



1
00:00:16,870 --> 00:00:14,629
this

2
00:00:19,429 --> 00:00:16,880
hockey puck sized medical device

3
00:00:22,550 --> 00:00:19,439
represents a dramatic step forward

4
00:00:25,830 --> 00:00:22,560
in the treatment of diabetes it's called

5
00:00:27,189 --> 00:00:25,840
pims programmable implantable medication

6
00:00:29,189 --> 00:00:27,199
system

7
00:00:31,269 --> 00:00:29,199
all this sophisticated hardware fits

8
00:00:34,950 --> 00:00:31,279
together in a titanium shell

9
00:00:37,990 --> 00:00:34,960
to form a computer pump and reservoir

10
00:00:39,590 --> 00:00:38,000
inventor robert fischell this whole

11
00:00:41,990 --> 00:00:39,600
computer for pims

12
00:00:45,190 --> 00:00:42,000
runs on just over one millionth the

13
00:00:47,110 --> 00:00:45,200

power of a flashlight bulb

14
00:00:49,670 --> 00:00:47,120
some of the technology was borrowed from

15
00:00:50,549 --> 00:00:49,680
a pair of viking spacecraft that landed

16
00:00:54,150 --> 00:00:50,559
on mars

17
00:00:56,229 --> 00:00:54,160
in the mid 1970s so far about 20

18
00:00:57,270 --> 00:00:56,239
patients have received the experimental

19
00:00:59,349 --> 00:00:57,280
implant

20
00:01:01,990 --> 00:00:59,359
it's inserted just below the skin in the

21
00:01:04,789 --> 00:01:02,000
abdomen and can be refilled with insulin

22
00:01:07,270 --> 00:01:04,799
every two to three months the first

23
00:01:09,190 --> 00:01:07,280
recipient of pims was jack pietro

24
00:01:11,109 --> 00:01:09,200
a professor at american university's

25
00:01:14,070 --> 00:01:11,119
school of international service

26

00:01:14,950 --> 00:01:14,080

in washington dc congressional

27

00:01:18,230 --> 00:01:14,960

monitoring

28

00:01:20,230 --> 00:01:18,240

for 28 years jack has had diabetes

29

00:01:22,230 --> 00:01:20,240

like one million other americans he

30

00:01:23,190 --> 00:01:22,240

coped with his body's inability to break

31

00:01:26,950 --> 00:01:23,200

down sugars

32

00:01:29,510 --> 00:01:26,960

through daily insulin injections

33

00:01:30,950 --> 00:01:29,520

jack's daily routine includes some tasks

34

00:01:33,429 --> 00:01:30,960

common to us all

35

00:01:35,749 --> 00:01:33,439

and some not so common he must do a

36

00:01:37,749 --> 00:01:35,759

blood sugar test before and after all

37

00:01:39,510 --> 00:01:37,759

meals and activities

38

00:01:40,789 --> 00:01:39,520

the reading helps determine how much

39

00:01:42,469 --> 00:01:40,799

insulin he needs

40

00:01:46,870 --> 00:01:42,479

after considering what he will eat for

41

00:01:50,870 --> 00:01:49,270

with this handheld unit information is

42

00:01:53,190 --> 00:01:50,880

relayed to the pump's computer

43

00:01:55,510 --> 00:01:53,200

controlling the release of insulin

44

00:01:57,350 --> 00:01:55,520

once an appropriate dose is entered a

45

00:01:59,030 --> 00:01:57,360

start command is given

46

00:02:00,550 --> 00:01:59,040

the two units communicate with each

47

00:02:02,870 --> 00:02:00,560

other using telemetry

48

00:02:05,190 --> 00:02:02,880

the same way satellites beam information

49

00:02:07,030 --> 00:02:05,200

from outer space

50

00:02:08,949 --> 00:02:07,040

the key to maintaining normal blood

51
00:02:09,669 --> 00:02:08,959
sugar is through careful regulation of

52
00:02:12,949 --> 00:02:09,679
diet

53
00:02:13,830 --> 00:02:12,959
insulin and exercise jack plays tennis

54
00:02:15,830 --> 00:02:13,840
regularly

55
00:02:18,630 --> 00:02:15,840
he thinks pins may have helped him win

56
00:02:20,150 --> 00:02:18,640
last summer's 55 and over baltimore open

57
00:02:22,790 --> 00:02:20,160
tennis championship

58
00:02:24,150 --> 00:02:22,800
one of the sort of unsuspected benefits

59
00:02:27,030 --> 00:02:24,160
for me has been a

60
00:02:27,910 --> 00:02:27,040
a general upgrading of health i feel

61
00:02:32,470 --> 00:02:27,920
better

62
00:02:37,830 --> 00:02:35,270
meet 23 year old melissa frank a lab

63
00:02:40,070 --> 00:02:37,840

technician in eldersburg maryland

64

00:02:41,830 --> 00:02:40,080

for as long as she can remember diabetes

65

00:02:43,750 --> 00:02:41,840

has been part of her life

66

00:02:44,949 --> 00:02:43,760

melissa regulates her blood sugar with

67

00:02:47,110 --> 00:02:44,959

insulin injections

68

00:02:48,150 --> 00:02:47,120

often four times a day but there are

69

00:02:50,150 --> 00:02:48,160

side effects

70

00:02:52,229 --> 00:02:50,160

for instance her skin has developed a

71

00:02:54,790 --> 00:02:52,239

dangerous resistance to absorbing

72

00:02:56,229 --> 00:02:54,800

insulin properly this results in poor

73

00:02:58,149 --> 00:02:56,239

blood sugar control

74

00:03:01,830 --> 00:02:58,159

which can lead to blindness nerve

75

00:03:03,910 --> 00:03:01,840

disorders liver and heart damage

76

00:03:05,430 --> 00:03:03,920

this summer melissa is going to have an

77

00:03:07,830 --> 00:03:05,440

insulin pump implanted

78

00:03:09,190 --> 00:03:07,840

and is very excited because she has seen

79

00:03:11,910 --> 00:03:09,200

the difference it has made

80

00:03:13,190 --> 00:03:11,920

with other patients who have it that's

81

00:03:15,509 --> 00:03:13,200

why i want it

82

00:03:16,869 --> 00:03:15,519

because i've had my disease so long now

83

00:03:18,710 --> 00:03:16,879

i don't want to have complications by

84

00:03:21,910 --> 00:03:18,720

the time i hit 30.

85

00:03:22,710 --> 00:03:21,920

pims programmable implantable medication

86

00:03:25,350 --> 00:03:22,720

system

87

00:03:26,390 --> 00:03:25,360

using space technology to improve the

88

00:03:33,430 --> 00:03:26,400

daily lives