Real Data

• Q1 (1100): Is this the first day of the patient? $Answer(CurrentDate == x) \land Order(x, 1, Sequence(d, d.type == Date))$ • **Q2** (1101): What day is it? Answer(Day(CurrentDate))• Q3 (11111): How high is the basal rate before midnight? $Answer(e.value) \land Before(e.time, MidNight()) \land e.type == BasalRate$ • S1 (01): I see that the blood glucose level is a little high in the midnight. $High(e.value) \land e.type == BGL \land e.time == MidNight()$ • Q4 (111111): what happened before that? $Answer(e) \land Before(e.time, e(-1).time)$ • Click1 (20) $Click(e) \land e.type == Bolus \land e.time == 22:12pm$ • Click2 (20)

 $Click(e) \land e.type == FingerSticks \land e.time == 22:31pm$

- Q5 (11101): Is there any heart rate reported this day? $Answer(Any(d.type == HeartRate \land d.date == CurrentDate))$
- Q6 (1101): So what is the first day they also have heart rate reported? $Answer(e.date) \wedge Order(e, 1, Sequence(d, d.type == HeartRate))$
- Q7 (11101): Did he eat during the night? $Answer(Any(d.type == Meal \land d.time == Night))$
- Click3 (20) $Click(e) \land e.type == Meal \land e.time == 1:07 pm$
- Q8 (111112): How high was the heart rate when he ate? $Answer(e.value) \wedge Highest(e.value) \wedge Around(e.time, e(-1).time)$ $\wedge e.type == HeartRate$
- Q9 (11111): How low did he get during that night? $Answer(e.value) \wedge Lowest(e.value) \wedge e.type == BGL \wedge e.time == Night()$
- Q10 (111011): So the blood glucose you showed me, it is a hypoglycemia? Answer(Hypo(e(-1)))
- Q11 (111112): What did he do when he went hypo? $Answer(e) \wedge Around(e.time, e(-1).time) \wedge e.type == DiscreteType$

• Click4 (20)

$$Click(e) \land e.type == HypoAction \land e.time == 19:49pm$$

• Click5 (20)

$$Click(e) \land e.type == FingerSticks \land e.time == 19:58pm$$

• Click6 (20)

$$Click(e) \land e.type == Bolus \land e.time == 20:00pm$$

• **Q12** (111011): Is that just one bolus?

$$Answer(Count(e,e.type == Bolus \land Around(e.time,e(-1).time)) == 1)$$

• S2 (01): GSR went really high in the morning.

$$High(e.value) \land e.type == GSR \land e.time == Morning()$$

• Q13 (111111): what did he do?

$$Answer(e) \land Around(e.time, e(-1).time) \land e.type == DiscreteType$$

• Click7 (20)

$$Click(e) \land e.type == Meal \land e.time == 7:35am$$

• Click8 (20)

$$Click(e) \land e.type == Bolus \land e.time == 7:41am$$

• Q14 (10): Go next.

DoSetDate(CurrentDate + 1)

• Q15 (1100): Is this patient 101?

Answer(CurrentPatient == 101)

• Q16 (10): Can you go back to the previous day?

DoSetDate(CurrentDate - 1)

• **S3** (01): In the morning, he goes low.

 $Hypo(e) \wedge e.time == Morning()$

• **S4** (01): In the late afternoon, then again, he goes low.

 $Hypo(e) \wedge e.time == Afternoon()$

• Q17 (11100): Is there another day he goes low in the morning and evening?

$$Answer(Any(Hypo(d_1) \land Hypo(d_2) \land x! = CurrentDate \\ \land x.type == Date \land d_1.time == Morning(x) \land d_2.time == Afternoon(x)))$$

• S5 (01): I can see GSR is pretty high in the morning.

 $Highest(e.value) \land e.type == GSR \land e.time == Morning()$

• Q18 (111111): what did he eat?

 $Answer(e.food) \land Around(e.time, e(-1).time)$

• S6 (): I see she went low in the middle of the day.

$$Low(e.value) \land e.type == BGL \land e.time == MidDay()$$

ullet S7 (): It looks like there's a hypo.

$$Hypo(e(-1))$$

• Q19 (): I want to know how low she is?

$$Answer(e(-1).value)$$

• Click9 ():

$$Click(e) \land e.type == FingerStick \land e.time == 11:53am$$

• S8 (): Well the Finger Stick is 56.

$$e.type == Fingerstick \land e.value == 56$$

• **S9** (): It looks like she suspended her pump.

$$Suspended(e) \land Around(e.time, e(-1).time)$$

• **Q20** (): What did she say about it?

$$Answer(e) \land e.type == Misc \land Around(e.time, e(-1).time)$$

• Click10 ():

$$Click(e) \land e.type == HypoEvent \land e.time == 11:45am$$

• Q21 (): So what does she do about it?

 $Answer(e) \land e.type == HypoAction \land Around(e.time, e(-1).time)$

• Click11 ():

 $Click(e) \land e.type == HypoAction \land e.time == 11:46am$

• **Q22** (): It looks like she ate something?

 $Answer(e) \land e.type == Meal \land Around(e.time, e(-1).time)$

• Click12 ():

 $Click(e) \land e.type == Meal \land e.time == 11:55pm$

• **S10** (): look how she goes up like this.

 $Behavior(e.value, Up) \land Around(e.time, e(-1).time) \land e.type == BGL$

• S11 (): 30 carbs, that would be an overcorrection.

 $e.carbs == 30 \land e == e_2(-1)$

• Q23 (): How high does she get?

 $Answer(e.value) \land Highest(e.value) \land Around(e.time, e(-1).time) \land e.type == BGL$

• Click13 ():

 $Click(e) \land e.type == FingerStick \land e.time == 14:20pm$

• S12 (): It looks like she has a miscellaneous comment.

$$e.type == Misc$$

• Click14 ():

$$Click(e) \land e.type == Misc \land e.time == 15:40pm$$

• Q24 (): Did she bolus or anything?

$$Answer(e) \land Around(e.time, e(-1).time) \land e.type == Bolus$$

• Click15 ():

$$Click(e) \land e.type == Bolus \land e.time == 17:24pm$$

• S13 (): Not until 3:40 in the afternoon, and she's already coming down.

$$Behavior(e.value, Down) \land Around(e.time, 3:40pm) \land e.type == BGL$$

• **Q25** (): What did she come down to?

$$Answer(e.value) \land Lowest(e.value) \land Around(e.time, e(-1).time) \land e.type == BGL$$

• Click16 ():

$$Click(e) \land e.type == FingerStick \land e.time == 17:19pm$$

• **Q26** (): What is she doing then?

$$Answer(e) \land Around(e.time, e(-1).time) \land e.type == DiscreteType$$

• Click17 ():

$$Click(e) \land e.type == HypoAction \land e.time == 20:47pm$$

• Q27 (): Okay, so why would she have dropped right there?

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Answer(e) \land Before(e.time, e(-1).time) \land e.type == DiscreteType
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• Click18 ():

$$Click(e) \land e.type == Exercise \land e.time == 20:04pm$$

• S14 (): I also see she's pretty high in the morning here, right when she wakes up.

$$High(e.value) \land Around(e.time, e_1.time) \land e.type == BGL \land e_1.type == Wakeup \land e.time == Morning()$$

• Q28 (): This not being winter, we can turn off skin and air temp.

 $DoToggle(Off, SkinTemperature) \land DoToggle(Off, AirTemperature)$

• Q29 (): Let's go to the next day.

DoSetDate(CurrentDate + 1)

• S15 (): She exercises here, but doesn't go quite so low.

 $Cond(After(e.time, e_1.time) \land e.type == BGL ==>!Low(e.value)) \land e_1.type == Exercise$

• **S16** (): We can see what the finger stick is.

$$e.type == FingerSticks \land Around(e.time, e_2(-1).time)$$

• Click19 ():

$$Click(e) \land e.type == FingerSticks \land e.time == 20:40pm$$

• Q30 (): Let's go to the previous day.

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DoSetDate(CurrentDate - 1)
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• S17 (): Now we see two hypo events on this day.

$$Count(e, e.type == Hypo \land e.date == CurrentDate) == 2$$

• Q31 (): Is there any recent day in which the same thing happens?

$$Answer(Any(d, Before(d, CurrentDate) \land Count(d_1, d_1.type == HypoEvent \land d_1.date == d) == 2 \land d.type == Date)$$

• Q32 (): Is there any other day close to this day which there are two hypo events?

$$Answer(Any(d, Around(d, CurrentDate) \land Count(d_1, d_1.type == HypoEvent \land d_1.date == d) == 2 \land d.type == Date)$$

• Q33 (): Can we also go to the day before this one?

$$DoSetDate(CurrentDate - 1)$$

• Q34 (): Can we look at another day before this one?

$$DoSetDate(CurrentDate - 1)$$

• S18 (): This one is not after exercise, but during exercise.

$$Around(e.time, e_1.time) \land e.type == Hypo \land e_1.type == Exercise$$

• S19 (): She suspended her pump.

 $Suspended(e) \land Around(e.time, e(-1).time)$

• Q35 (): Well what did she say about that?

 $Answer(e) \land e.type == Misc \land Around(e.time, e(-1).time)$

• Click20 ():

 $Click(e) \land e.type == Misc \land e.time == 20:01pm$

• Q36 (): What else did she say?

 $Answer(e) \land e.type == Misc$

• Click21 ():

$$Click(e) \land e.type == Misc \land e.time == 20:26pm$$

• Q37 (): What kind of exercise is she doing?

 $Answer(e.kind) \land e.type == Exercise$

• Click22 ():

$$Click(e) \land e.type == Exercise \land e.time == 19:18pm$$

• Q38 (): What did she eat to take care of the hypo event?

 $Answer(e.food) \land Around(e.time, e_1.time) \land e_1.type == Hypo$

• Click23 ():

$$Click(e) \land e.type == HypoEvent \land e.time == 19:54pm$$

• Click24 ():

$$Click(e) \land e.type == HypoAction \land e.time == 19.54pm$$

• Q39 (): Does she usually just take sugar?

$$Answer(Cond(e.type == HypoAction ==> e.food == Sugar))$$

• Q40 (): How often does she use sugar as a hypo action?

$$Answer(Count(e, e.food == sugar \land e.type == HypoAction))$$

• Q41 (): When she does other types of exercise, does she still go low, or is it just with elliptical exercise?

$$Answer(Any(Hypo(e) \land After(e.time, e_1.time) \land e_1.type = Exercise \land e_1.kind! = Elliptical))$$

• Q42 (): How intense is her elliptical exercise?

$$Answer(e.intensity) \land e.type = Exercise \land e.kind == Elliptical$$

• Click25 ():

$$Click(e) \land e.type == Exercise \land e.time == 19:56pm$$

• Q43 (): Show me exercises where intensity is higher than 5.

$$e.type == Exercise \land e.intensity > 5 \land e.date == AnyDate$$

• Q44 (): What is she eating right before her exercise?

 $Answer(e.food) \land e.type == Meal \land RightBefore(e.time, e(-1).time)$

• Click26 ():

$$Click(e) \wedge e.type == Meal \wedge e.time == 19:20pm$$

• Q45 (): How many meals did she have this day?

 $Answer(Count(e, e.type == Meal \land e.date == CurrentDate))$

• Q46 (): Did she eat more than average, in terms of carbs?

Answer(Sum(e.carbs, e.date == CurrentDate) > Mean(e.carbs))

• Click27 ():

$$Click(e) \wedge e.type == Meal \wedge e.time == 18:06pm$$

• **S20** (): She bolused even though she already had a hypo event.

$$e.type == Bolus \land After(e.time, e_1.time) \land e_1.type == Hypo$$

• S21 (): She must have been eating something.

$$e.type == Meal \land Around(e.time, e(-1).time)$$

• Click28 ():

$$Click(e) \land e.type == Meal \land e.time == 18:08pm$$

• Q47 (): Well how much insulin did she take in that bolus?

 $Answer(e.value) \land e.type == Bolus$

• Click29 ():

$$Click(e) \land e.type == Bolus \land e.time == 18:08 pm$$

• Q48 (10): Let's move ahead to April 4th.

DoSetDate(April4th)

• Q49 (): Is she getting better about going low after exercise?

 $Answer(Cond(After(e.time, e_1.time) \land e.type == BGL \land e_1.type == Exercise ==>!Hypo(e)))$

• **S22** (): Here she has a low before exercise.

 $Hypo(e) \wedge Before(e.time, e_1(-1).time)$

• S23 (): She drops during exercise.

 $Behavior(e.value, Down) \land Around(e.time, e_1(-1).time) \land e.type == BGL$

• **S24** (): She is not into the hypo range.

!Hypo(e(-1))

• Q50 (): Let's see what her finger stick is?

 $Answer(e) \land Around(e.time, e(-1).time) \land e.type == FingerSticks$

• Click30 ():

$$Click(e) \land e.type == FingerStick \land e.time == 20.53pm$$

• Click31 ():

$$Click(e) \land e.type == BGL \land e.time == 20.53pm$$

• S25 (): She ate before exercise.

$$e.type == Meal \land Before(e.time, e_1.time) \land e_1.type == Exercise$$

• Q51 (): what did she have?

$$Answer(e(-1).food)$$

• Click32 ():

$$Click(e) \wedge e.type == Meal \wedge e.time == 18:13pm$$

 \bullet S26 (): But she bolused with that meal.

$$e.type == Bolus \land Around(e.time, e(-1).time)$$

• Q52 (): How much did she bolus?

$$Answer(e(-1).value)$$

• Click33 ():

$$Click(e) \land e.type == Bolus \land e.time == 18:18pm$$

• Q53 (): What intensity was that exercise?

 $Answer(e.intensity) \land e.type == Exercise$

• Click34 ():

$$Click(e) \land e.type == Exercise \land e.time == 19:15pm$$

• Q54 (): Does she ever say she's not having exercise intensity 5?

 $Answer(Any(e.type == Exercise \land e.intensity! = 5))$

• Click35 ():

$$Click(e) \land e.type == InfusionSet \land e.time == 7:27am$$

• S27 (): It looks like she changed her infusion set today.

$$e.type == InfusionSet$$

• Q55 (): When was the last time she changed it?

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Answer(e.date) \\ \land Order(e, -1, Sequence(e_1, e_1.type == InfusionSet \land e_1.time == Before(CurrentDay)))
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• Q56 (): Is she running a little high all day long then?

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Answer(Cond(e.type == BGL \land e.date == CurrentDate ==> High(e.value)))
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• Click36 ():

$$Click(e) \land e.type == Illness \land e.time == 13:25pm$$

• Q57 (): Let's look at the next day.

DoSetDate(CurrentDate + 1)

• S28 (): It looks like she woke up in the night because she was feeling low.

 $e.type == WakeUp \land e.time == Night() \land Around(e.time, e_1.time) \land Low(e_1)$

• Q58 (): Does she take sugar, even at night?

 $Answer(Any(e.food == Sugar \land e.time == Night()))$

• Click37 ():

 $Click(e) \wedge e.type == Hypo \wedge e.time == 2:14am$

• Click38 ():

 $Click(e) \land e.type == HypoAction \land e.time == 2:14am$

• Q59 (): Let's see what kind of exercise that is, where the steps are high?

 $Answer(e.kind) \land e.type == Exercise \land Around(e.time, e_1.time) \land e_1.type == StepCount \land High(e_1.value)$

• Click39 ():

 $Click(e) \land e.type == Exercise \land e.time == 18:30pm$

• Q60 (): So does she only go low after elliptical and go high after walking?

• Q61 (): What is the intensity of walking?

 $Answer(e.intensity) \land e.type == Exercise \land e.kind == Walking$

• Q62 (): Has the heart rate come down since then?

 $Behavior(e.value, Down) \land Around(e.time, CurrentDate) \land e.type == HeartRate$

• Q63 (): I'm just gonna go to the next day.

DoSetDate(CurrentDate + 1)

• S29 (): She has a lot of steps during exercise.

 $High(e.value) \land Around(e.time, e_1.time) \land e.type == StepCount \land e_1.type == Exercise$

• Q64 (): I wonder what kind of exercise she's doing this day.

 $Answer(e.kind) \land e.type == Exercise$

• Click40 ():

 $Click(e) \land e.type == Exercise \land e.time == 19:03pm$

• Q65 (): What does she eat before this exercise?

 $Answer(e.food) \land Before(e.time, e(-1).time)$

• Q66 (10): Do the toggle so we can see step counts.

DoToggle(On, StepCount)

• Click41 (20)

$$Click(e) \land e.type == Exercise \land e.time == 9:31am$$

• Click42 (20)

$$Click(e) \land e.type == Misc \land e.time == 9:50am$$

• Q67 (11111): What was she doing mid afternoon when her heart rate went up?

$$Answer(e) \land Behavior(e_1.value, Up) \land Around(e.time, e_1.time) \land e_1.type == HeartRate \land e_1.time == MidAfternoon()$$

• Click43 (20)

$$Click(e) \land e.type == BGL \land e.time == 16:23pm$$

• S30 (01): If you look around 10 o'clock at night, sweat goes up.

$$Behavior(e.value, Up) \land Around(e.time, 10pm) \land e.type == GSR$$

• **Q68** (111111): What happened then?

$$Answer(e) \land Around(e.time, e(-1).time) \land e.type == DiscreteType$$

• **Q69** (10): Let's go next day.

$$DoSetDate(CurrentDate + 1)$$

• Click44 (20)

$$Click(e) \land e.type == Exercise \land e.time == 9:41am$$

• Q70 (10): Click on the second exercise.

 $DoClick(e) \land Order(e, 2, Sequence(d, d.type == Exercise \land d.date == CurrentDate))$

• Click45 (20)

$$Click(e) \land e.type == Exercise \land e.time == 12:43pm$$

• Click46 (20)

$$Click(e) \wedge e.type == BGL \wedge e.time == 13:44pm$$

• S31 (01): If you look, she woke up and took 2 boluses.

$$Count(e, e.type == Bolus \land After(e.time, e_1.time) \land e_1.type == WakeUp) == 2$$

• **Q71** (1111111): What time was that?

$$Answer(e(-1).time)$$

• Q72 (10): Let's go back to the day before.

$$DoSetDate(CurrentDate - 1)$$

• Click47 (20)

$$Click(e) \land e.type == Bolus \land e.time == 20:03pm$$

• **Q73** (111111): What did she eat?

$$Answer(e.food) \land Around(e.time, e(-1).time)$$

• Click48 (20)

$$Click(e) \land e.type == Meal \land e.time == 20:27pm$$

• Q74 (10): Toggle on air temperature.

DoToggle(On, AirTemperature)

• Q75 (10): Toggle on skin temperature.

DoToggle(On, SkinTemperature)

• **Q76** (10): So, go to Thursday.

DoSetDate(Thursday)

• S32 (01): So it woke her up before she had symptoms.

$$e.type == Wakeup$$

• Q77 (111111): Did she do anything?

 $Answer(e) \land Around(e.time, e(-1).time) \land e.type == DiscreteType$

• S33 (): She's high at night that night.

$$High(e.value) \land e.type == BGL \land e.time == Night()$$

• **Q78** (): What did she eat?

 $Answer(e.food) \land Before(e.time, e(-1).time)$

• Click49 ()

$$Click(e) \land e.type == BGL \land e.time == 5:11am$$

• Q79 (): Look at her bolus at 6pm.

$$DoClick(e) \land e.type == Bolus \land Around(e.time, 6:00pm)$$

• Click50 ()

$$Click(e) \land e.type == Bolus \land e.time == 17:05pm$$

• Q80 (): Look at her bolus at 2.

$$DoClick(e) \land e.type == Bolus \land Around(e.time, 2:00pm)$$

• Click51 ()

$$Click(e) \land e.type == Bolus \land e.time == 13:13pm$$

• Q81 (): Okay, see what she ate.

$$Answer(e.food) \land Around(e.time, e(-1).time) \land e.type == Meal$$

• Click52 ()

$$Click(e) \land e.type == Meal \land e.time == 13:39pm$$

• Q82 (): Let's just go to the next day.

$$DoSetDate(CurrentDate + 1)$$

• Click53 ()

$$Click(e) \land e.type == FingerSticks \land e.time == 11:51$$
am

• Q83 (): Any activity (exercise) in the afternoon?

 $Answer(Any(d.type == Exercise \land d.time == Afternoon()))$

• S34 (): She suspended the pump at about 12:30, 1 o'clock.

 $Suspended(e) \land (Around(e.time, 12:30pm) \lor Around(e.time, 1pm))$

• Q84 (): What did she eat there?

 $Answer(e.food) \land Around(e.time, e(-1).time)$

• Click54 ()

 $Click(e) \land e.type == Meal \land e.time == 13:04pm$

• **Q85** (): What did she eat at supper that night?

 $Answer(e.food) \land e.type == Meal \land e.time == Night()$

• Click55 ()

 $Click(e) \land e.type == Meal \land e.time == 12:22pm$

• **Q86** (): Now the 28th.

DoSetDate(28th)

• Q87 (): Was that low after exercise?

 $Answer(After(e.time, e_1.time)) \land Hypo(e) \land e_1.type == Exercise$

• Click56 ()

$$Click(e) \land e.type == Exercise \land e.time == 19:52pm$$

• S35 (): There's the exercise.

$$e == e(-1)$$

• Q88 (): What did she do then?

$$Answer(e(-1).kind)$$

• Q89 (): Did she take a bolus before then?

$$Answer(Any(e.type == Bolus \land Before(e.time, e(-1).time)))$$

• Click57 ()

$$Click(e) \land e.type == Bolus \land e.time == 18:39pm$$

• **Q90** (): Now go to the 29th.

• Q91 (): Click on that meal.

$$DoClick(e) \land e.type == Meal$$

• Q92 (): Go to the next day.

$$DoSetDate(CurrentDate + 1)$$

• Q93 (): Go to the 26th. DoSetDate(26th)

• Click58 ()

$$Click(e) \land e.type == BGL \land e.time == 14:04pm$$

• Click59 ()

$$Click(e) \land e.type == Hypo \land e.time == 12:42pm$$

• **Q94** (): What did she eat before her exercise?

 $Answer(e.food) \land Before(e.time, e_1.time) \land e.type == Meal \land e_1.type == Exercise$

• **Q95** (): What did she bolus before her exercise?

 $Answer(e.value) \land Before(e.time, e_1(-1).time) \land e.type == Bolus$

• **Q96** (): Go to the 22nd.

DoSetDate(22nd)

• **Q97** (): Let's just go to the 17th.

DoSetDate(17th)

• **Q98** (): What did she eat for supper?

 $Answer(e.food) \land e.type == Meal \land e.time == Night()$

• Click60 ()

$$Click(e) \land e.type == Meal \land e.time == 16:28pm$$

• Click61 ()

$$Click(e) \land e.type == InfusionSet \land e.time == 15:06pm$$

• Click62 ()

$$Click(e) \land e.type == FingerSticks \land e.time == 05:45 am$$

• $\mathbf{Q99}$ (): Did she eat anything for that low?

$$Answer(Any(e.type == Meal \land Around(e.time, e_1.time)))$$
$$\land Hypo(e_1) \land Around(e_1.time, e(-1).time)$$

• Click63 ()

$$Click(e) \land e.type == Meal \land e.time == 05:26am$$

• Click64 ()

$$Click(e) \land e.type == Bolus \land e.time == 07{:}15 \mathrm{am}$$

• S36 (): Did you see the low in the mid-afternoon?

$$Hypo(e) \wedge e.time == MidAfternoon()$$

• Q100 (): Next day.

$$DoSetDate(CurrentDate + 1)$$

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• Q101 (): Put steps in.
    DoToggle(On, StepsCount)
• Q102 (): Let's see if she walked Sunday.
    Answer(Any(e.kind == Walk \land e.time == Interval(Sunday)))
• Q103 (): Go to the 24th.
    DoSetDate(24th)
• Click65 ()
    Click(e) \land e.type == BGL \land e.time == 07:12pm
• Q104 (): Go back to Saturday.
    DoSetDate(Saturday)
• Click66 ()
    Click(e) \land e.type == FingerSticks \land e.time == 06:23am
• Q105 (): Start at the 28th.
    DoSetDate(28th)
• Q106 (): Look at the 27th.
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DoSetDate(27th)

• Q107 (): Look at 28th.

DoSetDate(28th)

• Q108 (): Look at the exercise she used to bring that blood sugar down.

 $DoClick(e) \land Behavior(e_1.value, Down)$ $\land Around(e.time, e_1.time) \land e.type == Exercise \land e_1.type == BGL$

• Click67 ()

 $Click(e) \land e.type == FingerSticks \land e.time == 05:15$ am

• **Q109** (): Look at the bolus at 11pm.

 $DoClick(e) \land e.type == Bolus \land Around(e.time, 11pm)$

 \bullet Q110 (): Look at the 31st.

DoSetDate(31st)

• S37 (): She boluses at night.

 $e.type == Bolus \land e.time == Night()$

• Q111 (): Will you toggle the steps on?

DoToggle(On, StepCount)

• Q112 (): Look at the 1st.

DoSetDate(1st)

• Q113 (): Did she change her infusion set?

 $Answer(Any(e.type == InfusionSet \land e.date == CurrentDate))$

• Click68 ()

 $Click(e) \land e.type == Bolus \land e.time == 20:23pm$

• Q114 (): How much did she bolus?

 $Answer(e.value) \land e.type == Bolus \land e == e(-1)$

• $\mathbf{Q115}$ (): go to the 1st.

DoSetDate(1st)

• Q116 (): go to the 3rd.

DoSetDate(3rd)

• Click69 ()

 $Click(e) \land e.type == FingerSticks \land e.time == 03:54$ am

• Q117 (): How low did she go right there.

 $Answer(e.value) \land Lowest(e.value) \land Around(e.time, e(-1).time) \land e.type == BGL$

• Click70 ()

 $Click(e) \land e.type == Hypo \land e.time == 03:54$ am

• Q118 (): Click on the exercise.

 $DoClick(e) \land e.type == Exercise$

• Q119 (): Was he working on cars again?

 $Answer(e.kind == Cars) \land e.type == Work$

• Click71 ()

 $Click(e) \land e.type == Exercise \land e.time == 17:02pm$

• Q120 (): On Saturday was he working on cars too?

 $Answer(e.kind == Cars) \land e.type == Work \land e.date == Saturday$

• Q121 (): Just look at his meals for fun.

 $DoClick(e) \land e.type == Meal$

• Q122 (): Look at the next day.

DoSetDate(CurrentDate + 1)

• **Q123** (): see if he went low.

Answer(Any(e, Hypo(e)))

• Q124 (): Let's just look at all of his meals for fun.

 $DoClick(e) \land e.type == Meal$

• Click72 ()

$$Click(e) \land e.type == Meal \land e.time == 19:09pm$$

• Click73 ()

$$Click(e) \land e.type == Meal \land e.time == 06:19am$$

• Click74 ()

$$Click(e) \land e.type == Meal \land e.time == 12:18pm$$

• Q125 (): How much did he bolus?

$$Answer(e.value) \land Around(e.time, e(-1).time) \land e.type == Bolus$$

• Q126 (): Did he work on cars this day?

$$Answer(e.kind == Cars) \land e.type == Work$$