

## Allergy Documentation in EHR Opportunities and Risks: How Can We Make It Better?

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No disclosures

### Opportunity vs Risk

- 1/10 of hospital admissions adverse drug
- Many more office visits
- Many drug reactions with no encounter
- Clinical decision support at point of care
  - Prevent allergic and intolerance reactions
  - Increase risk and cost of alternatives
  - Decrease efficacy of treatment

### Allergies and Intolerances

- “Allergy” often means allergy or intolerance
- Mechanism is important, but the details of the history more important
- Get the history and the mechanism usually is apparent

### Allergy or Intolerance Reaction

Clinical definition: unexpected signs and symptoms following exposure to a substance which are expected to recur predictably after re-exposure

### Episode vs Condition

- Items on the list of allergies and intolerances are conditions that represent a clinical judgment based on a history of one or more episodes of reaction
- The clinical judgment of the entering provider may be based on the judgment of another, including the patient



## Coded Data, Truth, Consequences

- Coded data, discrete data is semantically interoperable, defined
- Coded data is sanctified; assumed to be true
- Used in decision support, with or without computer and assumed to have specific meaning

## Severe allergy to penicillin

55 yo male whose mother says, his pediatrician said when he was 5 years old he might die if he took penicillin again

55 yo male spent 24 hours in ICU last month and required intubation because of anaphylaxis that began 10 minutes after a penicillin injection

## Information Models

- Different EHRs capture structured data about allergy reactions in different models
- Information model of an allergic reaction is not the same as a model of the list of allergies and intolerances

## Simplest Allergy Model

- Specific substance or compound with indication of allergic: yes or no

## Data Elements for Allergic Reaction

- What happened
- Who says
- How certain
- How bad
- How dangerous
- How likely to happen again

## Varying Modeling Efforts

- Australian: defines immunologic types
- Canadian: includes propensity
- Intermountain healthcare: 30 year effort
- HL7 workgroup reviewing allergy model



## Is there a missing model?

The Reality Model: A model for the list of allergies and intolerances

## Misattributions

20 yo female seen in student health with sore throat, ear pain  
given prescription for antibiotic which she does not fill  
over next 24 hours slightly itchy rash spreads from trunk to extremities  
returns to student health; diagnosed with "severe allergy", given prednisone

## Guilt by Association

- Extrapolation to class of medications
  - Antibiotics
  - Narcotics
  - Cyclooxygenase inhibitors
  - ACE inhibitors
- Extrapolation of intolerance as allergy
  - erythromycin

## Disproven Theories

Iodinated radiocontrast media reactions attributed to iodine allergy  
Seawater contains iodine, therefore seafood allergy related to iodine sensitivity  
Some radiology departments still ask about seafood allergy before administering contrast

## Legacy Data Carried Forward

- NIH Clinical Center adopted EMR in 1976
- Replaced with commercial system 2004
- Review of allergy data in legacy system
  - Uncertainty about substance, misspellings
  - Lack of attribution of source
  - Lack of severity indication
- Result: legacy data not carried forward

## Better to Play It Safe?

Alternatives are:

- Likely to be more expensive
- May have more potential side effects
- May have unintended consequences
- May be less efficacious



## What can make it better?

- Reconcile allergy lists
- Investigate past reactions
- Allergy referral
- Work toward a consistent information model
- Clinical decision support for allergy lists

## Reconcile Allergy Lists

- Reconciliation on conversion to EHR
- Reconciliation on annual basis
- Update at office visits

## Investigate Reaction History

- Record review
- Outside records for missing data
- Pharmacy records
- Retrieval of medication vials

## Call a specialist

- Resolve history based on mechanisms
- Tests?
- Pre-treat
- Desensitization

## Consolidated Data Model

- Harmonize data models
- Agree upon a framework for exchange
- Use the data from harmonized model to improve the model and clinical decision support
- Create clinical decision support for populating the list of allergy & intolerance

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