The following Q&As address Medicare guidelines on the reporting of breast imaging procedures. Private payer guidelines may vary from Medicare guidelines and from payer to payer; therefore, please be sure to check with your private payers on their specific breast imaging guidelines.

Q: What differentiates a diagnostic from a screening mammography procedure?

Medicare's definitions of screening and diagnostic mammography, as noted in the Centers for Medicare and Medicaid's (CMS') National Coverage Determination database, and the American College of Radiology's (ACR's) definitions, as stated in the ACR Practice Parameter of Screening and Diagnostic Mammography, are provided as a means of differentiating diagnostic from screening mammography procedures. Although Medicare's definitions are consistent with those from the ACR, the ACR's definitions of screening and diagnostic mammography offer additional insight into what may be included in these procedures. Please go to the CMS and ACR Web site links noted below for more indepth information about these studies.

Medicare Definitions (per the CMS National Coverage Determination for Mammograms 220.4)

"A *diagnostic* mammogram is a radiologic procedure furnished to a man or woman with signs and symptoms of breast disease, or a personal history of breast cancer, or a personal history of biopsy - proven benign breast disease, and includes a physician's interpretation of the results of the procedure."

"A screening mammogram is a radiologic procedure furnished to a woman without signs or symptoms of breast disease, for the purpose of early detection of breast cancer, and includes a physician's interpretation of the results of the procedure. A screening mammogram has limitations as it must be, at a minimum a two-view exposure (cranio-caudal and a medial lateral oblique view) of each breast."

Medicare will not pay for a screening mammogram performed on a woman under the age of 35. Medicare will pay for only one screening mammography procedure performed on a woman over age 34 but under age 40. For an asymptomatic woman over age 39, payment may be made for a screening mammography performed after at least 11 months have passed following the month in which the last screening mammography was performed.

As noted in the Medicare Benefit Policy Manual, Chapter 15 — Covered Medical and Other Health (Section 280.3) "the term 'screening mammography' means a radiologic procedure provided to an asymptomatic woman for the purpose of early detection of breast cancer..." Therefore, Medicare does not cover screening mammography for a man.*

Medicare will pay for a diagnostic mammogram when one of the following conditions is met:

- A patient has distinct signs and symptoms for which a mammogram is indicated
- A patient has a history of breast cancer
- A patient is asymptomatic but, on the basis of the patient's history and other factors the physician considers significant, the physician's judgment is that a [diagnostic] mammogram is appropriate

*See www.cms.gov/Regulations-and-guidance/Guidance/Transmittals/downloads/R1877CP.pdf for the use of modifier KX on claims for transgender patients.

ACR Definitions (as defined in the ACR Practice Parameter of Screening and Diagnostic Mammography)

Screening mammography is a radiological examination to detect unsuspected breast cancer in asymptomatic women. Standard views are obtained, and thus the interpreting physician does not need to be present at the facility to monitor the examination when the patient is imaged.

The examination should ordinarily be limited to craniocaudal (CC) and mediolateral oblique (MLO) views of each breast. On occasion, supplementary views may be required to visualize breast tissue completely or optimally, but such views are not ordinarily part of the routine screening examination except for women with implants. Views may be modified to accommodate patient positioning limitations.

Diagnostic mammography is a radiologic examination performed to evaluate patients who have signs and/or symptoms of breast disease, imaging findings of concern, or prior imaging findings requiring specific follow-up. Diagnostic mammography requires direct supervision.¹ A diagnostic mammogram may include MLO, CC, and/or additional views to evaluate an area of clinical or radiographic concern. Additional mammographic views might include spot compression, spot compression with magnification, tangential views, or other special views. When selecting a view, the proximity of the area of concern to the image receptor should be considered.

The written or electronic request for a diagnostic mammography examination should provide sufficient information to demonstrate the medical necessity for the examination and allow for its proper performance and interpretation.

As noted in Section II. Indications, B. Diagnostic Mammography, of the ACR Practice Parameter of Screening and Diagnostic Mammography, indications for diagnostic mammography include (but are not limited to):

- Diagnostic mammography is used to evaluate a clinical breast finding(s), such as an area of palpable concern, a persistent focal area of pain or tenderness, skin/nipple changes, or suspicious nipple discharge.
- 2. A clinical breast finding may be elicited when a woman presents for a screening mammogram. If so, a diagnostic mammogram should be performed instead.
 - a. The facility should have a process for converting a screening mammogram to a diagnostic examination (which may comprise both mammography and ultrasound).
- 3. Diagnostic mammography is used to evaluate abnormal imaging findings identified on screening mammography.
 - Occasionally, diagnostic mammography may be requested to characterize breast findings identified on imaging examinations not specific to the breast, such as computed tomography (CT), positron emission tomography/computed tomography (PET/CT), or magnetic resonance (MR) studies.
 - b. Diagnostic mammography may be indicated to further evaluate a finding identified on a breast MR examination, although targeted ultrasound is more commonly used in this setting.
- Diagnostic mammography should be performed for follow-up evaluation of a mammographic finding assessed as "probably benign" at a prior diagnostic examination, as defined by the ACR Breast Imaging Reporting and Data System (BI-RADS[®]) [18].

When billing for a Medicare patient who has had a mammogram, one must be cautious to follow the Centers for Medicare and Medicaid Services' definition. One should consult the local Medicare carrier or

Medicare Administrative Contractor to determine how to code for some scenarios. Note that non-Medicare third-party payers should be contacted as they may handle coverage of screening and diagnostic mammograms differently.

ACR Practice Parameter for the Performance of Screening and Diagnostic Mammography (Res. 35 - 2018)

Direct supervision is defined as the physician being present and immediately available to furnish assistance and direction throughout the performance of the procedure. Direct supervision may also be accomplished via telemammography as long as the interpreting physician is immediately available.

Q: How are additional views reported when performed during a screening mammography procedure to better visualize breast tissue?

Additional views performed to better visualize breast tissue are considered part of the base procedure performed and not reported separately. Although a screening examination should ordinarily be limited to craniocaudal (CC) and mediolateral oblique (MLO) views of each breast, on occasion, supplemental views may be required to visualize breast tissue completely or optimally, but such views are not ordinarily part of the routine screening examination except for women with implants.² When pathology is suspected, a recommendation for additional imaging may be warranted.

²ACR Practice Parameter for the Performance of Screening and Diagnostic Mammography (Res. 35 - 2018)

Q: How is computer-aided detection (CAD) coded when performed in addition to mammography?

Three Category I codes were created to describe mammography (both digital and analog) with computer-aided detection (CAD) when performed. This means that the payment for CAD is included in the base code's value and is not paid separately. These bundled codes (77065, 77066, 77067) replaced CPT CAD codes 77051 and 77052, and mammography codes 77055, 77056, 77057, G0202, G0204, and G0206). The same codes are used if CAD is not performed.

Q: What code(s) should be reported to describe a screening mammogram when additional mammogram work-up views are required for a suspected abnormality? May I code both a diagnostic mammogram and a screening mammogram and is an order required?

If a screening mammogram is performed and, after review of the images, an abnormality is suspected, the interpreting physician is allowed to order additional images. When additional views are obtained, Medicare states that it is appropriate to charge for both a screening mammogram and a diagnostic mammogram whether the studies are performed on the same or different days. If the additional views are done on the same day as the screening mammogram, the diagnostic study should be reported with the GG modifier, which Medicare uses for tracking purposes. This modifier designates the performance and payment of a screening mammogram and diagnostic mammogram on the same patient, same day.

In March 2015, CMS responded to an appeal from the ACR regarding a newly implemented National Correct Coding Initiative (NCCI) edit for screening mammography and diagnostic mammography performed on the same patient on the same date of service. CMS elected to retain these NCCI edits. Per CMS, if a provider performs both screening and diagnostic mammography on the same patient on the same date of service, CMS instructions require that a provider report modifier GG with the diagnostic mammography code (77065 or 77066). However, because modifier GG is not an NCCIassociated modifier and will not bypass the NCCI edit, providers are instructed to additionally append

modifier 59 (Distinct Procedural Service) to the screening mammography (77067) to bypass the NCCI edits.

When a patient has a screening mammogram performed on one day and returns on another day for the additional diagnostic mammogram, both the screening mammogram and diagnostic mammogram services should be coded separately. In this scenario, no GG modifier would be required.

See Medicare Claims Processing Manual, Chapter 18, Preventive and Screening Services, Section 20.2 — HCPCS and Diagnosis Codes for Mammography Services _for additional information on the reporting of a screening and diagnostic mammogram performed on the same day.

Q: Is it appropriate to combine the interpretation of a screening and a diagnostic study into one report or must two separate reports be issued?

Yes, there are instances where it is appropriate to combine the interpretation of a screening and a diagnostic study into one report. According to the ACR Breast Imaging Reporting and Data System (BIRADS[®])* frequently asked questions available at https://www.acr.org/Clinical-Resources/Reporting-and-Data-Systems/Bi-Rads

*BI-RADS[®] was developed by the ACR to standardize mammographic reporting, improve communication, reduce confusion regarding mammographic findings, aid research, and facilitate outcomes monitoring.

Q: How do you code for a unilateral screening mammogram in a patient who has had one of her breasts removed? The code descriptor for a screening mammogram specifies that it is a bilateral study.

When a screening mammography study is ordered and performed on a patient who has only one breast, it is appropriate to report 77067 (*Screening mammography, bilateral (2-view study of each breast*), *including computer-aided detection (CAD) when performed*. Because the CPT code descriptor for 77067 states "bilateral," it would be appropriate to use a 52 modifier, *Reduced Services*, to designate a screening procedure of only one breast. However, radiology practices should check with their local contractor and other third-party payers regarding the use of the 52 modifier in this situation, because some payers have stated that a 52 modifier is not necessary for reporting a unilateral screening mammogram.

Q: We received an order for a screening mammogram on one breast and a diagnostic mammogram on the other breast at the same patient visit. Is it appropriate to report a unilateral screening and a unilateral diagnostic mammogram for this service?

No, it is not recommended to perform a screening exam on one breast and a diagnostic exam on the other breast at the same patient visit. In this scenario, a single diagnostic mammogram of both breasts is indicated, rather than two separate examinations. According to the ACR Practice Parameter on Screening and Diagnostic Mammography, overall final assessment of findings should be based on all imaging studies performed at that patient visit and classified according to FDA-approved final assessment categories following the ACR BI-RADS Atlas; this would not be possible if two separate examinations (i.e., screening mammogram of one breast and diagnostic mammogram of the other breast) were performed. Nonetheless, radiology practices should check with their local carriers and third-party payers to ensure they do not have different guidelines.

Q: What is the correct way to code for a mammography examination on a mastectomy patient when images of remaining tissue or axillary region on the mastectomy side are performed? Is it correct to report a bilateral mammography code even though there is no breast tissue? Would this be considered a screening or diagnostic study?

Yes, it is correct to code a bilateral mammography examination code even though there is no obvious breast tissue because both the side of the remaining breast and the mastectomy side are being imaged. This is analogous to a mammogram of a man, where there is little breast tissue. Depending on the type of mastectomy performed, there may be residual breast tissue left behind. If there is enough clinical concern to warrant imaging, there is probably clinical concern that a small amount of breast tissue remains. This should, therefore, be billed as a bilateral diagnostic mammogram (code 77066).

Q: Should a screening mammogram or a diagnostic mammogram be performed on an asymptomatic patient with augmented breasts (e.g., breast implants)?

Note: The ACR's guidance differs from CMS' policy for asymptomatic patients with augmented breasts. According to the ACR Practice Parameter for Performance of Screening and Diagnostic Mammography, the facility and/or interpreting physician can determine whether a woman with augmented breasts (breast implants) is imaged as a screening or a diagnostic patient. The practice parameter notes the following screening mammography indications for a woman with breast augmentation:

8. Women with breast augmentation

a. Asymptomatic women with breast implants may undergo screening mammography. b. Facilities must have procedures in place to inquire whether patients have breast implants before a mammogram is performed.

c. If a facility does not provide imaging services for women with breast implants, it should refer the patient to a facility that does.

However, the CMS' payment policy for a diagnostic mammogram does not recognize asymptomatic patients with augmented breasts as diagnostic. Medicare will pay only for a screening mammogram for an asymptomatic woman with breast implants.

Because Medicare denies the necessity of a diagnostic mammogram for an asymptomatic patient with augmented breasts, if a diagnostic mammogram is performed rather than a screening mammogram, it is recommended that the physician have the patient sign an advance beneficiary notice form so that the radiologist may bill the patient for the procedure. If the patient and referring physician decide that a screening mammogram should be performed, then the patient would receive a screening mammogram. The ACR practice parameters are an educational tool designed to assist practitioners in providing appropriate radiologic care for patients. They are not inflexible rules or requirements of practice and are not intended, nor should they be used, to establish a legal standard of care. The ultimate judgment regarding the propriety of any specific procedure or course of action must be made by the physician or medical physicist in light of all the circumstances presented. Thus, an approach that differs from the guidelines, does not necessarily imply that the approach was below the standard of care.³

ACR Practice Parameter for the Performance of Screening and Diagnostic Mammography (Res. 35 - 2018)

Q: Is it appropriate to separately code for the review of prior mammographic images when those images are not available for comparison at the time of the current mammogram interpretation?

No, it is not appropriate to separately code for the review of prior mammographic images when they are not available for comparison at the time of interpretation of the current images. The comparison of prior images (when available) is an important part of interpreting screening and diagnostic mammography. Radiology practices should work to ensure images are available for comparison at the time of the current mammography interpretation, but if the prior images are submitted after the current mammogram has already been interpreted, then a non-billable addendum may be rendered.

Q: What type of mammogram should a patient who has a personal history of biopsy-proven benign breast disease receive?

As noted in the Dec. 8, 1995 *Federal Register*, p. 28, the Centers for Medicare and Medicaid Services expanded its definition of diagnostic mammography to include a personal history of biopsy-proven benign breast disease, thereby allowing the attending physician and the patient the opportunity to determine whether a screening mammogram or a diagnostic mammogram is performed.

Q: Is there a guideline that states that patients with a history of mastectomy must revert back to a screening mammography study after a set number of negative diagnostic studies or after a specified number of years post mastectomy?

No, Medicare does not have a specific requirement that a patient with a history of mastectomy must revert back to a screening mammography study after a set number of negative diagnostic studies or after a specified number of years post mastectomy. CMS allows the attending physician and the patient the flexibility to choose whether they want to continue with a diagnostic mammogram or revert back to the screening process.

Q: Can an order be changed from diagnostic mammography to ultrasound without a new order from the referring physician?

No, the radiologist cannot change a diagnostic mammogram to an ultrasound without a new order from the referring physician. As stated in Medicare Carrier's Manual Transmittal 1725, "the treating physician/practitioner may not change the diagnostic test ordered (e.g., CT to MR) without a new order from the requesting physician."

Q: What supervision level is required for a diagnostic mammogram?

There is nothing in the regulations that requires supervision by a radiologist for mammography procedures. The October 31, 1997, the Healthcare Financing Administration [now known as the Centers for Medicare and Medicaid Services (CMS)] final rule clarifying the appropriate level of physician supervision for diagnostic tests payable under the Medicare Physician Fee Schedule does not apply to mammography procedures. Mammography is covered under the Food and Drug Administration's Mammography Quality Standards Act (MQSA) guidelines, which also do not address the issue of supervision. However, the ACR Practice Parameter of Screening and Diagnostic Mammography noted for screening mammography, "interpreting physician does not need to be present at the facility to monitor the examination when the patient is imaged" and recommends diagnostic mammography "should be performed under the immediate supervision of the interpreting physician."

Q: What national provider identifier (NPI) number should be reported when a self-referred mammography patient is seen?

The Centers for Medicare & Medicaid Services has instructed providers to use the institution's NPI number for self-referred mammograms for all claims submitted on or after May 23, 2008. Please reference the CMS Change Request 6023 MLN Matters[®] Article which states:

• Institutional providers submitting claims for self-referred mammography services will duplicate the institution's own NPI in the attending physician NPI field on their claims; **and**

• Suppliers submitting claims for self-referred mammography services will duplicate the supplier's own NPI in the attending/referring physician NPI field on their claims.

Q: What is a breast tomosynthesis study, and how is it coded?

Breast tomosynthesis is a digital tomographic technique performed using multiple low-dose X-ray exposures. The resulting image data is reconstructed using standard computer algorithms to produce a series of sequential, stacked slices through the breast. This type of tomographic imaging enables the physician to view the breast(s) as thin, discrete image slices on a computer workstation. The addition of digital breast tomosynthesis (DBT) to conventional mammography has been shown to be more sensitive and specific for breast cancer detection.

The Current Procedural Terminology (CPT[®]) Editorial Panel created three Category I codes to describe unilateral diagnostic (77061), bilateral diagnostic (77062), and screening (77063) breast tomosynthesis procedures, which became available for use as of January 1, 2015. However, CMS only recognized code 77063 for screening DBT as an add-on code, but did not recognize the stand-alone diagnostic DBT codes 77061 and 77062. In place of using codes 77061 and 77062, CMS created the HCPCS Level II add-on code G0279 to describe diagnostic DBT, whether unilateral or bilateral.

Q: Is a written order required for breast tomosynthesis?

An order for breast tomosynthesis, as described by the breast tomosynthesis codes (77061, 77062, 77063, G0279), is not required and would fall within the Ordering of Diagnostic Tests Rule exception. However, when breast tomosynthesis is used, the breast tomosynthesis procedure should be documented in the report. See the *Medicare Benefit Policy Manual, Chapter 15 – Covered Medical and Other Health Services*. section 80.6 for the latest guidelines on the Ordering of Diagnostic Tests Rule.

For more information on the Ordering of Diagnostic Test Rule, reference Further Clarification on the Ordering of Diagnostic Tests Rule in the July- Aug 2003 ACR Radiology Coding Source

Q: My digital breast tomosynthesis (DBT) system has the ability to derive synthesized planar mammographic images from the tomosynthesis data set. If I am utilizing synthesized planar images rather than directly acquired full-field digital mammography (FFDM) images, how do I code for that?

ACR published in the Nov-Dec 2014 ACR Radiology Coding Source Q&A advice that a planar mammogram is a planar mammogram, regardless if that planar mammogram was directly acquired FFDM data or synthesized from the DBT data set. Planar mammograms are coded as 77065, 77066, 77067.

Q: How should a diagnostic digital breast tomosynthesis (DBT) study performed without mammographic images be reported for a Medicare patient?

In 2018, the Centers for Medicare and Medicaid Services provided guidance to the ACR stating that code G0279 (Diagnostic digital breast tomosynthesis, unilateral or bilateral (list separately in addition to 77065 or 77066) should be billed with 77065 or 77066, even if a diagnostic planar mammogram was NOT performed. Codes G0279 and 77065 should be reported to describe a unilateral diagnostic digital breast tomosynthesis (DBT), regardless if a planar unilateral diagnostic DBT, regardless if a planar bilateral diagnostic DBT, regardless if a planar bilateral diagnostic mammogram was performed.

Q: In a freestanding office or independent diagnostic testing facility (IDTF) setting, is a separate order required for a breast ultrasound study recommended by a radiologist to further evaluate a suspicious finding on screening mammography?

Yes, in freestanding office and IDTF settings a separate order is required for the addition of a breast ultrasound study following a screening mammography procedure to further evaluate a suspicious finding. The rationale that allows for the performance of a diagnostic mammogram following a screening mammogram without an order from the referring physician does not apply to additional diagnostic testing such as ultrasound or MRI (see Terrence Kay letter to American College of Radiology).

The national office of the Health Care Financing Administration (HCFA), renamed the Centers for Medicare and Medicaid Services in July, 2001, notified the ACR that Medicare proposed and adopted the diagnostic mammography exception to the Ordering of Diagnostic Tests Rule (see Medicare Benefit Policy Manual, Chapter 15, Section 80.6) because Congress made the Food and Drug Administration, rather than HCFA, responsible for the conditions under which mammograms are covered. In addition, the screening mammography benefit contains no requirement for a physician's order. Thus, a beneficiary could receive the screening mammogram on a walk-in basis, with no treating physician to order the subsequent diagnostic procedure. Note that the Ordering of Diagnostic Test Rule does not apply in the hospital setting (see Thomas Scully letter to American Hospital Association, Response #1).

For more information on the Ordering of Diagnostic Test Rule, reference Further Clarification on the Ordering of Diagnostic Tests Rule in the July- Aug 2003 ACR Radiology Coding Source

Q: How should the use of computer-aided detection software be reported in conjunction with breast sonography services?

No code is available to describe computer-aided detection (CAD) performed in conjunction with breast ultrasound. CAD performed in conjunction with breast sonography is reported with the unlisted CPT code 76999 (*Unlisted ultrasound procedure (e.g., diagnostic, interventional)*) to describe the CAD analysis and CPT code 76641 (*Ultrasound, breast, unilateral, real time with image documentation, including axilla when performed; complete*) or 76642 (*Ultrasound, breast, unilateral, real time with image documentation, including axilla when performed; limited*) to describe the breast ultrasound study.

Q: How do you report an ultrasound elastography (USE) of a breast mass to characterize a lesion?

Effective 2019, three Category I codes were created to report USE. See AMA/ACR *Clinical Examples in Radiology*, Volume 14, Issue 4, Fall 2018:

"When an organ is evaluated for the degree of fibrosis utilizing imaging-based ultrasound elastography, code 76981, *Ultrasound, elastography; parenchyma (eg, organ),* should be reported. When imaging based ultrasound elastography is utilized to evaluate targeted lesion(s) within an organ (eg, breast, prostate, or thyroid), codes 76982, *Ultrasound, elastography; first target lesion* and 76983, *Ultrasound, elastography; each additional target lesion (List separately in addition to code for primary procedure)* should be reported. Code 76982 should be reported for evaluation of the first target lesion within a particular organ. Each additional lesion should be reported with add on code 76983. Code 76983 should not be reported more than two times per organ. For evaluation of both the degree of fibrosis within an organ and a target lesion within the same organ, report code 76981."

Q: Since there are two breast ultrasound codes (*Ultrasound, breast, unilateral, real time with image documentation, including axilla when performed; complete* (76641), and *limited* (76642)), should referring physicians be asked to specify on the order whether they want limited or complete, or should the radiologist do what he/she thinks is appropriate no matter what is on the order?

The referring physician does not need to specify in an order if a complete or limited breast ultrasound is required. The type of ultrasound performed may be determined by the radiologist under the Ordering of Diagnostic Test Rule exemption, similar to the decision to perform a CT with or without contrast. For example, if the order is for breast ultrasound, the radiologist may determine if it should be a complete or limited ultrasound based on the medical necessity. However, if the referring physician specifies that a complete or limited ultrasound should be performed, the radiologist should speak with the referring physician if the radiologist disagrees with the type of study requested.

As noted above, the determination of whether a complete or limited study is performed falls under the Ordering of Diagnostic Tests Rule exemption, "Unless specified in the order, the interpreting physician may determine, without notifying the treating physician/practitioner, the parameters of the diagnostic test (e.g., number of radiographic views obtained, thickness of tomographic sections acquired, use or non-use of contrast media)" or "the radiologist may modify an order with clear and obvious errors (e.g., X-ray of wrong foot ordered)" (see Section 80.6.4, Chapter 15, Medicare Benefit Policy Manual). This applies to an interpreting physician of a testing facility who furnishes a diagnostic test to a beneficiary who is not a hospital inpatient or outpatient.

A "testing facility" is a Medicare provider or supplier that furnishes diagnostic tests. A testing facility may include a physician or a group of physicians (e.g., radiologist, pathologist), a laboratory, or an independent diagnostic testing facility (IDTF).

For more information on the Ordering of Diagnostic Test Rule, reference Further Clarification on the Ordering of Diagnostic Tests Rule in the July- Aug 2003 ACR Radiology Coding Source

Q: What makes up a limited versus a complete breast ultrasound?

Per the *CPT*[®] 2021 codebook, Professional Edition, p. 536, code 76641 represents a complete ultrasound examination of the breast. Code 76641 consists of an ultrasound examination of all four quadrants of

the breast and the retro-areolar region. It also includes ultrasound examination of the axilla, if performed.

Code 76642 consists of a focused ultrasound examination of the breast limited to the assessment of one or more, but not all, of the elements listed in code 76641. It also includes ultrasound examination of the axilla, if performed. If only the axilla is scanned, it should be coded as a limited extremity ultrasound, code 76882.

Use of ultrasound, without thorough evaluation of organ(s) or anatomic region, image documentation, and final written report, is not separately reportable.

Q: If a breast ultrasound study is performed on both breasts, how should that be coded?

The breast ultrasound codes are unilateral procedures. When the same type of breast ultrasound study is performed on both breasts, it is appropriate to report the code twice – once with an RT modifier and once with an LT modifier to designate a bilateral procedure was performed. For example, a complete breast ultrasound of both the right breast and left breast would be reported as 76641-RT and 76641-LT. Modifiers are payer specific; check with your third-party payers to determine how you should report these procedures.

Q: Does Medicare pay for a breast ultrasound when performed as a screening study?

No, Medicare does not pay for a breast ultrasound when performed as a screening study, as Medicare pays for screening studies only when they are mandated by Congress. Medicare will pay for a limited or complete breast ultrasound if medically indicated.

If breast ultrasound is performed as a screening study, a Medicare patient would be responsible for payment. Non-covered services (i.e., services excluded by law or under a non-benefit category) do not require that a waiver (Advance Beneficiary Notice) be signed, and the patient is responsible for payment. Click here for more information on Medicare's Advance Beneficiary Notice.

For most purposes, women whose breasts are classified as heterogeneously dense or extremely dense are considered to have dense breasts. Some states have enacted breast density notification laws that require women to be informed when a mammogram indicates that she has dense breasts. Other supplementary imaging tests, including breast tomosynthesis, breast ultrasound, and breast MRI, may help find breast cancers that cannot be seen in dense breasts during a mammography exam.¹

¹Radiology Info https://www.radiologyinfo.org/en/info.cfm?pg=dense-breasts

Q: How should breast MRI with the use of computer-aided detection software be reported?

Prior to January 1, 2019, breast MRI with CAD was reported with codes 77058, 77059, and 0159T. These codes have been deleted and replaced with codes 77046-77049. Effective January 1, 2019, MRI breast codes bundle in the performance of CAD, when performed.

CPT Description	CPT Codes
MRI, breast, w/o contrast; unilateral	77046
MRI, breast, w/o contrast; bilateral	77047
MRI, breast, w/o and w/ contrast, including CAD, when performed; unilateral	77048
MRI, breast, w/o and w/ contrast, including CAD, when performed; bilateral	77049

Q: How do you code for an MRI of the breast performed only with contrast (as opposed to without and with contrast)?

Currently, there is no code to report breast MRI only performed with contrast. Breast MRI procedures typically include at least some non-contrast images, and therefore are reported with 77048 or 77049. If a MRI breast procedure is performed using only post-contrast imaging, it would be appropriate to report CPT code 76498, *Unlisted magnetic resonance procedure (eg, diagnostic, interventional)* for the uncommon scenario of obtaining only contrast-enhanced images for a breast MRI procedure.

Q: Is an order required for the use of computer-aided detection (CAD) with breast imaging procedures, such as mammography, magnetic resonance imaging (MRI) and ultrasound? Must the use of CAD be dictated in the report?

No, an order is not required for the use of CAD when performed in conjunction with breast imaging procedures, such as mammography, MRI, and ultrasound.

MRI breast (77048, 77049) and mammography (77065-77067) code descriptors include CAD "when performed", therefore when CAD is performed, a statement is not necessary in the report. However, the breast ultrasound codes do not include CAD and therefore a statement such as "CAD software was used" should be included in the procedure report. The appropriate codes to report are for breast sonography CAD would be CPT code 76641 or 76642 to describe the breast ultrasound examination and CPT code 76999 (Unlisted ultrasound procedure [eg, diagnostic, interventional]) to describe the CAD analysis.

As noted in the Winter 2007 issue of the AMA/ACR Clinical Examples in Radiology, an order is not required for the performance of CAD because CAD is covered under the Ordering of Diagnostic Tests design exemption (Section 80.6.4). *15021 (E)(1) Test Design [see Internet Only Medicare Benefit Policy Manual, Chapter 15, Covered Medical and Other Health Services 80.6.2.]*

Test Design

Unless specified in the order, the interpreting physician may determine, without notifying the treating physician/practitioner, the parameters of the diagnostic test (e.g., number of radiographic views obtained, thickness of tomographic sections acquired, use or non-use of contrast media). Modifying an order with regard to use or non-use of contrast, that required prior authorization, may require re-authorization.

For more information on the Ordering of Diagnostic Test Rule, reference Further Clarification on the Ordering of Diagnostic Tests Rule in the July- Aug 2003 ACR Radiology Coding Source

Q: An abbreviated breast MRI (AB-MRI) is performed for cancer screening for women with dense breast tissue. Dense breast tissue makes detecting cancer more difficult via mammography or selfexamination. There are some differences between regular breast MRI and AB-MRI, both do not involve radiation as with any MRI, and the breasts are not compressed. The AB-MRI requires images without and with contrast, but fewer contrast enhanced sequences are performed compared to a standard breast MRI without and with contrast. How is an abbreviated breast MRI reported? Should it be reported with CPT Code 77049 with modifier -52 appended?

See the AMA CPT[®] Assistant December 2019/Volume 29 Issue 12:

"It is appropriate to report one of the new breast magnetic resonance imaging (MRI) codes 77048, Magnetic resonance imaging, breast, without and with contrast material(s), including computer-aided detection (CAD real-time lesion detection, characterization and pharmacokinetic analysis), when performed; unilateral, or 77049, Magnetic resonance imaging, breast, without and with contrast material(s), including computer-aided detection (CAD real-time lesion detection, characterization and pharmacokinetic analysis), when performed; bilateral, for abbreviated breast MRI (AB-MRI) for cancer screening for women with dense breast tissue. The revised breast MRI CPT codes were designed to be used for screening or diagnostic breast MRI. Similar to many CPT codes, the MRI breast codes do not distinguish between shorter than average, average, and longer than average studies."

Rather, it may be appropriate to append modifier 52, *Reduced services*, to designate to the payer that the services provided are less than those typically performed or add modifier 22, *Increased procedural services*, to indicate to the payer that the service provided was substantially greater than that typically required.

Also noted in the Fall 2018 issue of the AMA/ACR Clinical Examples in Radiology:

"The CPT code descriptors for magnetic resonance imaging (MRI) studies do not specify the number or type of sequences that constitute a complete study. The number and type of sequences performed should be tailored to patient needs, which is not always proportional to the work. The coding of magnetic resonance imaging (MRI) procedures is based on the anatomic area studied, not the type of views acquired, the position of the patient, or the type of equipment used."

As always, please check with your payers to verify their reporting guidelines and coverage determination."

Q: When digital subtraction is used in conjunction with a breast magnetic resonance imaging (MRI) with contrast study, is it appropriate to report the digital subtraction?

Digital subtraction should not be reported in addition to the code for a breast MRI without and with contrast. Digital subtraction generates another set of images and is considered to be inherent in the breast MRI procedure. This is similar to another pulse sequence in MRI or another set of windows in computed tomography.

Q: How do you report a breast computed tomography (CT) used to detect and evaluate breast lesions?

Effective Jan. 1, 2021, breast CT can be reported with six new Category III codes that were created for a new technology using CT to detect and evaluate breast lesions.

CPT Description	CPT Codes
CT, breast, incl. 3D, when performed, unilateral; w/o contrast	0633T
CT, breast, incl. 3D, when performed, unilateral; w/ contrast	0634T
CT, breast, incl. 3D, when performed, unilateral; w/o followed by w/ contrast	0635T
CT, breast, incl. 3D, when performed, bilateral; w/o contrast	0636T
CT, breast, incl. 3D, when performed, bilateral; w/ contrast	0637T
CT, breast, incl. 3D, when performed, bilateral; w/o followed by w/ contrast	0638T

Q: How do I code for breast marker placement in the absence of performing a biopsy?

Codes 19281-19288 were specifically created to describe breast marker placement in the absence of performing a biopsy. To report bilateral image-guided placement of localization devices see codes 19281, 19283, 19285, or 19287 for the initial lesion localized, depending on the modality used for imaging guidance. A contra-lateral and each additional breast image-guided localization device placement(s) is reported with codes 19282, 19284, 19286, and 19288. For example, when a breast localization device is placed using stereotactic guidance, code 19283 is reported for the first lesion and add-on code 19284 for each additional lesion. If the patient subsequently goes on to surgical excision, it is appropriate to report the radiograph of the surgical specimen using code 76098, *Radiological examination, surgical specimen*.

Q: When I do breast biopsies or localize breast lesions using metallic pellets, radioactive seeds, radiofrequency identification (RFID) tags, or other localization devices instead of traditional clips or localization wires, how are these markers reported?

Metallic pellets, radioactive seeds, RFID devices or any other localization devices used during breast biopsy or breast localization are all included in codes 19081-19086 (if placed during needle biopsy) and 19281-19288 (if placed as part of a breast localization). Note that these codes are used once per lesion localized, regardless of the number of localization devices placed in or around the lesion (i.e., if mammographically-guided needle localization is performed using two radioactive seeds to designate the extent of a single abnormality, code 19281 is still only reported one time).

Q: Is it appropriate to separately report a specimen radiograph performed after a breast localization procedure?

Yes, it is appropriate to report radiographs of a surgical specimen (76098) performed after breast localization (19281-19288). However, radiographs of the specimen samples obtained at the time of percutaneous core needle biopsies are included in the breast biopsy codes (19081-19086).

Q: What CPT code(s) should be used to report a percutaneous breast biopsy?

Percutaneous breast biopsy procedures are reported with CPT codes 19081-19086 and 19100 based on whether the procedure performed is with or without imaging guidance. When percutaneous placement of a localization device is performed without the performance a breast biopsy, see codes 19281-19288.

Table 1 below provides a summary of the breast biopsy and placement of breast localization device codes. For detailed guidelines on the reporting of these codes, please reference the AMA's *CPT 2021* codebook guidelines, *Percutaneous image-guided breast biopsies*, which state the following:

- When more than one percutaneous breast biopsy with or without localization device placement is performed using the same imaging modality, use an add-on code whether the additional service(s) is on the same or contralateral breast.
- If additional percutaneous biopsies with or without localization device placements are performed using different imaging modalities, report another primary code for each additional biopsy with or without localization device placement performed using a different image guidance modality.
- To report bilateral image-guided breast biopsies, report 19081, 19083, 19085 for the initial biopsy. The contralateral and each additional breast image-guided biopsy are then reported with 19082, 19084, 19086.

BREAST NEEDLE BIOPSY	СРТ
Breast biopsy w/o imaging guidance, percutaneous	19100
Stereotactic guidance, 1st lesion	19081
Stereotactic guidance, each additional lesion	19082
Ultrasound guidance, 1st lesion	19083
Ultrasound guidance, each additional lesion	19084
Magnetic resonance guidance, 1st lesion	19085
Magnetic resonance guidance, each additional lesion	19086
Tomosynthesis guidance w/o stereotactic	19499*

Table 1: Reporting of Breast Biopsy and Placement of Location Devices

Breast biopsy includes: imaging, placement of localization device(s), and imaging of biopsy specimen, when performed *CPT code 19499, *Unlisted procedure, breast*

BREAST LOCALIZATION DEVICE(S) W/O BREAST BIOPSY	СРТ
Mammographic guidance, 1st lesion	19281
Mammographic guidance, each additional lesion	19282
Stereotactic guidance, 1st lesion	19283
Stereotactic guidance, each additional lesion	19284
Ultrasound guidance, 1st lesion	19285
Ultrasound guidance, each additional lesion	19286
Magnetic resonance guidance, 1st lesion	19287
Magnetic resonance guidance, each additional lesion	19288
Surgical specimen radiography	76098

Q: Can you report a breast biopsy code multiple times when multiple samples are taken from the same lesion?

No, if multiple samples are taken from the same lesion, the biopsy code should be reported only once. However, when separate lesions are sampled during the same session, it is appropriate to report biopsy codes for the initial and each additional lesion biopsied based on the number of separate lesions sampled.

Q: How do you code for a breast biopsy with only tomographic guidance? What CPT code should be used to report a core breast biopsy performed using both stereotactic and tomosynthesis imaging guidance?

The AMA/ACR *Clinical Examples in Radiology* Fall 2016 issue provides guidance on the reporting of a breast biopsy with only tomographic guidance as well as combined stereotactic and tomosynthesis imaging-guided core breast biopsy as follows:

"Currently, there is no CPT code for tomographic-guided breast biopsy. Therefore, when tomosynthesis is the only imaging guidance used for a breast biopsy, it is appropriate to use CPT code 19499, *Unlisted procedure, breast.*

When a breast biopsy is performed using both stereotactic and tomosynthesis imaging guidance, it is appropriate to use CPT code 19081, *Biopsy, breast, with placement of breast localization device(s) (eg, clip, metallic pellet), when performed, and imaging of the biopsy specimen, when performed, percutaneous; first lesion, including stereotactic guidance.*

If a combination stereotactic-tomosynthesis-guided biopsy is performed using a separate piece of equipment (such as a prone table) and the patient is moved to another unit for a post-procedure mammogram, it is appropriate to report the post-procedure mammogram separately. If the combination stereotactic-tomosynthesis-guided biopsy is performed using a standard digital breast tomosynthesis mammography unit on which the post-procedure mammogram separately. If is not appropriate to report the post-procedure mammogram separately.

Q: How do you report a breast biopsy with multiple calcifications or microcalcifications?

The image-guided percutaneous breast biopsy codes (19081-19086) are reported per lesion, not per calcification or per number of cores. A grouping of calcifications is defined as a single lesion. For example, multiple samples of a grouping of calcifications under stereotactic guidance would be reported as a single unit with code 19081, *Biopsy, breast, with placement of breast localization device(s) (eg, clip, metallic pellet), when performed, and imaging of the biopsy specimen, when performed, percutaneous; first lesion, including stereotactic guidance.* For each distinct separately identifiable lesion (whether it is a second mass or separate and distinct grouping of calcifications), under stereotactic guidance, report add-on code 19082, *Biopsy, breast, with placement of breast localization device(s) (eg, clip, metallic pellet), when performed, and imaging of the biopsy specimen, when performed, percutaneous; add-on code 19082, Biopsy, breast, with placement of breast localization device(s) (eg, clip, metallic pellet), when performed, and imaging of the biopsy specimen, when performed, percutaneous; each additional lesion, including stereotactic guidance (List separately in addition to code for primary procedure).*

Q: What CPT code(s) should be used to report Fine Needle Aspiration (FNA) biopsy(ies) of the breast(s)?

Effective for dates of service on or after January 1, 2019, CPT codes 10004 -10012 and 10021 are used to describe fine needle aspiration biopsies of the breast. CPT code 10022 has been deleted and is no longer available for use.

The following table lists the breast FNA biopsy codes differentiated by "with" or "without" imaging guidance and the type of guidance provided.

FINE NEEDLE ASPIRATION BIOPSY	СРТ
FNA Bx w/o Imaging, first lesion	10021
FNA Bx w/o Imaging, each additional lesion	10004
FNA Bx w/ Ultrasound, first lesion	10005
FNA Bx w/ Ultrasound, each additional lesion	10006
FNA Bx w/Fluoro, first lesion	10007
FNA Bx w/Fluoro, each additional lesion	10008
FNA Bx w/CT, first lesion	10009
FNA Bx w/CT, each additional lesion	10010
FNA Bx w/MR, first lesion	10011
FNA Bx w/MR, each additional lesion	10012

Do not report 10004, 10021 in conjunction with 10005-10012 for the same lesion.

The AMA's *CPT 2021* codebook guidelines, *General Guidelines Fine Needle Aspiration (FNA) Biopsy*, differentiate between FNA and needle core biopsies as follows:

A fine needle aspiration (FNA) biopsy is performed when material is aspirated with a fine needle and the cells are examined cytologically. A core needle biopsy is typically performed with a larger bore needle to obtain a core sample of tissue for histopathologic evaluation. FNA biopsy procedures are performed with or without imaging guidance.

In addition, the CPT 2021 codebook lists the following important notes:

When more than one FNA biopsy is performed on separate lesions at the same session, same day, same imaging modality, use the appropriate imaging modality add-on code for the second and subsequent lesion(s). When more than one FNA biopsy is performed on separate lesions, same session, same day, using different imaging modalities, report the corresponding primary code with modifier 59 for each additional imaging modality and corresponding add-on codes for subsequent lesions sampled. This instruction applies regardless of whether the lesions are ipsilateral or contralateral to each other, and/or whether they are in the same or different organs/structures. When FNA biopsy and core needle biopsy both are performed on the same lesion, same session, same day using the same type of imaging guidance, do not separately report the imaging guidance for the core needle biopsy. When FNA biopsy is performed on one lesion and core needle biopsy is performed on a separate lesion, same session, same day using the same type of imaging guidance, both the core needle biopsy and the imaging guidance for the core needle biopsy may be reported separately with modifier 59. When FNA biopsy is performed on one lesion and core needle biopsy is performed on a separate lesion, same session,

same day using different types of imaging guidance, both the core needle biopsy and the imaging guidance for the core needle biopsy may be reported with modifier 59.

Q: Is a consent form signed by the patient required for a breast cyst aspiration?

Obtaining informed consent from the patient or appropriate designee as defined by local and often state regulations. Breast procedures are no different from obtaining informed consent for any other invasive or interventional procedure.

Q: If a physical exam is performed in conjunction with a diagnostic mammogram or breast ultrasound and the results are discussed with the patient, is it appropriate to bill for an office visit (e.g., 99212) if performed in a private office setting?

It is only appropriate to bill for a consultation or other evaluation and management (E&M) service when the service is provided and documented according to established E&M guidelines. The Relative (Value Unit) Update Committee (RUC) database clearly indicates that such discussion of findings with the patient is part of the valued work (and thus reporting this separately with an E&M code is unbundling).

Modifier 25 is required when an E&M service is provided on the same day as a procedure with a global fee period (000 or 010). An E&M service should only be reported on the same date when the physician indicates that the service is for a significant and separately identifiable service, above and beyond the usual pre- or post-procedural work.

Q: Does the global period for a breast biopsy extend beyond the day of the procedure? Is there any other issue with the E/M codes, like unbundling for example, that we need to be aware of when using them in this situation?

Breast biopsy procedures (codes 19081-19086, 19100) have a 000 global period. There are no National Correct Coding Initiative (NCCI) edits when reporting a breast biopsy procedure (19081-19086, 19100) with an E/M service (99202-99215). Medicare's NCCI edits are in place to prevent payment when certain code combinations are reported. The NCCI edits apply only to services that are performed on the same day for the same patient and billed by the same physician or facility (eg, on the same claim form). This means that studies performed by different physicians on a single patient on the same day, or studies performed by the same patient on different days, are not subject to NCCI edits.

Q: Breast imagers are asked for second opinions quite often, which many times can reduce the amount of additional imaging and also eliminate unnecessary biopsies. How would you report a second opinion or a re-read?

See Nov-Dec 2016 ACR Radiology Coding Source:

"When a physician's opinion or advice regarding a specific film is requested by another physician, and on examination of the film the consulting physician provides his or her opinion or advice to the requesting physician in a written report, the specific procedure code with a 26 modifier (professional component only) should be used.

Some Medicare carriers require that modifier "77" also be used to indicate that a basic procedure or service performed by another physician had to be repeated. Please check with your local Medicare carrier for their guidelines. Other carriers and third-party payers may have

different guidelines and may recommend the use of CPT code 76140 (*Consultation on X-ray exam made elsewhere, written report*).

As noted in the American Medical Association's *Principles of CPT Coding*, if a new or established patient comes to an office visit and brings his or her medical records (including imaging studies) the review and/or reread of the X-rays would be considered part of the face-to-face evaluation and management service provided to the patient by the physician billing for the clinical visit and would not be reported separately.

For more information on second opinions, please reference "Another Unpaid Second Opinion," JACR, Volume 2, Issue 9, Pages 793-794 (September 2005)."

Q: We are currently performing planar bilateral breast scintigraphy studies using an FDA-approved optimized small field-of-view detector. How should this be reported?

Both the ACR and the Society of Nuclear Medicine and Molecular Imaging recommend that CPT code 78800 (Radiopharmaceutical localization of tumor or distribution of radiopharmaceutical agent(s); limited area) be reported for a breast scintigraphy study of either one or both breasts. Although it is recognized that there is more work in imaging both breasts, CPT code (78801) refers to multiple different sites in the body rather than both sides of a bilateral body part or organ. Just as imaging of the chest (including both lungs) is considered one single limited area for other nuclear medicine procedures, both breasts are considered a single limited area as well.

Reference the ACR's Breast Imaging Resources page for additional information.

Q: Our state passed a law that requires mammography providers to directly inform their patients of their breast density category. The law includes an insurance mandate covering screening breast ultrasound for women with mammography-detected dense breasts. How should we code screening breast ultrasound exams?

The appropriate CPT code to report an ultrasound examination of the breast *is* 76641, *Ultrasound*, *breast*, *unilateral*, *real time with image documentation*, *including axilla when performed; complete*, or 76642, *Ultrasound*, *breast*, *unilateral*, *real time with image documentation*, *including axilla when performed; limited*. If bilateral breast ultrasound study is performed in this setting, the code should be reported once with modifier 50, *Bilateral Procedure*, or twice – once with an RT modifier and once with an LT modifier to indicate both breasts were imaged.

Whenever a screening examination is performed, the screening ICD-10-CM code is the first-listed, regardless of the findings or any procedure that may be performed as a result of the findings. Therefore, an ultrasound screening examination of the breast should be reported with ICD-10 code Z12.39, *Encounter for other screening for malignant neoplasm of breast*. It is recommended that a secondary diagnosis be reported (e.g., R92.2, Inconclusive mammogram – Dense breasts NOS) to communicate to the payer that the study was performed for a high-risk patient. As stated in the 2021 CMS ICD-10-CM Official Guidelines for Coding and Reporting: "A screening code may be a first-listed code if the reason for the visit is specifically the screening exam. Should a condition be discovered during the screening then the code for the condition may be assigned as an additional diagnosis."

Please check with your local state law for coverage on screening breast ultrasound. Note that Medicare does not pay for a breast ultrasound when performed as a screening study, as Medicare pays for

screening studies only when they are mandated by Congress. Medicare will pay for a limited or complete breast ultrasound if medically indicated.

Q: What ICD-10 codes should be used to report a screening mammography study? Must this code be listed as the primary diagnosis code or would a positive finding be reported as the primary code?

Code Z12.31 (*Encounter for screening mammogram for malignant neoplasm of breast*) should be reported as the primary diagnosis code when screening mammography is performed even when the outcome of the study renders a positive finding.

As noted in Diagnostic Coding and Reporting Guidelines for Outpatient Services available at https://www.cms.gov/files/document/2021-coding-guidelines.pdf. A screening code may be a firstlisted code if the reason for the visit is specifically the screening exam.

- A screening code may be a first-listed code if the reason for the visit is specifically the screening exam.
- Should a condition be discovered during the screening then the code for the condition may be assigned as an additional diagnosis.

Also refer to *Chapter 18, Medicare Claims Processing Manual, Section 20.2 - HCPCS and Diagnosis Codes* for *Mammography Services* for additional information on the reporting of ICD-10 codes for mammography procedures.

Q: International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) code N63, Unspecified lump in breast, requires specification of the quadrant of the lump site. The radiology report states, "12 o'clock right breast mass." How do you code for a 3, 6, 9, and 12 o'clock breast mass/lesion since there are no "other specified site" or "unspecified quadrant" codes?

There is no ideal method for defining the quadrant of breast lumps at the 3, 6, 9, and 12 o'clock positions. The ACR thus recommends that radiologists select the nearest quadrant to the abnormality while being as consistent as possible in their practice.

For Medicare patients, however, the Centers for Medicare and Medicaid Services (CMS) provided guidance for coding overlapping quadrants in the National Coverage Determination (NCD) for Mammograms. The NCD states, "Dual dx codes depicting specific quadrants can be reported instead of unspecified quadrants if found more appropriate by provider." Given this guidance, a 12 o'clock right breast mass can be reported as ICD-10 code N63.15, Unspecified lump in right breast, overlapping quadrants, or as dual ICD-10 codes for overlapping quadrants, N63.11, Unspecified lump in the right breast, upper outer quadrant, and N63.12, Unspecified lump in the right breast, upper inner quadrant. For more information see: https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNMattersArticles/Downloads/MM11392.pdf

Q: Is it appropriate to report the 3-D rendering code 76376 when the referring physician did not include 3-D in the order?

In the past, the ACR maintained that an order for 2D and 3D reconstruction imaging was not necessary because this was covered under the Ordering of Diagnostic Tests Rule test design exception (Chapter 15,

Medicare Benefit Policy Manual, Section 80.6.4). However, based on the exponential rise in both the use of 3D rendering codes 76376 (not requiring image post-processing on an independent workstation) and 76377 (requiring image post-processing on an independent workstation) and the number of practice investigations evolving out of overutilization (routine use), the ACR strongly encourages radiology practices to obtain an order from the referring physician in the non-hospital setting. In the hospital setting, radiologists may generate their own order, but they are strongly encouraged to justify medical necessity for the use of 3D rendering in a separate dictation.

For more information on the Ordering of Diagnostic Test Rule, reference Further Clarification on the Ordering of Diagnostic Tests Rule in the July- Aug 2003 ACR Radiology Coding Source.