Visualizing the Effectiveness of Behavior Change in Combatting Fraudulent Healthcare Claims - Demo

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Abstract - The cost of healthcare is skyrocketing and a major component of the costs are losses due to fraud, waste, and abuse. The current approach, “Pay and Chase”, has proven to be ineffective at dealing with the problem. A new approach, “Detect and Prevent”, shows great promise as being more effective than “Pay and Chase”. This new approach, based on behavior change, introduces novelty and complexity that is not found in “Pay and Chase”. Since there is not a lot of experience with “Detect and Prevent”, it is imperative that the execution of a “Detect and Prevent” solution also include a novel User Interface / User Experience that hides all complexity and present the results in an intuitive way. We present the visualization used in a new “Detect and Prevent” solution, FraudLens, and how the visualizations help the user recognize and understand behavior change.

Keywords: Healthcare, fraud, waste, abuse FWA, user interface, behavior change, visualization

1 Introduction

The cost of healthcare is skyrocketing. While some of the cost is due to technical and clinical advances and R & D costs, a huge part of healthcare cost is due to losses to fraud, waste, and abuse (FWA). In a 2012 report from the Institute of Medicine (IOM), the losses to fraud, waste, abuse, etc. in the calendar year of 2009 was estimated at $750 billion, or nearly 30 percent of the total spend in healthcare. \textsuperscript{[1]} Current approaches to dealing with the problem are ineffective. They focus on the discovery of the fraud through complex data mining that occurs long after the fraud was first perpetrated and recovery of the lost funds through the court system. This is often nicknamed, “Pay and Chase”. A new approach, often labelled as “Detect and Prevent”, focuses on stopping the fraud early and then using software monitoring to prevent continuing instances of the same fraud. This approach shows great promise as being more effective than “Pay and Chase”. This new approach introduces challenges unseen in the “Pay and Chase” world due to the novelty and complexity of “Detect and Prevent”. Since there is NOT a lot of experience with this approach it is imperative that the execution of a “Detect and Prevent” solution also include a User Interface / User Experience that hides all complexity and present the results in an intuitive way.

2 Rethinking Law Enforcement for FWA

For “Detect and Prevent” to work, there are 3 essential elements that are not part of the “Pay and Chase” world. They are: 1) it is imperative that all instances of FWA are detected immediately 2) it is imperative to intervene with each and every instance of FWA immediately 3) the tone and language of the intervention for each instance of the same FWA must be gradually escalated over time.

Essential elements 1) and 2) above are not subjects of this paper and for the purpose of this paper, we presume that both elements have been met.

We focus on the 3rd essential element, because it is this element that benefits greatly from the use of visualization. This is the element that deals with behavior change on the part of the provider who is engaged in fraudulent claims submission. Behavior change is our measure of success so we need to understand and interpret any indication that behavior change and occurred or not.

The reason we focus on behavior change is that most of the money lost to healthcare FWA is small dollar frauds. Small dollars per incident committed by a lot of providers regularly over a long period of time results in total big dollar losses. Because the size of each instance of fraud is so small, there is no way to justify the use of law enforcement to stop the fraud. No District Attorney, no Attorney General will begin a criminal investigation over $100 healthcare claim upcode. It is precisely this unwillingness of the authorities to take action that encourages opportunists to engage in the fraud. Hence the reliance on behavior change. If we cannot prosecute, we can try to pressure the opportunistic fraudsters until they stop. In other words, Behavior Change.

2.1 Effectiveness of Behavior Change

Previous studies on behavior change have demonstrated the effectiveness of carefully tailored messages to effect behavior change in providers. The Volpp study in 2005 showed the 5% – 15% effectiveness of smoking cessation (the
behavior change). This result increased to 52% if the participants in the smoking cessation program had a monetary stake in the outcome.

In a second study FN that focused on improving hand hygiene in a hospital setting, the researchers found that showing the doctors clear evidence of their lack of hand hygiene (photographs of the contaminated hands of the doctors) and making this evidence ubiquitous (the picture was on every screen saver on every monitor in the hospital) achieved 100% compliance with the hand hygiene protocols. To maintain this level of compliance any violators were placed on a “shame list” that was open and available to the hospital staff.

When we compare the hand hygiene study to the imperatives for behavior change in FWA, we see parallels to the 3rd essential element for “Detect and Prevent”. Showing evidence of contaminated hands is analogous with the imperative to detect FWA immediately. The use of the photograph as a screensaver is analogous to the imperative to intervene. The use of the “shame list” is the escalation as the problem continues over time.

2.2 Visualizing the Behavior Change

When tracking behavior change it is important to capture the following information.

1. The problem, i.e. the original behavior
2. The expected change in behavior
3. The message used in communication the need for behavior change
4. The timeline of the problem
5. The timing of the tipping point from old to new behavior
6. The escalation of the tipping point
7. The timing of any relapse in the behavior change

The language in the email follows a pattern of escalation in tone and text that ranges through 5 levels. Each time a provider reaches the threshold for escalation, the event is represented by a red, up escalator icon as shown in the red rectangle in Figure 2.

2.2.1 Tracking Response

Tracking Behavior of Provider (Timeline)

Figure 1: Showing Time line of the Provider’s Behavior

Figure 2: Escalator and de-escalator, email counter

The first 2 levels presume some kind of typos or transposition of numbers. The tone and text of level 1 and 2 focus on correction of the simple mistake. The next 2 levels deal with provider ignorance of proper coding and the email tone and text focus on education and retraining.

3 Conclusions

Any improvement in the fight against FWA in healthcare will require new approaches that focus on detecting and dealing with the FWA in the early stages. This requires a focus away from law enforcement and recovery of lost money to behavior change and prevention of the loss. The use of visualization makes it easier to track and understand the effectiveness of behavior change. This paper and demo shows one implementation of this visualization.

4 References

