The Elicitation and Representation of the Adult Outpatient Chemotherapy Process

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Presentation Overview

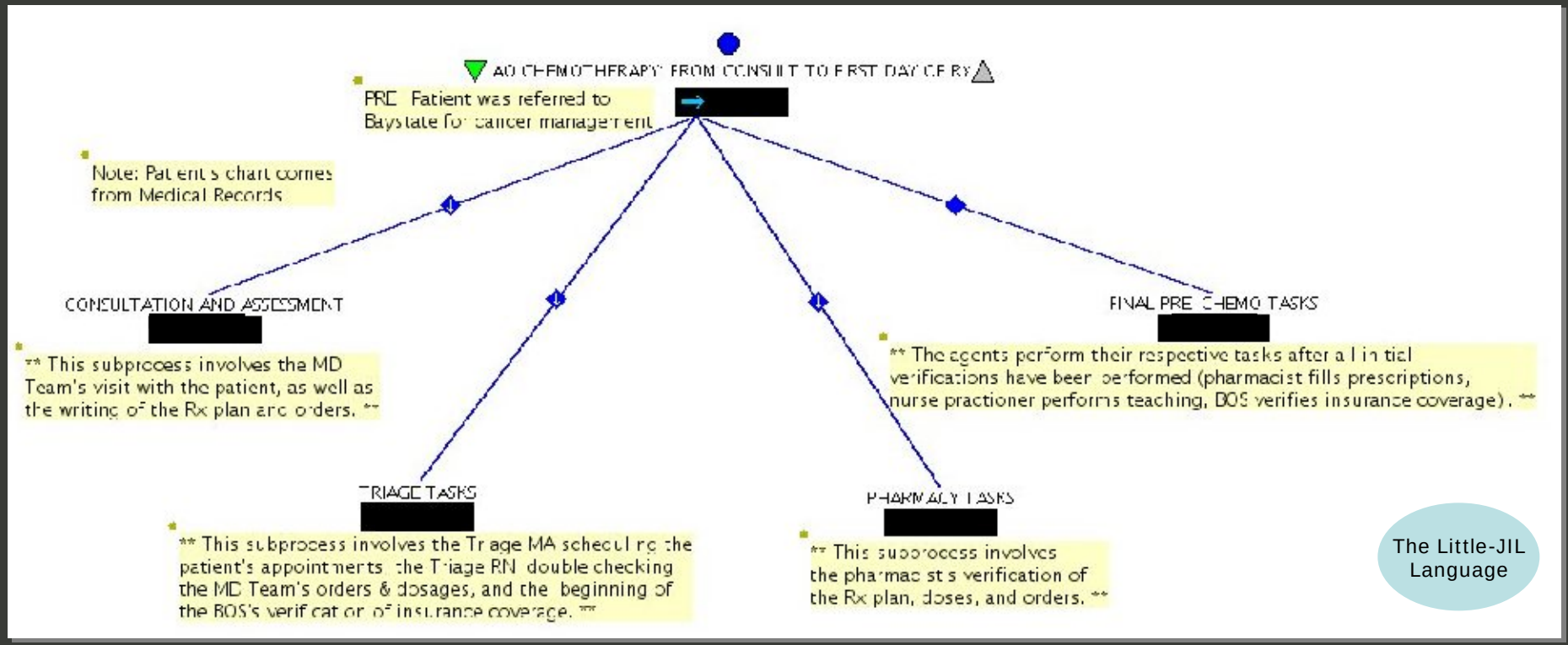
- Introduction to the chemotherapy project
- Chemo Process
- Process Representation
- Process Elicitation
- Observations

Chemotherapy Project

1. Medical safety issues
2. Stakeholders and risks
    1. Eliciting the process
    2. Not eliciting the process
3. Goals of project
4. Approach

AOChemo Process Definition

Difficulties...



Adult Outpatient Chemotherapy: From Consult to First Day of Treatment

Based on the AC Chemo treatment, this is the high-level process created.

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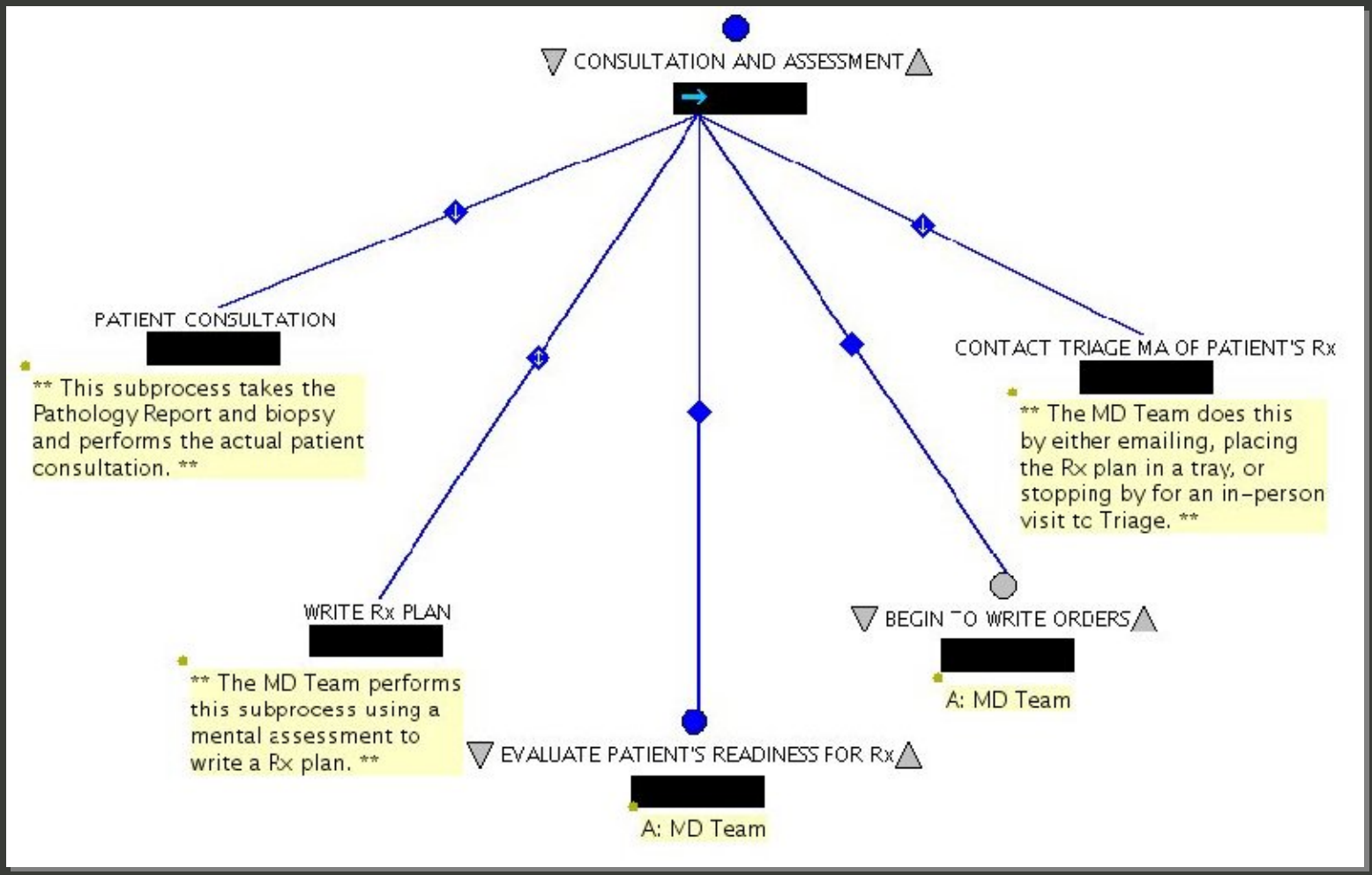
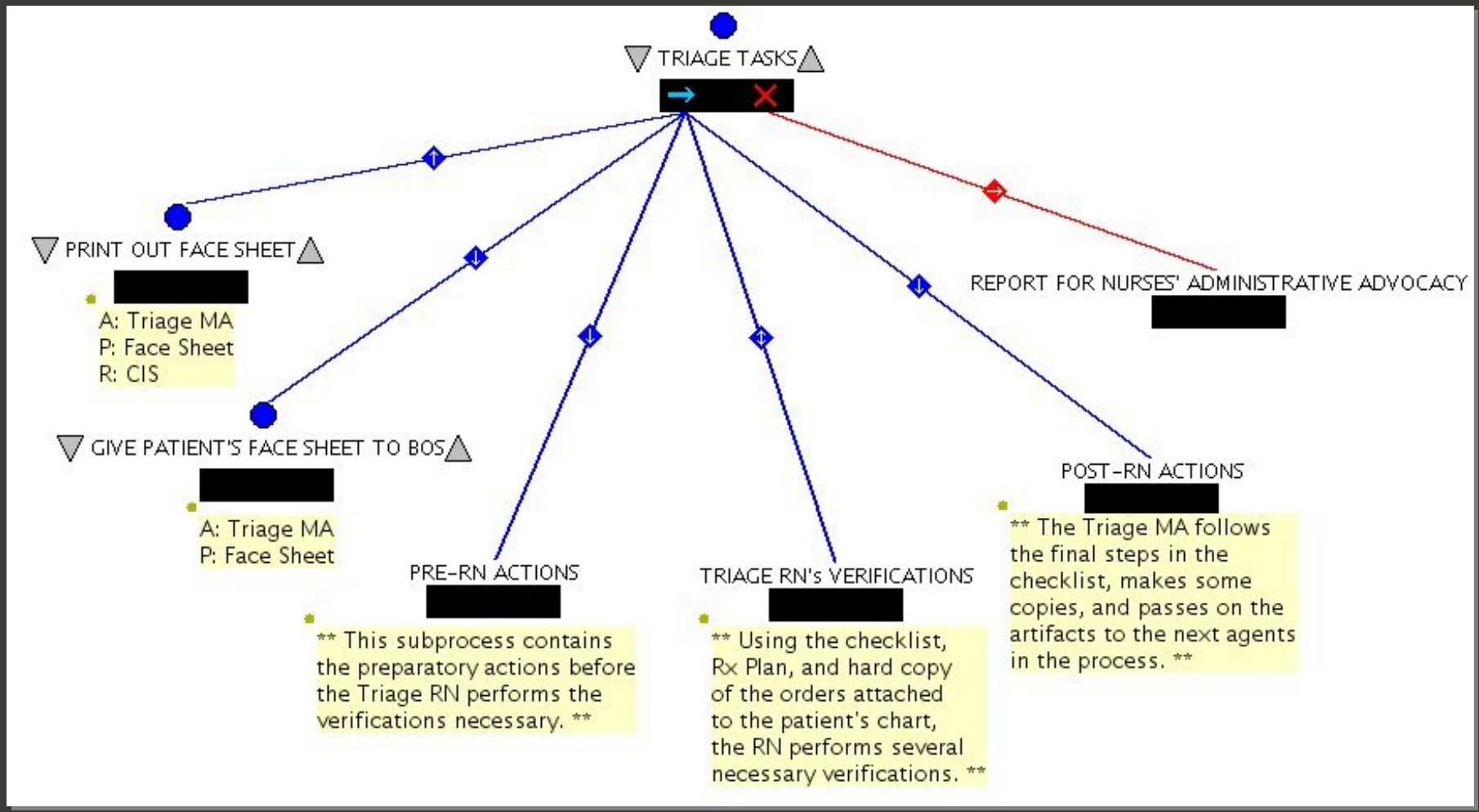
Consultation & Assessment

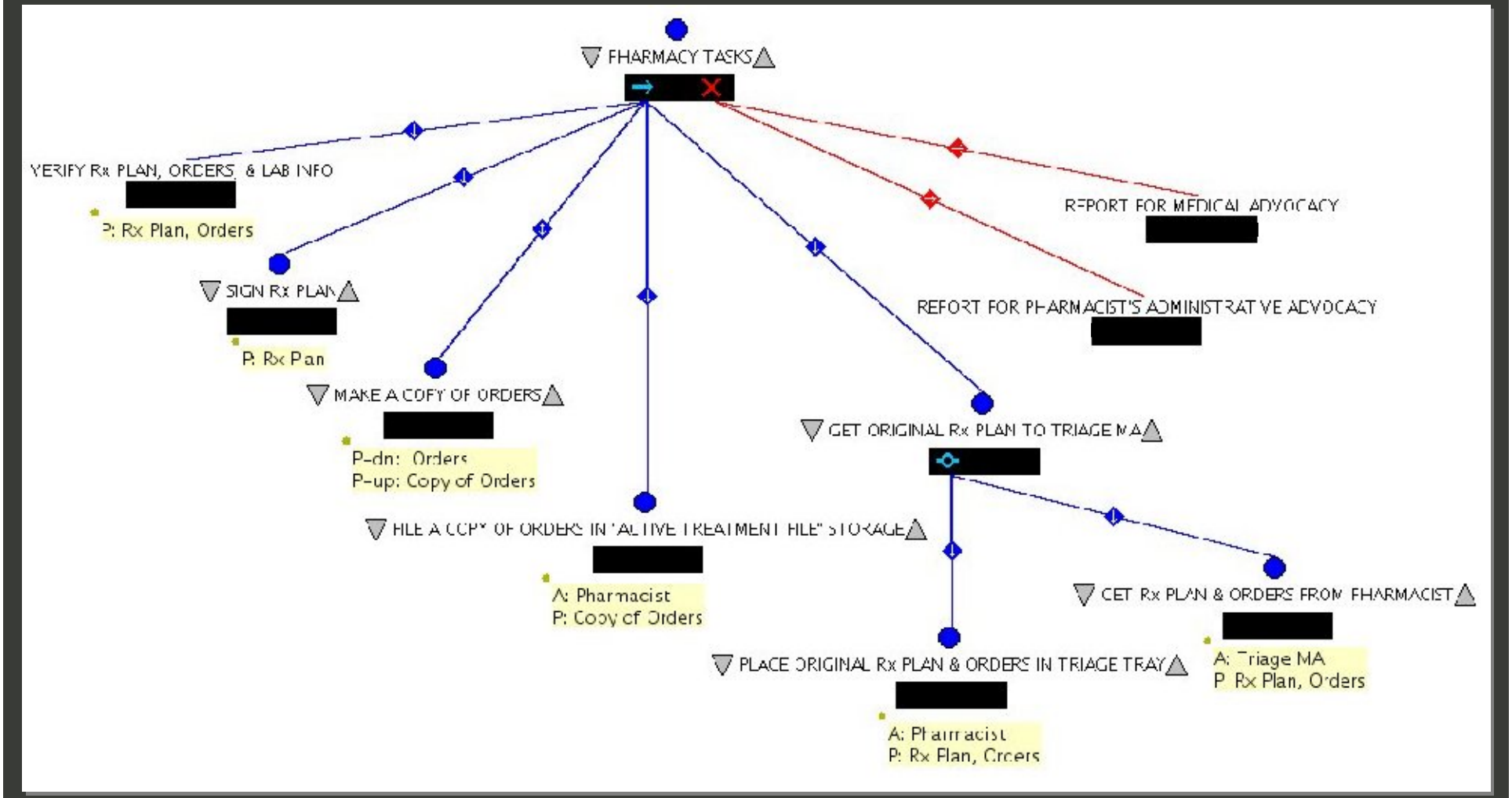


Triage Tasks



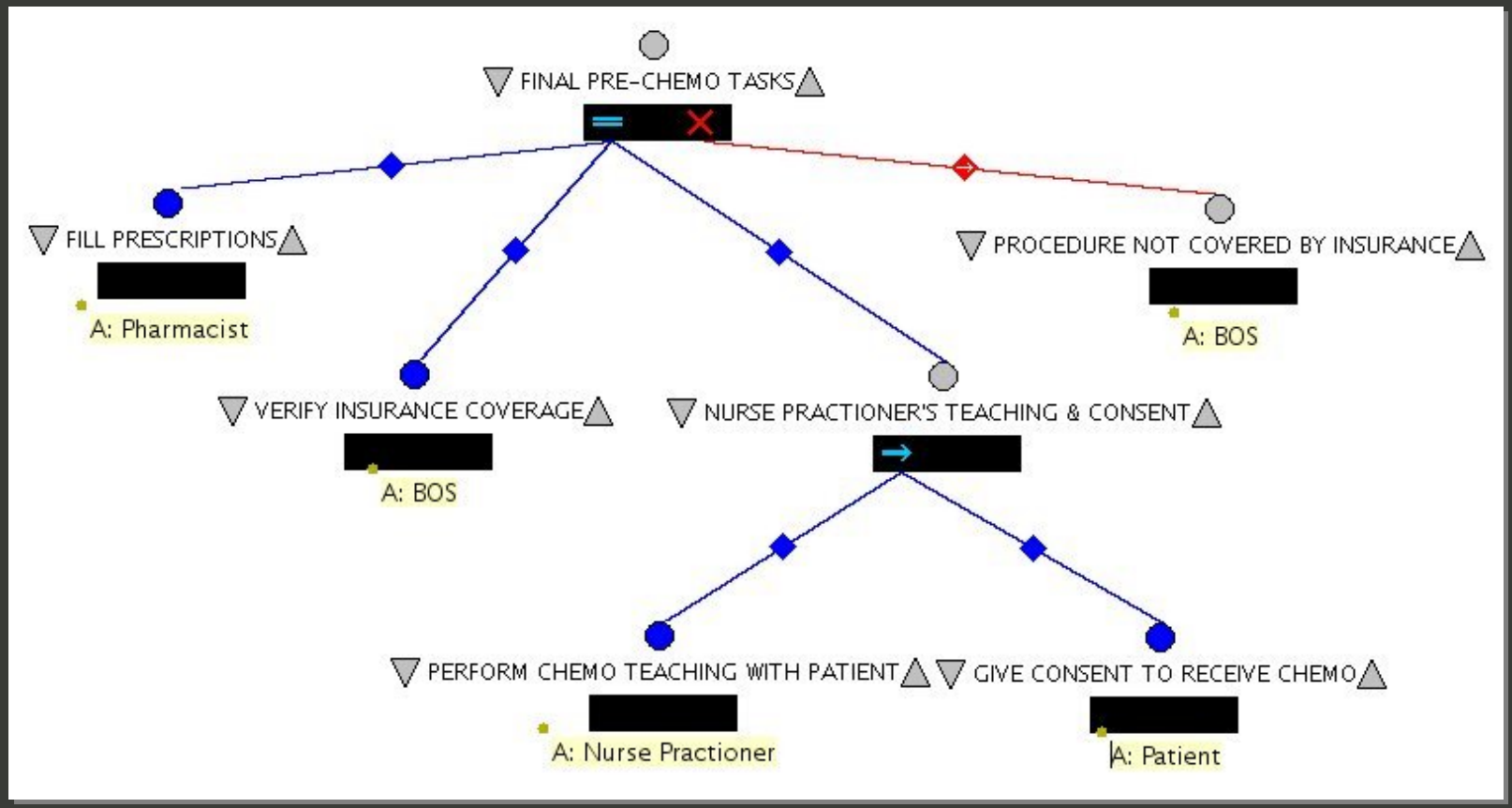
Pharmacy Tasks

AOChemotherapy: From Consult...



Final Pre-Chemo Tasks

AOChemotherapy: From Consult...

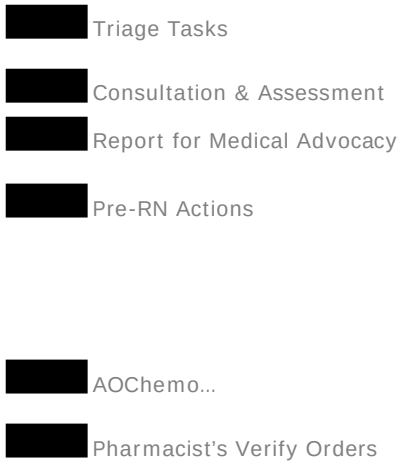


Process Representation:
Benefits of Using Little-JIL

- Expressiveness of language
- Combination of text and graphics
  - Computer Science
  - Medical Professionals

Process Representation:
Difficulties with Little-JIL

- Difficult to represent certain concepts
  - Background string - B.O.S.
  - Teams of Agents: MD Team, Advocacy
  - Atomic actions
  - Disease is life-threatening
  - Timeline of process
- Difficult to display all data



Process Representation:
Little-JIL Observations

- Writing text consistently
  - Name parent steps as abstract processes
  - Describe actions with small set of verbs
- Chemo Process Glossary
  - Verify *(presence/completeness/correctness)*
- Use of Post-Its

Process Elicitation

- Approach
  - Goal of elicitation
  - Setting of Baystate Meetings
  - Evolution of our process and theirs
  - Progression of our presentations
- Feedback from Meetings

Process Elicitation:
Observations

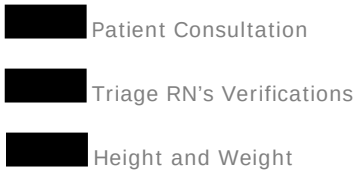
- Pace of discussion
- Resources
- Assumptions
  - Vocabulary (CS vs Medicine)
  - Notion of a Tree
  - Communication between Medical Professionals

Final Observations:
What Worked Well

- Evolution of process
- Overhead projection + walkthrough
- Elicitation specialized by agent
- LASER discussions
- Teamwork

Where to Go From Here

- Elicit more exceptions



- Continue to uncover mystery artifacts
  - Face Sheet
  - Clinical Summary
  - Patient's Chart and its contents
- First day of Rx: ?

- Research methods of elicitation
  - "Best Case Scenario"
  - By agent perspective [Nuseibeh, 1993]
  - Actions first, artifacts later
  - "Worst Case Scenario"
  - Backwards (constraint-based)
  - Question-tree
  - Role-play
  - Agent isolation and elicitation
  - Priority Based

Works Cited

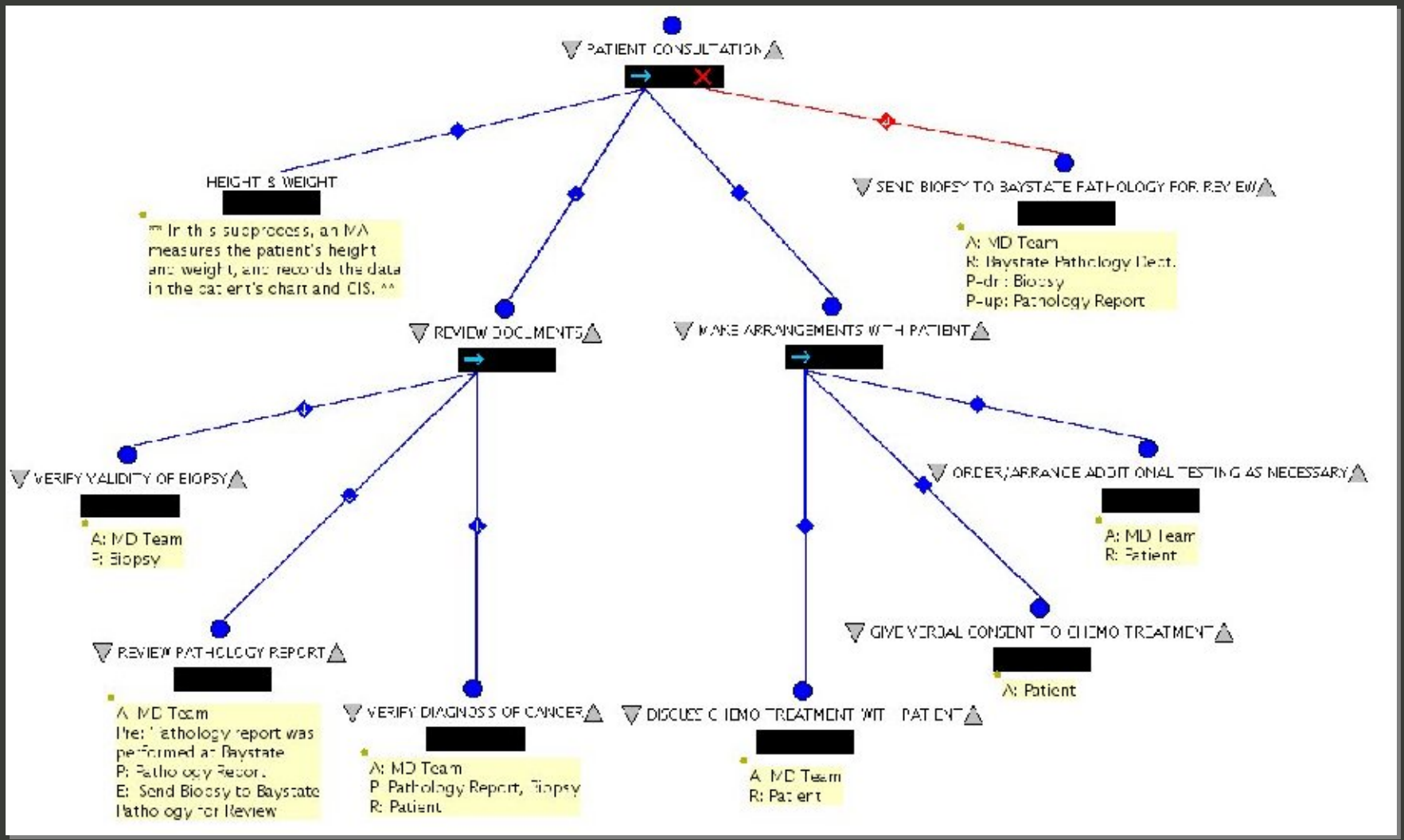
Special Acknowledgements to LASER at the University of Massachusetts at Amherst, the Baystate Medical Staff, and Dr. Lori Clarke.

1. L. Clarke, Y. Chen, G. Avrunin, B. Chen, R. Cobleigh, K. Frederick, E. Henneman, and L. Osterweil. *Process Programming to Support Medical Safety: A Case Study on Blood Transfusion*. Proceedings of the Software Process Workshop (SPW2005), Beijing, China, May 25-27, 2005.
2. E. Leiter, J. Kramer, J. Magee, and S. Uchitel. *Monitoring and Control in Scenario-Based Requirements Analysis*. ICSE 2005: 382-391.
3. B. Nuseibeh, J. Kramer, and A. Finkelstein. *Expressing the Relationships Between Multiple Views in Requirements Specification*. ICSE 1993: 187-196.
4. Uchitel, S., J. Kramer, and J. Magee. *Incremental Elaboration of Scenario-Based Specifications and Behavior Models Using Implied Scenarios.* ACM Trans. Software Engineering Methology 2004. 13(1): 37-85.
5. Wise, A., A. G. Cass, B. S. Lerner, E. K. McCall, L. J. Osterweil, and J. Stanely M. Sutton. *Using Little-JIL to Coordinate Agents in Software Engineering.* In Proceedings Of the Automated Software Engineering Conference (ASE 2000).

Patient Consultation

Consultation & Assessment

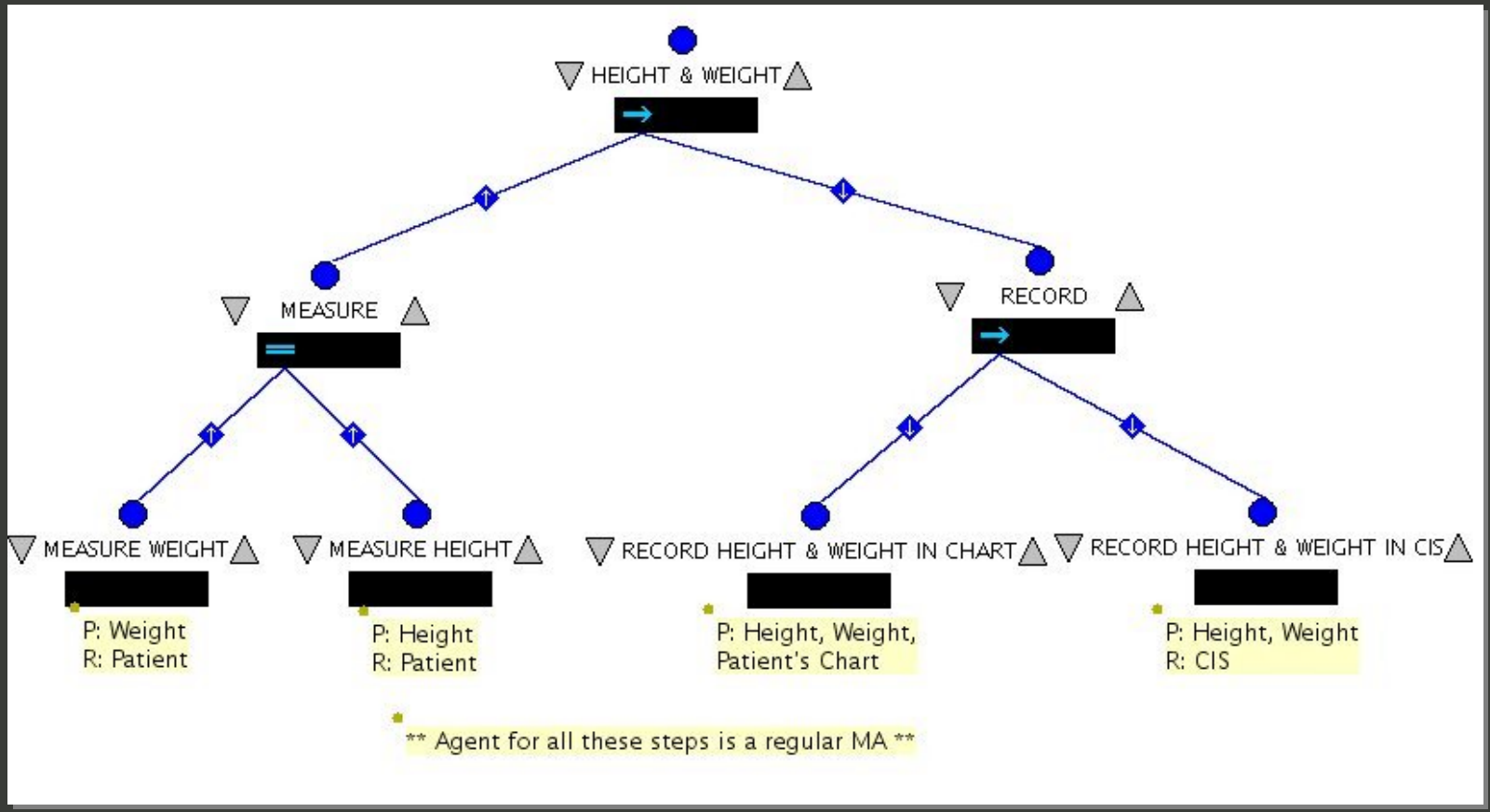
Exceptions...



Height & Weight

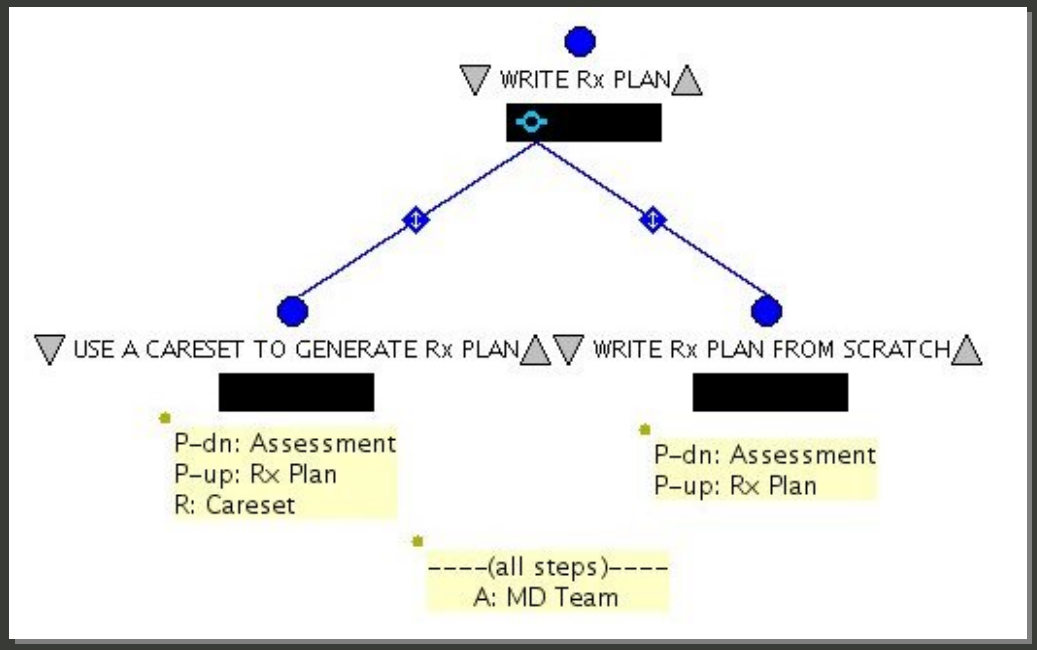
Patient Consultation

Exceptions...



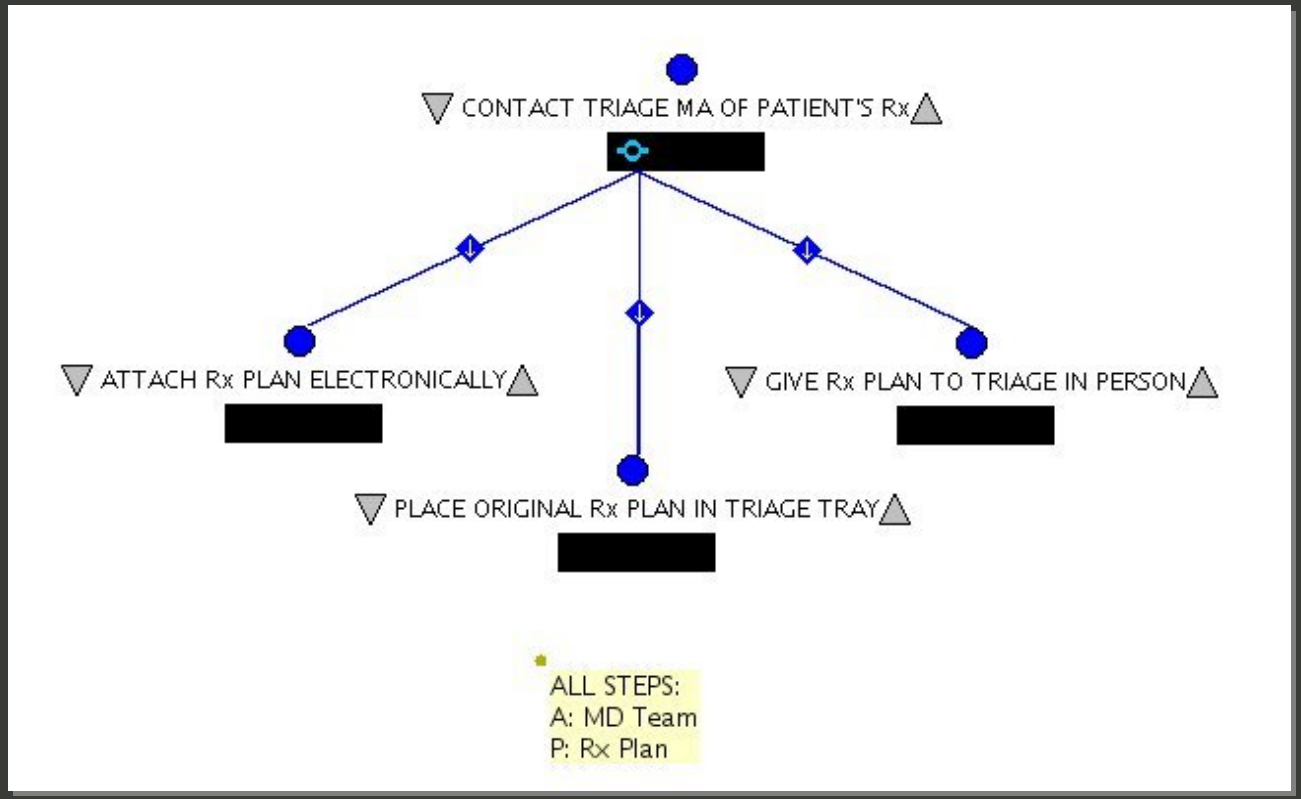
Write Rx Plan

Consultation & Assessment



Contact Triage MA of Patient's Rx

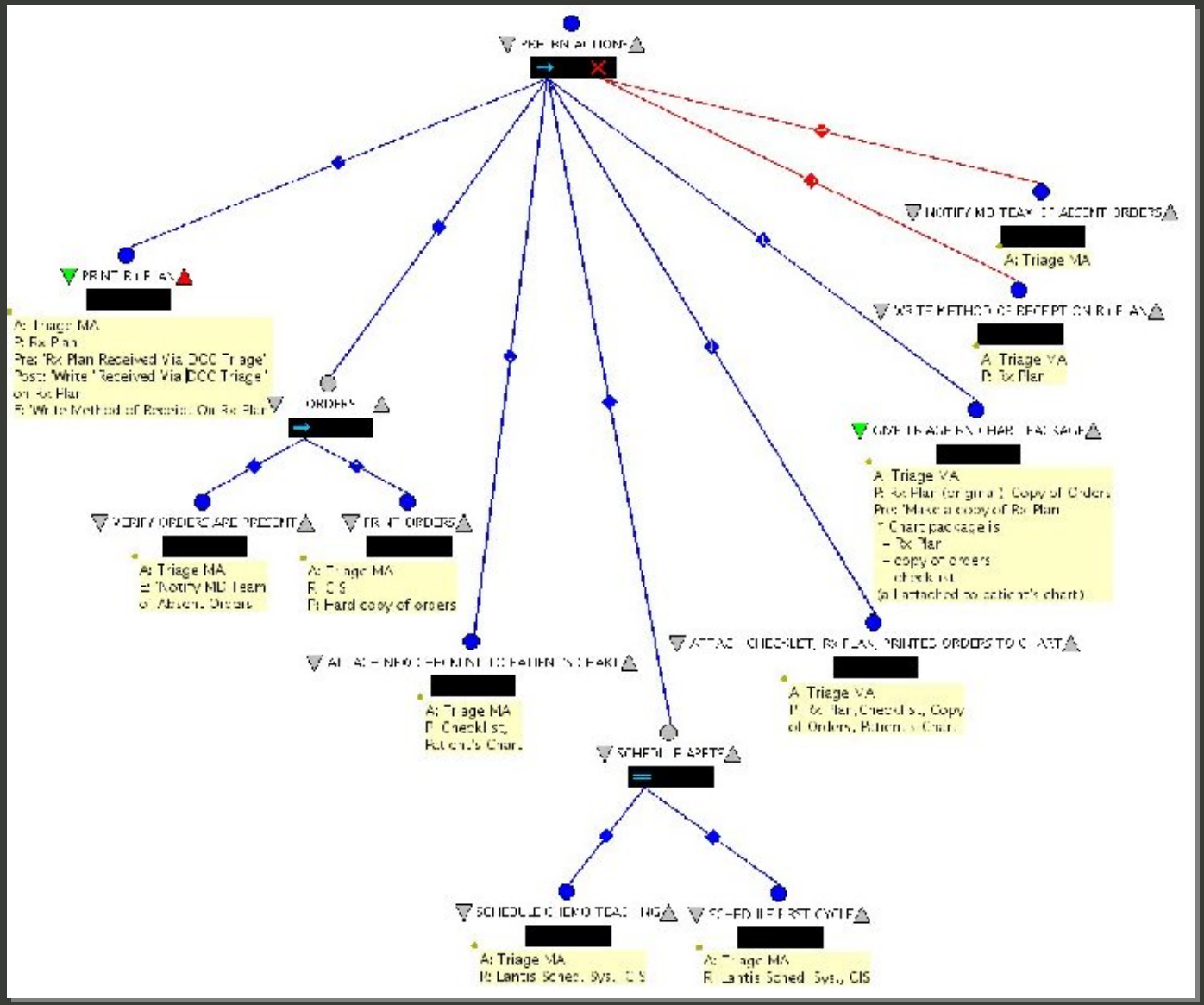
Consultation & Assessment



Pre-RN Actions

Triage Tasks

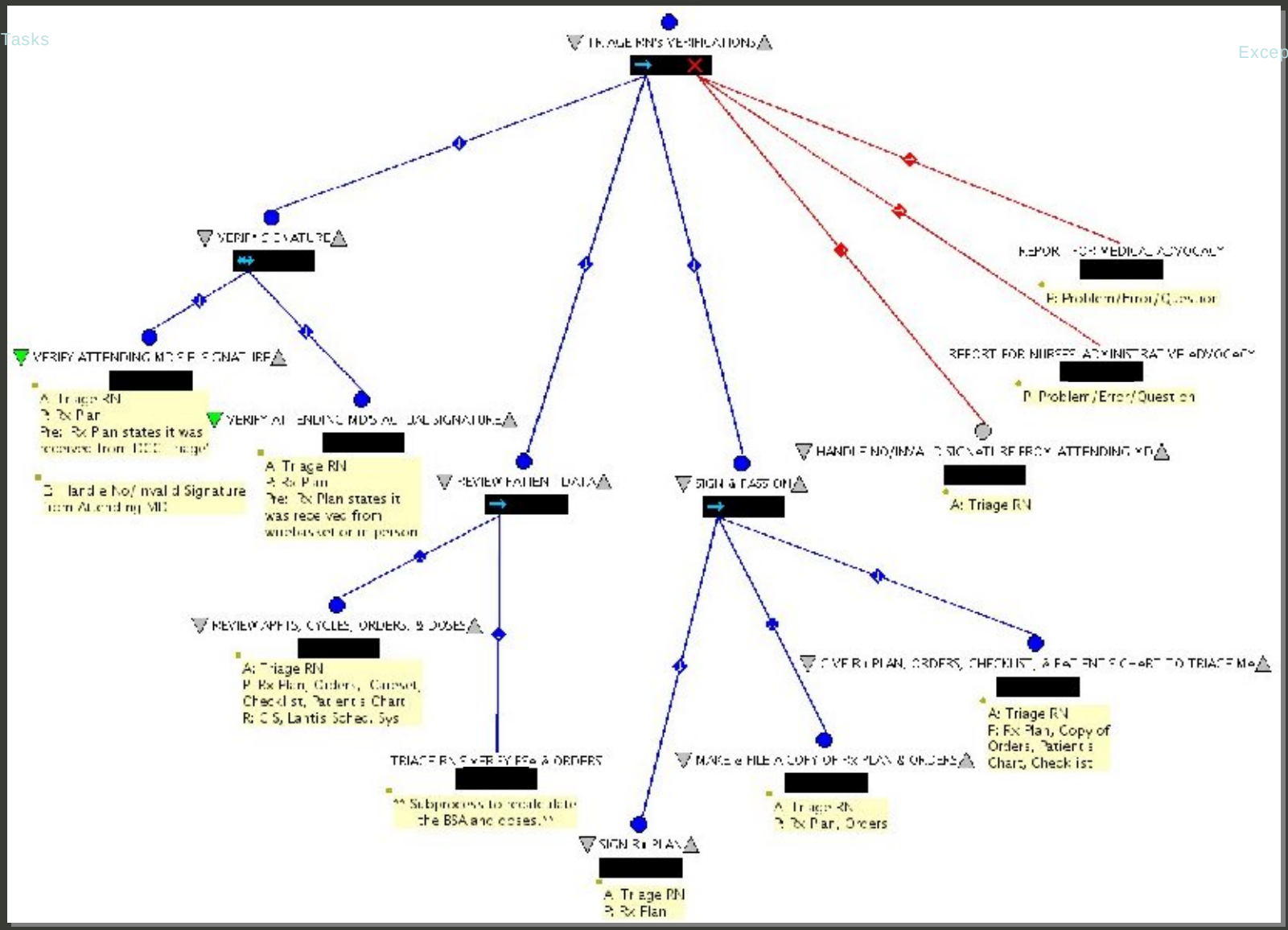
Difficulties...



Triage RN's Verifications

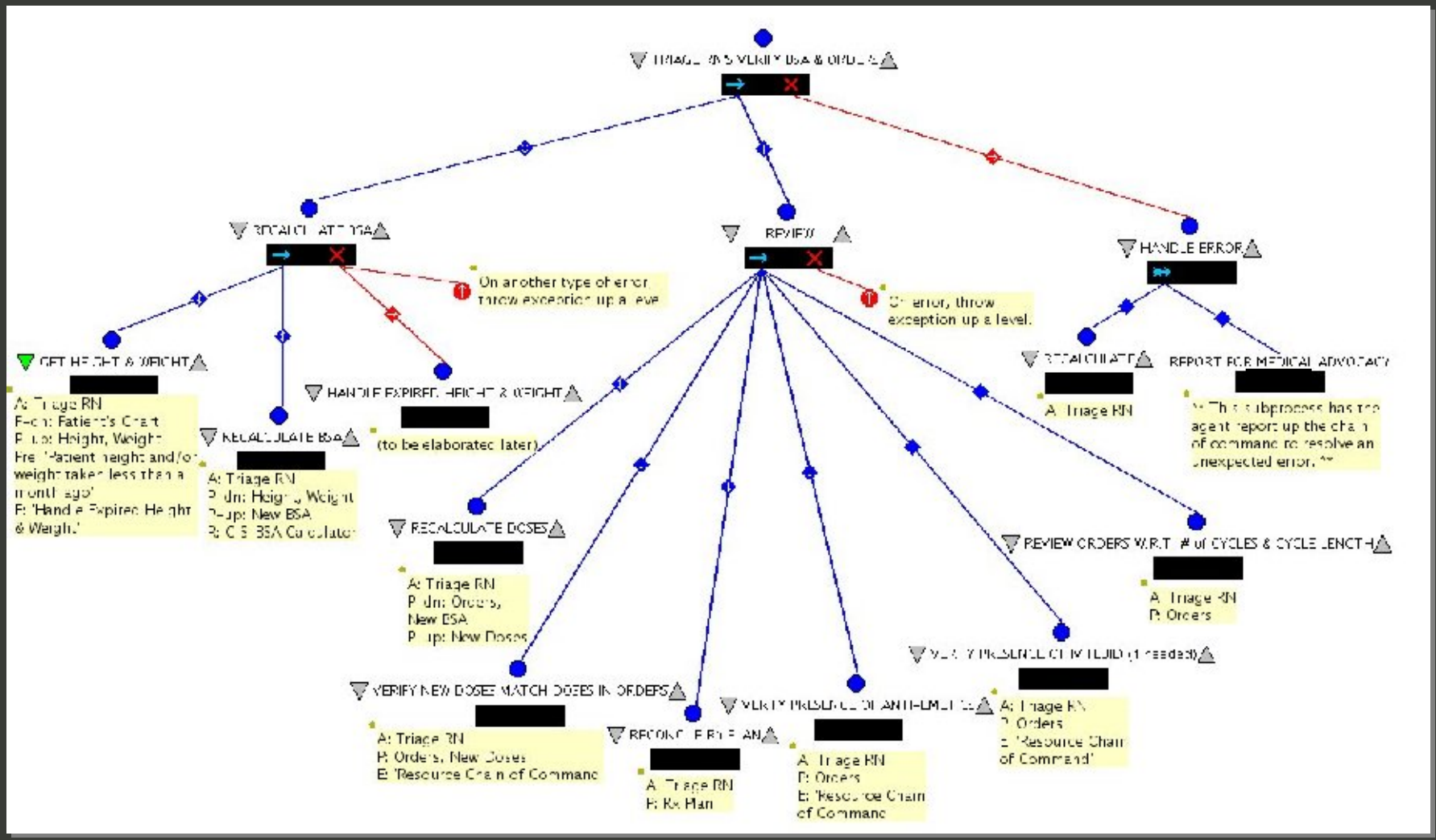
Triage Tasks

Exceptions...



Triage RN's Verify BSA & Orders

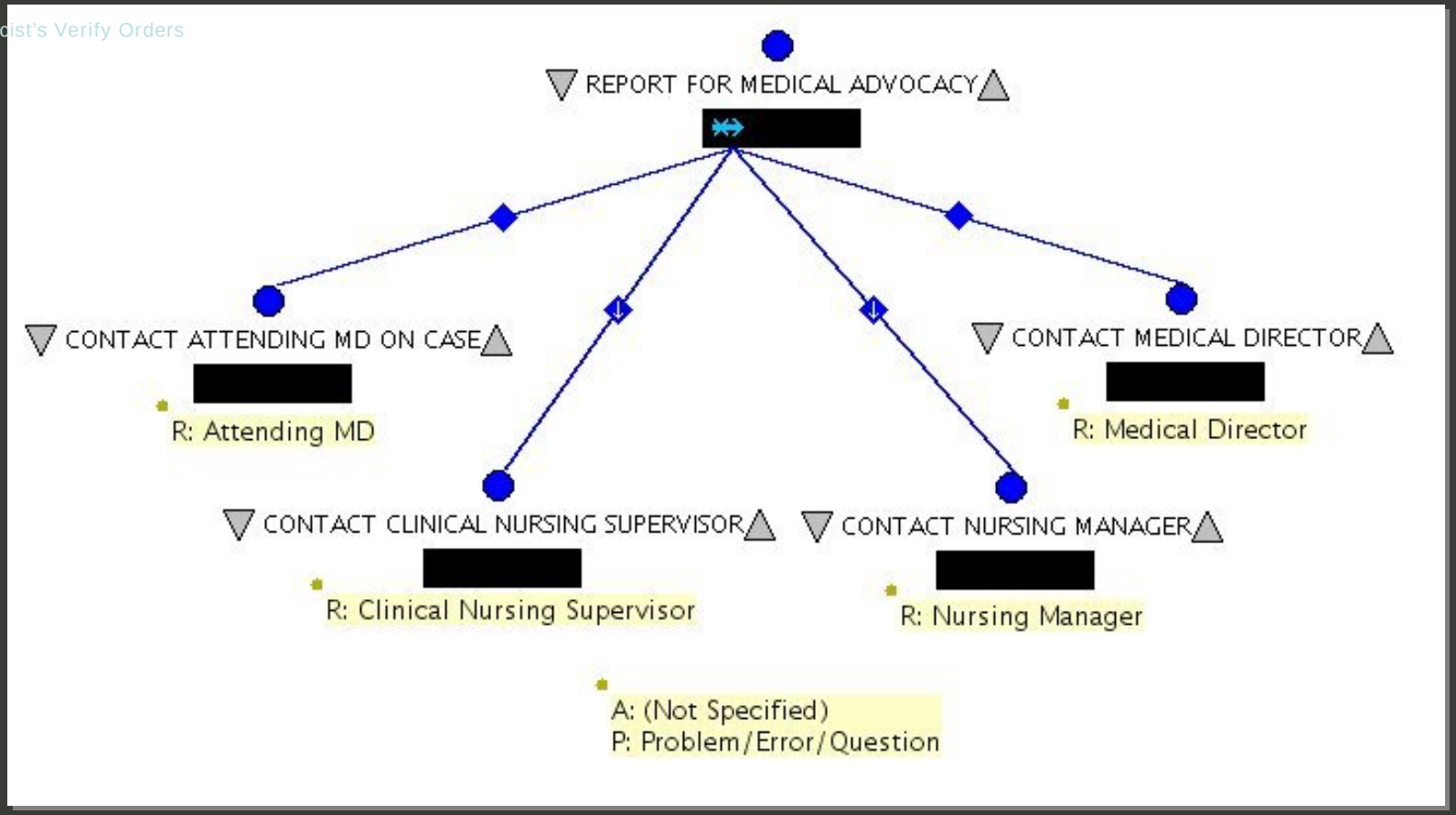
Triage RN's Verifications



Report for Medical Advocacy

- Triage RN's Verify BSA & Orders
- Triage RN's Verifications
- Pharmacy Tasks
- Pharmacist's Verify Orders

Difficulties...



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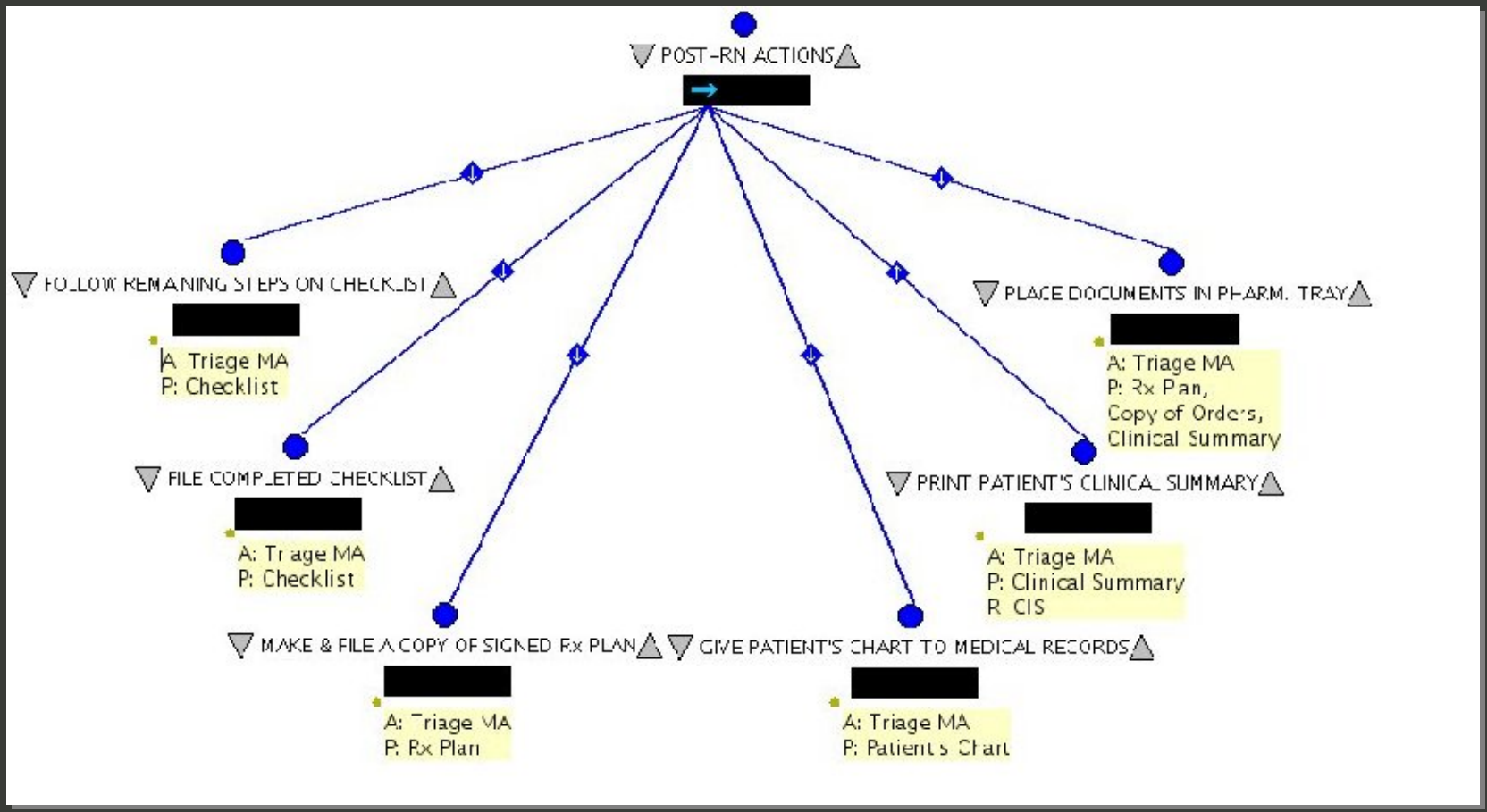
Post-RN Actions

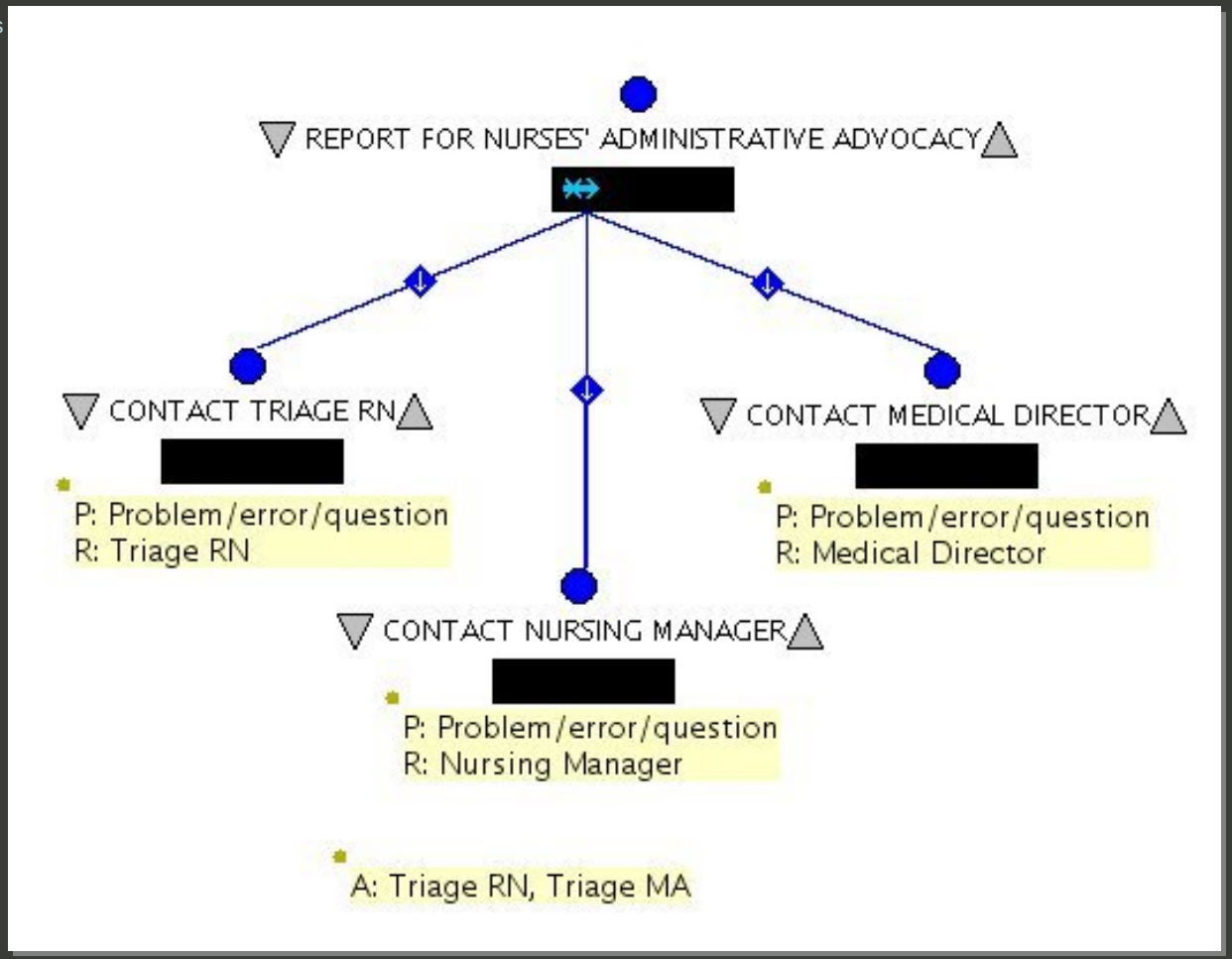
Triage Tasks



Report for Nurses' Administrative Advocacy

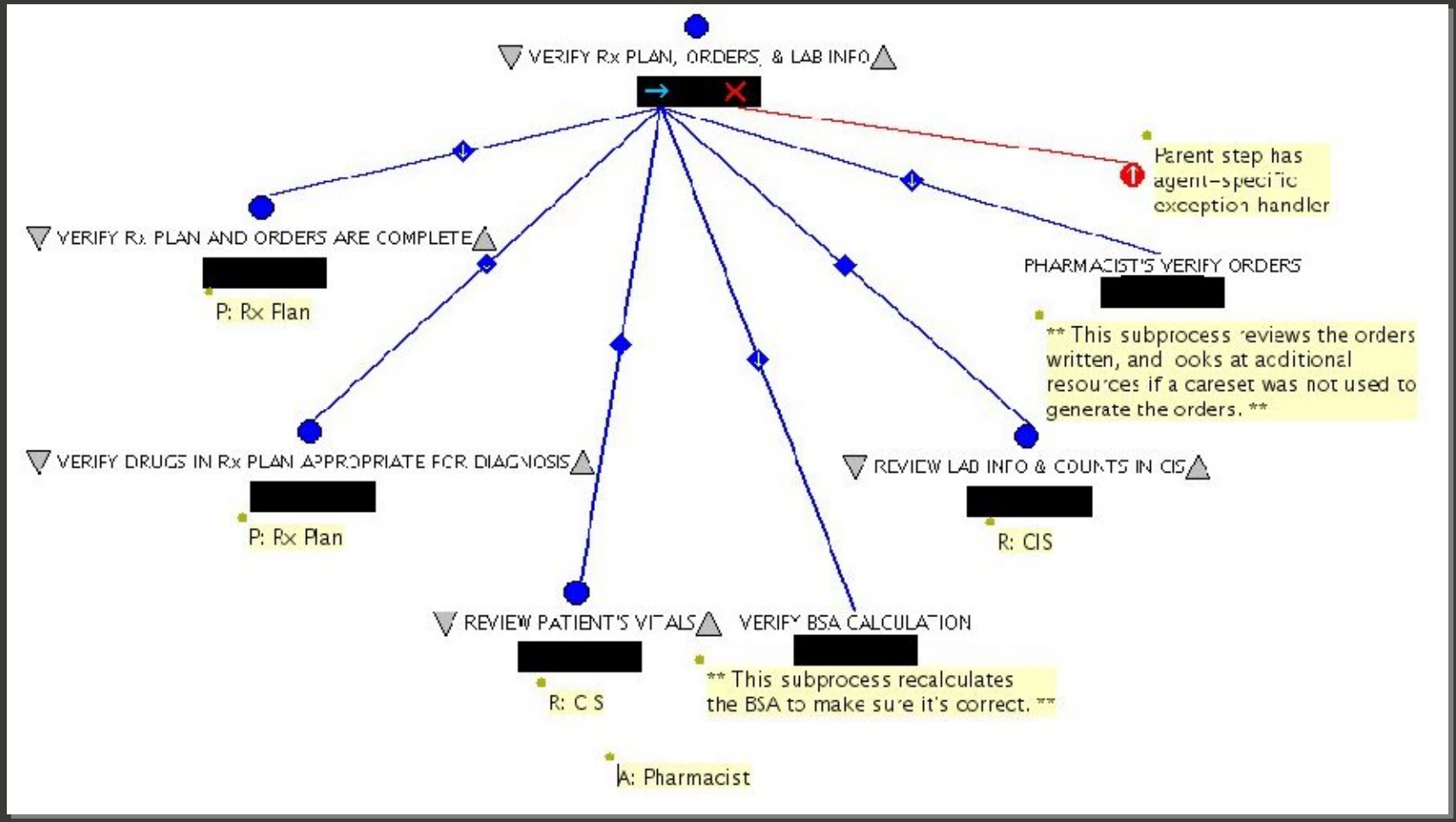
Triage Tasks

Triage RN's Verifications



Verify Rx Plan, Orders, & Lab Info

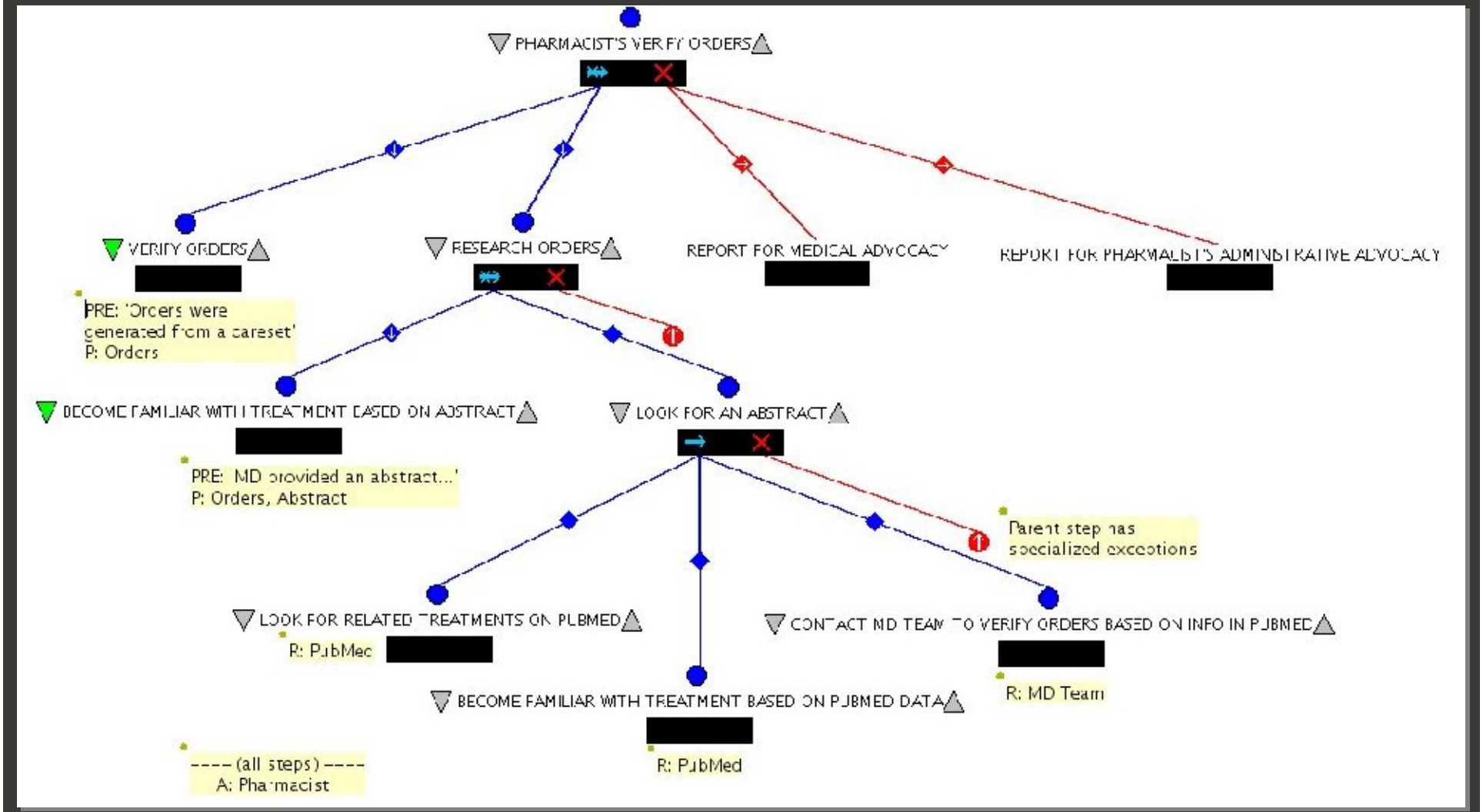
Pharmacy Tasks



Pharmacist's Verify Orders

Verify Rx Plan, Orders...

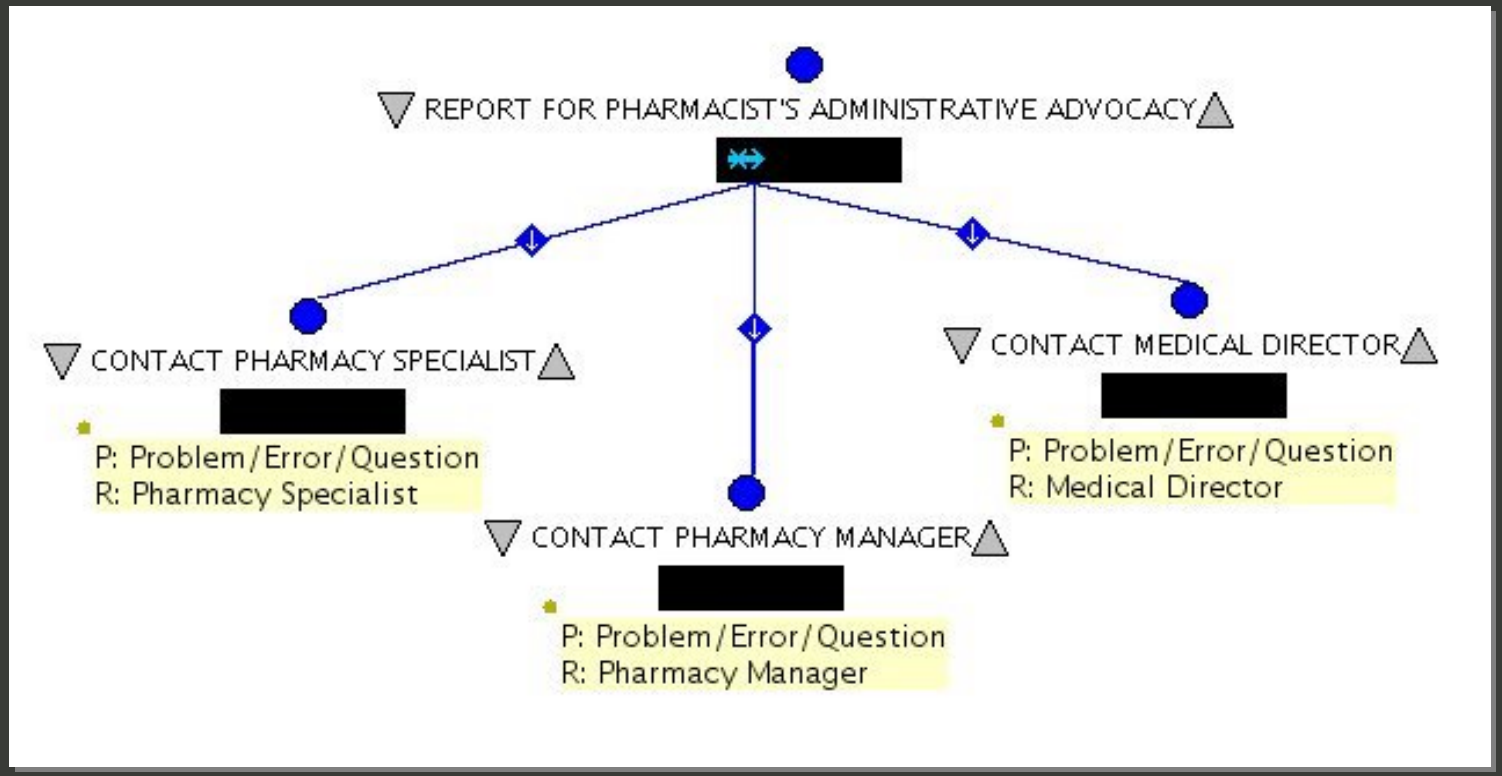
Difficulties...



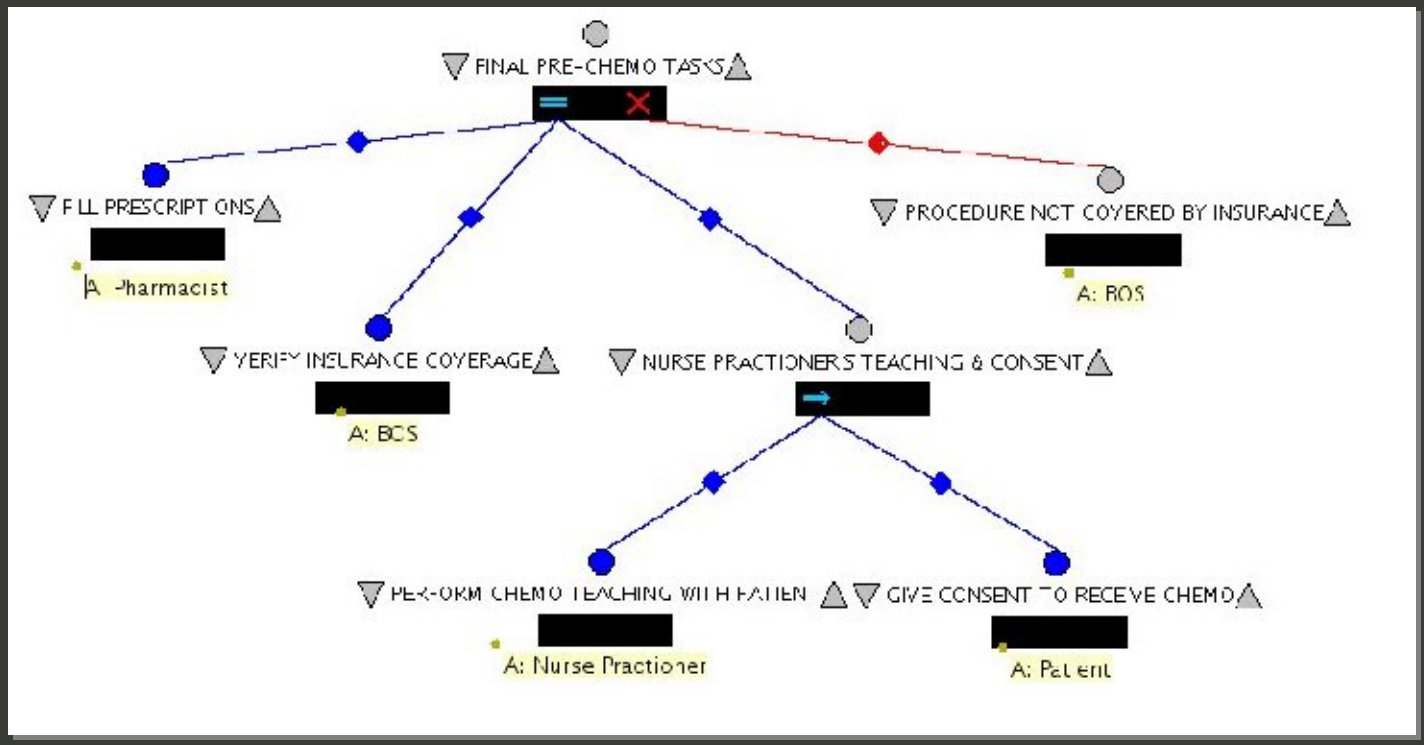
Report for Pharmacist's Administrative Advocacy

Pharmacy Tasks

Pharmacist's Verify Orders



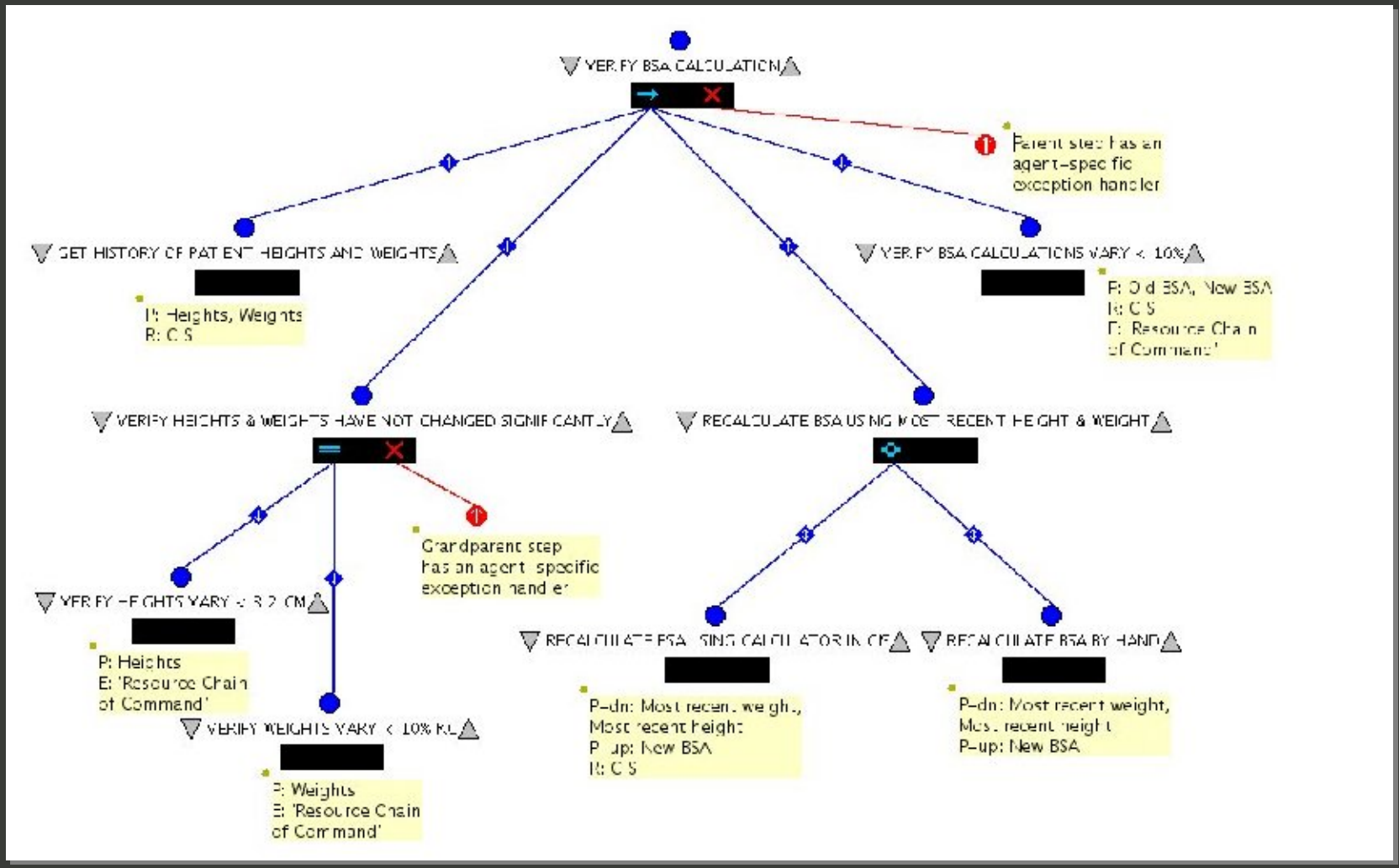
Final Pre-Chemo Tasks



NOTE: this slide identical to slide #8

Verify BSA Calculation

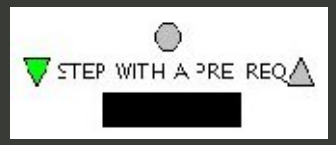
Verify Rx Plan, Orders...



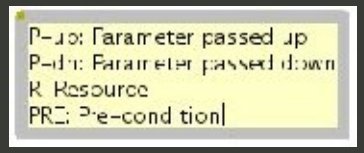
Little-JIL

• Little-JIL is a “language for programming the coordination of agents” that uses symbols, trees, and text to represent a process. [Wise, 2000]

The blue symbols indicate how the children steps are to be executed.



Comment boxes



Parameter flow from child to parent

Parameter flow from parent to child

AOChemo Process