



The RSNA Structured Reporting Initiative: Motivations and Approach

Curtis P. Langlotz, MD, PhD
 Chair, RSNA Structured Reporting Committee
 Vice Chair for Informatics, Department of Radiology
 Professor of Radiology and Informatics
 (in Epidemiology and Biostatistics)
 Medical Director, Information Services
 University of Pennsylvania Health System



Intersociety Conference: Summary Conclusions 2007

- Structured reporting is the optimal reporting method, provided that structured reporting tools do not impede radiologist productivity
- Reporting tools should enable a hybrid of speech recognition and structured reporting
- Radiology professional organizations should create a repository of exemplary reports based on RadLex and other standard terminologies

Dunnick & Langlotz, *J Am Coll Radiol* 5:626, 2008

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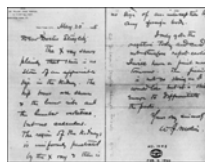
Forces Driving Change

- Consistency of report format and content
- Compliance with accreditation requirements
- Compensation from pay for reporting incentives
- Continuous quality improvement programs



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Tradeoffs of Radiology Reporting



Knight & Reiner
Imaging Economics, 2004



Radiologists



Payers



Referring providers



Practice managers



Patients



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Problems with Information Extraction: Why not Google™ ?

- Pertinent negatives
 - “There is no evidence of free air”
 - Automatic detection: sens 82%; spec 96%*
- Synonyms
 - kidney stone vs. urolithiasis vs. renal calculus...
- Hierarchical relationships
 - cancer AND lung vs.
adenocarcinoma AND lingula

*Chapman et al. *J Biomed Informatics* 34: 301-310, 2001

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The **RSNA** Reporting Initiative

- Goal: Create an on-line library of best-practices radiology report templates for key clinical scenarios
- Based on standard terminology, including RadLex
- Developed by consensus in collaboration with professional organizations and standards bodies
- Available as text report templates, speech recognition macros, and true structured reports
- Adapted by radiology practices based on local practice patterns

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RSNA® | Radiological Society
of North America
Founded in 1915



Structured Report Format

PA and Lateral Chest X-Ray

HISTORY:

Positive PPD

IMPRESSION:

No active cardiopulmonary disease

COMMENT:

PA and lateral views of the chest exposed at 13:45 hours on June 10th are reviewed without prior exams. The lungs are clear. The heart is normal in size. The mediastinal contours are normal. There is no evidence of tuberculosis.

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Consistent Report Organization: Macros and Templates

LIVER: [..]

GALLBLADDER: [..]

BILIARY: [..]

PANCREAS: [..]

SPLEEN: [..]

KIDNEYS: [..]

VASCULAR: [..]

OTHER FINDINGS: [..]

IMPRESSION: [..]

Sistrom & Langlotz, *J Am Coll Radiol* 2: 159-167, 2005

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Consistent Report Organization

LIVER: Demonstrates diffuse increased echogenicity, likely due to fatty infiltration. There are no focal lesions.

GALLBLADDER: Normally distended with no gallstones. There is no pericholecystic fluid, wall thickening, or sonographic Murphy's sign.

BILIARY: No intrahepatic ductal dilatation is identified. The common duct measures 6 mm at the porta hepatis.

PANCREAS: Limited visualization due to gas in the stomach and colon.

SPLEEN: Measures 9.9 cm in length and is normal.

KIDNEYS: The right kidney measures 11.9 cm. There is an echogenic structure within the inferior pole of the right kidney with posterior shadowing, likely a renal stone. It measures 8 mm. There is no right hydronephrosis or hydroureter. The left kidney measures 12.3 cm. and is normal.

VASCULAR: The abdominal aorta is non aneurysmal.

OTHER FINDINGS: The bladder was empty and not evaluated.

IMPRESSION: No gallstones and no evidence of cholecystitis. There is an 8mm. stone within the inferior pole of the right kidney without evidence of hydronephrosis.

Sistrom & Langlotz, *J Am Coll Radiol* 2: 159-167, 2005


Standard Report Language

MRI Knee

Medial meniscus: [normal]
 tear
 intersubstance tear
 flap tear
 radial tear
 meniscal cyst
 degenerative change



The Interactive Radiology Report



Penn State University

Patient: Twist, Oliver
MRN: 12345678
Date of Birth: July 8, 1960

Ordering Provider: John Hamm, MD
Contact: 555-555-4015
Examination: [MR RIGHT KNEE](#)

CLINICAL INDICATION:
[Tear of medial meniscus](#)

TECHNIQUE:
[Axial, sagittal and coronal sequences](#) were performed.

OBSERVATIONS:
The [lateral meniscus](#) is unremarkable. [Medial meniscus](#) demonstrates some [degenerative signals](#) which do not touch the inferior articular surface of the femur. For example series 4, images 5-6. However, on image 7, a [small, globular](#) focus abuts the inferior articular surface near the free edge; this is compatible with a [tear](#).


[Quadriceps tendon](#) and [patellar tendon](#) are intact. [Anterior cruciate ligament](#) and [posterior cruciate ligament](#) are intact. [Medial collateral ligament](#) and [fibular collateral ligaments](#) are intact.

As far as can be seen, the [articular cartilage](#) is unremarkable.

[Moderate](#) amount of [suprapatellar fluid](#) is identified.

IMPRESSION:
[DEGENERATIVE CHANGES OF MEDIAL MENISCUS](#)
• MODERATE AMOUNT
• THERE IS SUGGESTION OF A TEAR.

Signed:
Curis P
1/15/09



McCauley, T. R. et al. Am. J. Roentgenol. 2002;179:645-648
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Term Viewer

Name: anterior cruciate ligament
RadLex ID: RID2781
URI: <http://radlex.org/RID2781>

RadLex Parents
Is a: [ligament of knee joint](#)

RadLex Children
Part: [anteromedial bundle of anterior cruciate ligament](#), [posterolateral bundle of anterior cruciate ligament](#)



www.radlex.org

- lower extremity
 - foot or ankle
 - leg
 - knee
 - space of knee
 - bursa of knee
 - tendon of knee
 - proximal tibiofibular joint
 - knee joint
 - plica of knee joint
 - synovium of knee joint
 - ligament of knee joint
 - medial patellar retinaculum
 - lateral patellar retinaculum
 - menisofemoral ligament
 - oblique meniscomeniscal ligament
 - anterior intermeniscal ligament
 - posterolateral corner of knee
 - posterior oblique ligament of knee
 - medial collateral ligament of knee
 - posterior cruciate ligament
 - anterior cruciate ligament
 - anteromedial bundle of anterior cruciate ligament
 - posterolateral bundle of anterior cruciate ligament
 - knee meniscus
 - articular surface of knee joint
 - bone structure of knee

Benefits of a Library of Report Templates

- Starting point for practices adopting structured reporting
- Standardizes and improves the quality of radiology reports
- Enables data mining and quality measurement
- Fosters the development of new and better reporting systems



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The End

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