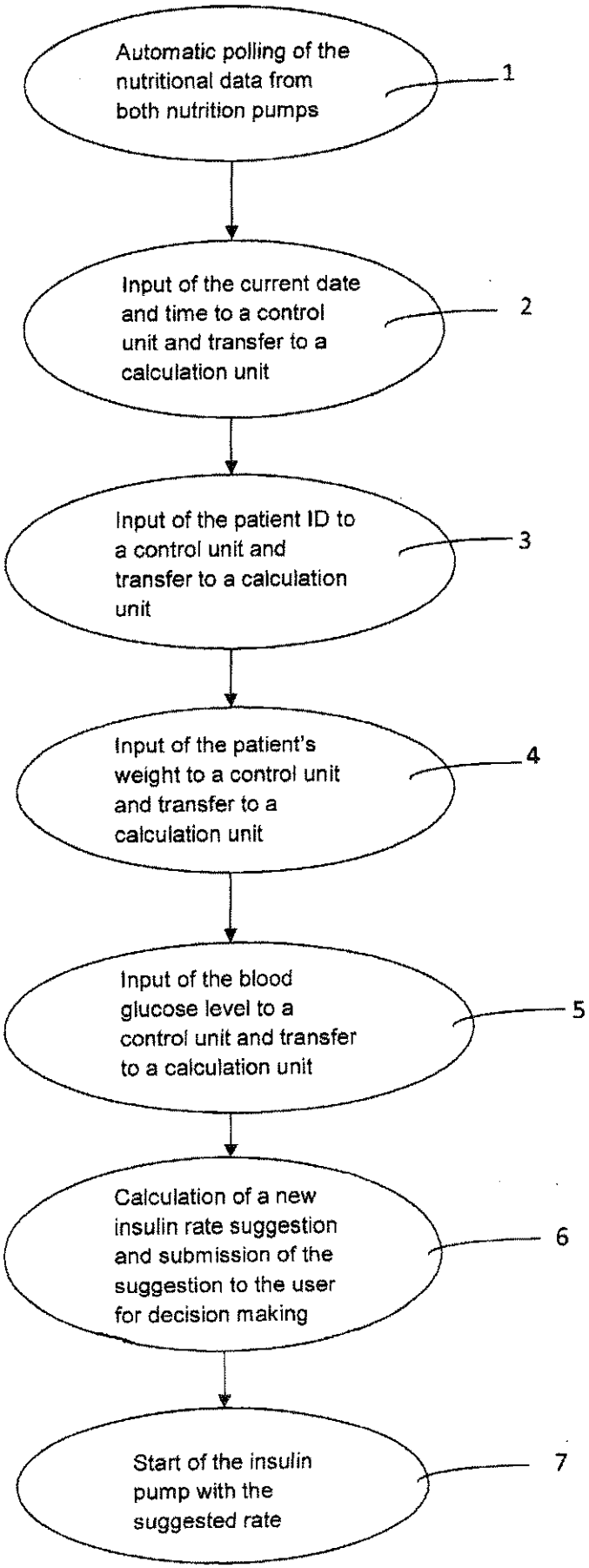
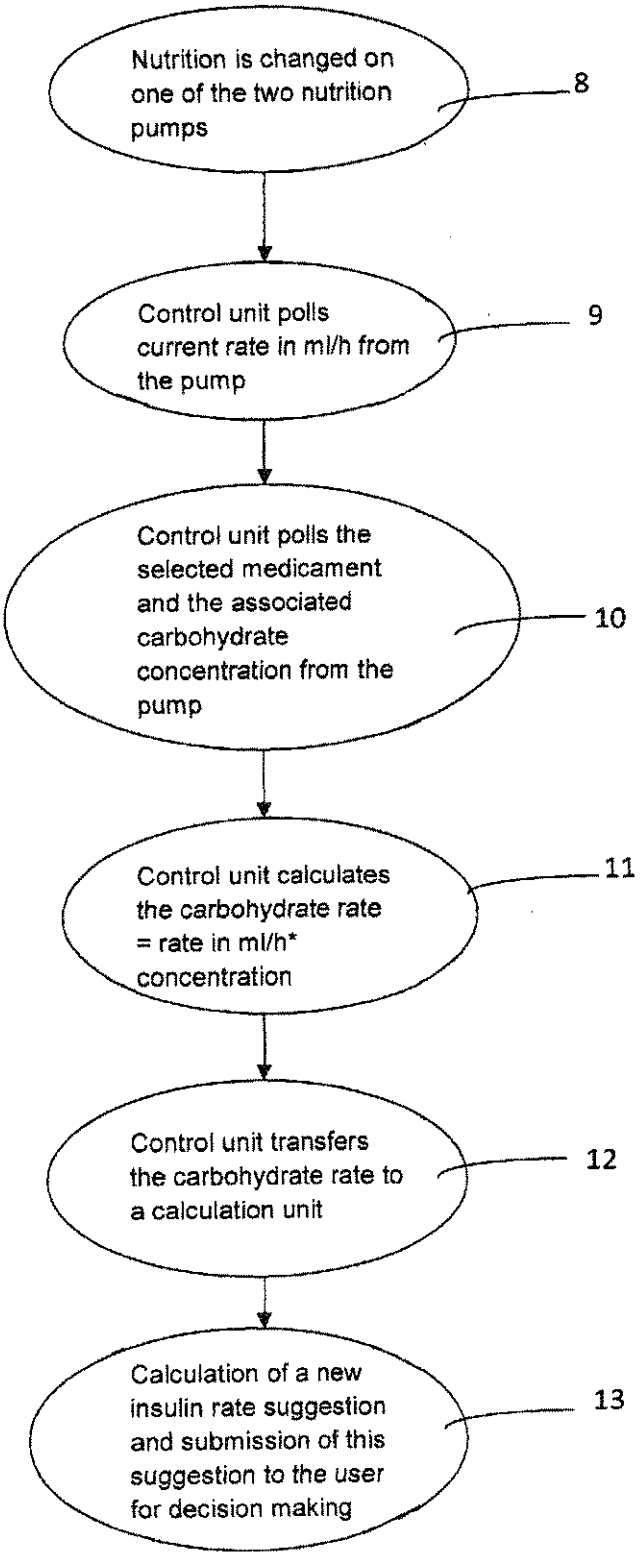

Automatic polling of the nutritional data from both nutrition pumps
1
Input of the current date and time to a control unit and transfer to a calculation unit
2
Input of the patient ID to a control unit and transfer to a calculation unit
3
Input of the patient's weight to a control unit and transfer to a calculation unit
4
Input of the blood glucose level to a control unit and transfer to a calculation unit
5
Calculation of a new insulin rate suggestion and submission of the suggestion to the user for decision making
6
Start of the insulin pump with the suggested rate
7


Nutrition is changed on one of the two nutrition pumps
8
Control unit polls current rate in ml/h from the pump
9
Control unit polls the selected medicament and the associated carbohydrate concentration from the pump
10
Control unit calculates the carbohydrate rate = rate in ml/h* concentration
11
Control unit transfers the carbohydrate rate to a calculation unit
12
Calculation of a new insulin rate suggestion and submission of this suggestion to the user for decision making
13

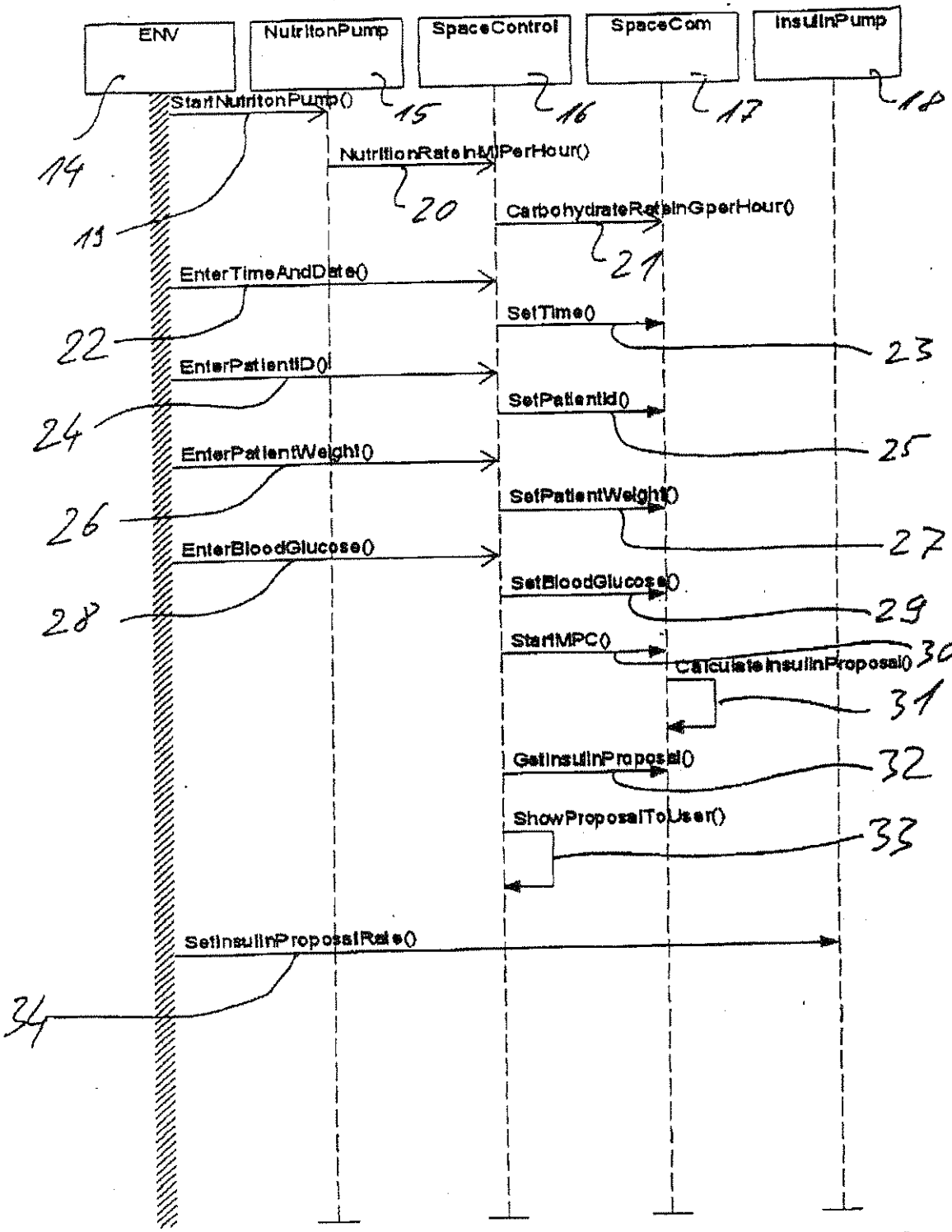

ENV
NutritonPump
SpaceControl
SpaceCom
InsulinPump
14
15
16
17
18
StartNutritonPump()
13
NutritionRateInMlPerHour()
20
CarbohydrateRateInGperHour()
21
EnterTimeAndDate()
22
SetTime()
23
EnterPatientID()
24
SetPatientId()
25
EnterPatientWeight()
26
SetPatientWeight()
27
EnterBloodGlucose()
28
SetBloodGlucose()
29
StartMPC()
30
CalculateInsulinProposal()
31
GetInsulinProposal()
32
ShowProposalToUser()
33
SetInsulinProposalRate()
34

Fig. 3

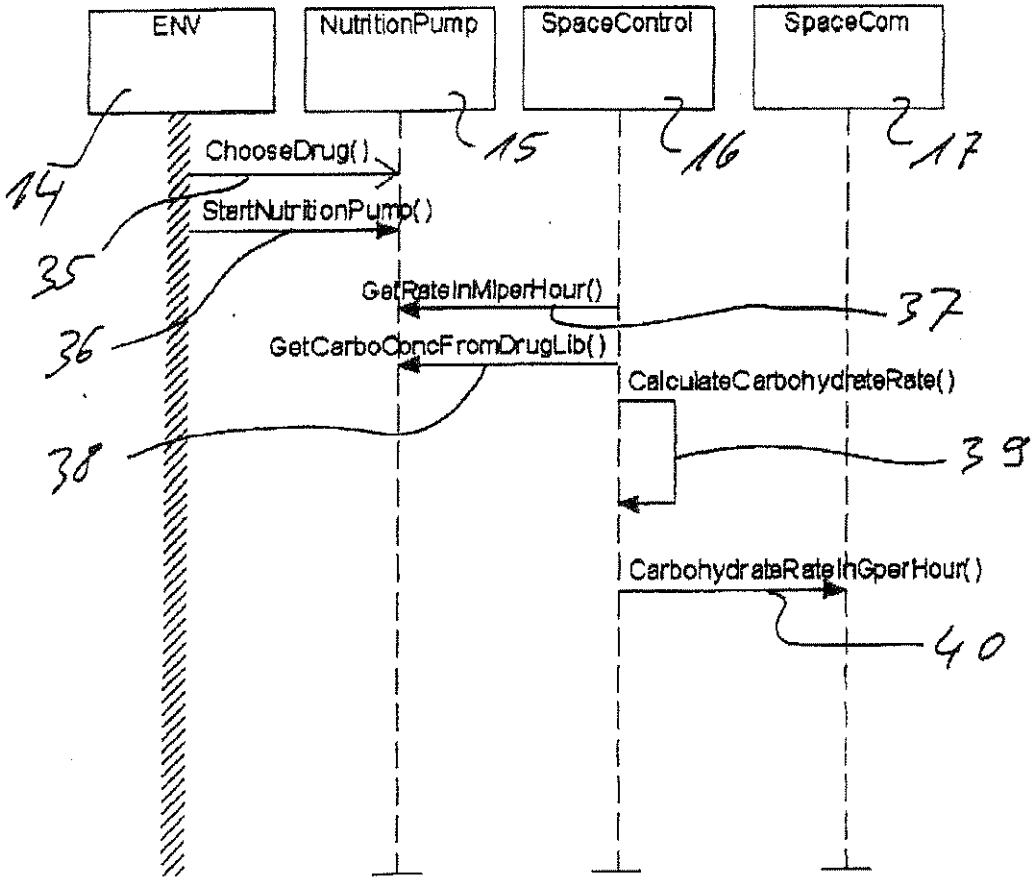

ENV
NutritionPump
SpaceControl
SpaceCom
14
15
16
17
ChooseDrug()
StartNutritionPump()
35
36
GetRateInMlperHour()
37
GetCarboConcFromDrugLib()
38
CalculateCarbohydrateRate()
39
CarbohydrateRateInGperHour()
40

Fig. 4

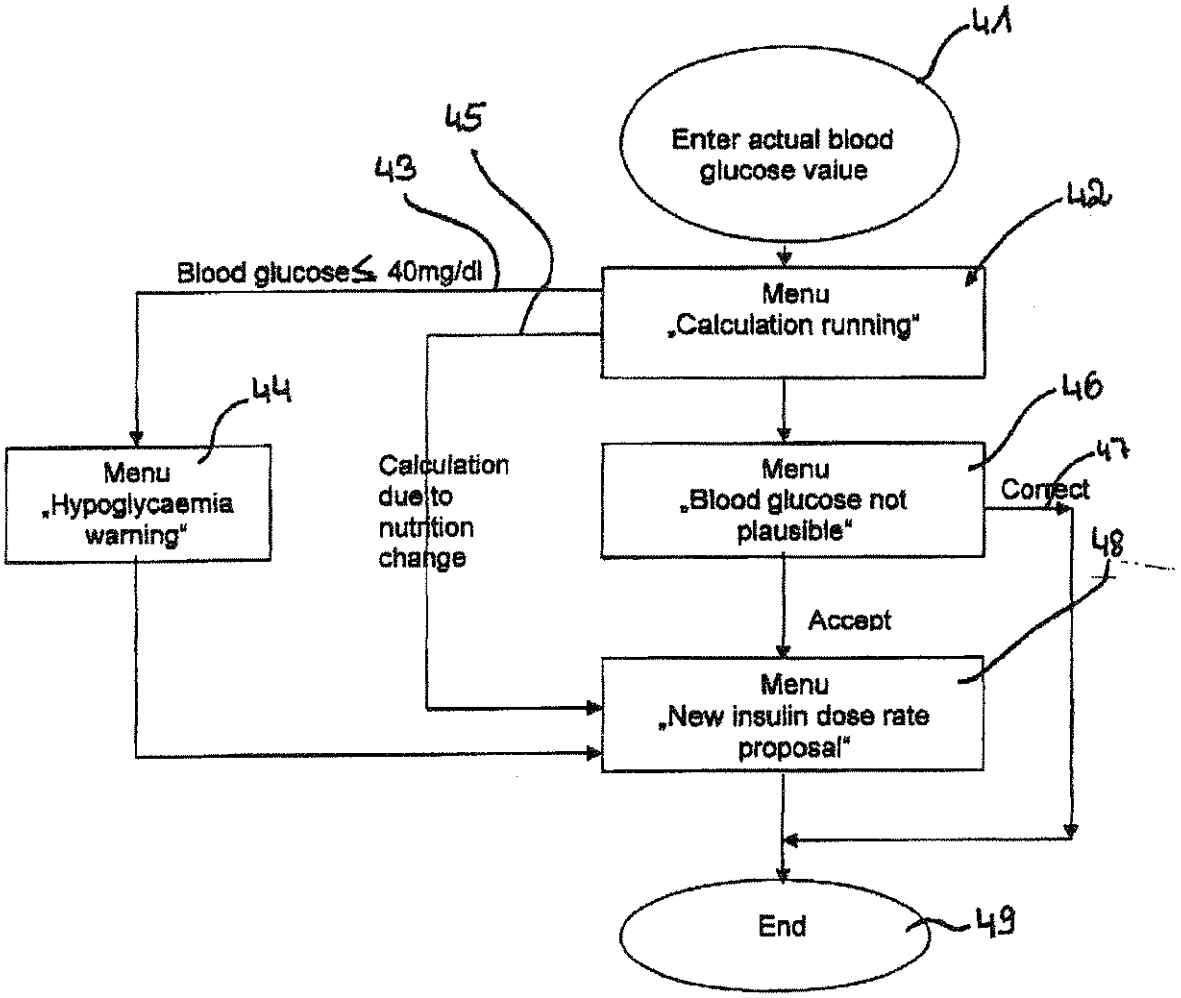

41
Enter actual blood glucose value
45
43
42
Blood glucose≤ 40mg/dl
Menu „Calculation running"
44
46
Menu „Hypoglycaemia warning"
Calculation due to nutrition change
Menu „Blood glucose not plausible"
47
Correct
48
Accept
Menu „New insulin dose rate proposal"
End
49

Fig.5

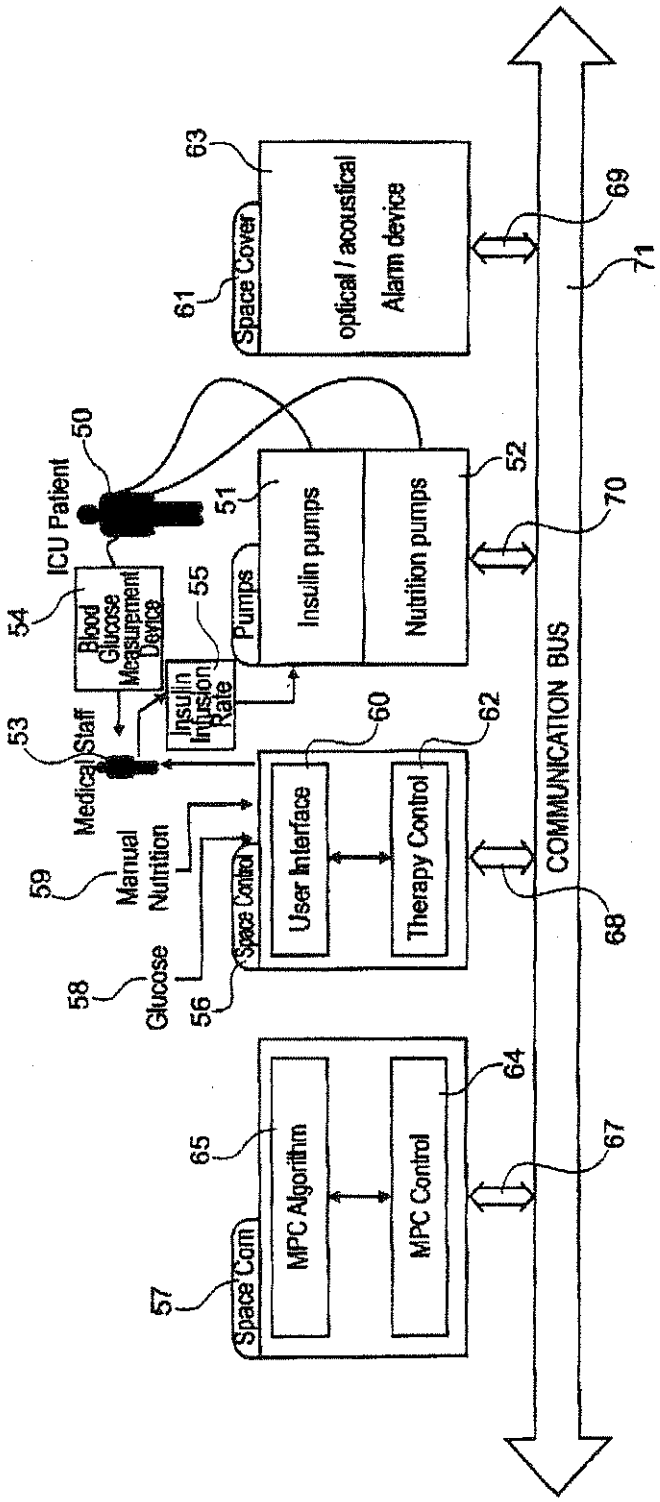

63
optical / acoustical Alarm device
61
Space Cover
69
71
50
ICU Patient
51
Insulin pumps
Nutrition pumps
52
70
54
Blood Glucose Measurement Device
55
Pumps
Insulin Infusion Rate
53
Medical Staff
60
62
User Interface
Therapy Control
59
Manual Nutrition
Space Control
COMMUNICATION BUS
58
Glucose
56
68
64
65
MPC Algorithm
MPC Control
57
Space Com
67

Fig. 6

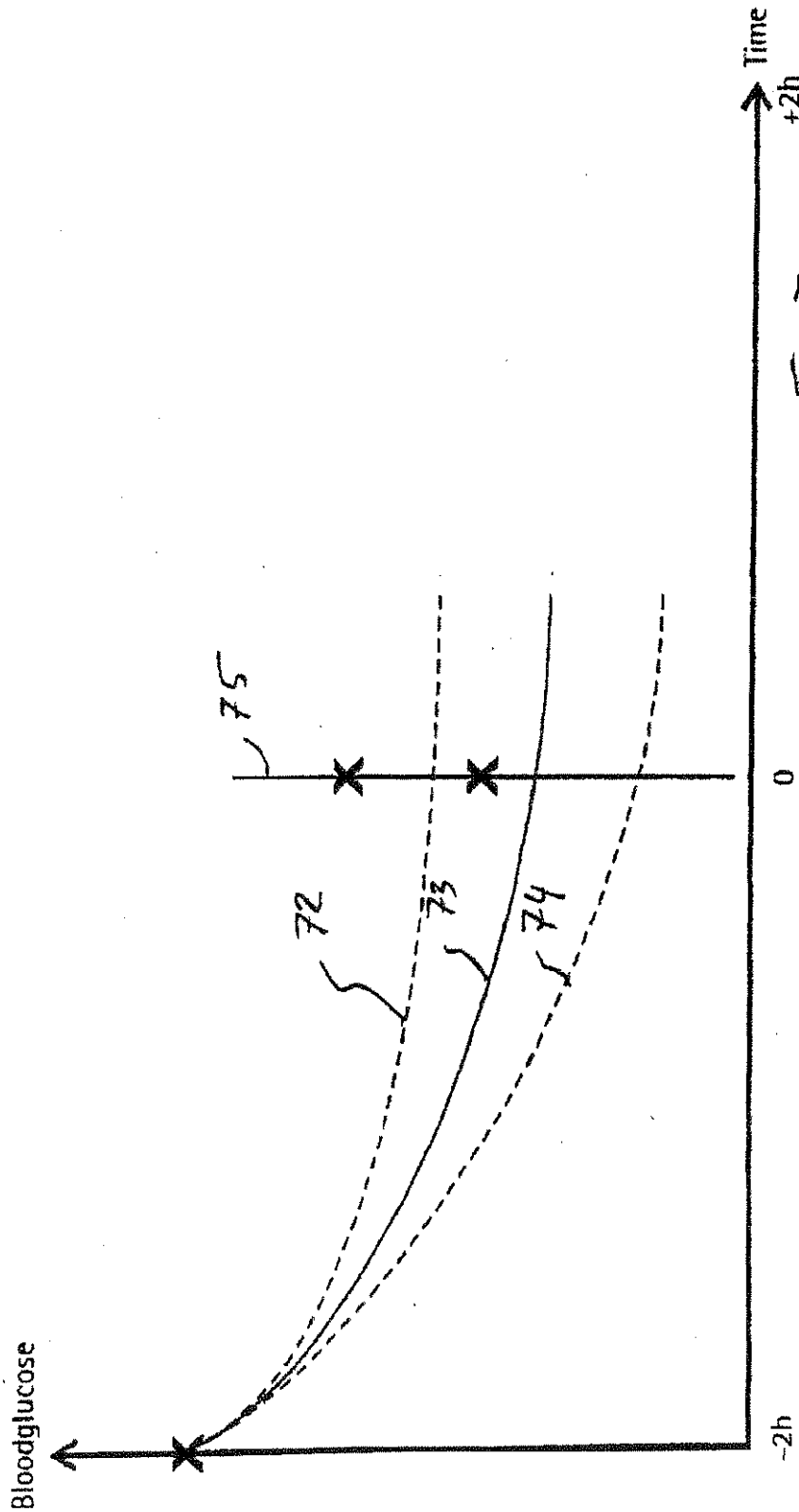


Fig. 7