

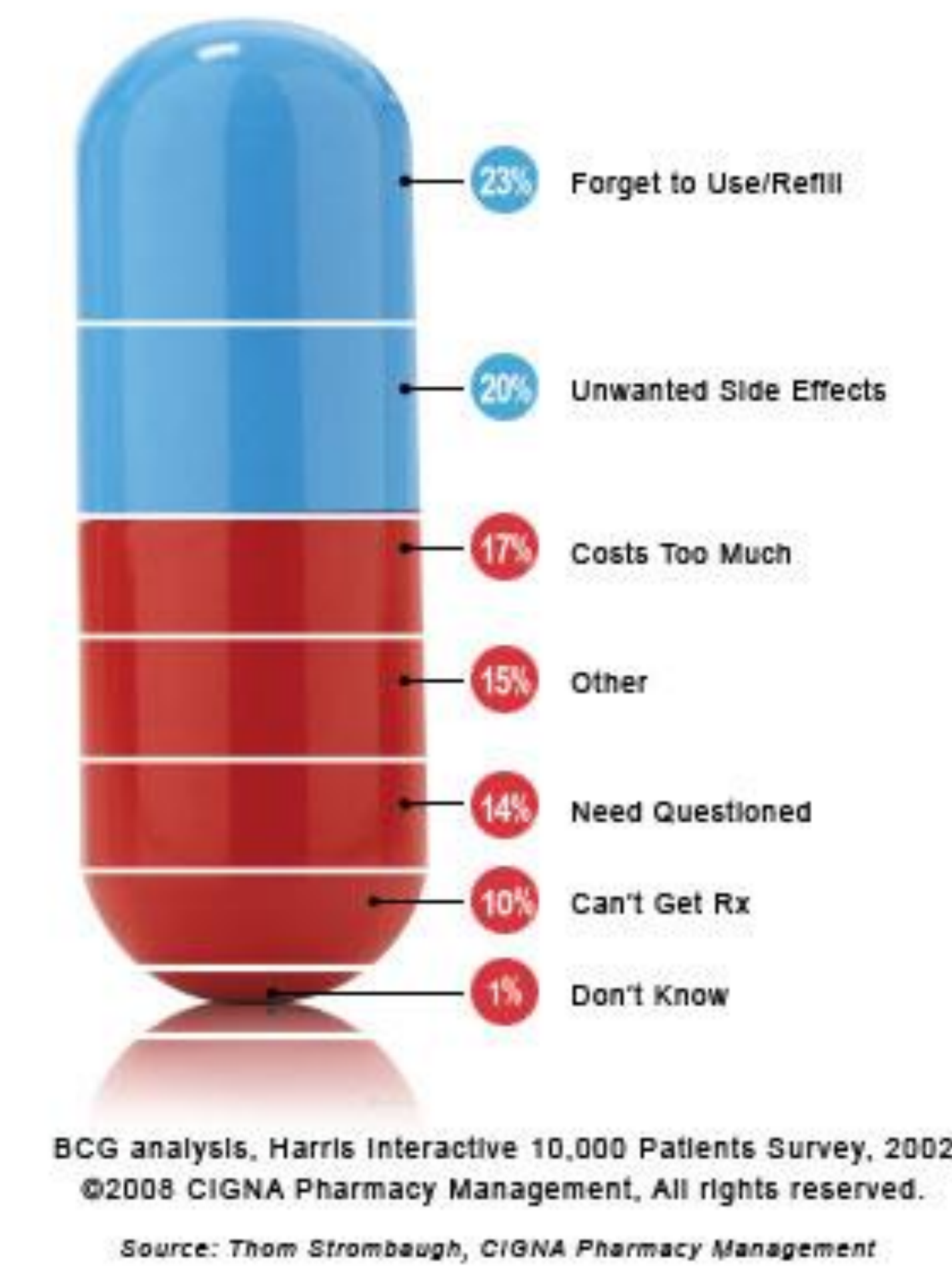
Why?

- One of the biggest problems that older adults face is medication adherence.
- According to a 2009 report by the New England Healthcare Institute, medical non-adherence among the elderly with multiple chronic conditions costs the healthcare industry an estimated annual \$290 billion(1).
- An independent study carried out by the National Community Pharmacist’s Association ranks Americans’ medical adherence at a low C+ grade(2).
- The demographic surveyed had a mean of 4 separate ongoing prescriptions and a median age of 60. This nonadherence may originate from multiple factors, such as memory loss, mild cognitive disorders, or an unwillingness to take medication.
- We are implementing user-friendly, highly intuitive smartphone technology to intelligently prompt users for improved adherence.
- Our goal is to improve the standard of living for our demographic while reducing the burden on the healthcare system by medical nonadherence.

Pillsy

- Pillsy is a Seattle-based company that manufactures smart pill boxes. This product, referred to as a PillsyCap, is paired with the Pillsy app, currently available for iOS and Android devices.
- A PillsyCap is a single-drug pill box with a top that syncs to a smartphone via Bluetooth connection (within approximately 50 meters).
- The Pillsy mobile app will prompt the user if the app detects whether or not they have opened their pillbox within an allotted time frame.
- When a user first receives the PillsyCap and downloads the mobile app, they are led through a step-by-step process on their smartphones, in which they set up an account based on their specific needs and the constraints of their medicine.
- One account can be linked to up to 20 PillsyCaps, which is incredibly important because many older adults face multiple chronic conditions that require a large number of drugs taken at multiple points, some with conditions that must be met (food intake, before bed, upon awakening, etc) before they can be ingested.
- Pillsy and the PillsyCap are designed to improve adherence by sending prompts to users before, during, and after the time frame for taking their medication.

Reasons Cited for Poor Medication Adherence



Future Directions

- On a large scale, our overarching purpose is to improve adherence among older adults with multiple chronic medical conditions.
- Upon equipping smartphones with a modified Pillsy app with Activity Learning capabilities, we will formulate a hypothesis and begin testing.
- In keeping with the demographic surveyed and targeted, we will be testing older adults with multiple chronic medical conditions using placebo pills (Same as above).
- Maybe you should call this future directions or plans, since you are not mentioning results it is very hard and almost incorrect to call this section “conclusion”.

References

1. “Thinking Outside the Pillbox: A System-wide Approach to Improving Patient Medication Adherence for Chronic Disease.” NEHI, 2009.
2. “Medication Adherence In America: A National Report Card.” NCPA, 2013.
3. “Activity Learning User Manual.” CASAS, 2016.
4. “BCG Analysis.” Cigna Pharmacy Management, 2008.

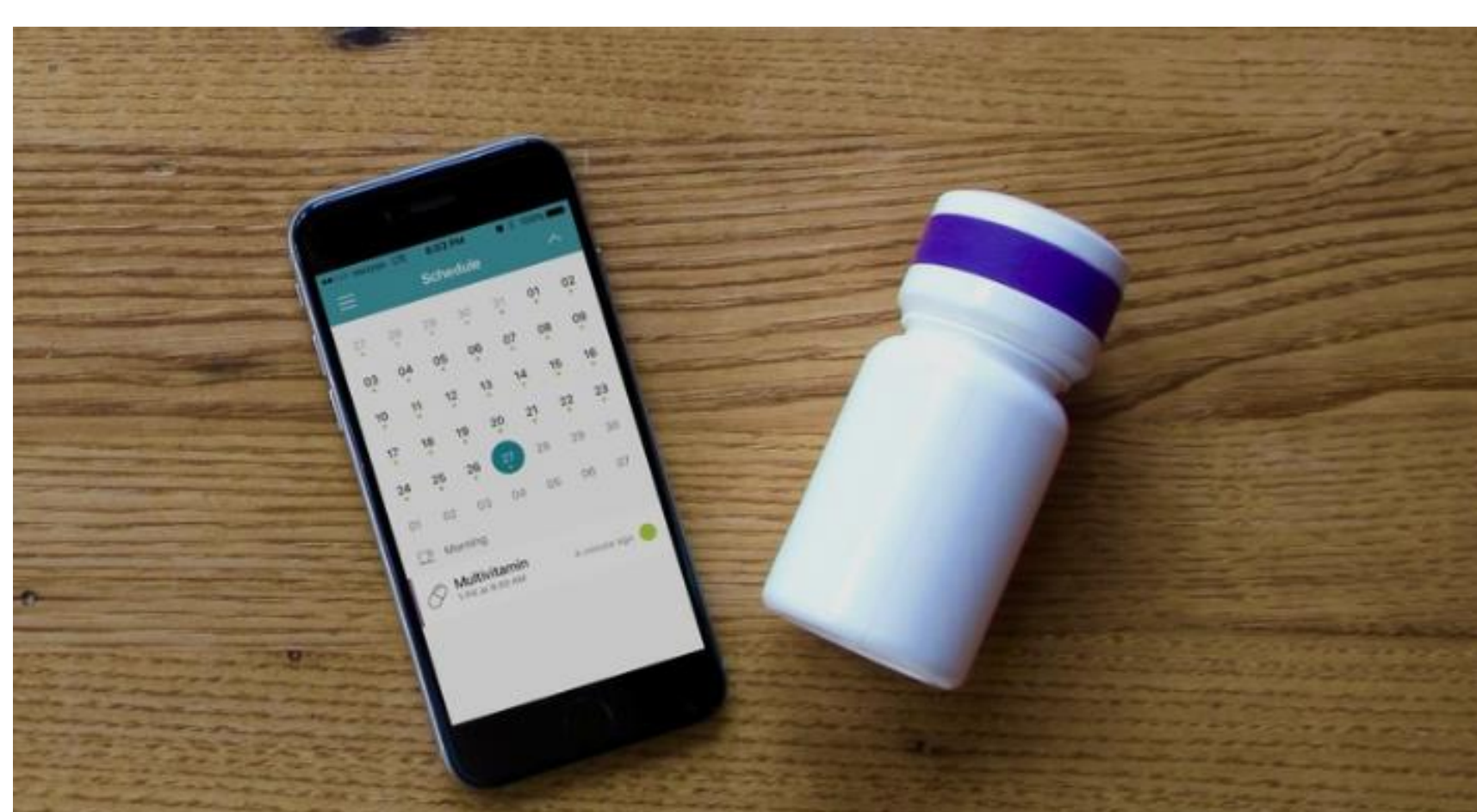
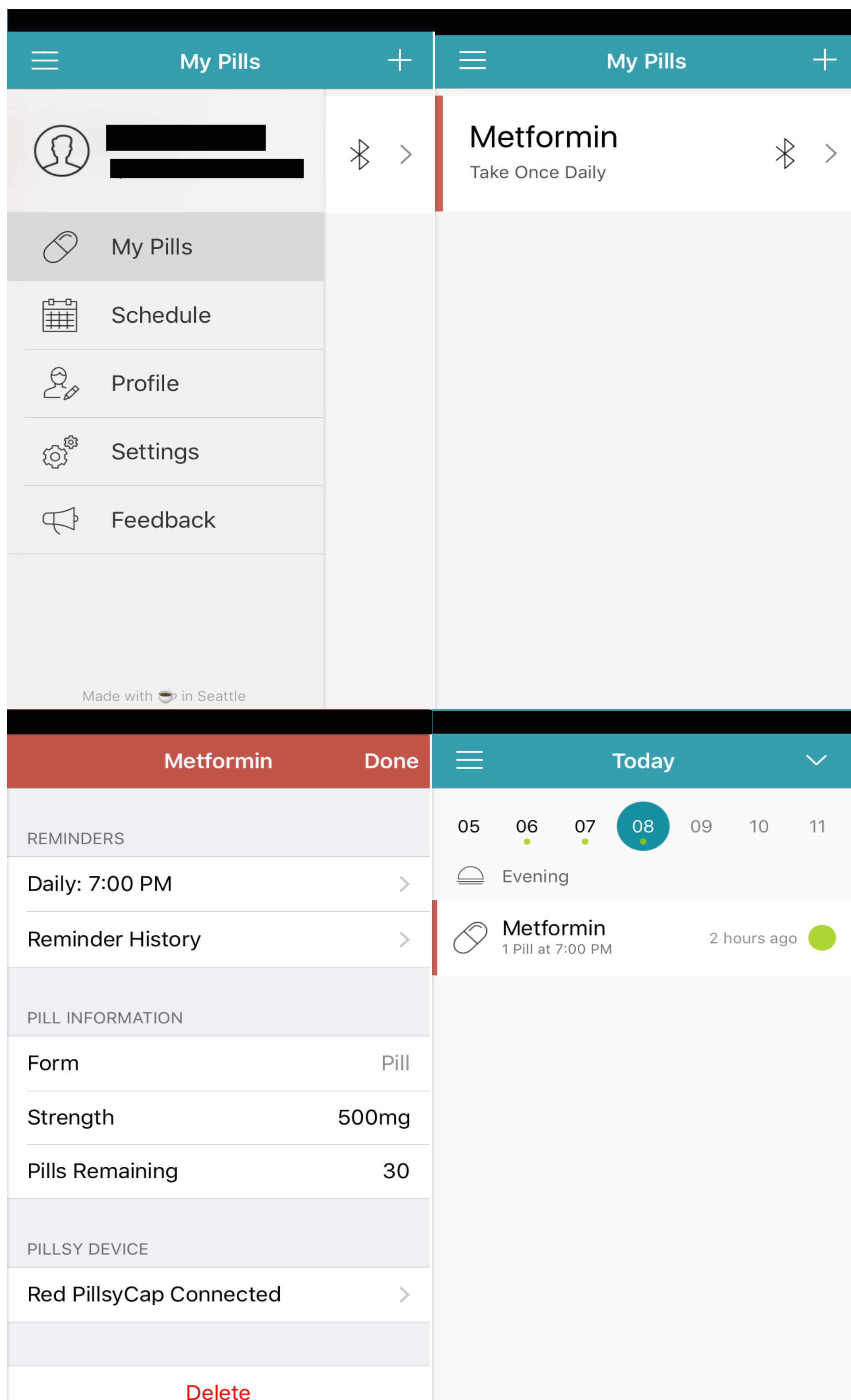
For Further Reading

- “Thinking Outside the Pillbox: A System-wide Approach to Improving Patient Medication Adherence for Chronic Disease.” NEHI, 2009.
- “Annotating smart environment sensor data for activity learning.” S. Szewczyk, K. Dwan, B. Minor, B. Swedlove and D. Cook. 2009.
- “Medication Adherence: WHO Cares?” M. T. Brown, J. K. Bussell. 2011.
- “Medication Adherence In America: A National Report Card.” NCPA, 2013.
- “Methods for evaluation of medication adherence and persistence using automated databases.” S. E. Andrade, K. H. Kahler, F. Frech, and K. A. Chan. 2006.

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Pillsy

Activity Learning

- The Pillsy app is paired with a mobile Activity Learning (3) application. This allows for a smarter prompting of the user by the Pillsy app.
- Activity Learning operates in three components: Activity Discovery, Activity Recognition, and Activity Prediction.
- In Activity Discovery (AD), the application analyzes time-ordered data from the various sensors on a smartphone for patterns and assigns label names for the “activity” that the patterns show.
- In Activity Recognition (AR), the application recognizes and automatically labels activities based on AD if the “same patterns” are found again.
- In Activity Prediction (AP), the application extrapolates the probability of certain labelled activities to occur at a certain time based on the beginnings of previously recognized patterns.
- Activity Learning, once paired with the PillsyCap and Pillsy mobile app, can more intelligently prompt a user based on their specific lifestyle and circumstances.