

JULY 14, 2014



Protect Patients, Save Millions by Testing your EHR/EMR Systems

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Introduction

A key component of a healthcare provider's financial success is the accuracy of billing for services rendered, therefore it is critical that charges are billed accurately and on time. There are many documented cases of poor EHR/EMR implementations such as the Maine Medical Center, in Portland Maine where they experienced a ***\$13.4 million revenue loss after going live with their EHR/EMR system.*** A significant portion of the losses were attributed to the inability to accurately charge for services provided, the direct result of not testing billing codes⁴. In May 2014 a Georgia CEO was forced out of his position because of a poor EHR implementation that failed to validate the transfer of data before going live. The article stated that, because of "increased medication errors, lost orders, and long delays in patient care" the physicians and the Board of Trustees voted to fire the CEO⁵.

As part of the American Recovery and Reinvestment Act 2009, the United States Government has targeted \$22 billion to assist hospitals and doctor's offices in the implementation of electronic medical records¹. Implementing an EHR/EMR system is an enormous task. Compressed timelines and limited resources make it difficult to focus on the accuracy of the data being transferred. EHR/EMRs are supposed to increase hospital efficiencies but many facilities are reporting disappointing outcomes.

The Department of Health and Human Services released a report in December 2012 and a follow up report in January 2013, warning CEOs, CIOs and others responsible for EHR/EMR implementations of oversights with regard to fraud and abuse which in many cases are the result of inaccurate records². Medicare has not kept pace with the adoption of EHR/EMRs, thus it offers little guidance for the detection of misuse. Hospitals do not willingly make erroneous charges but they are accountable for billing accuracy. The absence of internal controls often contributes to high incidence levels of billing inaccuracies. These errors can result in lost revenue for services rendered and fines levied by Federal and State regulatory agencies.

Background

Through our work in the field assisting EHR/EMR integration clients, BC Solutions has been able to quantify a 10% - 15% error rate in Current Procedural Terminology (CPT) Code mapping between the Laboratory Information System (LIS) and the newly implemented EHR/EMR system. Our findings concluded that billing codes were mapped incorrectly or not mapped at all resulting in the causative potential to disqualify billing for collection or to potentially collect fraudulent charges. **Further Medicare data suggests the average cost per lab test is \$49 which theoretically could account for a \$1 million dollar loss in revenue collection for a medium size hospital³.** For networks with several hospitals using a common LIS database the revenue loss could increase by an order of magnitude. Additionally, improper billing can lead to fines and costly audits by insurers and government agencies

Testing Billing Codes

In order to ensure the accuracy of the data during and after the EHR/EMR implementation, a strategic quality assurance review and test is needed to validate the accuracy and categorization of charges generated for all laboratory departments and point of care (POC) in the EHR/EMR. Through our field experience BC Solutions has found that one test strategy does not fit all sites. Specific testing strategies relative to the site must be developed to fully uncover deficiencies in LIS data reporting to the EHR/EMR and HIS systems. This test strategy needs to be deployed not only when EHR/EMR systems are implemented but also when the EHR/EMR is substantially upgraded. The appropriate testing strategy enables the detection of errors that will substantially improve the accuracy of the billing of laboratory charges for health care facilities.

To achieve optimal results a good test plan must include the coordination of resources from all stakeholders. The laboratory staff, the hospital information systems (HIS) department and the finance department work together to develop an implementation plan that accommodates all or most stakeholder needs. This team then oversees the execution of the plan and plan results. Employing an experienced third party test / validation service will help to ensure a timely, accurate launch of the EHR/EMR.

Charge masters from the LIS and HIS systems need to be reviewed to insure all charge descriptors and codes are present and appropriately matched in both systems. BC Solutions deploys clinical science Subject Matter Experts (SME) to review all laboratory workflows, orders and required results fields. These reviews should be done for all LIS associated with a common HIS because there are many laboratory tests that have similar descriptors for more than one procedure. For example, a test for creatinine could be a serum creatinine, a urine creatinine or a 24 hour creatinine clearance test. If the HIS system is configured by personnel who are familiar with HIS and EHR/EMR systems but not clinical laboratory routines the charge descriptor and code will may not be matched correctly resulting in errors incurred by charging for the wrong lab test.

An optimum test will include placing orders through the hospital interface network to insure data successfully moves through the interface network. It is important to insure all systems are working as expected before testing is started to establish the baseline accuracy. For each laboratory orderable, orders are placed in the EHR/EMR system which triggers orders in the LIS which then flow to the HIS. For each order, an HL7 interface message is generated. A typical HL7 message between an LIS application and an HIS application is shown in *figure 1*. Although HL7 messages vary in the information they provide their standardized format is easily deciphered by experienced personnel. This HL7 interface message in *figure 1* message includes the message source, event record, patient identifier, patient visit information and the charge information.

Typical HL7 Messages from LIS to HIS:

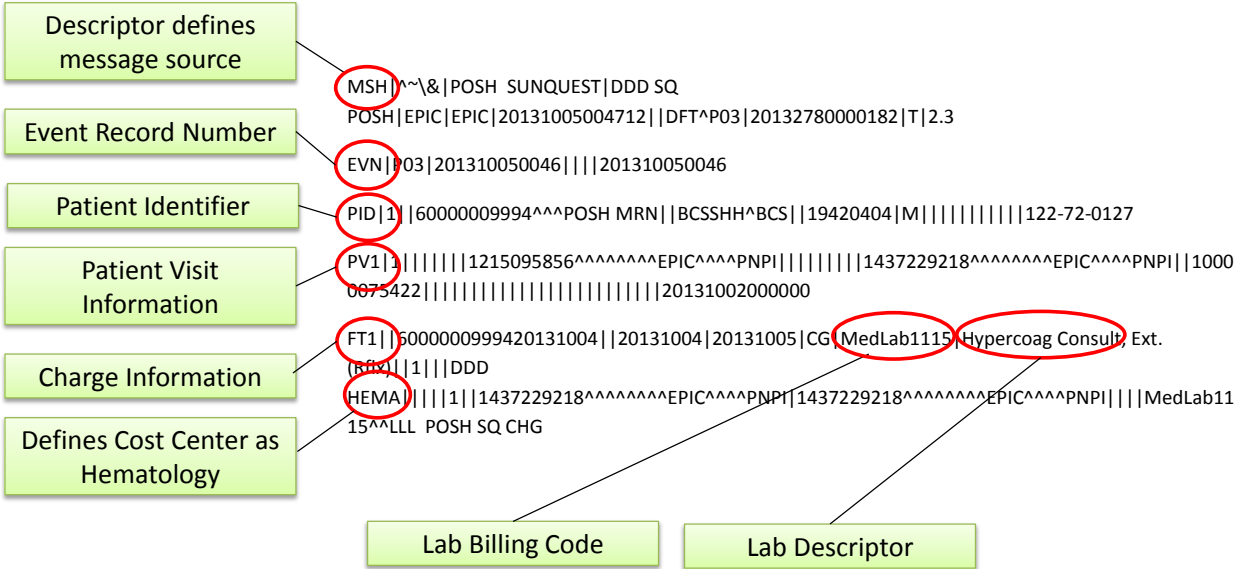


Figure 1

After placing the orders and generating the HL7 interface messages, the messages need to be reviewed and the data matched to the charge master. *Figure 2* is an example of a charge master. Analysts check the HL7 interface message against the charge master to insure the correct charge codes are present, the descriptor is correct, the correct CPT code is present and that the correct ordering department is being credited for the order. MedLab1115, MedLab1116 and MedLab1117 are all components for the Hyper-Coag Consult procedure. Only a trained SME with extensive clinical laboratory experience will be familiar with this level of detail. If there are any discrepancies corrective actions are made to the deficient system and the orders re-submitted for verification of the corrective action. This process is repeated until the acceptable level of accuracy for the Hyper-Coag consult is achieved.

Typical Charge Master:

Patient ID	Hospital Account No	CSN	MRN	LIS Code	Billing Code	Descriptor	CPT Code	Date of Service	Date report pulled	Ordering Dept. Code	Ordering Dept.
BCSSHH,BCS	xxx	1.00E+10	7.00E+11	MedLab1111	205100312	HC MERCURY, URINE QUANTITATIVE	83825	10/4/2013	10/5/2013	216854	LAB BIOCHEMISTRY
BCSSHH,BCS	xxx	1.00E+10	7.00E+11	MedLab1112	205100458	HC HELICOBACTER PYLORI	86677	10/4/2013	10/5/2013	216854	LABORATORY
BCSSHH,BCS	xxx	1.00E+10	7.00E+11	MedLab1113	205100604	HC HERPES SIMPLEX TEST - TYPE 1 IGG	86695	10/4/2013	10/5/2013	216854	LABORATORY
BCSSHH,BCS	xxx	1.00E+10	7.00E+11	MedLab1114	205100750	HC HERPES SIMPLEX TYPE 2 - HSV 1&2 IGG-HSV TYPE 2	86696	10/4/2013	10/5/2013	216854	LABORATORY
BCSSHH,BCS	xxx	1.00E+10	7.00E+11	MedLab1115	205100896	HC APC RESISTANCE ASSAY	85307	10/4/2013	10/5/2013	216854	LAB HEMATOLOGY
BCSSHH,BCS	xxx	1.00E+10	7.00E+11	MedLab1116	205101042	HC PROTEIN C ACTIVITY	85303	10/4/2013	10/5/2013	216854	LAB HEMATOLOGY
BCSSHH,BCS	xxx	1.00E+10	7.00E+11	MedLab1117	205101188	HC THROMBIN III ACTIVITY	85300	10/4/2013	10/5/2013	216854	LAB HEMATOLOGY
BCSSHH,BCS	xxx	1.00E+10	7.00E+11	MedLab1118	205101334	HC THROMBIN III ANTIGEN ASSAY	85301	10/4/2013	10/5/2013	216854	LAB HEMATOLOGY
BCSSHH,BCS	xxx	1.00E+10	7.00E+11	MedLab1119	205101480	HC THROMBOPLASTIN TIME PARTIAL	85730	10/4/2013	10/5/2013	216854	LAB HEMATOLOGY
BCSSHH,BCS	xxx	1.00E+10	7.00E+11	MedLab4128	205101626	HC THROMBIN TIME	85670	10/4/2013	10/5/2013	216854	LAB HEMATOLOGY
BCSSHH,BCS	xxx	1.00E+10	7.00E+11	MedLab4319	205101772	HC HOMOCYSTEINE, CARDIAC RISK	83090	10/4/2013	10/5/2013	216854	LAB BIOCHEMISTRY
BCSSHH,BCS	xxx	1.00E+10	7.00E+11	MedLab4198	205101918	HC ALLERGEN SPECIFIC IGE	86003	10/4/2013	10/5/2013	216854	LABORATORY
BCSSHH,BCS	xxx	1.00E+10	7.00E+11	MedLab4199	205102064	HC ALLERGEN SPECIFIC IGE	86003	10/4/2013	10/5/2013	216854	LABORATORY
BCSSHH,BCS	xxx	1.00E+10	7.00E+11	MedLab4201	205102210	HC ALLERGEN SPECIFIC IGE	86003	10/4/2013	10/5/2013	216854	LABORATORY

Figure 2

The Benefits of Testing

When implementing a new EHR/EMR system, it is critical that all stake holders are included in the design of the billing code test and the execution of the test. Due to the comprehensive nature of EHR/EMR projects, EHR/EMR build teams frequently use consultants with extensive health information system experience. Unfortunately, most of the consultants lack the clinical laboratory experience to discern the proper coding required in large, complex laboratory systems. Furthermore, resident laboratory personnel have limited time to devote to such a large project. BC Solutions' staff develops relationships that bridge the gap between the EHR/EMR implementation team and the clinical laboratory departments.

It is critical that the laboratory data is transferred completely and accurately to the patient record and that the EHR/EMR data is validated through testing. The benefits of testing include;

- ***Positive patient outcomes***
- ***No Lost revenue***
 - ***Correct charges for services provided***
 - ***Collection of revenue for services provided, no over / under charges, lost revenue***
- ***Elimination of suspected fraud or abuse by auditors***

EHR/EMR systems are the present and future for patient records, thus thoughtful planning and implementation of electronic reporting can significantly improve the accuracy and efficiency of the health care delivery process. However, the lack of EHR/EMR, LIS and HIS software standardization coupled with the urgency of implementation can contribute to inaccurate records, loss of revenues and additional over head to dispute audit findings. BC Solutions team of subject matter experts will help you to implement your EHR/EMR efficiently and confidently. We work together with EHR/EMR and Laboratory implementation teams to ensure the delivered system meets both clinical and financial expectations.

About BC Solutions

BC Solutions is a healthcare information technology consulting firm. BC Solutions' (BCS) core team has on average 25 years of health care experience, with special expertise in Laboratory Information Technology. The BCS team is committed to the highest quality and efficiency, delivering a cost effective validation service that not only saves you hundreds of hours, but also gives you the highest confidence that your software performance is efficient, accurate and above all, safe. BCS maintains a high level of expertise in the current regulatory requirements which they apply daily by teaching both laboratories and software vendors how to comply with regulations mandated by the FDA, HCFA (HIPAA), CAP, JCACHO, AABB, ISBT and other regulatory organizations.

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