7. Kids: Mastering additional challenges… *(NN)* V2.0

Please note that with autoISF 3.0 you are in an early-dev. environment, where the user interface is **not optimized for safety** of users who stray away from intended ways to use. Good safety features exist, but these are only as good as the development-oriented user understands and implements them. This is not a medical product, refer to disclaimer in section 0

- - - - - - - - **call for contributions**, chapter and case studies - - - - - - - - - - - - - -

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Points from section 1.6 *that need to be detailed here :*

To establish and maintain a FCL for kids brings about some extra challenges if:

- Lyumjev is not available or well tolerated

- Hourly basal rate is very low, providing a poor basis for big SMBs *=> Measures to get sufficient initial SMB sizes?*

- Diet is rich in sweet components. With the typical low blood volume of a small body, strong tendency towards very high bg spikes! *=> Provisions for erratic hi carb snacking/ the occasional sweet drink? (see sections 5.2.1 etc   - is this applicable ?)*

- Going through marked changes of insulin sensitivity or of circadian pattern makes it difficult to keep the FCL appropriately tuned.

   This problem is about the same in Hybrid Closed Looping. However, now you might expect miracles from the FCL. This is not going to happen. You still should try to set appropriate temp. changed profiles, that serve also as a basis for your autoISF FCL.

- Discipline is poor regarding keeping Bluetooth connectivity and infusion sites perfectly running *(=> alarms on parents phone, see section 1.3 Automation example ?)*

- Between kid and supervising parent it must be guaranteed, especially in the initial weeks, that an eye is kept on whether the FCL is working about as to be expected.

   FCL => implications for remote parent monitoring ? (may have to come at the end, when all potential problems were discussed)

30 The DIY Cockpit (see quoted below, from section 5.1.4) allows to have buttons dedicated to

31 kindergarten hours etc that can in a time-uncritical manner activate special routines – **should be**

32 **very helpful to custom program Automations for kids**!

33 ---quoted section 5.1.4 --------------------------------------

34 5.1.4 Using Automations for a **DIY FCL cockpit**: 1-button operation for treating "disturbances" e.g.

35 from snacks

36

37 Life in Full Closed Loop is easy if your lifestyle largely consists of real meals, and not much other

38 disturbances like from snacking in between. In section 4. we dealt with major meals.

39

40 High carb snacks, sweets, consuming ice cream or having a sweet drink comes with the problem

41 of even steeper glucose rises, but overall a lesser insulin need, compared to major meals (for

42 which we tuned our FCL).

43

44 Tuning aggressiveness

45 Key is that I need even more aggressive FCL performance than for meals in my normal

46 spectrum of diets.

47 Therefore, I can set

48 • a higher **temp. profile%** and/or

49 • a temp.elevated **bgAccel_ISF-weight** (see screenshot of my Automation).

50 • a **low temp. target** (76 for instance); it additionally helps maximize the first SMBs

51 that will automatically be triggered at detection of acceleration.

52

53 When first defining and testing this Automation, also check:

54 • that the safety limits as discussed in section 2 will not block the intended elevated

55 aggressiveness

56 • SMBs will not get outrageously big and iobTH sometimes exceeded by too mucht

57 Note that "the last SMB" is allowed to overshoot the valid iobTH by 30%

58

59 Limiting iob

60 For "just a snack", insulin need will in total probably not amount to as much as for a meal.

61   If you would just have your sweet drink and your meal-oriented FCL would "attack",

62   iob likely would become too high, and a glucose rollercoaster would start, with you

63   needing to consume more =>

64 If you just have a snack, or drink a glass of juice, you can lower the **iobTH_percent**

65 accordingly.
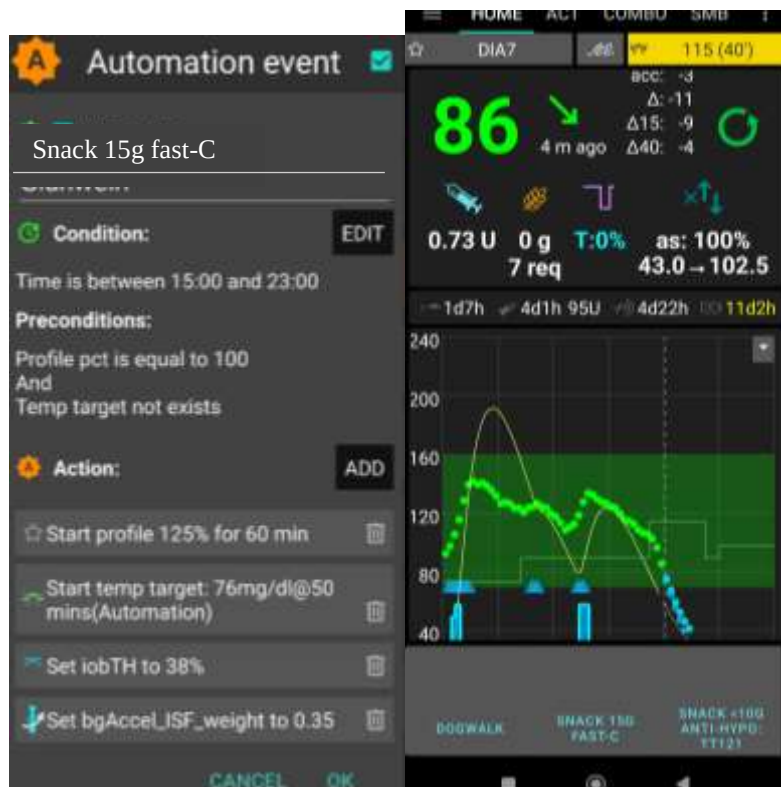
"User action" is always ticked-on

This will, in the defined time space ..

..offer the "DIY cockpit" button..

..which I must press any time (~90…30 minutes) before my snack.

<u>Note:</u> Make sure that iobTH and bgAccel_ISF_weight revert to default afterwards

66

67 So, this is a little extra "project" when setting up your FCL. You need to research your

68 snack habits (if any), and over time find out which settings in the snack-related Automation

69 work well.

70

71 In everyday life you then just must press the related button in your cockpit (which is not

72 time critical at all, except it should be clicked latest a couple of minutes after you took the

73 drink or snack).

74   If you consume more, and also eat something with your sweet drink, this will more

75   resemble a full meal… however, with unusual amounts of fast carbs. So you still

76   profit from the more aggressive modulation regarding %profile and bgAccel_ISF, but

77   in that case, you might keep the full default set iobTH_percent, or even elevate it

78   (and label your Automation, and button, differently).

79

81

82   In the related Automation, just keep the "User action" box clicked at all times, and define in

83   the Conditions when you want to see that button available for cockpit use (see screenshot

84   above) => you will see that button offered.

85

86   Besides snacks, also any other recurring special situations can be addressed via a cockpit

87   button, and receive different aggressiveness up to a suitable iobTH level.

88   ---------------------------------------==end of quote from chapter 5.1.4==------------------------------

89

90   *End with something like:*

91   There are a couple of parents and kids pioneering this area, see also Case studies 7.x.

92   We highlighted areas that would require some minimum compliance. In the end it comes down to

93   compare the achieved ease in daily use and achieved %TIR to how it was when hybrid closed

94   looping.

95

96

97   **If users pre-bolus** for kids …..always, or sometimes? How(much)? =>

98   Make sure to give **details** …

99   …. and possibly a **warning**, regarding implications for settings (I could imagine bgAccel_ISF-
100 weight tuning should be factor 5 if not 10 milder in that case = … and not be good if sometimes you
101 pre-bolus a bit, and sometimes not ????)

102

103 *Re. pre-requisites, CGM, for kids: what works well ??*

104 If not G6 is used: (re CGMs, observe latest developments re 1 minute vs 5 minute readings, see
105 github/ga-zelle pls)
106
107 *Pls include implications of (from wiki aaps):*

108   **Dexcom G6 or Dexcom ONE with xDrip+ Companion Mode**

109   The noise-level data is not shared with AAPS using this method. Therefore 'Enable SMB
110   always' and 'Enable SMB after carbs' are disabled.

111   **xDrip+ with FreeStyle Libre**

112   None of the FreeStyle Libre systems (FSL1, FSL2, or FSL3) broadcast any information
113   about the level of noise detected in the readings, and therefore 'Enable SMB always'
114   'Enable SMB after carbs' are disabled for all setups using the FreeStyle Libre.

115   In addition, many people have reported the FreeStyle Libre often produces noisy data. In
116   xDrip+ there are a few options to help with this:

117   **Smooth Sensor Noise.** In xDrip+ Settings > xDrip+ Display Settings ensure that Smooth
118   Sensor Noise is turned on. This attempts to apply smoothing to noisy data.

119   **Smooth Sensor Noise (Ultrasensitive).** If you are still seeing noisy data in xDrip+ you can
120   apply more aggressive smoothing using the Smooth Sensor Noise (Ultrasensitive) setting.
121   This will attempt to apply smoothing even on very low levels of detected noise. To do this,
122   first enable engineering mode in xDrip+. Then navigate to Settings > xDrip+ Display Set-
123   tings and turn on Smooth Sensor Noise (Ultrasensitive).

124