

Digital X-ray

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The Pros

- Portability of the image- PACS (Picture Archiving Computer System)
- Rapid access for decision making
- Never lose another x ray
- Link your office PACS to the operating room
- Link your ER by PACS



The Pros

- Better quality images-no guess work for the technician with DR
- Reduce radiation exposure due to fewer retakes



The Pros

- Eliminate waste-no cassettes, no chemicals, no film
- Eliminate strain and exposure to your tech-reduce potential liability



Image Profile

<u>Film Based Operation</u>		<u>Digital Detector Based Operation</u>	
Quantity of Annual Exams	13,000	Quantity of Annual Exams	13,000
Images per Exam	3.0	Images per Exam	3.0
Retake Rate	3.0%	Retake Rate	1.0%
Lost Film Rate	4.0%	Lost Film Rate	0%
Total Annual Images	41,777	Total Annual Images	39,390
Additional Copies Required Rate	10.0%	Hard Copy Required Rate	10.0%
Additional Copies	4,178	Additional Copies	3,939
Total Printed Images / Copies	45,954	Total Printed Images / Copies	3,939



The Pros

- Increase productivity and throughput
- -No cassettes
- -No developing
- Rapid turnover per patient



Productivity Study

Analog Film

-v-

CR

-v-

True Digital



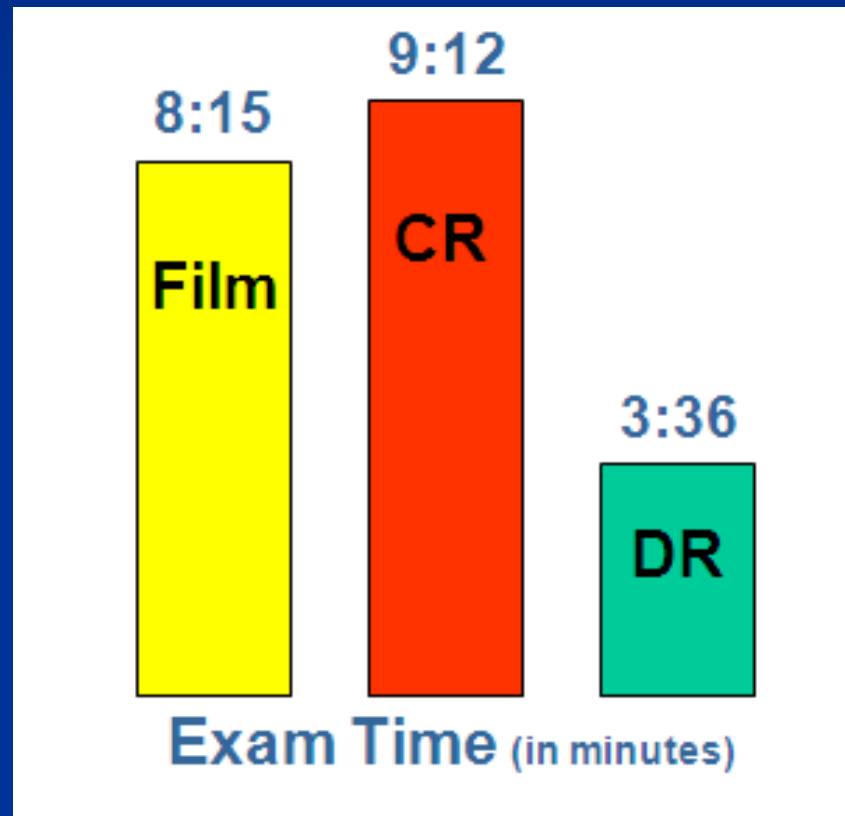
Productivity Examples

- Southwest Florida Ortho and Sports Medicine: 130 pts/day on a single detector D8000 before adding a D5000 (17 physicians)
- Hughtston Orthopedic, Columbus, GA: 250 pts/day or more on 2 D8000s side by side plus an additional 80-100 on their D8000 in the Annex (19 physicians)
- University of Mississippi Medical Center Ortho Pavilion: Average 175-200 pts on 2 D8000 units. The two GE digital rooms replaced 5 analog rooms with CR, and the patient wait time went from 1 hour to 15 minutes with digital
- Capital Regional Orthopedic Group: 100 pts/day per GE digital room (3x). They have experienced a 70% productivity gain over analog X-ray with CR (27 physicians)
- San Antonio Orthopedic Group: 100 pts/day on a GE D8000 digital X-ray room with multiple locations (23 physicians)
- Orthopedic Associates, Duluth, MN: 75 pts/day with 2 techs. 63 patients imaged by one tech in an 8 hour day
- Tria Orthopedic, Edina MN: 77 patients done on the D8000 in an 8 hour day



Exam Time

(in minutes)



The Cons

- Patient positioning
- -Not as flexible
- Guerney patients-unable to slide a cassette beneath them, must move them over



The Cons

- Start Up Cost !!!!!!
- -Consider all aspects of pros and cons in order to factor in true costs vs. true gains
- Consider a merger or joint venture with other MDs, groups or your hospital



Variable Cost Comparison

	Digital	Film	CR
Exam Labor Savings			
Avg Pat Escort	2:10	2:10	2:10
Exam Time	2:18	6:05	7:02
Tech Time	4:28	8:15	9:12
Labor / Exam1	\$1.90	\$3.51	\$4.01
Film Labor Savings2			
Labor / Exam1	\$0.31	\$3.16	\$1.30
Film & Processor Savings2			
Supplies / Exam	\$0.28	\$2.75	\$0.89
Total	\$2.49	\$9.42	\$6.20
Onsite savings*	\$31,374	\$118,692	\$78,120
* Based on 12,600 exams/year			



Resources

Average Resource Cost

	Hourly Rate	Burden Rate	Loaded Hourly Rate
Technologist	\$ 20.00	30.0%	\$ 26.00
Support Staff	\$ 10.00	30.0%	\$ 13.00

Productivity

	Resource	Film Based Operation	Digital Detector Based Operation	
Average Exam Time	Technologist	6.5	2.8	Minutes Per Exam
Film Handling	Technologist	3.0	0.0	Minutes Per Exam
Film Filing	Support Staff	5.0	0.0	Minutes Per Exam
Film Retrieval	Support Staff	5.0	0.0	Minutes Per Exam

Expense

	Resource	Film Based Operation	Digital Detector Based Operation
Average Exam Time	Technologist	\$ 2.82	\$ 1.19
Film Handling	Technologist	\$ 1.30	\$ -
Film Filing	Support Staff	\$ 1.08	\$ -
Film Retrieval	Support Staff	\$ 1.08	\$ -

Cost per Exam

\$ 6.28	\$ 1.19
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Total Exam Cost

\$ 84,950.67	\$ 15,491.67
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Material Expense

(per sheet)

Film Based Operation			
Film (14x17) Cost Per Sheet			\$ 0.87
Chemicals			\$ 0.50
	Gal	\$/Gal	
Water	3.0	\$ 0.03	\$ 0.09
Sewage	3.0	\$ 0.03	\$ 0.09
Total			\$ 1.55
Annual Material Expense			\$ 71,229.44

Digital Detector Based Operation			
Laser Film (14x17) Cost Per Sheet			\$ 1.10
Chemicals			\$ -
	Gal	\$/Gal	
Water	3	\$ 0.03	\$ 0.09
Sewage	3	\$ 0.03	\$ 0.09
Total			\$ 1.28
			\$ 5,041.92



Annual Equipment Expense

	Film Based Operation	Digital Detector Based Operation	
Capital Cost	\$ 78,000.00	\$ 350,000.00	
Depreciation Years	5.0	5.0	
Depreciation Expense, Annual	\$ 15,600.00	\$ 70,000.00	Straight Line 15% of Capital Equipment
Maintenance, Annual	\$ 11,700.00	\$ 52,500.00	
Total Annual Equipment Expense	\$ 27,300.00	\$ 122,500.00	



Facilities Requirements

Film Based Operation				Digital Detector Based Operation			
	Sq Ft	\$/Sq Ft	Total		Sq Ft	\$/Sq Ft	Total
Current RAD Room(s)	300	\$ 20.00	\$ 6,300.00	GE Digital Radiography	300	\$ 20.00	\$ 6,300.00
Dark Room	50	\$ 20.00	\$ 1,050.00	Printers	15	\$ 20.00	\$ 315.00
Printers	15	\$ 20.00	\$ 315.00	Digital Archive / Server	15	\$ 20.00	\$ 315.00
Film Storage	325	\$ 20.00	\$ 6,825.00	Soft Copy Review Station	10	\$ 20.00	\$ 210.00
Film Review Station	10	\$ 20.00	\$ 210.00				
Total, Film	700		\$ 14,700.00	Total, DR	340		\$ 7,140.00

Storage Space Assumption:

813 Linear Feet of Files
 271 Shelves, width = 3 Foot
 27 Book Case w/ 10 Shelves
 12 Square Feet for each Book Case (3x2) + 2ft of Access
 325 Total Square Feet of Floor Space to Store One Years Exams



Roll Up

	Annual Expense		Cost Per Exam		Cost Per Desired Image	
	Film Based Operation	Digital Detector Based Operation	Film Based Operation	Digital Detector Based Operation	Film Based Operation	Digital Detector Based Operation
Material	\$ 71,229.44	\$ 5,041.92	\$ 5.48	\$ 0.39	\$ 1.83	\$ 0.13
Facilities	\$ 14,700.00	\$ 7,140.00	\$ 1.13	\$ 0.55	\$ 0.38	\$ 0.18
Equipment	\$ 27,300.00	\$ 122,500.00	\$ 2.10	\$ 9.42	\$ 0.70	\$ 3.14
Resources	\$ 84,950.67	\$ 15,491.67	\$ 6.53	\$ 1.19	\$ 2.18	\$ 0.40
TOTAL	\$ 198,180.11	\$ 150,173.59	\$ 15.24	\$ 11.55	\$ 5.08	\$ 3.85
Variance		\$ (48,006.52)		\$ (3.69)		\$ (1.23)

Savings Digital Over Analog \$ (48,006.52) One Year
 Savings Digital Over Analog \$ (240,032.62) Five Years



Newport Orthopedic Institute

- Two digital x ray systems for 16 MDs
- Systems installed in 2006
- Productivity increase of $> 50\%$ without adding another tech
- We shoot approximately x rays per day
- Come visit if you are considering the leap!

