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Advancing Health and Health Care through Scholarship and Action

## The NCSPuzzler

with Dr. Austin "Knows Riddles but not Statistics" Kilaru



Evidence demonstrates that working on riddles extends the life expectancy of health service research fellows by 0.3 years. Take a break from that NEJM commentary you are writing (i.e., checking Instagram) and try your hand at these medication-related puzzlers.

If you believe you have one or both of the right answers, send me a note at [austin.kilaru@penntermedicine.upenn.edu](mailto:austin.kilaru@penntermedicine.upenn.edu). One of the correct respondents will be randomly selected to receive the prize: a small stuffed lemur which I bought for my friend's dog but I keep forgetting to bring it to his house when I visit.

### Puzzle 1 (Difficulty level: Student's t-test):

It is the night before your first RIP in the program. The day-old sushi that you found sitting on your co-fellow's desk is not sitting well in your stomach. Intense cramping sends you to the bathroom for medication in liquid form. You are hoping for any kind of relief. Unfortunately, the print is so small on the bottle that you cannot read the dose, even after you put on your glasses.

The cramping intensifies, and you fall to your knees to vomit. In the process, you drop the bottle, snap your glasses in two, and knock over the toothbrush sitting in a cup next to the sink. While you lay on the ground in agony, you realize that you now have a way to find the correct dose. How? Sadly, your RIP does not go well, but at least you feel better.

**BAD SUSHI**



## **Puzzle 2 (Difficulty level: instrumental variable analysis):**

You are a researcher that studies medication adherence, inspired by your own difficulties taking your own daily medications.



[http://www.jerseyurology.com/wp-content/uploads/2016/06/Pills\\_copy.jpg](http://www.jerseyurology.com/wp-content/uploads/2016/06/Pills_copy.jpg)

You are prescribed two pills, Pill A and Pill B. It is dangerous to take too few or too much of Pill B - you need to take exactly one pill every day. You also have to take it at the same time that you take exactly one Pill A, otherwise you develop delusions of grandeur and think that your K proposal is ready for the NIH.

When you went to take the medications this morning, you put one Pill A in your hand. Then, you accidentally drop two Pill Bs into the same hand. Unfortunately, the pills are unmarked and look/feel exactly the same. Unable to distinguish between the pills, how do you ensure that you take the right dose? The pills each cost \$43,000.00 and your high deductible health plan does not cover any additional pills each month, forcing you to pay out-of-pocket if you throw the pills in your hand away.

*Puzzles inspired by CarTalk, Tom and Ray Magliozzi (specific episode credits to follow in the next newsletter).*