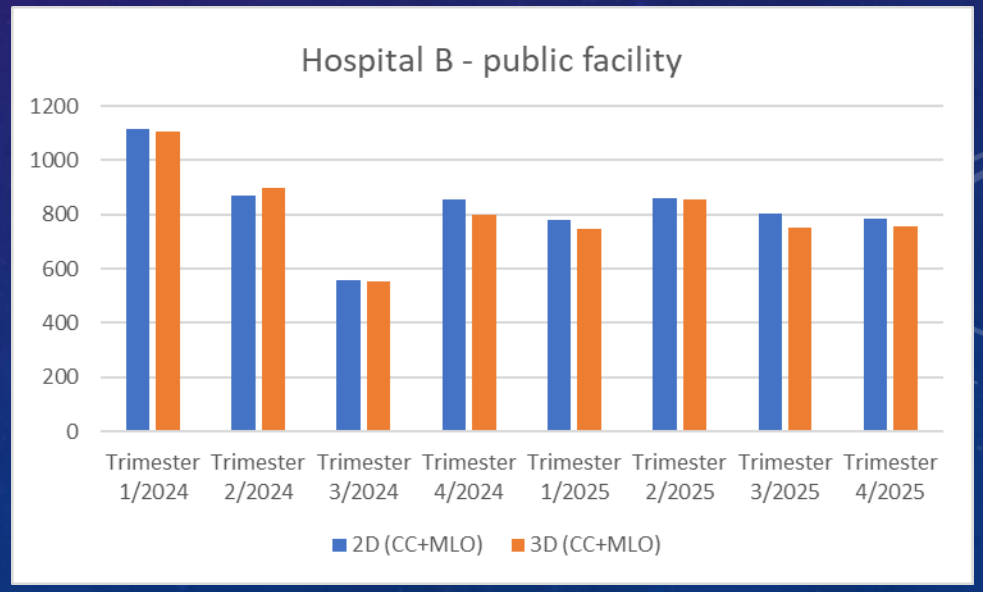


RESULTS

- For Hospital A, 3D exposures are much fewer, representing only 30% of the number of 2D exposures

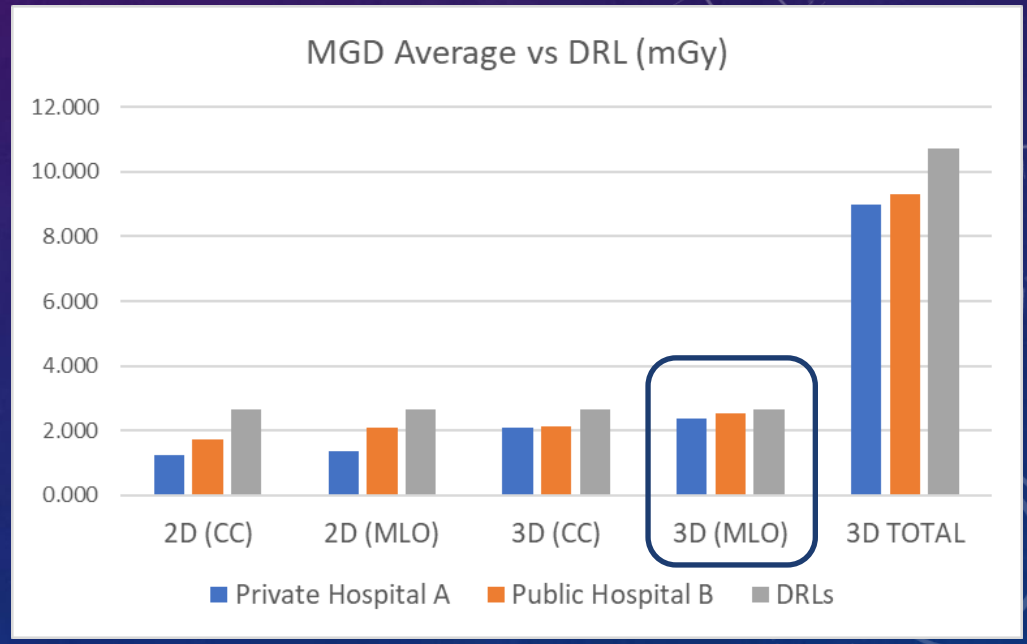
- Hospital B presents equal weights for 3D and 2D exposures





RESULTS

- All MGD values are below the DRLs established at national level, both for Hospital A and for Hospital B
- MGD values for Hospital A are generally lower than those for Hospital B
- The highest MGD values, that are closest to the national DRLs, are those for digital mammography with tomosynthesis, in MLO projection, a situation valid for both hospitals



CONCLUSIONS

Two different approaches are observed:

- the standard investigation procedure in Private Hospital A is the 2D examination, and if certain abnormalities of the breast tissue are observed, the 3D examination is also performed, the radiation doses received by the patients being thus maintained at a lower level

- the standard investigation procedure in Public Hospital B consists of the combined 2D + 3D examinations, thus the doses received by the patient are higher compared to the situation in Hospital A

CONCLUSIONS

- Digital 2D mammography remains the minimal standard method.
- Tomosynthesis (3D) mammography is being used more and more in Romania, but it is still not the standard option everywhere.
- Tomosynthesis (3D) is recommended in most modern screening and diagnostic situations, especially in the case of dense breasts, symptoms, or increased risk.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