Probabilistically Populated Medical Record Templates

2013 AMIA Student Design Challenge

Tristan Naumann
Marzyeh Ghassemi
Andreea Bodnari
Rohit Joshi

November 19th, 2013
Introduction

**Dynamically** populate medical record templates with **context-aware information** from related notes to sections such as:
- patient history
- physical examination
- assessment and plan
- medications
- counseling
1. **Redundant** information across patient records is underutilized
Problem Overview

1. **Redundant** information across patient records is underutilized

2. **Copy-paste** edit process within records is error prone

Sources:
Problem Overview

1. **Redundant** information across patient records is underutilized

2. **Copy-paste** edit process within records is error prone

3. **High quality** records consume clinical practice time
Engage patients in clinical process

Learn the right data for the right context:
- patient-relevant medical context
- medically similar patient cohort

Create customized templates by clinical role
Step 2: Select Diagnosis

- Low Back Pain
- Sciatica
- Disk Symptoms
- Urinary Symptoms Present
- More

Step 3: Select Relevant Template Categories

- REVIEW OF SYSTEMS
  - Cardiovascular
- REFERRAL
  - Orthopedics
- PATIENT EDUCATION
  - Home Care Tips
- More

Patient Name: Marzyeh Ghassemi

28 year old female presenting with low back pain that started 2 days ago.

Read and confirm the complete summary »

History of Present Illness

28 year old came with low back pain that started 2 days ago after he lifted few heavy boxes. He was helping his friend move his apartment.

- Pain Intensity: 7/10
  - Type: Achy pain

Medications

- Pain killers: Tylenol or ibuprofen
- Topical pain relievers like bengae

Counselling

Treatment Plan

Typically resolves in 7-10 days but may last up to six weeks.
1. **Controlled Testing**  
Compare change in documentation time

2. **Active Learning**  
Measure template errors continuously by majority voting

3. **Expert Opinion**  
Feedback from clinicians about template errors
Summary

Benefits

- Leverage patient wait time
- Generate relevant content
- Focus clinical time on patient interaction

Considerations

- Possible source of error
- Separation of template and clinical judgment
Questions?