Medicare Claims Management System
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Abstract— Medicare plays a vital role in a real time environment. Medicare can contribute to a significant part of a country's economy. Medicare is the maintenance or improvement of health. Access to health care varies across countries, groups, and individuals, largely influenced by social and economic conditions as well as the health policies in place. In this paper a system and method for a rules-based pre-adjudication of a benefits claim submission is disclosed. The reviewing and adjudicating medical insurance claims is done electronically. In support medical procedure eligibility verification, patient referrals, treatment authorization, data entry editing, electronic claim submission, claim status determination and electronic remittance processing is also done. The system can handle both individual and family insurance policies. The claims processing system performs automatic adjudication on submitted claims. The payment tracking system allows health care providers to monitor the payment status of a claim after submission.

Key words: Service Provider, Service Payer, Adjudication, Claim Processing, Reimbursement

I. INTRODUCTION
In today's world Medicare plays a vital role in a real time environment. Medicare can add to a noteworthy piece of a nation's economy. Medicare is the maintenance or improvement of health. Access to health care varies across countries, groups, and individuals, largely influenced by social and economic conditions as well as the health policies in place. Countries and jurisdictions have different policies and plans in relation to the personal and population-based health care goals within their societies. Medicare systems are organizations established to meet the health needs of target populations. Within the America, a number of one-of-a-kind types of tax-sheltered bills have been legal. It provides health insurance for Americans aged 65 and older who have worked and paid into the system through the payroll tax. It also provides health insurance to younger people with some disabilities status as determined by the Social Security Administration, as well as younger people with end stage renal disease and amyotrophic lateral sclerosis.

II. LITERATURE SURVEY
A system and method for permitting real-time payment of healthcare charges from multiple sources of payment [4]. A POS terminal is used to enter a patient ID and treatment code. A health insurance network receives the patient ID and treatment code and returns an electronic explanation of benefits (EOB) data packet that is used to display an EOB statement at the POS terminal, the display including information on a patient portion not covered by the health insurance plan. The EOB data packet is used to electronically process payment for the patient portion from a second payment source, such as an medical savings account (MSA), credit card account or banking account [5].

Fraud detection needs a lot of inputs from domain experts. In health care claims, relationships between physicians and patients form complex community's structures and these communities could lead to potential fraud discoveries. The development incorporates checking repaid claims got from no less than one payer, where one of the repaid claims got from the payer is related with the medication and figuring out whether the payer has refreshed its inside estimating esteem related with the medication [5]. The retrospective analysis of the IMS PharMetrics Plus claims database aimed to describe the current real-world treatment patterns for metastatic melanoma in the USA [1]. This System developed two algorithms to detect these small and exclusive communities. These algorithms can be applied to larger dataset and are highly scalable [4].

Current techniques rely on parametric statistics that are based on assumptions such as outlier free and “normally distributed” data. Even some non-parametric statistics are adversely influenced by non-normality and the presence of outliers. Current technology cannot represent the combined variable values into one meaningful value that reflects the overall risk that this observation is an outlier [3]. A plurality of healthcare providers which are in communication with said server by way of said portal, and which submit rejected or denied healthcare claims to the portal from a plurality of source systems running a plurality of distinct healthcare practice management programs [6]. Using the automated adjudication system, health care providers may electronically prepare and submit claims for payment. Before a claim is submitted, claims recheck process is used to determine whether the claim may be automatically adjudicated or instead must be manually adjudicated. If manual adjudication is indicated, the health care provider may the claim in an effort to achieve automated adjudication prior to claim submission [2].

III. PROPOSED SYSTEM

Fig. 1: Service Processing
Medicare claims management helps in saving and retrieving information of Members, Service Providers and Claim Processing. The Service provider is the hospital which submits the claims on behalf of the member. All the member information are stored by the payer which performs validation and processing of claims. The following are the few important modules in the system. Service Payer is the healthcare insurance company that provide insurance coverage for subscribed members. Payers offer several plans based on subscribers needs. Coverage is provided to

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subscribers based on the plans that are subscribed. Individuals subscribed to plans offered by payers are called members.

As per the research work concerned, this claim providence supports mainly for elderly aged people who more than the age 65. For U.S concerned this people will be automatically provided with claim service. Following Table shows the past, current and future need for the Medicare in enhanced years.

![The Number of 65-Plus Americans is Projected to Grow Rapidly](image)

**Fig. 2:** Analysis of above 65 aged Americans

Based on analysis, 53% of claim rejected due to invalid submissions and repeated submissions. Invalid submission can be easily protected. There was a more number of duplicate submissions happened in recent years. For these reason, most of the claim got rejected without any adjudication.

![Average Claim Rejection Amount 2015-2016](image)

**Fig. 3:** Statistical Analysis of Claim Rejection over 2015-2016

A primary goal of Medicare reform proposals is to move program beneficiaries into managed care plans operated by private insurance companies. Medicare is publicly funded health program that covers populations in need of long-term care. Service Provider is the hospital where the member has undergone healthcare. Provider submits claims online by logging into the online system. Various details related to claims are fed into the system. Providers are required to attach the bill in the system as a part of claims submission process. Once the claim is submitted member is provided a claim id. Medicare Provider could come back into the system and look up the status of claim. Payer processes the claim and updates the status for each claim. Claim status is either accepted or rejected. Accepted claim response would also contain details related what reimbursement amount is applicable for the claim.

IV. SYSTEM ARCHITECTURE DIAGRAM

A physical architecture is an arrangement of physical elements, (system elements and physical interfaces) that provides the designed solution for a product, service, or enterprise. It is intended to satisfy logical architecture elements and system requirements. Medicare Claim follows a three layered architecture namely presentation layer, business logic layer and data access layer.

![Logical Architecture with Physical Components](image)

**Fig. 4:** Logical Architecture with Physical Components

The System Architecture defines the Processes (the activities and functions) that are required to provide the required User Services. Many different Processes must work together and share information to provide a User Service. The Processes can be implemented via software, hardware, or firmware. The Logical Architecture is independent of technologies and implementations.

V. MODULES DESCRIPTION

The Medicare Claim helps us in creating the model for each registration and keeps tracking of claim management. It includes Main Modules like Member System, Service Provider Admin and Service Payer Admin. Payer processes the claim and updates the status for each claim. Claim status is either accepted or rejected. Accepted claim response would also contain details related what reimbursement amount is applicable for the claim. Identified Sub modules are Provider Management, Member Management, Disease Management, Drugs Management, Plan Management, Claim Processing.

![Flow diagram of Claim Processing and Adjudication](image)

**Fig. 5:** Flow diagram of Claim Processing and Adjudication
When the Clerk clicks on the register Provider, it will re-direct to registration form and the payer needs to fill some of the basic attributes/fields as mentioned below in requirement Provider Name, Provider Address, Provider Contact, Provider Email Id etc. At any point of time, the Payer can deselect all or can go to home page by the clicking home.

The Medicare payer has to store all the diseases that cover in the insurance plan. So, a separate table is maintained to store the diseases and its attributes. The fields such as disease id, disease name, drug name, symptoms, remedies, disease severity. These fields are filled by the payer and then stored to the database. In this drug table has to be mapped to disease table this is done by mapping both id in separate table. The lists of drugs appear in drop-down and the respective drug can select for the disease.

Drug management modules enables only when the detail for disease is needed. It is a dependent module of disease management. Here it will display all the details of the medicines related to the disease. All drug details are already dumped in the table. So we can capture details easily. For drugs it will maintain an identifier for a particular disease.
The Service payer provides several plans for the member that is the member can include the other member in his family; it may be father-mother plan or wife/husband-children plan or individual plan. It includes what percent has to be returned to the member that is read as reimbursement-percentage. Then the subscription start date and end date is also stored in plan table.

The Member System registers his details to the payer. The claim that is submitted by the provider is viewed by the member and the status of the claim can be seen. Service Provider submits claims online by logging into the online system. Various details related to claims are fed into the system. Providers are required to attach the bills in the system as part of claims submission process. Provider could come back into the system and look up the status of claim. Here Sub modules are Claim submission and Report Screen.

Service Provider can submit all details of the patients who are getting treatment by the provider who is also a member to the payer which is an insurance company. Screen captures necessary details of the provider and Member. This claim submission is done on behalf of the member.

![Claim submission Information](image1)

**Fig. 11: Snapshot of Claim submission Information**

In Claim Adjudication Management, the claim that is submitted by the provider on behalf of the user is validated by the payer. The validation is done by verifying the member details then the checking of the claim as whether the claim is valid or invalid. If the claim is valid then the status of the claim along with the reimbursement amount is returned to the payer. If the claim is not valid the claim is rejected and the corresponding status is returned.

![Claim Report Management](image2)

**Fig. 12: Snapshot of Claim Report Management**

**VI. CONCLUSION**

The purpose of the system is to provide reimbursement amount to the member who age above 65 through the service provider by the service payer. Researches are made for above 65 aged people [Fig 2] and claim rejection analysis[Fig 3]. The proposed System deals with these solutions to overcome these issues. Advantage associated with the system is quicker claims processing and remittance, reduced transaction fees and direct connections with service provider, trading partners and value added networks.

**ACKNOWLEDGEMENT**

This project has been funded by Cognizant Technology Solutions, Chennai.

**REFERENCES**


