

INR Self Tracking

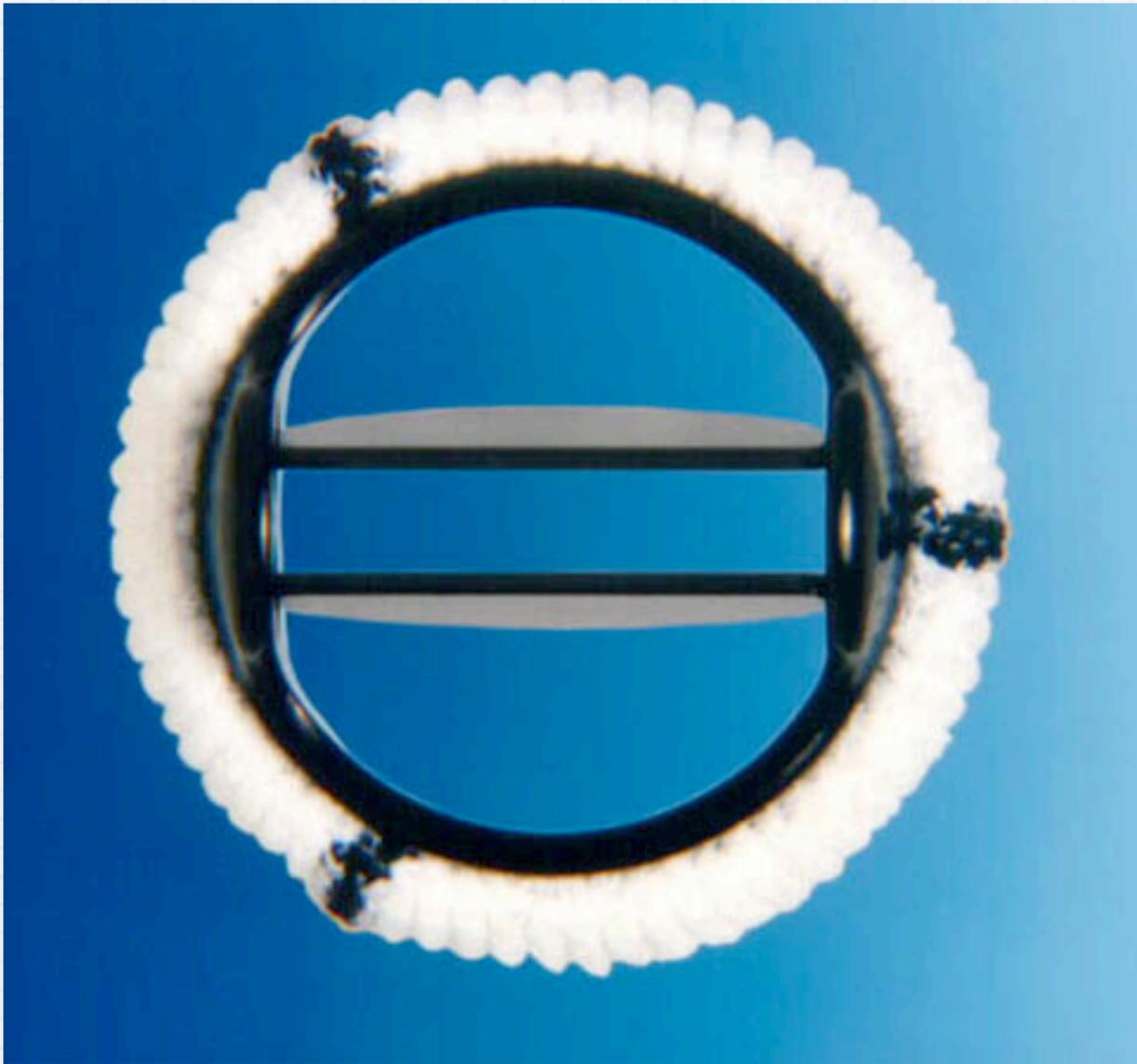
Rob Rothfarb

Patient $\langle == \rangle$ Tracker

Proactive patient, tracking several vital signs, blood values, diet, weight, sleep, and activity.

Medical devices getting more miniaturized, new devices being created that allow patients with various conditions that need to be managed to more actively participate in their care by using devices and gathering data their Drs can use in that management.

Mechanical Prosthetic Aortic Heart Valve



Requires life-long
anticoagulation
therapy to prevent
dangerous blood
clots from forming
on valve

Implanted June 2011, started on anticoagulation therapy at that time, will be on it rest of my life. Good news is that these devices exist and work. Provides a high-quality valve function and usually don't malfunction or cause complications. Can hear the clicking sound of valve opening and closing if you stand next to me in a quiet place. Would use the amplified sound as a metronome during band practice but it turns out it's not a great time-keeper because of some arrhythmia I have.

PT/INR

- * International Normalized Ratio - a standard way to quantify length of time it takes for blood to clot. INR is calculated from Prothrombin Time, adjusted for the chemical reagents used to do the test. Medical professionals use PT/INR values to manage a patient's anticoagulation therapy.

Blood Clotting Time

too short and risk dangerous blood clots forming around valve....stroke, heart attack

too long and risk serious internal bleeding, stroke

my INR needs to be kept in 'therapeutic range' :
2.5 - 3.5, ideally at/near 3.0

(normal range is 0.8 - 1.2 for people not on therapy)

Why is it important? Serious health risks if not kept in the range needed for therapy. People who have to take Warfarin for other conditions like Atrial Fibrillation or Deep Vein Thrombosis, are kept in a therapeutic ranges specific to those conditions. Mechanical valves require a high level of anticoagulation.

Anticoagulation Therapy

Warfarin aka Coumadin

Only drug currently approved by FDA for OAT for mechanical valve prosthetics

Take a daily oral dose to keep myself in therapeutic range

Dose amount often varies by day of week

Frequent blood testing to check INR

Dr or clinic adjusts dose & testing frequency based on INR values

So what exactly is anticoagulation therapy? Usually monthly testing, 4–5 weeks max between tests. Effective half-life of Warfarin ranges from 20 – 60 hours. Many variables affect how it works. Can be difficult to keep track of since dose often varies by day of week and those days can change as Dr adjusts dosage.

Needing to be Monitored Regularly

Different things affect INR

Diet

Exercise

Metabolism / Weight

Medications

Supplements

Alcohol

Genetic sensitivity to Warfarin

Have heard that weather and air pressure can affect INR also. Have to avoid supplements like CoQ10, Ginko Biloba, Hawthorne, Garlic as well as OTC medications like aspirin and ibuprofen.

INR Self-Testing

Some patients on anticoagulation therapy are able to test their PT/INR themselves using a portable meter.

Promotes regular testing

Get dosage adjustments sooner than via lab testing
Hours as opposed to next day

Allows me to test anytime

Allows me to do any needed testing while traveling

Surgeon told me about it and recommended it for me, thought I'd be a good candidate. Cardiologist gave it a thumbs up. Insurance company was a pain in getting it approved but got it OK'd after 4 months of wrangling. Issue of 'medical necessity'. Slow movement in patient management toward INR self-testing. There are several benefits.

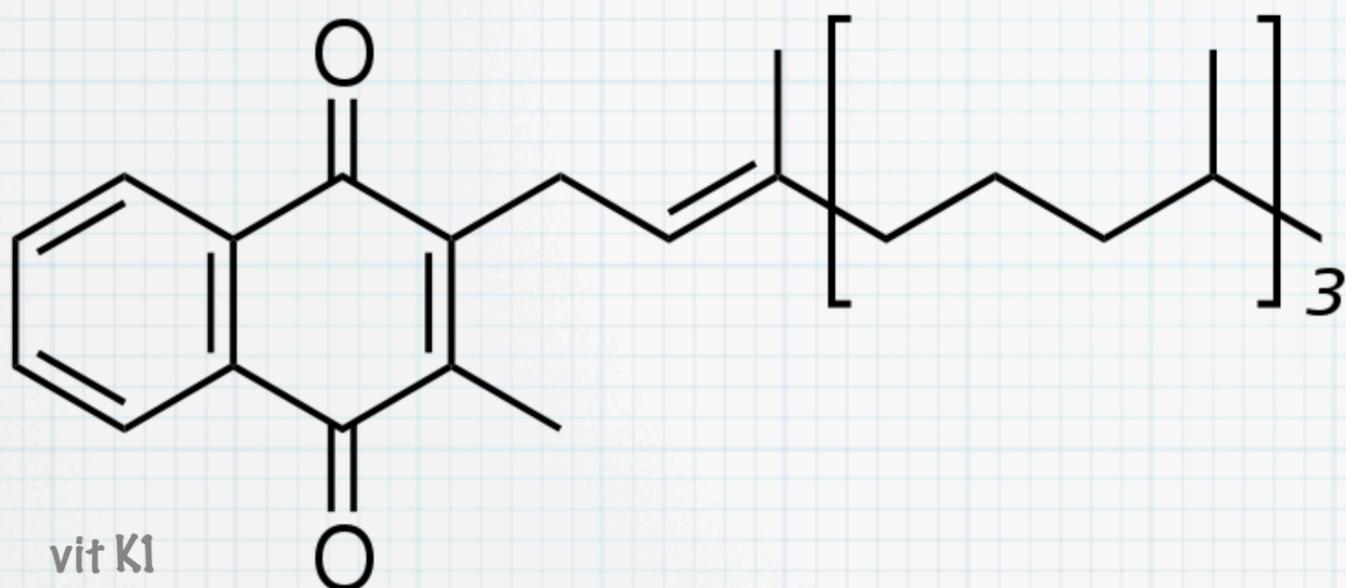
PT/INR Meter

Drop of blood mixes with chemical reagents on test strip to start clotting. Impedance of the test sample is measured to calculate INR.



(temp image)

Drop of blood. Results in a minute. Log and report to Dr. Meter has built-in quality checks, uses electrical impedance of reagents on test strip reacting to contact with blood to calculate INR. Results can vary up to xx%. Check meter accuracy X times / year by same-day venous draw at lab.



vit K1

Vitamin K

Essential nutrient needed by the liver to create proteins which start blood clotting and control bleeding.

Green, leafy vegetables have high amounts

Amount in a person's system affects coagulation

Works against Warfarin - lowers INR

Have to get a consistent amount through diet

world of K



Vit K also high in tofu, blueberries, kiwis, bean sprouts, cabbage, lettuce, chard, some red meats like liver.

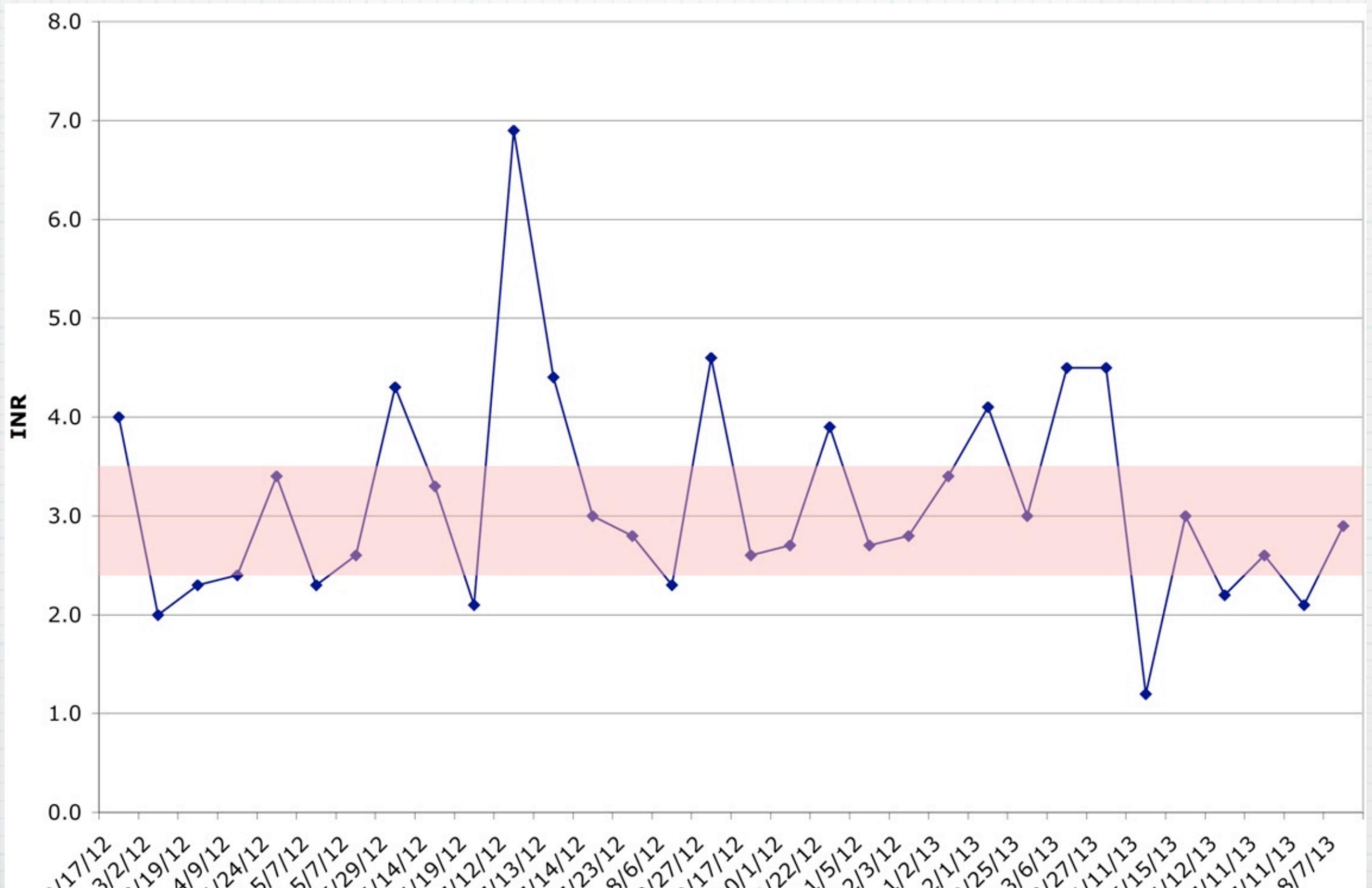
K also in some red meats like liver but thankfully I don't have to worry about that since I don't eat red meat. Also high in blueberries, kiwis, bean sprouts, cabbage, lettuce.

Vit K also created in the body!

Some gut bacteria produce Vit K. Not sure if/how this affects INR since it's outside of blood stream.

Note to self: research this more later

INR Values



INR values since I started self-testing. (need to note dates where Warfarin dosing changed occurred). Dr consistently makes changes when out-of-range values occur and usually also when INR is near-out-of-range

Tracking Questions

Does weekly testing keep me in therapeutic range more consistently?

How often to test if I make intentional diet changes?

Tracking question. This wasn't recommended by my Dr for times that my INR is stable. He's asked me to test more frequently when out of range values have occurred. We agreed to communicate whenever I made diet changes.

Factors

Things I can control

- greens and probiotics in diet, alcohol, exercise

Things Drs drive

- new medication or change

... as opposed to things harder to control

- adverse gastrointestinal reactions
- incidental (not serious) bleeding

Plan: Test Weekly for 2 months

Make some small diet changes

+probiotic foods and supplements

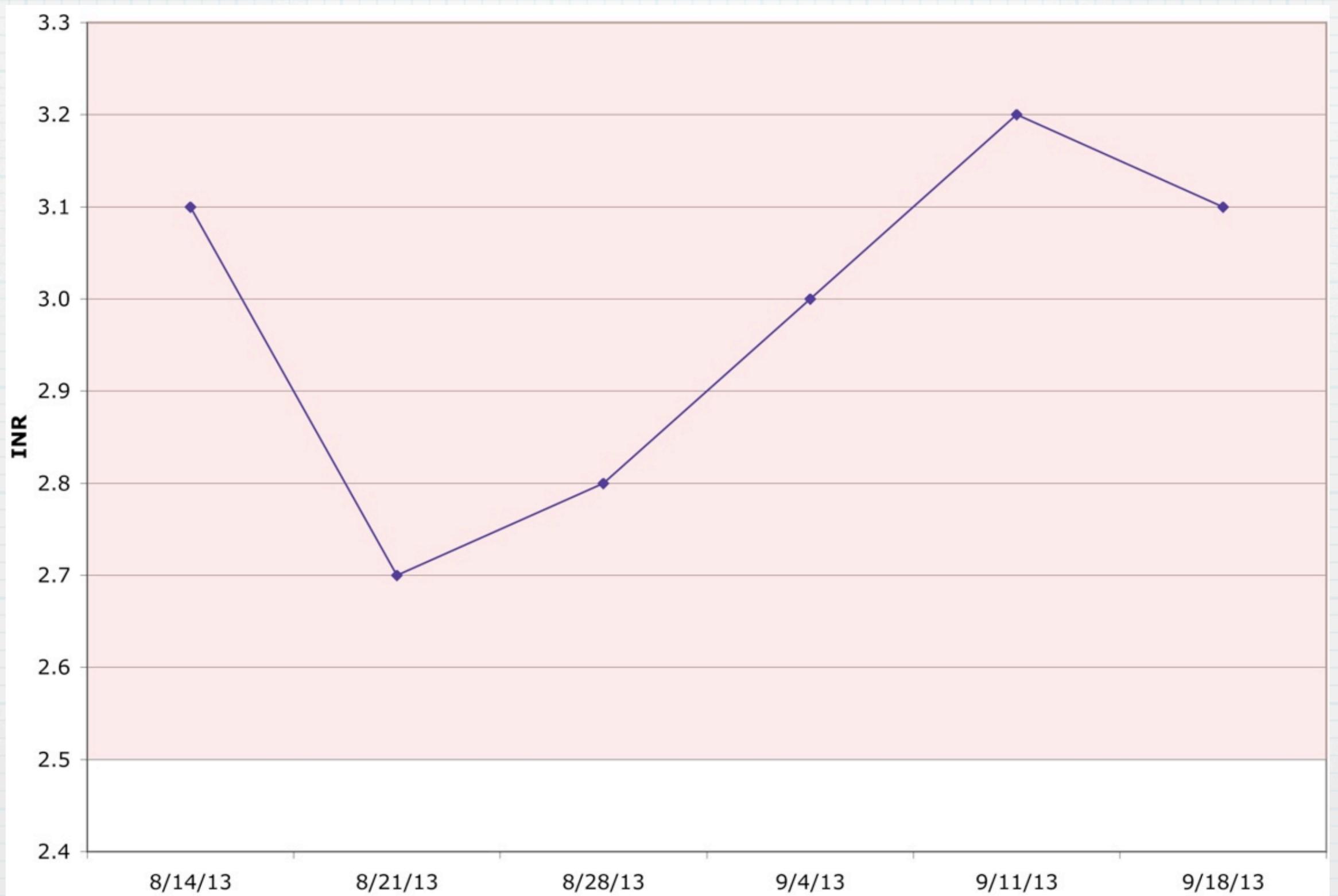
Try to be consistent with this change

Track INR values

Check in w/Dr after test cycle



2 Month Study of Weekly Testing



Results so far. Update chart with full 2 month data set. As of 9/18/13, weekly testing didn't detect any significant variance from therapeutic range. For this period, INR remained stable.

Conclusion

How well did I stick with my diet change plan?

Did eat probiotic foods and take probiotic supplements. Not as consistent as I'd wanted to be for both. Slightly inhibited by sodium issue in pro-b prepared foods.

As of 9/18/13, weekly testing didn't detect any significant variance from therapeutic range

For this period, INR remained stable

Supported recent Dr direction of 4-5 week testing interval

Thoughts

Learn more about probiotic foods and supplements:

- kinds, absorption, finding lower-sodium options
- work on adding consistent amounts to diet

Follow directed testing schedule

Dr adjusts test freq when out of range values detected

Test when any unexpected bleeding occurs

Ask Dr if OK to temporarily test more frequently when near-out-of-range values recorded*

Fun with INR Tracking...

thanks!

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