AHIMA Comments on NQF eMeasure Format Review

Driven by the EHR Incentive program and the Meaningful Use regulation, the Department of Health and Human Services (DHHS) requested that the National Quality Forum (NQF) convert 113 NQF-endorsed clinical quality measures from a paper-based format to an electronic "eMeasure" format. These 113 eMeasures were released for public and member comment to ensure the retooled measures retain the same content and intent as originally developed.

AHIMA engaged a group of health information management coding and terminology experts to evaluate a subset of the 113 eMeasures. The group spent a majority of their time validating the ICD-9-CM, ICD-10-CM, and SNOMED CT code lists associated with approximately 22 eMeasures from four disease domains, including diabetes, coronary artery disease, ischemic vascular disease, and heart failure.

The AHIMA experts validated the code sets against the standard taxonomy version noted in the eMeasure code list spreadsheets; however, there were several instances where the taxonomy versions were missing (blank). In those instances, the group referenced the most current version of ICD-9-CM and SNOMED CT, and the 2010 version of ICD-10-CM, since a majority of the eMeasure ICD-10-CM code lists referenced this version.

General Comments – Code Lists

Although AHIMA supports the industry’s efforts to retool measure specifications for use in electronic environments, we strongly encourage quality measure stewards and NQF to engage credentialed coding experts in a full validation of the code lists associated with the 113 eMeasures to ensure the intent of the original measure specification is maintained, and that the concepts selected for each code list are consistent and accurately applied.

We encourage quality measure stewards and NQF to apply each coding and classification system independently rather than relying solely on the General Equivalence Mappings (GEMs) to translate ICD-9-CM codes to ICD-10-CM or SNOMED CT. As noted in the NQF ICD-10-CM/PCS Coding Maintenance Operational Guidance Consensus Report published last year, “the most ideal way to convert code sets for quality measures would be to examine the original intent of the measure and select codes directly from the target code set to define the concepts rather than relying on mapping alone.” The NQF report further states “measure developers/stewards should be required to submit information detailing the process they used for selecting codes in the new code set.” The information detailing the process used for selecting ICD-10-CM, SNOMED CT, or other new codes for the 113 eMeasures was not included in the documentation for this public comment review. As such, our ability to discuss opportunities for further improving the code selection process for the eMeasures is somewhat limited.
ICD-10-CM Codes
Measure developers should be cautious when defining their ICD-10-CM code lists to ensure that invalid (incomplete) codes are not included when a more specific code is available for use. For example, when an ICD-10-CM code has been subdivided into four-, five-, or six-character codes, the most specific codes should be selected. When a code is not further subdivided, the code is considered valid and may be included in an eMeasure ICD-10-CM code list. The following sampling of ICD-10-CM category codes are contained in a variety of the eMeasure code lists. These categories can be further subdivided and should be replaced with more specific codes.

- E08 (diabetes mellitus due to underlying condition)
- E10 (type 1 diabetes mellitus)
- I13 (hypertensive heart and chronic kidney disease)
- E08 (diabetes mellitus due to underlying condition)
- E10 (type 1 diabetes mellitus)
- I13 (hypertensive heart and chronic kidney disease)
- I21 (ST elevation (STEMI) and non-ST elevation (NSTEMI) myocardial infarction)
- I21.2 (ST elevation (STEMI) myocardial infarction of other sites)
- I22 (subsequent ST elevation (STEMI) and non-ST elevation (NSTEMI) myocardial infarction)
- I24 (other acute ischemic heart diseases)
- I25.1 (atherosclerotic heart disease of native coronary artery)
- I25.70 (atherosclerosis of coronary artery bypass graft(s), unspecified, with angina pectoris)
- I25.72 (atherosclerosis of autologous artery coronary artery bypass graft(s) with angina pectoris)
- I25.73 (atherosclerosis of nonautologous biological coronary artery bypass graft(s) with angina pectoris)
- I25.75 (atherosclerosis of native coronary artery of transplanted heart with angina pectoris)
- I65 (occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction)
- I69 (sequelae of cerebrovascular disease)
- I70.21 (atherosclerosis of native arteries of extremities with intermittent claudication)
- I70.22 (atherosclerosis of native arteries of extremities with rest pain)
- I70.23 (atherosclerosis of native arteries of right leg with ulceration)
- I70.26 (atherosclerosis of native arteries of extremities with gangrene)
- I70.29 (other atherosclerosis of native arteries of extremities)
- I74 (other atherosclerosis of native arteries of extremities)

SNOMED CT
It appears as if the methodology for populating the eMeasure SNOMED CT code lists was through automated inheritance. This assumption is based on our manual analysis of the subset entry hierarchies. As a result of the automated inheritance, the eMeasure SNOMED CT code lists contain less granular or ambiguous concepts and clinically inappropriate concepts. We have provided examples of each type of concern for your reference below:
Example of less granular or ambiguous concepts:

- SNOMED CT code 29551000 (anemia due to oxygen) has a more clinically relevant child concept of 129638002 (hemolytic anemia due to hyperbaric oxygen). The more ambiguous concept (29551000) is included in the eMeasure code list, but the more specific child concept (129638002) was excluded from the eMeasure code list.
- SNOMED CT code 62585004 (degenerative disorder of eye) is included in the eMeasure code list for diabetic retinopathy, and also has more clinically relevant child concepts that should be considered for inclusion in the eMeasure code list.

Examples of clinically inappropriate concepts:

- SNOMED CT code 62379007 (squirrel fibroma) from the non-human subset is included in eMeasure code lists. There is a SNOMED CT release of the non-human subset. The member entries in the non-human subset have no human overlap. Measure stewards and NQF could leverage the non-human subset to specifically exclude or filter codes identified as being part of the non-human subset from the eMeasure code lists.
- The eMeasure standard concept of anesthesia, in the context of cardiac procedures, contains SNOMED CT code 3802001 (dental application of desensitizing medicament). This SNOMED CT concept should be excluded from the cardiac-related anesthesia code lists.

In addition to the concerns that result from automated inheritance noted above, we have a variety of other general issues and concerns with the SNOMED CT code lists. For example, many of the SNOMED CT concepts contain extension IDs which are not part of the official public release of SNOMED CT. For example, SNOMED CT code 10189771000046100 (final bone scintigraphy report correlates with previous imaging study (finding), which is an extension that belongs to a local name space for an individual or group and is not part of the official SNOMED CT release.

A variety of SNOMED CT codes contained in the eMeasure SNOMED CT code lists are retired or have limited status. Measure stewards and NQF should include only those SNOMED CT codes containing a status of ‘0’ which means active. Statuses ‘2’ through ‘5’ indicate the code is retired and status ‘6’ indicates the code is limited. Codes with statuses ‘2’ through ‘6’ are not recommended for any reporting or modeling activities. Examples of SNOMED CT codes contained in eMeasure lists that are retired or limited include:

- 55655006 (prerenal uremia syndrome) – status retired
- 302944009 (congenital complete heart block (disorder)) – status limited

Multiple eMeasure SNOMED CT codes contain data entry errors. For example, the SNOMED CT code 132138001 (genitourinary pain) contains a data entry error. The correct code is actually 162138001.

Several of the eMeasure SNOMED CT code lists contain a mixture of description identifiers (IDs) and concept IDs. SNOMED CT descriptions serve as synonyms for SNOMED CT concepts. Description IDs may become retired, whereas the related concept ID may still remain active. AHIMA recommends the use of concept IDs within the eMeasure SNOMED CT code lists to ensure consistency. An example of
a SNOMED CT description ID included in an eMeasure SNOMED CT code list is 427781019 (Inhalation general anesthesia).

Lastly, there are a variety of SNOMED CT codes included in the eMeasure code lists are unspecific (e.g., that contain “AND/OR,” “unspecified,” or “other”). SNOMED CT is a controlled medical terminology that provides comprehensive coverage of diseases, clinical findings, etiologies, procedures and outcomes. Unlike ICD-9-CM, which classifies diseases into broad categories and does not provide the appropriate level of granularity in all instances, SNOMED CT concepts are very granular. Using non-specific SNOMED CT codes when more specific concepts are available is not recommended and highly discouraged.

Examples of non-specific SNOMED CT codes contained in eMeasure SNOMED CT lists that NQF and measure stewards should consider replacing with more specific concepts:

- 71266000 (open fracture of vault of skull with subarachnoid, subdural AND/OR extradural hemorrhage)
- 106007006 (maternal AND/OR fetal condition affecting labor AND/OR delivery)
- 199234002 (diabetes mellitus during pregnancy, childbirth or the puerperium NOS)
- 195979001 (asthma unspecified)

**Diabetes Quality Measures (0055, 0056, 0059, 0060, 0061, 0062, 0064, 0575) – Code Lists**

**General Comment**
The ICD-9-CM coding system classifies diabetes mellitus as type 1, type 2, or secondary. ICD-9-CM also includes the concepts of uncontrolled or not stated as uncontrolled. Diabetic manifestations are usually further specified in a second ICD-9-CM code. ICD-10-CM has expanded the diabetes mellitus classification to type 1 (E10); type 2 (E11); due to underlying disease (E08); drug/chemical induced (E09); and other specified diabetes mellitus (E13). The ICD-9-CM concepts of uncontrolled and not stated as uncontrolled are addressed through the inclusion of hyperglycemia. ICD-9-CM also requires two codes for diabetes mellitus with manifestations. The initial code provides information regarding the diabetes mellitus type and general classification of the diabetic manifestation. The second code provides more granular information regarding the manifestation. Diabetic manifestations and diabetes mellitus type are included within a single ICD-10-CM code. This hierarchical change underlines the need for a complete review of the ICD-9-CM and ICD-10-CM code lists to ensure that the appropriate codes from each code set are included.

**Steroid Induced Diabetes**
The ICD-10-CM code of E08 has been selected to represent the concept of *steroid induced diabetes*. This particular ICD-10-CM category of codes is designed to capture diabetes mellitus due to underlying conditions but specifically excludes drug or chemical induced diabetes. AHIMA recommends using E09 codes (drug or chemical induced diabetes mellitus) to represent the concept of *steroid induced diabetes*. 
In addition, the measure code lists do not contain the proper code descriptor for the ICD-10-CM codes of E08 or E10. The spreadsheet lists a descriptor of “steroid induced diabetes” but the code description in ICD-10-CM for E08 is “diabetes mellitus due to underlying condition” and E10 is “type 1 diabetes.” Although inaccurate code descriptions may be perceived as a minimal concern, these inaccuracies could lead to confusion or miscommunication as eMeasure specifications are evaluated and implemented.

Gestational Diabetes
The ICD-10-CM codes R73.02 (impaired fasting glucose) and R73.09 (other abnormal glucose) were included in the code list for the standard concept of gestational diabetes. However these codes should not be included because that particular category of codes specifically excludes gestational diabetes. AHIMA recommends replacing R73.02 and R73.09 with ICD-10-CM codes O24.410 through O24.439 (gestational diabetes mellitus in pregnancy, childbirth, and the puerperium) and O99.810 through O99.815 (abnormal glucose complicating pregnancy, childbirth, and the puerperium).

Diabetic Retinopathy Quality Measures (0055, 0088, 0089) – Code Lists
Diabetic Retinopathy
AHIMA compared the ICD-9-CM code list for diabetic retinopathy to the ICD-10-CM code list for the same standard concept and found that the ICD-10-CM code list is missing the following codes for Type 1 Diabetic Retinopathy:

- E10.321 Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema
- E10.329 Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema
- E10.331 Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema
- E10.339 Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema
- E10.341 Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema
- E10.349 Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema
- E10.351 Type 1 diabetes with proliferative diabetic retinopathy with macular edema
- E10.359 Type 1 diabetes with proliferative diabetic retinopathy without macular edema

The ICD-10-CM code list is also missing the following codes for Type 2 Diabetic Retinopathy:

- E11.351 Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema
- E11.359 Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular edema

AHIMA recommends that the measure stewards and NQF validate the code lists for this concept to ensure the appropriate codes are included.
Diabetes Urine Screening (0062) – Code Lists
Nephropathy
The code list spreadsheet for this measure contains three code lists (and corresponding OIDs) associated with the standard concept for nephropathy (OIDs xxx.0001.345 for ICD-9-CM, xxx.0001.344 for ICD-10-CM, and xxx.0001.346 for SNOMED CT codes). The ICD-9-CM code list appears to be accurate (OID .345); however, the standard concept of nephropathy contains an ICD-10-CM code list with neuropathy codes. Please also note that there have been a number of changes in ICD-10-CM for the conditions contained in the ICD-9-CM code list. The nephropathy conditions spans a number of different categories including diabetes, hypertensive renal disease, congenital conditions, as well as the main genitourinary section. For example there is a new category N14 (drug and heavy metal induced tubulo—interstitial and tubular conditions) that was not specifically represented in the ICD-9-CM classification system. AHIMA recommends that the measure stewards and NQF validate the code lists for these types of new concepts to ensure the appropriate codes are associated with each of the standard concepts.

Coronary Artery Disease/Angiotensin-Converting Enzyme (ACE) Inhibitor or Angiotensin Receptor Blocker (ARB) Therapy for Patients (0066) – Code Lists
Diabetes Mellitus and Diabetic Complications
ICD-9-CM codes 648.00 through 648.04 (diabetes mellitus complications related to pregnancy) are contained in the measure steward’s original specifications but are missing from the diabetes mellitus and diabetic complications standard concept ICD-9-CM code list in the eMeasure specification. In addition, if these codes are added to the ICD-9-CM code list, the following ICD-10-CM codes should be considered for inclusion in the ICD-10-CM code list for this same concept:

For ICD-9-CM code 648.00, the corresponding ICD-10-CM codes may include:
- O24.319 (unspecified pre-existing diabetes mellitus in pregnancy, unspecified trimester);
- O24.019 (pre-existing diabetes mellitus, type 1, in pregnancy, unspecified trimester);
- O24.119 (pre-existing diabetes mellitus, type 2, in pregnancy, unspecified trimester);
- O24.819 (other pre-existing diabetes mellitus in pregnancy, unspecified trimester);
- O24.919 (unspecified diabetes mellitus in pregnancy, unspecified trimester);

For ICD-9-CM code 648.01, the corresponding ICD-10-CM codes may include:
- O24.92 (unspecified diabetes mellitus in childbirth);
- O24.011 (pre-existing diabetes mellitus, type 1, in pregnancy, first trimester);
- O24.012 (pre-existing diabetes mellitus, type 1, in pregnancy, second trimester);
- O24.013 (pre-existing diabetes mellitus, type 1, in pregnancy, third trimester);
- O24.02 (pre-existing diabetes mellitus, type 1, in childbirth);
- O24.111 (pre-existing diabetes mellitus, type 2, in pregnancy, first trimester);
- O24.112 (pre-existing diabetes mellitus, type 2, in pregnancy, second trimester);
- O24.113 (pre-existing diabetes mellitus, type 2, in pregnancy, third trimester);
- O24.12 (pre-existing diabetes mellitus, type 2, in childbirth);
- O24.311 (unspecified pre-existing diabetes mellitus in pregnancy, first trimester);
- O24.312 (unspecified pre-existing diabetes mellitus in pregnancy, second trimester);
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- O24.313 (unspecified pre-existing diabetes mellitus in pregnancy, third trimester);
- O24.32 (unspecified pre-existing diabetes mellitus in childbirth);
- O24.811 (other pre-existing diabetes mellitus in pregnancy, first trimester);
- O24.812 (other pre-existing diabetes mellitus in pregnancy, second trimester);
- O24.813 (other pre-existing diabetes mellitus in pregnancy, third trimester);
- O24.82 (other pre-existing diabetes mellitus in childbirth);
- O24.911 (unspecified diabetes mellitus in pregnancy, first trimester);
- O24.912 (unspecified diabetes mellitus in pregnancy, second trimester);
- O24.913 (unspecified diabetes mellitus in pregnancy, third trimester);

For ICD-9-CM code 648.02, the corresponding ICD-10-CM codes may include:
- O24.93 (unspecified diabetes mellitus in the puerperium)

For ICD-9-CM code 648.03, the corresponding ICD-10-CM codes may include:
- O24.011 (pre-existing diabetes mellitus, type 1, in pregnancy, first trimester)
- O24.012 (pre-existing diabetes mellitus, type 1, in pregnancy, second trimester)
- O24.013 (pre-existing diabetes mellitus, type 1, in pregnancy, third trimester)
- O24.111 (pre-existing diabetes mellitus, type 2, in pregnancy, first trimester)
- O24.112 (pre-existing diabetes mellitus, type 2, in pregnancy, second trimester)
- O24.113 (pre-existing diabetes mellitus, type 2, in pregnancy, third trimester)
- O24.311 (unspecified pre-existing diabetes mellitus in pregnancy, first trimester)
- O24.312 (unspecified pre-existing diabetes mellitus in pregnancy, second trimester)
- O24.313 (unspecified pre-existing diabetes mellitus in pregnancy, third trimester)
- O24.811 (other pre-existing diabetes mellitus in pregnancy, first trimester)
- O24.812 (other pre-existing diabetes mellitus in pregnancy, second trimester)
- O24.813 (other pre-existing diabetes mellitus in pregnancy, third trimester)
- O24.911 (unspecified diabetes mellitus in pregnancy, first trimester)
- O24.912 (unspecified diabetes mellitus in pregnancy, second trimester)
- O24.913 (unspecified diabetes mellitus in pregnancy, third trimester)

For ICD-9-CM code 648.04, the corresponding ICD-10-CM codes may include:
- O24.93 (unspecified diabetes mellitus in the puerperium)
- O24.03 (pre-existing diabetes mellitus, type 1, in the puerperium)
- O24.13 (pre-existing diabetes mellitus, type 2, in the puerperium)
- O24.33 (unspecified pre-existing diabetes mellitus in the puerperium)
- O24.83 (other pre-existing diabetes mellitus in the puerperium)

Deficiencies of Circulating Enzymes
According to the ICD-10-CM GEMs, ICD-9-CM code 277.6 (Other Deficiencies of Circulating Enzymes) is a direct map to ICD-10-CM code D84.1 (other immune deficiencies / defects in the complement system). However, this code is not included in the ICD-10-CM code list for the deficiencies of circulating enzymes standard concept. In addition, the ICD-10-CM code list includes code E88.09
(other disorders of plasma-protein metabolism, not elsewhere classified), which is not represented in the ICD-9-CM code list for the same standard concept.

**Diseases of Aortic and Mitral Valves**
AHIMA compared the ICD-9-CM code list for *diseases of aortic and mitral valves* to the ICD-10-CM code list for the same standard concept. The codes related to congenital conditions contained in the ICD-10-CM code list (Q23.0 through Q23.3) should not be included because these types of concepts are excluded from the ICD-9-CM code list for the same standard concept.

**Acute Renal Failure**
The ICD-10-CM code N17.9 (acute kidney failure, unspecified) should be considered for inclusion in the code list for the standard concept of *acute renal failure*, since 584.9 (acute kidney failure, unspecified) is included in the ICD-9-CM code list for the same standard concept.

NQF and measure stewards should also be aware that ICD-9-CM codes related to this concept are a current discussion topic for further clarification by the ICD-9-CM Coordination and Maintenance Committee. At the March 2011 ICD-9-CM Coordination and Maintenance Committee meeting, it became apparent that this terminology is not consistent among the medical community. This measure may need additional review after the FY 2012 ICD-9-CM and ICD-10-CM code set updates are published.

**Renal Failure and ESRD**
ICD-10-CM codes N18.5 (chronic kidney disease, stage V) and N18.6 (end stage renal disease) should be considered for inclusion in the standard concept for *renal failure and ESRD*, since 585.5 (chronic kidney disease, stage V) and 585.6 (end stage renal disease) are included in the ICD-9-CM code list for the same standard concept. These codes indicate that the patient is requiring dialysis (stage 5 or ESRD). In ICD-10-CM, these codes are identified in the Index/Tabular.

**Oral Antiplatelet Therapy Prescribed for Patients with CAD (0067) – Code Lists**
**Bleeding Coagulation Disorders**
The ICD-10-CM code E72.13 contained in the eMeasure *bleeding coagulation disorders* code list is invalid in the 2010 version of ICD-10-CM (the version of the code set cited in the eMeasure code list). In addition, the diagnostic concept of transient neonatal thrombocytopenia (noted as the description for E72.13 in the eMeasure code list) is not included in the ICD-9-CM code set for the measure. Therefore, we recommend removing this code from the ICD-10-CM code list for this standard concept.

In addition, ICD-10-CM codes E72.11 (homocystinuria) and E72.12 (methylenetetrahydrofolate reductase deficiency) are included in the eMeasure *bleeding coagulation disorders* code list; however, the corresponding ICD-9-CM codes for the same concept are missing from the ICD-9-CM code list. The measure steward and NQF should validate these two code lists to ensure the appropriate concepts are included.
Coronary Artery Disease includes MI
The ICD-9-CM code list for the standard concept of Coronary Artery Disease includes MI does not contain codes 093.9 (cardiovascular syphilis, unspecified) or 093.89 (other specified cardiovascular syphilis, other); therefore, the ICD-10-CM code list for the same standard concept should not include A52.00 (Cardiovascular syphilis, unspecified), A52.06 (other syphilitic heart involvement), or A52.09 (other cardiovascular syphilis).

The ICD-9-CM code list for Coronary Artery Disease includes MI includes 411.1 (intermediate coronary syndrome), 411.81 (acute coronary occlusion without myocardial infarction), 413.0 (angina decubitus), 413.9 (other and unspecified angina pectoris), and V45.82 (percutaneous transluminal coronary angioplasty status); therefore, the ICD-10-CM code list for the same standard concept may need to include the following codes that are currently missing from the ICD-10-CM code list:
- I20.0 (unstable angina)
- I20.8 (other forms of angina pectoris)
- I24.0 (acute coronary thrombosis not resulting in myocardial infarction)
- I25.710 (atherosclerosis of autologous vein coronary artery bypass graft(s) with unstable angina pectoris)
- I25.750 (atherosclerosis of native coronary artery of transplanted heart with unstable angina)
- I25.751 (Atherosclerosis of native coronary artery of transplanted heart with angina pectoris with documented spasm)
- I25.758 (Atherosclerosis of native coronary artery of transplanted heart with other forms of angina pectoris)
- I25.759 (Atherosclerosis of native coronary artery of transplanted heart with unspecified angina pectoris)
- I25.760 (atherosclerosis of bypass graft of coronary artery of transplanted heart with unstable angina)
- I25.761 (Atherosclerosis of bypass graft of coronary artery of transplanted heart with angina pectoris with documented spasm)
- I25.768 (Atherosclerosis of bypass graft of coronary artery of transplanted heart with other forms of angina pectoris)
- I25.769 (Atherosclerosis of bypass graft of coronary artery of transplanted heart with unspecified angina pectoris)
- Z98.61 (coronary angioplasty status)

Coronary Artery Disease (CAD)/ Beta-Blocker Therapy for CAD Patients with Prior Myocardial Infarction (0070) – Code Lists
Asthma
The ICD-10-CM code list for the eMeasure standard concept of asthma is not as comprehensive as the ICD-9-CM code list for the same standard concept. The ICD-9-CM code list contains all asthma conditions, whereas the ICD-10-CM code list includes only select asthma codes, mainly those with status asthmaticus. AHIMA recommends a careful review of the ICD-9-CM and ICD-10-CM code lists for this standard concept to ensure the appropriate codes are included in each code list.
Coronary Artery Disease No MI
The measure steward may want to consider including ICD-10-CM code Z98.61 (coronary angioplasty status) in the code list for the standard concept of coronary artery disease no MI since V45.82 (percutaneous transluminal coronary angioplasty status) is included in the ICD-9-CM code list for the same standard concept. This ICD-10-CM code indicates that the patient has a history of coronary angioplasty which would indicate a history of coronary artery disease.

AHIMA appreciates the opportunity to review and provide input to the eMeasure specifications. Although there was not enough time to conduct a comprehensive review of all code lists associated with all 113 eMeasures, we hope these findings provide insight and guidance for NQF and measure stewards and identify opportunities to further improve the eMeasures specifications.

If we can provide further information, or if you have questions regarding our recommendations, please contact Crystal Kallem, AHIMA Director of Practice Leadership, at crystal.kallem@ahima.org.

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