

Properties of Jaundice

1

Overview

- **Choice of properties** of jaundice
- **Formulation** of the properties in KIV
- **Improvements** of the formulations

2

Choice of properties

- **Medically relevant:**
 - Intentions (CBO)
 - Indicator of MAJIC document
- **Asbru/kiv view:**
 - Different type of intentions:
 - Achieve/maintain/avoid
 - Intermediate/final state
 - With and without time annotation
 - Intention of "child" versus "parent" plan

3

Medical relevancy

- Treatment part is more medically relevant than diagnosis part.
- Ordering of intentions:
 - (1) Phototherapy-intensive:
maintain intermediate state (TSB-decrease = yes) <time-anno>
AND TSB-change >= 1 <time-anno>
 - (if (1) fails) Phototherapy-normal-prescription:
maintain intermediate state (TSB-decrease = yes)
 - (2) Exchange-transfusion:
Achieve overall-state (bilirubin <> transfusion)
Avoid intermediate-state (bilirubin = observation)
 - (3) Regular-treatments:

4

Improvements

Phototherapy-intensive:

- maintain intermediate state (TSB-decrease = yes) <time anno> AND (TSB-change >= 1)<time anno>
- |- plan#(...) → [] plan-state.activated → condition
- Improvements:
 - Environment assumption
(only time changes, other things do not)
 - In the condition no reference to primed (') variables.
 - You can not speak about primed variables in laststep
 - Improvement condition: laststep V "condition"
 - Condition holds when plan is activated until plan is not activated any more.
 - |- plan#(...) → environment-assumption → ([] (laststep V⁹ (plan-state.<activated AND plan-state=activated →

KIV

- Phototherapy-intensive:
maintain intermediate state (TSB-decrease = yes) <time anno>
AND (TSB-change >= 1)<time anno>
- |- plan#(...) → environment-assumption →
([] (laststep V
(plan-state.<activated AND
plan-state=activated → time-anno holds
→ condition unless plan-state<activated)
- |- phototherapy-intensive#(ptnp-acttime,patient-data,time,pti-acttime,pti-state)
→ (pti-state'=pti-state' AND pti-acttime'=pti-acttime' AND
time'=time'+1) unless laststep
→ ([] (laststep V
(pti-state.<activated AND pti-state=activated
→ (4 <= time. - pti-acttime..value AND time.-acttime..value <= 6)
→ get-decrease(patient-data..tsb, pti-acttime..value) ¹⁰
AND get-change(patient-data..tsb, pti-acttime..value) >= 10)

Current state

- (1) Phototherapy-intensive:
 - maintain intermediate state (TSB-decrease = yes <time-anno>
AND TSB-change >= 1 <time-anno>)
- (if (1) fails) Phototherapy-normal-prescription:
 - maintain intermediate state (TSB-decrease = yes)
- (2) Exchange-transfusion:
 - Achieve overall-state (bilirubin ↔ transfusion)
- (3) Regular-treatments:
 - Achieve intermediate-state (bilirubin = transfusion)
 - Achieve overall-state (bilirubin = observation)
- Indicator MAJIC paper

11

MAJIC Indicator

- No more than one measurement after phototherapy is discontinued.
- Property about regular treatments
- Lemma's for childrens' plan
- What is "phototherapy is discontinued"?
- Need additional assumptions...
(need changes in specification...)

12

Conclusions

13