The ACR-SIR Fluoroscopy Dose Index Registry Pilot

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Disclosure

- A. Kyle Jones is President of FluoroSafety, a company that produces CME on quality and safety in medical imaging

- FluoroSafety will not be discussed in this talk (but a bit of artwork will be used)

In the beginning

- On the way to Grouse Mountain in Vancouver during WAIS 2015
- Jeremy Durack asked a few basic questions about dose indices for the IR Registry
- One thing led to another…

The ACR NRDR


MIPS QCDR
Qualified Clinical Data Registry »
NRDR LCSR™ Lung Cancer Screening Registry
American College of Radiology
Lung Cancer Screening Registry »
NRDR DIR® Dose Index Registry
American College of Radiology
Dose Index Registry »
NRDR IR Interventional Radiology Registry™
American College of Radiology
Society of Interventional Radiology
Interventional Radiology Registry »
NRDR NMD® National Mammography Database
American College of Radiology
National Mammography Database »
NRDR GRID® General Radiology Improvement Database
General Radiology Improvement Database »
NRDR CTC™ CT Colonography Registry
American College of Radiology
CT Colonography Registry »
NRDR CDS™ Clinical Decision Support R-SCAN Registry
American College of Radiology
CDS R-SCAN Registry »

Normative datasets

- Comparison of facility data to a normative dataset allows a practice to understand their performance relative to their peers

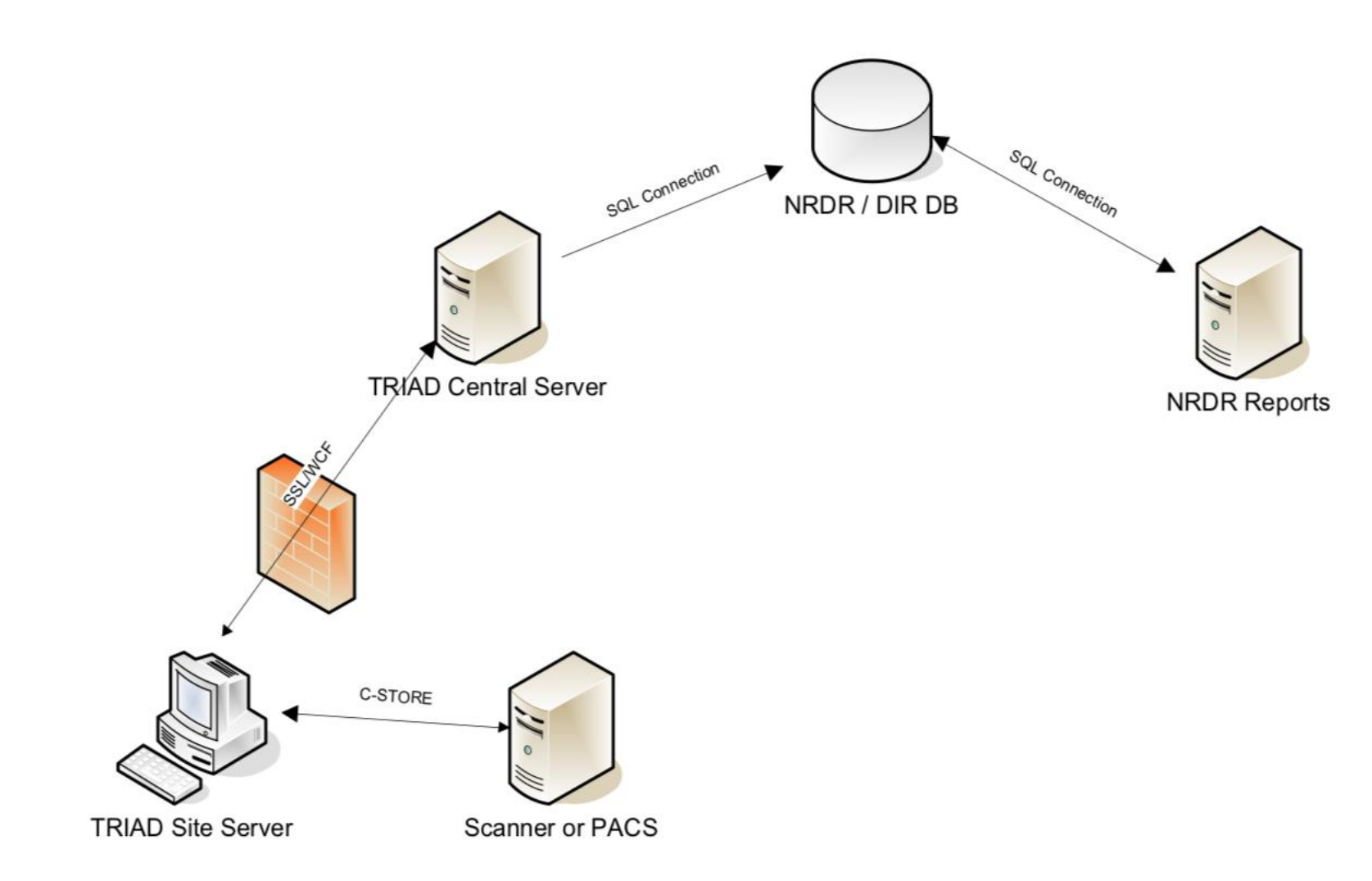
- The most well-known normative dataset is probably the ACR CT DIR
  - Currently more than 80M exams in the CT DIR

The need for a registry

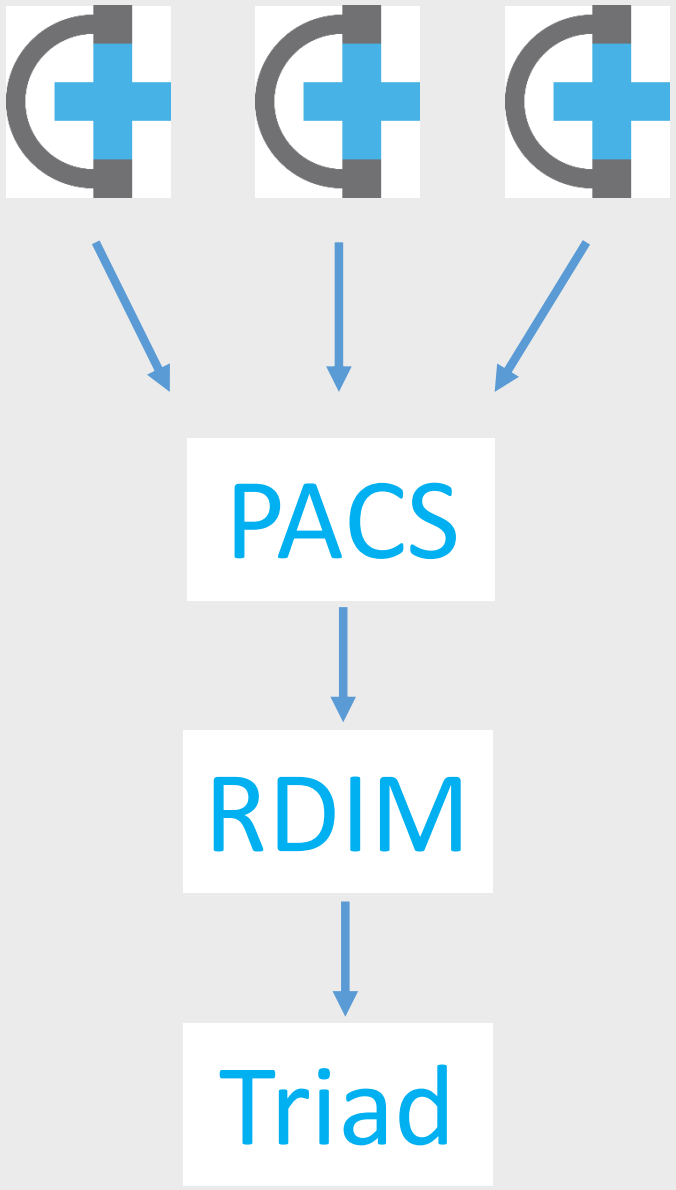
- The RAD-IR study is the largest normative dataset for FGI
- Data for RAD-IR was collected in the mid- to late 1990s
  - 2,142 procedures
  - Single fluoroscope make and model (Siemens Multistar/Neurostar, pulsed/continuous fluoro, fixed 0.2 mm Cu filter for fluoro and small ACQ beam paths, XRII)
  - Herculean manual effort
- Substantial changes since the data collection period of RAD-IR
  - Scope and number of FGI
  - Mandatory reporting of $K_{a,r}$
  - RDSR
  - Technological advances, including variable added filtration, FPD, etc.

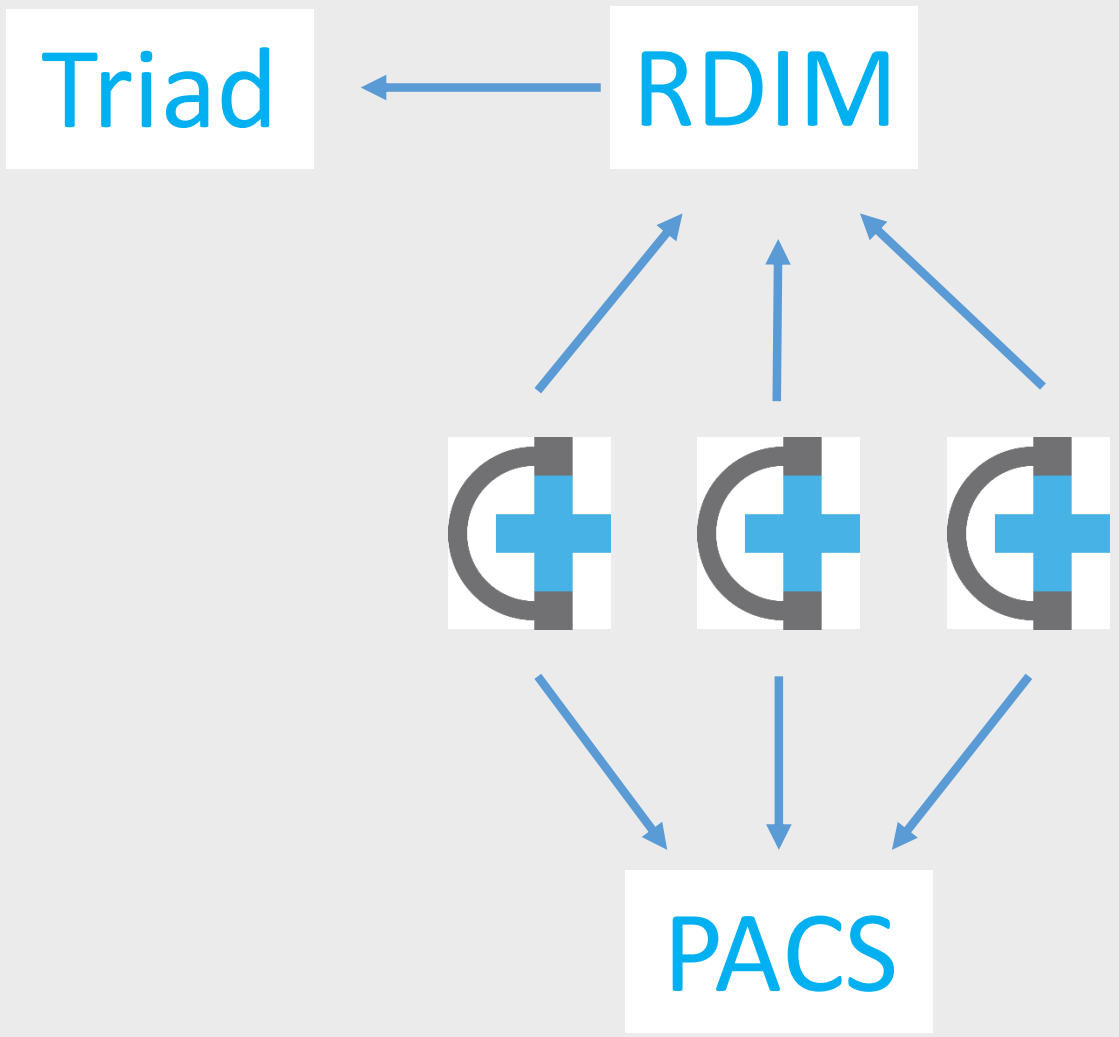
Integrating with the DIR

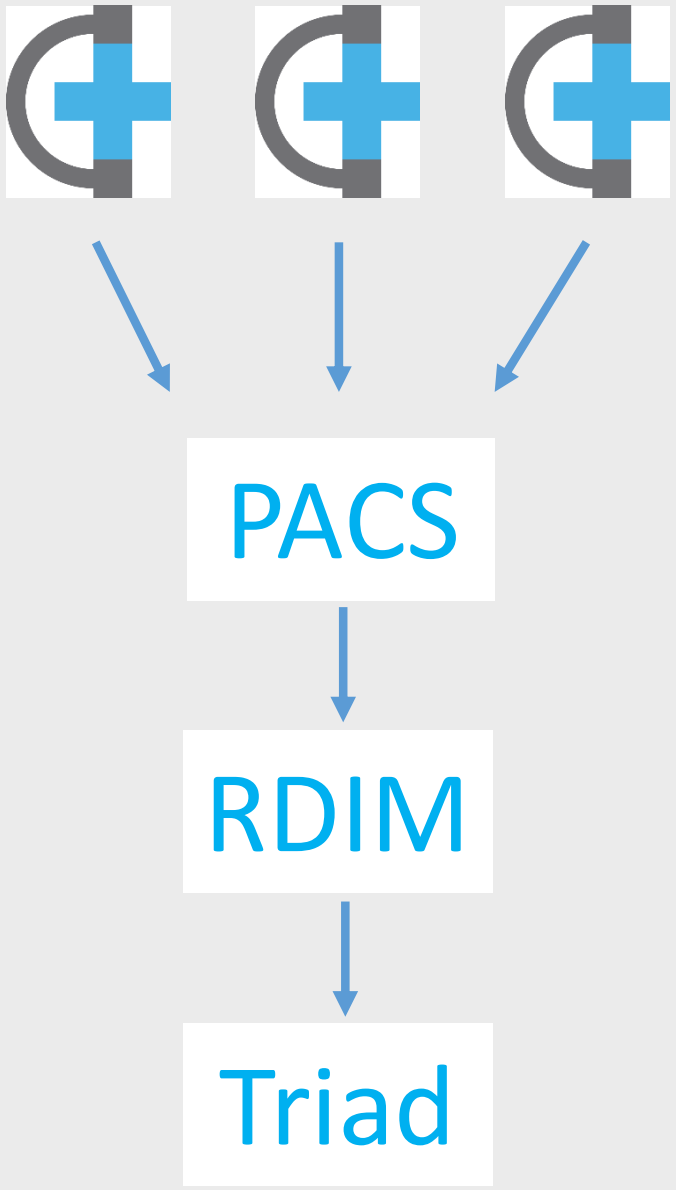
- Directly through the ACR Triad server
- Via RDIM system as an intermediary
  - RDIM may not, by default, simply pass through the RDSR
- Connecting systems to an RDIM
  - Auto-forward from PACS
  - Send directly from modalities
  - May require vendor assistance for back-end configuration



Triad User Guide


PACS
RDIM
Triad


Triad
RDIM
PACS


PACS
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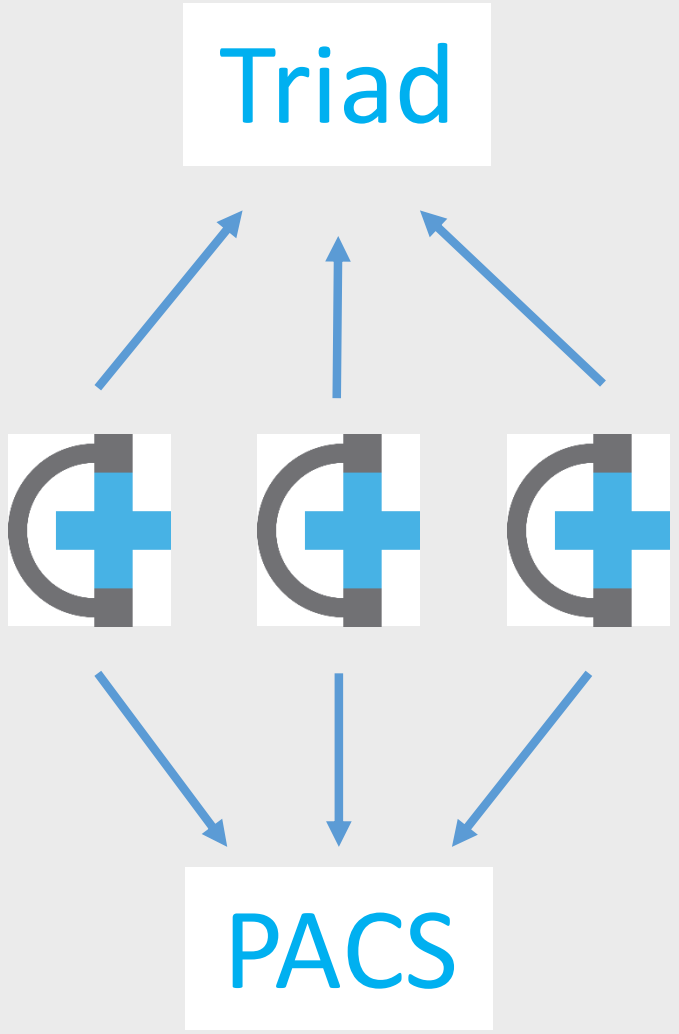

Triad
PACS

Radiation dose structured report (RDSR)

- Granular, detailed information
  - Every exposure event
  - Can soon contain calibration information for dose measuring device (NEMA XR-27)
- Often sent to Radiation Dose Index Monitoring (RDIM) system
  - PACS do not display in useful way
- Sites participating in DIR send RDSR to ACR via Triad

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	radiation Event Type	quisition Protocol	Area Product (Gy/m	ure (RP) (Gy	timer Primary Angle (n	ner Secondary Angle	X-Ray Filter Material	ay Filter Thickness Minimum (m	luoro Mode	ulse Rate (pulse/	umber of Pulses (numbe	kVP (kV	Ray Tube Current (m	xposure Time (ms	ulse Width (ms	xposure (uR
2	Fluoroscopy	FL Angio 7.5	0.000002	0.00005	179.2	0.3	Copper or Copper compound	0.2	Pulsed	7.5	3	70	92.9	23.7	7.9	2201
3	Fluoroscopy	FL Angio 7.5	0.000066	0.0018	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	90	68	106.9	927	10.3	99096
4	Fluoroscopy	FL Angio 7.5	0.000026	0.00071	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	35	68	108.8	360.5	10.3	39222
5	Fluoroscopy	FL Angio 7.5	0.000019	0.00051	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	25	68	110.6	257.5	10.3	28479
6	Fluoroscopy	FL Angio 7.5	0.000002	0.00004	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	2	68	106	21	10.5	2226
7	Fluoroscopy	FL Angio 7.5	0.000039	0.00106	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	57	68	101.2	587.1	10.3	59414
8	Fluoroscopy	FL Angio 7.5	0.000001	0.00004	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	2	68	102.5	20.8	10.4	2132
9	Fluoroscopy	FL Angio 7.5	0.00002	0.00054	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	28	68	104.9	285.6	10.2	29959
10	Fluoroscopy	FL Angio 7.5	0.000043	0.00116	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	59	68	107.6	607.7	10.3	65388
11	Fluoroscopy	FL Angio 7.5	0.00003	0.00082	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	42	68	106.4	432.6	10.3	46028
12	Fluoroscopy	FL Angio 7.5	0.000046	0.00127	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	63	68	109.8	642.6	10.2	70557
13	Fluoroscopy	FL Angio 7.5	0.000046	0.00125	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	64	68	106.6	652.8	10.2	69588
14	Fluoroscopy	FL Angio 7.5	0.00016764	0.00458	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	233	68	106.8	2399.9	10.3	256309
15	Fluoroscopy	FL Angio 7.5	0.000047	0.00127	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	65	68	106.4	669.5	10.3	71234
16	Fluoroscopy	FL Angio 7.5	0.000046	0.00125	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	65	68	104.7	663	10.2	69416
17	Fluoroscopy	FL Angio 7.5	0.000019	0.00053	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	27	68	107.1	275.4	10.2	29495
18	Fluoroscopy	FL Angio 7.5	0.000004	0.00012	179.2	0.3	Copper or Copper compound	0.2	Pulsed	7.5	5	70	102.4	51.5	10.3	5273
19	Fluoroscopy	FL Angio 7.5	0.000018	0.00058	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	21	68	147.9	216.3	10.3	31990
20	Fluoroscopy	FL Angio 7.5	0.000042	0.00135	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	48	68	150.9	494.4	10.3	74604
21	Fluoroscopy	FL Angio 7.5	0.000003	0.00009	179.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	3	68	161.8	30.6	10.2	4951
22	Fluoroscopy	FL Angio 7.5	0.000001	0.00004	172.9	0.3	Copper or Copper compound	0.2	Pulsed	7.5	2	70	94	20.6	10.3	1936
23	Fluoroscopy	FL Angio 7.5	0.000043	0.00119	172.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	50	68	130.5	515	10.3	67207
24	Fluoroscopy	FL Angio 7.5	0.00011305	0.00313	172.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	133	68	128.4	1369.9	10.3	175895
25	Fluoroscopy	FL Angio 7.5	0.000048	0.00132	172.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	56	68	128.2	576.8	10.3	73945
26	Fluoroscopy	FL Angio 7.5	0.00004	0.00111	172.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	48	68	125.5	494.4	10.3	62047
27	Fluoroscopy	FL Angio 7.5	0.000037	0.00103	172.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	44	68	128.3	453.2	10.3	58145
28	Fluoroscopy	FL Angio 7.5	0.000057	0.00157	172.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	66	68	129.8	679.8	10.3	88238
29	Fluoroscopy	FL Angio 7.5	0.000012	0.00033	172.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	14	68	126.8	145.6	10.4	18462
30	Fluoroscopy	FL Angio 7.5	0.000035	0.00096	172.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	39	68	135.5	397.8	10.2	53901
31	Fluoroscopy	FL Angio 7.5	0.000061	0.00168	172.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	68	68	135.4	700.4	10.3	94834
32	Fluoroscopy	FL Angio 7.5	0.000004	0.0001	172.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	4	68	134.9	41.6	10.4	5611
33	Fluoroscopy	FL Angio 7.5	0.000003	0.00008	172.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	3	68	138.3	30.6	10.2	4231
34	Fluoroscopy	FL Angio 7.5	0.000047	0.00129	172.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	50	68	141.1	515	10.3	72666
35	Fluoroscopy	FL Angio 7.5	0.00010587	0.00293	172.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	114	68	139.8	1174.2	10.3	164153
36	Fluoroscopy	FL Angio 7.5	0.000045	0.00119	-179.7	0.3	Copper or Copper compound	0.3	Pulsed	7.5	47	68	138.9	484.1	10.3	67241
37	Fluoroscopy	FL Angio 7.5	0.000017	0.0012	-179.7	0.3	Copper or Copper compound	0.3	Pulsed	7.5	31	68	203.2	319.3	10.3	64881
38	Fluoroscopy	FL Angio 7.5	0.000036	0.00269	165.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	69	68	202.1	710.7	10.3	143632
39	Fluoroscopy	FL Angio 7.5	0.000018	0.00136	165.9	0.3	Copper or Copper compound	0.3	Pulsed	7.5	32	68	220.5	332.8	10.4	73382
40	Fluoroscopy	FL Angio 7.5	0.000032	0.00234	-175.5	0.3	Copper or Copper compound	0.3	Pulsed	7.5	56	68	215.6	576.8	10.3	124358
41	Fluoroscopy	FL Angio 7.5	0.000031	0.00227	-167.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	56	68	210	582.4	10.4	122304
42	Fluoroscopy	FL Angio 7.5	0.000011	0.00079	-167.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	17	68	239.2	175.1	10.3	41883
43	Fluoroscopy	FL Angio 7.5	0.000025	0.00186	-167.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	40	68	238.8	416	10.4	99340
44	Fluoroscopy	FL Angio 7.5	0.000018	0.00136	-167.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	30	68	233.5	309	10.3	72151
45	Fluoroscopy	FL Angio 7.5	0.000027	0.00197	-167.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	44	68	230.7	453.2	10.3	104553
46	Fluoroscopy	FL Angio 7.5	0.00003	0.00223	-167.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	50	68	230.6	515	10.3	118759
47	Fluoroscopy	FL Angio 7.5	0.000015	0.00111	-167.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	24	68	239	249.6	10.4	59654
48	Fluoroscopy	FL Angio 7.5	0.00002	0.00148	-167.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	33	68	232.8	339.9	10.3	79128
49	Fluoroscopy	FL Angio 7.5	0.000039	0.00292	-167.2	0.3	Copper or Copper compound	0.2	Pulsed	7.5	50	70	189.2	515	10.3	97438
50	Fluoroscopy	FL Angio 7.5	0.000002	0.00017	-167.2	0.3	Copper or Copper compound	0.2	Pulsed	7.5	3	70	184.9	30.9	10.3	5713
51	Fluoroscopy	FL Angio 7.5	0.000001	0.00005	-167.2	0.3	Copper or Copper compound	0.2	Pulsed	7.5	1	70	166.7	11.7	11.7	1950
52	Fluoroscopy	FL Angio 7.5	0.000004	0.00033	166.2	0.3	Copper or Copper compound	0.2	Pulsed	7.5	8	70	151.5	80.8	10.1	12241
53	Fluoroscopy	FL Angio 7.5	0.000014	0.00106	166.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	25	68	220.5	257.5	10.3	56778
54	Fluoroscopy	FL Angio 7.5	0.000013	0.00096	166.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	23	68	216.6	236.9	10.3	51312
55	Fluoroscopy	FL Angio 7.5	0.00001	0.00073	166.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	17	68	222.6	176.8	10.4	39355
56	Fluoroscopy	FL Angio 7.5	0.000004	0.00027	166.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	6	68	228.3	63	10.5	14382
57	Fluoroscopy	FL Angio 7.5	0.000016	0.00118	166.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	28	68	216.9	288.4	10.3	62553
58	Fluoroscopy	FL Angio 7.5	0.000006	0.00043	166.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	10	68	221.3	104	10.4	23015
59	Fluoroscopy	FL Angio 7.5	0.000002	0.00012	166.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	3	68	221.6	30.9	10.3	6847
60	Fluoroscopy	FL Angio 7.5	0.000004	0.00029	166.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	7	68	208.8	74.2	10.6	15492
61	Fluoroscopy	FL Angio 7.5	0.000003	0.00025	166.2	0.3	Copper or Copper compound	0.3	Pulsed	7.5	6	68	221.5	61.8	10.3	13688

Patients | Dose Events

NEMA XR-27

- X-ray Equipment for Interventional Procedures User Quality Control Mode
  - Manual selection of X-ray parameters
  - Access to and export of FOR PROCESSING and FOR PRESENTATION images
  - **Single point calibration factor for dose indices**
  - Electronic documentation of system configuration
  - Access to RDSR in all scenarios
- Report of AAPM TG 190 provides the method for measuring the calibration factor
- Not universally available at the current time

Mechanics

- Participate in the ACR NRDR
  - Participation agreement and registry application signed
  - Triad server installed and configured
- Configure your IR fluoroscopes to send data to the Triad server
  - Directly or via RDIM
  - RDSR only
- Map your procedures to ACR Common™

On Friday, May 31, Michael Simanowith, MD, ACR's director of registries, sent an email to selected Dose Index Registry (DIR) participants. I share it with my AAPM colleagues below because I believe medical physicists can provide value to their imaging clinics by assisting with the upcoming change in how the DIR will be receiving and processing dose index data. Our FAQs on the NEMA XR-29 Standard can be found here.

Dear DIR Participant,
Thank you for your ongoing participation in the American College of Radiology's (ACR) Dose Index Registry (DIR). Your participation in the registry not only affects quality improvement at your own facility, but also establishes benchmarks that other facilities use for performance comparison and ultimately to reduce unnecessary patient radiation exposure across all participant sites.

When we launched the DIR in 2011 few CT scanners were capable of generating Radiation Dose Structured Reports (RDSRs). Therefore, we accepted exams directly from a RDSR as well as from secondary capture images (without RDSR). In the years since the registry launch, and with the implementation of the XR-29 standard on CT scanners, most scanners submitting DIR data are now capable of producing RDSRs. In addition, the secondary capture method has proven to be less effective than RDSR in terms of data quality, information processing time, and resource support requirements. In response to the industry technology changes, and to the overall limitations of secondary capture, we would like to transition DIR support to RDSR submission only. Consequently, we are requesting that all sites shift submission of all of their registry data to the RDSR format as soon as possible.

Your site is one of several identified as sending secondary capture images without RDSRs in the past three months. As such, we ask that you switch over to RDSR transmission by **September 3, 2019**. Though we would prefer to receive the RDSR message exclusively, we can accept an accompanying secondary capture (it will not be processed) in the event your system mandates sending both.

The continued success of the Dose Index Registry and the resulting improvement in radiological quality is dependent on active participation by sites such as yours. We realize that making this change may result in modifications to your processes/systems with potential effort required by you. ACR thanks you in advance for your willingness to consider this change. If you have barriers to sending the RDSR we will be more than happy to work with you in an attempt to overcome these issues. Please contact the National Radiology Data Registry support team for assistance.

ACR Common

- Ontology for radiology procedures
  - Leverages existing ontologies and coding schemes
  - Organized around fundamental and derived axes such as scenario, procedure, and finding
  - Includes indications and more details about the procedure

- Updated based on experience during the pilot phase

Will ACR Common replace or compete with existing taxonomies such as Radlex?

No. ACR Common will link where possible and appropriate to existing terminologies. However, it will evolve continuously to meet market demand, maintaining linkages to existing terminologies where possible and informing those efforts along the way.

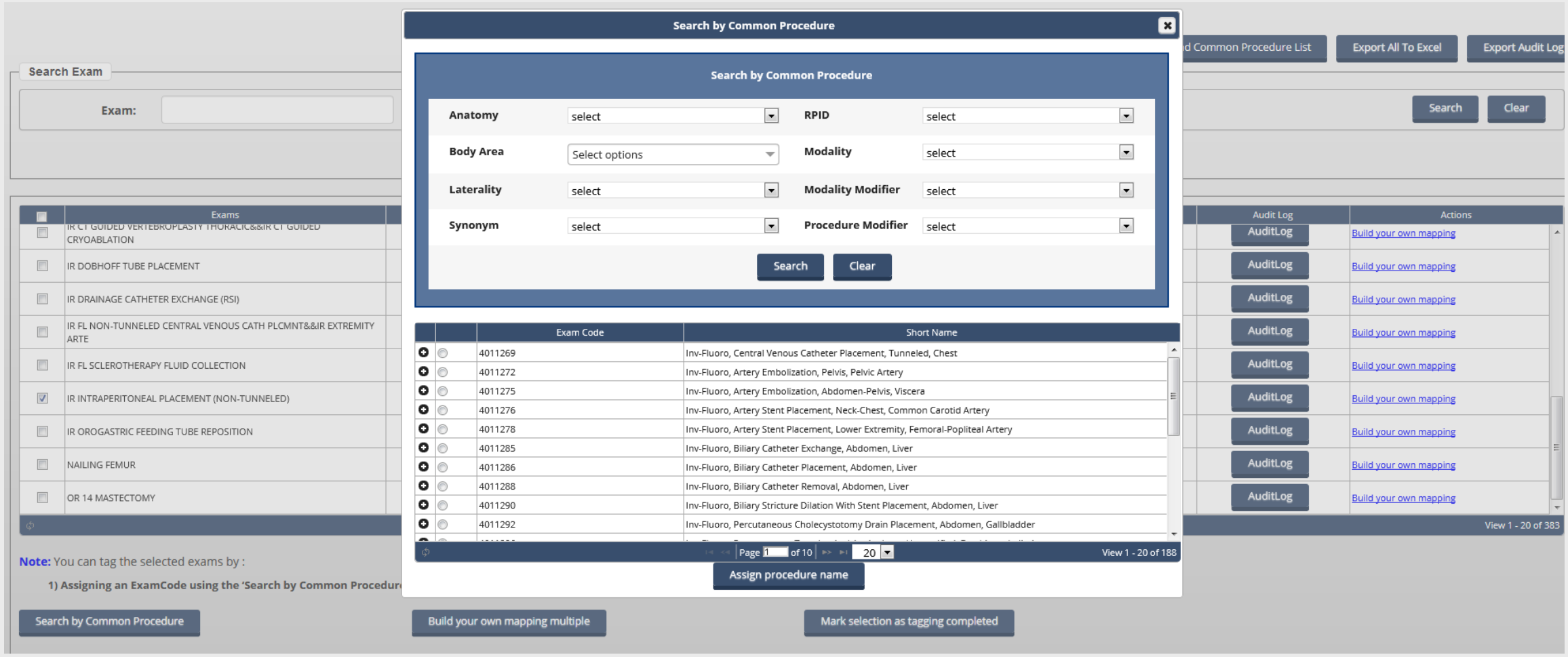
What's the difference between RSNA RADLEX Playbook and the ACR Common Procedure dimension?

By design, they are close with the intention of maintaining a crosswalk for those standardizing on Playbook terminology. However, because ACR Common is tied heavily to heterogeneous production systems and dynamic products and services, it will continue to evolve at a rate that will exceed the processes employed by consensus-driven standards bodies. That community standards process is a long-run necessity but typically a short-run challenge.

In the case of Playbook, the procedure axis of ACR Common fills the immediate market gap for those not standardized on Playbook and can serve to inform the evolution of Playbook over time so that effort continues to evolve to meet market demand.

This iterative development process is a reflection of market reality and the balance between solving immediate production problems while charting a long-run path for the industry. Similar coordination will occur along the other axes of Common with other consensus-driven standards bodies.

Because we map to Playbook, organizations that adopt Playbook as their charge master will not have to do any additional mappings to consume ACR Common-enabled products and services.


Search by Common Procedure
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Synonym
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Short Name
4011269
Inv-Fluoro, Central Venous Catheter Placement, Tunneled, Chest
4011272
Inv-Fluoro, Artery Embolization, Pelvis, Pelvic Artery
4011275
Inv-Fluoro, Artery Embolization, Abdomen-Pelvis, Viscera
4011276
Inv-Fluoro, Artery Stent Placement, Neck-Chest, Common Carotid Artery
4011278
Inv-Fluoro, Artery Stent Placement, Lower Extremity, Femoral-Popliteal Artery
4011285
Inv-Fluoro, Biliary Catheter Exchange, Abdomen, Liver
4011286
Inv-Fluoro, Biliary Catheter Placement, Abdomen, Liver
4011288
Inv-Fluoro, Biliary Catheter Removal, Abdomen, Liver
4011290
Inv-Fluoro, Biliary Stricture Dilation With Stent Placement, Abdomen, Liver
4011292
Inv-Fluoro, Percutaneous Cholecystotomy Drain Placement, Abdomen, Gallbladder
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20
View 1 - 20 of 188
Assign procedure name
Search Exam
Exam:
Search
Clear
Export All To Excel
Export Audit Log
Exams
Audit Log
Actions
IR DOBHOFF TUBE PLACEMENT
IR DRAINAGE CATHETER EXCHANGE (RSI)
IR FL NON-TUNNELED CENTRAL VENOUS CATH PLCMNT&&IR EXTREMITY ARTE
IR FL SCLEROTHERAPY FLUID COLLECTION
IR INTRAPERITONEAL PLACEMENT (NON-TUNNELED)
IR OROGASTRIC FEEDING TUBE REPOSITION
NAILING FEMUR
OR 14 MASTECTOMY
AuditLog
Build your own mapping
View 1 - 20 of 383
Note: You can tag the selected exams by :
1) Assigning an ExamCode using the 'Search by Common Procedur
Search by Common Procedure
Build your own mapping multiple
Mark selection as tagging completed

Not perfect

- Interpretation of data in a registry must take into account how the data is collected, processed, and what the data represents
  - Design and configure to reduce variability as much as possible

- E.g., $CTDI_{vol}$ and DLP for CT Chest in ACR CT DIR; combined procedures; what is a "Tumor Embolization – Liver"

⊕	4011486	Inv-Fluoro, Venacavagram, Chest, Superior Vena Cava
⊕	4011601	Inv-Fluoro, Venogram, Chest, Superior Vena Cava

☐	IR FL PORT PLACEMENT&&IR INFUSION THROMBOLYTIC VENOUS INITIAL TR

Common problems

- Mapping is not 1:1 (in both directions)
- Combined procedures
- Study Description vs. Requested Procedure Description
- Change in procedure after case is started

The pilot phase

- The pilot of the ACR-SIR Fluoroscopy Dose Index Registry has 10 sites, including several sites performing substantial numbers of pediatric interventions
- Data collection began in early 2018 and is ongoing
- As of April 2019 we have collected 58,344 procedures

IR Registry

- Also part of NRDR
- Structured reporting templates for 60+ IR procedures
  - Designed to include structured information related to the clinical aspects of the procedure
- Desirable that dose indices be included in this report
  - Procedural dose indices are best understood in the context of procedural and patient factors

4 VBUs below carina/0.25 VBUs above carina/0.5 VBUs above carina/0.75 VBUs above carina/1 VBU above the carina/1.25 VBUs above carina/1.5 VBUs above carina/1.75 VBUs above carina/2 VBUs above carina/More than 2 VBUs above carina/Uncertain/Other-.
Unique Device Identifier: UDI number
Catheter flush: Catheter flush:Heparin (100 units/mL)/Heparin (1000 units/mL)/Normal saline/Citrate/Other-

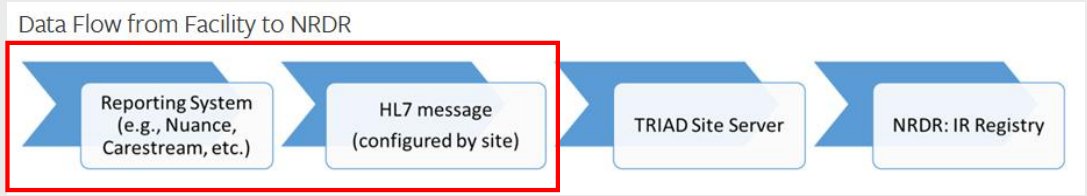
Closure
Access site closure technique: Access closure:Tissue adhesive/Absorbable suture/Absorbable suture and tissue adhesive/Steri-strips/Other [specify]/None
Incision closure technique: Incision closure:Tissue adhesive/Absorbable suture/Absorbable suture and tissue adhesive
Sterile dressing(s) applied.
Patient discharged from procedure suite with device accessed: Port accessed:No/Yes

Contrast
Contrast agent: Contrast agent:Omnipaque 350/Visipaque 320/Isovue 370/Ultravist 370/Other-/None
Contrast volume: Contrast volume mL

Radiation Dose
Fluoroscopy time: Fluoro time minutes
Reference air kerma: Air Kerma AK units:Gy/mGy/Not provided by imaging equipment
Kerma area product: Kerma area product KAP units:mGy-cm2/Gy-cm2/cGy-m2/Not provided by imaging equipment

Additional Details
Additional description of procedure: Additional description
Additional findings: Additional findings
Equipment details: Useful or additional equipment
Specimens removed: Specimens
Estimated blood loss: Blood Loss:Less than 10 mL/10-50 mL/50-100 mL/100-200 mL/200-500 mL/500-1000 mL/1000-2000 mL/Greater than 2000 mL
Standardized report: SIR_CVA_Port1.3

Attestation
I, Signer Name, attest that I Presence:was present for the entire procedure/was present for the key elements of the procedure and immediately available/supervised the procedure and was immediately available. I reviewed the stored images and agree with the report as written.



How do they fit together?

- Both registries use the ACR Triad server infrastructure
- IR Registry collects clinical data related to the procedure
  - Performing physician
  - Total procedural dose metrics, which are either dictated (common) or populated via HL7 feed from RDIM system (uncommon)
- Fluoroscopy Dose Index Registry collects dose data related to the procedure
  - From the Radiation Dose Structured Report, which includes detailed information about ***each irradiation event***
  - RDSR also includes summary information, metadata, and correction factors
- It is desirable to link both data sources for a complete understanding of an interventional procedure

Including dose metrics in procedure report

- Manual dictation is cumbersome
- HL7 feed from RDIM system
  - Costs additional $$ to build out
- Link on the Triad server

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  - Dustin Gress
  - Mike Simanowith
- Kevin Wunderle
- Don Miller and Steve Balter
- Pilot sites

ACR-SIR Fluoroscopy Dose Index Registry Pilot Sites

- University of Texas MD Anderson Cancer Center (A. Kyle Jones)
- Cleveland Clinic (Kevin Wunderle)
- Memorial Sloan Kettering Cancer Center (Usman Mahmood)
- Montefiore Medical Center (Alan Schoenfeld)
- Boston Children's Hospital (Don-Soo Kim)
- University of Washington (Jeff Moirano)
- Emory University (Shalmali Dharmadhikari)
- University of Texas Southwestern (Xinhui Duan)
- Duke University (Steve Mann)
- New York Presbyterian/Weill-Cornell (Wendy Kresge)