“I attest that this exam response is my own independent, original work. I prepared this on my own without the assistance or participation of anyone else.”

Introduction/Context

I am an Information Technology Officer working at 150 bedded, Rainbow Healthcare Hospital, reporting to the Head of the IT department located in Indianapolis and presenting this proposal to the CEO of the hospital. Rainbow Healthcare Hospital has been under the radar of the state government because of the IT audit held in the current year where fraudulent activities have been detected. 20 Patients are schemed to pay for the services which they have not received and are wrongfully charged. During the audit, 5 personnel including 3 people from the billing department, 1 physician and 1 nurse were involved in these fraudulent activities and were fired immediately. Addressing the fraudulent activities, my suggestion is to build an in-house electronic billing verification system where all the entries per patient are done in the EMR system rather than the existing manual approach which has led to fraudulent activities. Implementing this electronic billing verification system needs a funding of $240,000 from the hospital to maintain the safety of the patient and to maintain regulatory compliance during the audit process.

Situation

An estimation done by The National Health Care Anti-Fraud Association (NHCAA) reveals that financial losses because of fraud in healthcare are approximately ten of billion dollars every year and a rough estimate is 3% of the total expenditure. The government and other law enforcing agencies do place the loss at about 10% as the annual health expenditure accounting to be more than 300 billion dollars (about $920 per person in the US) (NHCAA).

Problem

In the current scenario, a manual billing system has no way of verifying the fraudulent activity and no feasible way of identifying whether the bills generated are real or fraudulent. Analysis during audits have recovered services of 90,000$ rendered to illegal charging of services by upcoding the services in the final bill provided to the patients and has traced 5 personnel involved in this fraud.

Implications

- 90,000$ has been rendered to fraudulent billing entries, and if the manual billing system continues, greater damage can happen to the hospital's revenue and cause greater harm to its reputation. If we do not act right now, then even though the personnel have been fired, other people can also take advantage of the current situation and in the end, this will lead to the closure of the hospital.
- Penalties will be imposed by the government due to failure in compliance during audits, this will in turn lead to decreased ratio of reimbursements, failure in tie-ups with other hospitals and agencies, licensure revocation for various facilities provided by the hospital, decrease in the face value of the brand which is Rainbow Healthcare hospital and disintegration of healthcare operations.

Need Pay-off

Addressal of these problems and to avoid these implications we require an automated, AI integrated billing verification system which can be incorporated in the Electronic Medical Record system where a proper workflow is maintained. Access controls, elimination of

fraudulent activities from human errors, bias and building the trust of the patients will be considered top priorities. Training new staff for the implementation of new software, maintaining regulatory audits and increasing the compliance rate will be considered utmost important.

Solution

The vision is to build a multifaceted solution by developing an unassailable AI integrated billing verification system named MedTrack that prohibits human errors and upcoding. MedTrack provides access to authorized personnel only because of the two-factor authentication system incorporated in the system. It stops fraudulent activities created by entry of wrong services imputed by humans, converts a complete manual, paper-based system to an electronic AI integrated system. The investment of $2,40,000 will be contributed towards getting the licensure for the software, integration of services, training, and onboarding of the IT staff, implementation of the new hardware infrastructure and finally fees towards maintaining the software. At the end, after implementation, in the future years, due to benefit of the system brand value of the hospital will be increased. Regulatory compliance during audits will increase as well.

Benefits

Following are the revised benefits-

1) **Fraud Elimination in the Billing system** – Primary benefit is that Manual Billing will be eliminated and complete use of technology in the process of billing will help in avoiding and eradicating the manual entries to the bills of the patients. Hence, fraudulent activities will be stopped once the technology is implemented. The main benefit will be the elimination of fraudulent activities.

2) Increase in net revenue by decreasing write-offs – When the documentation of the patient information is accurate and efficient then it reduces denied claims and increase the efficiency in payer performance along with that decreases the need to write off non reimbursed care.

Key performance metrics pertaining to the effectiveness, efficiency, compliance, and patient experience of the billing process are anticipated to significantly improve from an operations perspective. There will be a reduction in the error rates seen in the billing. In government audits, Hospital should be better able to meet compliance requirements due to increased transparency and auditability. A smoother experience for patients will result from more accurate bills that are in line with the services provided. The decrease in false claims and associated fines will have a direct financial impact on cost savings. Another way to increase revenue is to capture and validate relevant patient charges more effectively.

Financial Benefits	**First Year**	**Second Year**	**Third Year**
Fraud elimination in the billing system	**500,000**	**700,000**	**900,000**
Increase in net revenue	**30,000**	**32,000**	**35,000**
Risk reduction	**15000**	**30,000**	**45,000**
Total Financial Benefits	$500,000	$700,000	$900,000

Methodology

Indiana Manufacturers Association and We Ask America's Public poll (January 2019), has shown the following reasons for healthcare costs (Lanne and Henry)

1) 35% - Overcharging of Medical Procedures
2) 22% - Increment in insurance premiums

3) 16% - Government involvement and fraud in the healthcare system
4) 9% - Lawsuits and malpractices adding the cost
5) 2% - nothing.

The highest rate is that of healthcare frauds and hence there is a need for health information technology to be introduced in the hospital system. According to Statistics, 80 billion USD is the cost of health insurance fraud in USA annually (1). An AI Integrated Electonic billing verification system can provide solution for the main concern of the ongoing fraudulent activities in the hospital. Manual process will be completely converted into an automated system where human errors and bias will not be included. Medtrack will use Artificial Intelligence and Machine Learning Algorithms to understand the previous incidents and data of the paper-based system and detect the abnormalities in the coding system of billing. After detection, comparison will be made, and falsified claims and services will be identified. Once that is done, whenever a patient's billing process is rendered, only several codes would be asked according to the diseases of the patient and only authorized personnel will be able to input those services in the system. Services will be completely charged according to the treatment given to the patient, hence eliminating frauds or human errors. Hence, manually imputing and committing fraud will be eliminated. 2 factor authentication will be needed mandatorily when inputting the services and the accessibility will be audited as to who and when accessed the patient's files. Along with that, staff in the IT department will be trained by a trainer who can navigate the software installed and can train other non-technical staff to input services into the system. By using both technology and training, the fundamental flaws that allowed a small number of employees to deceive patients are directly fixed. Continuous process improvement will be made possible by ongoing analytics as opposed to relying exclusively on outside audits.

Approach, Cost and Resource Requirements

$240,000 is the total upfront cost sought to implement MedTrack and related modifications. During the initial rollout, this includes professional services, infrastructure upgrades, training, and software procurement. Once the cost is done for the current year, for the following years, there will be just maintenance and upgradation of licensure fees.

Costs	Current Year	First Year	Second Year	Third Year
Licensure for Implementation of technology	70,000	2,000	2,000	2,000
Integration of System in EMR	20,000	2,000	2,000	2,000
New infrastructure	35,000	1,500	1,600	2,000
Recruitment of staff	100,000			
Training new staff	15,000			
Total cost	240,000	5,500	5,600	6,000

Analysis

Initial Investment is 240,000

Discount Rate is 8%

	Current Year	First Year	Second Year	Third Year
Present value of estimated future benefits		462,963	600,137	714,449
Discount Rate is 8%				
Total net present value of estimated future benefits		$1,537,549		
Calculating the value of the investment				

Calculating the simple rate of return at day 1		641%		
Rate of return by year	292%	208%	292%	375%
Calculting the value based on a revenue multiplier of 6.4		$3,200,000	$4,480,000	$5,760,000
Calculating the value based on EBITDA (net income) multiplier of 20.0		$10,000,000	$14,000,000	$18,000,000

Based on the above tables and figures mentioned, it can be seen that there is a positive net present value, hence, future benefits are going to be more than the initial investment of 2,40,000$. Hence, the implementation and integration of the tool will be beneficial financially for the hospital. The rate of Return shows that in the next 3 years, there will be an increase by a huge profitable margin. As seen for the EBIDTA multiplier, the revenue generated for the future years shows that the valuations would be more than the investment which is made in the current year. Hence, all the measures (NPV,ROI,and EBIDTA multiplier) are showing profitability for the next 3 years.

Assumptions

- Buying new software license for the solution for a 150-bed hospital. The integration of the software would be expensive if a new system is established and hence the estimate cost for the current year would be majorly high but after the integration is done. The IT staff are trained and the cost for the coming years will be minimal and cost-effective.
- Implementation of New Infrastructure would account to be 35000$ in the current year as there would be 40 working stations and 875$ would be the installation cost for hardware at each working station.
- Recruitment of 1 IT staff who can train others on the new software which is installed.

Risks

There can be multiple risks associated with this implementation which can be procurement of this technology, hiring of new technical employees for the audit team, lack of funds for funding this implementation of technology, resistance to change from healthcare personnel, increase in bias leading to non-compliance of new system.

Conclusion

Rainbow Healthcare Hospital needs to upgrade itself from a manual paper-based billing record system to an electronic billing verification system because it is important to be updated with the newer technologies and this could be the first step towards it. The ROI analysis is convincing and validates the investment asked for integration and to make it functional this year. Fraudulent activities will be stopped and that is the important goal behind this proposal. It is time to be proactive in reducing the future risks and penalties. Hence, I support this and would be ready to discuss any feedback and suggestions. In conclusion, Rainbow Healthcare will become a leader in accountable billing by switching from an outdated and weak manual billing system to one with integrated AI safeguards. The ROI analysis is highly persuasive as it validates the reasonable $240,000 investment through near-term value generation, operational enhancements, and proactive risk reduction. I wholeheartedly support this project and would appreciate any last remarks or suggestions from the board.

References

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