Encounters Data Processing System: path to effective healthcare domain

Hicham Amine, Abdelouahab Mesnaoui, safaa el khaddam

***Abstract*— Technology is becoming a key to success in all industries to better assure effectiveness and quality work. The purpose of this document is to sensitize the importance of Encounter Data Processing System (EDPS) in the process of encounters submission in the healthcare domain especially with this advancement of technology. This article shows the move from Risk Adjustment Processing System (RAPS) to Encounter Data Processing System (EDPS) in order to process encounters and claims in a very efficient way by passing all the errors that might result to system issues. With this new move, the System tracks claim lifecycle information from receipt of the original claim through the submission of the outbound 837 encounter and beyond. All historical and audit information associated with the claim is recorded and viewable from within TM, and via a user interface into the Claims Management Repository accessible from TM meaning that The System allows users to search and view received claims that are accepted for processing by the Submitted Claim ID and its corresponding Internal Claim ID. To protect personal healthcare information and ensure secure access, user authentication and data encryption are needed to provide secure transactions and involve some relevant security technologies, it is very important to implement this change as soon as possible.**

***Index Terms*— EDS, healthcare, IT, encounters.**

I. INTRODUCTION

To better measure the Medicare Advantage population's healthcare utilization and refine its risk adjustment models, CMS is replacing its Risk Adjustment Processing System (RAPS) with the Encounter Data Processing System (EDPS). Use of the EDPS is required starting January 3, 2012. Outbound 837 Encounter Data Reporting will have far more data than RAPS, and is much more complex. In part, this is due to CMS' decision to replace the manual process for dealing with inaccurate and incomplete RAPS data with electronic responses, leveraging 5010 TA1 and 999 file acknowledgements, as well as the 277 Claim Acknowledgements (277CA) a new technology is probably due to a great number of factors, only a few of which are measured here, and even so not terribly precisely. We asked questions speculating about potential adoption of RFID health care devices, services with which they have had few analogous experiences, so we cannot measure current uses and attitudes [1]. The purpose of this document is to cover the release features, and business requirements associated with the Claims Management 7.0.9 General Availability release. More specifically, the scope includes the added functionality of Outbound 837 5010A Encounter Data Reporting which CMS has mandated Medicare Advantage Organizations (MAO's) implement by January 3, 2012. The 7.0.9 General Availability release is targeted at MAO's, as well as Managed Care Organizations (MCO's) that contract with State Medicaid agencies to manage the delivery of healthcare services to Medicaid enrollees.

Manuscript received Dec 15, 2014

Hicham Amine, Al Akhawayn university, Department of Operations Management and IT, Ifrane, Morocco

Abdelouahab Mesnaoui, E-Learning Consulting Groups, Rabat Morocc

safaa el khaddam, University of Ibn Tofail, Faculty of science, Laboratory of Genetics and Biometric, Kenitra, Morocco

II. RESULTS

The following is an outline of the end to end process involved in the new Outbound 837 5010A Encounter Reporting functionality:

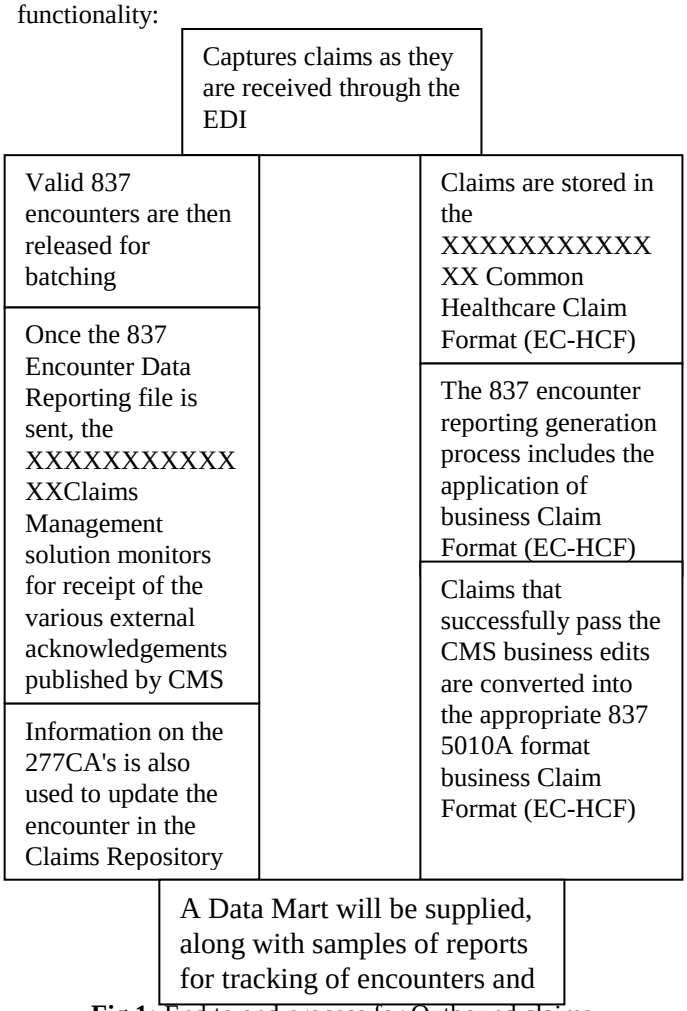

Fig.1: End to end process for Outbound claims

Captures claims as they are received through the EDI, web, or internal claim data entry channels (DDE) and stores them within the Claims Management Repository. Claims are stored

in the XXXXXXXXXXXX Common Healthcare Claim Format (EC-HCF), which includes all of the submitted claim data, as well as data added to the claim during the adjudication process (i.e., pricing, internal provider and member identifiers, internal ICN/DCN assignments, claim adjustments, and final payment information). The 837 encounter reporting generation process includes the application of business rules necessary to supplement or edit the claim data to comply with CMS Encounter Data Reporting requirements. Some of these rules are provided by XXXXXXXXXXXX "out-of-the-box", and others are customer configured. Claims that successfully pass the CMS business edits are converted into the appropriate 837 5010A format and verified for format compliance. If issues are identified, the claim is routed to an exception process for user intervention and manual resolution. Valid 837 encounters are then released for batching and the creation of an outbound 837 Encounter Data Reporting file to CMS. Once the 837 Encounter Data Reporting file is sent, the XXXXXXXXXXXX Claims Management solution monitors for receipt of the various external acknowledgements published by CMS. Each file acknowledgement (TA1, 999) is reconciled to an outbound 837 encounter file, and the 277 Claim Acknowledgements (277CA) are reconciled to individual encounters.

Information on the 277CA's is also used to update the encounter in the Claims Repository, including the CMS-assigned ICN and status information. If the acknowledgement reports a negative condition, a work list item is automatically generated. Users review the work list item and either hold the item for research, or schedule the encounter for resubmission (e.g., enrollment cycle updates). Or, the user can modify the encounter as needed and then release it for immediate resubmission to CMS. A Data Mart will be supplied, along with samples of reports for tracking of encounters and exceptions.

III. INBOUND AND OUTBOUND PROCESSES

A. Receive Inbound Claim File

Description

Inbound claim files are received from a variety of sources, including providers and other third parties, such as a claims clearinghouse. The System must be able to receive inbound claim files in standard HIPAA formats.

Requirements

The X12 837 files are pulled via a message queuing service (i.e., JMS, MS BizTalk, Server, etc.) FTP connector from a file system location then the system processes both 837I and 837P files, and supports both 5010A1 and 4010A claim formats. The inbound claim file is validated for HIPAA compliance before the inbound claim file is loaded into TM, as a claim file and as individual claims. The Originator, Sender, Receiver, and Destination Partners of the file and individual claims are identified based on the inbound Trade Relationship and the claim file is split into individual claims for downstream processing which is a unique correlation identifier called Submitted Claim ID is assigned to each claim, and is used to track a claim within TM and for downstream process reporting of updates. The submitted claim within TM has two groups of related transactions: One for gateway transactions – those associated with a front-end claim and one for related internal transactions – those associated with an internal claim are loaded in TM via the Receive Inbound Claim process are tagged with "Source" of "Channel", Disposition of "In-Progress". Individual claims are stored within the Claims Repository in the EC-HCF format and encounters from delegated/capitated partners are identified based on the inbound Trade Relationship. After claims are stored in the Claims Repository, the individual HIPAA compliant claims are placed in a folder to be retrieved by downstream processing components.

Capture Inbound Claim

Description

The System stores the original HIPAA 837 within TM. For DDE claims that are not received in the HIPAA 837 format, the System converts these claims to the 837 format and stores them in TM. The System maps the HIPAA 837 to the EC-HCF format and stores it in the Claim Repository.

Requirements

HIPAA 837 XData is converted to the X12 format (or directly to the EC-HCF format). Individual claims, both accepted and rejected, are loaded into the Claims Repository in the EC-HCF format and the following properties are associated with the claim in the Claims Repository: Default current state of "Front End "and status indicating "Received" .The original X12 HIPAA 837 format for each claim is stored as an attachment in TM and the EC-HCF version is stored as a search property on the claim in the Claims Repository.

B. Classification Router

Description

The Classification Router is used to route EC-HCF claim updates to the appropriate product process for applying the specific type of claim update.

Requirements

The EC-HCF claim is routed to the following product processes via the Classification Router: When new Claims Process New Direct Submitted Claims and Process Internal Claim Receipt Updates the Process Internal Claim Update the Outbound Triggers to Process Trigger to Generate Encounter and Recycle Exception Type. Claims that fail Classification Router Validation are written to an Error Folder.

C. Receive Internal Claim Updates

Description

The System receives pre-adjudication, adjudication, and re-adjudication (i.e., adjustments) processing result updates, and applies them to identified claim(s). This includes claim identifiers, splitting, and payments and denials, as well as notifications that an encounter is ready for reporting to CMS.

Requirements

Internal claim updates are received from the claim processor in the EC-HCF format. These updates may contain claim identifiers needed for payment reconciliation and encounter reporting to CMS. Internal claim updates are received for Direct Data Entered claims – claims that did not come in through the normal intake/gateway process, i.e., paper claims. Internal claim notifications are received from the claim processor regarding new split claims, which trigger a new split claim to be created in the Claims Repository then the Internal claim notifications are received from the claim

processor that a claim or adjusted claim is ready for encounter generation.

Internal claim notifications are received from the claim processor that may contain internal claim updates, which are applied before the notification triggering encounter generation. After that, the System verifies the EC-HCF contains sufficient information for processing based upon the claim classification category. The System verifies that all service lines on the EC-HCF contain both a claim processor service line ID and a submitted service line ID however, if the claim classification is New Split Claim, the System verifies the Parent Claim ID and the Internal Claim ID exist on the EC-HCF but if the claim classification is Internal Receipt, the System verifies the Submitted Claim ID and the Internal Claim ID exist on the EC-HCF. If the claim classification is Claim Update, the System verifies that the Internal Claim ID exists on the EC-HCF and the System verifies that the Current State, Status Code, and Status Category Code exist on the EC-HCF.

If the EC-HCF lacks the necessary information or the required properties do not exist, the claim is written to an error folder. The EC-HCF should contain enough information regarding the error to aid in resolution.

The System verifies the date and time on the internal update/notification to ensure it is received in the correct sequence. If the date and time on the internal update/notification is previous to the date and time on the current claim, the update/notification is not applied.

Monitor for x12 acknowledgement reconciliation

The below diagram shows the header of an 837 claim in terms of the header which starts from ISA till the end of the claim including the claim number which a unique value. It also represents the relation between the 999 and the TA1 that are acknowledgments of the outbound claims.

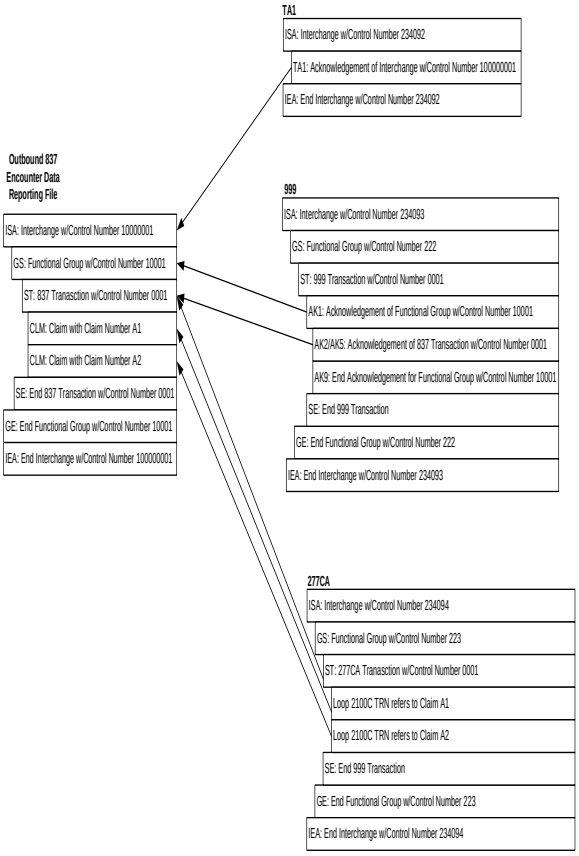

Fig.2: Acknowledgment of 837 outbound claims

The above diagram depicts the relationship between data elements within the outbound 837 encounter file in relationship to data elements within the CMS acknowledgement files. It also shows the loops and segment of an 837 claim per the guideline provided by CMS. We can see the acknowledgments that are 277CA and 999 where the claim was received by either the Medicaid agency or the customer. These acknowledgments confirm that the files were received and followed the HIPPAA guidelines from format and content standpoint. 999 transactions confirms the receipt of the set of claims and are ready for adjudications with a status with either rejected or accepted at the claim level however, 277CA confirms the acceptance at the file level.

IV. PROCESS EXTERNAL CLAIM ACKNOWLEDGEMENTS

The below diagram describes the process flow of the submission of an encounter after receiving the inbound claim from the vendors. It also shows the attachments that can be added to the claim during the outbound submission.

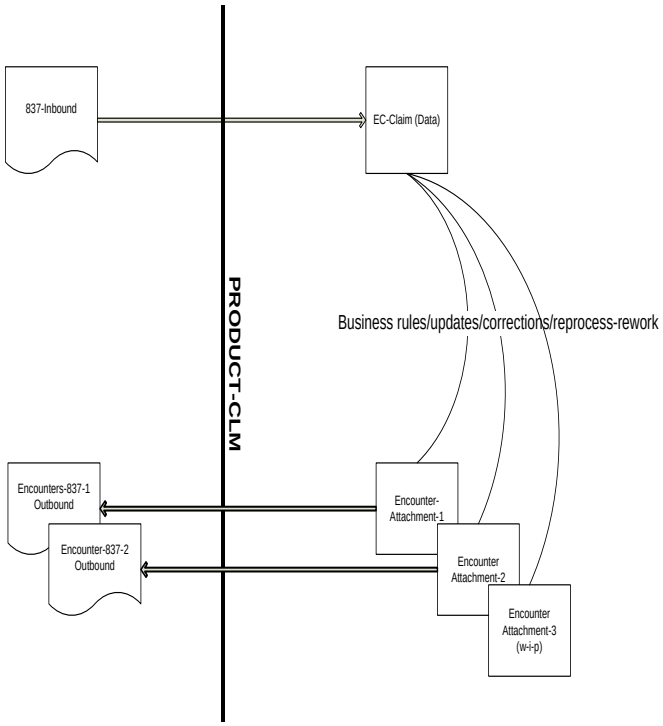

Fig.3: Process of encounters from inbound to Outbound

The above diagram depicts the incoming 837 claim and the outgoing 837 encounter and the relationship between the claim and the encounter within TM. After a claim is received to the system, it should have followed the format of HIPPAA guideline to be able to make it through the platform. After that, the systems performs a data massage and modifications to transform the inbound claims to outbound claims after doing data manipulation and make sure that the claims will not be rejected by the receiver. There are rules and operations that have to be strictly followed to avoid any rejections at the claim and file level. Outbound claims are considered as a big challenge since they are translated to encounters after finishing all data process and corrections.

V. DISCUSSION

This article shows the move from Risk Adjustment Processing System (RAPS) to Encounter Data Processing System (EDPS) in order to process encounters and claims in a very efficient way by passing all the errors that might result to system issues. With this new move, the System tracks claim lifecycle information from receipt of the original claim through the submission of the outbound 837 encounter and beyond. All historical and audit information associated with the claim is recorded and viewable from within TM, and via a user interface into the Claims Management Repository accessible from TM meaning that The System allows users to search and view received claims that are accepted for processing by the Submitted Claim ID and its corresponding Internal Claim ID.

Moreover, when a negative 277CA acknowledgement is received from CMS, users are able to "correct" the encounter via a Claim Correction user interface which is accessible from within TM. Some common, high-volume errors can be customer-configured for automatic correction and resubmission. As far as 999 is concerned, When a negative 999 or TA1 acknowledgement is received from CMS, it is resolved and "re-inserted" into the appropriate process. This includes resending the outbound item as necessary. The System receives 277 Claim Acknowledgements and "splits" them at the individual claim level. Information from the acknowledgement is used to update the claim in the Claims Repository. From the above new functionalities, we can see the importance of this move and the improvements this new system will have. The new system will allow the health plan catch any duplicate encounters which might be rejected and then increase the error rate which most of the time results on fines from the state [2, 3]. Also, this new platform can assure not only data privacy but also data protection which is more important since it deals more with. Adapting this new system will play an important role in term of cost since it has proven successful in health care organizations.It offers promise for improving quality and efficiency while controlling costs in the provision of optimum patient care[4]. Encounter Data Processing System can lead any healthplan to get certification in encounters submission like the study was done by Altegra :' Altegra Health continues to expand its encounter reporting capabilities to help health plans receive accurate reimbursement in support of excellent care, ultimately leading to superior member outcomes[5]. this will also facilitate all daily transactions performed by the health plan when submitting outbound encounters to the state and assure effective submissions and accurate data specially it is related to patient healthcare information (PHI) which has to remain confidential and not exposed to the public and the format of the encounters have to follow the guideline provided by CMS (Center for Medicaid and Medicare services) to better assure effective exchange of information and ensure better payments and coverage inquiries. The study done in Taiwan states that:" Different from conventional online goods purchases, healthcare commerce, such as purchasing prescription drugs, involves transaction steps of insurance coverage inquiries which are required to determine insurance coverage and payments. Without efficient processing of online insurance coverage inquiries, the online healthcare commerce cannot be carried out successfully"[6].From this research we also realized that implementing Encounter Data Processing System is a move from legacy to a modern system and this is confirmed by a study done in UK when it states that: Modern healthcare systems are the epitome of complexity [7,8,9], and also the move from paper processes to automated process which increase accuracy of data such as paid date, paid amount and claim number which will help to prevent any errors. Therefore, we have identified the key ingredients of the business concept required for healthcare [10]. We should not forget the impact will have this new system in terms of security which is a critical based on a study done in Taiwan where the outcome was" The computerization of healthcare information has improved the efficiency and quality of healthcare management. Management costs have also been reduced since a tremendous amount of data is now processed and transmitted via computers, including medical insurance claims, medicine purchase orders and payments for prescription drugs. Moreover, the popularity of the Internet and advances in information technology have made Internet access to healthcare information an inexorable trend. Healthcare organizations are enabling online healthcare transactions on the Internet w8x. However, the open environment of the Internet makes data security and patient privacy crucial. The healthcare commerce needs to provide secure transactions [11].

To protect personal healthcare information and ensure secure access, user authentication and data encryption are needed to provide secure transactions and involve some relevant security technologies, including encryption methods, digital signatures and digital certificates [12,13].

Communication between the payer and the provider and sometimes the government agency is considered a key element to avoid any mistakes that can be crucial for both sides and this showed by a study done in Italy concluding that :'ineffective communication among patient care team members, is the main cause of medical errors in healthcare [14,15]. Thus, the pervasive and ubiquitous access to healthcare data is essential for both the proper diagnosis and treatment procedure" [16].

What is more, because of the advanced technologies available nowadays it becomes highly recommended to take advantage of the use of technology to improve the healthcare industry and involve positive tools and technologies in this domain and this goes with what the study done in USA when they confirmed that by saying" One trajectory of mobile healthcare applications has particular relevance here, namely portable forms that are in the possession of or are even placed on or in the patient." [17]. Also, new technologies implemented shall facilitate the monitoring of data and can help reduce expenses and that was confirmed in another study in USA when they found how technologies can decrease cost:" using the RFID healthcare services of "monitoring health" and "lower cost medical insurance" are "bad ideas" [18].

CONCLUSION

After the results above, we can conclude how the EDPS will change the process of encounters submission and facilitate the exchange of data between the payer and the vendor from the inbound to the outbound avoiding any errors that might penalize the healthcare plan due to the miss of Service Level Agreement established between the parties concerned. The new implementation shall move the healthcare system from manual to automated system and shall help the improvement

of data accuracy and move to paperless to avoid any losses of the paper claims or paper data which will be stored in the new platform.

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