Usability and Access

CHOP: Scenario-based design and test
Center for Biomedical Informatics (CBMi)
Dean Karavite
Robert Grundmeier, MD
Requirements: Understanding Our Users

- Study Representative Users
  - Contextual Inquiry, Shadow, Interview, Survey...
  - Utilize EMR data

- Define their task flow
  - Develop Use Cases

- Use cases as the foundation of the entire development process
  - Design to the use cases
  - Usability test via use cases
  - System test via use cases
  - Guide questions in post deployment surveys...
System Independent Use Cases

- Develop use cases that describe interaction with any system

<table>
<thead>
<tr>
<th>Use Case ID:</th>
<th>5.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Case Title:</td>
<td>Synagis: Subsequent dose scheduling</td>
</tr>
</tbody>
</table>
| Precondition(s): | Use Case 3.0 Patient Approved for Synagis  
Use Case 4.0 Patient has Dose 1 |
| Primary Actor: | Nurse, “The User” |
| Additional Actor(s): | Patient, Parent/Guardian |
| Primary Use Case - Sequence of actions: | User identifies date of previous dose  
Calculate recommended date range for next dose  
Access patient schedule  
If patient has no future scheduled encounters  
Call Patient Parent/Guardian  
Schedule encounter during range  
Record in System |
| Alternate Use Case(s): | 5.1 Patient has future encounter scheduled during recommended range  
5.2 Patient has future encounter scheduled, but not during recommended range |
### Use Case Styles/Formats

#### Formal/Detailed

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#### Informal/Scenario

A patient has received their first dose of Synagis.

The nurse calculates the date range for the next dose.

The nurse checks the schedule to see if the patient has an appointment scheduled during the date range. Nothing is scheduled.

The nurse calls the patient’s parent/guardian to schedule a visit during the date range to administer the injection.
Use Case Validation

• Present use cases to end users
  – Scenario based format, simple diagrams...

• Determine use case accuracy
  – “Is this what you do/would like to do?”

• Stratify use cases
  – How important is it?
  – How frequently is it encountered?
  – How satisfied are users with the current process?

<table>
<thead>
<tr>
<th>Use Case</th>
<th>Importance</th>
<th>Frequency</th>
<th>Current Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Case 1</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Use Case 2</td>
<td>High</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Use Case 3</td>
<td>Low</td>
<td>High</td>
<td>Med</td>
</tr>
<tr>
<td>Use Case 4</td>
<td>Low</td>
<td>Low</td>
<td>Med</td>
</tr>
<tr>
<td>Use Case 5</td>
<td>Low</td>
<td>High</td>
<td>High</td>
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</table>
Design to the Use Cases

<table>
<thead>
<tr>
<th>Premature Infant</th>
<th>Chronological Age: 5 months</th>
<th>Gestational Age: 30 5/7 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant</td>
<td>Corrected Age: 3 months</td>
<td>Birth Weight: 1.686 kg</td>
</tr>
</tbody>
</table>

RSV and Synagis: Patient is Candidate for Palivizumab (Synagis)

Criteria: Chronological Age < 24 months, Chronic Lung Disease (CLD), Bronchiolitis

Will submit for approval? Yes [ ] No [ ]

View AAP Policy Statement

Initial Submission Date: 5/4/2011
Initial Submission Response: Approved [ ]
Doses approved: 5 [ ]

Date Range: 11/5 - 11/7
Status: Given
Date: 11/4/11
No Appt.
Weight Estimate: 2.8 kg
3.1 kg
Order: Received
Ordered

Comments: 

![Diagram showing use case flow]

- Identify patient who may qualify for Synagis
- Submit for Coverage
- Perform Chart Review
- Submit Insurance Form
- Approved/Denied
- Decide to Submit for Appeal
- Yes
- Physician Letter
- Submit Appeal
- Approved/Denied
- Denied
- END
- Order Doses
- Approved/Denied
- Denied
- Repeat for all doses
- Schedule Dose
- Administer Dose
Validate Use Case Based Designs

- Develop sequential dynamic mockups that represent each step in a use case / series of use cases

- “Walkthrough” these mockups with end users
  - Collect subjective and objective data from users
  - Will almost certainly discover new use case details in the process

- Iterate, iterate, iterate
**Premature Infant Assistant**

- **Chronological Age:** 5 months
- **Corrected Age:** 3 months
- **Gestational Age:** 30 5/7 weeks
- **Birth Weight:** 1.686 kg

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**RSV and Synagis**

- Patient is Candidate for Palivizumab (Synagis)

**Criteria:**
- Chronological Age < 24 months, Chronic Lung Disease (CLD), Bronchodilator

**Initial Submission Date:** 9/4/2011
**Initial Submission Response:** Approved
**Will submit for approval?** Yes

**Insurance Provider:**
- **Insurance Provider:**
- **Synagis Distributor:** ACRO

**Doses approved:**

<table>
<thead>
<tr>
<th>Dose</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>Date Range</td>
<td>11/1 - 11/7</td>
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- KM

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- ACRO

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- Ordered  
- Select...

**Comments:**
Schedule in EMR as any other appointment (Well Visit or Nurse Visit)
**Premature Infant Assistant**

**Chronological Age**: 5 months  
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### RSV and Synagis

Patient is Candidate for Palivizumab (Synagis)

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**Comments**: [ ]
Challenges with Use Cases

• Difficult to have everyone think in terms of use cases
  –  Mockups/UI designs are more accessible

• Difficult to develop and maintain (if highly detailed)

• Difficult to provide as a deliverable that developers can actually work from