

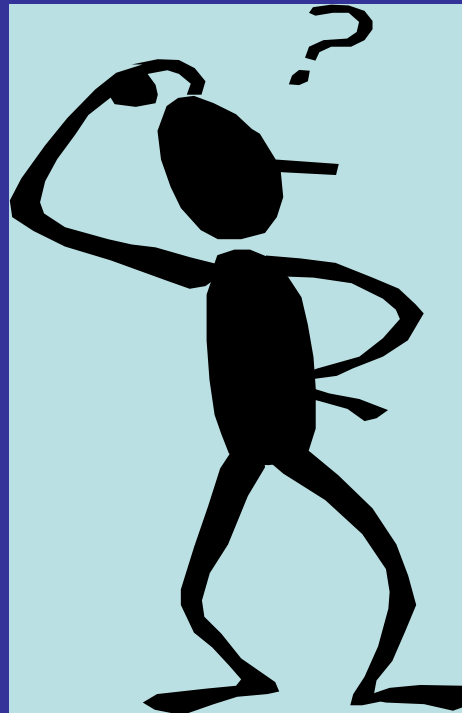
# **Tracking Radiation Exposure From Medical Diagnostic Procedures**

2011 Gilbert W. Beebe Symposium

Session 1: National & International  
Efforts in volume and dose tracking

- **Introduction** **F. Mettler**
- IAEA activities and overview of global activities  
M. Rehani
- FDA's past and present efforts M. Spelic
- VHA Strategies C. Anderson
- ACR Dose Index Registry R. Morin
- Discussion 20 minutes

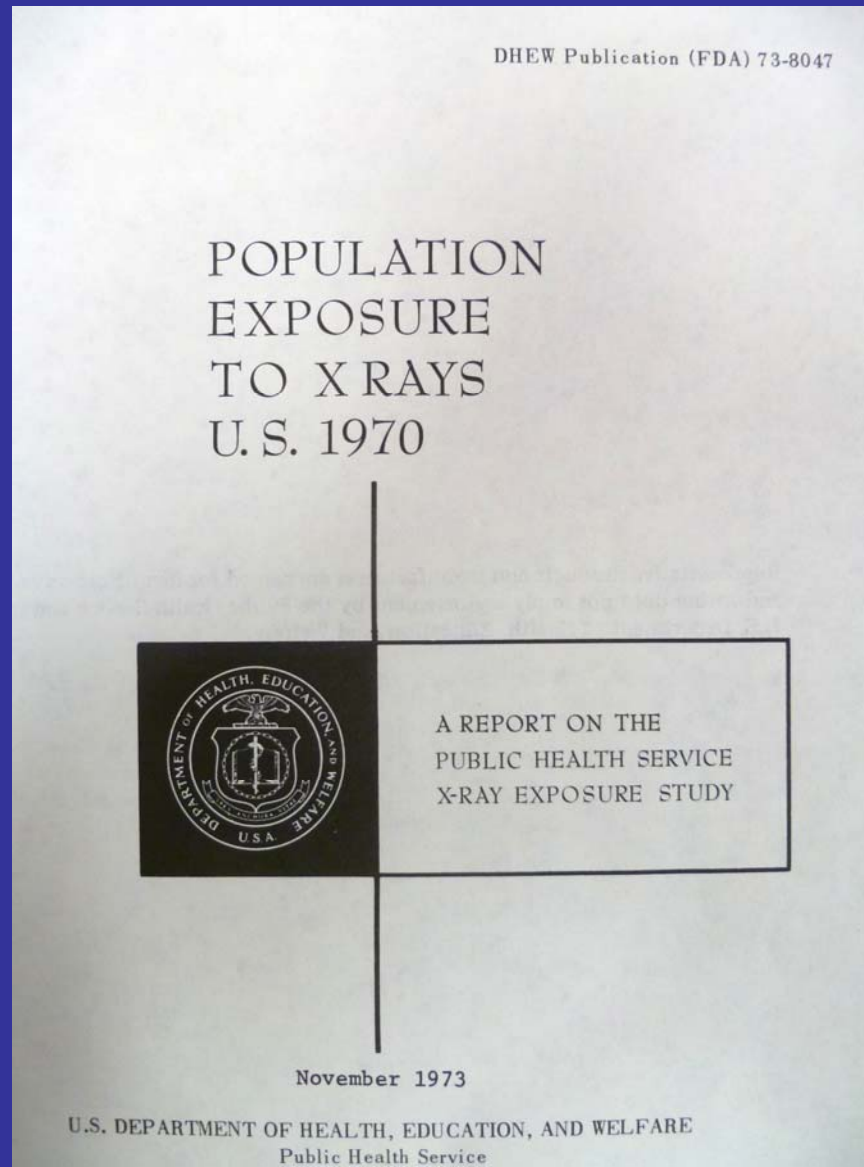
Why don't we know more precisely  
what the exposure/dose from  
medical diagnostics is ?



# Issues

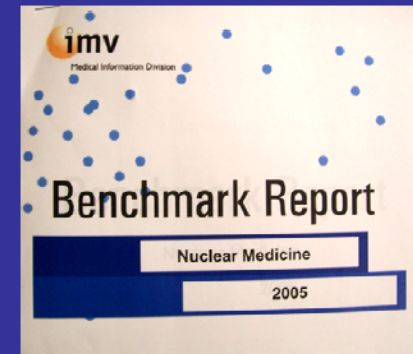
- Disparate and incomplete sources of volume and frequency data
- Machine and radionuclide injection activity variation
- Patient size and shape variation
- Machines that do not have a dose index
- Uncertainty about beam orientation
- Minimal recording of dose information
- Published information on actual doses is limited

# Early FDA surveys discontinued



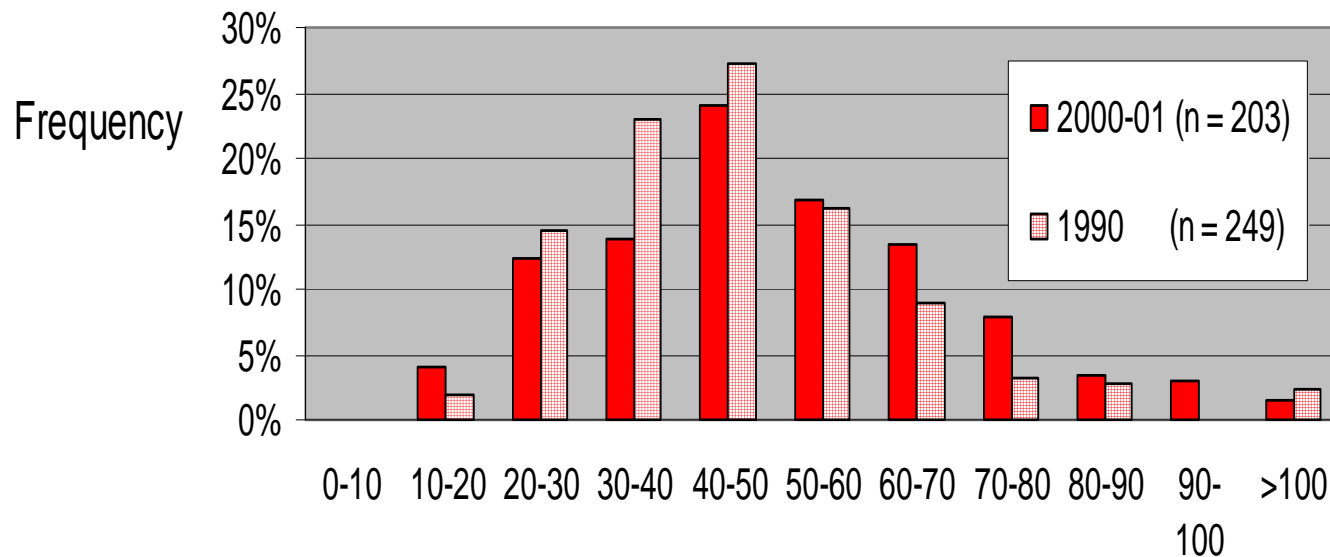
# Major and minor volume and frequency data sources

- Commercial (IMV Benchmark) (60%)
- Medicare payment data (2003-2005) (~25%)
- VA Health Care System
- Claims data from large national employer plan
- State radiation programs
- Large hospitals
- American College of Radiology
- Literature



# Limited periodic FDA dose surveys

## Multiple Scan Average Dose



S. Stern, USFDA

MSAD (mGy)

# 10-fold variation in CT scan doses





System Ready

Heat Units Available: 100%

Record Technic Adjust

Selected Procedure: CHEST - Lateral

Max 1250

DIGITAL  
RAD

120

KV

400

mA

11.4

ms

4.56

mAs

MED ADULT

PATIENT  
SIZE

Left

LATERALITY

SID

72 in



FOCAL  
SPOT

1.25

DOSE

100%



AEC  
FIXED

TUBE  
WARMUP

DIGITAL  
RAD

CHEST - PA

SELECT

CHEST - Anterior Oblique

SELECT

PROCEDURE  
MENU



Acquire / Re...

Fluor

Settings

Study Select

Image Processing

Pre-Processing

Not Defined

Not Defined

View:

Zoom / Pan / Rotate / Flip:

Label / Comment:

Filter:

F1

F2

F3

F4

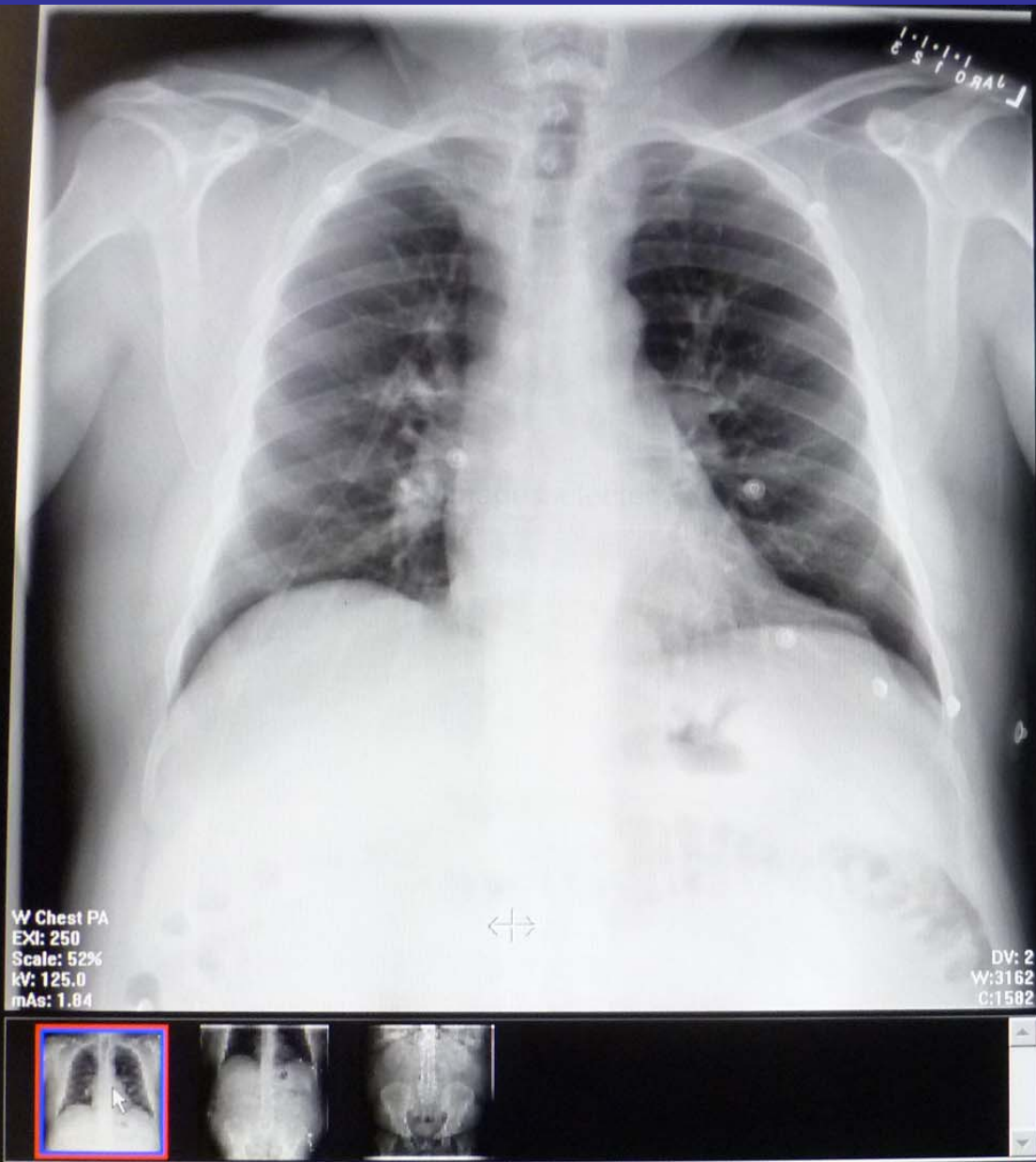
F5

F6

Windowing:

W: 3162

C: 1582



# Unknown collimation

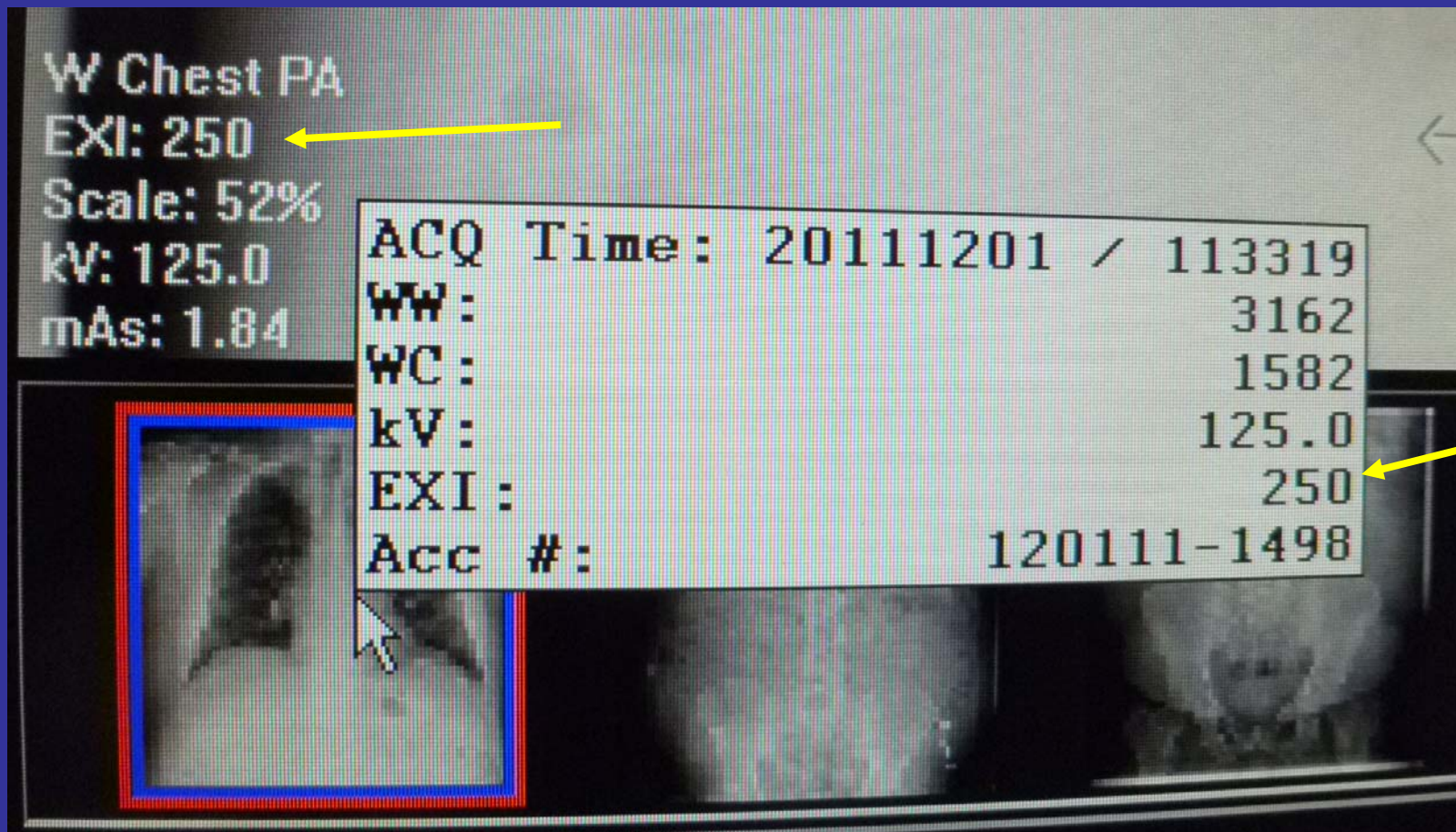




## Exposure index

Linear or logarithmic ?

Translation into exposure or dose ?



Many fluoroscopy machines have no dose index  
(90% at my hospital have none)





# Nuclear medicine: only record of administered activity

Absorbed dose varies with patient size and disease



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