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.

Forces Driving Change

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

Tradeoffs of Radiology Reporting

- Payers
- Referring providers
- Practice managers
- Patients

Knight & Reiner
Imaging Economics, 2004
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


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
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.

Consistent Report Organization: Macros and Templates

LIVER: [...]  
GALLBLADDER: [...]  
BILIARY: [...]  
PANCREAS: [...]  
Spleen: [...]  
KIDNEYS: [...]  
VASCULAR: [...]  
OTHER FINDINGS: [...]  
IMPRESSION: [...]  

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 hepatitis.
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. The 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

University of Pennsylvania
The Interactive Radiology Report

OBSEVATIONS:

The lateral meniscus is unremarkable. The medial meniscus demonstrates some abnormal signal intensity, which do not touch the interior articular surface of knee joint. For example series 4, images 5-6. However, on image 5, a small, spherical focus about 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 ligaments and fibular collateral ligaments are intact.

As far as can be seen, the articular cartilage is unremarkable.

Moderate amount of suprapatellar fluid is identified.
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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