

# ANALYSIS OF IMAGE QUALITY AND DOSE FOR INTERVENTIONAL PROCEDURES: ALLURA XPER VS CLARITY

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# Introduction

- Leiden University Medical Center (The Netherlands)
  - ~ 1800 complex body interventional x-ray procedures yearly
  - Philips system

Allura Xper  
FD20

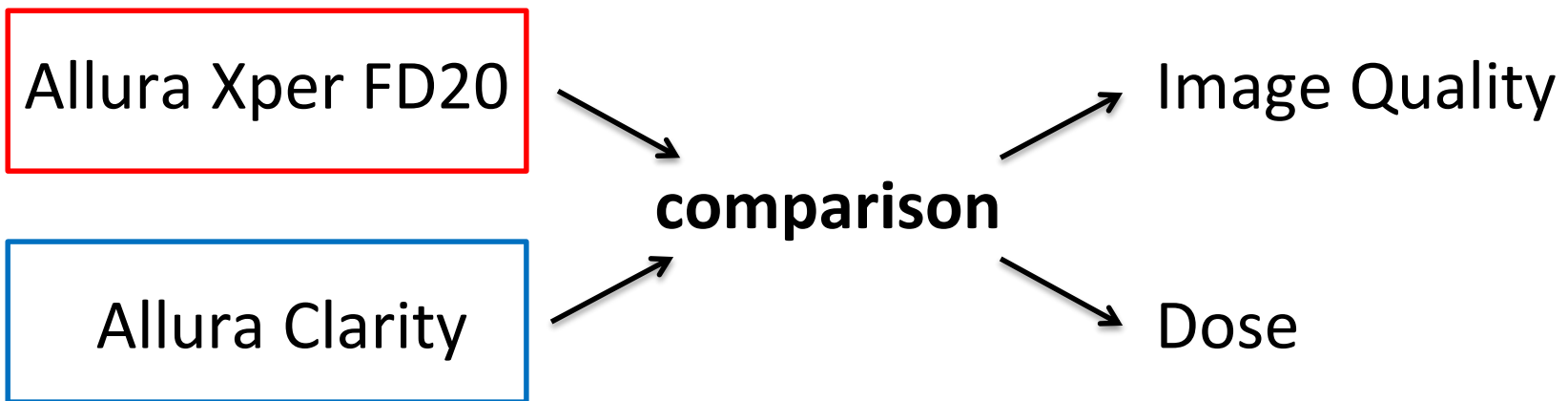
Software upgrade

Allura  
Clarity



\* Image retrieved from  
[www.philips.nl/healthcare](http://www.philips.nl/healthcare)

# Purpose



Vendor claims upgrade will result in:

higher image quality at a lower patient dose

\* Due to fine-tuning of parameters per clinical application  
s.a. filtering, spot size, pulse width and image processing

# Method - general

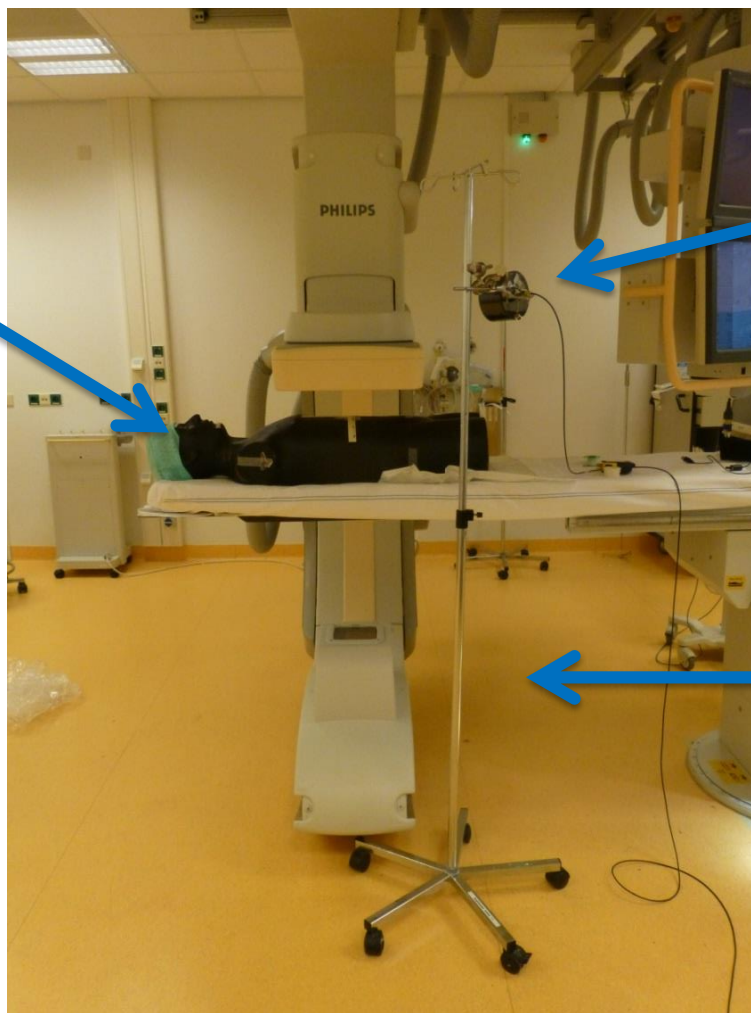
- Default clinical fluoroscopy modes
  - Automatic Brightness Control
  - Low dose mode: pulse rate of 7.5 p/s
- FOV 37 cm, most frequently used in clinic
- Phantom images analysed with ImageJ
- Patient cohort comparison of total dose procedure



# Method – staff dose

## Scattered dose

Antropomorphic  
Phantom RANDO



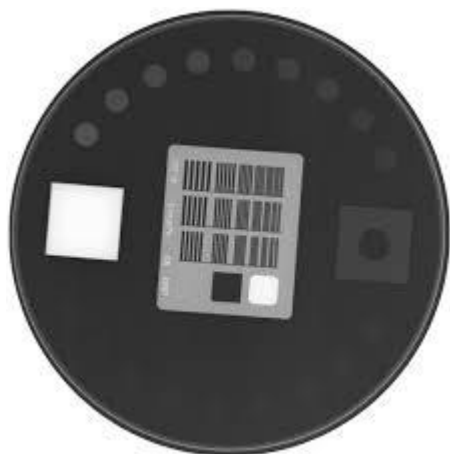
Keithley ionisation  
chamber 600 CC

Position radiologist  
chest height, 50 cm  
from table

# Method – image quality

## Image quality

Leeds TOR-18FG  
phantom

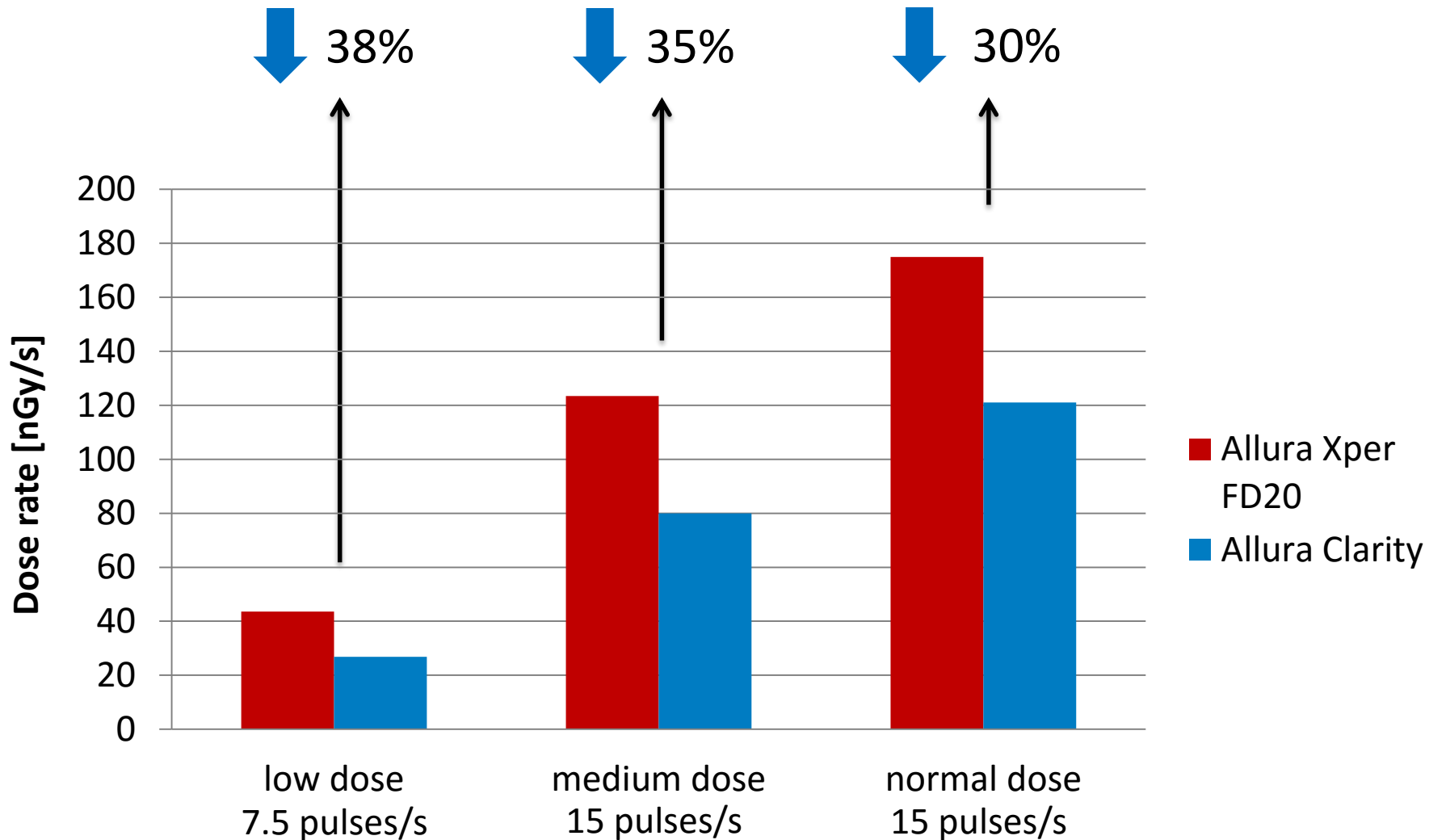


28x28x12cm<sup>3</sup> PMMA

28x28x12cm<sup>3</sup> PMMA

# Results – staff dose

## Scattered dose

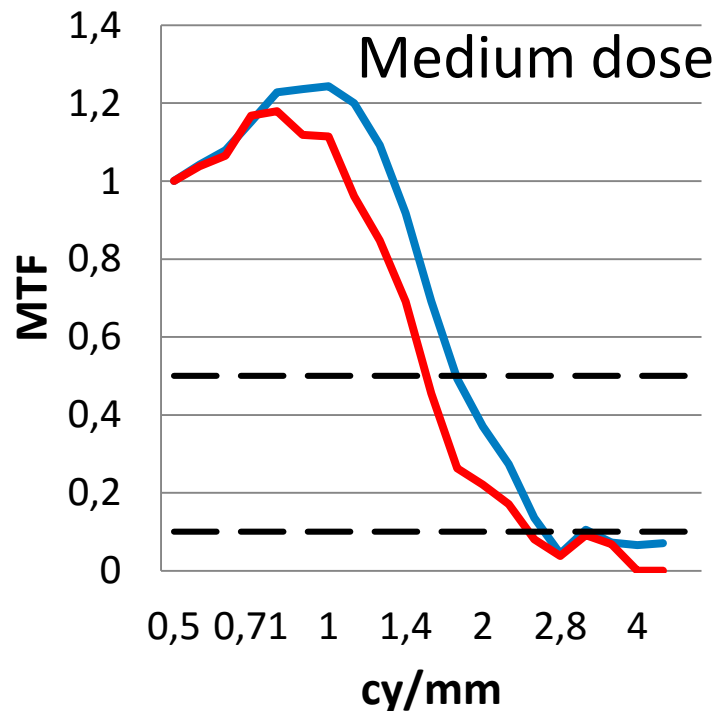
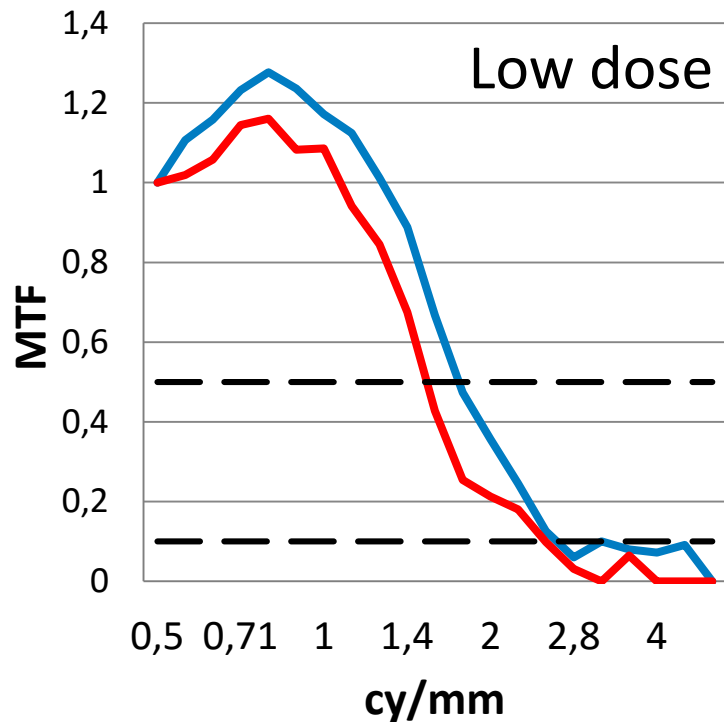




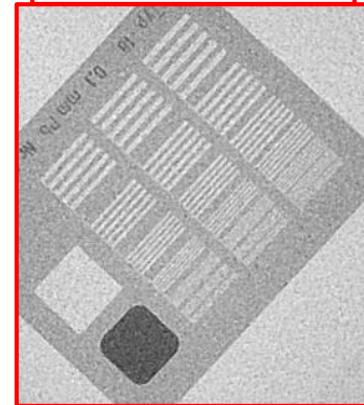
# Results – image quality

## MTF

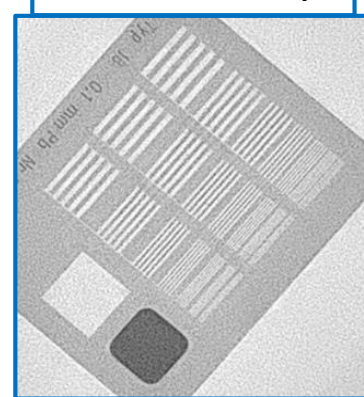
	Low dose		Medium dose	
	Allura Xper	Allura Clarity	Allura Xper	Allura Clarity
MTF50%	1.5 cy/mm	1.8 cy/mm	1.6 cy/mm	1.8 cy/mm
MTF10%	2.6 cy/mm	2.7 cy/mm	2.3 cy/mm	2.4 cy/mm



Allura Xper  
FD20



Allura Clarity



Medium dose



# Results – patient dose

Dose area product

30% ↓



~2000 patients Allura Xper FD20

~100 patients Allura Clarity

Allura Xper FD20



Drain  
replacement

Allura Clarity



# Conclusion

