

Activity 2.1.5

Telehealth

Thirty days of data, and the pattern hiding under the average. Current reading, weekly summaries, a thirty day graph. Find the patterns that repeat by time of day, then make recommendations you can defend.

DATE	PORTAL DAY	LESSON	TURN IN
Friday 2026-10-20	Analyze chronic trends	Lesson 2.1 Talk to Your Doc	CER

Where this sits. Day 2 of 2. Portal calendar label for today: Analyze chronic trends.

01 Why today matters

You have a month of round-the-clock readings from a patient who is not in the room, and a summary screen that reports an average and a percentage.

Today you go past those two numbers and find where in the day this patient's control keeps slipping, because that is the only finding a recommendation can be built on.

02 What you already know

- From Monday you have the glucose feedback loop, the difference between the two types of diabetes, and the target ranges.
- From yesterday you have the habit of reading every value against the range printed beside it. From last Thursday you know the difference between one reading and a trend.

WHAT THIS SHEET WILL NOT TELL YOU

- No conclusion about this patient is printed here. The patterns are yours to find.

03 Vocabulary

TERM	WHAT IT MEANS, PLAINLY
Time in range	The percentage of a period during which readings stayed inside the target band. A headline number that hides where the rest of the time went.
Hypo event	An episode of blood glucose falling below the target band. Counted separately from time in range because a low is dangerous fast, even when it is rare.
Hyper event	An episode above the target band. Slower to harm, but repeated highs are what damage vessels, kidneys, eyes and nerves over years.
Overnight pattern	A run of readings between bedtime and waking that repeatedly sits outside the band. Important because nobody is awake to notice it and nothing in the patient's day explains it.

Postprandial	After a meal. The two-hour-after-eating target exists because that is when a meal's glucose peak arrives.
Basal and bolus	The two jobs insulin does: a steady background delivery all day, and an extra dose timed to a meal. A pattern that repeats at one hour of the day points at a different one of these than a pattern that follows every meal.
Confounder	Something else that could explain the pattern you found. Exercise, illness, a sensor at the end of its life, a missed dose, a growth spurt.
Correlation	Two things moving together. Useful for finding where to look. Not proof that one caused the other.
Adherence	Whether a plan is actually being followed in real life. When it is not, the useful question is what makes it hard, not whether the patient tried.
Scope of practice	The limit of what a given professional is licensed to decide. Reading a pattern and recommending a review are inside a primary care physician's scope. Rewriting an insulin regimen from a summary screen is not.

Every term on this list is flagged for the illustrated glossary, scoped to this activity only. Terms are not shared forward or backward between activities, because a definition from a later activity can hand you an answer you were supposed to derive.

04 How to do the work

Read the data in the order below. The order matters, because if you look at the summary first it will tell you what to see.

- 1 Copy the target ranges from Monday's sheet to the top of your page. Every judgment today is made against those.
- 2 Start with the raw current reading and the short graph that comes with it. Note the value, the time, and whether the line is rising, falling or flat. Direction is information the number alone does not carry.
- 3 Move to the two weekly summaries. Record every figure they give you: percentage in range, average, counts of lows and highs, highest and lowest readings, days in balance. Do not interpret yet.
- 4 Now the thirty day summary graph. This is hourly data averaged over a month, so a bump in this line is not one bad night, it is a habit. Mark on your copy where the average line crosses out of the target band, and read the clock time off the axis for each crossing.
- 5 Line up the graph's markers for waking, meals, insulin, exercise and sleep against the crossings you just marked. For each crossing write the clock window and what is happening to the patient at that hour.
- 6 Read the thirty day summary text. Compare its stated average against the weekly averages you recorded. If they disagree, that gap is a finding, not a mistake to smooth over. Say what could produce it.
- 7 Write out every pattern you found in this form: at [time window], readings are [above or below] target, [how often]. A pattern needs a time and a direction, or it is not a pattern.
- 8 For each pattern, list at least two things that could explain it, and say what evidence would separate them. This is the step that turns an observation into something a clinician can act on.
- 9 Write your recommendations. Split them into two lists: things the patient can change, and things you need to measure or review before anything changes. Every item names who does it and when.
- 10 Draft the pros and cons of telemedicine with a partner, then write which way you come down and what evidence from this month's data pushed you there.

WHERE THE CEILING ON YOUR RECOMMENDATION SITS

- You are reading a summary from an app, not examining a patient. That supports recommendations about timing of meals, timing and type of exercise, when to check by fingerstick, when to change the sensor, and what to bring to the next appointment.
- It does not support you writing a new insulin dose. Changing a regimen needs the pump's own delivery record, the food log, illness history and a prescriber. Recommending that this review happens, and saying exactly which data it needs, is the strong answer.
- Write the ceiling into your response on purpose. An answer that names its own limit reads as more competent than one that quietly exceeds it, and it is the honest one.

05 Where students get stuck

- Stopping at the average. An average sits in the middle of everything that happened. A month that alternated lows and highs and a month that stayed near target can produce the same average, and only one of them is a patient in trouble. Report the average and then report the spread and the events.
- Reading a high percentage in range as a clean result. Work out what the leftover percentage is in hours. Fifteen percent of a week is about twenty-five hours outside the band. Convert every percentage into time before you decide whether it is small.
- Confusing one event with a pattern. A single low on a Tuesday is an event, and you note it. Lows at the same hour across many days is a pattern, and it points at something structural. Different findings, different recommendations.
- Assuming the thing that happened just before is the cause. Meals, exercise and doses all cluster at the same times of day, so almost anything will correlate with almost anything. Name at least two candidate explanations for each pattern and say what would tell them apart.
- Ignoring the overnight hours. Nobody is awake to feel an overnight problem and nothing in the patient's behavior explains it, so it is the pattern most likely to be missed and the one continuous monitoring exists to catch. Read that stretch of the graph deliberately.
- Recommending a dose change. It is outside what this evidence supports and outside a student's claim ceiling. Recommend the review, name the data it needs, and say who has to be in the room.

06 What you turn in

CER

A claim, evidence, reasoning response for the medical file. Claim: the patterns you found, each stated with a time window and a direction. Evidence: the figures you pulled from the current reading, both weekly summaries, the thirty day graph and the thirty day summary, each with its source named, plus the percentages converted into hours. Reasoning: for each pattern, the candidate explanations and what would separate them. Finish with two lists: what the patient changes, and what has to be measured or reviewed first. Name the limit of what this evidence supports.

07 Check yourself

- ☐ A week reports 85 percent time in range. Convert the remainder into hours and say why that conversion changes how the number reads. (Where students get stuck, the percentage trap)
- ☐ You find readings above target between roughly 11 pm and 6:30 am on most nights. Write the pattern statement, then give two explanations that would produce it. (How to do the work, steps 7 and 8)

- ☐ Why is a recommendation to change an insulin dose outside what this month of data supports? (How to do the work, the ceiling on your recommendation)