What's NEXT?

The Nationwide Evaluation of X-ray Trends (NEXT) is a national program conducted to characterize the radiation doses patients receive and to document the state of the practice of diagnostic radiology. This program is conducted jointly by the Conference of Radiation Control Program Directors, Inc. (CRCPD), an association of state and local radiation control agencies, and the Food and Drug Administration's (FDA) Center for Devices and Radiological Health (CDRH), with financial assistance from the American College of Radiology (ACR).

Every one-to-two years the NEXT survey program selects a particular radiological examination for study. Facilities are randomly selected for participation, and the surveys are performed by personnel from the radiation control agencies of participating states.

In 2003 a survey of facilities that perform upper gastrointestinal (upper GI) fluoroscopy was conducted, capturing data on facility exam workload, patient exposure, clinical technique factors, fluoroscopic and radiographic image quality, and the quality of film processing. Patient exposure data was captured with an attenuation phantom based on the clinically validated NEXT adult fluoroscopy phantom. The phantom is representative of a standard reference patient having a height of approximately 172 cm (5 ft, 8 in), weight of approximately 74.5 kg (164 lbs), and an approximately 23 cm chest and abdomen. Previously a NEXT survey of upper GI fluoroscopy was performed in 1996.

This NEXT trifold brochure contains a summary of significant technical findings of the upper GI fluoroscopy survey; it is intended to provide a brief snapshot of the state-of-practice to both the radiation protection specialist and to the practicing radiological community. Downloadable NEXT survey summaries and further information on NEXT surveys are available from CRCPD (http://www.crcpd.org/next.aspx) or from FDA (http://www.fda.gov/cdrh/radhlth/next.html.)

The information contained herein is for guidance. The implementation and use of the information and recommendations are at the discretion of the user. The mention of commercial products, their sources, or their use in connection with material reported is not to be construed as either an actual or implied endorsement by CRCPD or CDRH.

SURVEY RESULTS FOR YOUR FACILITY

The chart below and accompanying survey results of the 2003 NEXT survey can be used to compare your facility's practice with that of the U.S.-representative survey sample for the upper gastrointestinal (upper GI) exam. These survey results are NOT recommended performance levels, but rather are statistical indicators of the state of practice nationwide for this exam at the time of the survey. NOTE: Certain survey outcomes require the use of the NEXT fluoroscopy phantom.

For a routine upper GI exam:

	Your Result	Survey Mean
Fluoroscopic kVp		95
Fluoroscopic mA		2.3
HVL @ clinical kVp (mm Al)		4.6
Skin-entrance air kerma rate (mGy/min)		40.4
Image Quality:		
No. of holes visible on fluoro monitor (low contrast indicator)		4.7
No. of meshes visible on fluoro monitor (spatial resolution indicator)		5.0
Entrance air kerma for single radiographic image (mGy)		2.0
No. of radiographs per exam		12
Recording mode kVp		105

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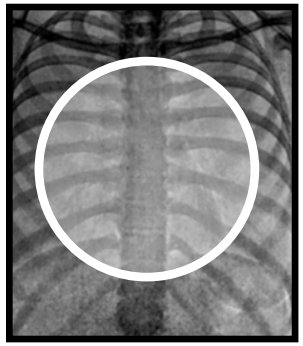
Nationwide Evaluation of X-Ray Trends (NEXT) 2003 Upper Gastrointestinal Fluoroscopy



Conference of Radiation Control Program Directors, Inc.

and

Food and Drug Administration
Center for Devices and Radiological Health

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Workload Data, Technique Factors, and X-ray Unit Data	
Facility workload (exams/week)	18.8
Surveyed unit workload / week	12.6
Percentage facilities with fluoro equipment 15 years and older	14 %
Entrance air kerma rate (mGy/min [R/min])	40.4 [4.6]
Entrance air kerma rate w/copper filter	
HVL at clinical kVp (mm Al)	
Fluoroscopic kVp	95
Fluoroscopic mA	2.3

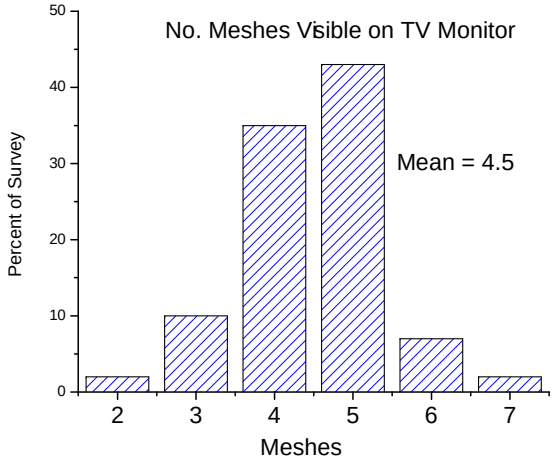
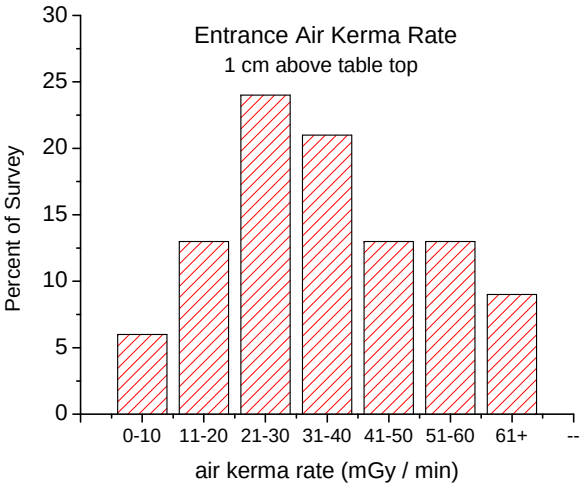
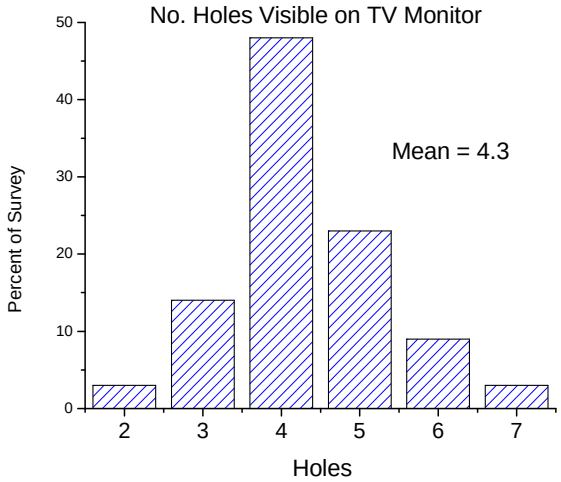
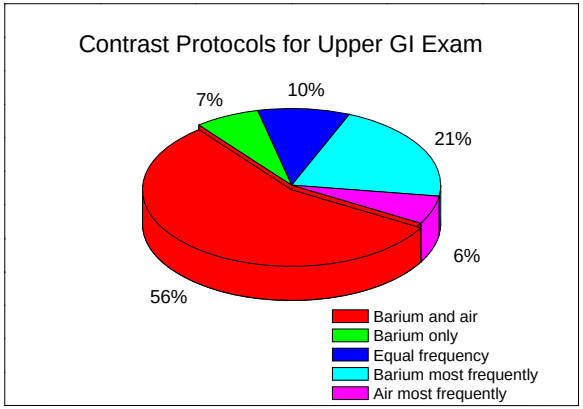


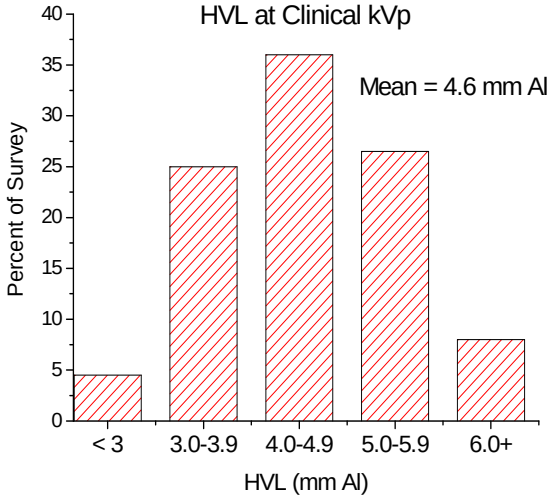
Image Recording – Spot Film	
Percentage of facilities using digital spot	65 %
No. of radiographs / exam	12
Radiographic kVp	106
Spot film air kerma (mGy [mR])	1.64 [187]
Phantom image background OD	1.26
Percentage facilities using spot film grid	62%

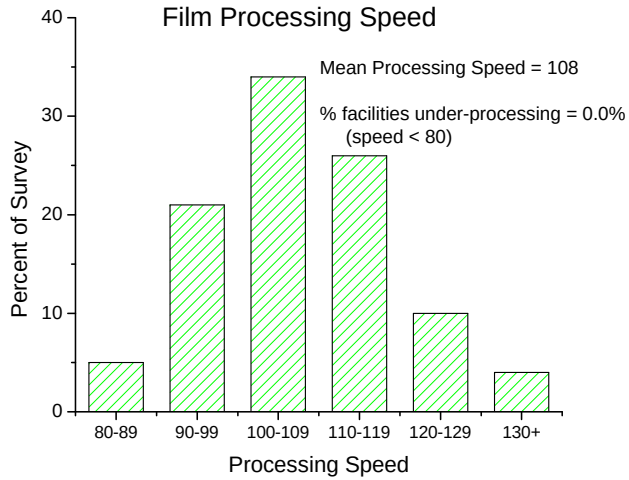
Digital Spot vs. Screen-Film	Screen-Film	Digital-Based
No. of spot radiographs taken	13	8
Mean exposure per spot radiograph	2.64 mGy [301 mR]	0.98 mGy [112 mR]
Total radiation delivered to patient	34.16 mGy [3.9 R]	7.85 mGy [0.9 R]











Notes

1. Results are only for under-table systems, and are PRELIMINARY.
2. Tabulated results are mean values unless otherwise indicated.
3. To convert Air Kerma rate (mGy/min) to exposure rate (R/min), divide Air Kerma by 8.76 mGy/R.
4. Entrance Air Kerma rate is reported at 1cm above table top.
5. For valid comparison, film processing speed determination (STEP) should only be performed with equipment traceable to FDA references. For detailed description of the processor speed evaluation (STEP) refer to: *Suleiman OH, Rueter FG, Antonsen RG, Conway BJ, Slayton RJ. The Sensitometric Technique for the Evaluation of Processing (STEP).* Radiation Protection Dosimetry Vol. 49, Nos 1/3, pp 105-106 (1993)
6. The upper GI fluoroscopy phantom is based on the NEXT abdomen phantom and is approximately equivalent to a 23 cm AP adult abdomen.