Conflict of Interest Disclosure

Stephen W. Ponder MD, FAAP, CDE has no conflicts of interests to disclose

Diabetes care is about **CHOICES**

35,000 each day  12,775,000 a year

225 about food each day  82,125 a year
Points can define **shapes**

Constellation Ursa Major

What do you see here?

Shapes can be **significant**
Shapes can carry valuable health information.

Even life-saving information!

Same information, different format. Which is easier to understand?
How Sugar Surfing™ works...

**REACTIVE**
- Omissions

**PROACTIVE**
- Actions

‘IN CONTROL’

How Sugar Surfing™ works...

Actions

‘recent’ past

present

‘immediate’ future

S.U.R.F.

See the patterns

Follow up carefully

Understand their Significance

Respond appropriately

“Pattern anatomy”

shelf

delta

drop

pivot

inflection

lag

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Your blood glucose is 100 mg/dl dropping at a rate of 2–3 mg/dL/min and your insulin pump is delivering at 1.3 U/hr. YOU'RE GETTING LOW!

Sugar Surfing™ emphasizes significance

Determining significance: take **C.A.R.E.**
- **C**urrent (what are you doing now)
- **A**nticipated (actions/omissions)
- **R**ecent (actions/omissions)
- **E**xperience (your own)

Significance is situationally dependent

Act or not act?
- 220 mg/dl
- 190 mg/dl
- 160 mg/dl
- 130 mg/dl
- 100 mg/dl
- 70 mg/dl

Act or not act?
Heuristics are simple, efficient rules used to form judgments and make decisions. They are mental shortcuts that usually involve focusing on one aspect of a complex problem.
This is Sugar Surfing...

1HR  3HR  6HR  12HR  24HR

This is Sugar Surfing...

1HR  3HR  6HR  12HR  24HR
This is Sugar Surfing...

The point is that every "day of surfing" is never exactly the same: variability is expected

In nature, no two waves are exactly the same

Blood glucose "waves" included...
Appreciate the **flux** of sugar levels in *non-d* persons

![Graph showing blood glucose levels over a week.]

4 day non-diabetic CGM plot

"the only person with a straight line blood sugar is a dead person"

*Ponder, 2008*

Every day is **UNIQUE**

If your blood sugar could be accurately measured EVERY MINUTE of the day by some special machine, there would be 1,440 numbers in a row. WHAT ARE THE ODDS of two different days being EXACTLY THE SAME?

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“Flux and Drift”

Sugar Surfing: Which one uses an insulin pump?

A

B
Which user is non-d?

Looping compared to Sugar Surfing

Sugar Surfing is a process, not a recipe
“Sugar Surfing is about making choices ‘in the moment’. It’s NOT about what you choose to eat”

Stephen W. Ponder MD, FAAP, CDE

Example

3 dose meal
More reasons Sugar Surfing™ is a Paradigm shift

Pattern Management Logbook: Backward looking. Reactive. No way observer (e.g., doctor) knows the “situation” at each BG check point. You must nearly do things in order. This presumes data is collected and reviewed frequently but...


Sugar Surfing exists at the intersection of....

thinking
His blood sugar has been as stable as I’ve ever seen the last few weeks, but it’s been incredible the last three days... Thank you Jesus! This includes a 100(!) carb dinner with french fries AND trampoline time! This kid. He’s really taken on the challenge to sugar surf.

7 year old Surfer

1 day after Minneapolis workshop (pivoting)

10 year old New Jersey surfer (first pivot)
After Wichita, a Drive-In movie, Kentucky Fried Chicken and a bucket of Popcorn.

Thanks for your help refining our I-chaining technique.

It’s been almost a year since the Wichita workshop and we’ve Sugar Surfed ever since. This will be our forth 90 day visit and A1C check, exactly the same for a year. Our five year old still gets to eat what she wants when she wants with just a little moderation. It’s also important to note that my wife and I apply Sugar surfing techniques with quite different approaches, but with equal success. It is true that anyone can do it, all you have to do is try. Thank you Kevin and Dr. Fender.

Emily and Juliana

What have we learned?

- It’s “Dynamic Diabetes Self Management”
- aka “Management in the Moment”
- It’s a process, not a formula
- How you take insulin is totally up to you (pump or injections)
- Surfing leverages dynamic thinking in proactive and reactive ways
- Sugar Surfing is a true paradigm shift in d-care
**BASIC SUGAR SURFING MOVES**

4 Sugar Surfing prerequisites

1. Make ‘glancing’ a habit
2. Fluidly manage alerts/alarms
3. Calibrate your system carefully
4. Set a steady basal insulin effect

What a basal insulin is *supposed* to facilitate

**BALANCE**: Incoming blood sugar (influx)

**WITH**: Outgoing blood sugar (efflux)
Look back...

Calibrate on the straight

A little basal “heavy”
The 4 “core” Sugar Surfing moves

Basic pivot

Taking the drop
**Double pivot**

- At IDENTICAL levels using a BG meter, your next actions can be ANYTHING based on the DIRECTION of FLOW.

**“Direction affects correction”**

**Learning how to pivot**

- Treat a low blood sugar (BS) level by consuming carbs or glucose tablets.
- Treat a high BS level by trying to lower it through exercise or insulin injection.

---

22

70

100 mg/dl

120 mg/dl

140 mg/dl

160 mg/dl

180 mg/dl

80 mg/dl

60 mg/dl

40 mg/dl

140 mg/dl

180 mg/dl

220 mg/dl

260 mg/dl

280 mg/dl

240 mg/dl

200 mg/dl

160 mg/dl

120 mg/dl

80 mg/dl

60 mg/dl

40 mg/dl

---

64

65

66
Practice *higher* dosing thresholds when first learning to pivot

Once comfortable, then *lower* the pivot action threshold

Breaking down a delta wave

- How long has it been happening and how fast is it changing?
- Where did it start and where is it going? Is it significant?
- Was it related to food, stress, fading insulin, or all three?
- Have you seen this before under similar circumstances?
You must do a lot of THIS…

Before doing this…

Practice your moves from “fixed” points

YOU CHOOSE

100 mg/dl
120 mg/dl
140 mg/dl
160 mg/dl
180 mg/dl
80 mg/dl
60 mg/dl
40 mg/dl

Learn micro-dosing at higher starting points first (“shelf”)

“aim small at first”

Units of rapid-acting insulin

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Then...as your skills/confidence grows...

Set lower action thresholds and targets

Watching a drop

Take pivot dose of insulin
Consider taking the drop
Just glance the shelf
Perform a carb pivot

Determine your personal MAXIMUM and minimum effective dose range for rapid-acting insulin
Learning from the Line Graph – Insulin Timing

Yesterday

- Insulin bolus: 7:30 AM
- Breakfast: 7:30 AM

Today

- Insulin bolus: 7:10 AM
- Breakfast: 7:30 AM

Timing is everything
Waiting for the bend and meal timing depends on BG trend
And it also depends on the food (fast, medium or slow)

Before meal sugar
After meal sugar

Timing 101 – 20 min. match

Timing 101 – 20 min. match
Why timing is everything

Basic Surfing: Timing

Timing insulin and meals to prevent a spike
Why timing is so important to halt further spikes

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Timing insulin

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Timing insulin
BG 159 mg/dL (8.8 mmol/L) 6 U Humalog @5:30AM

28 gm carbs @ 7:18AM 119 mg/dL (6.6 mmol/L)

3 U Humalog @ 7:03 AM 126 mg/dL (7 mmol/L)

Why we must watch when we can...

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Insulin onset times vary

Onset timing varies

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Inflections have meaning

The situation:
- Single basal insulin rate/dose
- Delta wave from low-carb breakfast
- Inflections "visualize" insulin duration
  (here about 90-110 minutes)

Why the different insulin responses?
The next night...

Inflections are revealing

Let’s review...
What are these called?

- drops
- deltas
- shelves
- inflections
- pivots
What have we learned: **TIMING**

Timing 101 – 20 min. match

1) Watch your lag times (they vary)
2) Inflection points matter
3) “Wait for the bend” (an inflection)
4) Know when your insulin peaks
5) BG direction, speed and sensor lag all affect correction and the timing of your actions
6) Don’t feel bad when you can’t always do this! Life goes on.

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**PRINCIPLES OF SUGAR SURFING**

1. A CGM is no better than its user.
2. Flux and drift happen...steer them!
3. Manage the situation, not just BG.
4. Keep an eye on the trend line.
5. Learn patience.
6. Experiment a little
7. Learn to micro-dose
8. Don’t let “good enough” be an enemy.
10. Sugar Surfing is a skill, not a recipe.

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End of Part 1. Thank you!
Free e-book for newly diagnosed go to sugarsurfing.com