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EDITORIAL

Problems with Medical Claims that Artificial Intelligence (AI) and Blockchain Can Fix

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The challenges in medical claims in the Middle East are significant. The region is witnessing rapid growth in healthcare utilization and expenditures, making it crucial to find effective ways to manage and control medical claims costs. Factors such as an aging population, rising chronic disease burden, and increased demand for healthcare services put pressure on healthcare systems and insurance providers.

In addition, the complexity of healthcare delivery systems, reimbursement models, and varying regulatory environments in the Middle East poses unique challenges for medical claims management. There is a need for streamlined processes, standardized practices, and effective utilization management to ensure accurate and timely claims processing while preventing fraud and abuse.

Here, I share my experience in managing medical claims, implementing digital health solutions, and understanding of the healthcare landscape in the Middle East. Insights and recommendations come from extensive discussions and debates with ecosystem partners to address these challenges. The objective here is to raise awareness of the challenges in medical claims in the Middle East, share best practices, and propose innovative strategies designed to improve the efficiency, accuracy, and cost-effectiveness of medical claims processing in the region.

Issues related to payment of fraudulent claims and non-payment of valid claims are presented as follows.

Problem 1. Unpaid valid claims hospitals want to address (Table 1)

- Delayed or denied treatment: Valid claims not paid in a timely manner can result in delays or denials of necessary medical treatment. This can adversely affect the health and well-being of the insured individuals.

Table 1. Defining the distinction between valid and fraudulent claims in medical insurance

Valid and Legitimate Medical Claim	Fraudulent or Inappropriate Claims
Typically involve services and treatments necessary for diagnosis, treatment, or prevention of a medical condition. • Doctor visits • Hospital stays • Surgeries • Prescription medications • Medically necessary tests or procedures Insurance companies are obligated to cover these types of claims as per the terms of the policy.	May involve: • Intentional misrepresentation of information • Billing for services not provided • Seeking reimbursement for unnecessary or excessive treatments Such claims may be made with the intention of obtaining financial gain improperly or abusing the insurance system.

- The financial burden on patients: When the insurer does not pay valid claims, individuals may be forced to bear the financial burden of medical expenses, which can be significant and cause financial hardship.
- Loss of trust: Unpaid valid claims can erode trust between insured individuals and their insurance provider. This can lead to dissatisfaction and frustration, damaging the insurer's reputation.

Problem 2. Paid fraudulent or inappropriate claims insurers want to address (Table 2)

- Increased costs: Paying fraudulent or inappropriate claims can result in increased healthcare costs for the insurer and the insured population as a whole. This can lead to higher premiums for policyholders and strain the sustainability of the insurance system.

Table 2. Problems associated with unpaid valid claims and paid fraudulent or inappropriate claims in medical insurance

Claim	Paid	Not paid
Valid	Valid and legitimate claims that are appropriately paid by the insurer.	Problem 1. • Valid and legitimate claims that are unjustifiably not paid by the insurer.
Fraudulent or Inappropriate	Problem 2. • Fraudulent or inappropriate claims that are mistakenly paid by the insurer.	Fraudulent or inappropriate claims that are correctly not paid by the insurer.

- Diversion of resources: When funds are allocated to fraudulent or inappropriate claims, it diverts resources away from legitimate healthcare needs. This can impact the availability and affordability of healthcare services for those who genuinely require them.
- Undermining the integrity of the system: Paying fraudulent claims undermines the integrity of the insurance system and creates an environment that encourages further fraudulent activities. It can also lead to higher levels of waste, fraud, and abuse in the healthcare industry.

How AI and Blockchain Technologies Contribute to Resolving Issues in Medical Insurance Claims

Artificial Intelligence.

- Fraud detection: AI-powered algorithms can analyze vast amounts of data, including medical records, billing patterns, and historical claim data, to identify patterns indicative of fraudulent or inappropriate claims. Machine learning models can be trained to continuously learn and adapt to evolving fraud tactics, improving detection accuracy over time.
- Claims review and processing: AI can automate and streamline the claims review and processing workflows. Natural Language Processing (NLP) techniques can be employed to extract relevant information from medical records and verify the completeness and accuracy of claims. This helps reduce manual errors and accelerates the overall process.
- Predictive analytics: AI algorithms can analyze historical claim data and patient information to identify trends and predict the likelihood of certain claims being valid or fraudulent. These insights can assist insurers in making informed decisions, prioritizing claim reviews, and allocating resources effectively.

Blockchain

- Immutable and transparent records: Blockchain technology enables the creation of a decentralized and secure ledger where medical insurance claims and related data can be stored. The immutability and transparency of the blockchain can help prevent tampering with claims data and enhance trust among stakeholders.
- Smart contracts: Blockchain-based smart contracts can automate claim settlement processes. These self-executing contracts can automatically validate the eligibility criteria and conditions of claims, triggering payment or denial accordingly. Smart contracts can reduce administrative costs, minimize delays, and enhance efficiency.
- Data privacy and security: Blockchain networks can provide enhanced security for sensitive medical data. By utilizing cryptography and distributed consensus mechanisms, patient data can be stored securely and accessed only by authorized parties, thereby protecting privacy and preventing unauthorized modifications.

Combining AI and Blockchain technologies can bring additional benefits, such as using AI algorithms to analyze data stored on the blockchain for fraud detection or leveraging blockchain's transparency to improve the accuracy of AI models by providing access to a larger dataset.

Potential Commercial Approaches for A Services Company Offering Recovery or Rectification Services to An Insurance Company Regarding Mistakenly Paid Fraudulent or Inappropriate Claims?

- Technology Solutions: The services company can develop or provide technological solutions tailored to fraud detection and recovery needs. This may involve implementing advanced analytics platforms, AI-powered fraud detection systems, or blockchain-based solutions for secure data sharing and auditing. By leveraging technology, they can help the insurance company automate processes, improve efficiency, and strengthen its fraud prevention efforts.
- Claims Auditing and Review: The services company can conduct thorough audits and reviews of the insurance company's claims data to identify any fraudulent or inappropriate claims that were mistakenly paid. They can analyze patterns, review documentation, and assess billing practices to pinpoint discrepancies. Based on their findings, they can provide recommendations for recovery actions.
- Investigation and Fraud Detection: The services company can specialize in investigating fraudulent claims and detecting fraudulent activities. They can employ advanced analytics and AI algorithms to analyze claims data, identify red flags, and investigate suspicious cases. By leveraging their expertise, they can help the insurance company uncover fraud, gather evidence, and build a strong case for recovery.

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- Recovery Process Management: Once fraudulent or inappropriate claims are identified, the services company can assist the insurance company in managing the recovery process. They can handle the necessary legal and administrative procedures, communicate with relevant parties, and negotiate settlements on behalf of the insurer. Their experience in recovery strategies and processes can streamline the overall effort and maximize the chances of successful recovery.
- Training and Education: The services company can offer training and education programs to the insurance company's staff to enhance their knowledge and skills in detecting and preventing fraudulent claims. This may include workshops, seminars, or online courses that cover topics such as recognizing red flags, improving claim review processes, and staying updated on emerging fraud schemes.

In terms of commercial arrangements, the services company can structure its engagement through various models, such as project-based contracts, retainer agreements, or revenue-sharing arrangements based on the successful recovery of funds. The specific details of the commercial approach will depend on factors such as the scope of services, duration of engagement, and mutually agreed-upon terms between the services company and the insurance company.

Commercial Approaches for a Services Company Offering Payment Recovery or Claims Rectification/Resubmission Services to a Healthcare Provider Company Regarding Unjustifiably Unpaid Valid and Legitimate Claims by the Insurer.

- Technology Solutions: The services company can provide technology solutions that streamline the claims submission and reconciliation process for the healthcare provider. This may involve implementing billing and coding software, electronic health record systems, or claims management platforms. By leveraging technology, they can optimize the provider's revenue cycle management and enhance the accuracy and efficiency of claims submissions.
- Claims Review and Appeals: The services company can conduct a thorough review of the provider's unpaid claims, analyzing the denial reasons provided by the insurer. They can identify any errors or discrepancies in the claims submission, documentation, or coding that may have led to the denials. Based on their findings, they can assist the provider in preparing and submitting appeals to the insurer, providing supporting documentation and evidence to justify the validity of the claims.
- Denial Management and Resolution: The services company can specialize in denial management and resolution, helping the provider navigate the complex process of addressing claim denials. They can work closely with the provider's billing and coding teams to understand the specific denial reasons and develop strategies to rectify the issues. This may involve reformatting claims, correcting coding errors, providing additional documentation, or engaging in direct communication with the insurer to resolve disputes.
- Negotiation and Settlement: In cases where the provider's claims have been unjustifiably denied, the services company can assist in negotiating with the insurer to reach a fair settlement. They can leverage their knowledge of industry standards, reimbursement guidelines, and contractual agreements to advocate for the provider's rights. This may involve engaging in discussions, presenting supporting evidence, and seeking a mutually agreeable resolution for both parties.
- Coding and Documentation Improvement: The services company can offer coding and documentation improvement services to the healthcare provider to ensure that claims are submitted accurately and with complete supporting documentation. They can assess the provider's coding practices, documentation standards, and compliance with billing regulations. By identifying areas for improvement and offering training or guidance, they can help the provider enhance their claims submission process, reducing the risk of unjustified claim denials.

In terms of commercial arrangements, the services company can structure their engagement through various models, such as fee-based contracts, contingency-based agreements where they receive a percentage of recovered funds, or a combination of both. The specific details of the commercial approach will depend on factors such as the volume of claims, the complexity of denials, the duration of engagement, and mutually agreed-upon terms between the services company and the healthcare provider.

Conflicts of Interest

Joe Hawayek is a BHTY Regional MENA Editor, and currently serves as Board Member at TachyHealth, an AI-powered platform for addressing payor–provider interactions. Dr. Osama AbouElKhir, is CEO of TachyHealth.