

Why The Health Of Medical Dictionaries Matters

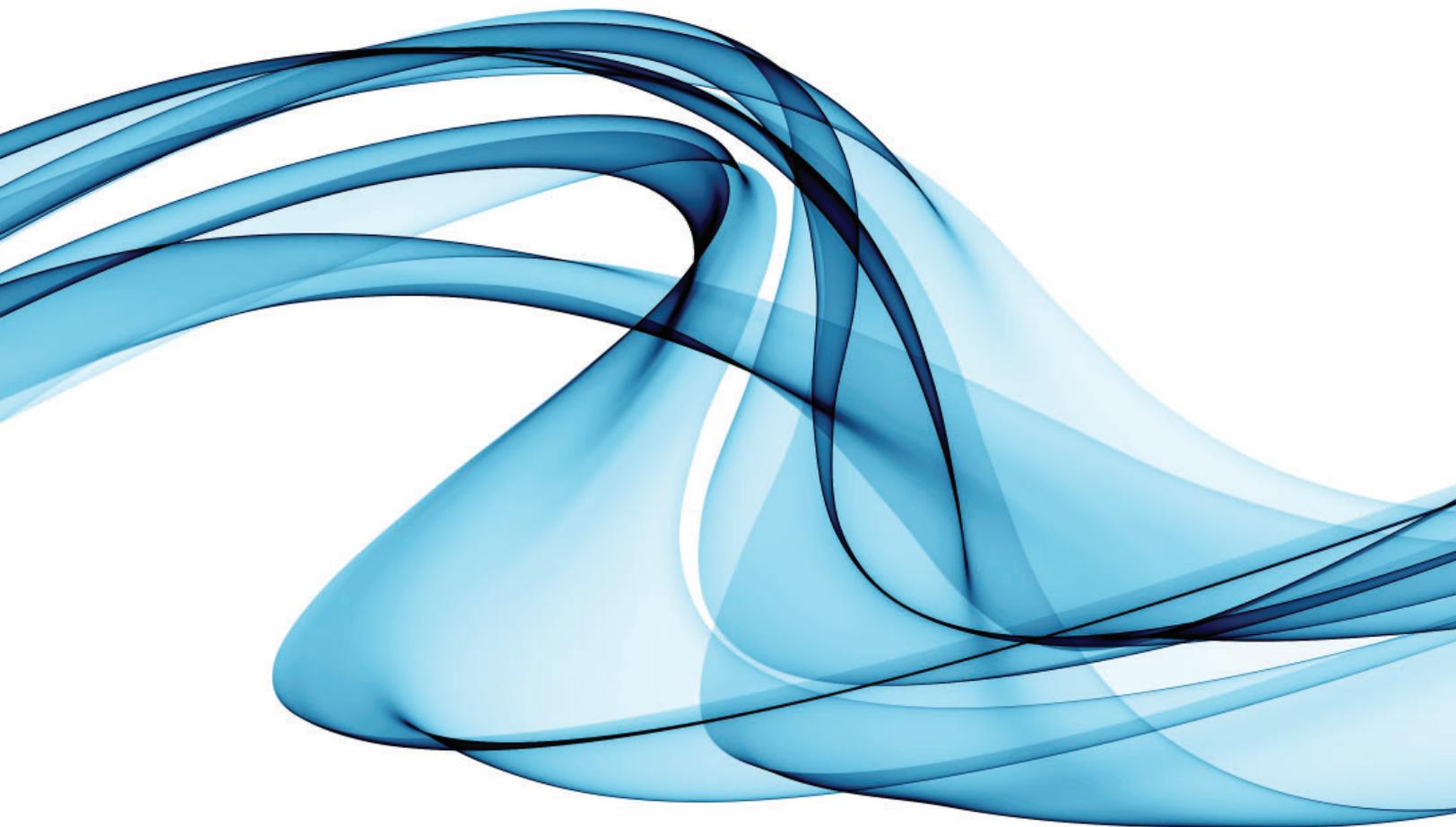


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OVERVIEW

Medical dictionaries are fundamental building blocks of Electronic Health Record (EHR) systems. Building and maintaining healthy dictionaries are vital for healthcare providers and organizations. A healthy dictionary supports organizational core functions including but not limited to quality reporting, reimbursement, and patient care. Defining a healthy dictionary from an unhealthy dictionary and the organizational impact is the focus of this paper.

A healthy medical dictionary contains comprehensive subject matter appropriate terms mapped to up-to-date industry standard code sets. Disseminating this definition across the organization's executive level is important to ensure support for all efforts to maintain a healthy dictionary. Causes of unhealthy dictionaries are multi-factorial and require a defined program to achieve and properly maintain good dictionary health.

INTRODUCTION

Medical dictionaries support capturing patients' stories in an Electronic Health Record (EHR) system. For example, a medical dictionary containing diagnoses supports the provider finding an appropriate diagnosis for each patient. Coding the diagnosis to machine-readable industry standard terminologies and code sets provides value as industry standards support efficient analytics to extract meaning for organizations.

Representing patient stories in a clinician's own words captures the clinical intent, while processes downstream from the actual patient/provider encounter rely on industry standard terminologies and code sets. A clinical interface terminology preserves the clinical intent as it provides a bridge between the provider's words and the machine-readable industry standards. Using a clinical interface terminology can dramatically improve the generation of standard coding from clinically relevant text or data.

Whether using an interface terminology or directly coding from clinician's words, comprehensive and up-to-date medical dictionaries are vital to the process.

Comprehensive, current and accurate are the three key characteristics of a healthy medical dictionary.

MEDICAL DICTIONARY DEFINITION AND IMPORTANCE

Medical dictionaries are lookup tables in a healthcare application that provide information a user needs when searching for medical, nomenclature, or administrative terms and codes. Content in the tables are used to record patient medical history or describe patient conditions (diagnoses, assessments, and chief complaints), procedures, lab orders, medications, etc. Content is stored in tables and not embedded in the software due to frequently required updates.

Medical dictionary impact on patient care, EHR incentive programs, and reimbursement are either positive or negative depending on its health.

Organizations must distinguish a healthy from an unhealthy dictionary based on the criteria further outlined.

In this paper, future references of medical dictionaries will be ‘dictionaries.’

DICTIONARY HEALTH

The terms and associated codes currently in the dictionary define its state and health. A healthy dictionary is one in the state of having the most current, comprehensive, and accurate set of terms and associated codes within a specified category according to these descriptions:

Current Knowledge: Contains wording of concepts according to latest medical knowledge which best describes the clinical meaning.

Comprehensive: Contains a complete set of clinical concepts and terms with no gaps; all common concept expressions are embodied in the range of terms.

Accurate Coding: Contains the most recent published code standards mapped to the correct terms. An unhealthy dictionary has one or more of the following conditions:

- Inadequate, ambiguous, or missing terms
- Aged, out of date terms or codes
- Wrong codes

UNHEALTHY DICTIONARY EXAMPLES

Missing Terms

While the Zika virus discovery occurred long before EHRs, many dictionaries overlooked this condition. The need for the term first presented in Texas during February 2016, when the virus first appeared in the United States. Unless using a clinical interface terminology at this time, the condition was most likely missing from the dictionary. (Of note, in case dictionaries have been derived from code systems, Zika virus disease A92.5 first appeared in ICD-10-CM in the October 1, 2016 release, and LOINC® codes for Zika virus testing in June, 2016).

Ambiguous Terms

The term “cervical lesion” is ambiguous in that it can refer to a person’s neck or the uterine cervix. This type of term may lead to improper term choice unless other indicators clarify the condition.

Each Terms Inadequate for Proper Documentation

Dictionaries support documenting all clinical details. If dictionary terms are lacking, clinical detail documentation and appropriate industry standard terminology and code sets reflect the lack of specificity. Other infection associated with device is an example of a term lacking clinical specificity.

Out of Date or Wrong Code Maps

Industry standard terminology and code sets have routine content updates. Dictionary content must reflect the changes in order to remain healthy. If the dictionary remains untouched, the content is considered aged. Lack of updates leads to out of date terms and code maps.

ICD-10-CM updated E10.311 to include laterality of terms. The dictionary update must occur to ensure accurate terms and codes.

Prior to October 1, 2016

- E10.311 – TYPE 1 DIABETES MELLITUS WITH UNSPECIFIED DIABETIC RETINOPATHY WITH MACULAR EDEMA

After October 1, 2016

- E10.37X1 – TYPE 1 DIABETES MELLITUS WITH DIABETIC MACULAR EDEMA, RESOLVED FOLLOWING TREATMENT, RIGHT EYE
- E10.37X2 – TYPE 1 DIABETES MELLITUS WITH DIABETIC MACULAR EDEMA, RESOLVED FOLLOWING TREATMENT, LEFT EYE
- E10.37X3 – TYPE 1 DIABETES MELLITUS WITH DIABETIC MACULAR EDEMA, RESOLVED FOLLOWING TREATMENT, BILATERAL

HOW DICTIONARY HEALTH AFFECTS PATIENT CARE

Term and Code Granularity

Accurately describing the patient in the patient record system requires granular terms to provide proper care.

The more granular the term, the more accurate the capture of patient information. Interface terminology, reference terminology and code sets may inform dictionary granularity. As they evolve, local EHR dictionaries may reflect the changes.

Captured data needs to be granular so that any clinician reading the patient record can understand all of the important elements of what the documenting clinician was attempting to say. Terms that are too broad or that apply to more than one condition may mislead a subsequent clinician to misunderstand, putting patient care at risk.

For example, if an EHR were to base an entry in the patient record on the ICD-10-CM code for atrial fibrillation, the code would be I48.91, which is the code for the term “atrial fibrillation”. Unfortunately, the code I48.91 also is the code that represents atrial fibrillation and other associated important clinical details not captured in ICD-10-CM. Patients with “Atrial fibrillation with normal ventricular rate” or with “Atrial fibrillation with rapid ventricular response,” which have very different meanings are reflected in the same ICD-10-CM code. ICD-10-CM alone does not identify those patients who require very different treatment and are at very different levels of risk.

HOW DICTIONARY HEALTH AFFECTS EHR INCENTIVE PROGRAMS

The foundation of government reports is terminology obtained from dictionaries. Building and mapping the terms and codes correctly in the site’s dictionary is an important first step in generating the reports.

Meaningful Use and Macra

The federal EHR incentive program, Meaningful Use, serves as a roadmap for providers to use certified EHRs to improve patient care. MACRA, the Medicare Access and CHIP Reauthorization Act of 2015, replaced future versions of Meaningful Use. MACRA is a Quality Payment Program also replacing the Physician Quality Reporting System, and the Value Modifier Program with two options.

MIPS - a performance-based payment system and APMs - payment models that can provide added incentive payments. These programs depend upon clinical quality measure reporting.

MIPS and APMs require healthcare organizations to generate and submit reports demonstrating quality patient care is delivered. Government standard measures selected by CMS and distributed by the Value Set Authority Center (VSAC) are the report foundations. The reports use formulas relying on external code systems such as SNOMED®, ICD9CM, ICD10CM/PCS, RxNorm, CDREC, CPT®, and LOINC. Under MACRA, organizations receive a higher rate of reimbursement the more they exceed the measure threshold indicated by CMS.

CLINICAL QUALITY MEASURE REPORTING AND DICTIONARY HEALTH

In order to generate and submit accurate reports, healthcare organizations must have the correct external codes built in to their dictionaries.

By having all of the appropriate codes built in to their dictionaries, organizations can achieve the highest possible conceptual coverage, resulting in the highest measure of compliance.

Annual updates occur to the reporting measures by adding value sets, removing value sets, or updating the codes contained within value sets. Therefore, staying up to date with the latest changes prevents unintended loss of information and leads to the most appropriate available incentive and reimbursement payments. The maintenance of external codes within the EHR's medical dictionaries for reporting purposes is significant. Having correct codes mapped in the system ensures the report formulas are pulling accurate results. Accurate reports result in healthcare organizations submitting

correct numbers to the government quality reporting programs and minimizing potential penalties.

Site audit results can have important financial and reputational ramifications. As reimbursement and incentive payments directly correlate to the reporting numbers that a site submits, it is imperative the site submits comprehensive and accurate numbers. The reporting results influence an organization's public image, as the results are publicly available on different platforms. It is important for the site to submit numbers that show the highest quality of care they are providing to patients.

PUBLIC HEALTH REPORTING AND DICTIONARY HEALTH

Public health agencies collect the data for monitoring and tracking various public health concerns and initiatives. The terms and codes necessary for public health reporting may have some overlap with clinical quality measure reporting but overall is a comprehensive independent data set. MIPS also requires public health reporting from organizations. Participating healthcare organizations may have a 5% bonus score added to their overall MIPS score by reporting. In addition to the national data reporting elements, each state may have unique requirements; however, both sets require a healthy dictionary.

The foundation of these reports is terminology obtained from dictionaries. Again, an important first step in generating these reports is building and mapping all required terms and codes appropriately in the dictionaries and maintaining the dictionary according to the state's public health requirements.

HOW DICTIONARY HEALTH AFFECTS REIMBURSEMENT

A dictionary’s health affects the reimbursement of services. Healthcare reimbursement is highly dependent upon proper industry standard codes on a claim. Submission of out of date or wrong codes results in denied or delayed reimbursement. Clear up-to-date terms, especially using interface terminology, facilitates appropriate code submission as providers capture their clinical intent for translation into codes.

Medicare

While all Medicare reimbursement is dependent upon accurate codes, models evolve to account for patient acuity. One physician-based model is CMS-HCC Risk Adjustment Model. There are two categories:

1. HCC based on the medical condition.
2. RxHCC based on the medication treating a condition.

The model is based on the higher the patient’s severity of illnesses, the greater the care cost and therefore a greater reimbursement to the provider. Medicare calculates patient

acuity based upon ICD-10-CM codes via claims submission as defined by the complex Medicare HCC program. Clinical specificity documentation is key in supporting appropriate ICD-10-CM code. ICD-10-CM codes are fundamental to HCC determination.

Table 1 illustrates the impact of clinical specificity on potential payments. The clinical term details must exist in dictionaries for the providers to capture the information. An unhealthy dictionary with older terms results in improper or insufficient documentation affecting the ICD-10-CM code assignment.

Table 1: Accurate and specific coding = Higher reimbursement

All conditions coded appropriately		Some conditions coded poor specificity		No conditions coded	
Condition	RAF	Condition	RAF	Condition	RAF
Female Age 76	0.457	Female Age 76	0.457	Female Age 76	0.457
Stable Angina	0.141	Stable Angina	0.141	No Angina coded	
Ac MI ant wall, sub EOC	0.258	Ac MI ant wall, sub EOC	0.258	No MI Coded	
Chron Ren Impair, Stage 4	0.224	Chron Ren Impair, unspec stage	0	No Remal Impairment coded	
Edema	0	Edema	0	Edema	
COPD	0.346	History of COPD	0	Hx of COPD	
Total RAF	1.285	Total RAF	0.715	Total RAF	0.457
payment	\$9,586.10	payment	\$5,333.90	payment	\$3,409.22

ICD-10-CM AND HCCS

ICD-10-CM codes are a core feature of HCC payment calculations as illustrated in Table 2 below. Capturing the most specific code including secondary codes, as appropriate, ensures accurate payment determinations.

Without a set of current codes, payment levels will be lower or even denied. With a set of correct codes, payment levels will be much higher.

Table 2: ICD-10-CM Specificity Payment Levels More Specificity = Higher Reimbursement

HCC	ICD9/10CM Dx	Diagnosis	Payment
HCC 19	250.00 / E11.9	Diabetes w/ no complications	\$1,967
HCC 18	250.50 / E11.93	Diabetes w/ ophthalmic manifestations	\$2,882
HCC 17	250.1-3 / E11.8	Diabetes w/ acute complications	\$3,959
HCC 16	250.6X / 250.8X E11.49 / E11.69	Diabetes w/ neurological or other specified manifestations	\$4,916
HCC 15	250.4X / E11.29	Diabetes w/ renal manifestations	\$6,613
HCC 15	250.7X / E11.51	Diabetes w/ peripheral circulatory manifestations	\$6,613

Dictionary health is key to many healthcare processes as highlighted in three areas above. **And while so important, how do dictionaries become unhealthy?**

FACTORS CONTRIBUTING TO UNHEALTHY DICTIONARIES

Generally, there are two categories of causes for a dictionary to fall into an unhealthy state:

1. Human factors attributed to people in charge of maintaining the dictionaries.
2. Time and technical factors.

HUMAN FACTORS

Lack of Appropriate Time / Allocation of Resources
 Busy staffers may simply not have enough time in

their workweek to focus on updating dictionaries with new content. There may not even be a designated person responsible for maintaining dictionaries due to an organization not being aware that such activity is necessary. Some regular staffing allocation is needed for proper maintenance and updating of dictionaries used by Healthcare IT systems.

Lack of Education and Training about Dictionary Maintenance

Personnel may not have proper training in the ongoing maintenance requirements of dictionaries, or the organization may not have guidelines or best practices for such work.

Organizations need to be aware that dictionaries are not create-and-forget entities, but need updating as medical, regulatory, and organizational needs change.

Erroneous Term or Codes Entry

Using out of date source materials leads to inaccurate updates. Some site personnel may make updates to dictionaries based on information they may have on hand or from information provided by unverified third-party sources, like a web search or out-of-date code handbook.

TECHNICAL FACTORS

Non-Responsive to Changes in Medical Terms (New Terms Introduced to the Vernacular)

Medical knowledge continues to evolve, as do the terms used to describe new conditions as they arise. New terms are continually introduced to the lexicon. For example, in one year the following important terms and associated codes were added:

- Toxic shock syndrome
- West Nile virus
- Coronary atherosclerosis in a transplanted heart
- Injury and death due to terrorism including aircraft used as a weapon
- SARS, severe acute respiratory syndrome

Dictionaries containing patient diagnoses then needed updating to include these new terms and codes.

New Codes Issued by Standards' Bodies.

Healthcare IT dictionaries need to contain a wide variety of code systems. A collection of governmental and standards organizations maintain the various systems. These organizations issue updates to code systems on a periodic basis, and these updates need to be reflected in the healthcare IT dictionary. Examples include new versions of SNOMED CT or

moving from ICD-9-CM to ICD-10-CM (or different biennial versions of ICD-10-CM.)

Tools Inadequate for Proper Terminology Maintenance

Maintaining and making additions to dictionaries requires use of appropriate software tools to edit and administer the dictionary. These tools need to be available to local staff who have had training so they know not only how to make changes to the dictionary, but also how and where use of the terms appears in the healthcare system.

Laboratory Changes May Require Significant Changes to Underlying Lab Dictionaries

As clinical laboratories add or update test orders and results in their test compendium, a variety of impacts may occur to dictionaries. Updates occur when implementing new analyzers or test kits or when testing is performed on additional specimens or with other changes. Whenever a test is added, it is imperative that it's migrated to the appropriate LOINC code. When a test is changed or updated, it is imperative that the LOINC code be updated or changed if needed.

LIS dictionaries must reflect updates to not only new content, methods, or equipment, but also new terminology or code system updates. The June 2016 LOINC release contained new codes for Zika virus testing. As new testing continues to evolve for Zika, LOINC codes will update. LIS dictionaries must reflect the updates as appropriate to their system.

Manual Updating Process

Many sites perform updates manually, either by a staffer laboriously stepping through changes updating terms or codes, or by obtaining an update file and applying the changes with a script or differential program. Both approaches contribute to the prevalence of unhealthy dictionaries.

A far better mode is to use a self-updating system that periodically checks for updates against a master notification system. When it detects new terms or codes are available, it automatically updates itself with the latest content.

This eliminates the need for human intervention and ensures that the system is always up to date.

SOLUTION

CONTINUAL DICTIONARY HEALTH

Fortunately, there are means and methods available for achieving and maintaining good dictionary health.

Connect with a trusted supplier of terminology

Advances in healthcare and changes in regulations have historically resulted in thousands of adjustments in the standard, albeit disparate, code systems. Keeping up with all the various changes in these standards, each with varying release schedules, download locations, file formats, release notes, etc. can be unmanageable. Relying instead on a terminology supplier to handle the heavy lifting to proactively package and deliver these changes will give dictionary staff a greater piece of mind.

Start with a healthy dictionary

If the patient record system or other healthcare IT application is already up and running (and chances are, it is) then the best action to take to get it to

a healthy state is to have a qualified terminology expert perform a “migration” on the dictionary. A migration involves performing a comparison test on it against a comprehensive, regulatory-compliant and always up-to-date master terminology catalog that contains a complete set of medical terms and accurate code mappings.

Subscribe to a continuous dictionary maintenance service

This provides periodic checkups to the dictionary and monitors all organizationally added new terms and codes. Such services employ terminology experts to review, modify and recommend updates to organizational dictionaries. These services use experts to ensure organizational dictionaries are comprehensive and up-to-date (healthy).

Make sure staff always knows the dictionary state

The service provider who keeps the dictionary up-to-date should offer a dictionary review software application that allows staff to view all terms in the dictionary. This tool provides staff the ability to review any changes to terms or codes by a new release and respond where appropriate. Such a tool can be invaluable when maintaining the dictionary.

Maintain and commit to a healthy dictionary policy

Establish rules and guidelines in the organization to ensure dictionaries get the required attention. Provide staff access to the tools a terminology service provider offers in order to seed any growth in dictionaries – i.e. have those new dictionary terms come in healthy from the start.

When establishing or maintaining a dictionary it is important to recognize dictionaries based on code sets have a fundamental problem. The fundamental problem is loss of clinical intent and degradation of the clinical story when documenting using only administrative or reference codes. A dictionary based

on a clinical interface terminology solves this latter problem and renders many of the aforementioned problems associated with dictionary health moot.

CLINICAL INTERFACE TERMINOLOGY

Clinical interface terminology is a systematic collection of healthcare related phrases that supports clinicians' entry of patient-related information into computer programs. Interface terminologies also facilitate display of computer-stored patient information to clinician users as simple human-readable text.

Thus, interface terminologies "interface" between clinicians' own unfettered conceptualizations of patient descriptors and the more structured, coded internal data elements used by specific clinical computer programs. Interface terminologies allow users to interact easily with concepts through common colloquial terms and synonyms. These terminologies generally embody a rich set of flexible, "user friendly" phrases.

For the problem of missing terms, a clinical interface terminology provides granular terms even though specific single codes may not yet be available for the missing concept.

For the problem of ambiguous terms, the full non-ambiguous clinical term would be included in the clinical interface terminology to specify it.

For the problem of terms inadequate for proper documentation, the clinical terminology contains the comprehensive list of proper terms.

For the problem of wrong code maps, the clinical interface term undergoes review for proper code map assignment.

SUMMARY

Dictionaries are the terminology and code backbone to many critical healthcare IT systems. When dictionaries are in an unhealthy state, your organization is at risk for reporting, penalties, poor reimbursements and reputational harm.

A policy of maintaining healthy dictionaries is easy to achieve and makes good financial and patient-care sense. IMO's mission is to provide organizations with current and comprehensive dictionary content, processes, services and IT infrastructure to ensure you are not at risk when following the programs prescribed.

IMO Offers:

1. A clinical interface terminology with clinician friendly terms that enable providers to capture true clinical intent at the point-of-care.

2. An ongoing dictionary update and maintenance service called Long Term Terminology Management (LTTM) for those systems not based on IMO provided dictionaries. This service methodically compares local hospital dictionaries to current and comprehensive master dictionaries curated by IMO. The system recommends changes to your version to add missing terms, remove duplicate terms, and validate that code mappings are correct. Thereafter, IMO will perform a review of the dictionaries on a periodic basis (typically every calendar quarter). Use of this service includes access to IMO's review tool, called Map IT, that allows your staff to inspect all changes and suggestions in the dictionaries.

3. Cloud-based terminology search services, that give your clinical, coding and compliance teams the ability to search for and find the correct clinical terms with appropriate code maps. Searching occurs outside the EHR so you are assured of getting the

best possible search result.

4. An onsite terminology appliance that is available for those systems that require an on-premise system. This system allows some EHR systems to update internal dictionaries with the master content contained within the appliance. The appliance is self-updating and always contains the latest and most current master dictionaries for a variety of terminology domains.

TERMINOLOGY EXPERTISE AND 3RD PARTY CODE VALIDATION

IMO maintains a full team of certified coders and mappers to assist you with your terminology needs. Our Clinical Team works in concert with our Mapping Team in the development of content and modifier workflow options. IMO's master dictionaries are curated for best clinical specificity and coding.

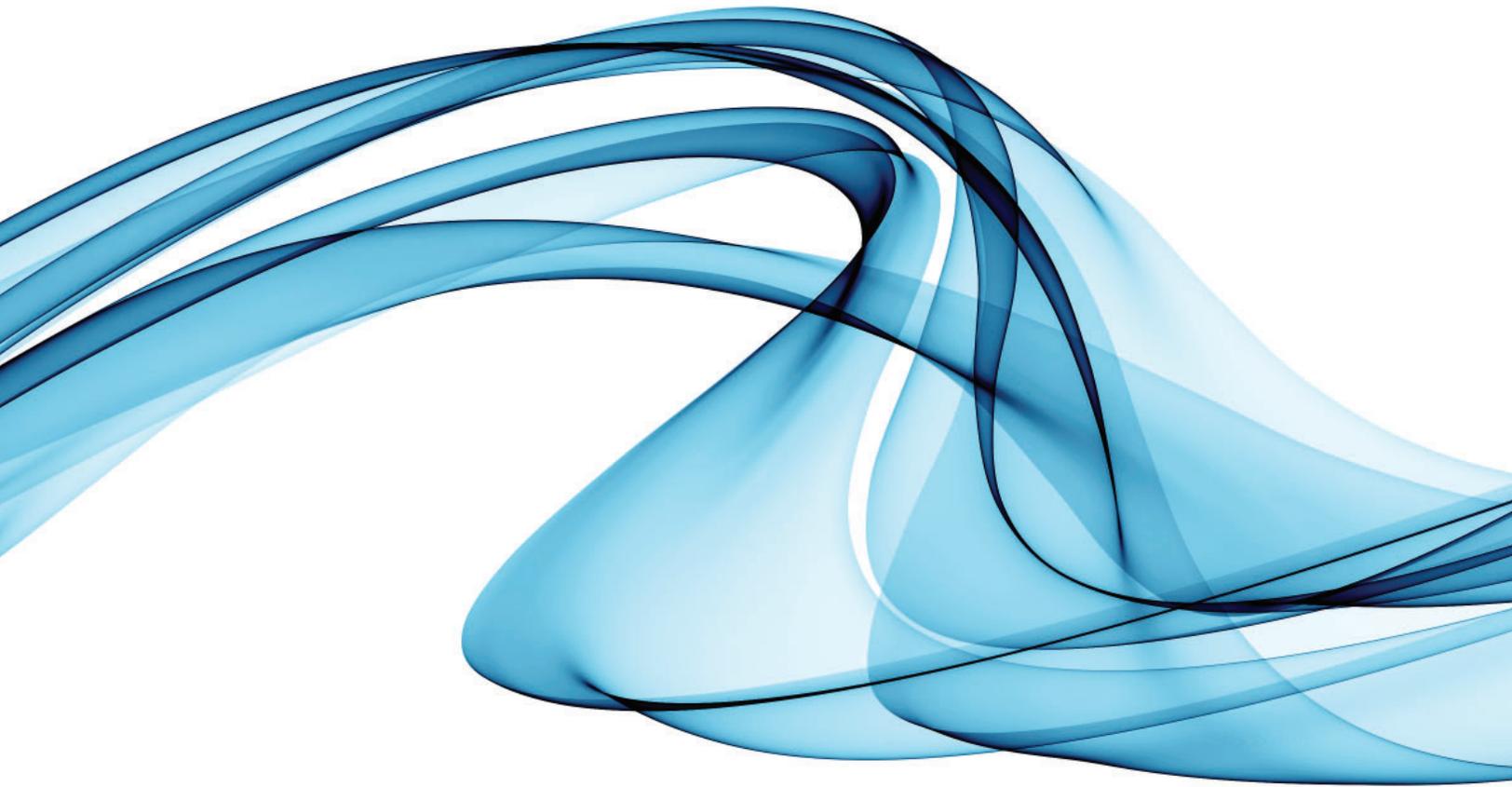
Additionally, the American Health Information Management Association (AHIMA) provides advisory services to IMO on all ICD-10-CM mappings. Please contact IMO at (847)272-1242 to speak with a Dictionary Health representative to find out more about how to keep your dictionaries healthy.

ABOUT INTELLIGENT MEDICAL OBJECTS (IMO)

Intelligent Medical Objects, Inc. (IMO), is the developer of the most widely accepted medical terminology solution for the management of medical vocabularies and software applications at healthcare organizations worldwide. IMO's terminology is used by more than 4,500 hospitals and 450,000 physicians daily, and this trusted terminology platform supports innovations by provider systems. IMO medical vocabulary and mapping solutions effectively capture clinical intent and help EMRs preserve and communicate this across the entire spectrum of care. IMO clinical terms are mapped to all standard coding systems including ICD-9, ICD-10, and SNOMED®. The accuracy of IMO's interface terminology was found to be "nearly perfect" in an independent study published by the US Centers for Disease Control. In 2016, IMO received a growth capital investment from Warburg Pincus, a global private equity firm focused on growth investing. Read more at www.e-imo.com.

GLOSSARY

1. APMS Advanced Alternative Payment Models: payment models that give added incentive payments to provide high-quality and cost-efficient care. APMs can apply to a specific clinical condition, a care episode, or a population. Advanced APMs are a subset of APMs, and let practices earn more for taking on some risk related to their patients' outcomes.
2. EHR Electronic Health Record
3. CMS Centers for Medicare & Medicaid Services: A part of the Department of Health and Human Services (HHS).
4. HCC Hierarchical Condition Categories is a payment system based on risk used by CMS to adjust Medicare Advantage plan payments at the individual patient level. Sometimes referred to as CMS-HCC.
5. LIS Laboratory Information System
6. LOINC Logical Observation Identifiers Names and Codes: provides a set of universal names and ID codes for identifying laboratory and clinical test results.
7. MU Meaningful Use: A program that awards incentives for using certified EHRs to improve patient care.
8. MACRA Medicare Access and CHIP Reauthorization Act of 2015: a Quality Payment Program with two options: MIPS and APMs.
9. MIPS Merit-based Incentive Payment System: a performance-based payment system composed of four categories that provide clinicians the flexibility to choose the activities and measures that are most meaningful to their practice. The four performance categories that are used to score a MIPS-eligible clinician are quality, use of services, EHR use, and quality improvements to care coordination and delivery.
10. RxHCC Prescription Drug Hierarchical Condition Categories are similar to HCC using the same methodology and data sources, predicts expenditures for which Medicare Part D sponsors are responsible, adding relative risk weights for individual risk markers assigned to the beneficiary; used to adjust capitated payment amounts.



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