January 2017 – SUPPORT Summary of a systematic review

What is the effectiveness of interventions to reduce healthcare fraud and abuse?

Healthcare fraud is a serious problem for health systems. There are increasing national, regional, and international fraud control initiatives. These include political, legislative, and administrative interventions intendend to combat fraud.

Key messages

➔ **It is uncertain if prevention, detection, or response interventions reduce healthcare fraud and abuse and related expenditures due to the scarcity of robust evidence.**

➔ **None of the included studies was conducted in a low-income country.**

Who is this summary for?

People deciding how to combat healthcare fraud and abuse.

! This summary includes:

- **Key findings** from research based on a systematic review
- **Considerations about the relevance of this research** for low-income countries

X Not included:

- Recommendations
- Additional evidence not included in the systematic review
- Detailed descriptions of interventions or their implementation

This summary is based on the following systematic review:

Rashidian A, Joudaki H, Vian T. No evidence of the effect of the interventions to combat health care fraud and abuse: a systematic review of literature. PloS One 2012;7(8):e4 1988.

What is a systematic review?

A summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise the relevant research, and to collect and analyse data from the included studies

SUPPORT was an international project to support the use of policy relevant reviews and trials to inform decisions about maternal and child health in low- and middle-income countries, funded by the European Commission (FP6) and the Canadian Institutes of Health Research.

Glossary of terms used in this report: www.supportsummaries.org/glossary-of-terms

Background references on this topic: See back page

Background

Fraud has been defined as an ''intentional deception or misrepresentation made by a person or an entity, with the knowledge that the deception could result in some kind of unauthorized benefits to that person or entity'. It has been estimated that 3-10% of healthcare spending is lost to fraud and abuse. The degree of intent by the individual or entity is often the determining factor in distinguishing between fraud and abuse. The term ''abuse'' may be used to describe problematic behavior which is not clearly against the law or where certain elements of the fraud definition (such as knowing deception) are missing (e.g. providing unnecessary care).

Based on who conducts the fraud, it can be classifed as *provider fraud* (e.g. by physicians, dentists, hospitals, diagnostic services, pharmaceutical or medical device manufacturers), *consumer fraud* (by patients or insured people), and *insurer or payer fraud*. Interventions to combat fraud can be categorised as: *prevention* (e.g creating an anti-fraud culture and improving controls), *detection* (e.g. by medical claims reviews), and *response* (e.g. administrative and legal actions).

How this summary was prepared

After searching widely for systematic reviews that can help inform decisions about health systems, we have selected ones that provide information that is relevant to low-income countries. The methods used to assess the reliability of the review and to make judgements about its relevance are described here: www.supportsummaries.org/how-support-summaries-are-prepared/

Knowing what's not known is important

A reliable review might not find any studies from low-income countries or might not find any well-designed studies. Although that is disappointing, it is important to know what is not known as well as what is known.

A lack of evidence does not mean a lack of effects. It means the effects are uncertain. When there is a lack of evidence, consideration should be given to monitoring and evaluating the effects of the intervention, if it is used.

About the systematic review underlying this summary

Review objective: To assess the effectiveness of interventions to combat healthcare fraud and abuse

Types of	What the review authors searched for	What the review authors found
Study designs & Interventions	Interventional studies with or without a concurrent control group assessing any intervention to combat healthcare fraud (including prevention, detection, and response interventions)	Four studies were included: 3 assessing detection actions and 2 response actions. The study designs were: longitudinal with concurrent control group (1), data mining (2) and before-after study (1).
Participants	Providers, patients or insured people, insurers (third party payers)	Taiwan's National Health Insurance, Medicare and Medicaid (in USA)
Settings	Public and non-public health sector.	Taiwan (2) and USA (2)
Outcomes	Prevention, detection, and response related outcomes	Detection of fraudulent claims, amount of anti-fraud expenditure, occurrence of healthcare fraud and abuse, fraudulent activities in diagnostic laboratories
Date of most recent search: December 2010		
Limitations: This is a well-conducted systematic review with only minor limitations.		

Rashidian A, Joudaki H, Vian T. No evidence of the effect of the interventions to combat health care fraud and abuse: a systematic review of literature. PloS One 2012;7(8):e4 1988.

Summary of findings

Four studies were included: none about prevention, three about detection and two about response interventions (one study assessed both detection and response interventions).

1) Detection interventions

One study found that the three data mining algorithms (logistic regression, neural networks, and classification trees) were accurate in detecting previously known fraudulent claims. Another data mining study, that used deviations from clinical pathways as an indication of potential fraud or abuse, showed sensitivity and specificity rates of detection of 64 and 67%, respectively. A third study estimated anti-fraud activities in different states, and then linked that with fraudulent activities in the states. This study estimated the amount of anti-fraud expenditure at the state level per hospital and per patient as a measure of intensity of anti-fraud interventions in the state. The study covered issues relevant to the 'detection', and 'response' categories of interventions to combat healthcare fraud.

About the certainty of the evidence (GRADE) *

⊕⊕⊕⊕
High: This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different† is low.

⊕⊕⊕◯
Moderate: This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different† is moderate.

⊕⊕◯◯
Low: This research provides some indication of the likely effect. However, the likelihood that it will be substantially different† is high.

⊕◯◯◯
Very low: This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different† is very high.

* This is sometimes referred to as 'quality of evidence' or 'confidence in the estimate'.

† Substantially different = a large enough difference that it might affect a decision

See last page for more information.

2) Response interventions

The main conclusion of the last study mentioned above was that more intense anti-fraud activity results in less occurrence of healthcare fraud and abuse. Increased anti-fraud expenditure was linked to a decline in billing by certain types of patients and hospitals without adverse consequences for patients' health outcomes.

Another before-after study assessed the effects of a legal intervention on fraud in diagnostic laboratories. It found that more lenient sanctions during a four-year period correlated with a gradual increase in the percentage of fraudulent activities in the same period.

➔ **It is uncertain if prevention, detection, and response interventions reduce healthcare fraud and abuse and related expenditures. The certainty of this evidence is very low.**

Interventions to combat healthcare fraud and abuse

People	Medicare beneficiaries
Settings	Medicare in the USA
Intervention	Antifraud activity
Comparison	No intervention

Outcomes	**Impact**	Certainty of the evidence (GRADE)
Inpatient expenditures	In models that measure enforcement on a per hospital basis, a 1% increase in enforcement leads to a 0.92% decrease in the acute inpatient expenditures of young male patients without a hospital admission during the prior year. A 1% increase in enforcement leads to a 5.55% relative decline in nonacute inpatient expenditures for the same population.	⊕◯◯◯ Very low

GRADE: GRADE Working Group grades of evidence (see above and last page)

Relevance of the review for low-income countries

➔ Findings	▷ Interpretation*
APPLICABILITY	
➔ **No studies from low-income countries were found.**	▷ *Low-income countries might be more prone and vulnerable to healthcare fraud and its consequences.* ▷ *When assessing the transferability of these findings to low-income countries, the following factors should be considered:* – *The availability of human and technical resources to combat fraud* – *The acceptability and costs of the interventions*
EQUITY	
➔ **There was no information in the included studies regarding differential effects of the interventions on disadvantaged populations.**	▷ *Resources needed to combat healthcare fraud are less available in disadvantaged settings.* ▷ *Interventions to combat healthcare fraud and abuse may increase inequity if they are not applied to these populations.*
ECONOMIC CONSIDERATIONS	
➔ **One study estimated the amount of anti-fraud expenditure, but the systematic review did not address any other economic considerations.**	▷ *Scaling up interventions to combat healthcare fraud and abuse will require resources.* ▷ *Local costings should be undertaken before scaling up these interventions.*
MONITORING & EVALUATION	
➔ **There is a lack of research assessing the effectiveness of interventions to combat healthcare fraud, and the limited number of studies available did not use robust research methods.** ➔ **Efforts to combat healthcare fraud are mainly focused on public expenses whether by government or by insurance organizations.**	▷ *Understanding the nature and the scale of fraud is a prerequisite to attempts to combat healthcare fraud and to prioritize efforts.* ▷ *More rigorous studies are required to determine the effects (including adverse consequences for patients' health outcomes) and the cost-effectiveness of interventions to prevent, detect, and respond to healthcare fraud.* ▷ *More attention should be paid to fraud and abuse related to private insurance organizations and fraud that results in direct costs to healthcare users.* ▷ *The nature of fraud makes it difficult to conduct effectiveness studies in experimental or controlled settings, but such studies are possible, as examples exist in other sectors.* ▷ *In detection systems, regardless of the extent of automation, a representative sample of patients (claims) should be tracked down and scrutinized as part of the fraud detection strategy. Such assessments might involve contacting providers or patients.*

*Judgements made by the authors of this summary, not necessarily those of the review authors, based on the findings of the review and consultation with researchers and policymakers in low-income countries. For additional details about how these judgements were made see: www.supportsummaries.org/methods

Additional information

Related literature

Gaitonde R, Oxman AD, Okebukola PO, Rada G. Interventions to reduce corruption in the health sector. Cochrane Database Syst Rev 2016; (8): CD008856.

Joudaki H, Rashidian A, Minaei-Bidgoli B, et al. Using data mining to detect health care fraud and abuse: a review of literature. Global Journal of Health Science 2015; 7(1): 194-202.

Bangpan M, Newman M, Tripney J, Matthews P, Niza C, Sinclair J. Fraud and error in financial, welfare and revenue services: a systematic map of the empirical research evidence with particular reference to 'notification of changes of circumstances'. Working Paper No 97. London: Department for Work and Pensions, 2011.

Li J, Huang KY, Jin J, Shi J. A survey on statistical methods for health care fraud detection. Healthc Manag Sci 2008; 11: 275–87.

Gee J, Button M, Brooks G, Vincke P. The financial cost of healthcare fraud. Portsmouth: University of Portsmouth, MacIntyre Hudson, Milton Keynes. Available: http://eprints.port.ac.uk/3987/1/The-Financial-Cost-of-Healthcare-Fraud-Final-(2).pdf. Accessed 2013 December 28.

Sokol L, Garcia B, Rodriguez J, West M, Johnson K. Using data mining to find fraud in HCFA health care claims. Topics in Health Information Management 2001; 22(1): 1-13.

Williams B. The ethical constraints of fraud & abuse regulations. Tennessee medicine: Journal of the Tennessee Medical Association 2002; 95(2): 53-56.

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Conflict of interest

None declared. For details, see: www.supportsummaries.org/coi

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This review should be cited as

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The summary should be cited as

Ciapponi A. What is the effectiveness of interventions to reduce healthcare fraud and abuse? A SUPPORT Summary of a systematic review. January 2017. www.supportsummaries.org

About certainty of the evidence (GRADE)

The "certainty of the evidence" is an assessment of how good an indication the research provides of the likely effect; i.e. the likelihood that the effect will be substantially different from what the research found. By "substantially different" we mean a large enough difference that it might affect a decision. These judgements are made using the GRADE system, and are provided for each outcome. The judgements are based on the study design (randomised trials versus observational studies), factors that reduce the certainty (risk of bias, inconsistency, indirectness, imprecision, and publication bias) and factors that increase the certainty (a large effect, a dose response relationship, and plausible confounding). For each outcome, the certainty of the evidence is rated as high, moderate, low or very low using the definitions on page 3.

For more information about GRADE: www.supportsummaries.org/grade

SUPPORT collaborators:

The Cochrane Effective Practice and Organisation of Care Group (EPOC) is part of the Cochrane Collaboration. The Norwegian EPOC satellite supports the production of Cochrane reviews relevant to health systems in low- and middle-income countries . www.epocoslo.cochrane.org

The Evidence-Informed Policy Network (EVIPNet) is an initiative to promote the use of health research in policymaking in low- and middle-income countries. www.evipnet.org

The Alliance for Health Policy and Systems Research (HPSR) is an international collaboration that promotes the generation and use of health policy and systems research in low- and middle-income countries. www.who.int/alliance-hpsr

Norad, the Norwegian Agency for Development Cooperation, supports the Norwegian EPOC satellite and the production of SUPPORT Summaries. www.norad.no

The Effective Health Care Research Consortium is an international partnership that prepares Cochrane reviews relevant to low-income countries. www.evidence4health.org

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