

# An Example Pre-, Intra-, and Post-Procedure Clinical Workflow for General Fluoroscopy and FGI Procedures

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# Financial Disclosures

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- None
- No discussion today is intended to serve as an advertisement for any company discussed





# UF Health Core Policy

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## UF HEALTH SHANDS CORE POLICY AND PROCEDURE

POLICY NUMBER: CP02.095  
CATEGORY: Patient Care

TITLE: Fluoroscopy

PURPOSE: To provide CRI prevention guidelines as approved by the Human Use of Radioisotopes and Radiation Committee (HURRC) and in accordance with the recommendations from National Council on Radiation Protection and Measurements (NCRP), specifically NCRP Report No. 168: Radiation Dose Management for Fluoroscopically-Guided Interventional Medical Procedures (2010) and NCRP Statement No. 11: Outline of Administrative Policies for Quality Assurance and Peer Review of Tissue Reactions Associated with Fluoroscopically-Guided Interventions (2014).





# UF Health Core Policy

- Fluoroscopic procedures
  - **General fluoroscopic procedures** – Defined as any procedure involving fluoroscopy not in the areas defined for FGI





# UF Health Core Policy

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- Fluoroscopic procedures
  - **Fluoroscopically-guided interventional (FGI) procedures** – Defined as any procedure utilizing fluoroscopy in cardiology, interventional radiology, and OR hybrid





# Status Board

**Epic** | What's new? | My Reports | Radiation Tracking | Patient Station | Releases | ROI Report | Anc Orders | Unsigned Studies | Imaging Reports | Patient Films | Appts | Study History | Research Studies

Reports

Status Board - SH RAD UF IR - Visc North [228072] for 5/1/2020

Holding Visc North Visc South Neuro Other More Reports

Find Open Case Expand Open Chart Events Rgfresh Show Headers Legend Settings OR Reports Assign Bed Request

IR NT RM11	IR NT RM14	IR Z VISCERAL
<p>Angiogram</p> <p>Embolization</p> <p>TheraSpheres, Hepatic</p> <p>IR NT Hold</p> <p>Pre Orders Intra Orders Closing</p> <p>Consented</p>	<p>Ir Dialysis Catheter Trialysis</p> <p>Placement</p> <p>SELECT pt, temp HD catheter placed at NFMRC, holding Plavix</p> <p>Visceral</p> <p>Out of Room</p> <p>Consented</p>	<p>Ir Dialysis Catheter Tunneled</p> <p>Placement</p> <p>SELECT pt, temp HD catheter placed at NFMRC, holding Plavix</p> <p>Visceral</p> <p>Consented</p>
<p>Angiogram</p> <p>TheraSpheres, Hepatic</p> <p>IR NT Hold</p> <p>Consented</p> <p>Pre Orders Intra Orders Patient Ready</p>	<p>Ir G/J Tube</p> <p>Exchange</p> <p>67M w/ surgical J tube (foley) recently converted to IR balloon J-tube. Pt w/</p> <p>Visceral</p> <p>Consented</p>	<p>Ir Powerline</p> <p>Placement, Single</p> <p>6 weeks IV antibiotics. Blood culture + pseudomonas and stenotrophomonas.</p> <p>Visceral</p> <p>Consented</p> <p>Contact isolation</p>
<p>Ir Dialysis Catheter Tunneled</p> <p>Placement</p> <p>Consented</p> <p>In Facility</p>	<p>IR Z VISCERAL</p> <p>Ir Percutaneous Nephrostomy</p> <p>Coronavirus Covid-19 By Naa</p> <p>Placement, Right, Right</p> <p>UB4612</p> <p>&lt;fon</p> <p>Pre Orders Intra Orders</p> <p>On-Hold</p> <p>Pre-op Complete</p>	<p>Ir Cvi Infusaport</p> <p>Removal, Single</p> <p>Concern for port infection; pain at side. Removal of infusaport. Accessed</p> <p>Visceral</p> <p>Consented</p> <p>Compromised host precautions</p>
<p>IR NT RM13</p> <p>Ir Cholangiogram</p> <p>Right, Right</p> <p>Pre Orders Intra Orders</p> <p>Visceral</p> <p>In Room</p>	<p>Ir Dialysis Catheter Tunneled</p> <p>Placement</p> <p>Nonoliguric AKI on CKD</p> <p>Visceral</p> <p>Consented</p>	<p>Ir G Tube</p> <p>Placement</p> <p>G tube placement for atovaquone, patient with vomiting.</p> <p>Visceral</p> <p>Consented</p> <p>Compromised host precautions</p>

**Epic** | What's new? | My Reports | Radiation Tracking | Patient Station | Releases | ROI Report | Anc Orders | Unsigned Studies | Imaging Reports

Reports

Status Board - SH RAD UF IR - Visc South [228080] for 5/1/2020

Holding Visc North Visc South Neuro Other More Reports

Find Open Case Expand Open Chart Events Refresh Show Header

IR ST RM1	IR Z SOUTH
<p>Ir Angiogram</p> <p>Embolization, Mesenteric</p> <p>Provocative angiogram</p> <p>Anesthesia Mohamed, Basma Abdalla, Visceral</p> <p>Incision</p> <p>Consented</p>	<p>Ir Powerline</p> <p>Placement, Double</p> <p>Dual lumen power line for ionotropes and blood draw. Patient with acute on</p> <p>Visceral</p>
<p>Ir Cholangiogram</p> <p>Right, Right</p> <p>Cholangiogram 4/22/2020 with occlusion of the distal common bile duct stent. Plan for sharp</p> <p>Anesthesia Mohamed, Basma Abdalla, Visceral</p> <p>On-Hold</p>	<p>Ir Percutaneous Nephrostomy In OriCysto</p> <p>Placement, Left, Left</p> <p>Visceral</p>
<p>IR Z SOUTH</p> <p>Ir Percutaneous Nephrostomy In OriCysto</p> <p>Exchange, Right, Right</p> <p>UA PERIOP</p> <p>Visceral</p>	<p>Ir Powerline</p> <p>Ir Dialysis Catheter Tunneled</p> <p>Placement, Single</p> <p>Single lumen power line for IV abx. ESRD on HD. Currently with</p> <p>Visceral</p> <p>Consented</p>
<p>Ir Percutaneous Nephrostomy In OriCysto</p> <p>Placement, Left, Left</p> <p>Visceral</p> <p>Consented</p>	<p>Ir G/J Tube</p> <p>Placement</p> <p>GJ placement through duodenal stent. Caloric needs. Perianipultery mass.</p> <p>Visceral</p> <p>Consented</p>





# Longitudinal Dose Tracking

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- Cumulative air kerma (CAK) tracking dose levels (within previous six months)
  - Level 1:  $3 \text{ Gy} \leq \text{CAK} < 5 \text{ Gy}$
  - Level 2:  $5 \text{ Gy} \leq \text{CAK} < 10 \text{ Gy}$
  - Level 3:  $\text{CAK} \geq 10 \text{ Gy}$





# Status Board

## Status Board - SH RAD UF IR - Visc South [228080] for 2/13/2019

Holding Visc North **Visc South** Neuro Other More Reports Find Open Case Expand Open Chart Events Refresh Show

IR ST RM1		IR Z SOUTH	
<b>Ir Cvl Infusaport</b> Placement, Single		<b>Ir G Tube</b> Placement	
IR NT Hold IR NT Hold Pool		UB4750	
<b>Anesthesia</b> Zasimovich, Yury, MD Visceral		Contact isolation, Enhanced Contact Isolation	
<b>Consented</b> Pre Orders		3,026.83 mGy Visceral	
Patient Sent For		<b>Consented</b> <b>On-Hold</b>	
<b>Ir Pthd</b> Placement, Right, Right Right vs Left sided		<b>Ir G Tube</b> Exchange	
UA4106		<b>Fentanyl, Versed [Midazolam]</b> 7539	
<b>Anesthesia</b> Zasimovich, Yury, MD Visceral		Visceral	
<b>Consented</b>		<b>Consented</b> <b>On-Hold</b>	
In Facility			





# Longitudinal Dose Tracking

## Radiation Dose Estimates

+ Add entry

Procedure	Dose Est	Unit
Air Kerma		
IR TIPS	6,491.02	mGy
IR TIPS	4,677.19	mGy
IR TIPS	1,698.19	mGy
Fluoro time		
IR TIPS	67.1	minutes
IR TIPS	78.9	minutes
IR TIPS	32.1	minutes

### UF RAD Physics Weekly Radiation Report - Physics [10817180] as of Wed 4/29/2020 11:03 AM

Filters Options
 Study Review
 Rel Priors
 Audit Trail

Appt Date	Jose (Order-Level)	6 Month Total Dose (To Date)	Name	MRN	Accession #	Service	Performing Physician	Technologist	Appt Resource	Jose (Order-Level)
	1,698.19 mGy	12,866.4 mGy				Visceral			IR ST RM1	9
		12,866.4 mGy				Visceral			IR ST RM1	9
	3,058.3 mGy	8,698.72 mGy				Visceral			IR ST RM1	-3
	320.62 mGy	8,698.72 mGy				Visceral			IR ST RM1	5
		8,698.72 mGy							GENERIC IMAGING FL	
		8,493.24 mGy							GENERIC IMAGING IR	
	3,439.12 mGy	6,457.95 mGy				Visceral			IR NT RM11	-1
		6,129.89 mGy				Visceral			IR Z VISCERAL	
	984.29 mGy	6,129.89 mGy				Visceral			IR NT RM16	96
	0 mGy	6,129.89 mGy				Visceral			IR NT RM16	96
		6,129.89 mGy				Visceral			IR NT RM15	0
	804.58 mGy	6,129.89 mGy				Visceral			IR NT RM16	90
		6,129.89 mGy				Visceral			IR NT RM16	90
	1,098.69 mGy	5,769 mGy				Visceral			IR NT RM11	2
		5,769 mGy							GENERIC IMAGING IR	
		5,769 mGy							GENERIC IMAGING IR	
	1,004.04 mGy	5,769 mGy				Visceral			IR NT RM13	91
		5,769 mGy				Visceral			IR NT RM13	91
	1,868.45 mGy	5,490.73 mGy							IR UB HYB OR 11	
	5,139.33 mGy	5,139.33 mGy				Visceral			IR NT RM11	
		5,139.33 mGy				Visceral			IR NT RM11	
	529.8 mGy	5,054.62 mGy				Visceral			IR NT RM13	





## Pre-Procedure – Informed Consent

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- **A patient's previous radiation history, including radiation therapy, should be taken into account when planning an FGI procedure in the same anatomic region as radiation-damaged skin may be more susceptible to future injury**
- Previously, informed consent obtained from any returning Level 2 or Level 3 patient
  - Review patient's history for susceptibility to CRI risk factors
  - Examine planned skin radiation entrance site for possible changes
- Informed consent is now obtained to any patient undergoing procedure in FGI suite, regardless of previous procedures





Informed Consent for Operative / Invasive Procedure CP02.010

Date \_\_\_\_\_ Time \_\_\_\_\_

I, the undersigned, consent to the following operation(s) and / or procedure(s); **With the use of radiation and possible high doses of radiation**

to be performed by Dr. \_\_\_\_\_ and his / her associates and assistants, as indicated below, with knowledge that the primary physician will have primary responsibility for my care specific to the stated procedure.

I understand that physicians who are fellows or residents (resident physicians), may also be involved in the procedure(s), including performing one or more significant task. I further understand that if resident physicians are involved:

- They will perform portions of the procedure(s) based on their level of competence;
- It will be decided at the time of the procedure(s) which resident physicians will participate and their manner of participation, taking into account the following factors: 1) my condition, 2) the availability of resident physicians with the necessary competence, and 3) the knowledge of the supervising physician of the resident physicians' skill sets;
- Any resident physicians performing significant tasks will be under the supervision of their supervising physician, though based on the resident physicians' level of competence, the supervising physician may not be physically present in the same room for some or all of the tasks performed by resident physicians.

**I have had the opportunity to ask any questions that I have regarding resident physician involvement.**

As listed below, certain significant tasks may be performed by qualified medical practitioners who are not physicians, acting within their scope of practice as permitted by State law and their clinical privileges granted by the hospital.

**Practitioner Type (check one):**

- ☐ Advanced Registered Nurse Practitioner  
☐ Physician Assistant  
☐ Certified Registered Nurse Anesthetist  
☐ Other \_\_\_\_\_

**Significant Task(s) to be Performed**

Dr. \_\_\_\_\_ has explained to me the nature and purpose of each operation(s) and / or procedure(s) as well as the substantial risks and possible complications involved, the benefits and the medically reasonable alternative methods of treatment.

The **SUBSTANTIAL RISKS** include but are not limited to (add additional risks as indicated):

- ☒ perforation and / or injury to adjacent blood vessels, nerves and / or organs  
☒ bleeding  
☒ infection  
☐ Redness, itching, warm feeling, or sensitivity of skin exposed to radiation; blistering and / or peeling of the skin after one to two weeks; ☐ Hair loss in areas exposed to radiation, with high doses hair loss may be permanent; ☐ Tanning of skin exposed to radiation, skin changes may be permanent; ☐ When treatment includes the eyes, they may feel dry, with high doses involving the eye, cataracts may occur as a long-term effect.

The **POTENTIAL BENEFIT(S)** include but are not limited to: ☐ Improvement of your quality of life; ☐ Non-surgical treatment of medical condition; ☐ Palliation of cancer-related symptoms

The **MEDICALLY REASONABLE ALTERNATIVE(S)** options are: ☐ Not receiving radiation treatment; ☐ Surgical treatment depending on your medical condition

Shands  
HealthCare  
Facility:  
Shands at UF

please print facility name  
This form provided by Shands as a courtesy  
to physicians and their patients.

Operative / Invasive Procedure  
Informed Consent (page 1 of 2)



AC0009

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pages 1 & 2 must be stapled.

Revised 4/4/11  
Reviewed 7/27/12  
PS105742

Patient Name: \_\_\_\_\_

Patient Identification #: \_\_\_\_\_

- I understand and consent to Shands' disposing of any tissue, parts or organs that are removed during the operation(s) and / or procedure(s), in accordance with its usual practice.
- I understand that the information I have received about risks is not exhaustive and there may be other, more remote risks.
- I have had the opportunity to ask questions regarding the proposed procedure(s) and all my questions have been answered to my satisfaction.
- I have read or have had read to me, this Operative / Invasive Procedure Informed Consent form.
- I have had explained to me, and I understand the potential benefits and drawbacks, potential problems related to recuperation, the likelihood of success, the possible results of non-treatment, and any medically reasonable alternatives.
- I have received no guarantees from anyone regarding the results that may be obtained.
- I know the relationship, if any, of my physician or other practitioner, to any teaching facility involved in my care.

My initials below indicate whether or not I consent to additional operations and / or procedures as are considered diagnostically or therapeutically necessary.

\_\_\_\_\_ I **consent** OR

\_\_\_\_\_ I **do not consent**

to additional operations and / or procedures as are considered diagnostically or therapeutically necessary on the basis of findings during the course of the operation(s) and / or procedure(s) described above and I accept the risks that may be associated with such additional operation(s) and / or procedure(s).

My initials below indicate whether observers may be present during my procedure, in accordance with my physicians' approval and hospital policy.

\_\_\_\_\_ I give permission to allow observers in the room during my procedure.

\_\_\_\_\_ I do not give permission to allow observers in the room during my procedure.

**CONSENT**

I do hereby consent to the above described operation(s) and / or procedure(s).

Patient Signature \_\_\_\_\_ Patient Printed Name \_\_\_\_\_

Witness Signature \_\_\_\_\_ Witness Printed Name \_\_\_\_\_

**SIGNATURES FOR CONSENT WHEN GIVEN BY REPRESENTATIVE OF PATIENT**

If patient is unable to consent, complete the following:

- ☐ Patient is a minor, or  
☐ Patient is unable to consent because: \_\_\_\_\_

Patient's Name \_\_\_\_\_

Representative's Signature \_\_\_\_\_

Representative's Printed Name \_\_\_\_\_ Relationship to Patient \_\_\_\_\_

Witness Signature \_\_\_\_\_ Witness Printed Name \_\_\_\_\_

**SIGNATURE OF PHYSICIAN WHO OBTAINED CONSENT**

I certify that the procedure(s) described above, including the substantial risks, benefits, possible complications, anticipated results, alternative treatment options (including non-treatment) and their attendant risks and benefits, the likelihood of success and the possible problems related to recuperation, were explained by me to the patient or his / her legal representative.

Date \_\_\_\_\_ Time \_\_\_\_\_

☐ Consent obtained by telephone.

☐ Consent obtained with use of interpreter.

Name of interpreter \_\_\_\_\_

Signature of Physician Who Obtained Consent \_\_\_\_\_

Physician Identification Number \_\_\_\_\_

Revised 4/4/11  
Reviewed 7/27/12

**Operative / Invasive Procedure Informed Consent (page 2 of 2)**  
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PS105742





# Intra-Procedure

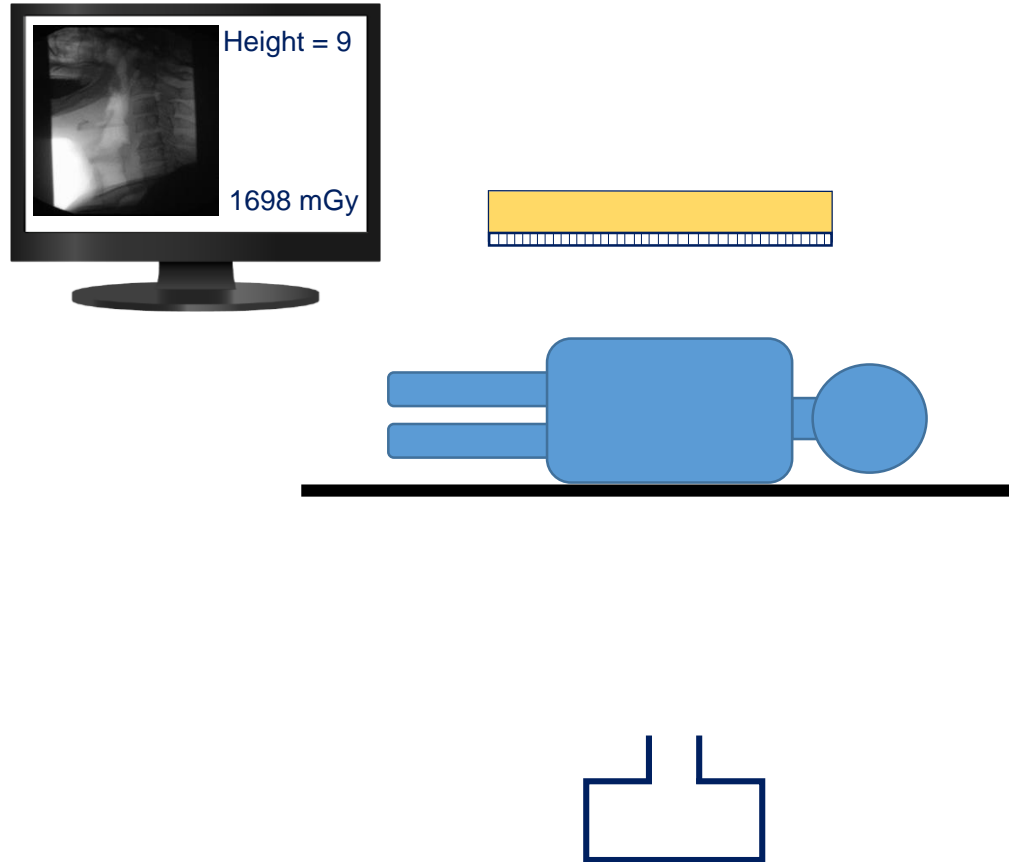
---

- Staff member provides intra-procedural notifications to proceduralist(s)
- Notifications based upon NCRP Report No. 168 recommendations
- Initial notification: 3 Gy CAK
- Further notification: Each 1 Gy CAK after initial 3 Gy CAK





# Post-Procedure (pre-2019)



## End Exam

SH RAD UF IR APPT-LEVEL EE

### Question

1. Trauma:
2. Contrast (mL):
3. Fentanyl (mcg):
4. Versed (mg):
5. Dilaudid (mg):
6. ANES required next procedure?
7. Catheter (French, Name, Length(cm)):
8. Fluoro table height (cm) 9
9. AP Fluoro Time (minutes)
10. Lat Fluoro time (minutes), Bi-Plane Rooms only
11. AP AK (mGy) 1698 mGy
12. Lat AK (mGy), Bi-Plane rooms only 0 mGy
13. Is the patient Supine or Prone?
14. Case Comments:





# Post-Procedure (pre-2019)

- Discharge paperwork if procedure results in a Level 2 patient
  - Single procedure SRDL
  - Multiple procedures in six-month span
- Discharge form printed and filled out by technologist present during the procedure
- Technologist would then physically transport form to RCU RNs to include with discharge paperwork

## Shands at UF Interventional Radiology: Post-Procedure Radiation Exposure Information Sheet

Patient Name: \_\_\_\_\_ MR #: \_\_\_\_\_ Phone #: \_\_\_\_\_

Procedure: \_\_\_\_\_ Procedure Date: \_\_\_\_\_ Affected Area: \_\_\_\_\_

The procedure you recently underwent is one of the more complex interventions performed by our service. This type of procedure is done with x-ray imaging and requires the use of higher radiation doses than most other diagnostic imaging studies, such as chest x-ray exams or CT scans.

How much radiation you receive depends on your specific procedure and medical condition. To ensure you the most benefit from your procedure, we make every attempt to minimize the radiation exposure, while recognizing that a portion of your body may receive a substantial dose from the procedure. In general, the risk of complications related to radiation exposure is very small and substantially less than other risks of the procedure.

Your procedure required a dose of radiation at the upper end of our usual range and, while we do not expect to see any effects from the radiation, there is a chance that it could cause skin changes in the area that was treated. These changes might include an area of redness, localized hair loss, itching, or flaking of the skin in the exposed area. These changes are usually temporary and fade away within a few days or weeks. In very rare situations more severe damage to skin can require medical attention.

Over the course of the next several weeks, please monitor your skin in the designated area and watch for any of the following symptoms. The areas where you may experience changes are circled in the diagrams below. If the area exposed was on your back, have someone check it for you, or do your best by looking in a mirror.

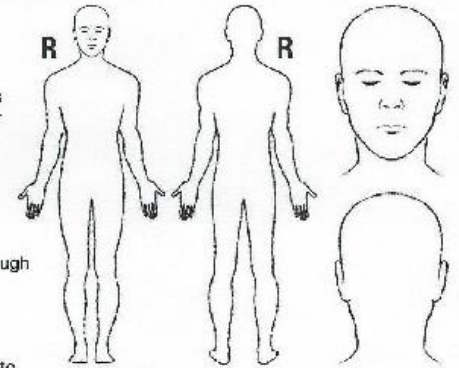
### Signs to look for:

- A red area, about the size of your hand
- Flaking skin, like a sunburn
- Areas of localized hair loss
- Constant itching in the affected area

If you see any of these signs, please contact us as soon as possible to determine if any further treatment is needed, or if the changes will resolve without intervention.

Please do your best not to scratch the irritated area, as doing so can lead to further changes in your skin.

- ☐ If you have any questions or concerns, contact Interventional Radiology at 352-265-0116 Monday through Friday between the hours of 8:00 am and 5:00 pm. Ask to speak to a Physician's Assistant.
- ☐ If you have any questions or concerns call the Department of Neurosurgery at 352-273-9000 and ask to speak to your doctor.



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University of Florida  
Gainesville, FL 32610

Post-Procedure Radiation  
Exposure Information Sheet  
(page 1 of 1)

Distribution: White- Medical Records;  
Yellow- Patient; Pink- PA



DO0006

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all pages must be stapled.

03/12  
PS1108481





**Shands at UF Interventional Radiology:  
Post-Procedure Radiation Exposure Information Sheet**

Patient Name: \_\_\_\_\_ MR #: \_\_\_\_\_ Phone #: \_\_\_\_\_

Procedure: \_\_\_\_\_ Procedure Date: \_\_\_\_\_ Affected Area: \_\_\_\_\_

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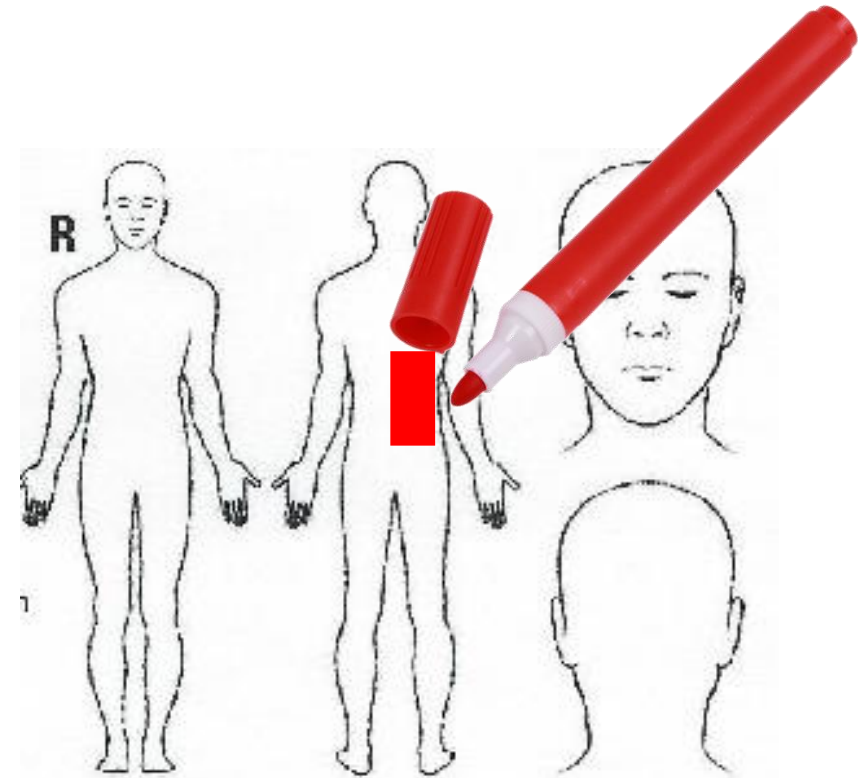
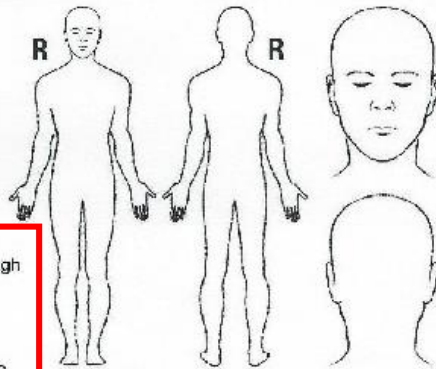
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**Shands.**  
University of Florida  
Gainesville, FL 32610

Post-Procedure Radiation  
Exposure Information Sheet  
(page 1 of 1)

Distribution: White- Medical Records;  
Yellow- Patient & Pink- PA



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all pages must be stapled.*

08/12  
PS110948





## Post-Procedure (2019-Present)

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- Updated system with automatic printing of discharge form with avatar appended to after-visit summary (AVS)







**Echo Cardiology**  
 Male, 42 y.o., 2/22/1978  
 MRN: 01367500  
**Preferred Language: English**  
 Bed: UB PERIOP POOL  
 Cur Location: UF RADIOLOGY - INTERVENTIONAL NT  
 Code: Full (no ACP docs)  
 Gender: Male  
 Legal: None  
 Out Info: None  
 MyUFHealth: Active  
 Visage: Images

Search

Allergies: Not on File

ADMITTED: 2/22/2018 (799 D)  
 Principal Problem: Unstable angina pectoris (CMS-HCC: 87)

**IR ANGIOGRAM**  
 (ACCESSION #G820)  
 Geller, Brian S, MD  
 Ordering

Ht: 5' 10" (177.8 cm)  
 Weight: 160 lb (72.6 kg)  
 BMI: —

[Summary](#)
[Chart Review](#)
[Results Review](#)
[History](#)
[Allergies](#)
[Medications](#)
[Demographics](#)
[Flowsheets](#)
[Intake/Output](#)
[MAR](#)
[Notes](#)
[Manage Orders](#)
[Visage GNV](#)
[Procedure](#)
[Log Tools](#)
[Timeout](#)
[Technologist Navigator](#)

### Technologist Navigator - End Exam: 1/8/2020

[Expand](#)
[IB Message](#)
[Notes](#)
[Audit Trail](#)
[Rel Priors](#)
[Scans](#)
[Mark as Ended](#)
[Go Back](#)

- END EXAM IR
- Staff Info
- Manage Orders
- Meds Admin
- IV LDAs
- LDA Removal
- LDA Avatar
- Implants
- Additional Info
- Counts
- Angio Event Log
- Notes
- Staff Info

Annotated Image

[Patient Education](#)  
[After Visit Summ...](#)

[IR ANGIOGRAM \(ACCESSION #G820\)](#)  
[Radiation](#)  
[Specimens](#)  
[Charges](#)

#### Staff Info

Begin time:	<input type="text" value="10:11 AM"/>	Technologist:	<input type="text" value="SH RADIANT, TECH"/>
Begin date:	<input type="text" value="1/8/2020"/>	Supporting staff:	<input type="text"/>
End time:	<input type="text" value="12:29 PM"/>	Performing physician:	<input type="text"/>
End date:	<input type="text" value="5/1/2020"/>	Reading priority:	<input type="text" value="Routine"/>
		Confirm resource:	<input type="text" value="IR NT RM14"/>

Total exposures:

Repeats?

# Repeats	Reason
1	

[Restore](#)
[Close](#)

[Previous](#)
[Next](#)

#### Manage Orders

[Go to Manage Orders](#)

#### Medication Administration

[Go to Medications](#)
[Go to MAR](#)
[Show Encounter Meds](#)
[Show D/Ced Meds](#)
[Show Meds Admin'ed Over 24 Hours](#)

Medication	Last Dose Given	Route/Site	Last Admin Date/Time	Exam Related
No medications for administration.				

#### IR ANGIOGRAM

Patient Details				MRN: 01367500	
Name:	Cardiology,Echo	Address:	1601 SW Archer Road	Home Phone:	352-265-0111
Sex:	Male			Work Phone:	352-265-0111
Allergies:	Not on File	City/State/Zip:	Gainesville, FL 32608	Email:	emrteam@shands.ufl.*
DOB:	2/22/1978	Country:	United States of America	PCP:	HAMILTON, KAREN KARISS*
SSN:	xxx-xx-4562			Aliases:	
Inpatient Unit:	UF UBOR	Inpatient Room:	UB PERIOP	Inpatient Bed:	UB PERIOP POOL











## Technologist Navigator - End Exam: 1/8/2020

Expand IB Message Notes Audit Trail Rel Priors Scans Mark as Egdged Go Back

**Echo Cardiology**  
Male, 42 y.o., 2/22/1978  
MRN: 01367500  
Preferred Language: English  
Bed: UB PERIOP POOL  
Cur Location: UF RADIOLOGY - INTERVENTIONAL NT  
Code: Full (no ACP docs)  
Gender: Male  
Legal: None  
Out Info: None  
MyUFHealth: Active  
Visage: Images

Search

Allergies: Not on File

ADMITTED: 2/22/2018 (803 D)  
Principal Problem: Unstable angina pectoris (CMS-HCC: 87)

### IR ANGIOGRAM

Geller, Brian S, MD  
Ordering

Ht: 5' 10" (177.8 cm)  
Weight: 160 lb (72.6 kg)  
BMI: —

END EXAM IR  
Staff Info  
Manage Orders  
Meds Admin  
IV LDAs  
LDA Removal  
LDA Avatar  
Implants  
Additional Info  
Counts  
Angio Event Log  
Notes  
Staff Info

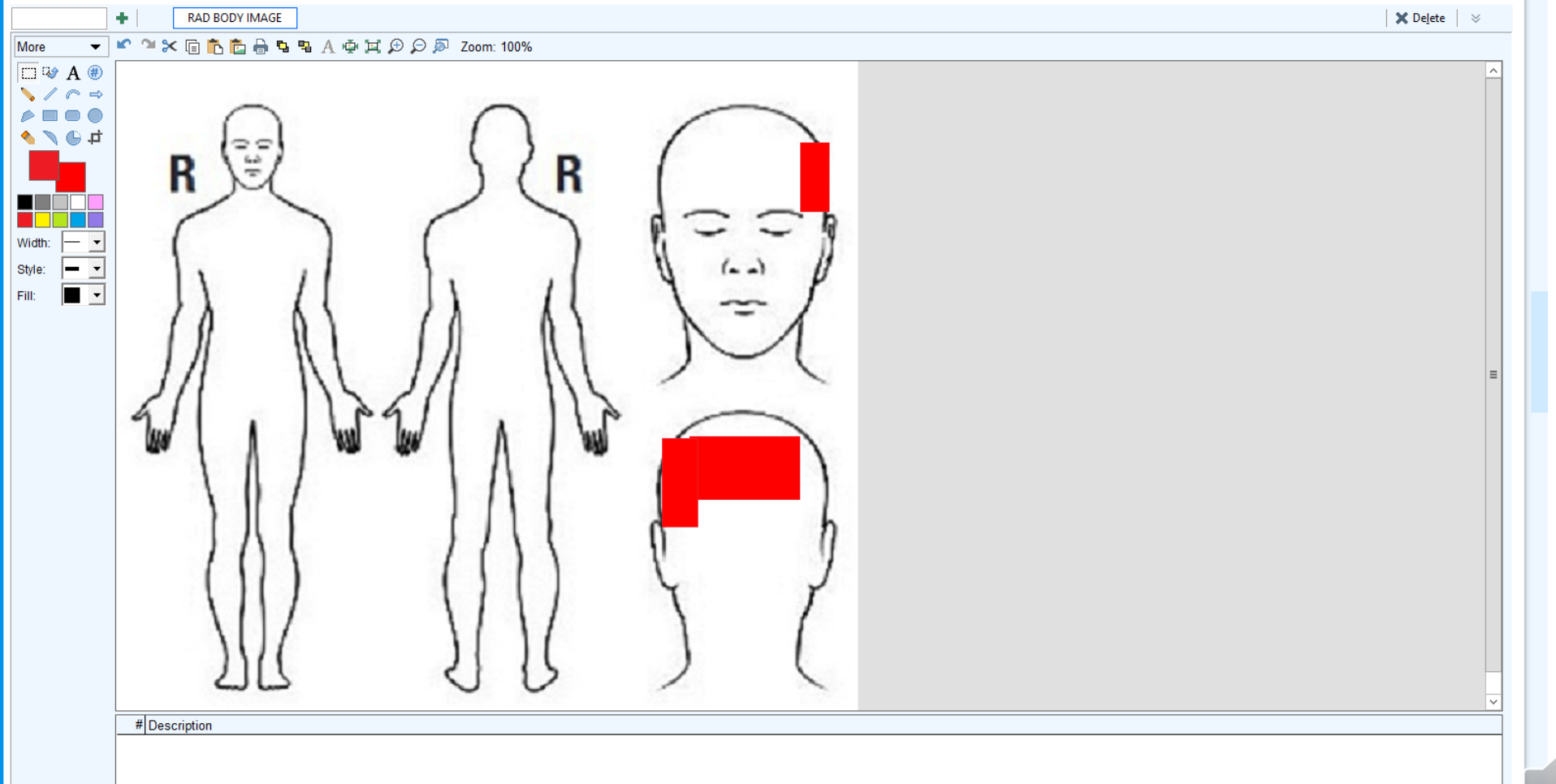
### PATIENT INSTRUCTIONS

Annotated Image  
Patient Education  
After Visit Summ...

IR ANGIOGRAM  
(ACCESSION #.G820)

Radiation  
Specimens  
Charges

### Annotated Images (RAD BODY IMAGE)



#	Description

Restore

Close

Previous

Next





Technologist Navigator - End Exam: 1/8/2020

Expand IB Message Notes Audit Trail Rel Priors Scans Mark as Ended Go Back

**Echo Cardiology**  
 Male, 42 y.o., 2/22/1978  
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- PATIENT INSTRUCTIONS
- Annotated Image
- Patient Education
- After Visit Summ...
- IR ANGIOGRAM (ACCESSION #:G820)
- Radiation
- Specimens
- Charges

**Annotated Images (RAD BODY IMAGE)**

RAD BODY IMAGE

More

Width: Style: Fill:

Zoom: 100%

# Description

Restore Close

Previous Next









## Technologist Navigator - End Exam: 1/8/2020

Expand IB Message Notes Audit Trail Rel Priors Scans Mark as Ended Go Back

END EXAM IR Staff Info Manage Orders Meds Admin IV LDAs LDA Removal LDA Avatar Implants Additional Info Counts Angio Event Log Notes Staff Info

PATIENT INSTRUCTIONS Annotated Image Patient Education After Visit Summ...

IR ANGIOGRAM (ACCESSION #:G820) Radiation Specimens Charges

Male, 42 y.o., 2/22/1978 MRN: 01367500 Preferred Language: English Bed: UB PERIOP POOL Cur Location: UF RADIOLOGY - INTERVENTIONAL NT Code: Full (no ACP docs) Gender: Male Legal: None Out Info: None MyUFHealth: Active Visage: Images

ADMITTED: 2/22/2018 (803 D) Principal Problem: Unstable angina pectoris (CMS-HCC: 87)

Geller, Brian S, MD Ordering

Ht: 5' 10" (177.8 cm) Weight: 160 lb (72.6 kg) BMI: —

1: Look for reddening of the skin here

RAD BODY IMAGE by Uf Radiant, Tech on 5/5/2020 9:18 AM

1: Look for reddening of the skin here

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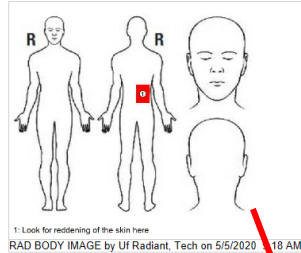
1: Look for reddening of the skin here

1: Look for reddening of the skin here

1: Look for reddening of the skin here



1 Patient Education - Add education information for discharge



**Epic**

What's new? Recent Exams Anc Orders Study History Appts DAR - Dept Appts Patient Station Transport Command Center (View Only) Confirm Master Daily Schedule Unit Manager Bed Board Patient Transport Service Task

Print Log Out

Cardiology, Echo

Validation TECH S. Radiant

EC

**Echo Cardiology**

Male, 42 y.o., 2/22/1978

MRN: 01367500

**Preferred Language: English**

Bed: UB PERIOP POOL

Cur Location: UF RADIOLOGY - INTERVENTIONAL NT

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Search

Allergies: Not on File

ADMITTED: 2/22/2018 (803 D)

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**IR ANGIOGRAM**

Geller, Brian S, MD

Ordering

Ht: 5' 10" (177.8 cm)

Weight: 160 lb (72.6 kg)

BMI: —

Summary Chart Review Results Review History Allergies Medications Demographics Flowsheets Intake/Output MAR Notes Manage Orders Visage GNV Procedure Log Tools Timeout

Technologist Navigator - End Exam: 1/8/2020

Expand IB Message Notes Audit Trail Rel Priors Scans Mark as Ended Go Back

END EXAM IR

Staff Info

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IV LDAs

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LDA Avatar

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Additional Info

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PATIENT INSTRUCTIONS

Annotated Image

Patient Education

After Visit Summ...

IR ANGIOGRAM (ACCESSION #: G820)

Radiation

Specimens

Charges

Look for reddening of the skin here

Restore Close

Previous Next

**Patient Education - Add education information for discharge**

**Suggested Discharge Instructions**

Acute Coronary Syndrome (English)

Acute Pain Adult (English)

Angina Easy-to-Read (English)

Angina (English)

Aspirin and Your Heart (English)

CORONARY ARTERY DISEASE, RISK FACTORS (ENGLISH)

**Instructions**

**POST-PROCEDURE RADIATION EXPOSURE INFORMATION SHEET**

The procedure you recently underwent is one of the more complex interventions performed by our service. This type of procedure is done with x-ray imaging and requires the use of higher radiation doses than most other diagnostic imaging studies, such as check x-ray exams or CT scans.

How much radiation you receive depends on your specific procedure and medical condition. To ensure you the most benefit from your procedure, we make every attempt to minimize the radiation exposure, while recognizing that a portion of the body may receive a substantial dose from the procedure. In general, the risk of complications related to radiation exposure is very small and substantially less than other risks of the procedure.

Your procedure required a dose of radiation at the upper end of our usual range and, while we do not expect to see any effects from the radiation, there is a chance that it could cause skin changes in the area that was treated. These changes might include an area of redness, localized hair loss, itching, or flaking of the skin in the exposed area. These changes are usually temporary and fade away within a few days or weeks. In very rare situations more severe damage to skin can require medical attention.

Over the course of the next several weeks, please monitor your skin in the designated area and watch for any of the following symptoms. The areas where you may experience changes are circled in the diagrams below. If the area exposed was on your back, have someone check it for you, or do your best by looking in mirror.

There are no annotated images to display.

**Signs to look for:**

- A red area, about the size of your hand
- Flaking skin, like a sunburn
- Areas of localized hair loss
- Constant itching in the affected area

If you see any of these signs, please contact us as soon as possible to determine if any further treatment is needed, or if the changes will resolve without intervention.









HOD After Visit Summary

Male, 42 y.o., 2/22/1978  
MRN: 01367500

Bed: UB PERIOP POOL

Code: Full (no ACP docs)

Legal: None


MyUFHealth: Active

Visage: Images

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 **Geller, Brian S, MD**  
Ordering

Weight: 160 lb (72.6 kg)

BMI: —

A	A	A
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Cannot print while editing a document.

**⚠ Discharge order reconciliation is not complete for this encounter.**

Done Editing 

**Echo Cardiology** MRN: 01367500 Date of birth: 2/22/1978

2/22/2018 - 5/5/2020 UF Health Heart and Neuro Hospitals Operating Room 352-265-0111

**Reason for your visit**

Unstable angina pectoris (CMS-HCC code) (CMS-HCC)

Blue baby

Chest pain due to myocardial ischemia, unspecified ischemic

Chest pain

- ➔ **START taking:**  
0.9% NaCl  
lisinopril (PRINIVIL,ZESTRIL)  
oxyCODONE (OxyCONTIN)

Review your updated medication list below.

☐ Pick up these medications from any pharmacy with your printed prescription

- lisinopril
- oxyCODONE

You currently have no upcoming appointments scheduled.

\* New medications may have been prescribed during this visit. Please review your list below.

Done Editing



## HOD After Visit Summary Selected to print

Edit AVS

### Therapies

*the patient does not practice as instructed.*

**Physical therapy:** Physical therapists\* treat pain by restoring, enhancing and maintaining physical and functional abilities. *Therapy interventions and recommendations will not help if the patient does not practice as instructed.*

### Behavioral and Mental Health Therapies

Psychiatrists\*, clinical social workers\*, marriage and family therapists\* and mental health counselors\* provide therapies that identify and treat mental disorders or substance abuse problems that may be roadblocks to pain management. *When used to manage pain, these therapies can take time.*

MyUFHealth

Our records indicate that you have a MyUFHealth account. Thank you for taking an active role in your health care. Access your MyUFHealth account online at <http://ufhealth.org/myufhealth> or on the go using the MyChart Mobile smartphone app. To view this visit summary within your MyUFHealth account: log into your account on the MyUFHealth site, click Visits on the top menu, then Appointments and Visits and then click on this specific appointment from your list of previous appointments. You can also view this summary on the MyChart Mobile app.

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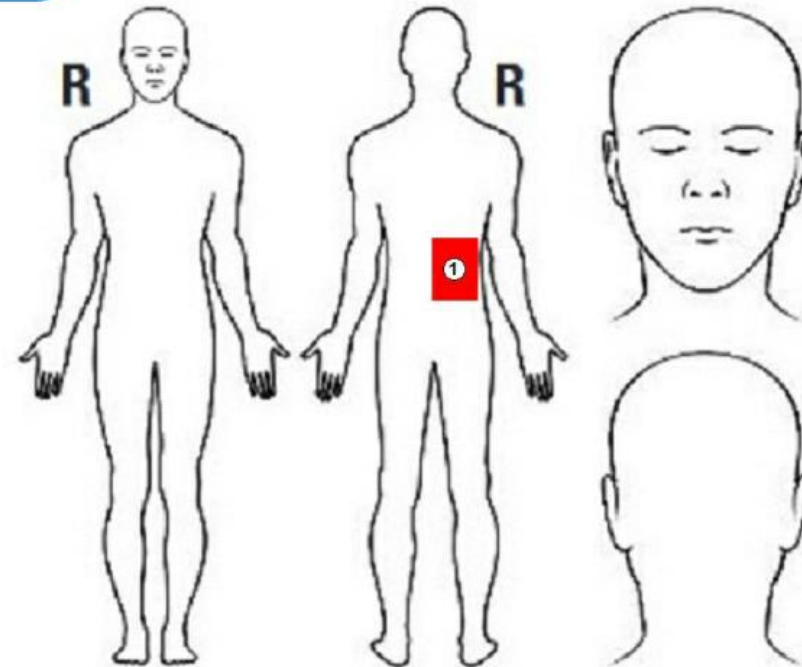
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- Areas of localized hair loss
- Constant itching in the affected area

If you see any of these signs, please contact us as soon as possible to determine if any further treatment is needed, or if the changes will resolve without intervention.



# Patient Follow-Up

---

- Follow-up is the responsibility of the proceduralist(s) for at least one year after FGI procedure if contacted by FGI patient with concerns for CRI
- Previously, VIR physician assistant (PA) would call patients at specific intervals to check in with patient about possible tissue effects
  - After procedure
  - Six months
  - One year
- Updated core policy places onus on the patient to contact providing service if tissue effects are discovered





# Longitudinal Dose Tracking

---

- Peak skin dose (PSD) calculations for all Level 3 patients
- If  $\text{PSD} > 15 \text{ Gy}$ , patient safety report (PSR) is placed, sentinel event may be reported (not required)
- **NCRP Commentary 11 recommends that, regardless of PSD, a sentinel event shall not be considered to have occurred for an observed skin effect if all the performed fluoroscopic procedures were deemed to have been performed within practice parameters by a QA/peer review committee**





# Longitudinal Dose Tracking

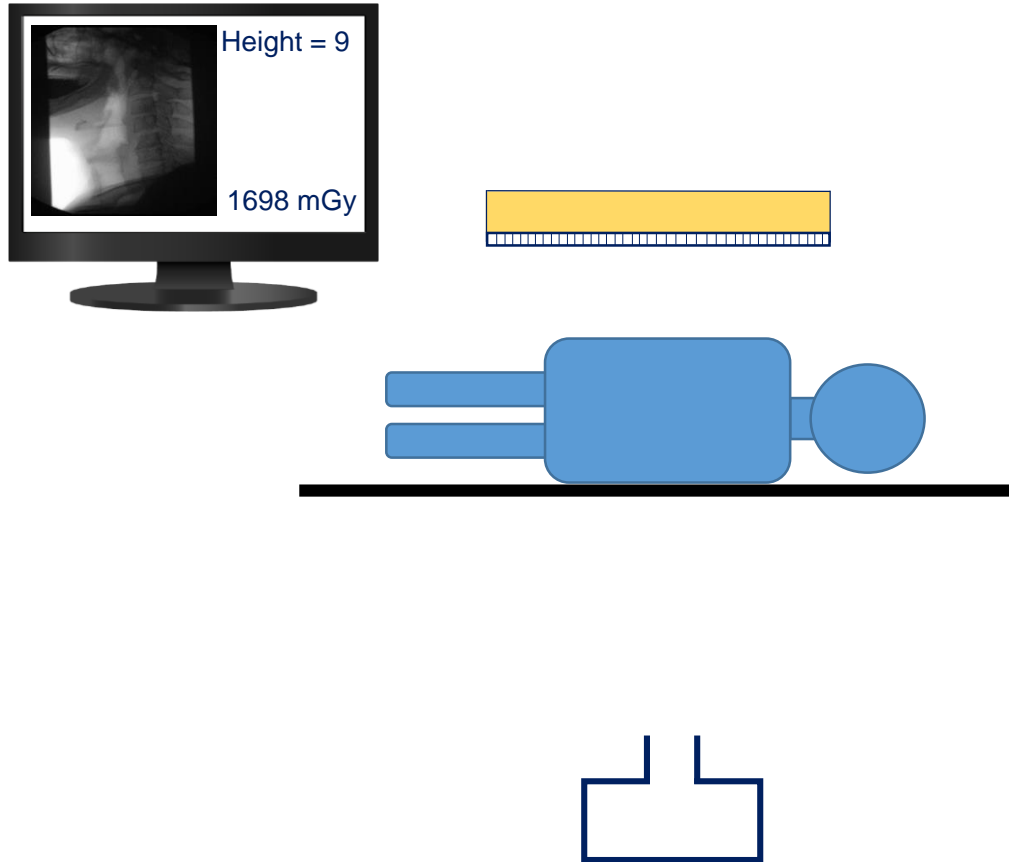
---

- **Peak skin dose calculations are difficult due to uncertainties in many parameters**
  - Backscatter factor
  - Beam orientation and beam motion
  - CAK reading





# Longitudinal Dose Tracking (pre-2019)



## End Exam

SH RAD UF IR APPT-LEVEL EE

### Question

1. Trauma:
2. Contrast (mL):
3. Fentanyl (mcg):
4. Versed (mg):
5. Dilaudid (mg):
6. ANES required next procedure?
7. Catheter (French, Name, Length(cm)):
8. Fluoro table height (cm) 9
9. AP Fluoro Time (minutes)
10. Lat Fluoro time (minutes), Bi-Plane Rooms only
11. AP AK (mGy) 1698 mGy
12. Lat AK (mGy), Bi-Plane rooms only 0 mGy
13. Is the patient Supine or Prone?
14. Case Comments:





# Longitudinal Dose Tracking (pre-2019)

UF RAD Physics Weekly Radiation Report - Physics [10817180] as of Wed 4/29/2020 11:03 AM

Filters Options Study Review Rel Priors Audit Trail

Appt Date	Dose (Order-Level)	6 Month Total Dose (To Date)	Name	MRN	Accession #	Service	Performing Physician	Technologist	Appt Resource	Dose (Order-Level)
	1,698.19 mGy	12,866.4 mGy				Visceral			IR ST RM1	9
		12,866.4 mGy				Visceral			IR ST RM1	9
	3,058.3 mGy	8,698.72 mGy				Visceral			IR ST RM1	-3
	320.62 mGy	8,698.72 mGy				Visceral			IR ST RM1	5
		8,698.72 mGy							GENERIC	

**Patient Lookup**

Select Patient Recent Patients

Name/MRN:  EPI ID:

SSN:  Sex:

Birth date:

☐ Use sounds-like

New Find Patient Clear Accept Cancel

	5,769 mGy		Visceral		IR NT RM13	91
1,868.45 mGy	5,490.73 mGy				IR UB HYB OR 11	
5,139.33 mGy	5,139.33 mGy		Visceral		IR NT RM11	
	5,139.33 mGy		Visceral		IR NT RM11	
529.8 mGy	5,054.62 mGy		Visceral		IR NT RM13	





# Longitudinal Dose Tracking (pre-2019)

## Radiation Dose Estimates

[+ Add entry](#)

Procedure	Dose Est	Unit	Anatomical F
Air Kerma			
IR TIPS	6,491.02	mGy	
IR TIPS	4,677.19	mGy	
IR TIPS	1,698.19	mGy	
Fluoro time			
IR TIPS	67.1	minutes	
IR TIPS	78.9	minutes	
IR TIPS	32.1	minutes	

## Report

3. Intervention:	Revision	
4. Notify me if not resulted within 20 days from expected date		
5. Is this order Research related?		
6. Admission source:	Clinic Referral [2]	
7. Admission type:	Elective [3]	
8. Private Encounter?	No	
9. Accident Related?	No	
End Exam		
SH RAD UF IR APPT-LEVEL EE		
Question	Answer	Comment
1. Trauma:		
2. Contrast (mL):	77.00	visi320
3. Fentanyl (mcg):		Gen anesthesia
4. Versed (mg):		
5. Dilaudid (mg):		
6. ANES required next procedure?		
7. Catheter (French, Name, Length(cm)):	VICI Venous stent	lot# 18100005
8. Fluoro table height (cm)	9	
9. AP Fluoro Time (minutes)	32.00	
10. Lat Fluoro time (minutes), Bi-Plane Rooms only		
11. AP AK (mGy)	1698	
12. Lat AK (mGy), Bi-Plane rooms only		
13. Is the patient Supine or Prone?	Supine	
14. Case Comments:	RIJ	

## Study Result

Procedures performed:  
Ultrasound-guided vascular access  
Fluoroscopic guidance  
TIPS revision and stent placement





# Longitudinal Dose Tracking (pre-2019)

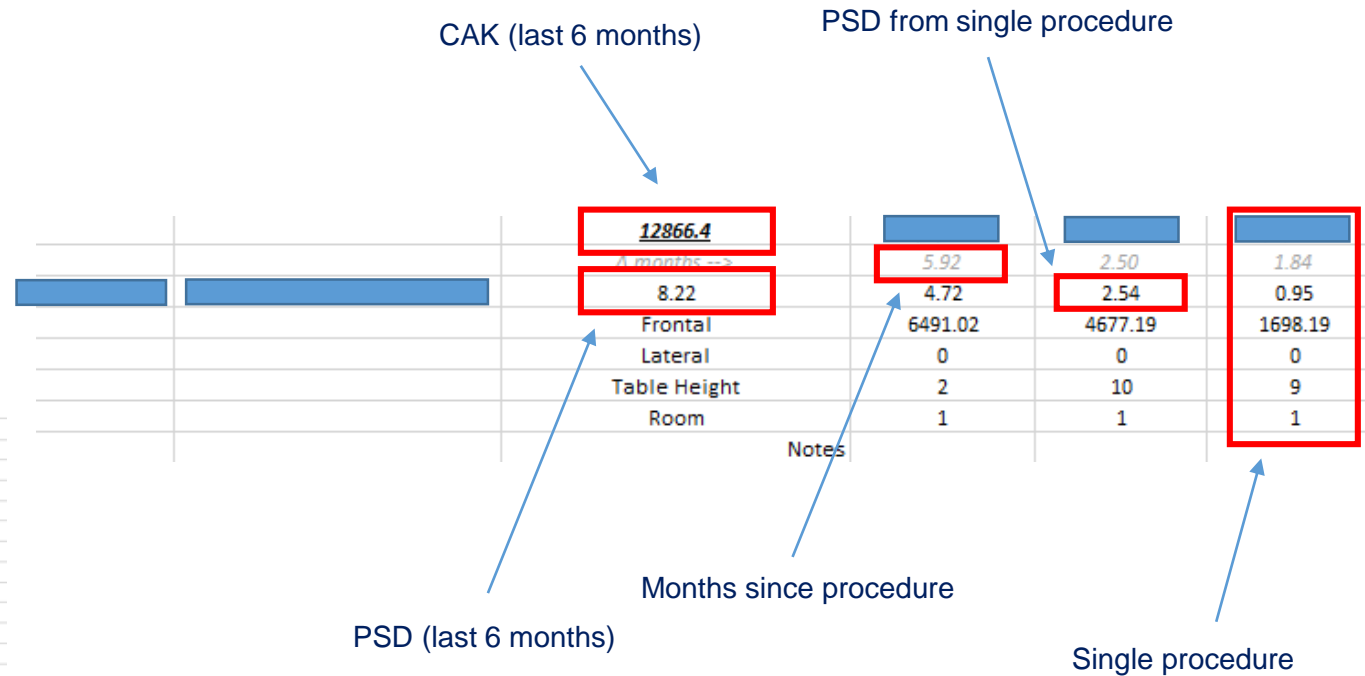
## Radiation Dose Estimates

[+ Add entry](#)

Procedure	Dose Est	Unit	Anatomical Regions	Exam Date	Technologist	Edited?	Report
Air Kerma							
IR TIPS	6,491.02	mGy		11/1/2019	BOTHA, HEATHER G		<a href="#">Report</a>
IR TIPS	4,677.19	mGy		2/13/2020	JAMES, KAILEY NICHOLE	Y	<a href="#">Report</a>
IR TIPS	1,698.19	mGy		3/4/2020	DAVIS, AMANDA L	Y	<a href="#">Report</a>
Fluoro time							
IR TIPS	67.1	minutes		11/1/2019	BOTHA, HEATHER G		<a href="#">Report</a>
IR TIPS	78.9	minutes		2/13/2020	JAMES, KAILEY NICHOLE	Y	<a href="#">Report</a>
IR TIPS	32.1	minutes		3/4/2020	DAVIS, AMANDA L	Y	<a href="#">Report</a>

## End Exam

SH RAD UF IR APPT-LEVEL EE	Question	Answer	Comment
1. Trauma:			
2. Contrast (mL):		77.00	visi320
3. Fentanyl (mcg):			Gen anesthesia
4. Versed (mg):			
5. Dilaudid (mg):			
6. ANES required next procedure?			
7. Catheter (French, Name, Length(cm)):		ViCI Venous stent	lot# 18100005
8. Fluoro table height (cm)		9	
9. AP Fluoro Time (minutes)		32.00	
10. Lat Fluoro time (minutes), Bi-Plane Rooms only			
11. AP AK (mGy)		1698	
12. Lat AK (mGy), Bi-Plane rooms only			
13. Is the patient Supine or Prone?		Supine	
14. Case Comments:		RJ	





# Longitudinal Dose Tracking (pre-2019)

---

- Problems with this system?
  - Compliance
  - Technologist error
  - Technologist workload
  - Physicist error
  - Availability and organization of CAK tracking database
  - Lack of notifications
  - PSD estimate accuracy





# Longitudinal Dose Tracking (2019-Present)

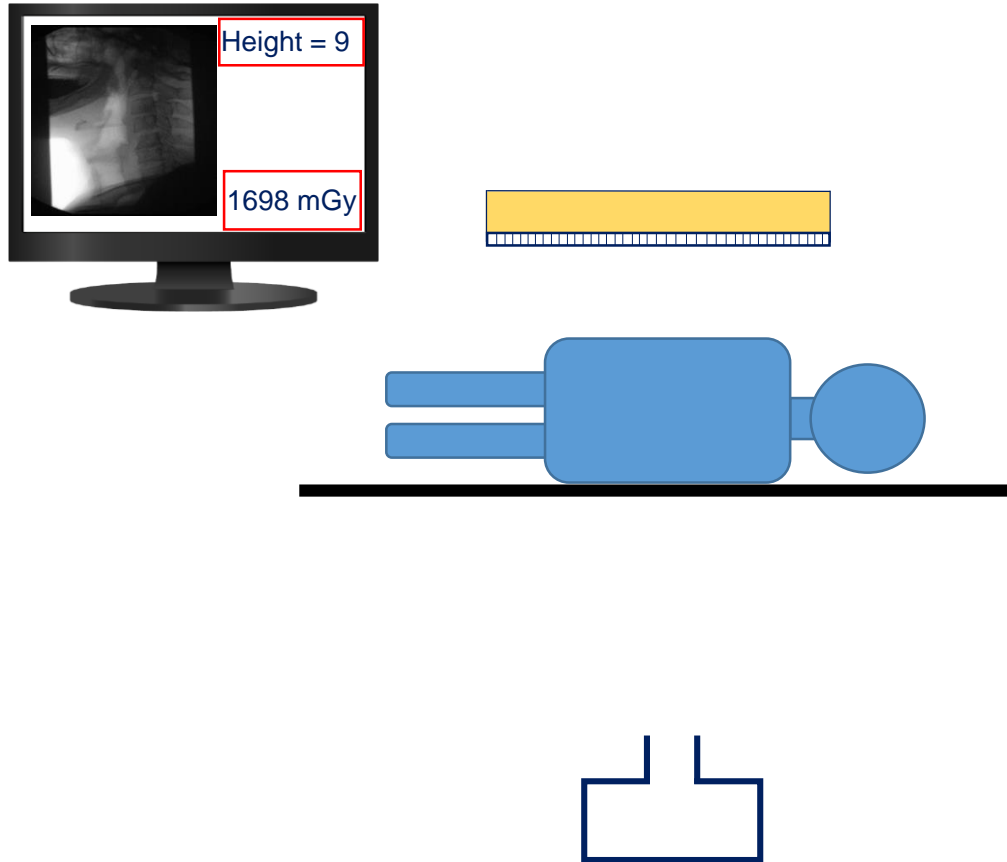
---

- Dose monitoring software utilized for patient CAK tracking
- DoseMonitor<sup>®</sup> (developed by PACSHealth<sup>®</sup>) utilized with EPIC integrations
- Dose information is captured through RDSRs and passed into patient EMR





# Longitudinal Dose Tracking (2019-Present)



## End Exam

SH RAD UF IR APPT-LEVEL EE

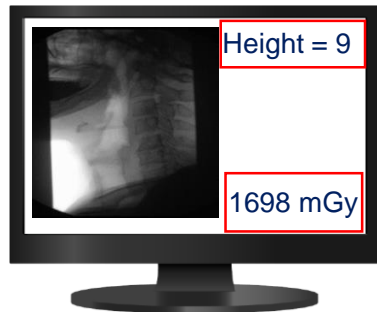
### Question

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4. Versed (mg):
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10. Lat Fluoro time (minutes), Bi-Plane Rooms only
11. AP AK (mGy) 1698 mGy
12. Lat AK (mGy), Bi-Plane rooms only 0 mGy
13. Is the patient Supine or Prone?
14. Case Comments:





# Longitudinal Dose Tracking (2019-Present)



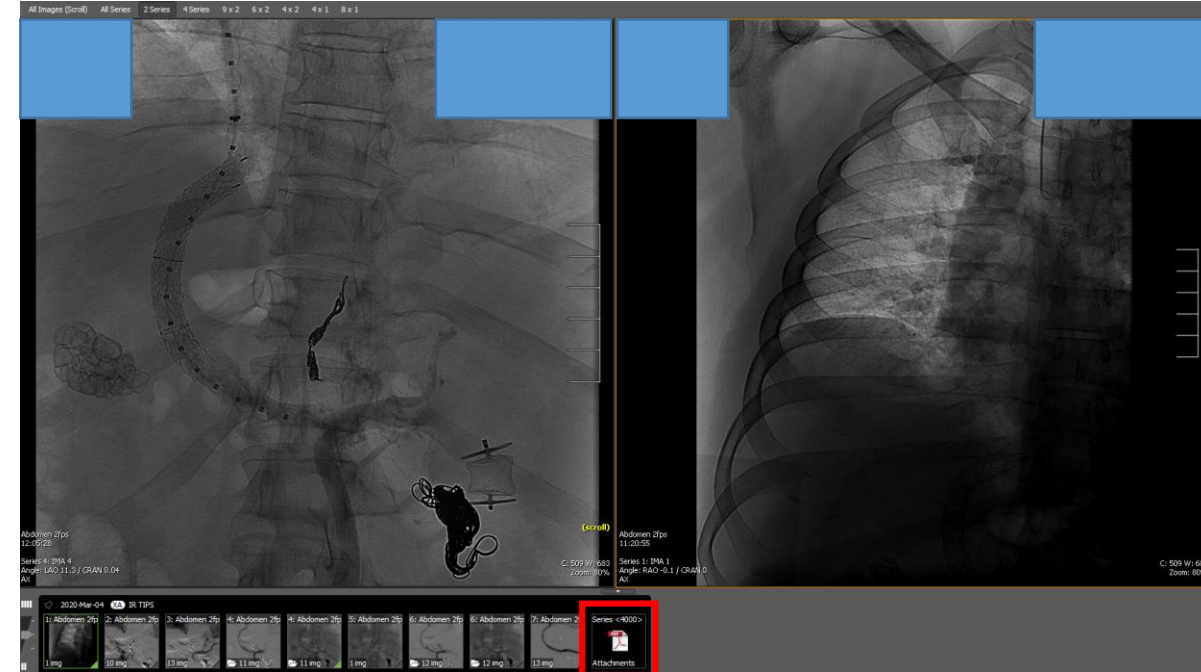
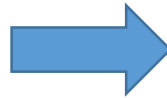
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(113701,DCM,"X-Ray Radiation Dose Report") CONTAINER
HAS CONCEPT MOD (121058,DCM,"Procedure reported") CODE [(113704,DCM,"Projection X-Ray")]
HAS CONCEPT MOD (G-C0E8,SRT,"Has Intent") CODE [(R-002E9,SRT,"Combined Diagnostic and Therapeutic Procedure")]
HAS OBS CONTEXT (121005,DCM,"Observer Type") CODE [(121007,DCM,"Device")]
HAS OBS CONTEXT (121012,DCM,"Device Observer UID") UIDREF [1.3.46.670589.28.3711501961590]
HAS OBS CONTEXT (121013,DCM,"Device Observer Name") TEXT [SCHXA1]
HAS OBS CONTEXT (121014,DCM,"Device Observer Manufacturer") TEXT [Philips Medical Systems]
HAS OBS CONTEXT (121015,DCM,"Device Observer Model Name") TEXT [Allura Xper]
HAS OBS CONTEXT (121016,DCM,"Device Observer Serial Number") TEXT [1]
HAS OBS CONTEXT (113705,DCM,"Scope of Accumulation") CODE [(113016,DCM,"Performed Procedure Step")]
HAS PROPERTIES (121126,DCM,"Performed Procedure Step SOP Instance UID") UIDREF [1.3.46.670589.28.371150196159020200304173332384291]
CONTAINS (113702,DCM,"Accumulated X-Ray Dose Data") CONTAINER
HAS CONCEPT MOD (113764,DCM,"Acquisition Plane") CODE [(113622,DCM,"Single Plane")]
CONTAINS (113780,DCM,"Reference Point Definition") TEXT [15cm below BeamIsocenter]
CONTAINS (113722,DCM,"Dose Area Product Total") NUM [0.0456475 Gy.m2]
CONTAINS (113725,DCM,"Dose (RP) Total") NUM [1.69818640955004 Gy]
CONTAINS (113726,DCM,"Fluoro Dose Area Product Total") NUM [0.0319025 Gy.m2]
CONTAINS (113728,DCM,"Fluoro Dose (RP) Total") NUM [1.14365472910927 Gy]
CONTAINS (113730,DCM,"Total Fluoro Time") NUM [1925 s]
CONTAINS (113727,DCM,"Acquisition Dose Area Product Total") NUM [0.013745 Gy.m2]
CONTAINS (113729,DCM,"Acquisition Dose (RP) Total") NUM [0.55453168044077 Gy]
CONTAINS (113855,DCM,"Total Acquisition Time") NUM [31.3220000000000 s]
CONTAINS (113731,DCM,"Total Number of Radiographic Frames") NUM [66 1]
CONTAINS (001,99PHI-IXR-XPER,"Height of System") NUM [1068 mm]
CONTAINS (002,99PHI-IXR-XPER,"Focal Spot to ISO Center") NUM [810 mm]
CONTAINS (113706,DCM,"Irradiation Event X-Ray Data") CONTAINER
HAS CONCEPT MOD (113764,DCM,"Acquisition Plane") CODE [(113622,DCM,"Single Plane")]
CONTAINS (111526,DCM,"DateTime Started") DATETIME [20200304110124.48]
CONTAINS (113721,DCM,"Irradiation Event Type") CODE [(P5-06000,SRT,"Fluoroscopy")]
CONTAINS (113780,DCM,"Reference Point Definition") TEXT [15cm below BeamIsocenter]
CONTAINS (113769,DCM,"Irradiation Event UID") UIDREF [1.3.46.670589.28.3711501961590.20200304110123799.1]
CONTAINS (122130,DCM,"Dose Area Product") NUM [0.0000705 Gy.m2]
CONTAINS (113738,DCM,"Dose (RP)") NUM [0.00207759412304 Gy]
CONTAINS (112011,DCM,"Positioner Primary Angle") NUM [-0.1 deg]
CONTAINS (112012,DCM,"Positioner Secondary Angle") NUM [0 deg]
CONTAINS (113771,DCM,"X-Ray Filters") CONTAINER
CONTAINS (113772,DCM,"X-Ray Filter Type") CODE [(113650,DCM,"Strip filter")]
CONTAINS (113757,DCM,"X-Ray Filter Material") CODE [(C-127F9,SRT,"Copper or Copper compound")]
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CONTAINS (113773,DCM,"X-Ray Filter Thickness Maximum") NUM [0.1 mm]
CONTAINS (113771,DCM,"X-Ray Filters") CONTAINER
CONTAINS (113772,DCM,"X-Ray Filter Type") CODE [(113650,DCM,"Strip filter")]
CONTAINS (113757,DCM,"X-Ray Filter Material") CODE [(C-120F9,SRT,"Aluminum or Aluminum compound")]
CONTAINS (113758,DCM,"X-Ray Filter Thickness Minimum") NUM [1 mm]
CONTAINS (113773,DCM,"X-Ray Filter Thickness Maximum") NUM [1 mm]
CONTAINS (113732,DCM,"Fluoro Mode") CODE [(113631,DCM,"Pulsed")]
CONTAINS (113791,DCM,"Pulse Rate") NUM [7.5 {pulse}/s]
CONTAINS (113768,DCM,"Number of Pulses") NUM [43 1]
CONTAINS (113734,DCM,"X-Ray Tube Current") NUM [143.5 mA]
CONTAINS (113748,DCM,"Distance Source to Isocenter") NUM [810 mm]
CONTAINS (113733,DCM,"KVp") NUM [77 kv]
CONTAINS (113793,DCM,"Pulse Width") NUM [7.4 ms]
CONTAINS (113742,DCM,"Irradiation Duration") NUM [5.733 s]
CONTAINS (113745,DCM,"Patient Table Relationship") CODE [(F-10470,SRT,"headfirst")]
CONTAINS (113743,DCM,"Patient Orientation") CODE [(F-10450,SRT,"recumbent")]
HAS CONCEPT MOD (113744,DCM,"Patient Orientation Modifier") CODE [(F-10340,SRT,"supine")]
CONTAINS (113751,DCM,"Table Longitudinal Position") NUM [8.8 mm]
CONTAINS (113752,DCM,"Table Lateral Position") NUM [1853.500000000000 mm]
CONTAINS (113754,DCM,"Table Head Tilt Angle") NUM [0 deg]
CONTAINS (113756,DCM,"Table Cradle Tilt Angle") NUM [0.1 deg]
CONTAINS (123014,DCM,"Target Region") CODE [(T-D400,SRT,"Abdomen")]
CONTAINS (003,99PHI-IXR-XPER,"Number of Frames") NUM [43 1]
CONTAINS (004,99PHI-IXR-XPER,"SubImages per Frame") NUM [1 1]
CONTAINS (005,99PHI-IXR-XPER,"Wedges and Shutters") CONTAINER
CONTAINS (006,99PHI-IXR-XPER,"Batter Shutters") NUM [0 5 1]
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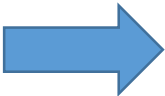
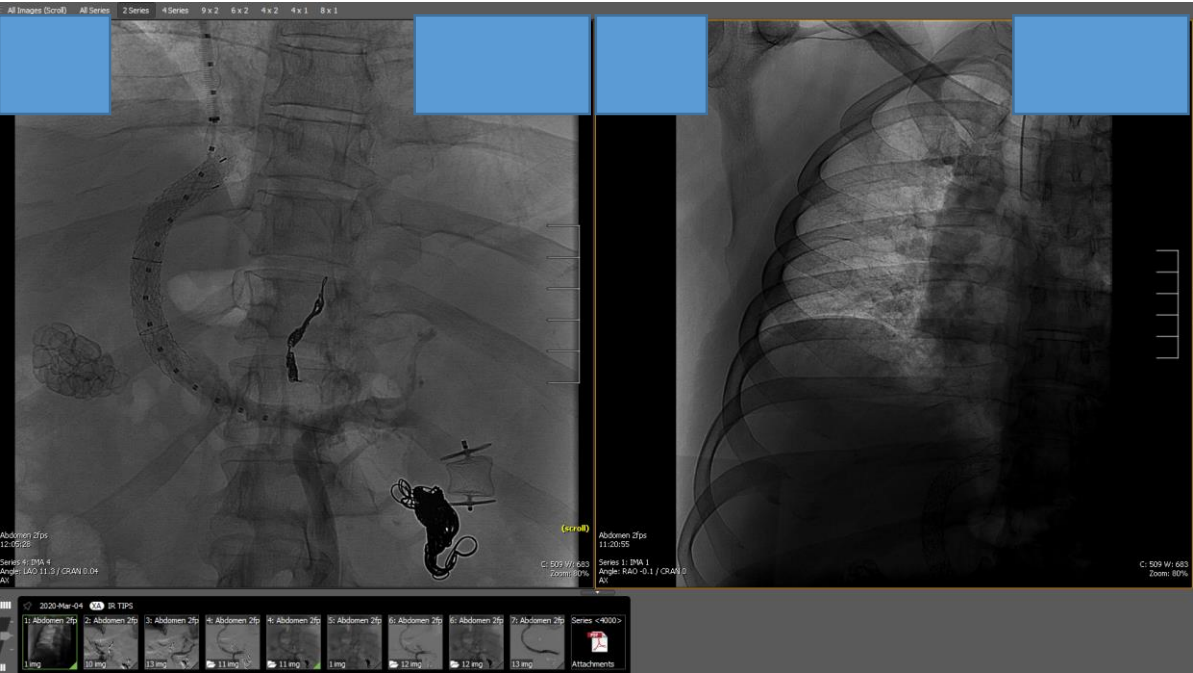
# Longitudinal Dose Tracking (2019-Present)

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HAS CONCEPT MOD (G-C0E8,SRT,"Has Intent") CODE [(R-002E9,SRT,"Combined Diagnostic and Therapeutic Procedure")]
HAS OBS CONTEXT (121005,DCM,"Observer Type") CODE [(121007,DCM,"Device")]
HAS OBS CONTEXT (121012,DCM,"Device Observer UID") UIDREF [1.3.46.670589.28.3711501961590]
HAS OBS CONTEXT (121013,DCM,"Device Observer Name") TEXT [SCHXAI]
HAS OBS CONTEXT (121014,DCM,"Device Observer Manufacturer") TEXT [Philips Medical Systems]
HAS OBS CONTEXT (121015,DCM,"Device Observer Model Name") TEXT [Allura Xper]
HAS OBS CONTEXT (121016,DCM,"Device Observer Serial Number") TEXT [1]
HAS OBS CONTEXT (113705,DCM,"Scope of Accumulation") CODE [(113016,DCM,"Performed Procedure Step")]
HAS PROPERTIES (121126,DCM,"Performed Procedure Step SOP Instance UID") UIDREF [1.3.46.670589.28.37115019615902020030417332384291]
CONTAINS (113702,DCM,"Accumulated X-Ray Dose Data") CONTAINER
HAS CONCEPT MOD (113764,DCM,"Acquisition Plane") CODE [(113622,DCM,"Single Plane")]
CONTAINS (113780,DCM,"Reference Point Definition") TEXT [15cm below BeamIsocenter]
CONTAINS (113722,DCM,"Dose Area Product Total") NUM [0.0456475 Gy.m2]
CONTAINS (113725,DCM,"Dose (RP) Total") NUM [1.69818640955004 Gy]
CONTAINS (113726,DCM,"Fluoro Dose Area Product Total") NUM [0.0319025 Gy.m2]
CONTAINS (113728,DCM,"Fluoro Dose (RP) Total") NUM [1.14365472910927 Gy]
CONTAINS (113730,DCM,"Total Fluoro Time") NUM [1925 s]
CONTAINS (113727,DCM,"Acquisition Dose Area Product Total") NUM [0.013745 Gy.m2]
CONTAINS (113729,DCM,"Acquisition Dose (RP) Total") NUM [0.55453168044077 Gy]
CONTAINS (113855,DCM,"Total Acquisition Time") NUM [31.3220000000000 s]
CONTAINS (113731,DCM,"Total Number of Radiographic Frames") NUM [66 1]
CONTAINS (001,99PHI-IXR-XPER,"Height of System") NUM [1068 mm]
CONTAINS (002,99PHI-IXR-XPER,"Focal Spot to ISO Center") NUM [810 mm]
CONTAINS (113706,DCM,"Irradiation Event X-Ray Data") CONTAINER
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CONTAINS (112012,DCM,"Positioner Secondary Angle") NUM [0 deg]
CONTAINS (113771,DCM,"X-Ray Filters") CONTAINER
CONTAINS (113772,DCM,"X-Ray Filter Type") CODE [(113650,DCM,"Strip filter")]
CONTAINS (113757,DCM,"X-Ray Filter Material") CODE [(C-127F9,SRT,"Copper or Copper compound")]
CONTAINS (113758,DCM,"X-Ray Filter Thickness Minimum") NUM [0.1 mm]
CONTAINS (113773,DCM,"X-Ray Filter Thickness Maximum") NUM [0.1 mm]
CONTAINS (113771,DCM,"X-Ray Filters") CONTAINER
CONTAINS (113772,DCM,"X-Ray Filter Type") CODE [(113650,DCM,"Strip filter")]
CONTAINS (113757,DCM,"X-Ray Filter Material") CODE [(C-120F9,SRT,"Aluminum or Aluminum compound")]
CONTAINS (113758,DCM,"X-Ray Filter Thickness Minimum") NUM [1 mm]
CONTAINS (113773,DCM,"X-Ray Filter Thickness Maximum") NUM [1 mm]
CONTAINS (113732,DCM,"Fluoro Mode") CODE [(113631,DCM,"Pulsed")]
CONTAINS (113791,DCM,"Pulse Rate") NUM [7.5 {pulse}/s]
CONTAINS (113768,DCM,"Number of Pulses") NUM [43 1]
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CONTAINS (113752,DCM,"Table Lateral Position") NUM [1853.50000000000 mm]
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CONTAINS (113756,DCM,"Table Cradle Tilt Angle") NUM [0.1 deg]
CONTAINS (123014,DCM,"Target Region") CODE [(T-D400,SRT,"Abdomen")]
CONTAINS (003,99PHI-IXR-XPER,"Number of Frames") NUM [43 1]
CONTAINS (004,99PHI-IXR-XPER,"SubImages per Frame") NUM [1 1]
CONTAINS (005,99PHI-IXR-XPER,"Wedges and Shutters") CONTAINER
CONTAINS (006,99PHI-IXR-XPER,"Pattern Shutter") NUM [0 5 mm]
```





# Longitudinal Dose Tracking (2019-Present)



NEXO [dose]

Multi-Modality Radiation Informatics

Home

Search

Analytics

Alerts 0

Admin

BRACCO

Study Details

Patient

Name:

MRN:

Issuer:

Master ID:

Date of Birth:

Age at Study:

Sex:

Height:

Weight:

View Patient History

Edit

Dose

Fluoro Time:

1925.00s

Dose (RP):

1698.19 mGy

Acquisition Dose (RP):

334.33 mGy

Fluoro Dose (RP):

1143.65 mGy

DAP:

4564.75 dGy.cm<sup>2</sup>

View Comparison

Edit

Study

Date/Time:

Accession:

Study ID:

Referring Phys.:

Last Update:

View Details

Export

Refresh from PACS

Send To

Delete

Procedure

Common Name

RP GUIDE TIPS PLACEMENT (Edit)

Description

IR TIPS

Device

GNV ST IR 1 (Edit)

Facility

Shands Cancer Hospital

Operator

Performing Phys.

Skin Dose

Peak Skin Dose

1.38 Gy

> 0 Gy

845.52 cm<sup>2</sup>

> 3 Gy

0 cm<sup>2</sup>

> 5 Gy

0 cm<sup>2</sup>

> 10 Gy

0 cm<sup>2</sup>

Download

Series

Series	Device	Description	Images	Dose (RP) (mGy)	kVp (kV)	mA Mean (mA)	Data Source	Details
Total:A	GNV ST IR 1	Accumulated X-Ray Dose Data (Single Plane)	106	1698.19	-	-	SR	View



# Longitudinal Dose Tracking (2019-Present)

Home
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 Analytics
 Alerts 0
 Admin

Study Details

Patient

Name:

MRN

Issuer

Master ID

Date of Birth

Age at Study

Sex

Height

Weight

View Patient History

Edit

Dose

Fluoro Time: 1925 sec

Dose (RP): 1698.19 mGy

Acquisition Dose (RP): 554.53 mGy

Fluoro Dose (RP): 1143.65 mGy

DAP: 4564.75 dGy.cm²

View Comparison

Edit

Study

Date/Time

Accession

Study ID

Referring Phys.

Last Update

View Details

Export

Refresh from PACS

Send To

Delete

Procedure

Common Name

Description

Device

Facility

Operator

Performing Phys.

RP GUIDE TIPS PLACEMENT (Edit)

IR TIPS

GNV ST IR 1 (Edit)

Shands Cancer Hospital

Skin Dose

Peak Skin Dose

1.38 Gy

> 0 Gy

> 3 Gy

> 5 Gy

> 10 Gy

845.52 cm²

0 cm²

0 cm²

0 cm²

Download

Series

Series	Device	Description	Images	Dose (RP) (mGy)	kVp (kV)	mA Mean (mA)	Data Source	Details
Total: A	GNV ST IR 1	Accumulated X-Ray Dose Data (Single Plane)	106	1698.19	-	-	SR	View

UF RAD Physics Weekly Radiation Report - Physics [10817180] as of Wed 4/29/2020 11:03 AM
 

Filters
 Options
 Study Review
 Rel Priors
 Audit Trail

Appt Date	Dose (Order-Level)	6 Month Total Dose (To Date)	Name	MRN	Accession #	Service	Performing Physician	Technologist	Appt Resource	Dose (Order-Level)
		12,866.4 mGy				Visceral			IR ST RM1	9
		12,866.4 mGy				Visceral			IR ST RM1	9
	3,058.3 mGy	8,698.72 mGy				Visceral			IR ST RM1	-3
	320.62 mGy	8,698.72 mGy				Visceral			IR ST RM1	5
		8,698.72 mGy							GENERIC IMAGING FL	
		8,493.24 mGy							GENERIC IMAGING IR	
	3,439.12 mGy	6,457.95 mGy				Visceral			IR NT RM11	-1
		6,129.89 mGy				Visceral			IR 2 VISCERAL	
	984.29 mGy	6,129.89 mGy				Visceral			IR NT RM16	96
	0 mGy	6,129.89 mGy				Visceral			IR NT RM16	96
		6,129.89 mGy				Visceral			IR NT RM15	0
	804.58 mGy	6,129.89 mGy				Visceral			IR NT RM16	90
		6,129.89 mGy				Visceral			IR NT RM16	90
	1,098.69 mGy	5,769 mGy				Visceral			IR NT RM11	2
		5,769 mGy							GENERIC IMAGING IR	
		5,769 mGy							GENERIC IMAGING IR	
	1,004.04 mGy	5,769 mGy				Visceral			IR NT RM13	91
		5,769 mGy				Visceral			IR NT RM13	91
	1,868.45 mGy	5,490.73 mGy							IR UB HYB OR 11	
	5,139.33 mGy	5,139.33 mGy				Visceral			IR NT RM11	
		5,139.33 mGy				Visceral			IR NT RM11	
	529.8 mGy	5,054.62 mGy				Visceral			IR NT RM13	





# Longitudinal Dose Tracking (2019-Present)

**NEXO [DOSE]**  
Multi-Modality Radiation Informatics

Home
 Search
 Analytics
 Alerts 0
 Admin

**Study Details**

**Patient**

**Name:**   
**MRN**  
**Issuer**  
**Master ID**  
**Date of Birth**  
**Age at Study**  
**Sex**  
**Height**  
**Weight**

[View Patient History](#) [Edit](#)

**Dose**

**Fluoro Time:** 1925 sec  
**Dose (RP):** 1698.19 mGy  
**Acquisition Dose (RP):** 554.53 mGy  
**Fluoro Dose (RP):** 1143.65 mGy  
**DAP:** 4564.75 dGy.cm<sup>2</sup>

[View Comparison](#) [Edit](#)

**Study**

**Date/Time**  
**Accession**  
**Study ID**  
**Referring Phys.**  
**Last Update**

[View Details](#) [Export](#) [Refresh from PACS](#) [Send To](#) [Delete](#)

**Procedure**

**Common Name** RP GUIDE TIPS PLACEMENT ([Edit](#))  
**Description** IR TIPS  
**Device** GNV ST IR 1 ([Edit](#))  
**Facility** Shands Cancer Hospital  
**Operator**  
**Performing Phys.**

**Skin Dose**

**Peak Skin Dose** 1.38 Gy  
 > 0 Gy: 845.52 cm<sup>2</sup>   > 3 Gy: 0 cm<sup>2</sup>   > 5 Gy: 0 cm<sup>2</sup>   > 10 Gy: 0 cm<sup>2</sup>

[Download](#)

**Series**

Series	Device	Description	Images	Dose (RP) (mGy)	kVp (kV)	mA Mean (mA)	Data Source	Details
Total: A	GNV ST IR 1	Accumulated X-Ray Dose Data (Single Plane)	106	1698.19	-	-	SR	<a href="#">View</a>

## Radiology Report

Status: FINAL

Patient Information		Study Information	
Patient Name:		Accession Number:	
Patient ID:		Study Date:	
Referring Physician:		Study Description:	
Interpreted by:		Signed by:	

Procedures performed:  
 Ultrasound-guided vascular access  
 Fluoroscopic guidance  
 TIPS revision and stent placement

Estimated blood loss: minimal

Dose (RP):

Hemodynamics POST STENT (mmHg)

Right Atrium: 15

Portal Vein: 17

IMPRESSION:

Impression:

1. Thrombosed TIPS stent and main portal vein successfully revised with 12 mm balloon angioplasty and stent extension using a 12 mm x 90 mm Vici stent.

2. Final portal venography was performed, demonstrating brisk hepatopedal flow through the main





# Inpatient Workflow

---

- Posed significant issue from original policy standpoint
- Outpatients
  - Patient goes home
  - If level 2 patient, discharge paperwork goes with them
  - Discharge paperwork gives instructions to patient
- Inpatients require hospital staff for follow-up
- Discharge paperwork must then follow with patient once they leave hospital
  - Old method of physical form being filled out not plausible
  - New method solves this issue





# General Fluoroscopy

---

- General fluoroscopic units are exempt from most of the requirements in UF Health core policy
- Units are not connected to dose tracking software
- CAK dose page sent to PACS, if available
  - Older equipment without CAK record fluoroscopy time in patient EMR
- If fluoroscopy time > 30 minutes, qualified personnel or their designee complete the dose collection form





Fluoroscopy Time Log Sheet – CP02.095

**TO BE COMPLETED BY PROCEDURAL STAFF IF RAD TECH NOT PRESENT FOR CASE**  
(PLEASE COMPLETE BEFORE EQUIPMENT IS TURNED OFF)

**\*\*Complete form only if Fluoro time exceeds 30 minutes\*\***

**Location:**

- ☐ UF Health Shands Hospital  
☐ UF Health Shands Cancer Hospital  
☐ UF Health Shands Children's Hospital  
☐ UF Health Neuromedicine Hospital  
☐ UF Health Heart & Vascular Hospital  
☐ Other: \_\_\_\_\_

C-Arm/Fluoro equipment used:	Fluoro Time (as displayed on equipment): (min)
Date of Exam:	Procedure:
Cumulative Air Kerma (as displayed on equipment): (mGy)	
Physician's Name:	

Completed forms should be returned to UF Health Shands Hospital, room G310 or mailed to P.O. Box 100374.



Patient Name: \_\_\_\_\_ Patient Identification #: \_\_\_\_\_





# Informed Consent

---

- As radiology policy, all returning Level 2 and Level 3 patients were provided informed consent about procedure
- Patient history evaluated for risk factors of CRI
- Skin site examined for possible changes due to radiation exposure
- With extension to hospital policy, returning patients being consented presented an issue
  - Coordination between departments



# Surgery

---

- VIR manages techs operating OR hybrid labs
- Clinical workflow is identical
- Identical status board
- Additional pre-procedure work-up
  - Flag patients that have had previous procedures
- Patient follow-up
  - Addressed in post-surgery clinical follow-up





# Cardiology

---

- One of the largest hurdles in the entire fluoroscopy policy and fluoroscopic dose management involved cardiology
- No Radiant setup in EPIC
- McKesson PACS build for hemodynamic monitoring
  - McKesson does not accept RDSRs
- How to link to dose tracking software?
- How to setup in EPIC build?





# Cardiology

- Linking to dose tracking software

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(113701,DCI,"X-Ray Radiation Dose Report") CONTAINER
HAS CONCEPT MOD (121058,DCI,"Procedure reported") CODE [(113704,DCI,"Projection X-Ray")]
HAS CONCEPT MOD (G-C088,SRT,"Has Intent") CODE [(R-002E9,SRT,"Combined Diagnostic and Therapeutic Procedure")]
HAS OBS CONTEXT (121085,DCI,"Observer Type") CODE [(121087,DCI,"Device")]
HAS OBS CONTEXT (121012,DCI,"Device Observer UID") UIDREF [1.3.46.670589.28.3711501961590]
HAS OBS CONTEXT (121013,DCI,"Device Observer Name") TEXT [SCHX1]
HAS OBS CONTEXT (121014,DCI,"Device Observer Manufacturer") TEXT [Philips Medical Systems]
HAS OBS CONTEXT (121015,DCI,"Device Observer Model Name") TEXT [Allura Aper]
HAS OBS CONTEXT (121016,DCI,"Device Observer Serial Number") TEXT [1]
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CONTAINS (113788,DCI,"Reference Point Definition") TEXT [15cm below BeamIsocenter]
CONTAINS (113721,DCI,"Dose Area Product Total") NUM [0.0054475 Gy.m2]
CONTAINS (113725,DCI,"Dose (RP) Total") NUM [1.69818640955004 Gy]
CONTAINS (113726,DCI,"Fluoro Dose Area Product Total") NUM [0.0119025 Gy.m2]
CONTAINS (113728,DCI,"Fluoro Dose (RP) Total") NUM [1.14365472910927 Gy]
CONTAINS (113730,DCI,"Total Fluoro Time") NUM [1925 s]
CONTAINS (113727,DCI,"Acquisition Dose Area Product Total") NUM [0.013745 Gy.m2]
CONTAINS (113729,DCI,"Acquisition Dose (RP) Total") NUM [0.554531680044077 Gy]
CONTAINS (113855,DCI,"Total Acquisition Time") NUM [31.3220000000000 s]
CONTAINS (113731,DCI,"Total Number of Radiographic Frames") NUM [66 1]
CONTAINS (001,99PHI-IXR-XPFR,"Height of System") NUM [1068 mm]
CONTAINS (002,99PHI-IXR-XPFR,"Focal Spot to ISO Center") NUM [810 mm]
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CONTAINS (113769,DCI,"Irradiation Event UID") UIDREF [1.3.46.670589.28.3711501961590.20200304110123799.1]
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CONTAINS (113738,DCI,"Dose (RP)") NUM [0.00207759412304 Gy]
CONTAINS (112011,DCI,"Positioner Primary Angle") NUM [-0.1 deg]
CONTAINS (112012,DCI,"Positioner Secondary Angle") NUM [0 deg]
CONTAINS (113771,DCI,"X-Ray Filters") CONTAINER
CONTAINS (113772,DCI,"X-Ray Filter Type") CODE [(113650,DCI,"Strip Filter")]
CONTAINS (113757,DCI,"X-Ray Filter Material") CODE [(C-127P9,SRT,"Copper or Copper compound")]
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CONTAINS (113773,DCI,"X-Ray Filter Thickness Maximum") NUM [0.1 mm]
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CONTAINS (113757,DCI,"X-Ray Filter Material") CODE [(C-120P9,SRT,"Aluminum or Aluminum compound")]
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CONTAINS (113791,DCI,"Pulse Rate") NUM [7.5 (pulse/s)]
CONTAINS (113760,DCI,"Number of Pulses") NUM [43 1]
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CONTAINS (113756,DCI,"Table Cradle Tilt Angle") NUM [0.1 deg]
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CONTAINS (004,99PHI-IXR-XPFR,"SubImages per Frame") NUM [1 1]
CONTAINS (005,99PHI-IXR-XPFR,"Hedges and Shutters") CONTAINER
```



**MCKESSON**

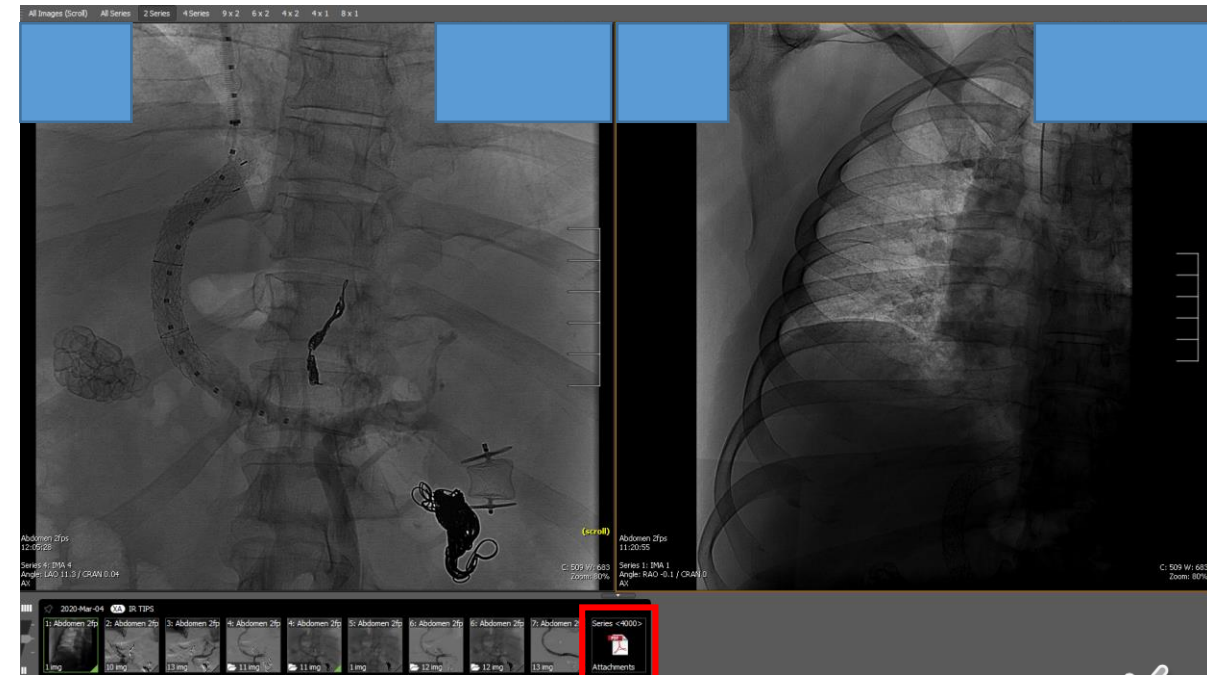
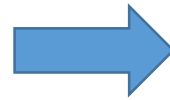




# Cardiology

- Linking to dose tracking software

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HAS OBS CONTEXT (113705,DCI,"Scope of Accumulation") CODE [(113016,DCI,"Performed Procedure Step")]
HAS PROPERTIES (121126,DCI,"Performed Procedure Step SOP Instance UID") UIDREF [1.3.46.670589.28.37115019615902020030417332384291]
CONTAINS (113702,DCI,"Accumulated X-Ray Dose Data") CONTAINER
HAS CONCEPT MOD (113764,DCI,"Acquisition Plane") CODE [(113622,DCI,"Single Plane")]
CONTAINS (113788,DCI,"Reference Point Definition") TEXT [15cm below BeamIsocenter]
CONTAINS (113721,DCI,"Dose Area Product Total") NUM [0.0056475 Gy.m2]
CONTAINS (113725,DCI,"Dose (RP) Total") NUM [1.69818640955004 Gy]
CONTAINS (113726,DCI,"Fluoro Dose Area Product Total") NUM [0.0119025 Gy.m2]
CONTAINS (113728,DCI,"Fluoro Dose (RP) Total") NUM [1.14365472910927 Gy]
CONTAINS (113730,DCI,"Total Fluoro Time") NUM [1925 s]
CONTAINS (113727,DCI,"Acquisition Dose Area Product Total") NUM [0.013745 Gy.m2]
CONTAINS (113729,DCI,"Acquisition Dose (RP) Total") NUM [0.554531680040077 Gy]
CONTAINS (113855,DCI,"Total Acquisition Time") NUM [31.3220000000000 s]
CONTAINS (113731,DCI,"Total Number of Radiographic Frames") NUM [66 1]
CONTAINS (001,99PHI-IXR-XP8R,"Height of System") NUM [1068 mm]
CONTAINS (001,99PHI-IXR-XP8R,"Focal Spot to ISO Center") NUM [810 mm]
CONTAINS (113706,DCI,"Irradiation Event X-Ray Data") CONTAINER
HAS CONCEPT MOD (113764,DCI,"Acquisition Plane") CODE [(113622,DCI,"Single Plane")]
CONTAINS (113721,DCI,"DataTime Started") DATETIME [20200304110124.48]
CONTAINS (113721,DCI,"Irradiation Event Type") CODE [(PS-06000,SRT,"Fluoroscopy")]
CONTAINS (113788,DCI,"Reference Point Definition") TEXT [15cm below BeamIsocenter]
CONTAINS (113769,DCI,"Irradiation Event UID") UIDREF [1.3.46.670589.28.3711501961590.20200304110123799.1]
CONTAINS (122136,DCI,"Dose Area Product") NUM [0.0000705 Gy.m2]
CONTAINS (113738,DCI,"Dose (RP)") NUM [0.00207759412304 Gy]
CONTAINS (112011,DCI,"Positioner Primary Angle") NUM [-0.1 deg]
CONTAINS (112012,DCI,"Positioner Secondary angle") NUM [0 deg]
CONTAINS (113771,DCI,"X-Ray Filters") CONTAINER
CONTAINS (113772,DCI,"X-Ray Filter Type") CODE [(113650,DCI,"Strip filter")]
CONTAINS (113757,DCI,"X-Ray Filter Material") CODE [(C-127P9,SRT,"Copper or Copper compound")]
CONTAINS (113758,DCI,"X-Ray Filter Thickness Minimum") NUM [0.1 mm]
CONTAINS (113773,DCI,"X-Ray Filter Thickness Maximum") NUM [0.1 mm]
CONTAINS (113771,DCI,"X-Ray Filters") CONTAINER
CONTAINS (113772,DCI,"X-Ray Filter Type") CODE [(113650,DCI,"Strip filter")]
CONTAINS (113757,DCI,"X-Ray Filter Material") CODE [(C-120P9,SRT,"Aluminum or Aluminum compound")]
CONTAINS (113759,DCI,"X-Ray Filter Thickness Minimum") NUM [1 mm]
CONTAINS (113773,DCI,"X-Ray Filter Thickness Maximum") NUM [1 mm]
CONTAINS (113732,DCI,"Fluoro Mode") CODE [(113631,DCI,"Pulsed")]
CONTAINS (113791,DCI,"Pulse Rate") NUM [7.5 (pulse/s)]
CONTAINS (113760,DCI,"Number of Pulses") NUM [43 1]
CONTAINS (113734,DCI,"X-Ray Tube Current") NUM [143.5 mA]
CONTAINS (113748,DCI,"Distance Source to Isocenter") NUM [810 mm]
CONTAINS (113733,DCI,"XVP") NUM [77 kV]
CONTAINS (113793,DCI,"Pulse Width") NUM [7.4 ms]
CONTAINS (113742,DCI,"Irradiation Duration") NUM [5.733 s]
CONTAINS (113745,DCI,"Patient Table Relationship") CODE [(F-10470,SRT,"headfirst")]
CONTAINS (113743,DCI,"Patient Orientation") CODE [(F-10450,SRT,"recumbent")]
HAS CONCEPT MOD (113744,DCI,"Patient Orientation Modifier") CODE [(F-10340,SRT,"supine")]
CONTAINS (113751,DCI,"Table Longitudinal Position") NUM [8.8 mm]
CONTAINS (113752,DCI,"Table Lateral Position") NUM [1851.500000000000 mm]
CONTAINS (113754,DCI,"Table Head Tilt Angle") NUM [0 deg]
CONTAINS (113756,DCI,"Table Cradle Tilt Angle") NUM [0.1 deg]
CONTAINS (123014,DCI,"Target Region") CODE [(T-0400,SRT,"Abdomen")]
CONTAINS (001,99PHI-IXR-XP8R,"Number of Frames") NUM [43 1]
CONTAINS (004,99PHI-IXR-XP8R,"SubImages per Frame") NUM [1 1]
CONTAINS (005,99PHI-IXR-XP8R,"Hedges and Shutters") CONTAINER
```





# Cardiology

- How to setup in EPIC build?

## Status Board - .GNV RN CATH HVN LAB [1533273] for 6/4/2020

Suite View Periop View Surgery Waiting Intraop Post-op NORA Find Intra Events Reports Actions Discharge Patient Transport Bed Request Transfer Procedure Not Performed Legend Pain Procedure Pass

Start date: 6/4/2020 End date: 6/4/2020

UB CATH A									
In Room									
0700	✓	00:17	Pujala, Jose	M	57 yrs	UF CARDIAC CATH LAB (UB)	Cardiac Catheterization-Bilateral	Keeley, E. (Primary) McNichols, B.	
1000		00:06	Smith, Angela	F	38 yrs	29	Cardiac Catheterization-Bilateral	Keeley, E.	
UB CATH B									
In Room									
0800	✓	00:31	Gleiberman, Steven	M	61 yrs	UF CARDIAC CATH LAB (UB)	Eps / Rfa (93609, 93613, 93656) Tee (93312) Cryo-N/A	Miles, W. (Primary - 1) Proceduralist, U.	Brown, E. Bannister, L.
1239			Trauma, Vatumai B	M	85 yrs	944401	Eps +/- Possible Ppm Or Icd, Possible Ablation-N/A	Miles, W.	Pre-assigned: UF UB66
UB CATH C									
In Room									
0800	✓	00:32	Lee, Dorothy	F	82 yrs	UF CARDIAC CATH LAB (UB)	Dc Pm (33208)-N/A	George, P.	Pre-assigned: UF UB66
1000			Arnold, Doris	F	69 yrs	UB7710	Electrophysiology-N/A	George, P.	
1313			Reyes, Felix	M	78 yrs	945602	Electrophysiology-N/A	George, P.	
UB CATH E									
0800		00:07	Nguyen, Guyun	F	19 yrs	31	Biopsy (Bx) - Ahmed / Bonnie Date Of Service: 6/4/20, Check-In 6:30am -->--> Must Have Translator Phone Available!!! <--<--N/A	Ahmed, M.	
0830	✓	00:05	Pritchett, Kerry	M	64 yrs	UF CARDIAC CATH LAB (UB)	Cardiac Catheterization Right Heart Cath With Dr. Ahmed-N/A	Ahmed, M.	
0900	✓	02:09	Brown, Yolanda	F	48 yrs	32	Right Heart Cath With Mustafa Ahmed, Md On Thursday 5/28/20-N/A	Ahmed, M.	
0930	✓	01:13	Camilo, Chris	M	43 yrs	HVN Pre/Post	Biopsy (Bx) - Ahmed / Renee Date Of Service: 6/4/20, Check-In 6:30-N/A	Ahmed, M.	





# Tribulations...

---

- Whole process appears smooth...
  - Many, many, many issues experienced during process
  - > 8 year process to get to this point
  - Many needs still not satisfied, but lots of progress has been made





# Tribulations...

- EPIC custom-built client
  - CAK summing and status board built to match feature of previous home-build IR system
  - Old system had CAK and status board indicator

The screenshot displays the EPIC Status Board for the department of SH RAD UF IR - Visc South, dated 5/1/2020. The interface is organized into a grid of patient cases, each with a header bar indicating the patient's name and status. The cases are categorized by procedure type, such as 'Ir Angiogram', 'Ir Cholangiogram', 'Ir Percutaneous Nephrostomy In OriCysto', and 'Ir Powerline'. The status indicators include 'Consented', 'On-Hold', and 'Visceral'. The interface also features a navigation bar at the top with tabs for 'Holding', 'Visc North', 'Visc South', 'Neuro', 'Other', and 'More Reports'. The 'Visc South' tab is currently selected. The bottom of the screen shows a 'Status Board' tab and a 'Reports' tab.

IR ST RM1	IR Z SOUTH
<b>Ir Angiogram</b> Embolization, Mesenteric Provocative angiogram <b>Anesthesia</b> Mohamed, Basma Abdalla, Visceral Incision Consented	<b>Ir Powerline</b> Placement, Double Dual lumen power line for ionotropes and blood draw. Patient with acute on Visceral
<b>Ir Cholangiogram</b> Right, Right Cholangiogram 4/22/2020 with occlusion of the distal common bile duct stent. Plan for sharp <b>Anesthesia</b> Mohamed, Basma Abdalla, Visceral On-Hold	<b>Ir Percutaneous Nephrostomy In OriCysto</b> Placement, Left, Left Visceral
<b>Ir Percutaneous Nephrostomy In OriCysto</b> Exchange, Right, Right UA PERIOP Visceral	<b>Ir Powerline</b> Ir Dialysis Catheter Tunneled Placement, Single Placement Single lumen power line for IV abx. ESRD on HD. Currently with Visceral Consented
<b>Ir Percutaneous Nephrostomy In OriCysto</b> Placement, Left, Left Visceral	<b>Ir G/J Tube</b> Placement GJ placement through duodenal stent. Caloric needs. Perianapillary mass. Visceral Consented





# Tribulations...

- EPIC custom-built client
  - Long process (i.e. years) to achieve generic body avatar incorporation into the patient EMR

Shands at UF Interventional Radiology:  
Post-Procedure Radiation Exposure Information Sheet

Patient Name: \_\_\_\_\_ MR #: \_\_\_\_\_ Phone #: \_\_\_\_\_

Procedure: \_\_\_\_\_ Procedure Date: \_\_\_\_\_ Affected Area: \_\_\_\_\_

The procedure you recently underwent is one of the more complex interventions performed by our service. This type of procedure is done with x-ray imaging and requires the use of higher radiation doses than most other diagnostic imaging studies, such as chest x-ray exams or CT scans.

How much radiation you receive depends on your specific procedure and medical condition. To ensure you the most benefit from your procedure, we make every attempt to minimize the radiation exposure, while recognizing that a portion of your body may receive a substantial dose from the procedure. In general, the risk of complications related to radiation exposure is very small and substantially less than other risks of the procedure.

Your procedure required a dose of radiation at the upper end of our usual range and, while we do not expect to see any effects from the radiation, there is a chance that it could cause skin changes in the area that was treated. These changes might include an area of redness, localized hair loss, itching, or flaking of the skin in the exposed area. These changes are usually temporary and fade away within a few days or weeks. In very rare situations more severe damage to skin can require medical attention.

Over the course of the next several weeks, please monitor your skin in the designated area and watch for any of the following symptoms. The areas where you may experience changes are circled in the diagrams below. If the area exposed was on your back, have someone check it for you, or do your best by looking in a mirror.

**Signs to look for:**

- A red area, about the size of your hand
- Flaking skin, like a sunburn
- Areas of localized hair loss
- Constant itching in the affected area

If you see any of these signs, please contact us as soon as possible to determine if any further treatment is needed, or if the changes will resolve without intervention.

Please do your best not to scratch the irritated area, as doing so can lead to further changes in your skin.

☐ If you have any questions or concerns, contact Interventional Radiology at 352-265-0116 Monday through Friday between the hours of 8:00 am and 5:00 pm. Ask to speak to a Physician's Assistant.

☐ If you have any questions or concerns call the Department of Neurosurgery at 352-273-9000 and ask to speak to your doctor.

Shands  
University of Florida  
© 2018  
Post-Procedure Radiation  
Exposure Information Sheet  
English Full Page  
Distribution: White: Medical Records  
Yellow: Patient Print: PA

000006  
It printed electronically,  
all pages must be stapled.  
C013  
PS110342



EPIC  
Cardiology, Echo

Technologist Navigator - End Exam: 1/8/2020

Expand | Message | Notes | Audit Trail | Rel Pipes | Scans | Mark as Expired | Go Back

End Exam IR  
Male, 42 y.o., 2/22/1978  
MRN: 01267500  
Preferred Language: English  
Bed: UB PERIOP POOL  
Cur Location: UF RADIOLOGY  
- INTERVENTIONAL NT  
Code: Full (no ACP doc)  
Gender: Male  
Legal: None  
Out Info: None  
MyUFHealth: Active  
Visage: Images

Search

Allergies: Not on File

ADMITTED: 2/22/2018 (803 D)  
Principal Problem: Unstable  
angina pectoris (CMS-HCC-  
87)

IR ANGIOGRAM  
Geller, Brian S. MD  
Ordering

HT: 5' 10" (177.8 cm)  
Weight: 160 lb (72.6 kg)  
BMI: —

IR ANGIOGRAM  
Annotated Image  
Patient Education  
After Visit Sum...

IR ANGIOGRAM  
Radiation  
Specimens  
Changes

POST-PROCEDURE RADIATION EXPOSURE INFORMATION SHEET

The procedure you recently underwent is one of the more complex interventions performed by our service. This type of procedure is done with x-ray imaging and requires the use of higher radiation doses than most other diagnostic imaging studies, such as chest x-ray exams or CT scans.

How much radiation you receive depends on your specific procedure and medical condition. To ensure you the most benefit from your procedure, we make every attempt to minimize the radiation exposure, while recognizing that a portion of the body may receive a substantial dose from the procedure. In general, the risk of complications related to radiation exposure is very small and substantially less than other risks of the procedure.

Your procedure required a dose of radiation at the upper end of our usual range and, while we do not expect to see any effects from the radiation, there is a chance that it could cause skin changes in the area that was treated. These changes might include an area of redness, localized hair loss, itching, or flaking of the skin in the exposed area. These changes are usually temporary and fade away within a few days or weeks. In very rare situations more severe damage to skin can require medical attention.

Over the course of the next several weeks, please monitor your skin in the designated area and watch for any of the following symptoms. The areas where you may experience changes are circled in the diagrams below. If the area exposed was on your back, have someone check it for you, or do your best by looking in a mirror.

1: Look for reddening of the skin here





# Tribulations...

---

- EPIC custom-built client
  - New core policy + push from Quality + helpful I.T. personnel = PROGRESS
  - Needed unified policy throughout all departments
  - Involved surgery, cardiology, radiology, IT (physician, technologist, physics, and nursing involved)
  - Formation of ad hoc committee
  - Issues to solve
    - ~~• Informed consent process~~
    - ~~• Incorporation of discharge instructions into AVS~~
    - ~~• Determination of follow-up responsibilities~~
    - Returning vs. non-returning level 2 patients



# Tribulations...

---

- EPIC custom-built client
  - Biggest workflow issue to still solve is the returning level 1 patient who becomes a level 2 patient due to multiple procedures
  - Example patient 1
    - Two procedures in 48-hour period
    - Procedure 1 – 4,999 mGy
    - Procedure 2 – 4,999 mGy
    - Total CAK ~ 10 Gy
    - This patient **never** receives discharge instructions
  - Example patient 2
    - Single procedure
    - CAK = 5 Gy
    - This patient receives discharge instructions



# Tribulations...

- Patient comes in as level 1 patient

Epic | What's new? | My Reports | Radiation Tracking | Patient Station | Releases | ROI Report | Anc Orders | Unsigned Studies | Imaging Reports | Patient Films | Appts | Study History | Research Studies

Reports

Status Board - SH RAD UF IR - Visc North [228072] for 5/1/2020

Holding Visc North Visc South Neuro Other More Reports

Find Open Case Expand Open Chart Events Refresh Show Headers Legend Settings OR Reports Assign Bed Request

IR NT RM11	IR NT RM14	IR Z VISCERAL
<p>Angiogram Embolization TheraSpheres, Hepatic</p> <p>IR NT Hold</p> <p>Pre Orders Intra Orders</p> <p>Visceral</p> <p>Closing</p> <p>Angiogram TheraSpheres, Hepatic</p> <p>IR NT Hold</p> <p>Consented Pre Orders Intra Orders</p> <p>Visceral</p> <p>Patient Ready</p> <p>Dialysis Catheter Tunneled Placement</p> <p>Consented</p> <p>In Facility</p> <p>IR NT RM13</p> <p>Cholangiogram Right, Right</p> <p>Pre Orders Intra Orders</p> <p>Visceral</p> <p>In Room</p>	<p>Dialysis Catheter Trialysis Placement Plasmapheresis. Patient with MS and optic neuritis.</p> <p>Consented</p> <p>Visceral</p> <p>Out of Room</p> <p>G/J Tube Exchange 87M w/ surgical J tube (foley) recently converted to IR balloon J-tube. Pt w/</p> <p>Consented</p> <p>Visceral</p> <p>Percutaneous Nephrostomy Coronavirus Covid-19 By Naa Placement, Right, Right</p> <p>UB4612</p> <p>Pre Orders Intra Orders</p> <p>Visceral</p> <p>On-Hold</p> <p>Pre-op Complete</p> <p>Dialysis Catheter Tunneled Placement Nonglucuric AKI on CKD</p> <p>Consented</p> <p>Visceral</p>	<p>Dialysis Catheter Tunneled Placement SELECT pt, temp HD catheter placed at NFMRC, holding Plavix</p> <p>Consented</p> <p>Visceral</p> <p>Powerline Placement, Single 6 weeks IV antibiotics. Blood culture + pseudomonas and stenotrophomonas.</p> <p>Consented</p> <p>Visceral</p> <p>Contact isolation</p> <p>Consented</p> <p>Prev On-Hold</p> <p>Cvt Infusaport Removal, Single Concern for port infection; pain at side. Removal of infusaport. Accessed</p> <p>Consented</p> <p>Visceral</p> <p>Compromised host precautions</p> <p>Consented</p> <p>On-Hold</p> <p>G Tube Placement G tube placement for atovaquone, patient with vomiting.</p> <p>Consented</p> <p>Visceral</p> <p>Compromised host precautions</p> <p>Consented</p> <p>On-Hold</p>

Epic | What's new? | My Reports | Radiation Tracking | Patient Station | Releases | ROI Report | Anc Orders | Unsigned Studies | Imaging Reports

Reports

Status Board - SH RAD UF IR - Visc South [228080] for 5/1/2020

Holding Visc North Visc South Neuro Other More Reports

Find Open Case Expand Open Chart Events Refresh Show Headers

IR ST RM1	IR Z SOUTH
<p>Angiogram Embolization, Mesenteric Provocative angiogram</p> <p>Anesthesia Mohamed, Basma Abdalla, Visceral</p> <p>Consented</p> <p>Incision</p> <p>Cholangiogram Right, Right Cholangiogram 4/22/2020 with occlusion of the distal common bile duct stent. Plan for sharp</p> <p>Anesthesia Mohamed, Basma Abdalla, Visceral</p> <p>On-Hold</p> <p>IR Z SOUTH</p> <p>Percutaneous Nephrostomy In OriCysto Exchange, Right, Right</p> <p>UA PERIOD</p> <p>Consented</p> <p>Visceral</p> <p>Percutaneous Nephrostomy In OriCysto Placement, Left, Left</p> <p>Consented</p> <p>Visceral</p> <p>G Tube Placement GJ placement through duodenal stent. Caloric needs. Perianal mass.</p> <p>Consented</p> <p>Visceral</p>	<p>Powerline Placement, Double Dual lumen power line for ionotropes and blood draw. Patient with acute on</p> <p>Visceral</p> <p>Percutaneous Nephrostomy In OriCysto Placement, Left, Left</p> <p>Consented</p> <p>Visceral</p> <p>Powerline Dialysis Catheter Tunneled Placement, Single Single lumen power line for IV abx. ESRD on HD. Currently with</p> <p>Consented</p> <p>Visceral</p>



# Tribulations...

- CAK must pass from unit to PACS to the dose tracking software and then back to EPIC
- EPIC then sums fields for each procedure
  - Takes time
  - Requires closing exam

Status Board - SH RAD UF IR - Visc South [228080] for 2/13/2019

Holding Visc North Visc South Neuro Other More Reports Find Open Case Expand Open Chart Events Refresh Show

IR ST RM1	IR Z SOUTH
<p>IR NT Hold IR NT Hold Pool</p> <p>Anesthesia Zaslavovich, Yuri, MD Visceral</p> <p>Consented Pre Orders Patient Sent For</p>	<p>UB4750</p> <p>3,026.83 mGy Visceral</p> <p>Contact isolation, Enhanced Contact Isolation</p> <p>Consented On-Hold</p>
<p>UA4106</p> <p>Anesthesia Zaslavovich, Yuri, MD Visceral</p> <p>Consented In Facility</p>	<p>7539</p> <p>Consented On-Hold Visceral</p>



# Tribulations...

- Techs often do not close exams for long time post-procedure
- Techs will not manually sum up CAK
- Misunderstood discharge paperwork policy years ago
- Currently, only patients who receive single SRDL receive discharge instructions

Status Board - SH RAD UF IR - Visc South [228080] for 2/13/2019

Holding	Visc North	Visc South	Neuro	Other	More Reports	Find	Open Case	Expand	Open Chart	Events	Refresh	Show
---------	------------	------------	-------	-------	--------------	------	-----------	--------	------------	--------	---------	------

IR ST RM1		IR Z SOUTH	
IR NT Hold IR NT Hold Pool		UB4750	
Anesthesia Zaslavich, Yuri, MD		Contact isolation, Enhanced Contact Isolation	
Consented Pre Orders		Consented On-Hold	
Patient Sent For		3,026.83 mGy Visceral	
UA4106		7539	
Anesthesia Zaslavich, Yuri, MD		Consented On-Hold	
Visceral		Visceral	
In Facility			



# Tribulations...

---

- Customizing dose tracking software
  - Thought of as a “magic box” of sorts
    - Link it with the systems, it takes care of everything else
  - In practice, for effective system, lots of upfront work and continuing maintenance is needed



# Tribulations...

- Customizing dose tracking software
  - Six-month longitudinal dose tracking ability

Studies in Report						
Search...						
Study Date	Patient	MRN	Modality	Accession	Description	Dose 1 Dose 2
					IR ANGIOGRAM	6064.01 -
					IR ANGIOGRAM	5855.8 -
					IR ANGIOGRAM	5742.35 -
					UNSCHEDULED PROCEDURE	5628.2 -
					IR TIPS	5554.8 -
					IR THERAPEUTIC INTERVENTION	5351.8 -
					IR THERAPEUTIC INTERVENTION	5351.8 -
					IR ANGIOGRAM	5312.45 -
					IR TIPS	5289.1 -
					IR TIPS	5289.1 -
					IR THERAPEUTIC INTERVENTION	5285.35 -
					IR ANGIOGRAM	5252.62 -
					UNSCHEDULED PROCEDURE	5147.08 -
					IR TIPS	5144.89 -
					IR ANGIOGRAM	5139.33 -
					IR ANGIOGRAM	5075.37 -
					IR ANGIOGRAM	5023.76 -
					UNSCHEDULED PROCEDURE	5003.26 -
					IR ANGIOGRAM	4995.81 -

NEXO™ [dose]

Multi-Modality Radiation Informatics

Home

Search

Analytics

Alerts 14

Admin

BRACCO

Patient History

Patient

Name

MRN

Issuer

Master ID

Date of Birth

Sex

Dose

Last 365 Days

Total

Dose (RP):

13582.63 mGy

13582.63 mGy

Export

Report

Alerts

Refresh from PACS

Computed Tomography (CT)

Date/Time	Accession	Description	CTDIvol Mean (mGy)	DLP (mGy.cm)	SSDE (mGy)	Stationary CTDIvol (mGy)
		CTA CHEST ABDOMEN PELVIS W/O & W IV CON	23.65	2533.71	25	93.34

X-Ray Angiography (XA)

Date/Time	Accession	Description	Fluoro Time (sec)	Dose (RP) (mGy)	Acquisition Dose (RP) (mGy)	Fluoro Dose (RP) (mGy)	DAP (dGy.cm²)
		IR THERAPEUTIC INTERVENTION	3064	5351.8	1582.34	3769.46	7414.31
		Spine	66	97.04	9.69	87.35	90.13
		IR LUMBAR PUNCTURE	66	97.04	9.69	87.35	90.13
		IR THERAPEUTIC INTERVENTION	837	2002.29	1193.06	809.23	2604.17
		IR ANGIOGRAM	491	1644.03	1395.6	248.43	2817.64
		IR THERAPEUTIC INTERVENTION	1963	4390.43	2363.77	2026.66	6148.31



# Tribulations...

- Customizing dose tracking software
  - Six-month longitudinal dose tracking ability

Date	Patient	Studies	In Days	Dose Type	Total	Rule	Ack User	Action
				Dose (RP)	5614.95	XA Cumulative Dose(RP) > 5 Gy in 180 days	-	

Reply Reply All Forward



Mon 5/4/2020 6:17 PM

support@pacshealth.com

US-FL-UFH-SH-ENT-NX Patient Total Dose Threshold Exceeded at Shands Cancer Hospital

To Rill, Lynn N.; Schwarz, Bryan C.; Hagle, Lara; Olguin, Edmond A; Shankar Pookotte Alan, Alok

Retention Policy SHANDS\_7 Day Expire and Reduce Deleted Items (1 week)

Expires 5/11/2020

This item will expire in 5 days. To keep this item longer apply a different Retention Policy.

A patient at Shands Cancer Hospital on device GNV ST IR 1 accumulated a total Dose (RP) of 5614.95 mGy which exceeds a threshold of 5000 within the last 180 days. Use the following link to view notification details. <http://10.14.132.91/NX/Alerts/PatientAlert/Edit/778>



# Tribulations...

- Customizing dose tracking software
  - Integrations – EPIC, PowerScribe

**NEXO [DOSE]**  
Multi-Modality Radiation Informatics

Home Search Analytics Alerts 8 Admin

**Study Details**

**Patient**

Name: [REDACTED]  
MRN: [REDACTED]  
Issuer: [REDACTED]  
Master ID: [REDACTED]  
Date of Birth: [REDACTED]  
Age at Study: [REDACTED]  
Sex: [REDACTED]  
Height: [REDACTED]  
Weight: [REDACTED]

**Dose**

Fluoro Time: 1925 sec  
Dose (RP): 1698.19 mGy  
Acquisition Dose (RP): 554.53 mGy  
Fluoro Dose (RP): 1143.65 mGy  
DAP: 4564.75 dGy.cm<sup>2</sup>

**Study**

Date/Time: [REDACTED]  
Accession: [REDACTED]  
Study ID: [REDACTED]  
Referring Phys.: [REDACTED]  
Last Update: [REDACTED]

**Procedure**

Common Name: RP GUIDE TIPS PLACEMENT (Edit)  
Description: IR TIPS  
Device: GNV ST IR 1 (Edit)  
Facility: Shands Cancer Hospital  
Operator: [REDACTED]  
Performing Phys.: [REDACTED]

**Skin Dose**

Peak Skin Dose: **1.38 Gy**

> 0 Gy: 845.52 cm<sup>2</sup>   > 3 Gy: 0 cm<sup>2</sup>   > 5 Gy: 0 cm<sup>2</sup>   > 10 Gy: 0 cm<sup>2</sup>

**Series**

Series	Device	Description	Images	Dose (RP) (mGy)	kVp (kV)	mA Mean (mA)	Data Source	Details
Total: A	GNV ST IR 1	Accumulated X-Ray Dose Data (Single Plane)	106	1698.19	-	-	SR	View

UF RAD Physics Weekly Radiation Report - Physics [10817180] as of Wed 4/29/2020 11:03 AM

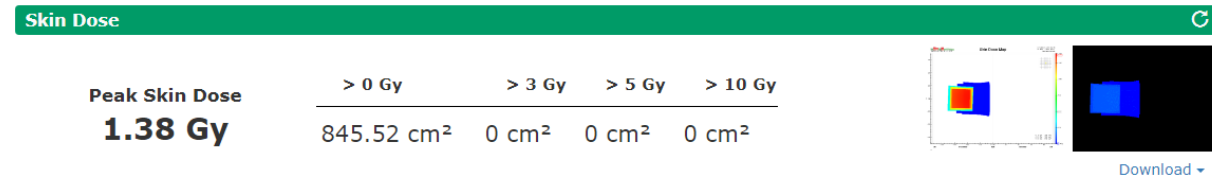
Filters Options Study Review Rel Priors Audit Trail

Appt Date	Dose (Order-Level)	6 Month Total Dose (To Date)	Name	MRN	Accession #	Service	Performing Physician	Technologist	Appt Resource	Dose (Order-Level)
	1,698.19 mGy					Visceral			IR ST RM1	9
						Visceral			IR ST RM1	9
	3,058.3 mGy					Visceral			IR ST RM1	-3
						Visceral			IR ST RM1	5
	320.62 mGy								GENERIC IMAGING FL	
									GENERIC IMAGING IR	
						Visceral			IR NT RM11	-1
	3,439.12 mGy					Visceral			IR Z VISCERAL	
						Visceral			IR NT RM16	96
	984.29 mGy					Visceral			IR NT RM16	96
	0 mGy					Visceral			IR NT RM15	0
	804.58 mGy					Visceral			IR NT RM16	90
						Visceral			IR NT RM16	90
	1,098.69 mGy					Visceral			IR NT RM11	2
									GENERIC IMAGING IR	
									GENERIC IMAGING IR	
	1,004.04 mGy					Visceral			IR NT RM13	91
						Visceral			IR NT RM13	91
	1,868.45 mGy								IR UB HYB OR 11	
	5,139.33 mGy					Visceral			IR NT RM11	
						Visceral			IR NT RM11	
						Visceral			IR NT RM11	
	529.8 mGy					Visceral			IR NT RM13	



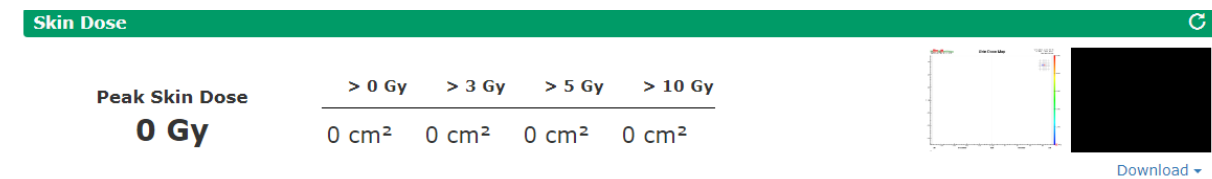
# Tribulations...

- Peak skin dose calculations
  - Inherent accuracy of calculation
  - Room-by-room custom table transmission factors
  - Vendor-specific issues



**Series**

Series	Device	Description	Images	Dose (RP) (mGy)	kVp (kV)	mA Mean (mA)	Data Source	Details
Total:A	GNV ST IR 1	Accumulated X-Ray Dose Data (Single Plane)	106	1698.19	-	-	SR	<a href="#">View</a>



**Series**

Series	Device	Description	Images	Dose (RP) (mGy)	kVp (kV)	mA Mean (mA)	Data Source	Details
Total:A	GNV NT IR Room 13	Accumulated X-Ray Dose Data (Single Plane)	154	1352.16	-	-	SR	<a href="#">View</a>



# Tribulations...

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- Multi-site incorporation and server issues
  - Missing patients
  - Lengthy time between procedure close and email alert (days, in some instances)
  - Some patients missing appropriate paperwork
  - Solution: New server
    - Single server purchased to handle both UF Gainesville and Jacksonville CT and fluoroscopy dose management
    - Server issue fixed with upgraded 8-core server
    - No longer server sharing between sites



# Tribulations...

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- Physician and administrative issues
  - Cost
  - Physician approval



# Tribulations...

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- Physician and administrative issues
  - In contrast with the TJC fluoroscopy sentinel event standard, Stecker et al. (2009) recommends different timelines with respect to longitudinally tracking CAK
    - **Society of Interventional Radiology (SIR) recommends longitudinal dose tracking on fluoroscopic procedures of the same anatomic region within 60 days**