Predictive Modeling for Healthcare

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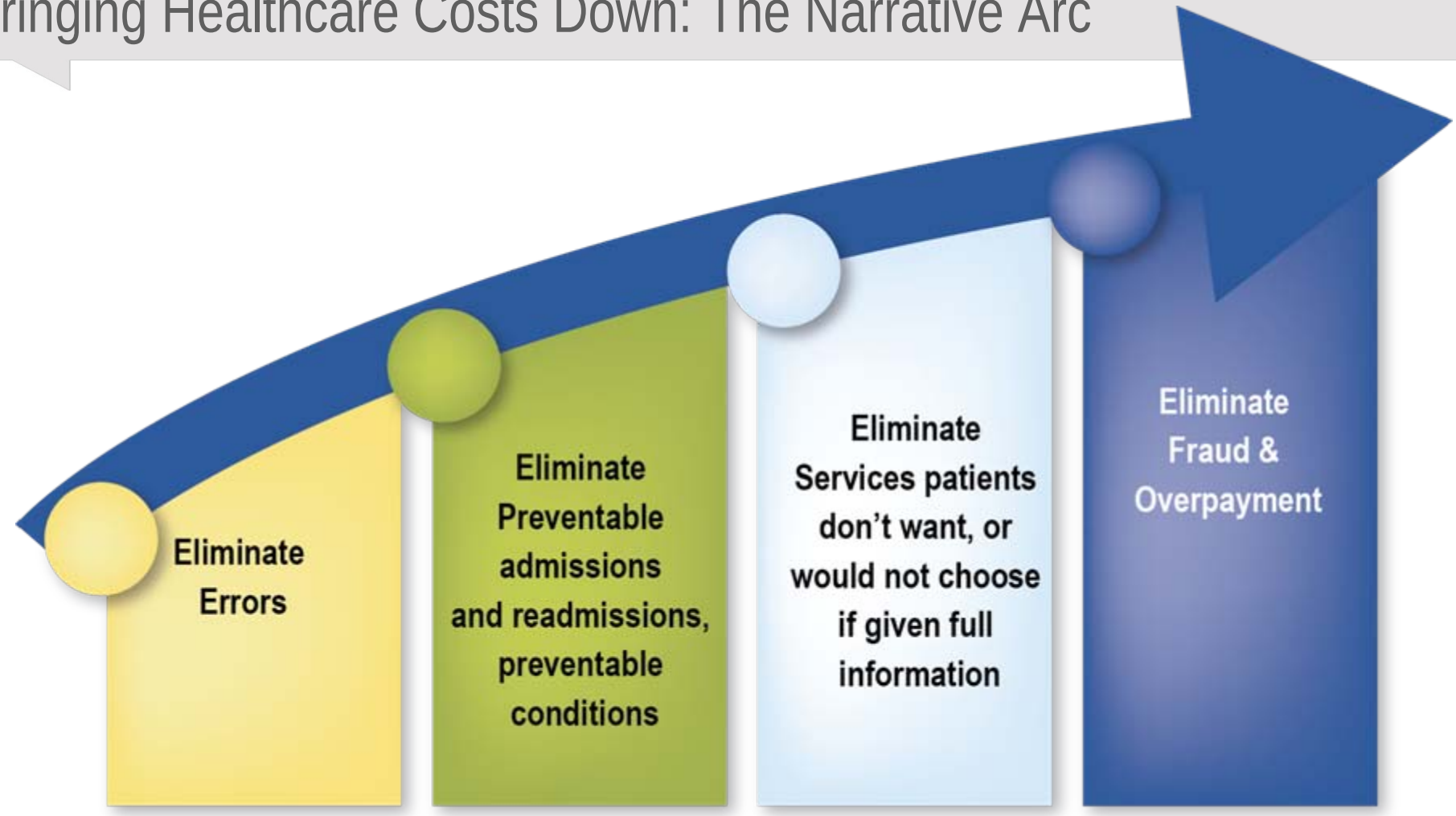
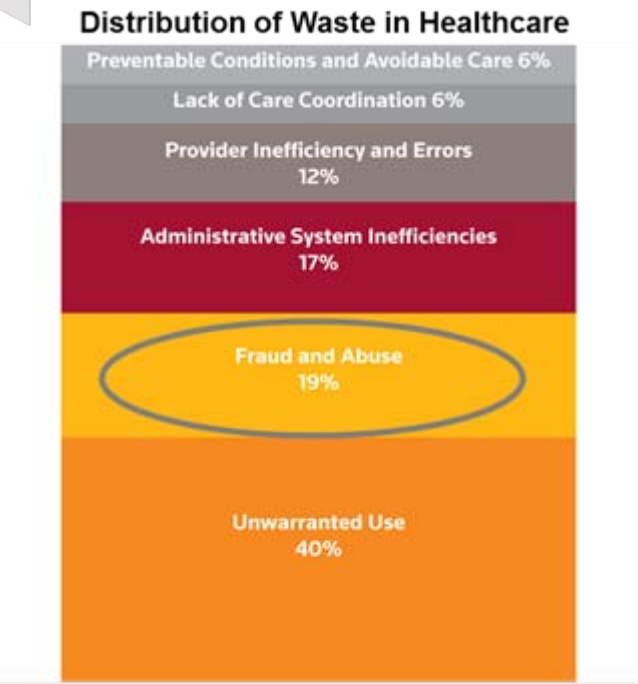
Participants & Agenda

- Participants
  - Dr Stephen Walker, Chief Medical Officer, CNSI
  - Nilakantan Rajaraman, Product Manager, CNSI
- Agenda
  - Fraud & Abuse in Healthcare
  - CNSI's Approach to Detecting Fraud
  - Other products in Predictive Modeling

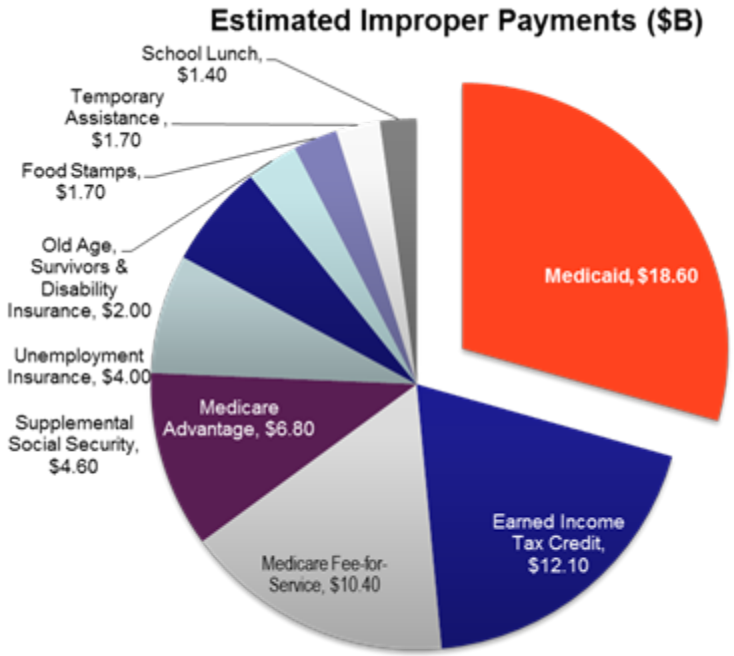
Bringing Healthcare Costs Down: The Narrative Arc



Cost of Fraud, Abuse and Waste



Source: Thomson Reuters, 2011

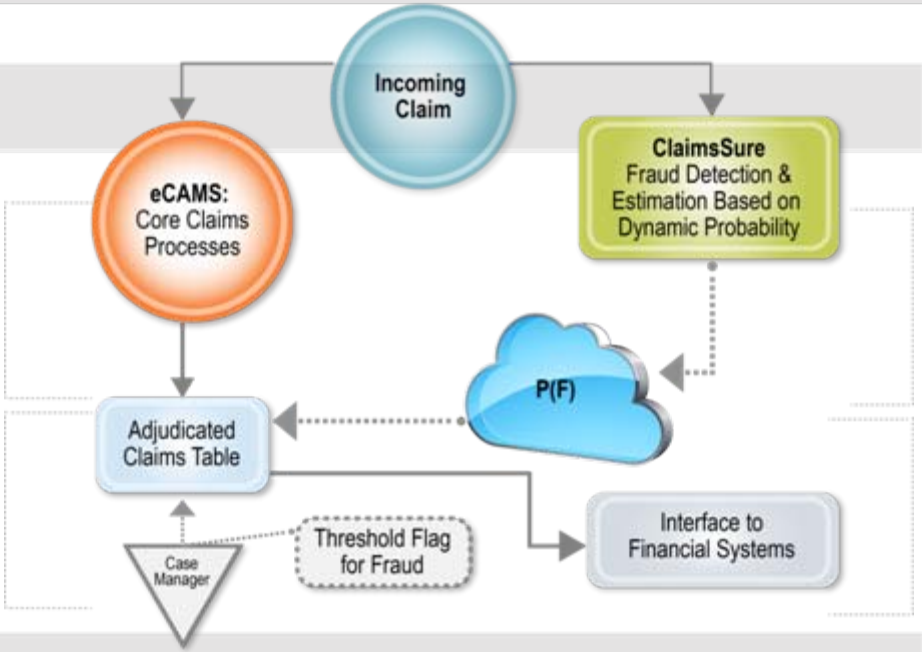


- **Goal: Avoid "Pay & Chase" -- Ineffective & Expensive**
  - ✓ **Recovery of fraudulent claims paid < 10% of detected cases**
  - ✓ **Incentivizes one-off fraud**

ClaimsSure

Two Step approach to Fraud

- Deterministic: Edits for defining Fraudulent Scenarios
- Probabilistic: Dynamic Estimator for Probability of Fraud
- Real time Probability of Fraud for incoming claims
- Determine whether to pay based on P(F)



A dynamic method of calculating probability

- Conditional probability estimation for each incoming claim
- Continuous Learning

Deterministic Edits vs Inference Engine

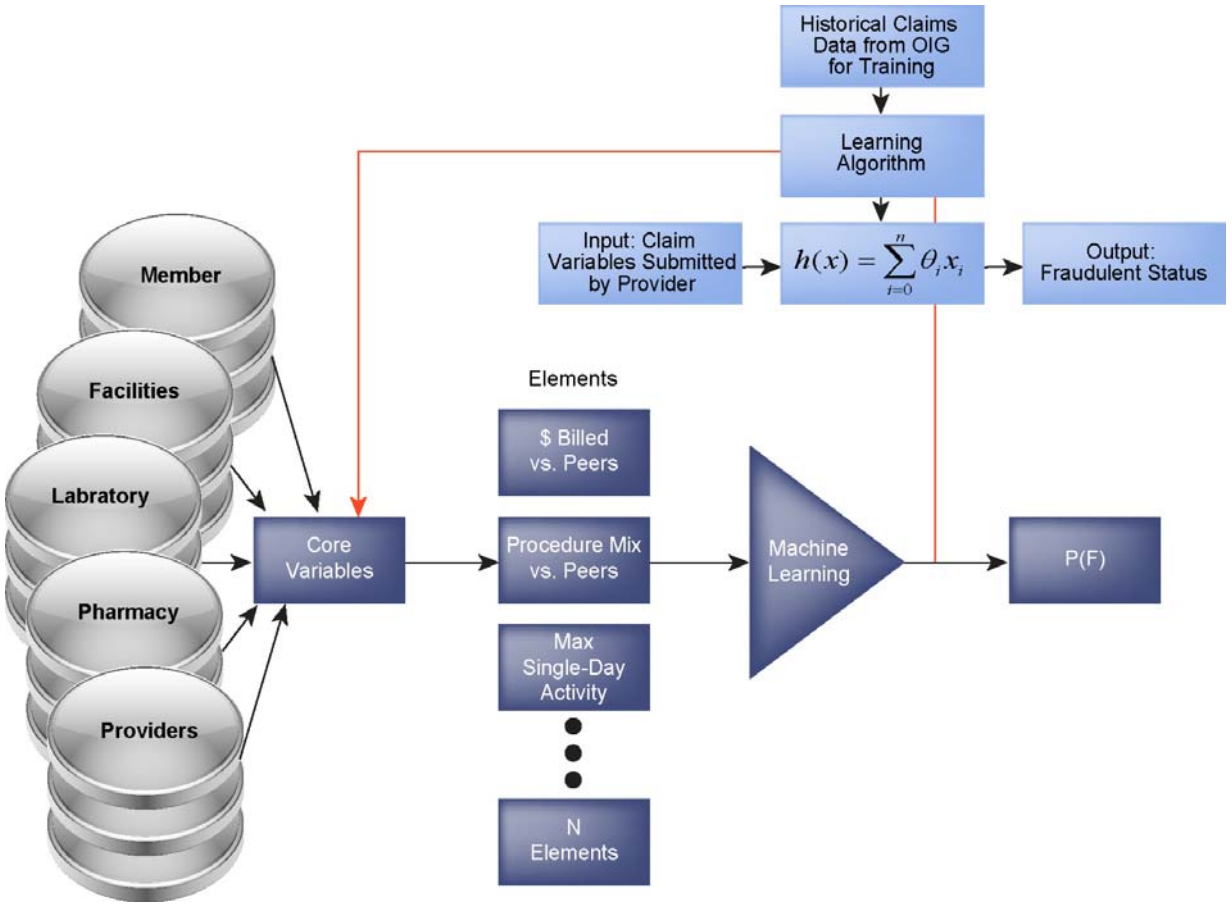
Deterministic Edits

- Powered by Business Rules Engine like RuleIT
- Examples: Medically Unlikely Edits. Such as a surgery on a member's already amputated arm or similar medical combinations that are unfeasible – such as pregnancies for men etc.

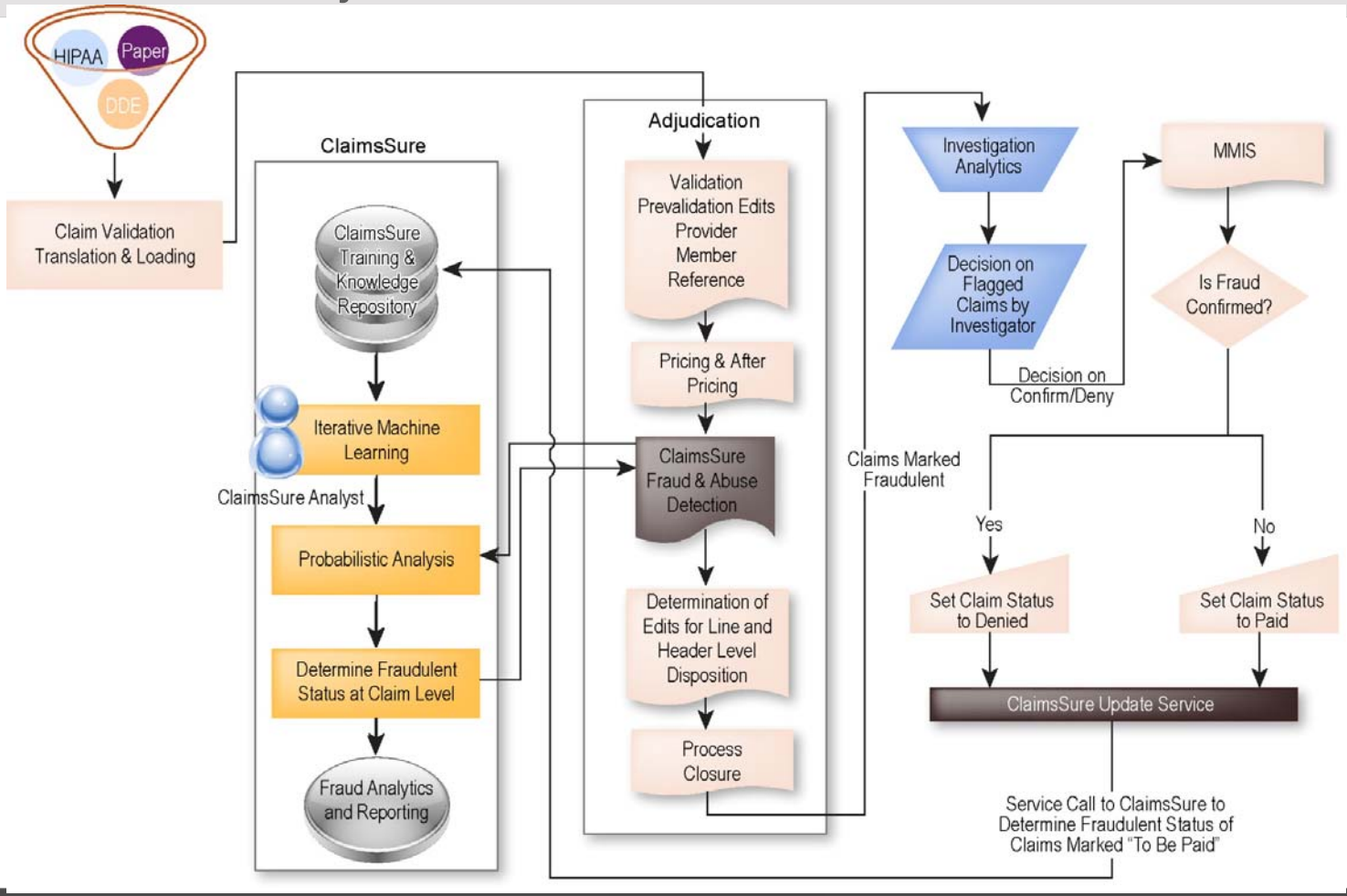
Inference Engine

- Maps the individual claim against a larger set of similar fraudulent data points and estimates the probability of fraud under such scenarios
- Dynamically learns from every single instance of a claim processing
- Probabilistic
- Example: Gaming the system for most profitable codes repeatedly following a specific pattern of abusive claims

ClaimsSure: Estimating Fraud



ClaimsSure: In-line Adjudication



ClaimsSure Benefits

Deterministic Edits

- Probability inference approach to detecting fraud
- Dynamic estimation based on history data
- Machine learning to make the system understand new methods of fraud as they happen
- User defined threshold to set parameters of extent of fraud
- Helps manage workload to case managers based on available resources and intended value
- Helps increase fraud detection by 60% compared to deterministic methods
- Calculations are processed in real time

Predictive Modeling for Healthcare: CNSI Products

- Decision Support Systems
  - Avoiding re-admissions
    - Payers & Providers
  - Test Necessity Criterion
    - Payers & Providers
  - Diagnosis Support
    - Providers

Implementation Details

- ClaimsSure
  - Under implementation in the State of Michigan
  - Proposed savings ~ $20 Million/ Year
  - Is called real-time, during adjudication