

Smartcards and prescription shopping

Health & welfare smartcards have special potential advantages for combating fraud, especially in offline environments where points of service are not connected to central mainframes. This paper looks at prescription shopping, and shows how smartcards can detect this problem at source, without having to transmit and centralise sensitive patient information for every single clinical encounter.

Lessons from smart credit & debit cards

EMV¹ smart credit/debit cards represent a comprehensive strategy for card fraud, with significant lessons that are applicable to health & welfare. While smartcard security is usually thought of in relation to skimming and counterfeiting, the full range of crime fighting potential has more to do with the intelligence and multi-programmability of smartcards.

One of the key strengths of smartcards is their ability to *keep tabs on transactions and to detect abuse without terminal equipment having to go online to backend mainframe databases*. A smartcard can automatically detect and flag a range of anomalous transactions. Sophisticated business rules can be programmed into the chip, including the use of different thresholds in different places, such as known high risk locations.

Application in health & welfare

Smartcards can autonomously enforce all sorts of entitlements rules and “reasonableness tests”. Primary healthcare in Australia covers a notoriously diverse range of settings, including suburban surgeries and pharmacies, rural & remote practices, base hospitals, community care, mobile public health screening units, and mobile out-patient clinics. It is often prohibitively expensive or outright impossible to connect to backend data-bases for real time fraud monitoring. Furthermore, *centralised monitoring of every single transaction in order to weed out a tiny minority of fraud cases jeopardises the privacy and security of the vast majority of law abiding users*.

Smartcards can directly address two major forms of Medicare fraud:

1. **Prescription shopping**, where an individual sees a number of providers in quick succession to obtain drugs or some other benefit, can be detected by the card without transmitting sensitive data over the network, by checking e.g. the time between doctor visits, or the number of scripts written in a period.
2. **Fraudulent claiming by providers** for item numbers not actually delivered, or the counterfeiting of claims by administrative clerical staff (see *Babystep 6*).

Detecting prescription shopping

The health system today is vulnerable to prescription shopping primarily because at the time a script is written or medication dispensed, clinical and pharmacy systems are typically not online to backend systems that might police usage and detect abuse. But smartcards can monitor usage autonomously and enforce rules offline, without “calling back to base”.

In the example illustrated below, when a doctor prescribes a drug, certain details are written to the patient’s smartcard, in an event summary digitally signed with the doctor’s professional smartcard. The full prescription might be lodged elsewhere and processed in a number of different ways, for reasons that need not concern us here. The important thing is that the patient smartcard is able to carry some history of recent prescriptions.

For each new prescribing event, the doctor’s local software (or that of the pharmacist) is then able to check the recent history, and generate an alert if rules seem to have been breached. For instance, the smartcard can keep track of how many scripts have been written in a given period of time. Or if a patient has special entitlements, to schedule 8 medications for instance, then more specific rules could be coded into their card. An attempt by the card holder to obtain additional prescriptions could be detected simply by checking the smartcard for details of pending scripts or the recent prescribing history. Ideally pharmacy systems would ‘close the loop’ by updating the card once dispensing is complete.



¹ EMV stands for *Europay-MasterCard-Visa*, the founding members of the standards consortium of credit card companies.