Use of the NGOMSL model for a task help document

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Introduction

The Duke University Medical Center’s eBrowser is a Web-based tool that runs in Microsoft Internet Explorer (IE), version 5.5 or above. The DUMC eBrowser enables health care providers to access patient health records via the intranet. The eBrowser is a convenient tool for finding potential research subjects. The GOMS analysis below demonstrates one way to search for and identify an eligible study subject using the eBrowser. The finished analysis will become a task description as a part of the Standard Operating Procedure (SOP) manual for research studies.

Rationale

The purpose of this analysis is to exploit the NGOMSL model for a research study. Because NGOMSL is a structured natural language well suited to representing methods and selection rules (Kieras, 1996), the NOMSL model can be used to establish a subject searching process for a research study. With its ability to provide predictions of operator sequence, execution time, and time to learn the methods (John, 1996) it is appropriate for this task.

Assumptions

- The reviewer is familiar with the screening form.
- The subject screening form lists all the eligibility criteria.
- The subject screening form and eBrowser are sized and aligned conveniently on the display screen.
- The reviewer’s hand is on the mouse.
• The analysis will not be timed as it is of less importance than accomplishing the tasks accurately and the purpose of this document is to be a guide for the novice data reviewers.

NGOMSL Model

Method for goal: Identify research subject.

Step 1. Accomplish goal: find subject.

Step 2. Decide: If no subject found, then return with no subject to enroll.

Step 3. Return with subject to enroll.

Method for goal: find subject.

Step 1. Accomplish goal: evaluate subject eligibility.

Step 2. Decide: If subject not found, then return with no subject found.

Step 3. Return with subject.

Method for goal: evaluate subject eligibility.

Step 1. Accomplish goal: create OR list.

Step 2. Get next subject from OR list.

Step 3. Decide: If no more subjects, return with subject not found.

Step 4. Accomplish goal: check eligibility.

Step 5. Decide: If subject not eligible, return with subject not found.

Step 6. Accomplish goal: fill out form.

Step 7. Return with subject.

Method for goal: create OR list

Step 1. Logon to eBrowser.

Step 2. Click “OR” item on menu bar.
Step 3. Wait for new window.

Step 4. Set Services filter to “CAR”.

Step 5. Set “Choose Date” filter to tomorrow’s date.

Step 6. Click on Surgery Search button.

Step 7. Return goal accomplished.

Method for goal: check eligibility.

Step 1. Get next criterion from criteria list.

Step 2. Decide: If no more criteria return with subject eligible.

Step 3. Decide: If subject does not match criteria return with subject not eligible.

Step 4. Go to step 1.

Method for goal: fill out form.

Step 1. Open online screening form.

Step 2. Fill in subject’s values for all eligibility criteria.

Step 3. Return with goal accomplished.
References

John, B. E. (1990), Extensions of GOMS analyses to expert performance requiring perception of
dynamic visual and auditory information. In proceedings of CHI, 1990 (Seattle,

Kieras, D. (1996) A guide to GOMS model usability evaluation using NGOMSL, University of
Michigan.
Appendix

Visit: Screening

Date: __________ Admit date: ______________ Discharge date: ____________
MRN: _______ Pt Name: _______________________________________
DOB: __________ Age: __________ Gender: _____ Race: ___________
Patient Location in hospital: _________________________________________
Admitting diagnosis: _______________________________________________
Planned surgery: ___________________________________________________
Surgeon’s Name: _________________________________________________
Planned OR Date/Time: ____________________________________________
Allergies & Reactions: _____________________________________________

Vital Signs: BP__________________ HR_____________ Temp____________
Ht __________________ inches_ Weight __________________ Lbs_

Contact Information:
Home Telephone Number: _____________ Alternate Number: _____________
Home Address: ___________________________________________________
                                  Street      City   State  Zip

Past Medical History:

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

List of

Current Medications (at the time of screen): See med log

Laboratory Results (collect data if available): Date: _________________
CPK ________________________________
WBC _______________________________
Absolute neutrophil count _______________
Platelet______________________________
Creatinine ____________ Creatinine Clearance ____________

Obtain serum HCG, if applicable. _________________________________________
Inclusion Criteria: Patients will be eligible for inclusion in the study if they meet the following criteria:

1. Age $\geq 18$ years of age  
   Yes______ No_______

2. A female patient of childbearing potential: Serum HCG negative?  
   Yes______ No_______ NA ______

3. Does patient have a risk factor for increased MRSA?  
   Yes______ No_______

   (Planned cardiac surgery procedures meeting current Duke Criteria to receive antimicrobial prophylaxis active against MRSA: Patients will meet at least one of the following criteria which are the same as for prophylaxis with Vancomycin)
   a. Preoperative hospitalization $> 48$ hours?  
      Yes______ No_______
   b. Transfer to Duke from outside facility?  
      Yes______ No_______
   c. Previous history of MRSA?  
      Yes______ No_______
   d. Patient deemed to be high risk for MRSA by the attending surgeon, due to a complicated past medical and/or surgical history?  
      Yes______ No_______

Exclusion Criteria:

1. Hypersensitivity to Daptomycin?  
   Yes______ No_______

2. Inability to receive standard prophylaxis agents (cefuroxime and rifampin) for any reason?  
   Yes______ No_______

3. Staph bacteremia at time of enrollment?  
   Yes______ No_______

4. Staph Aureus or CNS pacemaker/defibrillator infection within 18 months?  
   Yes______ No_______

5. Emergent CABG?  
   Yes______ No_______

6. Wt $> 150$ kg or $< 50$ kg?  
   Yes______ No_______

7. Pt considered unlikely to survive at least 7 days d/t underlying condition?  
   Yes______ No_______

8. Cr Clearance $< 30$ml/min using Cockcroft-Gault equation?  
   Yes______ No_______

9. Severe Neutropenia (absolute neutrophil count $< 0.500 \times 10^3$ /µL)?  
   Yes______ No_______
Yes_____ No_____

10. Pregnant, lactating or nursing women?   Yes_____ No_____

11. Patients considered unlikely to comply with study procedures or to return for the scheduled post treatment evaluation?   Yes_____ No_____

12. Any other condition that in the opinion of an investigator, would confound or interfere with evaluation of safety or efficacy of the investigational medication, or prevent compliance with the study protocol?   Yes_____ No_____

If yes describe: _____________________________________________________
_________________________________________________________________
_________________________________________________________________

*NOTE: If patient answers no to any inclusion criteria or yes to any exclusion criteria, they will be disqualified from participating in Daptomycin study.*