Classifying and Defining the Varieties of Health Care Fraud

Dallas Thornton[a]*, Michel Brinkhuis[b], Chintan Amrit[b], Robin Aly[c]

[a] Clemson University, 101 Calhoun Dr, Clemson, SC 29634, USA
[b] Department of Industrial Engineering & Business Information Systems, University of Twente, Drienerlolaan 5, 7522 NB Enschede, Netherlands
[c] Faculty of Electrical Engineering, Mathematics and Computer Science, University of Twente, Drienerlolaan 5, 7522 NB Enschede, Netherlands

Abstract

Today, the over $2 trillion US healthcare system is ravaged by fraud, waste, and abuse, with an estimated one-third of all these costs frivolously spent in such ways. Sun Tzu wrote, "Every battle is won or lost before it's ever fought." To combat healthcare fraud, we must understand it and the forms it takes. In this paper, we systematically evaluate published literature using Webster and Watson's concept matrix technique. From the applicable published literature, we provide a categorization and description of the documented types of fraud in healthcare.

Keywords: fraud; insurance; medical; health; healthcare; Medicaid; Medicare; fee-for-service; managed care; data mining

Introduction

In the United States, roughly one-third of all healthcare expenses are caused by fraud, waste, and abuse [1]. Fraud exists in many forms: from dishonest providers, organized criminals, colluding patients, and patients who misrepresent their eligibility for health insurance coverage. Medicaid, a healthcare program run by states with cost-share from the federal government, is particularly susceptible due to its patient population and limited payer oversight as compared with commercial insurers.

In this paper, we aim to explore the lessons learned in this space to date through a systemic literature review of published works in healthcare fraud. Specifically, as this is a quickly changing field, what types of fraud schemes are documented and explored? What is the current state of technology in detecting those types of fraud? Data mining is a popular subject of research today – are these technologies being used for healthcare fraud detection? Section 2 describes our methodology. Section 3 and 4 describe the results of our study, with specific details of the fraud scheme types and analytic methods documented in current literature. Section 5 provides conclusions and areas of future research.

1. Methodology

A structured literature review, as described by Webster and Watson [2], is performed to identify health insurance fraud schemes. In this review, we use a concept matrix:

1. Identify the set of keywords
2. Refine keywords based on result set
3. Filter results by title, filter out non-supported languages and clearly non-related articles
4. Filter results by reading abstracts
5. Identify concepts by reading resulting articles in more detail

The goal of this literature study is to find literature related to types of health insurance fraud. Fraud related to health, healthcare, health insurance, or the Medicaid program specifically is interesting for this research. The terms "health", "healthcare", "medical insurance" cover a wide spectrum of potential interesting articles. The query below was utilized for baseline search results.

TITLE ((Medicaid OR "health" OR "healthcare" OR "medical insurance") AND fraud)

Fig. 1 Search query used for this literature review

Two scientific search engines are used to find articles: Scopus and Web of Science. Both have a good coverage of technical articles as well as medical coverage. Web of Science also searches PubMed, a primary database containing citations of biomedical literature. The search engines offer several possibilities to filter the results.. Only articles written in English are included in the search. Furthermore, citations and patents are excluded. Only journal articles and scientific papers are included.

Exclusion criteria are as follows. Results

were excluded from the initial listings if the articles discussed only specific fraud cases (e.g. an analysis of a fraud case that was in the news). Even though filters were in place, some results were not in English and had thus to be removed. Also, news articles have been removed. The included articles discuss types of healthcare fraud as a phenomenon, or are scientific publications about the detection of such fraud types using data mining methods.

2. Results

Using the proposed query and filters, Scopus identified 152 documents, and Web of Science identified 248. All search results were exported to Microsoft Excel, creating an overview of all authors, titles, and abstracts. Based on the titles and authors, duplicates were filtered. This resulted in a set of 252 unique articles.

The results include a wide range of articles, of which a large amount are unrelated to healthcare fraud. The set of articles underwent rough selection, where relevancy is evaluated based on the work's title and abstract. In this first

selection round 183 articles are rejected because they are not relevant for this research. The resulting set yields 69 articles.

3.1. Fraud Types Described in Literature

27 Articles are selected as most descriptive of fraud types across this literature after a more thorough review of the full 69 works. Most articles discuss multiple types of fraud. The number of articles referencing each fraud type is shown in the graph below. We will now discuss the 18 fraud types identified in literature
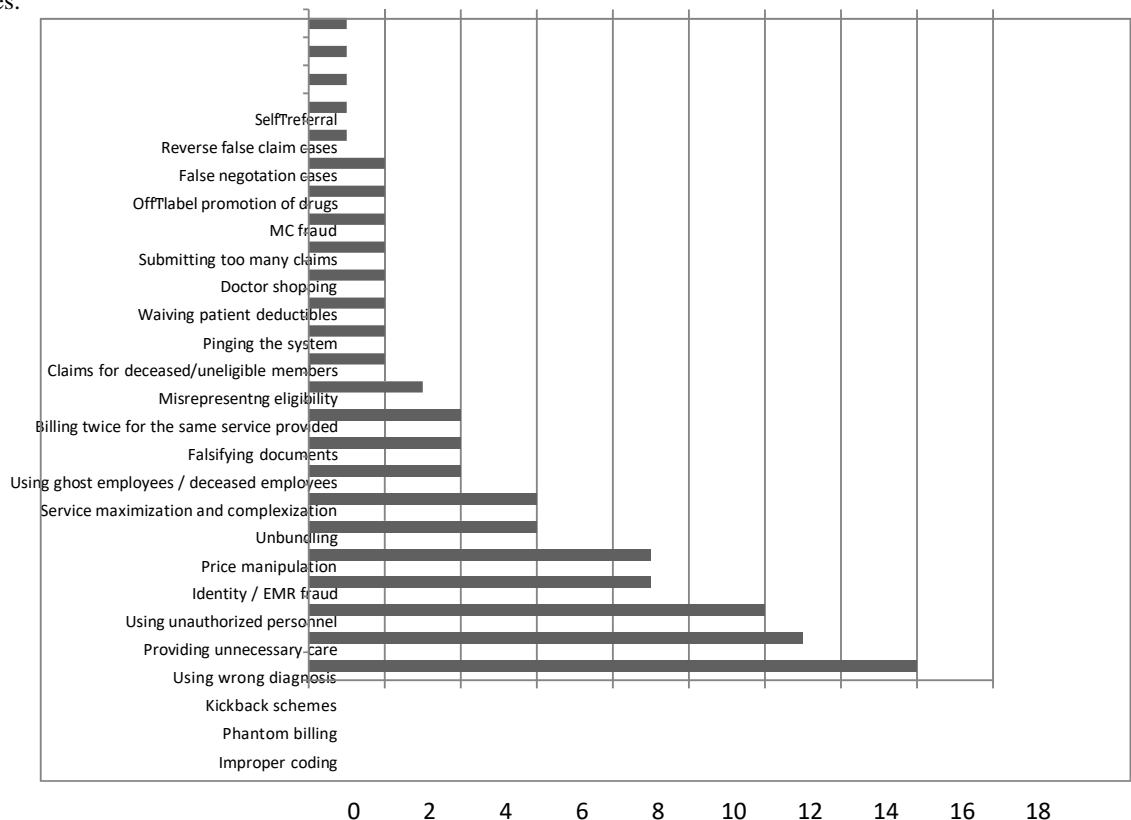

Fig. 1. Incidence of health insurance fraud types in literature.

3.1.1. Kickback schemes

One of the most discussed types of fraud is fraud involving kickbacks. Kickbacks exist in different forms. For example, pharmacists can fill a prescription with a specific brand of medicines instead of another that yields a bonus from the pharmaceutical company [3]. Beyond financial implications, this might also be

detrimental to the patient's health. Physicians themselves can fraudulently write prescriptions for money, essentially a kickback from the downstream illegal sale of these drugs. [4]. Benett [23] points to the importance of complying with kickback legislation, and states that deals that seem too good to be true can be

illegal.

3.1.2. Self-referral

Rashidian [5] defines self-referrals "referring the patients to a clinic, diagnostic service, hospital etc. with which the referring physician has a financial relationship." This might involve a kickback scheme if the referred-to party pays a commission back to the physician, but other financial relationships are conceivable. For example, many physician groups and hospitals are sustaining through growing. While some economies of scale are achievable

through growth, referrals within the same financial organization are becoming normal and accepted practices that typically elude significant audit scrutiny.

3.1.3. Doctor shopping

If feigning pain or bribing a doctor does not work, a drug-seeking person may simply look for another doctor who will provide the desired prescriptions. A patient can easily visit multiple doctors to obtain prescriptions (often multiple times). Carlson [6] refers to a study by the US Government Accountability Office that found that in 2011 about 600 patients in the Medicare program filled prescriptions from more than 20 doctors each.

3.1.4. Identity fraud

Identity fraud may happen where an uninsured individual assumes the identity of a person with insurance coverages to obtain services or to hide a certain illness [7]. They mention that the healthcare services eventually provided to the person 'lending' their identity could be adversely affected, since their health records will contain unrelated and potentially contrary information.

Identity theft can also happen without the owner of the identity knowing. Dube [8] mentions identity theft conducted by foreign gangs that have scammed federal authorities for millions of dollars.

3.1.5. Fraud by pharmaceutical companies

Sparrow [9] describes pharmaceutical abuses beyond the kickbacks schemes are mentioned above. Specifically, off-label promotion of drugs involves the marketing of drugs for uses which are not approved by the Food and Drug Administration. Illegal price manipulation in collusion with downstream data providers or other pharmaceutical companies has been shown on multiple occasions.

3.1.6. Device and services price manipulation

Similar to pharmaceutical companies but usually at a smaller, more regional scale, providers of medical equipment or health services can manipulate prices for certain groups of clients [9]. If they know Medicaid will pay varying rates for services, the may increases prices directly. Or, they may move across the street to the next zip code from which they can bill a higher rate.

3.1.7. Improper coding and upcoding

Improper coding, sometimes called upcoding, is one of the most discussed and prevalent fraud topics. Agrawal [10] describes upcoding as "billing for a more expensive service or procedure than the one performed." He also describes improper coding, which he differentiates as due to an administrative error versus a malicious attempt to increase revenue.

3.1.8. Unbundling

Unbundling means creating separate claims for services or supplies that should be grouped together [22]. Unbundling may be seen as a part of improper coding, but multiple authors mention unbundling as a separate form of fraud. Today software such as Grouper looks for unbundling and will either reject unbundled claims or "re- bundle" the claims and adjust the bill to pay for the combined procedure code.

3.1.9. Submitting double bills

When it comes to submitting claims not only improper coding practices can be fraudulent, but also care providers can try to submit the same claim multiple times, in order to get paid two times for performing one action. Byrd [11] describes double-billing as "billing multiple times for the same service." Automatic acceptance of claims is mostly done to improve processing speed, however Benzio [24] rightly mentions that for true efficiency not only speed matters. Tests for legitimacy are just as important.

3.1.10. Billing for services not provided

With double billing, at least care is provided to a patient. With billing for services not provided, claims are submitted for health care services that have not been provided or for medicines or medical devices that have not been

delivered to the patient. This concept is also referred to as *phantom billing* [5]. One of the examples mentioned by Stanton [12] and Lubao [26] described providers that submit so many claims on one day that is not physically possible (or at least highly unlikely) to help so many patients. To get around this minor obstacle, Brooks [13] describes the new practice of ghost employees: fake employees on the health providers' payroll that do not actually exist. Evans shows evidence of practices submitting bills for group sessions, while only one patient was treated [25]. Thornton [14] describes multidimensional data models centered around providers and provider groups, respectively, that can be utilized to highlight excessive billing at the provider and provider group models.

Related to this method of fraud is submitting false claims to the systems to discover how to get a false claim approved. Since claims are mostly automatically processed, knowing the thresholds of the claim handling systems allows one to submit claims for services not provided that do not trigger monitoring systems [4]. There are several ways, these types of schemes are found out. In order to submit false claims, accurate information from patients is needed. Sometimes a false claim is submitted for a patient that is no longer alive. Research on a population in Ontario (Canada) showed that, for 1 out of every 3000 deaths, providers submitted claims for medication more than one year after a patient was deceased [21].

3.1.11. Providing unnecessary care and maximizing care

It may also happen that more healthcare is provided than was actually needed to heal the patient; thus providing unnecessary care. Sometimes certificates are falsified [5] to show the medical necessity of certain actions in order to justify payments. Morris [4] also describes maximizing the number of services and claims. The fee-for-service model means that physicians get paid based on the services they provided – maximizing the number of services means maximizing their pay. Outlier detection techniques have shown promise in detecting providers that differ from their peer groups [15].

Other examples of unnecessary care include 'Rolling labs' which administer tests provided by health care providers that temporary visit shopping centers or retirement houses [16]. These are simple test, but billed as expensive tests to insurance programs. Furthermore sometimes care providers use unproven

treatments, which might not work in the end and thus result in unnecessary care provided.

3.1.12. False negation cases

False negotiation cases are mentioned by Doan [17] are cases that arise from situation in which a health care provider makes false statements to induce the government to enter into a contract for services or supplies. Sometimes this is also referred to as *frauds-in-the-inducement*.

3.1.13. Using the wrong diagnosis

Claims are submitted for a service provided based on a stated diagnosis. These diagnoses can also be manipulated
-- a patient can get a certain diagnosis while that is diagnosis is not actually true [18]. This type of fraud can be done to falsely prescribe certain medicines to a patient, for example.

3.1.14. Billing for services rendered by unqualified personnel

Care can be provided by people who do not have the credentials or license to actually perform that kind of care [11]. An example of this is when an intern is providing care that a physician bills for and which the intern is uncertified to perform or unqualified to bill.

3.1.15. Lying about eligibility

Patients can lie about their situation when they visit a pharmacist or a physician. They can for example claim exemption from prescription charges, when they are not exempt [5] or they can misrepresent information about their dependents to get insurance coverage for them [11].

3.1.16. Reverse false claim cases

False claims that are paid by an insurance program result in a provider receiving money from the insurer. *Reverse false claims* represent situations where a care provider owes money to the government and doesn't pay it back on time [16].

3.1.17. Managed care fraud

Managed care, as opposed to fee-for-service, represents a growing proportion of the US health insurance market. Within Medicaid, Managed Care Organizations (MCOs) now cover the majority of patients. This type of insurance mechanism theoretically passes risk from the primary payer to an intermediary insurer, which is paid on a capitated rate for the population they insure. Doctors participate either at-risk, also taking a capitated rate for their patients for certain services, or in a fee-for-specific-services arrangement. These changed incentives provides for new areas of fraud, as mentioned by Sparrow [9], including denial of services to patients, providing substandard care and creating logistical and/or administrative obstacles for patients in order to receive the care they need.

3.1.18. Waiving co-payments

Insurance plans can require co-payments for certain services to incentivize patients to make appropriate cost- minded decisions in their health care. Freeman and Loavenbruck [19] discuss health care providers waiving co-payments or deductibles, removing these incentives and violating their participation agreement with the insurer.

3. Technology

The 69 works not only describe health insurance fraud types but also methods for detecting health insurance fraud. Amongst these works, the graph below shows the number of works covering each method used for fraud detection.
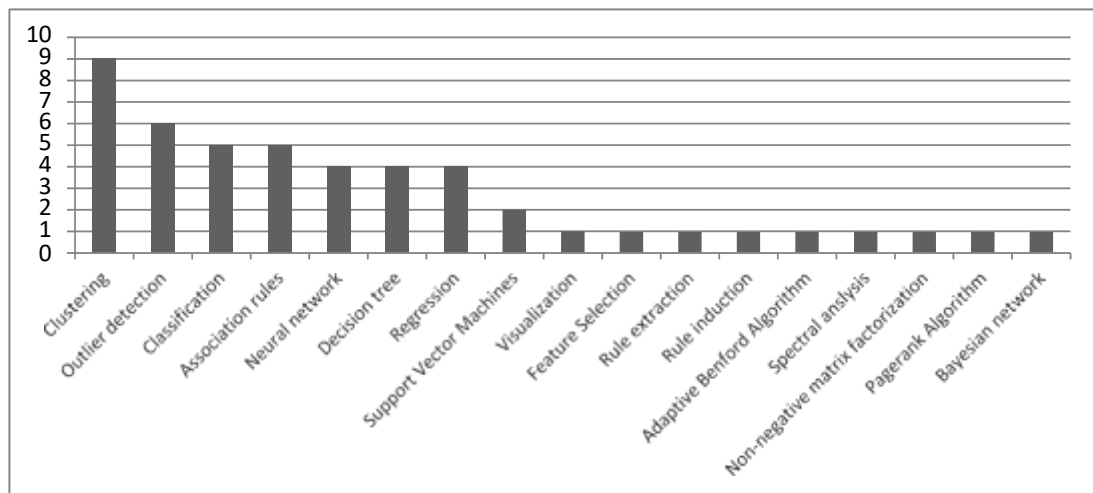

Fig. 2 Incidence of different health insurance fraud detection methods in literature.

Both enrollment and claim processing processes are being automated more and more. Fraudsters can easily find out which claims are being accepted, because systems often explain reasons for rejecting. As Sparrow [9] states: "If it pays one claim without a hiccup, then it will reliably pay 10.000 similar claims for other patients the exact same way." This introduces the need for continuously monitoring the data even after an approval process has been completed. Data mining technologies can be applied on the datasets containing claim and enrollment data in order to find anomalies. Figure 2 shows a wide range of algorithms is available, however we found only one publication that discussed many of the technologies.

Conclusions and Future Research

This paper provides a systematic literature review of health insurance fraud types in published works. Much work has been done in this space in recent years, yet much work remains. Sun Tzu [20] wrote, "Know your enemy and know yourself, find naught in fear for 100 battles. Know yourself but not your enemy, find level of loss and victory. Know thy enemy but not yourself, wallow in defeat every time." Healthcare fraud is an evolving type of crime, with new schemes emerging on a regular basis. In this review, we discuss and describe the enemy, the types of fraud that plague healthcare today. For the health insurance industry to succeed in combatting fraudsters, it must also know itself – its systems and how data mining and analytic

techniques can be applied within them to detect fraudulent activity. The research shows a discrepancy in the amount of publications for each type of fraud. Some types of fraud get much more attention than others. If research into healthcare fraud is lacking, catching it is difficult, and preventing it from happening is near impossible. Based on practical experience, we expect the lack of training data (structured datasets containing health care fraud cases) and a lack of useful open data available as the main causes for the relative small amount of research into the technological aspect of health insurance fraud. National and state privacy laws that inhibit data sharing and the desire of insurers to maintain proprietary approaches for competitive reasons will both continue to pose high barriers to progress in this field.

Future research can describe how data mining techniques are being used to combat healthcare fraud as well as develop on models that map these techniques to fraud types and tool frameworks. The fight against fraud in healthcare will be an ongoing struggle, but, though knowing our enemy as well as understanding the tools at our disposal, we can make continual progress in improving the state of the industry.

References

Kelley RR. Where can $700 Billion in Waste be cut annually from the US Healthcare System? Thomson Reuters 2009; TR-7261 10/09 LW.

Webster, J., and Watson, R. 2002. "Analyzing the Past to Prepare for the Future: Writing a Literature Review," MIS Quarterly (26:2), pp. xiii – xxiii.

Rabecs, R. N. 2006. "Health care fraud under the new Medicare Part D prescription drug program," The Journal of Criminal Law and Criminology, pp. 727–756.

Morris, L. 2009. "Combating Fraud In Health Care: An Essential Component Of Any Cost Containment Strategy," Health Affairs (28:5), pp. 1351–1356 (doi: 10.1377/hlthaff.28.5.1351).

Rashidian, A., Joudaki, H., and Vian, T. 2012. "No Evidence of the Effect of the Interventions to Combat Health Care Fraud and Abuse: A Systematic Review of Literature," PLoS ONE (H. R. Baradaran, ed.) (7:8), p. e41988 (doi: 10.1371/journal.pone.0041988).

Carlson, J. 2013. "Panful side effects," Modern Healthcare.

Plomp, M. G. A., and Grijpink, J. 2011. "Combating identity fraud in the public domain: information strategies for healthcare and criminal justice," in Proceedings of the 11th European Conference on e-Government, pp. 451–458 (available at http://books.google.com/books?hl=en&lr=&id=cIkxJXGyh v8C&oi=fnd&pg=PA451&dq=%22interdependent.+ICT+c an+support+the+devel opment+of+interorganisational+relations+through%22+%2 2shares+which+information+and+why,+are+complex+and +important+as+well.+I t+can+therefore%22+%22deployed,+there+are+many+pot ential+problems+in+their+use+that+need+to+be+tak&ots= RfYa1PlnvL&sig=P7z7 19JXdFh79V9tIP_XYKSwGNc).

Dube, J. F. 2011. "Fraud in Health Care and Organized Crime," Medicine & Health (94:9), pp. 268–269.

Sparrow, M. K. 2008. "Fraud in the US Health-Care System: Exposing the Vulnerabilities of Automated Payments Systems," social research, pp. 1151–1180.

Agrawal, S., Tarzy, B., Hunt, L., Taitsman, J., and Budetti, P. 2013. "Expanding Physician Education in Health Care Fraud and Program Integrity," Academic Medicine (88:8), pp. 1081–1087 (doi: 10.1097/ACM.0b013e318299f5cf).

Byrd, J. D., Powell, P., and Smith, D. L. 2013. "Health Care Fraud: An Introduction to a Major Cost Issue," Journal of Accounting, Ethics and Public Policy (14:3) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=228586 0).

Stanton, T. H. 2001. "Fraud-And-Abuse Enforcement In Medicare: Finding Middle Ground," Health Affairs (20:4), pp. 28–42 (doi: 10.1377/hlthaff.20.4.28).

Brooks , G., Button, M., and Gee, J. 2012. "The scale of health-care fraud: A global evaluation," Security Journal (25:1), pp. 76–87.

Thornton, D., Mueller, R. M., Schoutsen, P., van fegersberg, J. "Predicting Healthcare Fraud in Medicaid: A Multidimensional Data Model and Analysis Techniques for Fraud Detection," Procedia Technology, Volume 9 (2013) Pages 1252-1264

D. Thornton, G. van Capelleveen, M. Poel, J. van Hillegersberg, R. Mueller, "Outlier-based Health Insurance Fraud Detection for U.S. Medicaid Data," in Proceedings of the 16th International Conference on Enterprise Information Systems (ICEIS), Special Session on Information Systems Security - ISS pages 684-694, 2014.

Borca, G., "Technology Curtails Health Care Fraud," Managed Care, April 2001

Doan, R. 2011. "False Claims Act and the Eroding Scienter in Healthcare Fraud Litigation, The," Annals Health L. (20), p. 49.

Ogunbanjo, G. A., and Knapp van Bogaert, D. 2014. "Ethics in health care: healthcare fraud: ethics CPD supplement," South African Family Practice (56:1), pp. S10–S13.

Freeman, B. A., and Loavenbruck, A. 2001. "Complying with healthcare fraud laws: an overview for the hearing professional," The Hearing Journal (54:5).

Tzu, S.. The Art of War – Special Edition. El Paso Norte Press. ISBN 0-9760726-9-6.

Stelfox, H. T. and Redelmeier, D. A. "An analysis of one potential form of health care fraud in Canada," Can. Med. Assoc. J., vol. 169, no. 2, pp. 118–119, 2003.

Cady, R. F., "Healthcare Fraud: A Primer for the Nurse Executive," JONAS Healthc. Law Ethics Regul., vol. 9, no. 2, pp. 54–61, 2007. 23.Bennett, R. S. and Medearis, D. M., "Health Care Fraud; Recent Developments and Timeless Advice," Tex. Med., vol. 99, pp. 50–56, 2003. 24.Benzio, B., "Fee-for-Disservice: Medicare Fraud in the

Home Healthcare Industry," Ann. Health L, vol. 19, p. 229, 2009.

Evans, R. D. and Porche, D. A., "The nature and frequency of medicare/medicaid fraud and neutralization techniques among speech, occupational, and physical therapists," Deviant Behav., vol. 26, no. 3, pp. 253–270, May 2005.

Lubao, Michael. "Claiming Responsibility." Health Management Technology, June 2008.