BitClaims

BitClaims.io
Architecting a New Environment of Incentives for Healthcare

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February 2018

Abstract

BitClaims is a blockchain-based smart contract enabled platform for patients and service providers to connect directly for payments and execute terms. BitClaims empowers people to self-capitalize and crowdsource their healthcare plans. With BitClaims patients and providers can contract primary, elective, and cosmetic care services all in a trustless, secure environment that provides a mathematical proof that the funds are there and the terms of services are executed. This network provides value for service providers (general practitioners, primary care physicians, etc.) seeking to alleviate the pains associated with dealing under the scope of third parties. The BitClaims infrastructure is designed with the goals of interoperability, compatibility, and integration into current legacy systems to help put downward pressure on the cost of care, while keeping the quality high and incentivizing physicians to prioritize preventative care. BitClaims network seeks to both eliminate administrative inefficiencies related to currently-implemented physician compliance programs and increase value savings to health providers by reducing the need for recoupment actions and bulky overhead costs.

CURRENT STATE OF U.S. HEALTHCARE

The election of Donald J. Trump has ushered in a new era for the U.S. healthcare industry, which has spent years adapting to the Affordable Care Act. A majority of consumers have concerns about the affordability of healthcare products and services. Indeed, consumers place a high priority on the cost of their care.

In spite of the potential policy changes in Washington (and the effects thereof throughout the country), the work of shifting to value-based care has become all the more crucial. Various reports regarding the health third party industry have highlighted the forces expected to have the most impact on the healthcare industry relating to the focus on preventative medicine and providers who enable patient outcomes as such.

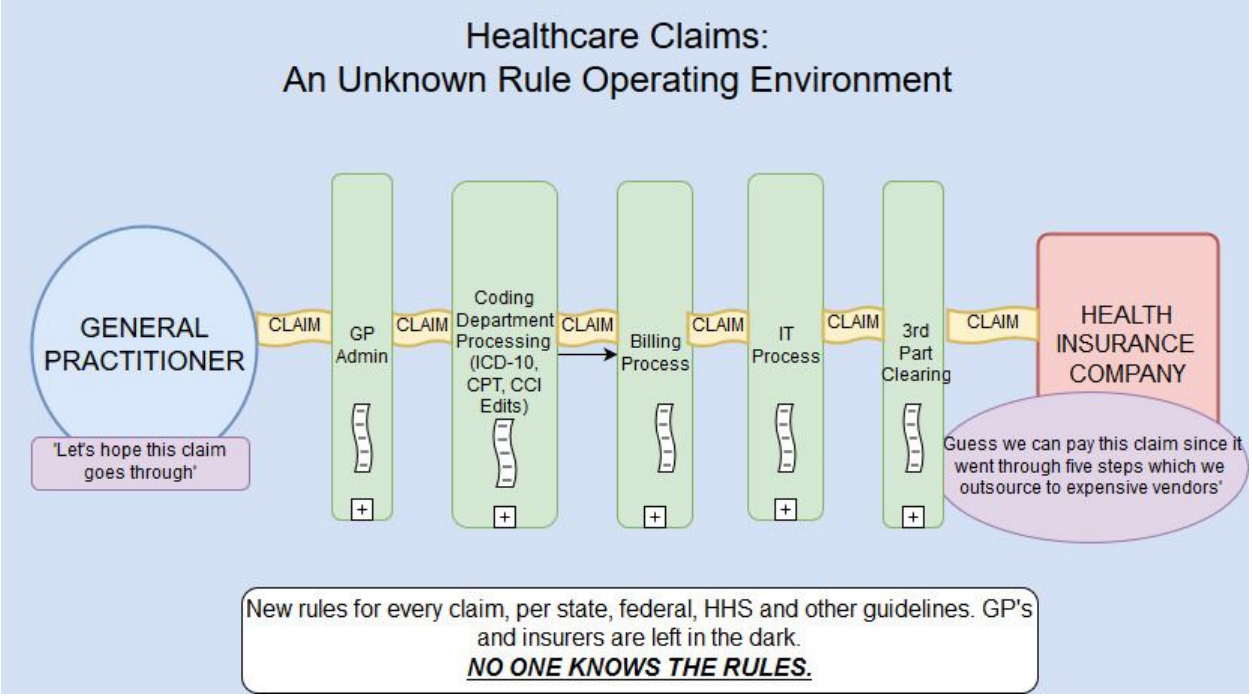
Many of the top issues both patients and providers are adapting to face how a shift toward value is occurring, and how traditional health organizations and new entrants are responding to it. Some of the primary tactics being adopted include ways for entrants to circumvent existing channels which often prove to be burdensome. This includes the patients being double billed for services and providers not knowing if and or when they will be paid.

U.S. TO EMBRACE EMERGING TECHNOLOGIES AND PATIENT CO-OPS

The U.S. health industry lags behind other industries, such as retail and telecommunications, in deploying emerging technologies, including digital records, online portals, cloud based data solutions, and decentralized, distributed solutions to legacy challenges. The upcoming years will mark the arrival and the eventual adoption of these technologies, and we're beginning to see their impacts on business models, operations, workforce needs and cybersecurity risks.

Emerging technologies are beginning to remake business operations and become integral parts of consumers lives. As these technologies make their way into the health industry, organizations will need to hire new talent or to partner with enterprises stocked with these skills. The 3 Trillion dollar U.S. healthcare ecosystem is set for disruption at the hands of these emerging technologies.

A THREE TRILLION DOLLAR CLUSTER OF SKEWED INCENTIVES



It is no secret that the government is becoming increasingly aggressive in its enforcement against health care providers. At the same time, regulations are becoming more complicated. The combination of these two forces means that many unknowing providers are being caught up in costly investigations of their practices. The government is taking a “return on investment” approach to health care fraud and is seeing a good return on every dollar that they put into the efforts. As a result, we cannot expect fraud enforcement to decrease any time soon.
For this reason, it is important that providers, including medical practices, develop and operate systems to help them comply with governmental regulations and third party payer billing requirements.

At the same time, providers often find themselves held hostage to third party payment methods that can take years to pay out, if at all. It is not uncommon for a provider to to bill for a service rendered, even when the patient is covered, only to find out years down the road that compensation for said services cannot occur. Moreover, providers are often subject to price reductions not of their own making, but at the hands of third parties who dictate the terms for them. In addition, various auditors who conduct expensive recoupment actions due to inadvertent billing mistakes or fraud eat away at the integrity and intention of the healthcare system, making it difficult for providers to run practices efficiently and enable the best possible preventative care outcomes. To make matters worse, providers can not always have transparency around all the terms of payment rendered for services and when. Imagine someone coming to you for a service, rendering the service upon request, and then not knowing

when you are getting paid or for how much. This is the environment of the U.S. healthcare system for many providers.

The development of a formalized method that enables patients and providers to free themselves from the inefficient costs associated with third parties and deal directly is needed to propagate into existence a new healthcare paradigm to which patients and providers share the incentive to realize preventative care outcomes. Current programs negative best practices around risk management. Failure to maintain compliance can lead to an increase in reimbursement disputes, increased uncollectible fees, more demands for repayment, civil litigation and in extreme cases, potential criminal prosecution.

Matters to be addressed when connecting patients to providers directly include not only billing practices but also anti-kickback compliance, state and federal self-referral prohibitions, state fee-splitting laws, licensure and accreditation requirements, labor relations matters, antitrust and price fixing prohibitions, HIPAA and medical records issues and a whole host of other state and federal laws.

Formalized compliance programs first began appearing in the late 1990s as a way to minimize risk in primarily large institutions. Compliance programs are a child of the Federal Sentencing Guidelines which factors in the adoption of 7 pillars of an effective compliance program when a healthcare organization is facing potential institutional criminal penalties for legal violations.

Formal compliance programs were more deeply woven into the fabric of many organizations as the Medicare Office of Inspector General began releasing compliance guidance directed toward specific segments of the healthcare industry in the late 1990s and continuing through the mid 2000s.

FORMAL COMPLIANCE HAS BECOME INDUSTRY “BEST PRACTICES”

Even though compliance programs were not traditionally been mandatory, they now are. Indeed, they have become “industry standard” as a way to minimize risks associated with healthcare regulations such as the Medicare and Medicaid Fraud and Abuse Laws, Anti-kickback Statute, Civil Monetary Laws, False Claims Act, the Clinical Laboratory Improvement Act and all other state and federal statutes, regulations and directives that apply to the operation of a physician’s practice.

The problem that continues to aries though is that no parties have full transparency into the terms of the patient and provider services contract. Nor due patients and providers have much insight into the sequencing of steps needed to be either reimbursed on the provider side, and prove that necessary payment has been made on the patient side.

A common misnomer in the healthcare and medical services industry is that a co-pay and or deductible is the end all be all for payment. Many patients find themselves inconvenienced at best, and shocked at worst, when they are still billed for treatments they thought were fully covered, or compensated for via existing premium, co-pay and deductible practices.

Section 6401 of the Patient Protection and Affordable Care Act of 2010, as amended by the Health Care Education Reconciliation Act of 2010 (the "Affordable Care Act") requires HHS and the Office of Inspector General to promulgate regulations that require most healthcare providers and suppliers to establish compliance programs. The compliance programs are intended to be "effective in preventing and detecting criminal, civil, and administrative violations" under the Medicare and Medicaid laws and other laws that govern operations.

Under the Affordable Care Act, physicians and group practices, along with other relatively small providers, are required to establish compliance programs as a condition of enrollment in the Medicare program. Early versions of the Affordable Care Act included an exception for physicians which was deleted from the version of the Act that was signed into law. We know that the mandatory compliance program requirement will apply to physician practices absent further legislative action.

BASIC ELEMENTS OF AN EFFECTIVE COMPLIANCE PROGRAM

Developing a compliance program that will be effective to reduce internal and external risk is a "practice specific activity." There is no "one size fits all" compliance program and there is no good "off the shelf" form solution. There are certainly vendors, consultants and lawyers out there who would like you to believe that you can take a form, make a few changes and fill in a few blanks, and create an effective compliance program for your organization. This approach really misses the point of what is required in order to develop and effective program.

There are generally seven basic core elements that are required of an effective compliance program including:

1. Adoption of written guidelines and policies to promote the organization's commitment to compliance;

2. Identification and appointment of a high ranking individual within the organization to serve as compliance officer;

3. Establishment of anonymous reporting systems, preferably through multiple pathways, to encourage individuals to make complaints regarding compliance items without fear of retaliation;

4. Effective education and training programs for all levels of employees and others with close relationships to the organization;

5. Ongoing auditing systems to assess the effectiveness of the compliance program and to provide input into areas that require additional emphasis;

6. Mechanisms to enforce the requirements of the compliance program and to discipline employees for violations of the organization's commitment to compliance; and

7. An ongoing system of program modification based upon audit, feedback and experience that can further adapt the compliance policies to the specific issues faced by the organization.

A compliance program should be developed with consideration for the actual risks that are present in the specific practice.

SOME PHYSICIANS, HOWEVER, HAVE REPORTED DIFFICULTY IN EFFECTIVELY IMPLEMENTING AND/OR ADHERING TO VARIOUS ASPECTS OF THEIR COMPLIANCE PROGRAMS.

Traditionally implemented compliance programs have been reported to 'miss' or fail in some or all of the following respects:

Validating bills for services and ensuring proper clinical coding;

Adhering to encryption requirements to ensure compliance with security measures and breach notification when there is a wrongful disclosure of PHI (Protected Health Information);

Payments made for services ordered or referred by excluded physicians, physicians without valid NPI, DEA number, appropriate state licensure, and/or billing privileges;

Difficulty quickly validating and verifying that the situs (place of service) from which the service(s) was billed is accurately reflected within the bill for services;

Failure of employees to report violations (even anonymously by hotline or other traditional anonymous means) due to fears of retaliation;

Upper management detecting and responding promptly to offenses and undertaking corrective actions;

Routine training of employees and ensuring consistent attendance; and

Ensuring required forms are up to date with the most recent regulations, guidance, LCDs and NCDs.

Above are just a few examples. Some of the difficulties with these examples arise from: non-existent or poor verification processes; lack of appropriately prompt response times; lack of self-validating measures; and use of traditional or legacy systems, which do not have efficiently organized ledger and consensus capabilities.

Validating Provider Bills for Services

Overbilling, specifically double billing for medical services which effects patients and providers. It skews the incentives for both parties to align practices to preventative medicine. Even with compliance plans in place, providers have continued to experience issues with overbilling and double billing.

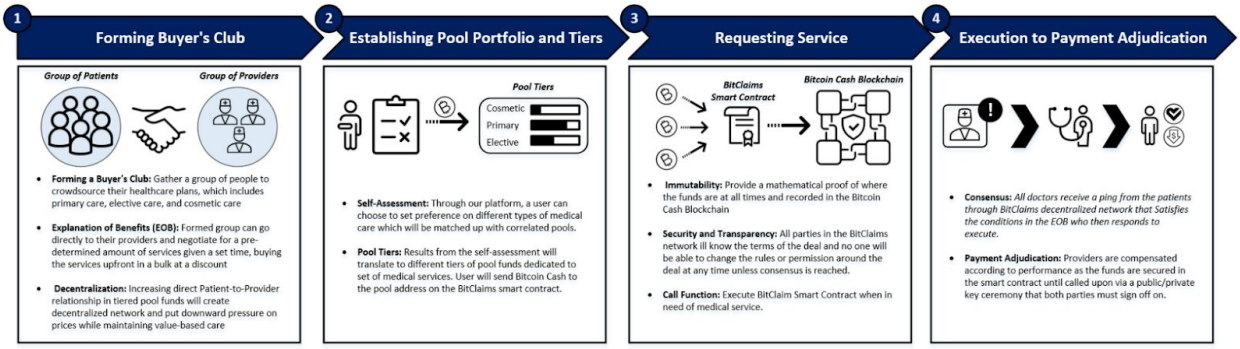
Double billing occurs when the physician bills for the same item or service more than once or when another party bills the federal healthcare program for an item or service also billed by the physician or when two providers attempt to get paid for the same procedure rendered to the same patient on the same date. Although duplicate billing can occur due to simple error, the knowing submission of duplicate claims--which is sometimes evidenced by systematic or repeated double billing--can create liability under criminal, civil, and/or administrative law.

One of the key problems blockchain consensus, validation and ledger technology solves is the problem of double spending. If a chunk of value is sent one place, there needs to be an internal check that prevents that value from being sent again. Something about the first payment must preclude the second from initiating.

BitClaims seeks to create a ledger that ensures when a bill for services is submitted, a second bill does not get re-submitted for a second payment and result in double payment for the same procedure rendered to the same patient on the same date.

Enter BitClaims - A Blockchain Platform Leveraging Time Series and Open Source Utilities

BitClaims: Architecting a new environment of incentives for healthcare



A platform that empowers patients to create their own association healthcare co-ops.

Distributed

Pooling together a certain amount of funds upfront, with the rest coming in piecemeal manifests into existence an entirely new set of incentives, all mapped to preventative care. The average primary care preventive services cost the patient around $1800-$2800 a year. This means that if the association healthcare co-op can procure half (50%) of the $2800, meaning $1400 per person on a scale, then they would each only have to contribute an additional $116 out of pocket a month. A major benefit to this model is that if no services are rendered, or if some services are only partially rendered, then the monies put in can be used towards the next years service costs, and or the patient can decide to take the built up money to another physician, provider, or receive a certain amount back.

Crowdsource

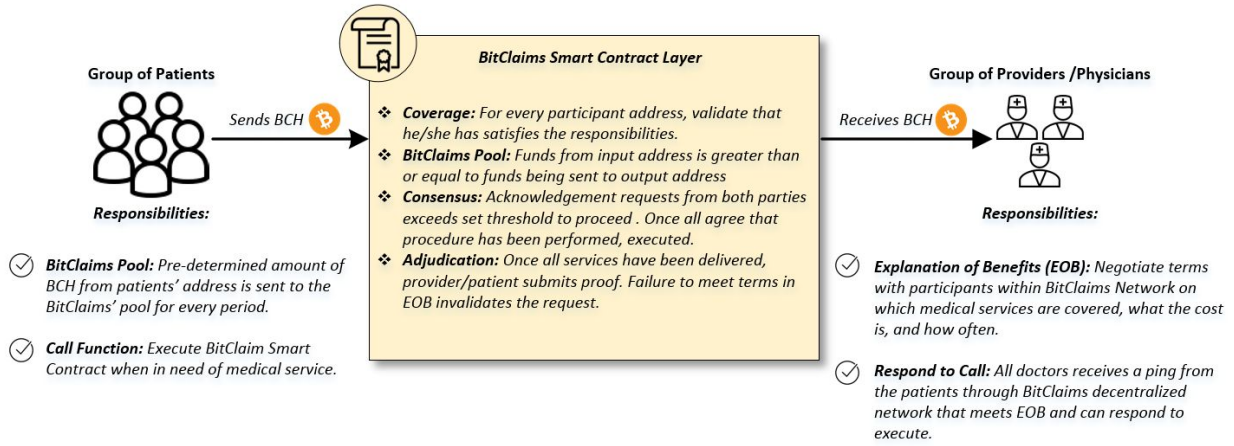
Healthcare plans mapped to services can be crowdsourced by anyone. Associations, communities and co-ops can go directly to providers for desired medical services such as primary care, elective surgery and even cosmetic. The groups can buy services upfront in bulk at a discount in a predefined time. This enables a decentralized crowdsourcing network as the pool grows.

Decentralized

All parties in the network will know the terms of the deal and no one will be able to change the rules or permission around the deal at any time. Everyone has to come to a predetermined consensus in order to payout funds held in the smart contract. In order to do so a predetermined call function from the patient side pings the smart contract. From there all parties in the smart contract, both patient and provider, are able to see which public key made the call and for how much. Coming to a consensus on if the funds should be released or not is determined by the set

of terms that both parties define prior. In this scenario the consensus enables payment to be made, while the private key signatures from a coordination of patient and providers sign off on the transaction.

The net result is the memorialized to the Bitcoin Cash blockchain.



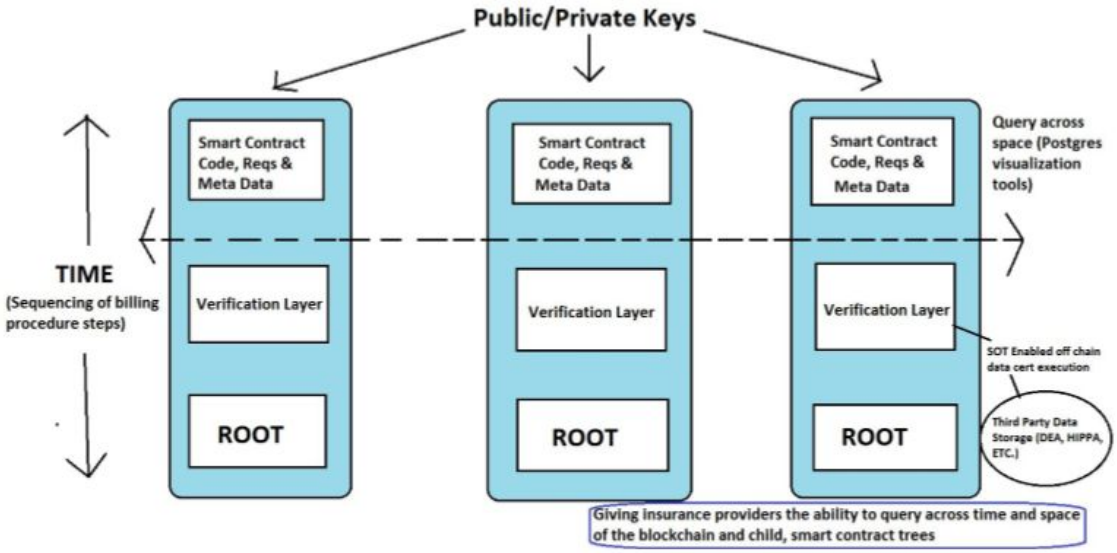
New Environment of Incentives

Pooled money enters the platform and a mathematical proof is shown to prove that the money is on the Bitcoin Cash Blockchain and a public-private key ceremony releases funds. One member of the group is a patient and wants to make a call function on a smart contract. The call function will say that this patient wants X amount of services mapped to the contract that the patient has with the provider. Everyone in the smart contract will receive a notification from BitClaims platform. The call function is associated with the patient's public key and only the people in the network will know who that public key will be tied to so privacy is ensured. Then all participants with public/private keys on the input side will respond to this ping to come to a consensus. Once consensus has reached to execute, predetermined amount of money will sweep directly into a provider's account.

Foundational Tasks

The BitClaims team is tasked with providing the resources to help providers run a full node of the Bitcoin Cash network on their machines. This is mapped to the best practices associated with the current environment providers and patients operate in.

TIMES SERIES APPROACH TO BLOCKCHAIN VIRTUAL MACHINE QUERIES

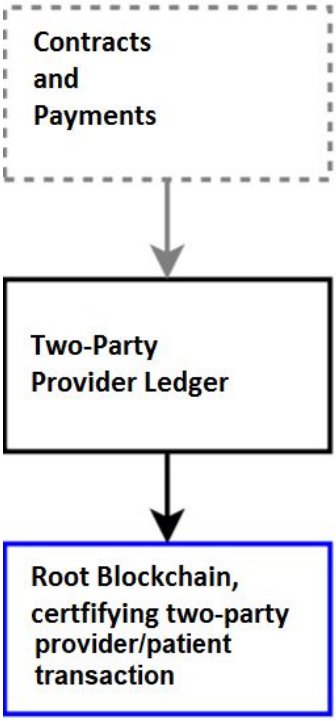


Time Series Principle Utility

Due to the infancy of development regarding BitCoin Cash smart contracts and colored coins, time series data workflows offer a new angle of approach to blockchain queries. For starters, time series data is largely immutable, correlating directly to the core tenants of an unalterable ledger (blockchain). New data writes occur independently and not as updates to existing rows. As new data arrives, it is correlated to existing time periods that data has been written to. Writes therefore are made primarily to recent time intervals. In a time series environment, data points that are written to the database are done so to the latest time activity and the data sources (smart contract metadata tags, smart contract protocols, call function requests). With this in mind, data queries are not constrained to one metric, and can instead select multiple metrics at the same time, or functions that call upon multiple metrics.

This methodology maps directly with the practices and processes involved around the sequencing of payment procurement in addition to several other use cases which BitClaims is aggregating for PHASE TWO implementations. This methodology allows maximum scalability and robust query support for the highest level of integrity demanded by resource heavy users.

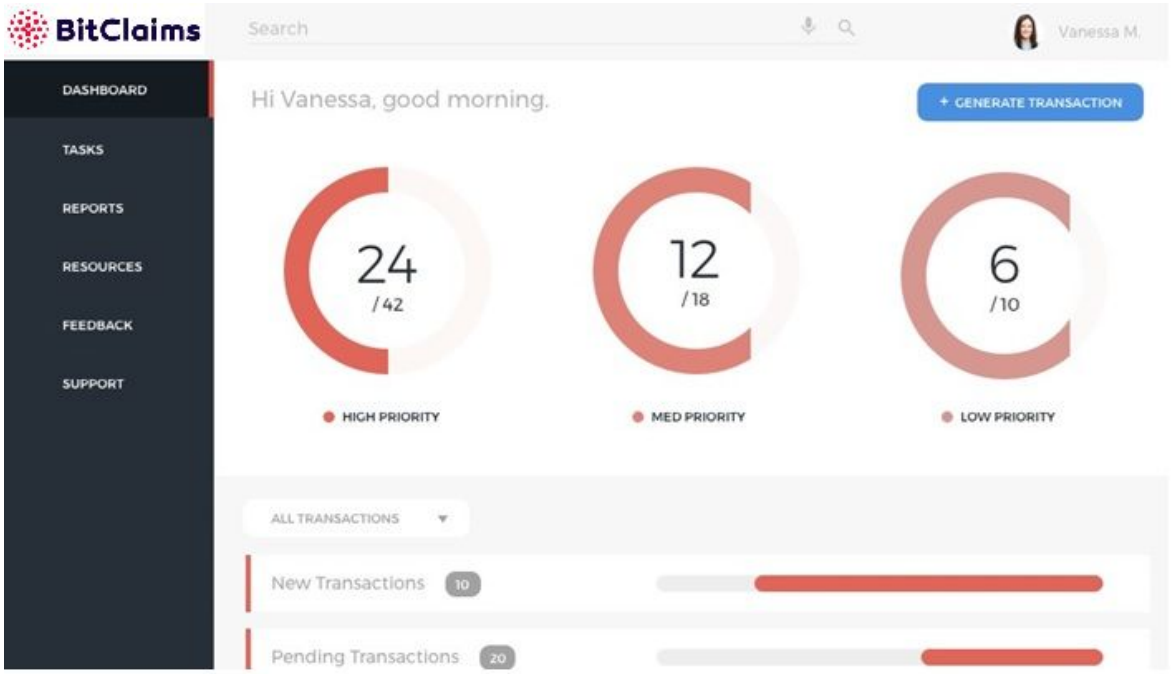
The primary care provider who must be regulatory compliant, runs a Bitcoin Cash node. This takes the form of a core blockchain being the unalterable ledger. The consensus model between patients and providers happens in conjunction with existing consensus models already running on top of the Bitcoin Cash network. Authorizing the permissioning around the transaction fundamentally occurs here.



Process

Primary care providers who are running a full Bitcoin Cash node can interact with the BitClaims API. This API provides robust querying functionality via postgres in a easy to use dashboard that patients and providers can understand.

Once running, the patients and providers have a shared portal in which they can communicate. The anonymity of patients, their data, and which terms and conditions are met to who and by whom are kept completely anonymous. BitClaims seeks to streamline this complex sequencing of steps with an approach current office admins and a nominated association healthcare co-op head can understand.

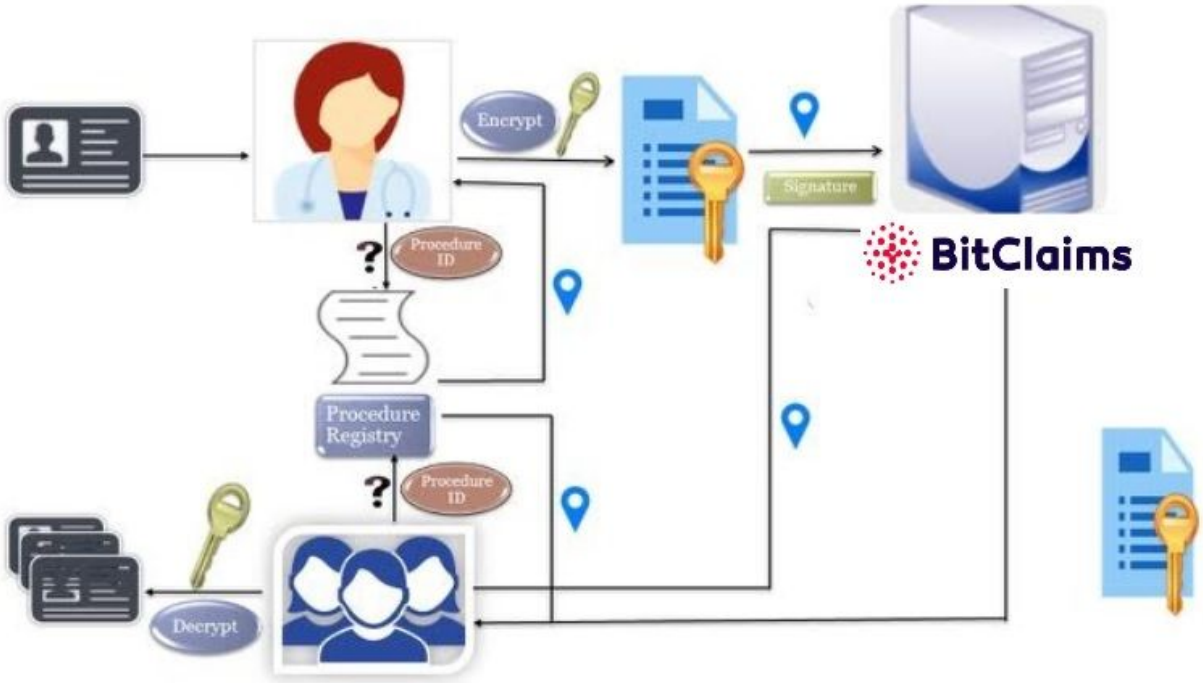


BitClaims Primary care providers can request the already validated cryptographic hash headers of a validated transaction on the blockchain. This occurs off chain and using public/private keys. The decentralized consensus via the blockchain protocols enables the request to happen being accepted or denied based on the network consensus. Upon consensus by the nodes on the blockchain, the transaction hits the root chain ledger.

The BitClaims Process consists of three main elements:

(1) A grouping of contextually based smart contracts via specific procedure numbers tied to claims established by Medicare, industry or otherwise.
(2) The BitClaim mechanism that rakes a percentage of daily revenue into a BCH custodial wallet which then sweeps to receipt holders.
(3) A front end portal that allows the environment to run smoothly between patients and providers directly.

BitClaims eco-system will only be validated and running on providers machines who are compliant with healthcare regulations. BitClaims validates the compliance of said care providers through existing regulatory channels. Validated providers then only interact with other compliant nodes in the network. This way, when a provider records a transaction, the network can see it in the next block.



The BitClaims App and Provider Interface

The front end of the BitClaims platform will allow patients and providers to ping create smart contracts for service terms, while keeping the nature, location and cause of said contract anonymous. The BitClaims app, of which providers and patients will interact with each other to validate the completion of a smart contract, will be an intranet portal able to interact with smart contracts directly. This allows the providers and patients the ability to spin up smart contracts directly,with pre-set rules understood by both parties that are unalterable via the smart contract code, at will and on a per service basis. When the admin at a provider's office initiates the sequence for a procedure payment, they are guided via the portal to fill out the necessary private key associated with the procedure they are requesting the association healthcare co-op release funds for.

To simplify the process initially, BitClaims uses the already well established billing sequencing by the healthcare industry for a standardized set of claims requirements for the procedure in the client facing application. Once the admin completes this first step, the metrics are populated into the smart contract for that specific smart contract.

BitClaims serves as the mediator that merely provides the client to connect both parties.

The Future of Incentives in Healthcare

This opens up the opportunity for a merit based ecosystem to evolve, while adhering to regulatory standards, and at the forefront providing superior quality care and service to patients at a much lower cost. BitClaims commits to developing best practices in the space.

Providers remain the exclusive holders of the patient data. BitClaims will not handle the storage of EHR's, or any variation thereof, in this context or form. For the BitClaims platform, it suits the providers to to have access to the data they require, and no one else.With this approach, BitClaims keeps the benefits of a decentralized and distributed computing structure, while keeping the data integrity and compliance cooperation on the side of the providers and patients.

Conclusion

The failure to confront and mitigate risks can be devastating to a physician practice and can mean a slow, but consistent, leak of money. For physicians, repayment obligations for false claims are generally three times the amount of the claims plus $11,000 per claim. It is shocking how fast the penalties add up. Extreme cases of fraud can also lead to criminal investigation and prosecution. Recently enacted healthcare reform legislation makes it easier to create a new environment of incentives for patients and providers to thrive in a value based, preventative care and service environment.

BitClaims will play an increasingly significant role in healthcare and bring beneficial disruption and new efficiencies to every patient and provider. It is vitally important that healthcare organizations and patients understand the core of blockchain technology to ensure they are ready for the changes the technology entails. The result will be a new generation of powerful, blockchain-based applications that will shape the next era of business in healthcare. For blockchain to full its potential in healthcare, it must be based on standards to ensure the compatibility and interoperability within the siloed health care system landscape.