American College of Radiology National Radiology Data Registry

Qualified Clinical Data Registry Measures

January 2019

QCDR Measure	ACRad 1
Measure Title	CT Colonography True Positive Rate

Measure Description	Percentage of exams with a ≥10mm polyp detected by CTC that was with confirmed by colonoscopy (True Positive Rate)
QCDR Measure Type	Existing QCDR Measure with No Changes
Does this measure belong to another QCDR?	No
NQF Number	
NQS Domain	Effective Clinical Care
NQS Domain Rationale	The rationale for placing this measure in the Effective Clinical Ca
Meaningful Measure Area	Preventative Care
Denominator	Number of CT colonography (CTC) exams with a ≥10mm polyp for which data on confirming colonoscopies is available
Denominator Data Elements	Exam date; Polyp size ≥10mm?; Did colonoscopy or surgery reach level of lesion?
Denominator Exclusions	None
Denominator Exceptions	Number of exams with confirming colonoscopies that did not re
Numerator	Number of exams with a confirmed ≥10mm polyp at colonoscopy that corresponds to a polyp detected by CTC. (A polyp confirmed by colonoscopy corresponds to a polyp detected at CTC if it is within 1 segment and 50% of the size of the CTC polyp, e.g., a polyp of 12mm at CTC must have a measurement of at least 6mm at colonoscopy.)
Numerator Excluions	None
Numerator Data Elements	Was polyp confirmed?
Number of performance rates to be submitted	1
Indicate an Overall Performance Rate if more tha	N/A
Measure Type (Process/Outcome)	Outcome
High Priority Measure	Not applicable
Outcome Measure	Yes
Inverse measure	No
Proportion Measure	Yes
Continuous Measure	No

QCDR Measure	ACRad 1
Measure Title	CT Colonography True Positive Rate

Ratio Measure	No
If Continuous or Ratio, what would be range of sc	N/A
Is the Measure Risk-Adjusted?	No
If risk-adjusted, which score is risk adjusted?	N/A
Data Source (Registry (<<which registry>>))	Registry (CT Colonography Registry Database)
Evidence	This measure was approved by CMS for QCDR inclusion in 2014. An assessment of diagnostic or interpretative performance is an essential part of a cancer screening and diagnosis program. This is a primary measure of diagnostic accuracy. High true positive rate is indicative of patient receiving most clinically appropriate screening, where imaging findings of disease are highly likely to be confirmed as true. When CTC is used for screening, the patient population should be fairly similar between providers but we will work on risk adjustment models to ensure fair comparison. This measure will work better for a group, so we will recommend it for group use but also permit it for individual providers. Colorectal cancer is a leading cause of mortality. Early detection programs provide an opportunity to save many lives. CT Colonography permits a minimally invasive, low-risk evaluation for cancerous polyps. Studies have shown that CT colonography is effective in screening patients with average risk of cancer. The True Positive Rate measure is designed to monitor and improve the interpretation quality of these studies in routine clinical practice. Observational studies have shown that CT colonography commonly detects extracolonic findings that can be considered clinically important when applied to an asymptomatic screening population. References: 1. Gluecker TM, Johnson CD et al. Extracolonic findings at CT colonography: Evaluation of prevalence and cost in a screening population Gastroenterology; Volume 124, Issue 4, April 2003, Pages 911–916. 2. Hassan C, Pickhardt PJ, Laghi A, et al. Computed tomographic colonography to screen for colorectal cancer, extracolonic cancer, and aortic aneurysm: model simulation with cost-effectiveness analysis. Arch Intern Med. 2008 Apr 14;168(7):696-705. 3. Macari M, Nevsky G, Bonavita J, et al. CT colonography in

senior versus nonsenior patients:
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prevalence and analysis of features for guiding management.
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asymptomatic women over 50 years of age: implications for clinical management and ovarian cancer
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Simultaneous screening for osteoporosis at CT colonography: Bone mineral density assessment
using MDCT attenuation techniques compared against the DXA reference standard. J Bone Miner
Res. 2011 Sep;26(9):2194-203.doi:10.1002/jbmr.428.
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osteoporosis using abdominal CT scans obtained for other indications. Ann Int Med 2013;158:588-
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colonography and fully-automated bone mineral densitometry in a single examination. J Comput
Assist Tomogr 2011;35:212-216.
11. Summers RM, Liu J, Sussman DL, Dwyer AJ, Rehani B, Pickhardt PJ, Choi JR, YaoJ. Association between visceral adiposity and colorectal polyps on CT colonography. AJR
2012;199:48-57.
12. Veerappan GR, Ally MR, Choi JR, et al. Extracolonic findings on CT colonography increases yield of
colorectal cancer screening. AJR. 2010;195:677-686.
13. Yee J, Sadda S, Aslam R, Yeh B. Extracolonic Findings at CT Colonography. Gastrointest Endoscopy

	Clin N Am. 2010:305-322.
Rationale	(This measure was discussed with CMS and is being submitted following that discussion, with some clarifications added to the specifications.) An assessment of diagnostic or interpretative performance is an essential part of a cancer screening and diagnosis program. This is a primary measure of diagnostic accuracy. High true positive rate is indicative of patient receiving most clinically appropriate screening, where imaging findings of disease are highly likely to be confirmed as true. When CTC is used for screening, the patient population should be fairly similar between providers but we will work on risk adjustment models to ensure fair comparison. This measure will work better for a group, so we will recommend it for group use but also permit it for individual providers. Additional information is provided in Appendix.
Specialty/specialties this measure applies to	Radiology
Measure funding source (Steward)	American College of Radiology

QCDR Measure	ACRad 15
Measure Title	Report Turnaround Time: Radiography

Measure Description	Mean radiography report turnaround time (RTAT). (Does not include mammography.) This measure has been harmonized with MSN QCDR.
QCDR Measure Type	Existing QCDR Measure with Changes
Does this measure belong to another QCDR?	No
NQF Number	
NQS Domain	Communication and Care Coordination
NQS Domain Rationale	The rationale for including this measure in the Communication a
Meaningful Measure Area	Patient's Experience of Care
Denominator	Total number of radiography exams completed
Denominator Data Elements	Exam modality or CPT/HCPCS Code or ICD-10 PCS Code; Date/time of exam completion
Denominator Exclusions	None
Denominator Exceptions	None
Numerator	Mean time from exam completion to final signature on report, in hours
Numerator Exclusions	None
Numerator Data Elements	Date/time of exam completion; Date/time of report signed
Number of performance rates to be submitted	1
Indicate an Overall Performance Rate if more tha	N/A
Measure Type (Process/Outcome)	Outcome
High Priority Measure	Yes
Outcome Measure	Yes
Inverse measure	Yes
Proportion Measure	No
Continuous Measure	Yes
Ratio Measure	No
If Continuous or Ratio, what would be range of sc	0.00-9999.00

QCDR Measure	ACRad 15
Measure Title	Report Turnaround Time: Radiography

Is the Measure Risk-Adjusted?	No
If risk-adjusted, which score is risk adjusted?	N/A
Data Source (Registry (<<which registry>>))	Registry (General Radiology Improvement Database)
Evidence	This measure was approved by CMS for QCDR inclusion in 2014. The written imaging report is a key method for providing diagnostic interpretation to referring clinicians from radiologists. Timely final imaging reports support informed and efficient decision making for treatment plans by referring physicians, and ultimately the delivery of care to patients. While important to timely treatment and potentially better health outcomes, short turnaround of reports also improves patients' experience with care, cuts input costs, and improves the throughput of imaging exams. Rapid turnaround time (TAT) of reports is especially important to patient care provided in the emergency department (ED). These measures encompass all settings, enabling quality improvement in each. While the definition of timeliness depends on setting or site characteristics, using comparative benchmarks from registry data provides radiologists with transparent feedback to optimize TAT at their sites. The American Board of Radiology includes "turnaround time" as one category from which radiologists may select to conduct a practice quality improvement (Part IV) for continued Maintenance of Certification. References: 1. ACR Practice Guideline for Communication of Diagnostic Imaging Findings http://www.acr.org/~/media/ACR/Documents/PGTS/guidelines/Comm_Diag_Imaging.pdf 2. Janet L. Strife, Larry E. Kun, Gary J. Becker, N. Reed Dunnick, Jennifer Bosma, Robert R. Hattery. The American Board of Radiology Perspective on Maintenance of Certification: Part IV—Practice Quality Improvement for Diagnostic Radiology Radiology, 2007, Vol.243: 309- 313, 10.1148/radiol.2432061954 3. Kruskal JB, Anderson S, Yam CS, Sosna J. Strategies for establishing a comprehensive quality and performance improvement program in a radiology department. Radiographics. 2009 Mar- Apr;29(2):315-29. doi: 10.114 /rg.292085090. Epub 2009 Jan 23. PubMed PMID: 19168762. 4. Reiner BI. The challenges, opportunities, and imperative of

structured reporting in medical
imaging. J Digit Imaging. 2009 Dec;22(6):562-8. doi: 10.1007/s10278-009-9239-z. Review.
PubMed PMID: 19816742; PubMed Central PMCID:PMC2782125.
5. Swensen SJ, Johnson CD. Radiology quality and safety: mapping value into radiology. J Am
Coll Radiol 2005;2:992-1000.
6. Towbin AJ, Iyer SB, Brown J, Varadarajan K, Perry LA, Larson DB. Practice policy and quality
initiatives: decreasing variability in turnaround time for radiographic studies from the
emergency department. Radiographics. 2013 Mar-Apr;33(2):361-71. doi: 10.1148/rg.332125738. PubMed PMID: 23479701.

Rationale	(This measure is modified to exclude mammography, because mammography is clinically distinct from other kinds of radiography procedures - it is overwhelmingly performed for screening asymoptomatic patients.) The written imaging report is a key method for providing diagnostic interpretation to referring clinicians from radiologists. Timely final imaging reports support informed and efficient decision making for treatment plans by referring physicians, and ultimately the delivery of care to patients. While important to timely treatment and potentially better health outcomes, short turnaround of reports also improves patients' experience with care, cuts input costs, and improves the throughput of imaging exams. Rapid turnaround time (TAT) of reports is especially important to patient care provided in the emergency department (ED). These measures encompass all settings, enabling quality improvement in each. While the definition of timeliness depends on setting or site characteristics, using comparative benchmarks from registry data provides radiologists with transparent feedback to optimize TAT at their sites. The American Board of Radiology includes "turnaround time" as one category from which radiologists may select to conduct a practice quality improvement (Part IV) for continued Maintenance of Certification. Additional information is provided in Appendix.
Specialty/specialties this measure applies to	Radiology
Measure funding source (Steward)	American College of Radiology

QCDR Measure	ACRad 16
Measure Title	Report Turnaround Time: Ultrasound (Excluding Breast US)

Measure Description	Mean Ultrasound report turnaround time (RTAT) This measure has been harmonized with MSN QCDR.
QCDR Measure Type	Existing QCDR Measure with Changes
Does this measure belong to another QCDR?	No
NQF Number	
Meaningful Measure Area	Patient Experience of Care
NQS Domain	Communication and Care Coordination
NQS Domain Rationale	The rationale for including this measure in the Communication a
Meaningful Measure Area	Patient's Experience of Care
Denominator	Total number of ultrasound exams completed (excluding breast US)
Denominator Data Elements	Exam modality or CPT/HCPCS Code or ICD-10 PCS Code; Date/time of exam completion
Denominator Exclusions	None
Denominator Exceptions	None
Numerator	Mean time from exam completion to final signature on report, in hours
Numerator Exclusions	None
Numerator Data Elements	Date/time of exam completion; Date/time of report signed
Number of performance rates to be submitted	1
Indicate an Overall Performance Rate if more tha	N/A
Measure Type (Process/Outcome)	Outcome
High Priority Measure	Yes
Outcome Measure	Yes
Inverse measure	Yes
Proportion Measure	No
Continuous Measure	Yes
Ratio Measure	No
If Continuous or Ratio, what would be range of sc	0.00-9999.00

QCDR Measure	ACRad 16
Measure Title	Report Turnaround Time: Ultrasound (Excluding Breast US)

Is the Measure Risk-Adjusted?	No
If risk-adjusted, which score is risk adjusted?	N/A
Data Source (Registry (<<which registry>>))	Registry (General Radiology Improvement Database)
Evidence	This measure was approved by CMS for QCDR inclusion in 2014. The written imaging report is a key method for providing diagnostic interpretation to referring clinicians from radiologists. Timely final imaging reports support informed and efficient decision making for treatment plans by referring physicians, and ultimately the delivery of care to patients. While important to timely treatment and potentially better health outcomes, short turnaround of reports also improves patients' experience with care, cuts input costs, and improves the throughput of imaging exams. Rapid turnaround time (TAT) of reports is especially important to patient care provided in the emergency department (ED). These measures encompass all settings, enabling quality improvement in each. While the definition of timeliness depends on setting or site characteristics, using comparative benchmarks from registry data provides radiologists with transparent feedback to optimize TAT at their sites. The American Board of Radiology includes "turnaround time" as one category from which radiologists may select to conduct a practice quality improvement (Part IV) for continued Maintenance of Certification. References: 1. ACR Practice Guideline for Communication of Diagnostic Imaging Findings http://www.acr.org/~/media/ACR/Documents/PGTS/guidelines/Comm_Diag_Imaging.pdf 2. Janet L. Strife, Larry E. Kun, Gary J. Becker, N. Reed Dunnick, Jennifer Bosma, Robert R. Hattery. The American Board of Radiology Perspective on Maintenance of Certification: Part IV—Practice Quality Improvement for Diagnostic Radiology Radiology, 2007, Vol.243: 309- 313, 10.1148/radiol.2432061954 3. Kruskal JB, Anderson S, Yam CS, Sosna J. Strategies for establishing a comprehensive quality and performance improvement program in a radiology department. Radiographics. 2009 Mar- Apr;29(2):315-29. doi: 10.114 /rg.292085090. Epub 2009 Jan 23. PubMed PMID: 19168762. 4. Reiner BI. The challenges, opportunities, and imperative of

	structured reporting in medical imaging. J Digit Imaging. 2009 Dec;22(6):562-8. doi: 10.1007/s10278-009-9239-z. Review. PubMed PMID: 19816742; PubMed Central PMCID:PMC2782125. 5. Swensen SJ, Johnson CD. Radiology quality and safety: mapping value into radiology. J Am Coll Radiol 2005;2:992-1000. 6. Towbin AJ, Iyer SB, Brown J, Varadarajan K, Perry LA, Larson DB. Practice policy and quality initiatives: decreasing variability in turnaround time for radiographic studies from the emergency department. Radiographics. 2013 Mar-Apr;33(2):361-71. doi: 10.1148/rg.332125738. PubMed PMID: 23479701.
Rationale	The written imaging report is a key method for providing diagnostic interpretation to referring clinicians from radiologists. Timely final imaging reports support informed and efficient decision making for treatment plans by referring physicians, and ultimately the delivery of care to patients. While important to timely treatment and potentially better health outcomes, short turnaround of reports also improves patients' experience with care, cuts input costs, and improves the throughput of imaging exams. Rapid turnaround time (TAT) of reports is especially important to patient care provided in the emergency department (ED). These measures encompass all settings, enabling quality improvement in each. While the definition of timeliness depends on setting or site characteristics, using comparative benchmarks from registry data provides radiologists with transparent feedback to optimize TAT at their sites. The American Board of Radiology includes "turnaround time" as one category from which radiologists may select to conduct a practice quality improvement (Part IV) for continued Maintenance of Certification. Additional information is provided in Appendix.
Specialty/specialties this measure applies to	Radiology
Measure funding source (Steward)	American College of Radiology

QCDR Measure	ACRad 17
Measure Title	Report Turnaround Time: MRI

Measure Description	Mean MRI report turnaround time (RTAT) This measure has been harmonized with MSN QCDR.
QCDR Measure Type	Existing QCDR Measure with Changes
Does this measure belong to another QCDR?	No
NQF Number	
NQS Domain	Communication and Care Coordination
NQS Domain Rationale	The rationale for including this measure in the Communication a
Meaningful Measure Area	Patient Experience of Care
Denominator	Total number of MRI exams completed
Denominator Data Elements	Exam modality or CPT/HCPCS Code or ICD-10 PCS Code; Date/time of exam completion
Denominator Exclusions	None
Denominator Exceptions	None
Numerator	Mean time from exam completion to final signature on report, in hours
Numerator Excluions	None
Numerator Data Elements	Date/time of exam completion; Date/time of report signed
Number of performance rates to be submitted	1
Indicate an Overall Performance Rate if more tha	N/A
Measure Type (Process/Outcome)	Outcome
High Priority Measure	Yes
Outcome Measure	Yes
Inverse measure	Yes
Proportion Measure	No
Continuous Measure	Yes
Ratio Measure	No
If Continuous or Ratio, what would be range of sc	0.00-9999.00

QCDR Measure	ACRad 17
Measure Title	Report Turnaround Time: MRI

Is the Measure Risk-Adjusted?	No
If risk-adjusted, which score is risk adjusted?	N/A
Data Source (Registry (<<which registry>>))	Registry (General Radiology Improvement Database)
Evidence	This measure was approved by CMS for QCDR inclusion in 2014. The written imaging report is a key method for providing diagnostic interpretation to referring clinicians from radiologists. Timely final imaging reports support informed and efficient decision making for treatment plans by referring physicians, and ultimately the delivery of care to patients. While important to timely treatment and potentially better health outcomes, short turnaround of reports also improves patients' experience with care, cuts input costs, and improves the throughput of imaging exams. Rapid turnaround time (TAT) of reports is especially important to patient care provided in the emergency department (ED). These measures encompass all settings, enabling quality improvement in each. While the definition of timeliness depends on setting or site characteristics, using comparative benchmarks from registry data provides radiologists with transparent feedback to optimize TAT at their sites. The American Board of Radiology includes "turnaround time" as one category from which radiologists may select to conduct a practice quality improvement (Part IV) for continued Maintenance of Certification. References: 1. ACR Practice Guideline for Communication of Diagnostic Imaging Findings http://www.acr.org/~/media/ACR/Documents/PGTS/guidelines/Comm_Diag_Imaging.pdf 2. Janet L. Strife, Larry E. Kun, Gary J. Becker, N. Reed Dunnick, Jennifer Bosma, Robert R. Hattery. The American Board of Radiology Perspective on Maintenance of Certification: Part IV—Practice Quality Improvement for Diagnostic Radiology Radiology, 2007, Vol.243: 309- 313, 10.1148/radiol.2432061954 3. Kruskal JB, Anderson S, Yam CS, Sosna J. Strategies for establishing a comprehensive quality and performance improvement program in a radiology department. Radiographics. 2009 Mar- Apr;29(2):315-29. doi: 10.114 /rg.292085090. Epub 2009 Jan 23. PubMed PMID: 19168762. 4. Reiner BI. The challenges, opportunities, and imperative of

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imaging. J Digit Imaging. 2009 Dec;22(6):562-8. doi: 10.1007/s10278-009-9239-z. Review.
PubMed PMID: 19816742; PubMed Central PMCID:PMC2782125.
5. Swensen SJ, Johnson CD. Radiology quality and safety: mapping value into radiology. J Am
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6. Towbin AJ, Iyer SB, Brown J, Varadarajan K, Perry LA, Larson DB. Practice policy and quality
initiatives: decreasing variability in turnaround time for radiographic studies from the
emergency department. Radiographics. 2013 Mar-Apr;33(2):361-71. doi: 10.1148/rg.332125738. PubMed PMID: 23479701.

Rationale	The written imaging report is a key method for providing diagnostic interpretation to referring clinicians from radiologists. Timely final imaging reports support informed and efficient decision making for treatment plans by referring physicians, and ultimately the delivery of care to patients. While important to timely treatment and potentially better health outcomes, short turnaround of reports also improves patients' experience with care, cuts input costs, and improves the throughput of imaging exams. Rapid turnaround time (TAT) of reports is especially important to patient care provided in the emergency department (ED). These measures encompass all settings, enabling quality improvement in each. While the definition of timeliness depends on setting or site characteristics, using comparative benchmarks from registry data provides radiologists with transparent feedback to optimize TAT at their sites. The American Board of Radiology includes "turnaround time" as one category from which radiologists may select to conduct a practice quality improvement (Part IV) for continued Maintenance of Certification. Additional information is provided in Appendix.
Specialty/specialties this measure applies to	Radiology
Measure funding source (Steward)	American College of Radiology

QCDR Measure	ACRad 18
Measure Title	Report Turnaround Time: CT

Measure Description	Mean CT report turnaround time (RTAT) This measure has been harmonized with MSN QCDR.
QCDR Measure Type	Existing QCDR Measure with Changes
Does this measure belong to another QCDR?	No
NQF Number	
NQS Domain	Communication and Care Coordination
NQS Domain Rationale	The rationale for including this measure in the Communication a
Meaningful Measure Area	Patient Experience of Care
Denominator	Total number of CT exams completed
Denominator Data Elements	Exam modality or CPT/HCPCS Code or ICD-10 PCS Code; Date/time of exam completion
Denominator Exclusions	None
Denominator Exceptions	None
Numerator	Mean time from exam completion to final signature on report, in hours
Numerator Excluions	None
Numerator Data Elements	Date/time of exam completion; Date/time of report signed
Number of performance rates to be submitted	1
Indicate an Overall Performance Rate if more tha	N/A
Measure Type (Process/Outcome)	Outcome
High Priority Measure	Yes
Outcome Measure	Yes
Inverse measure	Yes
Proportion Measure	No
Continuous Measure	Yes
Ratio Measure	No
If Continuous or Ratio, what would be range of sc	0.00-9999.00

QCDR Measure	ACRad 18
Measure Title	Report Turnaround Time: CT

Is the Measure Risk-Adjusted?	No
If risk-adjusted, which score is risk adjusted?	N/A
Data Source (Registry (<<which registry>>))	Registry (General Radiology Improvement Database)
Evidence	This measure was approved by CMS for QCDR inclusion in 2014. The written imaging report is a key method for providing diagnostic interpretation to referring clinicians from radiologists. Timely final imaging reports support informed and efficient decision making for treatment plans by referring physicians, and ultimately the delivery of care to patients. While important to timely treatment and potentially better health outcomes, short turnaround of reports also improves patients' experience with care, cuts input costs, and improves the throughput of imaging exams. Rapid turnaround time (TAT) of reports is especially important to patient care provided in the emergency department (ED). These measures encompass all settings, enabling quality improvement in each. While the definition of timeliness depends on setting or site characteristics, using comparative benchmarks from registry data provides radiologists with transparent feedback to optimize TAT at their sites. The American Board of Radiology includes "turnaround time" as one category from which radiologists may select to conduct a practice quality improvement (Part IV) for continued Maintenance of Certification. References: 1. ACR Practice Guideline for Communication of Diagnostic Imaging Findings http://www.acr.org/~/media/ACR/Documents/PGTS/guidelines/Comm_Diag_Imaging.pdf 2. Janet L. Strife, Larry E. Kun, Gary J. Becker, N. Reed Dunnick, Jennifer Bosma, Robert R. Hattery. The American Board of Radiology Perspective on Maintenance of Certification: Part IV—Practice Quality Improvement for Diagnostic Radiology Radiology, 2007, Vol.243: 309- 313, 10.1148/radiol.2432061954 3. Kruskal JB, Anderson S, Yam CS, Sosna J. Strategies for establishing a comprehensive quality and performance improvement program in a radiology department. Radiographics. 2009 Mar- Apr;29(2):315-29. doi: 10.114 /rg.292085090. Epub 2009 Jan 23. PubMed PMID: 19168762. 4. Reiner BI. The challenges, opportunities, and imperative of

	structured reporting in medical imaging. J Digit Imaging. 2009 Dec;22(6):562-8. doi: 10.1007/s10278-009-9239-z. Review. PubMed PMID: 19816742; PubMed Central PMCID:PMC2782125. 5. Swensen SJ, Johnson CD. Radiology quality and safety: mapping value into radiology. J Am Coll Radiol 2005;2:992-1000. 6. Towbin AJ, Iyer SB, Brown J, Varadarajan K, Perry LA, Larson DB. Practice policy and quality initiatives: decreasing variability in turnaround time for radiographic studies from the emergency department. Radiographics. 2013 Mar-Apr;33(2):361-71. doi: 10.1148/rg.332125738. PubMed PMID: 23479701.
Rationale	The written imaging report is a key method for providing diagnostic interpretation to referring clinicians from radiologists. Timely final imaging reports support informed and efficient decision making for treatment plans by referring physicians, and ultimately the delivery of care to patients. While important to timely treatment and potentially better health outcomes, short turnaround of reports also improves patients' experience with care, cuts input costs, and improves the throughput of imaging exams. Rapid turnaround time (TAT) of reports is especially important to patient care provided in the emergency department (ED). These measures encompass all settings, enabling quality improvement in each. While the definition of timeliness depends on setting or site characteristics, using comparative benchmarks from registry data provides radiologists with transparent feedback to optimize TAT at their sites. The American Board of Radiology includes "turnaround time" as one category from which radiologists may select to conduct a practice quality improvement (Part IV) for continued Maintenance of Certification. Additional information is provided in Appendix.
Specialty/specialties this measure applies to	Radiology
Measure funding source (Steward)	American College of Radiology

QCDR Measure	ACRad 19
Measure Title	Report Turnaround Time: PET

Measure Description	Mean PET report turnaround time (RTAT) This measure has been harmonized with MSN QCDR.
QCDR Measure Type	Existing QCDR Measure with Changes
Does this measure belong to another QCDR?	No
NQF Number	
NQS Domain	Communication and Care Coordination
NQS Domain Rationale	The rationale for including this measure in the Communication a
Meaningful Measure Area	Patient Experience of Care
Denominator	Total number of PET exams completed
Denominator Data Elements	Exam modality or CPT/HCPCS Code or ICD-10 PCS Code; Date/time of exam completion
Denominator Exclusions	None
Denominator Exceptions	None
Numerator	Mean time from exam completion to final signature on report, in hours
Numerator Exclusions	None
Numerator Data Elements	Date/time of exam completion; Date/time of report signed
Number of performance rates to be submitted	1
Indicate an Overall Performance Rate if more tha	N/A
Measure Type (Process/Outcome)	Outcome
High Priority Measure	Yes
Outcome Measure	Yes
Inverse measure	Yes
Proportion Measure	No
Continuous Measure	Yes
Ratio Measure	No
If Continuous or Ratio, what would be range of sc	0.00-9999.00

QCDR Measure	ACRad 19
Measure Title	Report Turnaround Time: PET

Is the Measure Risk-Adjusted?	No
If risk-adjusted, which score is risk adjusted?	N/A
Data Source (Registry (<<which registry>>))	Registry (General Radiology Improvement Database)
Evidence	This measure was approved by CMS for QCDR inclusion in 2014. The written imaging report is a key method for providing diagnostic interpretation to referring clinicians from radiologists. Timely final imaging reports support informed and efficient decision making for treatment plans by referring physicians, and ultimately the delivery of care to patients. While important to timely treatment and potentially better health outcomes, short turnaround of reports also improves patients' experience with care, cuts input costs, and improves the throughput of imaging exams. Rapid turnaround time (TAT) of reports is especially important to patient care provided in the emergency department (ED). These measures encompass all settings, enabling quality improvement in each. While the definition of timeliness depends on setting or site characteristics, using comparative benchmarks from registry data provides radiologists with transparent feedback to optimize TAT at their sites. The American Board of Radiology includes "turnaround time" as one category from which radiologists may select to conduct a practice quality improvement (Part IV) for continued Maintenance of Certification. References: 1. ACR Practice Guideline for Communication of Diagnostic Imaging Findings http://www.acr.org/~/media/ACR/Documents/PGTS/guidelines/Comm_Diag_Imaging.pdf 2. Janet L. Strife, Larry E. Kun, Gary J. Becker, N. Reed Dunnick, Jennifer Bosma, Robert R. Hattery. The American Board of Radiology Perspective on Maintenance of Certification: Part IV—Practice Quality Improvement for Diagnostic Radiology Radiology, 2007, Vol.243: 309- 313, 10.1148/radiol.2432061954 3. Kruskal JB, Anderson S, Yam CS, Sosna J. Strategies for establishing a comprehensive quality and performance improvement program in a radiology department. Radiographics. 2009 Mar- Apr;29(2):315-29. doi: 10.114 /rg.292085090. Epub 2009 Jan 23. PubMed PMID: 19168762. 4. Reiner BI. The challenges, opportunities, and imperative of

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imaging. J Digit Imaging. 2009 Dec;22(6):562-8. doi: 10.1007/s10278-009-9239-z. Review.
PubMed PMID: 19816742; PubMed Central PMCID:PMC2782125.
5. Swensen SJ, Johnson CD. Radiology quality and safety: mapping value into radiology. J Am
Coll Radiol 2005;2:992-1000.
6. Towbin AJ, Iyer SB, Brown J, Varadarajan K, Perry LA, Larson DB. Practice policy and quality
initiatives: decreasing variability in turnaround time for radiographic studies from the
emergency department. Radiographics. 2013 Mar-Apr;33(2):361-71. doi: 10.1148/rg.332125738. PubMed PMID: 23479701.

Rationale	The written imaging report is a key method for providing diagnostic interpretation to referring clinicians from radiologists. Timely final imaging reports support informed and efficient decision making for treatment plans by referring physicians, and ultimately the delivery of care to patients. While important to timely treatment and potentially better health outcomes, short turnaround of reports also improves patients' experience with care, cuts input costs, and improves the throughput of imaging exams. Rapid turnaround time (TAT) of reports is especially important to patient care provided in the emergency department (ED). These measures encompass all settings, enabling quality improvement in each. While the definition of timeliness depends on setting or site characteristics, using comparative benchmarks from registry data provides radiologists with transparent feedback to optimize TAT at their sites. The American Board of Radiology includes "turnaround time" as one category from which radiologists may select to conduct a practice quality improvement (Part IV) for continued Maintenance of Certification. Additional information is provided in Appendix.
Specialty/specialties this measure applies to	Radiology
Measure funding source (Steward)	American College of Radiology

QCDR Measure	ACRad 25
Measure Title	Report Turnaround Time: Mammography

Measure Description	Mean mammography report turnaround time (RTAT). This measure has been harmonized with MSN QCDR.
QCDR Measure Type	Existing QCDR Measure with Changes
Does this measure belong to another QCDR?	No
NQF Number	
NQS Domain	Communication and Care Coordination
NQS Domain Rationale	The rationale for including this measure in the Communication a
Meaningful Measure Area	Patient Experience of Care
Denominator	Total number of mammography exams completed
Denominator Data Elements	Exam modality or CPT/HCPCS Code or ICD-10 PCS Code; Date/time of exam completion.
Denominator Exclusions	None
Denominator Exceptions	None
Numerator	Mean time from exam completion to final signature on report, in hours
Numerator Excluions	None
Numerator Data Elements	Date/time of exam completion; Date/time of report signed
Number of performance rates to be submitted	1
Indicate an Overall Performance Rate if more tha	N/A
Measure Type (Process/Outcome)	Outcome
High Priority Measure	Yes
Outcome Measure	Yes
Inverse measure	Yes
Proportion Measure	No
Continuous Measure	Yes
Ratio Measure	No
If Continuous or Ratio, what would be range of sc	0.00-9999.00

QCDR Measure	ACRad 25
Measure Title	Report Turnaround Time: Mammography

Is the Measure Risk-Adjusted?	No
If risk-adjusted, which score is risk adjusted?	N/A
Data Source (Registry (<<which registry>>))	Registry (General Radiology Improvement Database)
Evidence	This measure was approved by CMS for QCDR inclusion in 2017. The written imaging report is a key method for providing diagnostic interpretation to referring clinicians from radiologists. Timely final imaging reports support informed and efficient decision making for treatment plans by referring physicians, and ultimately the delivery of care to patients. While important to timely treatment and potentially better health outcomes, short turnaround of reports also improves patients' experience with care, cuts input costs, and improves the throughput of imaging exams. Rapid turnaround time (TAT) of reports is especially important to patient care provided in the emergency department (ED). These measures encompass all settings, enabling quality improvement in each. While the definition of timeliness depends on setting or site characteristics, using comparative benchmarks from registry data provides radiologists with transparent feedback to optimize TAT at their sites. The American Board of Radiology includes "turnaround time" as one category from which radiologists may select to conduct a practice quality improvement (Part IV) for continued Maintenance of Certification. References: 1. ACR Practice Guideline for Communication of Diagnostic Imaging Findings http://www.acr.org/~/media/ACR/Documents/PGTS/guidelines/Comm_Diag_Imaging.pdf 2. Janet L. Strife, Larry E. Kun, Gary J. Becker, N. Reed Dunnick, Jennifer Bosma, Robert R. Hattery. The American Board of Radiology Perspective on Maintenance of Certification: Part IV—Practice Quality Improvement for Diagnostic Radiology Radiology, 2007, Vol.243: 309- 313, 10.1148/radiol.2432061954 3. Kruskal JB, Anderson S, Yam CS, Sosna J. Strategies for establishing a comprehensive quality and performance improvement program in a radiology department. Radiographics. 2009 Mar- Apr;29(2):315-29. doi: 10.114 /rg.292085090. Epub 2009 Jan 23. PubMed PMID: 19168762. 4. Reiner BI. The challenges, opportunities, and imperative of

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Rationale	The written imaging report is a key method for providing diagnostic interpretation to referring clinicians from radiologists. Timely final imaging reports support informed and efficient decision making for treatment plans by referring physicians, and ultimately the delivery of care to patients. While important to timely treatment and potentially better health outcomes, short turnaround of reports also improves patients' experience with care, cuts input costs, and improves the throughput of imaging exams. Rapid turnaround time (TAT) of reports is especially important to patient care provided in the emergency department (ED). These measures encompass all settings, enabling quality improvement in each. While the definition of timeliness depends on setting or site characteristics, using comparative benchmarks from registry data provides radiologists with transparent feedback to optimize TAT at their sites. The American Board of Radiology includes "turnaround time" as one category from which radiologists may select to conduct a practice quality improvement (Part IV) for continued Maintenance of Certification. Additional information is provided in Appendix.
Specialty/specialties this measure applies to	Radiology
Measure funding source (Steward)	American College of Radiology

QCDR Measure	ACRad 26
Measure Title	Appropriate venous access for hemodialysis

Measure Description	Percentage of patients undergoing tunneled (long-term) catheter access for hemodialysis via subclavian access as compared to internal jugular access
QCDR Measure Type	Existing QCDR Measure with No Changes
Does this measure belong to another QCDR? If so	No
NQF Number	
NQS Domain	Patient Safety
NQS Domain Rationale	The rationale for including this measure in the Patient Safety do
Meaningful Measure Area	Preventable Healthcare Harm
Denominator	Number of patients receiving tunneled hemodialysis catheters placed via the upper body (internal jugular, external jugular/other collateral veins or subclavian veins)
Denominator Data Elements	Vein Accessed
Denominator Exclusions	None
Denominator Exceptions	Patients with occlusion of the internal jugular veins
Numerator	Number of patients who underwent placement of tunneled catheters for dialysis via the subclavian veins.
Numerator Exclusions	None
Numerator Data Elements	Vein Accessed
Number of performance rates to be submitted	1
Indicate an Overall Performance Rate if more tha	N/A
Measure Type (Process/Outcome)	Process
High Priority Measure	Patient Safety
Outcome Measure	No
Inverse measure	Yes
Proportion Measure	Yes
Continuous Measure	No
Ratio Measure	No

QCDR Measure	ACRad 26
Measure Title	Appropriate venous access for hemodialysis

If Continuous or Ratio, what would be range of sc	N/A
Is the Measure Risk-Adjusted?	No
If risk-adjusted, which score is risk adjusted?	N/A
Data Source (Registry (<<which registry>>))	Registry (SIR Structured Reports)
Evidence	This measure was approved by CMS for QCDR inclusion in 2017. Tunneled catheter access is a well-established technique to achieve or bridge patients to hemodialysis via an arteriovenous fistula or graft. The preferred access site for long-term catheter access via the upper torso is the lower internal jugular veins. Catheters placed via the subclavian vein experience repetitive shear-type torsion which has resulted in catheter fracture and embolization. In addition, catheter placement in this location increases the likelihood of chronic injury to the subclavian vein, which is difficult to treat both surgically or endovascularly. Hence, it is preferable to place tunneled hemodialysis catheters via the lower internal jugular veins, or into a collateral vein draining into the subclavian-internal jugular confluence when possible. This measure addresses an important gap among the multiple measures available for renal disease patients. The wide-spread availability of ultrasound for vascular access guidance across specialties has made placement of catheters via the lower internal jugular veins a uniformly safe procedure (6). This access site should be used uniformly to establish durable vascular access in patients requiring hemodialysis who are being worked up for fistula creation or graft placement or in whom such access is contraindicated (7). References: 1. KDOQI Guidelines 2006. Guideline 2.4.1, Page 250. 2. Vanholder R, Ringoir S: Vascular access for hemodialysis. Artificial Organs 18:263-264, 1994. 3. Schillinger F, Schillinger D, Montagnac R, Milcent T: Post catheterization vein stenosis in haemodialysis: Comparative angiographic study of 50 subclavian and 50 internal jugular accesses. Nephrol Dial Transplant 6: 722-724, 1991. 4. Kamran T, Zaheer K, Khan AA, Khalid M, Akhtar MS: Applications and complications of subclavian vein catheterization for hemodialysis. J Coll Physicians Surg Pak 13:40-43, 2003. 5. Schwab SJ, Quarles LD, Milddleton JP, et al. Hemodialysis-associated subclavian vein stenosis.

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Rationale	Tunneled catheter access is a well-established technique to achieve or bridge patients to hemodialysis via an arteriovenous fistula or graft. The preferred access site for long-term catheter access via the upper torso is the lower internal jugular veins. Catheters placed via the subclavian vein experience repetitive shear-type torsion which has resulted in catheter fracture and embolization. In addition, catheter placement in this location increases the likelihood of chronic injury to the subclavian vein, which is difficult to treat both surgically or endovascularly. Hence, it is preferable to place tunneled hemodialysis catheters via the lower internal jugular veins, or into a collateral vein draining into the subclavian-internal jugular confluence when possible.
Specialty/specialties this measure applies to	Radiology
Measure funding source (Steward)	Society of Interventional Radiology

QCDR Measure	ACRad 29
Measure Title	Rate of percutaneous nephrostomy tube replacement within 30 days secondary to dislodgement

Measure Description	Percentage of percutaneous nephrostomy tube replacement within 30 days following initial placement.
QCDR Measure Type	Existing QCDR Measure with No Changes
Does this measure belong to another QCDR? If so	No
NQF Number	
NQS Domain	Patient Safety
NQS Domain Rationale	The rationale for including this measure in the Patient Safety do
Denominator	Number of percutaneous nephrostomy tubes placed primarily.
Denominator Data Elements	# of completed initial nephrostomy placement procedures AND Intervening Renal Procedure: Not Applicable/None/Unknown/Right Kidney [Specify]/Left Kidney [Specify]/Bilateral Kidneys [Specify] {part of all reports}
Denominator Exclusions	None
Denominator Exceptions	Patients undergoing an intervening procedure on the kidney. Ma
Numerator	Number of percutaneous nephrostomy tubes requiring replacement of a percutaneous nephrostomy tube secondary to dislodgement within 30 days of initial placement
Numerator Excluions	None
Numerator Data Elements	Pre-procedure Diagnosis
Number of performance rates to be submitted	1
Indicate an Overall Performance Rate if more tha	N/A
Measure Type (Process/Outcome)	Outcome
High Priority Measure	Patient Safety
Outcome Measure	Yes
Inverse measure	Yes
Proportion Measure	Yes

QCDR Measure	ACRad 29
Measure Title	Rate of percutaneous nephrostomy tube replacement within 30 days secondary to dislodgement

Continuous Measure	No
Ratio Measure	No
If Continuous or Ratio, what would be range of sc	N/A
Is the Measure Risk-Adjusted?	No
If risk-adjusted, which score is risk adjusted?	N/A
Data Source (Registry (<<which registry>>))	Registry (SIR Structured Reports)
Evidence	This measure was approved by CMS for QCDR inclusion in 2017. Replacement of percutaneous nephrostomy tubes that have become dislodged contributes to cost to the healthcare system and can lead to morbidity/mortality depending on the clinical scenario. Percutaneous nephrostomy catheters have an expected duration of 4-8 weeks depending on the clinical scenario; tubes are exchanged if long-term external drainage is required. Replacement of the tube once dislodged requires navigating an established tract (chronic) or a new percutaneous access (recently placed catheter). The rate of dislodgement has been reported from lessthan 1% in the early postplacement period to between 11 and 30% for longer duration catheters (1,2). Different securing strategies have been described in the literature and are known to reduce the rate of catheter dislodgement (3,4). Replacement of percutaneous nephrostomy tubes unnecessarily re-exposes patientsto the risks inherent with the initial tube placement (5). References: 1. Farrell TA et al. A review of radiologically guided percutaneous nephrostomies in 303 patients. JVIR 1997;14(9 pt 2): S277-S281. 2. Lee WJ et al. Emergency percutaneous nephrostomy: results and complications. JVIR 1994; 5(1):135-139. 3. Zhou T et al. Reinforcement for percutaneous nephrostomy tubes with a new technique. J Endourol. 2011;25(1):41-4. 4. Bayne D et al. Determinants of nephrostomy tube dislodgement after percutaneous nephrolithotomy. J Endourol. 2015;(29)3:289-92. 5. Pabon-Ramos WM et al. Quality Improvement Guidelines for Percutaneous Nephrostomy. JVIR 2016; 27:410-414.
Rationale	Replacement of percutaneous nephrostomy tubes that have

	become dislodged contributes to cost to the healthcare system and can lead to morbidity/mortality depending on the clinical scenario. Percutaneous nephrostomy catheters have an expected duration of 4-8 weeks depending on the clinical scenario; tubes are exchanged if long-term external drainage is required. Replacement of the tube once dislodged requires navigating an established tract (chronic) or a new percutaneous access (recently placed catheter). The rate of dislodgement has been reported from less than 1% in the early postplacement period to between 11 and 30% for longer duration catheters. Different securing strategies have been described in the literature and are known to reduce the rate of catheter dislodgement. Replacement of percutaneous nephrostomy tubes unnecessarily re-exposes patients to the risks inherent with the initial tube placement.
Specialty/specialties this measure applies to	Radiology
Measure funding source (Steward)	Society of Interventional Radiology

QCDR Measure	ACRad 30
Measure Title	Rate of Inadequate Percutaneous Image-Guided Biopsy

Measure Description	The percentage of percutaneous image-guided (US, CT, fluoro) biopsy procedures performed in which sampling was inadequate for diagnosis on the final pathology report.
QCDR Measure Type	Existing QCDR Measure with No Changes
Does this measure belong to another QCDR? If so	No
NQF Number	
NQS Domain	Patient Safety
NQS Domain Rationale	The rationale for including this measure in the Patient Safety do
Meaningful Measure Area	Appropriate Use of Healthcare
Denominator	Number of percutaneous image-guided biopsies performed
Denominator Data Elements	Number of percutaneous biopsy procedure reports
Denominator Exclusions	None
Denominator Exceptions	Repeat biopsy procedures performed following an initial inadeq
Numerator	Number of percutaneous image-guided biopsy procedures performed associated with a specimen sample considered inadequate for pathological analysis.
Numerator Excluions	None
Numerator Data Elements	Previous Biopsy
Number of performance rates to be submitted	1
Indicate an Overall Performance Rate if more tha	N/A
Measure Type (Process/Outcome)	Outcome
High Priority Measure	Patient Safety
Outcome Measure	Yes
Inverse measure	Yes
Proportion Measure	Yes
Continuous Measure	No
Ratio Measure	No
If Continuous or Ratio, what would be range of sc	N/A

QCDR Measure	ACRad 30
Measure Title	Rate of Inadequate Percutaneous Image-Guided Biopsy

Is the Measure Risk-Adjusted?	No
If risk-adjusted, which score is risk adjusted?	N/A
Data Source (Registry (<<which registry>>))	Registry (SIR Structured Reports)
Evidence	This measure was approved by CMS for QCDR inclusion in 2017. The success rate of percutaneous biopsy is determined by the suitability of the sample for pathological analysis. Patients in whom a biopsy procedure yields inadequate specimens for analysis may be referred for repeat percutaneous biopsy, open biopsy, or undergo imaging to assess for alternative sites for biopsy increasing costs to the system, necessitating a second procedure or imaging test, and resulting in a delay in diagnosis. This measure provides an overall assessment of effective biopsy sampling, which directly influences the patient experience and is an important component of efficient patient care. Evidence to support this measure comes from several published studies which were reviewed in a SIR Standards of Practice Document published in 2010 (1). The mean pooled success rates ranged from 70-96% for adequacy of sampling across a range of biopsy locations in 23 studies. The consensus panel suggested a threshold of 70-75% adequate sampling rate for internal quality improvement purposes. The proposed metric is intended not to penalize operators for attempting difficult percutaneous biopsies, but rather to place a priority on working with on-site pathologists to enable cytopathologic review during the biopsy procedure to ensure adequacy of sampling in a single procedure. References: 1. Gupta S, Wallace MJ, Cardella JF et al. Quality Improvement Guidelines for Percutaneous Needle Biopsy. JVIR 2010; 21:969=975
Rationale	The success rate of percutaneous biopsy is determined by the suitability of the sample for pathological analysis. Patients in whom a biopsy procedure yields inadequate specimens for analysis may be referred for repeat percutaneous biopsy, open biopsy, or undergo imaging to assess for alternative sites for biopsy increasing costs to the system, necessitating a second procedure or imaging test, and resulting in a delay in diagnosis. This measure provides an overall assessment of effective biopsy sampling, which directly influences the patient experience and is an important component of efficient patient care.Evidence to support this measure comes from several published studies which were reviewed in a SIR Standards of Practice Document

	published in 20101. The mean pooled success rates ranged from 70-96% for adequacy of sampling across a range of biopsy locations in 23 studies. The consensus panel suggested a threshold of 70-75% adequate sampling rate for internal quality improvement purposes. The proposed metric is intended not to penalize operators for attempting difficult percutaneous biopsies, but rather to place a priority on working with on-site pathologists to enable cytopathologic review during the biopsy procedure to ensure adequacy of sampling in a single procedure.
Specialty/specialties this measure applies to	Radiology
Measure funding source (Steward)	Society of Interventional Radiology

QCDR Measure	ACRad 34
Measure Title	Multi-strata weighted average for 3 CT Exam Types: Overall Percent of CT exams for which Dose Length Product is at or below the size-specific diagnostic reference level (for CT Abdomen-pelvis with contrast/single phase scan, CT Chest without contrast/single phase scan and CT Head/Brain without contrast/single phase scan)

Measure Description	Weighted average of 3 former QCDR measures, ACRad 31, ACRad 32, ACRad 33.
QCDR Measure Type	New QCDR Measure
Does this measure belong to another QCDR?	No
NQF Number	
NQS Domain	Patient Safety
NQS Domain Rationale	The rationale for including this measure in the Patient Safety do
Meaningful Measure Area	Preventable Healthcare Harm
Denominator	Number of CT Abdomen-pelvis exams with contrast (single phase scans), CT Chest exams without contrast (single phase scans), and CT Head/Brain (single phase scans)
Denominator Data Elements	Study description; Exam date; Acquisition protocol
Denominator Exclusions	None
Denominator Exceptions	None
Numerator	Number of CT Abdomen-Pelvis exams with contrast (single phase scan), CT Chest exams without contrast (single phase scan), and CT Head/Brain exams without contrast (single phase scan) for which Dose Length Product is at or below the size-specific exam-specific diagnostic reference level.
Numerator Exclusions	None
Numerator Data Elements	Dose length product; CTDIw Phantom Type; Effective Diameter (calculated from localizer image)
Number of performance rates to be submitted	1
Indicate an Overall Performance Rate if more tha	N/A
Measure Type (Process/Outcome)	Outcome
High Priority Measure	Patient Safety
Outcome Measure	Yes
Inverse measure	No

QCDR Measure	ACRad 34
Measure Title	Multi-strata weighted average for 3 CT Exam Types: Overall Percent of CT exams for which Dose Length Product is at or below the size-specific diagnostic reference level (for CT Abdomen-pelvis with contrast/single phase scan, CT Chest without contrast/single phase scan and CT Head/Brain without contrast/single phase scan)

Proportion Measure	Yes
Continuous Measure	No
Ratio Measure	No
If Continuous or Ratio, what would be range of sc	N/A
Is the Measure Risk-Adjusted?	No
If risk-adjusted, which score is risk adjusted?	N/A
Data Source (Registry (<<which registry>>))	Registry (Dose Index Registry Database)
Evidence	This measure is a composite of three previously approved QCDR measures, ACRad 31, ACRad 32, and ACRad 33. There has been a considerable rise in use of Computed Tomography (CT) over the past 10 years. With that, there is also a significant increase in the population's cumulative exposure to ionizing radiation. A CT study should use as little radiation as possible, while still meeting the image quality needs of the exam. Dose Length Product (DLP) is a standardized parameter to measure scanner radiation output to a patient and is a useful index to compare protocols across different practices and scanners. Providing comparative data across exam types to a physician or site will help adjust imaging protocols to obtain diagnostic images using the lowest reasonable dose. This measures the CT scanner radiation output specific to a patient and exam, comparing and benchmarking the actual dose index delivered to patients. While DLP itself is not a measure or estimate of actual patient radiation dose, it is closely related to doses received by patients. DLP is a measure of scanner output received and experienced by patients and not simply documentation of whether DLP was recorded. This measure is calculated at the facility level because protocol optimization is the combined effort of physicians, medical physicists and technologists in the practice, and change needs to be driven by the interpreting physicians as a team. Physicians see this information when interpreting an image and can participate actively with the rest of their team to manage the dose while maintaining diagnostic quality images. The determination of ionizing radiation dose to a living human is very complex and poses many challenges for referring physicians, radiologists, radiologic technologists, medical physicists, equipment vendors, regulators, and patients. To determine the absorbed radiation dose, the initial x- ray beam exposure and the absorption in each organ must be known. It is the latter quantity that complicates this determination. This absorption is dependent on the amount and

properties of each tissue encountered by the x-ray beam, and these parameters vary widely among patients. The situation is further complicated because it is not practical to insert radiation detectors into each organ of every patient. It is important to understand that the reported numerical values for individual radiation doses may vary by factors of 5 to 10 depending on individual patients and the manner of image acquisition.

There are many challenges in dose monitoring, including collection of accurate data with minimal effort on the part of the facility, standardization of procedure names so that benchmarks can be applied appropriately, and adjustment for patient sizes. Dose registries would enable facilities to compare their radiation doses to those delivered in other facilities for the same exam, and such comparisons over time could assist in optimizing patient radiation doses for medical imaging. The goals of tracking imaging exams and the associated radiation exposure include: (1) providing information at the point-of-care for the referring practitioner (i.e. supporting justification); (2) promoting development and use of diagnostic reference levels (DRLs) (i.e. supporting optimization); (3) providing information for assessment of radiation risks; and (4) establishing a tool for use in research and epidemiology.

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Rationale

This measure was discussed with CMS and is a modification and consolidation of previous measures. This measure is distinct from similar measures for head/brain and chest as these exams have different anatomic considerations, and are interpreted by different sub-specialists.) There has been a considerable rise in use of Computed Tomography (CT) over the past 10 years. With that, there is also a significant increase in the population's cumulative exposure to ionizing radiation. A CT study should use as little radiation as possible, while still meeting the image quality needs of the exam. Dose Length Product (DLP) is a standardized parameter to measure scanner radiation output to a patient and is a useful index to compare protocols across different practices and scanners. Providing comparative data across exam types to a physician or site will help adjust imaging protocols to obtain diagnostic images using the lowest reasonable dose. This measures the CT scanner radiation output specific to a patient and exam, comparing and benchmarking the actual dose index delivered to patients. While DLP itself is not a measure or estimate

	of actual patient radiation dose, it is closely related to doses received by patients. DLP is a measure of scanner output received and experienced by patients and not simply documentation of whether DLP was recorded. This measure is calculated at the facility level because protocol optimization is the combined effort of physicians, medical physicists and technologists in the practice, and change needs to be driven by the interpreting physicians as a team. Physicians see this information when interpreting an image and can participate actively with the rest of their team to manage the dose while maintaining diagnostic quality images.
Specialty/specialties this measure applies to	Radiology
Measure funding source (Steward)	American College of Radiology

QCDR Measure	ACRad 35
Measure Title	Screening Mammography Early Cancer Detection Rate

Measure Description	Percentage of cancers detected at screening mammography that were detected when minimal or node negative
QCDR Measure Type	Existing QCDR Measure with No Changes
Does this measure belong to another QCDR?	No
NQF Number	
NQS Domain	Effective Clinical Care
NQS Domain Rationale	The rationale for placing this measure in the Effective Clinical Ca
Meaningful Measure Area	Preventative Care
Denominator	Number of invasive cancers detected at screening mammography; number of cancers detected at screening mammography
Denominator Data Elements	Indication for examination; Exam date; Classification of lesion; Malignancy type
Denominator Exclusions	None
Denominator Exceptions	None
Numerator	Number of cancers that were (a) invasive and node negative, OR (b) invasive and <= 10mm, OR (c) DCIS
Numerator Exclusions	None
Numerator Data Elements	Nodal status; tumor size; malignancy type
Number of performance rates to be submitted	1
Indicate an Overall Performance Rate if more tha	N/A
Measure Type (Process/Outcome)	Outcome
High Priority Measure	Yes
Outcome Measure	Yes
Inverse measure	No
Proportion Measure	Yes
Continuous Measure	No
Ratio Measure	No
If Continuous or Ratio, what would be range of sc	N/A

QCDR Measure	ACRad 35
Measure Title	Screening Mammography Early Cancer Detection Rate

Is the Measure Risk-Adjusted?	No
If risk-adjusted, which score is risk adjusted?	N/A
Data Source (Registry (<<which registry>>))	Registry (National Mammography Database)
Evidence	This measure is a composite of two previously approved QCDR measures, ACRad 7 and ACRad 8. This measure is recommended for use for group reporting only. Node negativity reflects predictor of cancer prognosis, so it is the best measure to assess for "earliness" of detection. Minimal cancer rate is another indicator of the "earliness" of cancer detection. Unlike node negativity, it includes DCIS, but among invasive cancers it is limited to node negative tumors no larger than 10mm. Detecting a cancer when it is node-negative alerts the patient about disease when it is curable, and provides the patient and treating physician more options for planning treatment as well as higher likelihood of positive outcome of treatment. When mammography is used for screening, the patient population should be fairly similar between providers but we will work on risk adjustment models to ensure fair comparison. Three major goals of screening mammography include: 1) Find a high percentage of the cancersthat exist in a screening population (cancer detection rate), 2) Find these cancers within an acceptable range of recommendations for recall or biopsy to minimize cost and morbidity (abnormal interpretation, PPV), 3) Find a high percentage ofsmall, node-negative cancers, which are more likely to be curable (rate of minimal cancer, node-negative) There also is evidence of considerable variability in performance parameters among interpreting radiologists. These measures are designed to assess the outcome and effectiveness of the interpretation of screening mammography studies. Evidence-based guidelines, observational studies, randomized controlled trials, systematic syntheses of research and meta-analyses all provide support for the high impact these mammography measures have on quality healthcare. Mammograms affect large numbers of patients, are frequently performed, relate to a leading cause of morbidity/mortality, in many cases

demonstrate a severity of illness, and could impact high resource use.

There also is evidence of considerable variability in performance parameters among interpreting radiologists. These measures are designed to assess the outcome and effectiveness of the interpretation.

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Rationale

This measure is a composite of two previously approved QCDR measures, ACRad 7 and ACRad 8.

This measure is recommended for use for group reporting only. Node negativity reflects predictor of cancer prognosis, so it is the best measure to assess for "earliness" of detection. Minimal cancer rate is another indicator of the "earliness" of cancer detection. Unlike node negativity, it includes DCIS, but among invasive cancers it is limited to node negative tumors no larger than 10mm. Detecting a cancer when it is node-negative alerts the patient about disease when it is curable, and provides the patient and treating physician more options for planning treatment as well as higher likelihood of positive outcome of treatment. When mammography is used for screening, the patient population should be fairly similar between providers but we will work on risk adjustment models to ensure fair comparison.

Three major goals of screening mammography include:
4) Find a high percentage of the cancersthat exist in a screening population (cancer detection rate),
5) Find these cancers within an acceptable range of recommendations for recall or biopsy to
minimize cost and morbidity (abnormal interpretation, PPV),
6) Find a high percentage ofsmall, node-negative cancers, which are more likely to be curable (rate
of minimal cancer, node-negative)

There also is evidence of considerable variability in performance parameters among interpreting radiologists. These measures are designed to assess the outcome and effectiveness of the interpretation of screening mammography studies.

Evidence-based guidelines, observational studies, randomized

	controlled trials, systematic syntheses of research and meta-analyses all provide support for the high impact these mammography measures have on quality healthcare. Mammograms affect large numbers of patients, are frequently performed, relate to a leading cause of morbidity/mortality, in many cases demonstrate a severity of illness, and could impact high resource use. There also is evidence of considerable variability in performance parameters among interpreting radiologists. These measures are designed to assess the outcome and effectiveness of the interpretation.
Specialty/specialties this measure applies to	Radiology
Measure funding source (Steward)	American College of Radiology

For more information, please visit the NRDR QCDR website.

https://www.acr.org/Practice-Management-Quality-Informatics/Registries