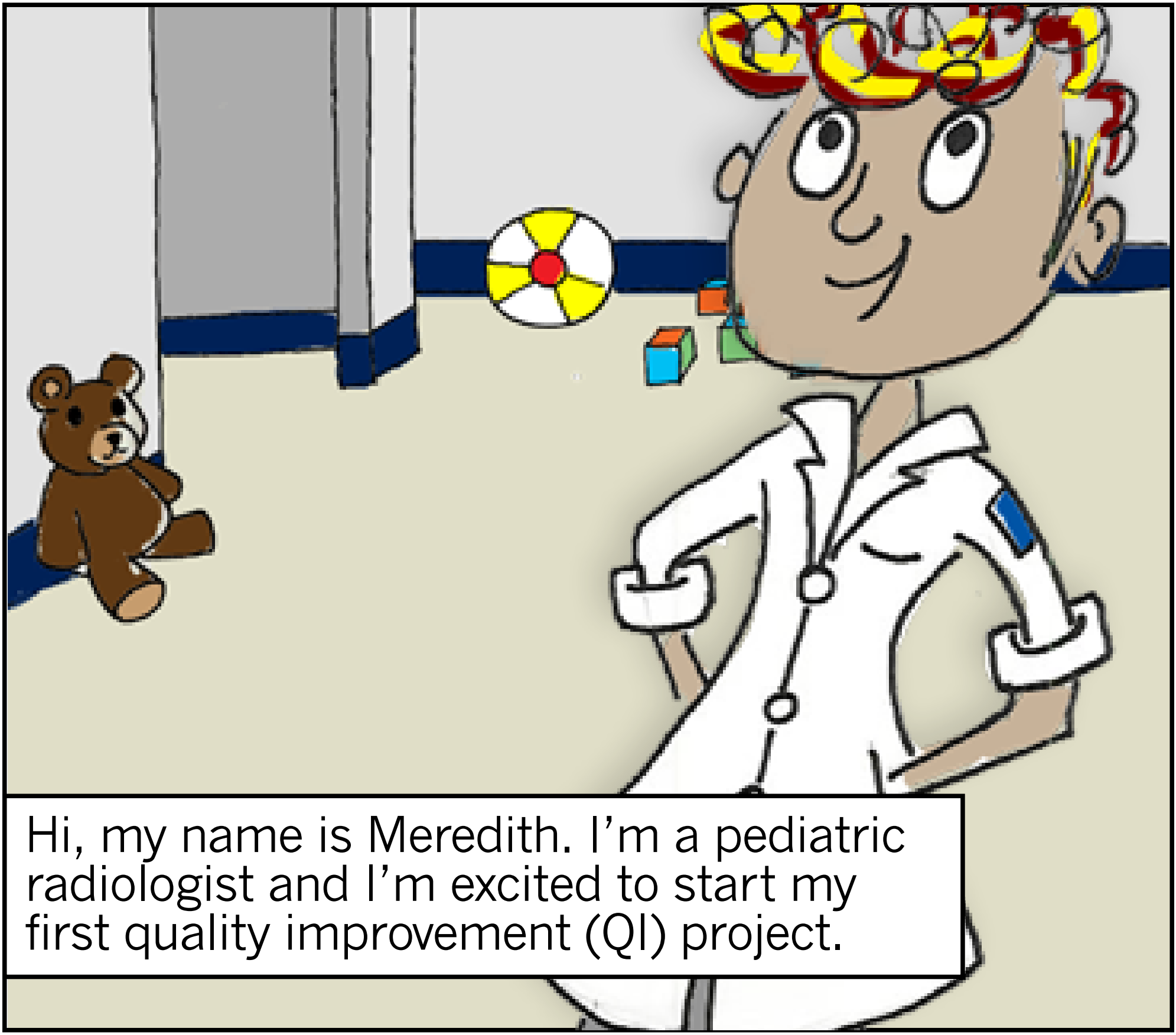
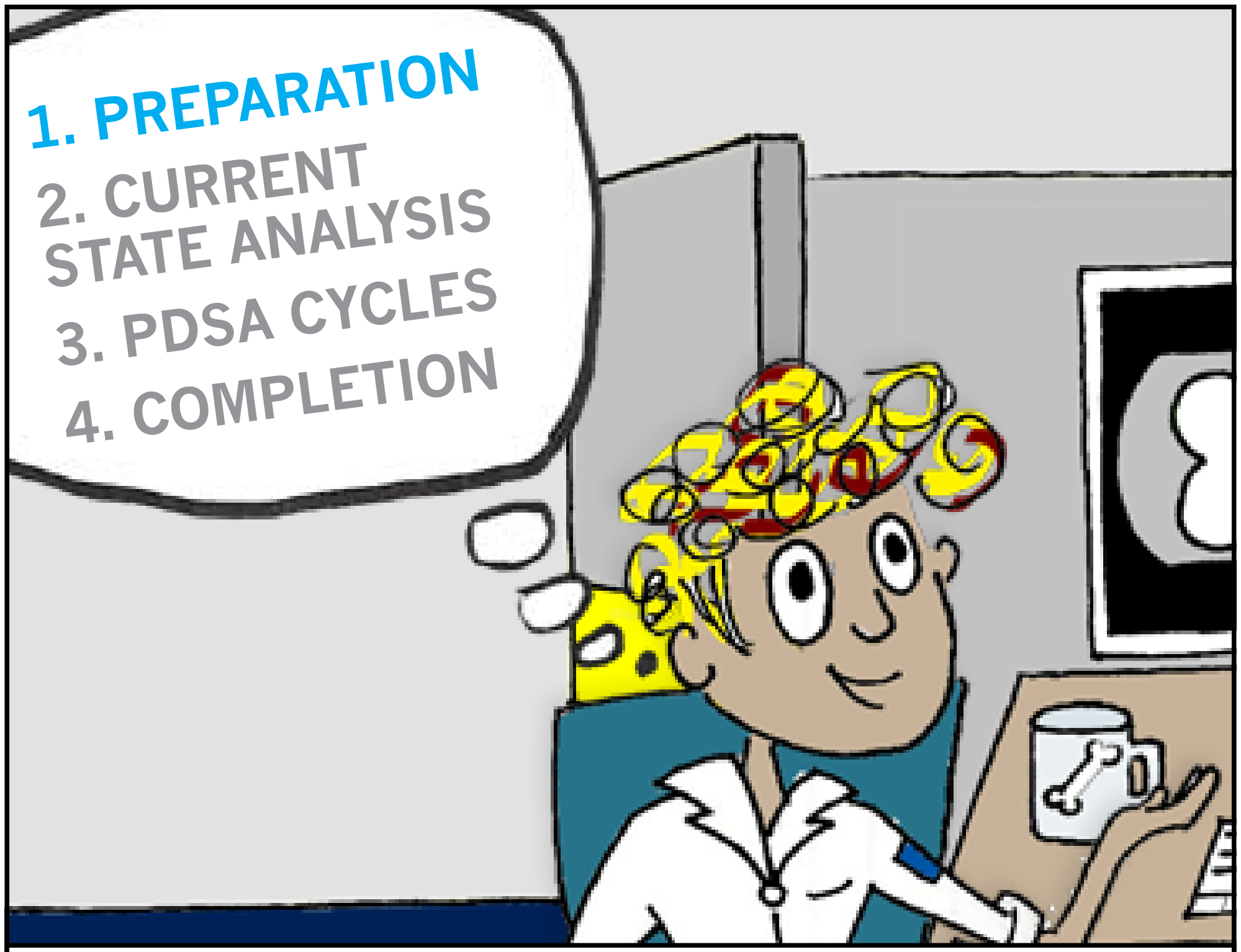
MY FIRST PQI PROJECT

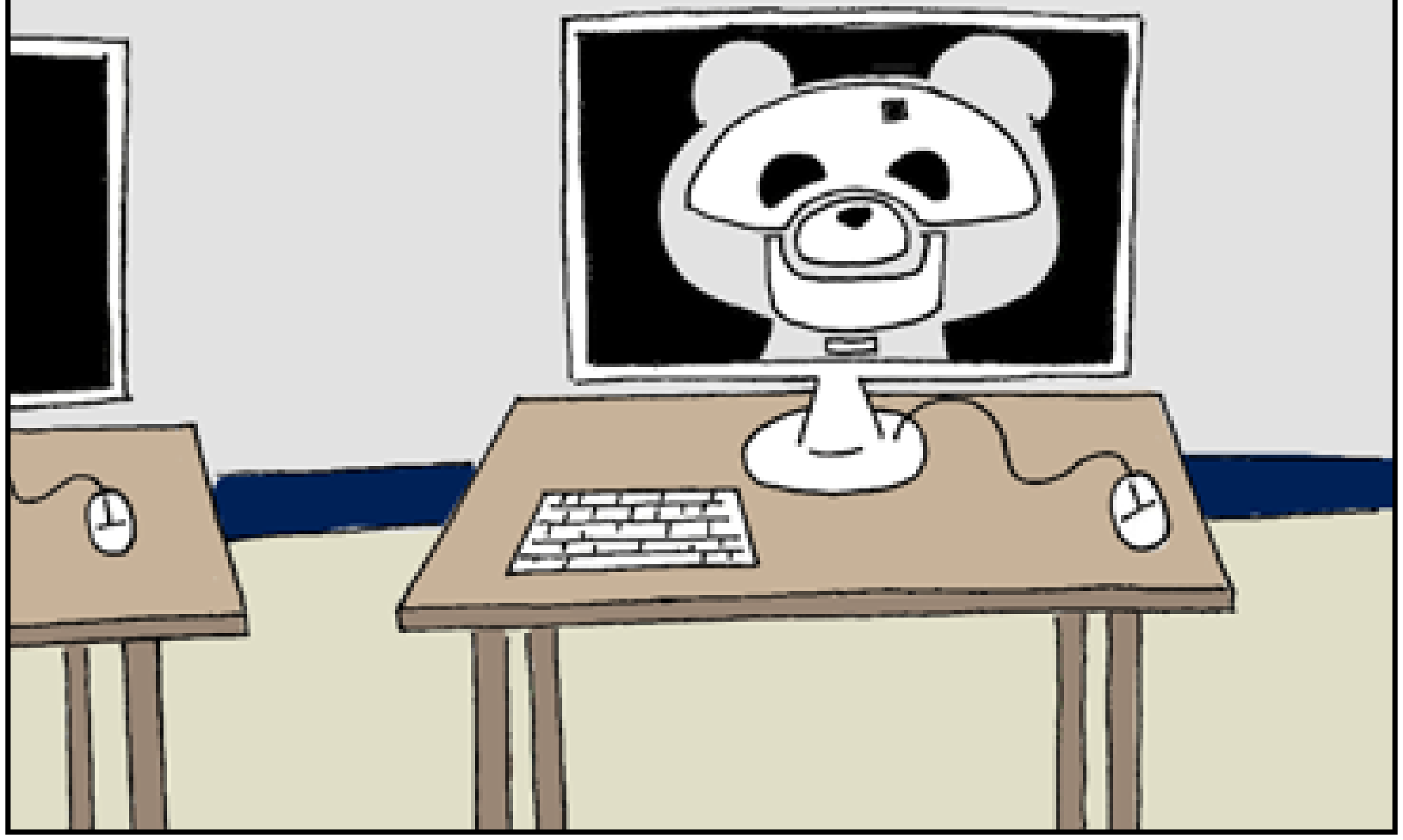

Hi, my name is Meredith. I'm a pediatric radiologist and I'm excited to start my first quality improvement (QI) project.

To prepare for my QI project, I went to the Institute for Healthcare Improvement (IHI) Open School website and took the free courses QI 101to104. I learned all about the QI process and the terminology and tools.

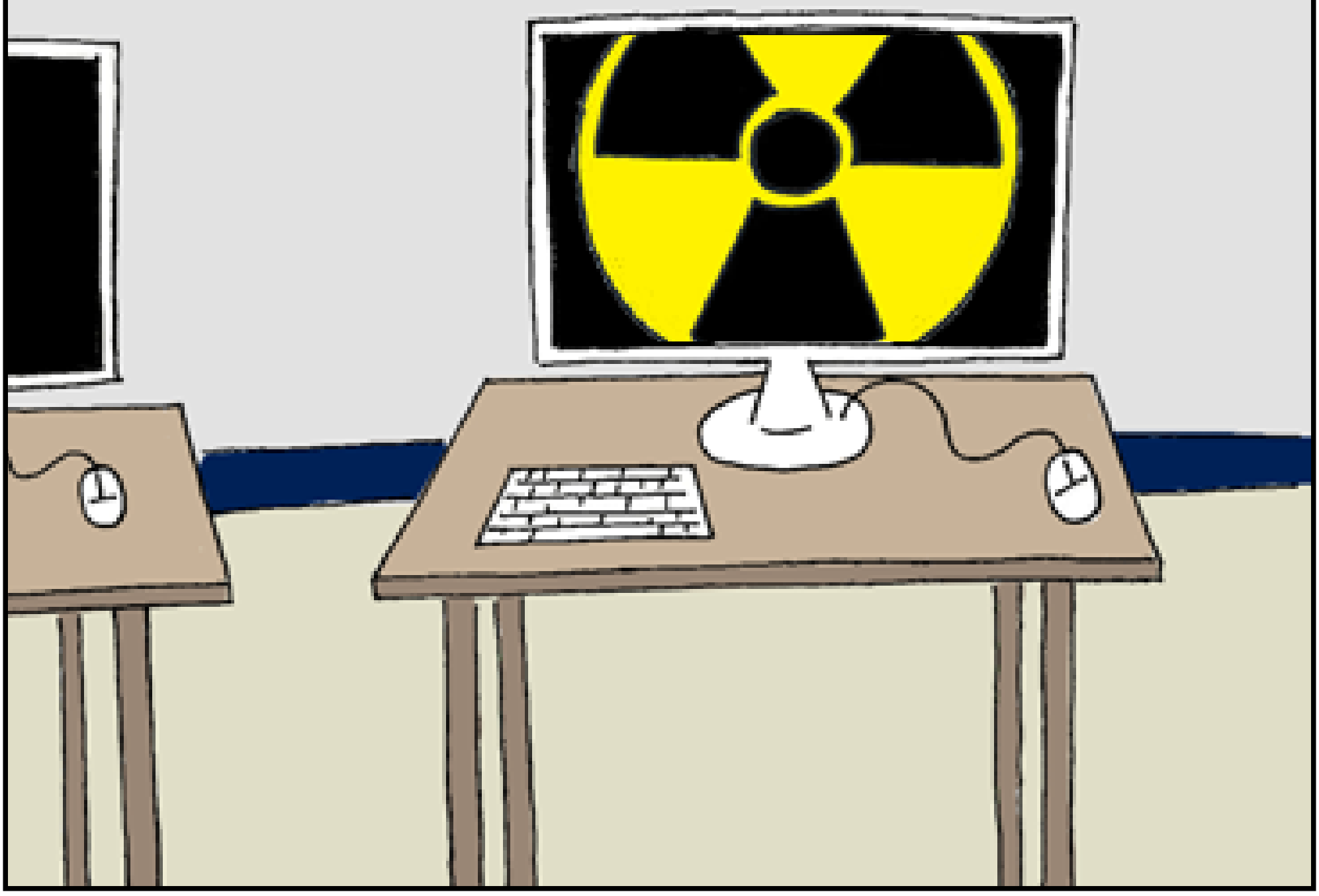


I think I can break down my QI project into four stages.

First, I need to decide what I want to improve. I read an article about using a fast brain MRI instead of CT in children with ventricular shunts and who are symptomatic...



... I think our department should be using fast brain MRI for these children in order to decrease their lifetime radiation exposure.



I looked at the **American Board of Radiology (ABR) and IHI websites** and it seems like there are a few items I should prepare during the planning phase:

1. TITLE & ABSTRACT
2. IOM AREA
3. AIM STATEMENT
4. METRIC
5. FEASIBILITY

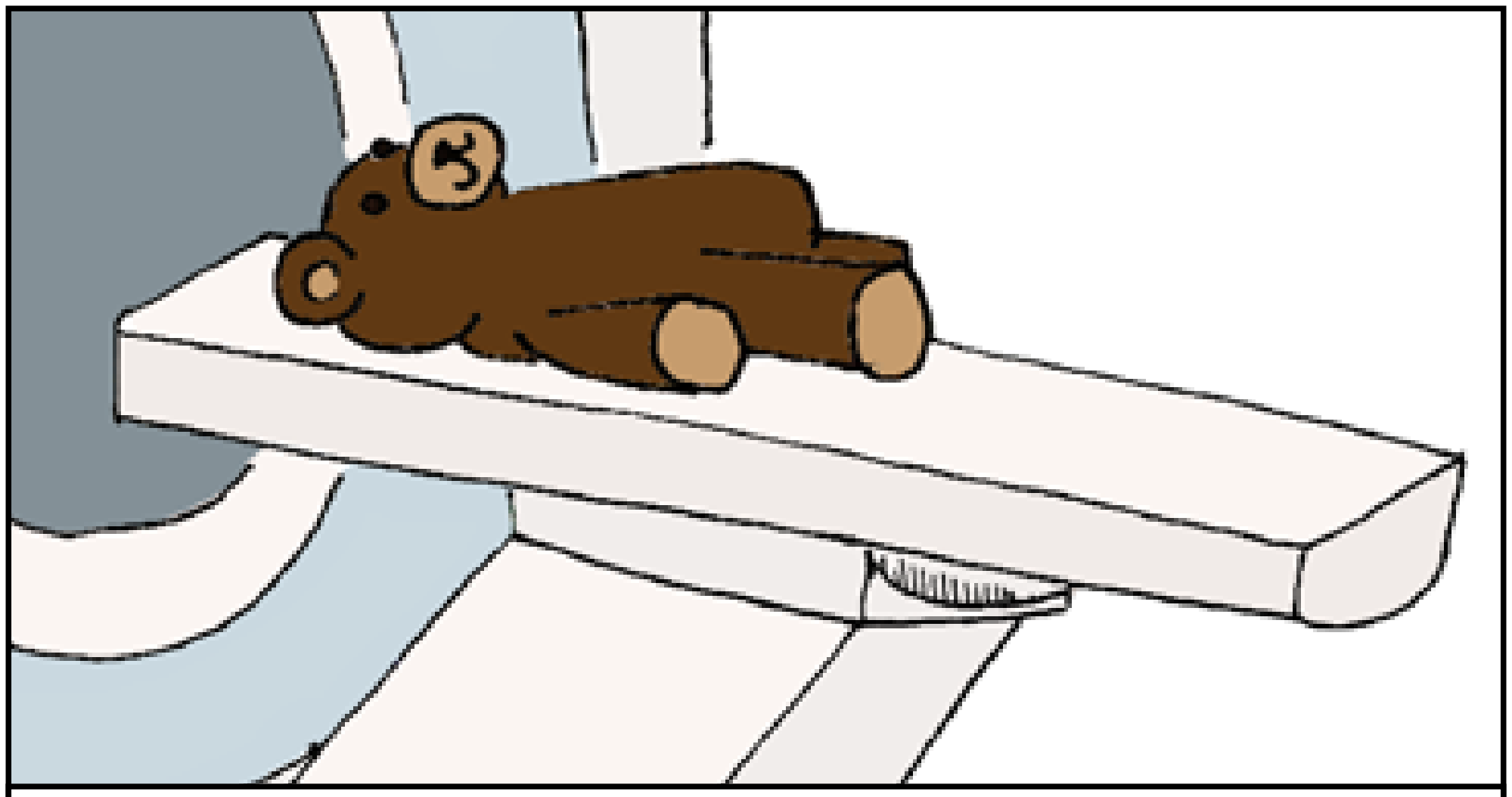
My study **title** is

FAST SHUNT MRI

... and the abstract is just a sentence about the goal of decreasing radiation exposure.

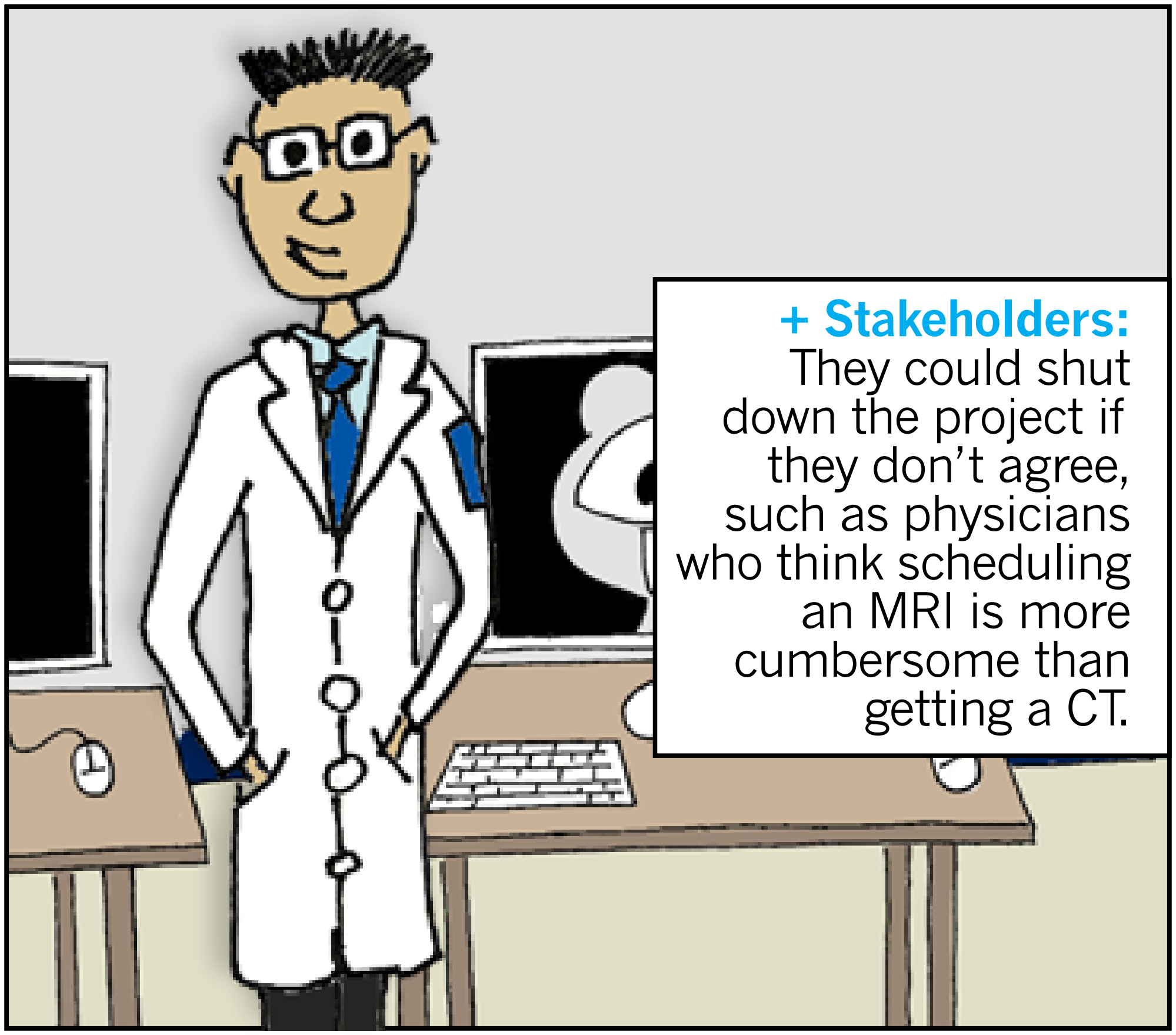
S T E E E P

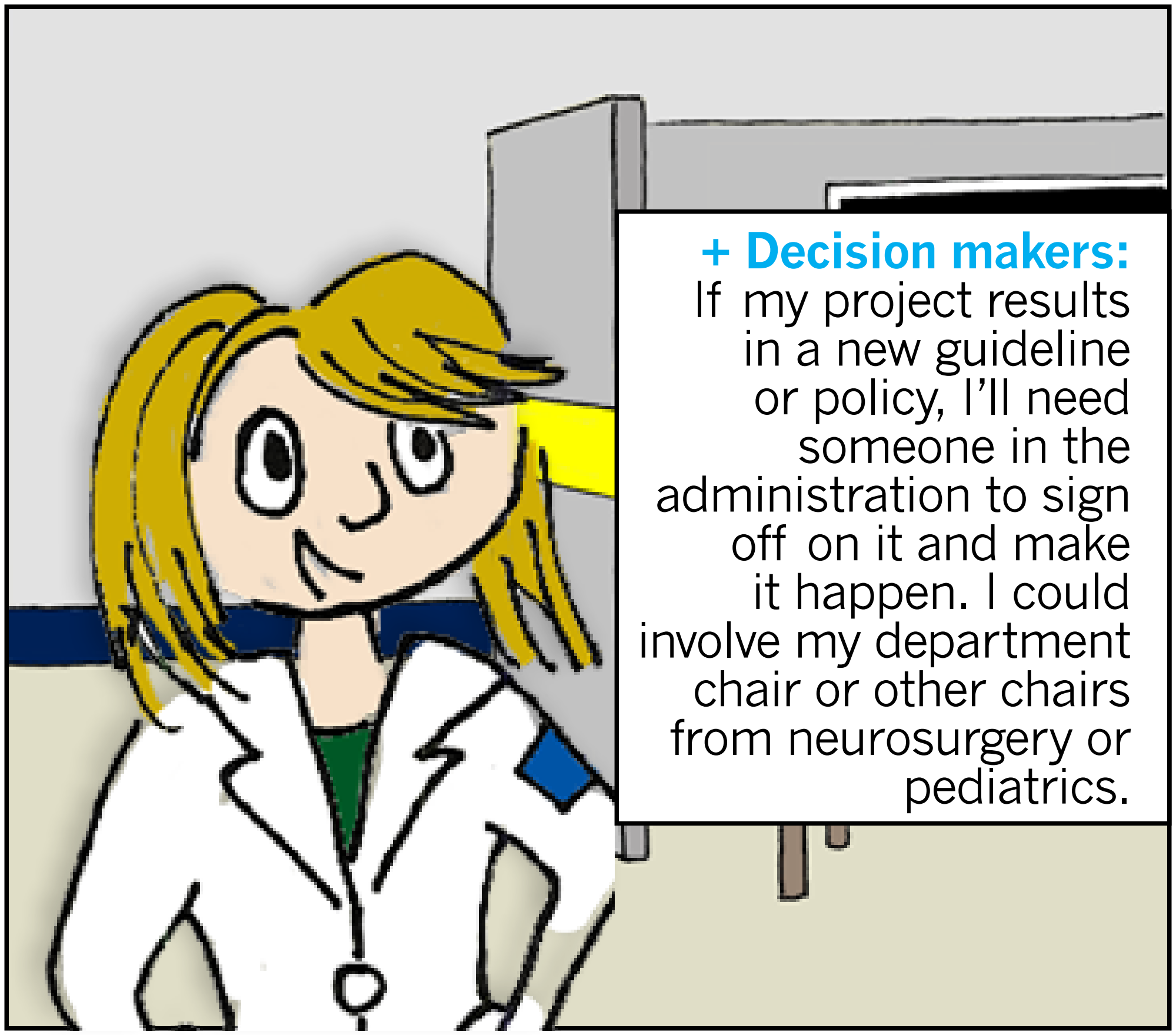
Next step … The Institute of Medicine's (IOM) 2001 report, *Crossing the Quality Chasm: Health Care in the 21st Century*, identified six specific aims for improving the U.S. health care system. I want to make sure that my project fits within one of the **STEEEP aims**: Safe, Timely, Effective, Efficient, Equitable, and Patient-centered. My project is all about **safety.**

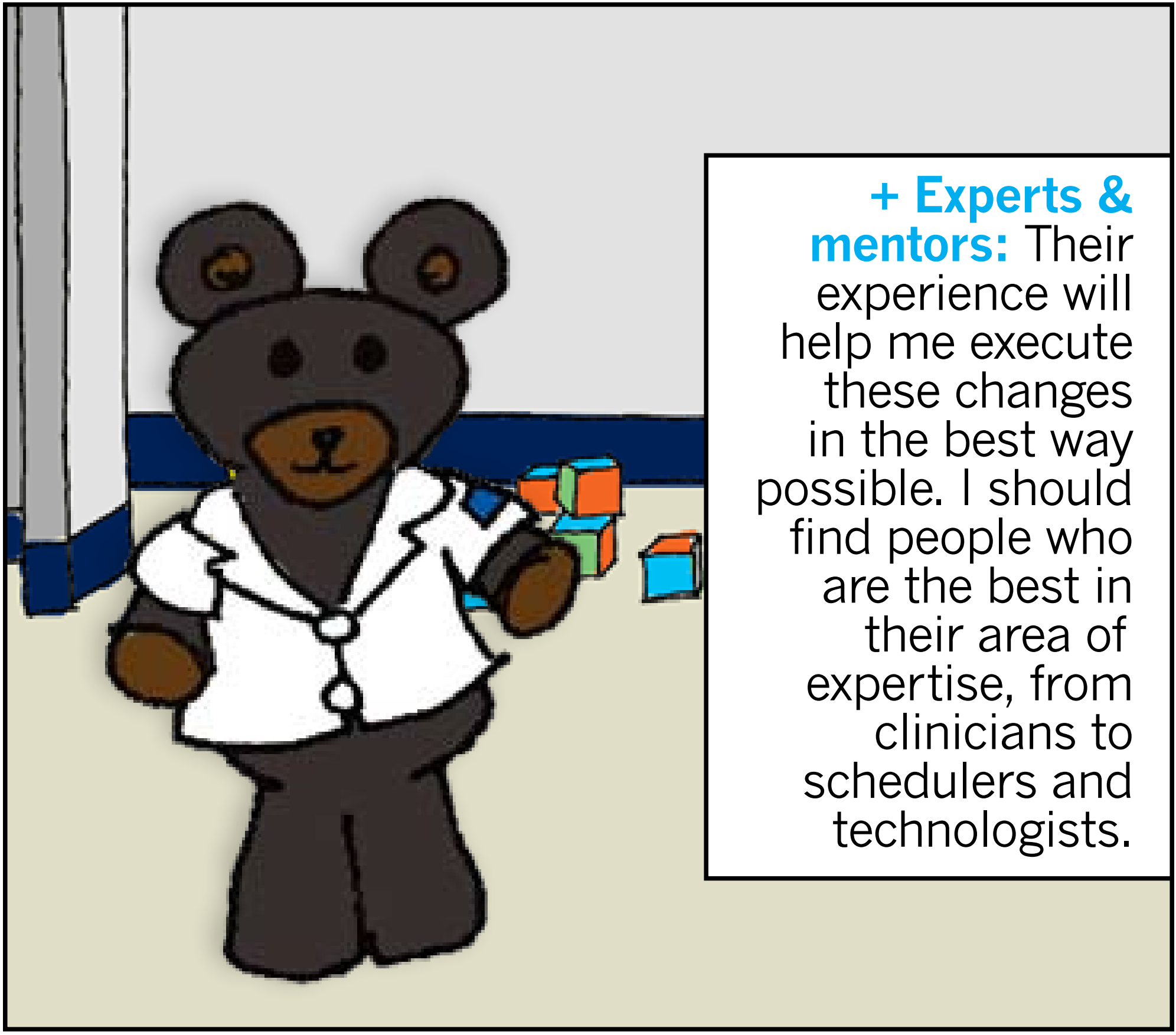


I love this “Aim statement.” It promotes commitment and is very specific! A good aim answers three questions: How good? By when? For whom? I’m going to draft a preliminary statement that I can revise once I’ve spoken to my team. Let’s say: “Decrease shunt CT use by 20% (=how good) for shunted children who are imaged as outpatients (=for whom) by June 30, 2015 (=by when).

Time to assemble my team. I have a feeling I can't do this alone. (It won't be as easy as picking the jocks in gym class!) I'm going to need input from:

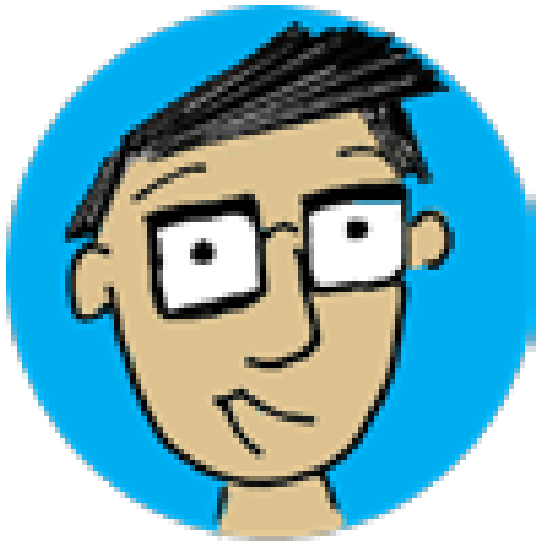

+ Stakeholders:
They could shut down the project if they don't agree, such as physicians who think scheduling an MRI is more cumbersome than getting a CT.

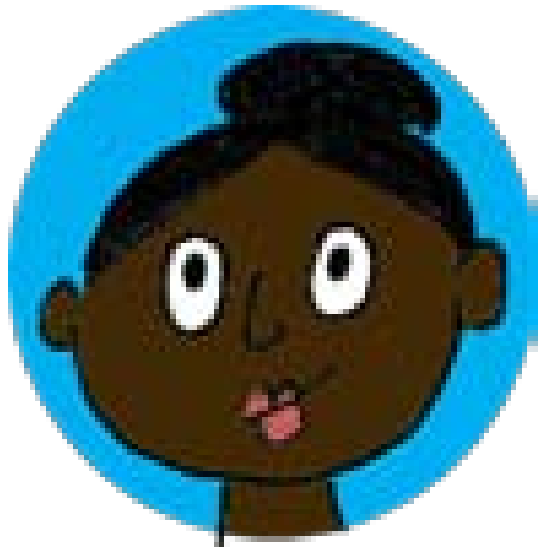

+ Decision makers:
If my project results in a new guideline or policy, I'll need someone in the administration to sign off on it and make it happen. I could involve my department chair or other chairs from neurosurgery or pediatrics.


+ Experts & mentors: Their experience will help me execute these changes in the best way possible. I should find people who are the best in their area of expertise, from clinicians to schedulers and technologists.

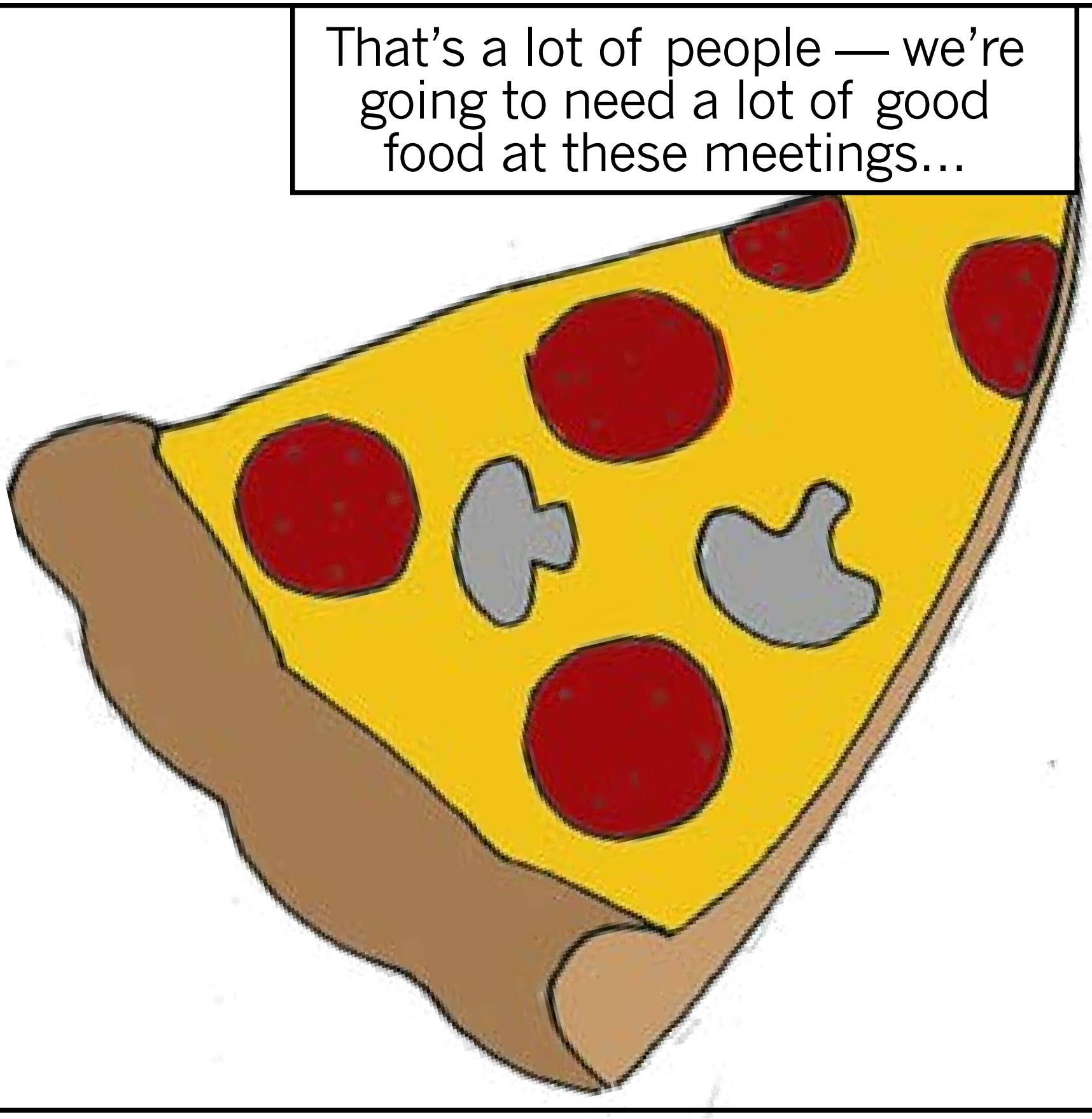
+ Front-liners: These are the folks who are part of the process. They will be most affected by any changes and will be the ones executing any new procedures or policies. They need to be involved because they will have great ideas about how best to optimize the existing workflow.

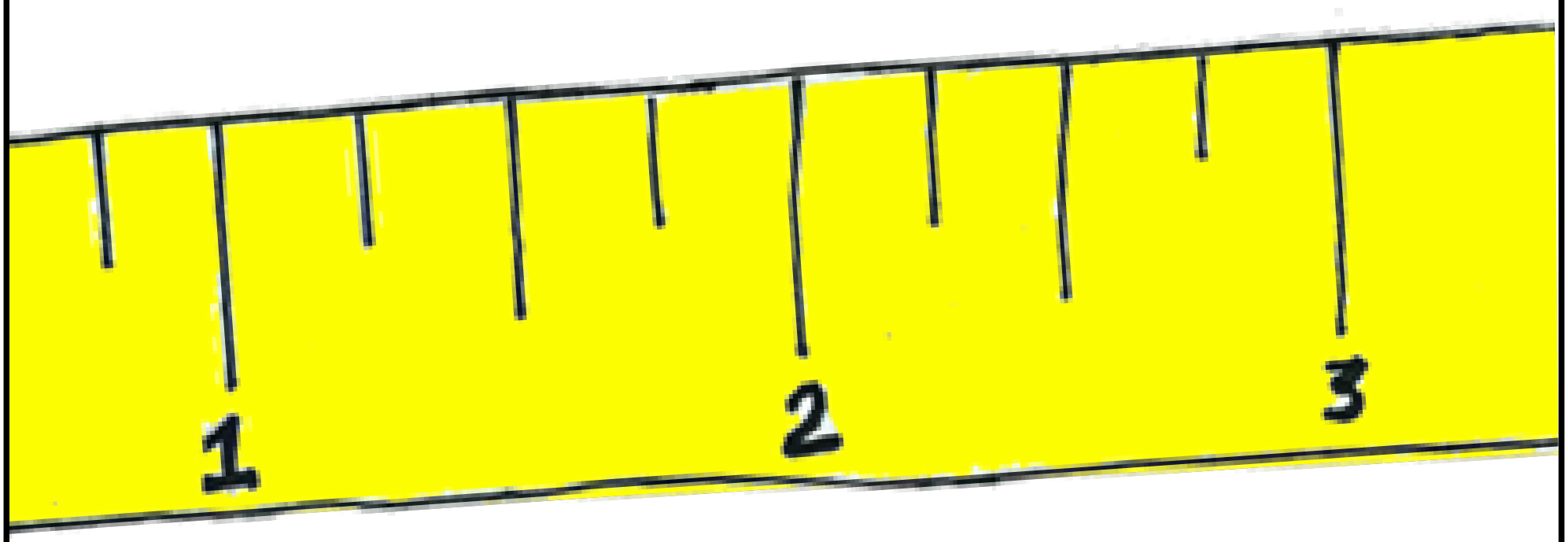
It's important to really think of everyone. My team should include members familiar with all the different aspects of the MRI process: neurosurgeons, emergency physicians, PAs, nurses and technologists in radiology, schedulers, administrators, neuroradiologists, and perhaps a patient representative.



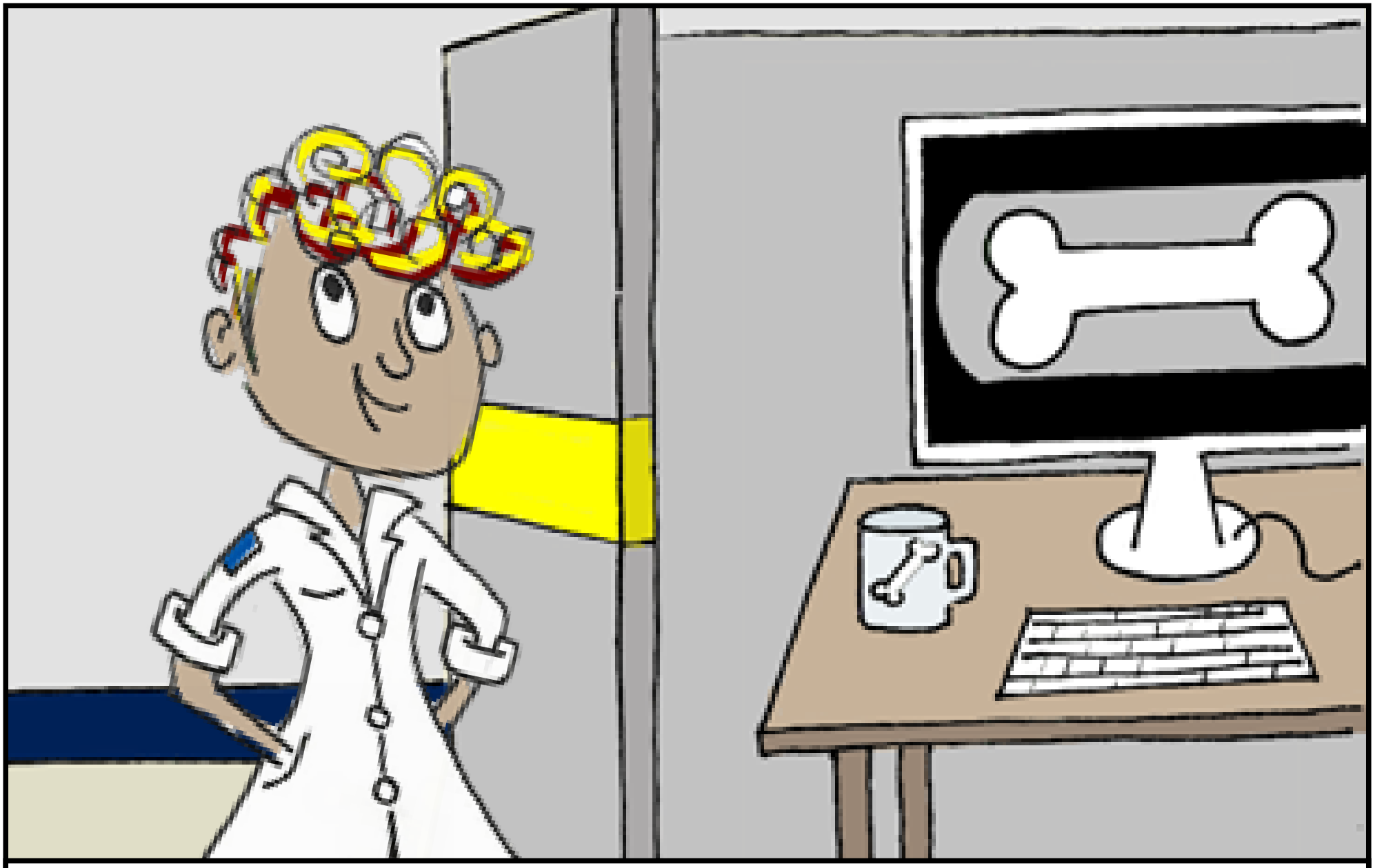


That's a lot of people — we're going to need a lot of good food at these meetings...

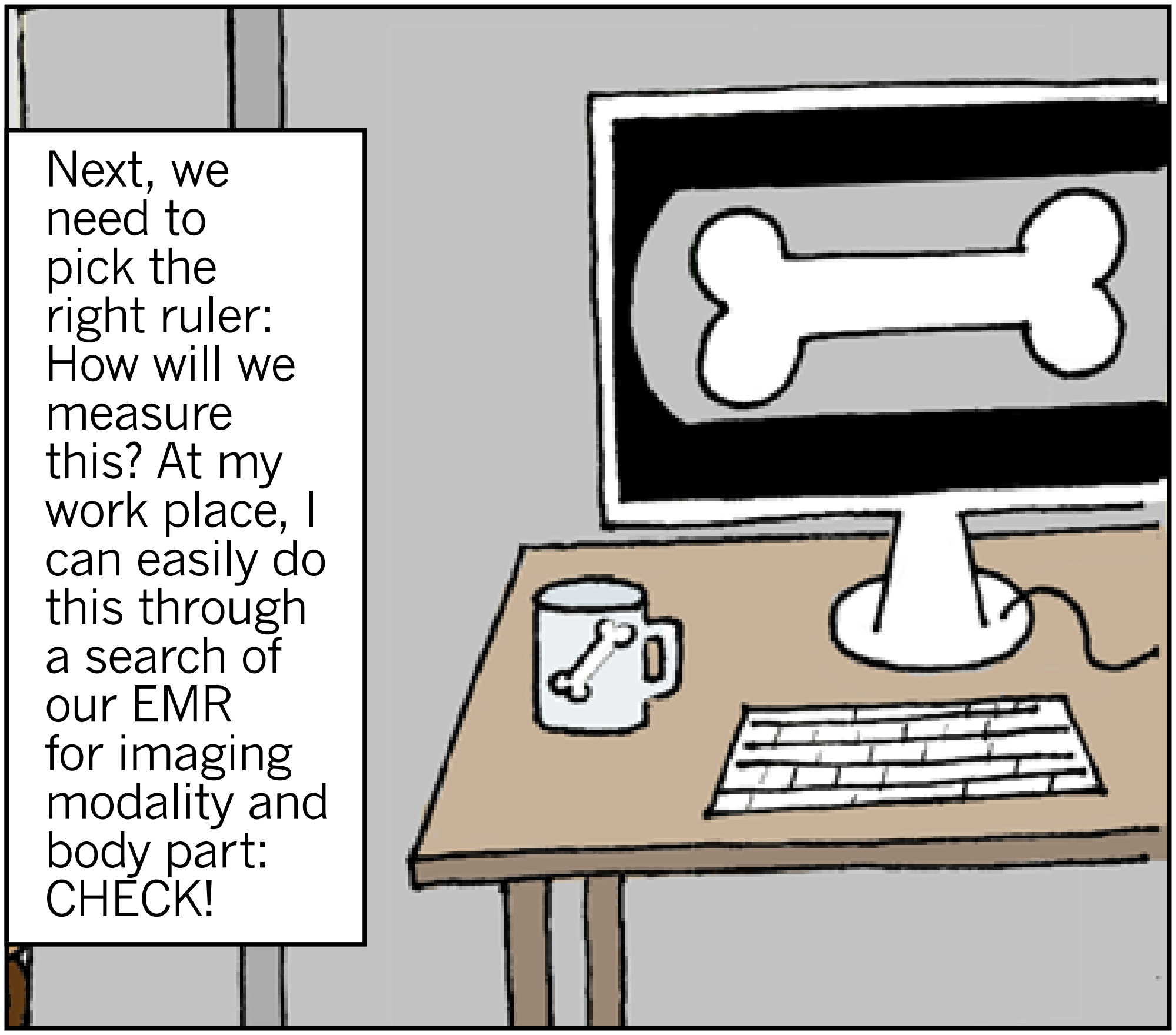




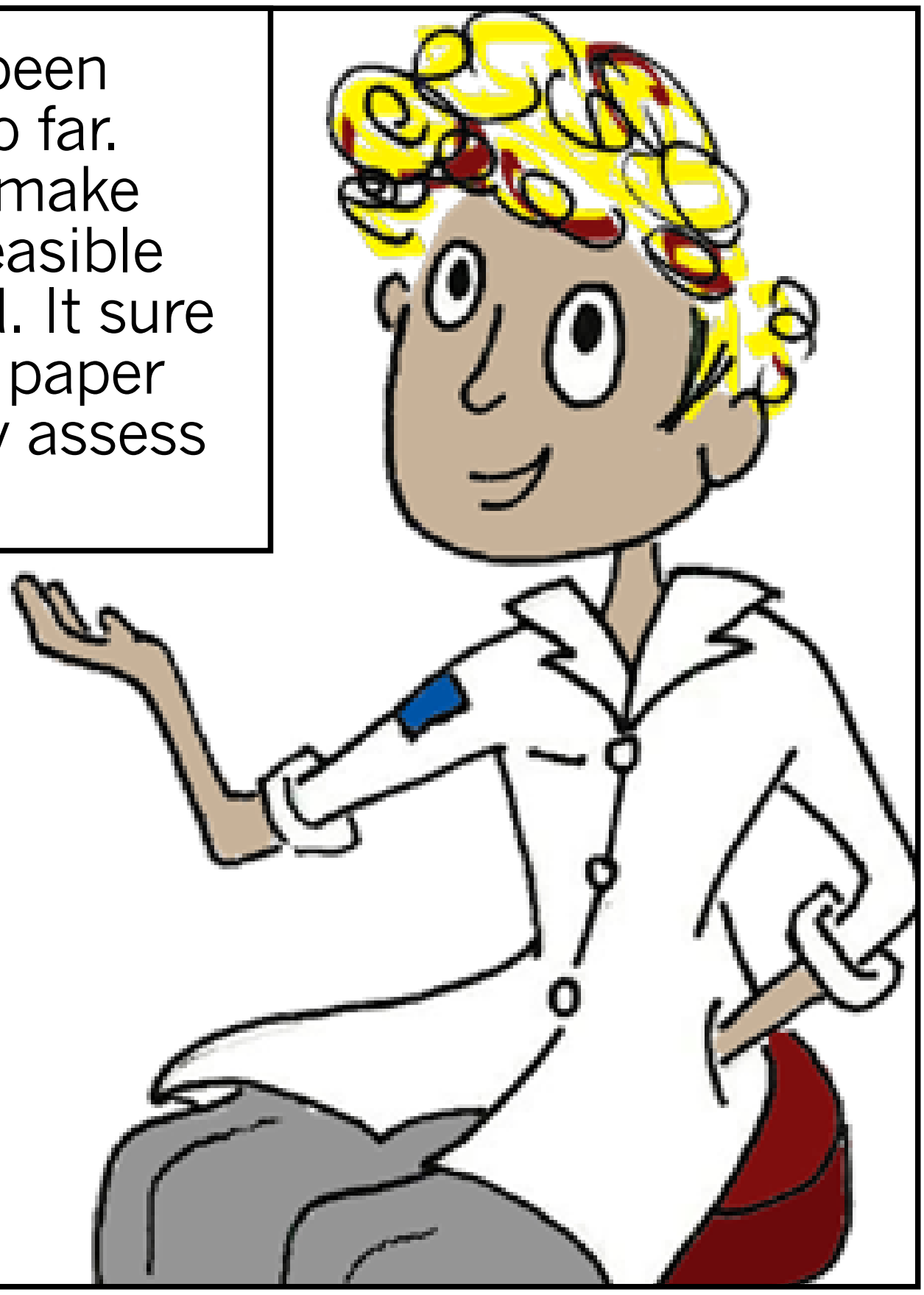
So, if we want to make changes we need some cold, hard numbers. We need to think about how we will know that a change we made resulted in an improvement. We need to measure!



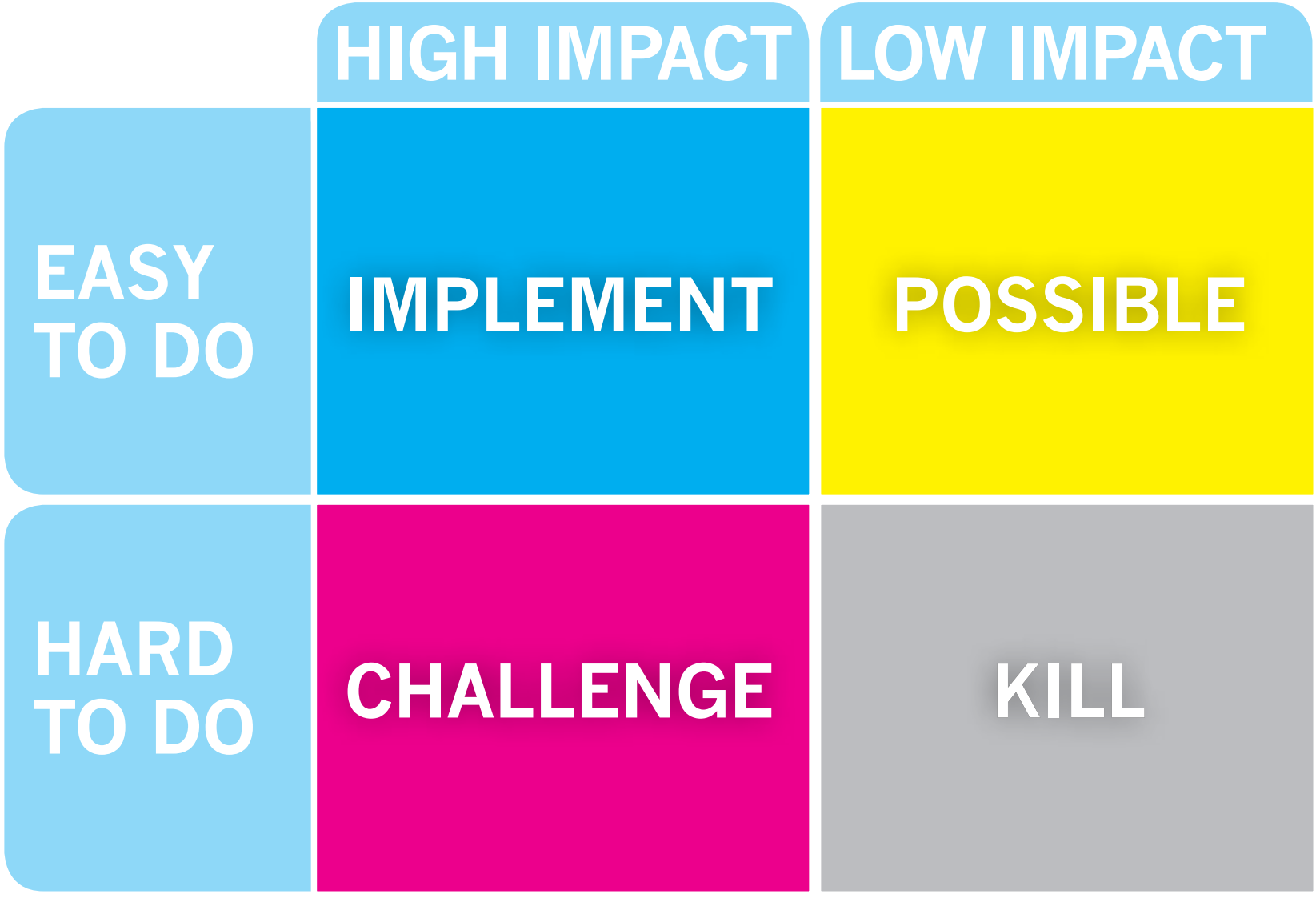
First, we need to know our baseline, like the number of brain CT scans performed monthly on children with ventricular shunts. A decrease in CT scans (and an increase in fast MRI scans) in these patients will be our outcome measure.


Next, we need to pick the right ruler: How will we measure this? At my work place, I can easily do this through a search of our EMR for imaging modality and body part: CHECK!

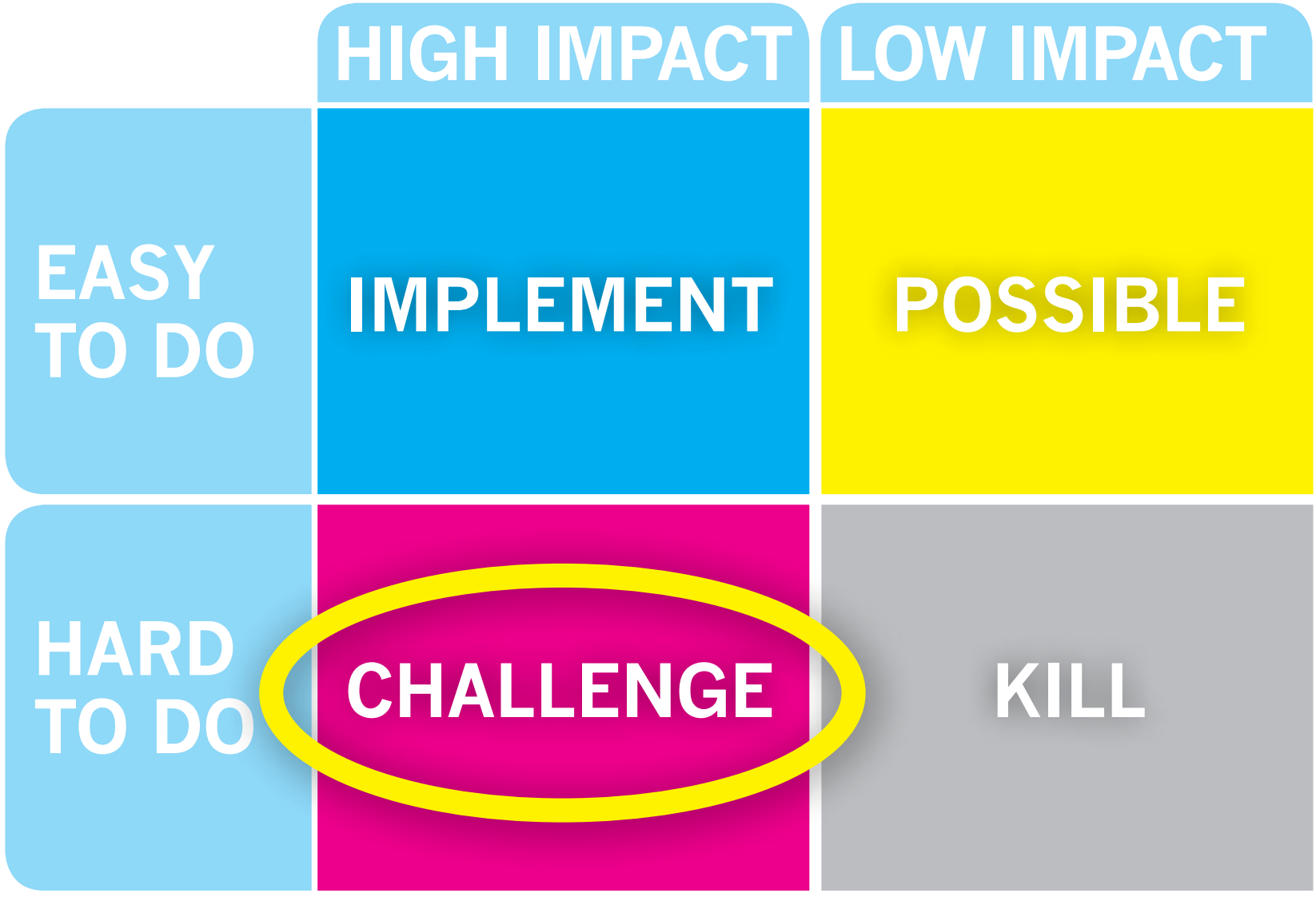
Phew ... this has been a lot of thinking so far. We need to really make sure this plan is feasible before we proceed. It sure sounds doable on paper but how do I really assess feasibility?

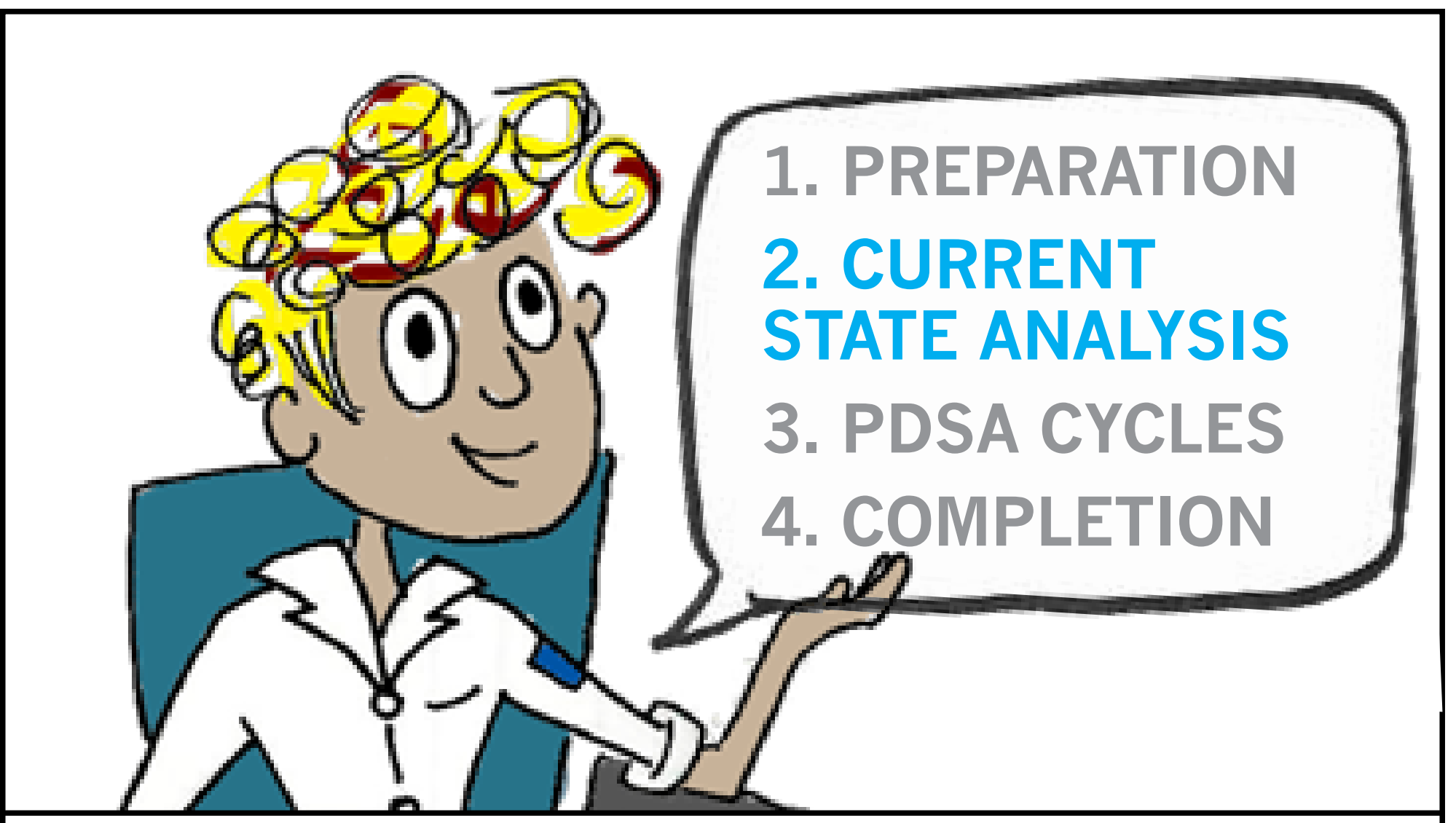


This handy matrix, called a PICK (Possible, Implement, Challenge and Kill) chart, helps me visualize feasibility by asking two big questions: How vast is the impact of our proposed changes? How challenging will it be to implement?



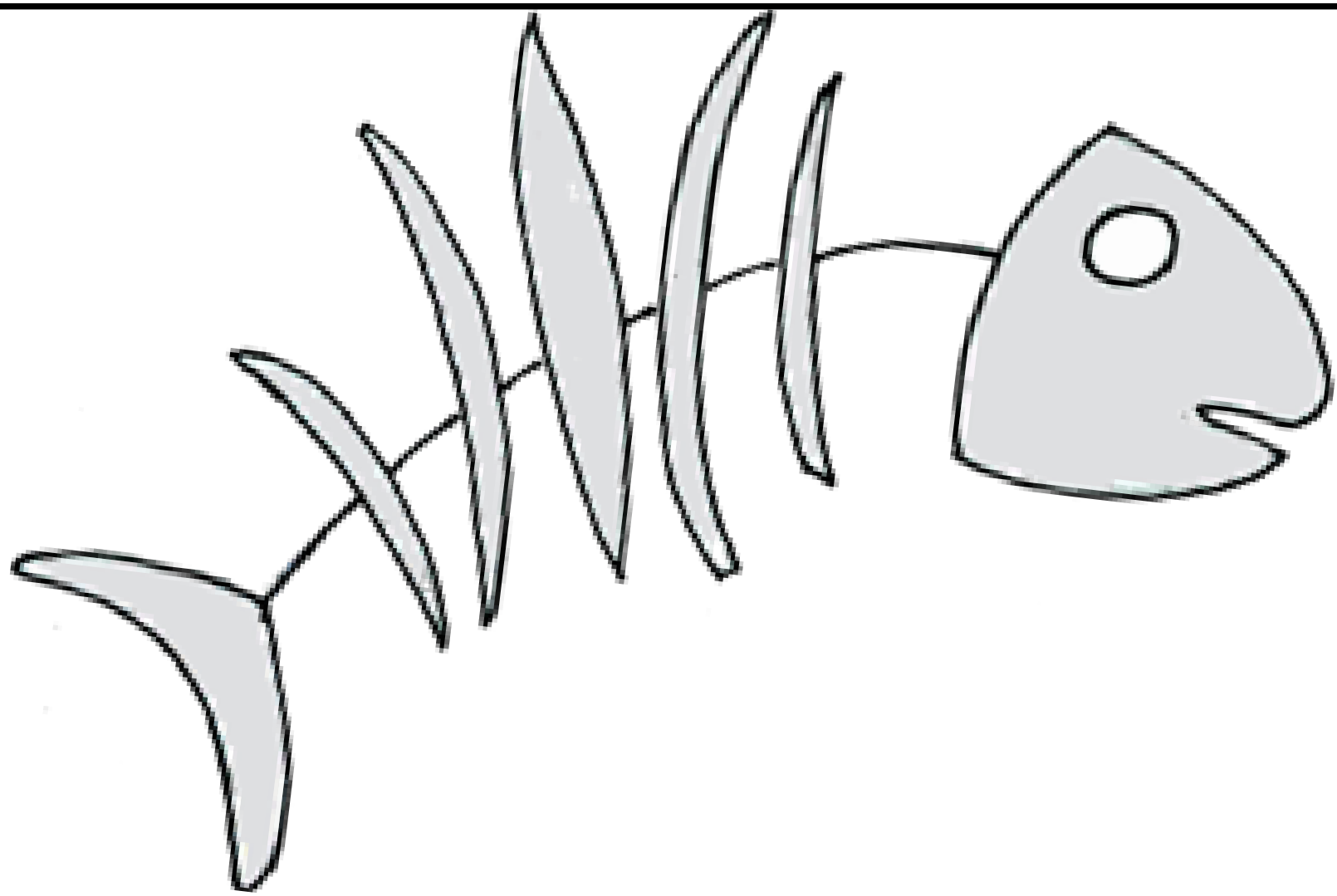
In my opinion, this will have a high impact on the affected patients, but I think it will be moderately difficult to implement because we need consensus from several different disciplines. That makes this a “Challenge” but I’m up for it.



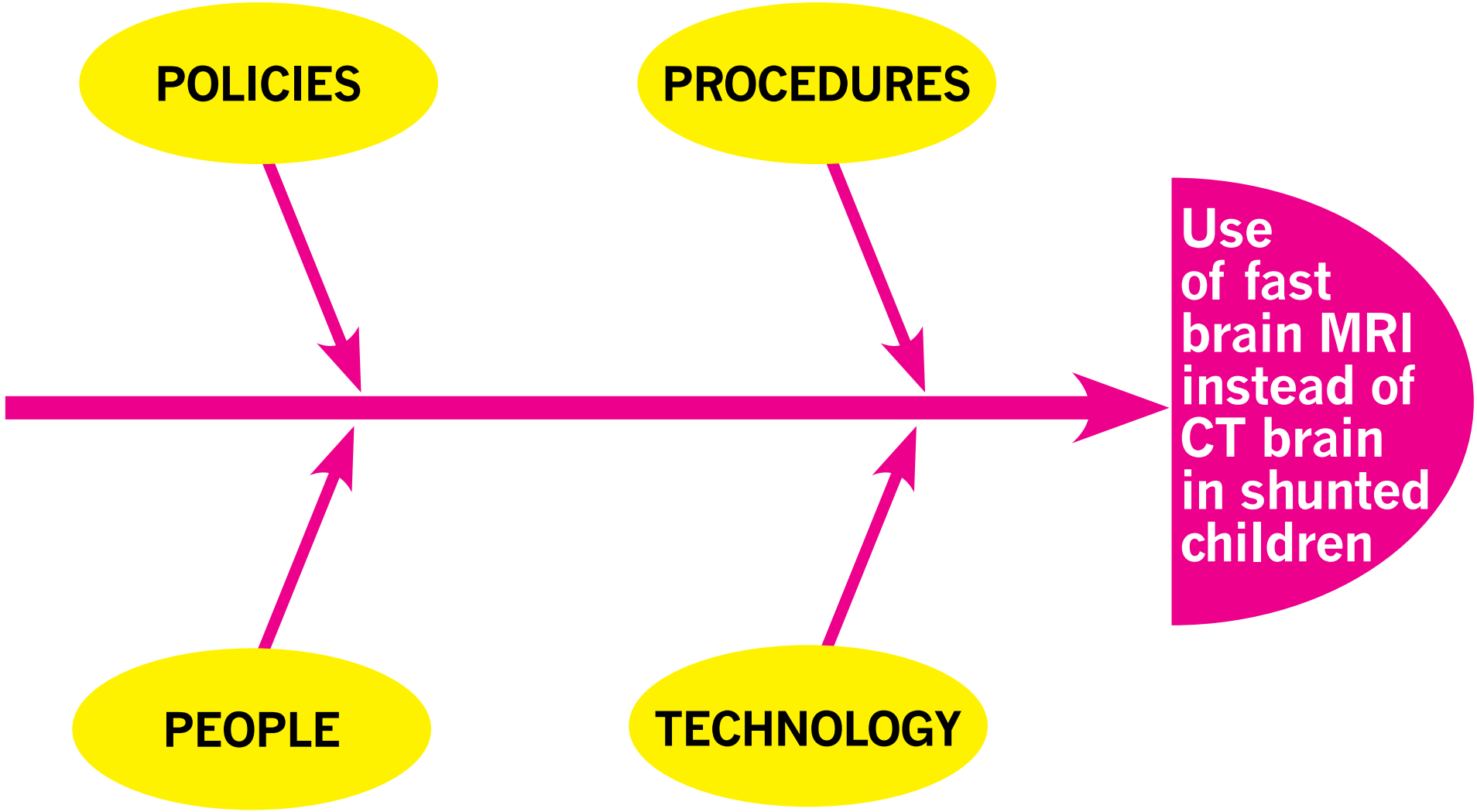


We've done it! We wrote a title and abstract, and selected an IOM area. We defined our aim and identified teammates. We've decided on a metric and the feasibility of the project. I discussed everything with the team and we made minor modifications. That means we're ready to move on to the current-state analysis!

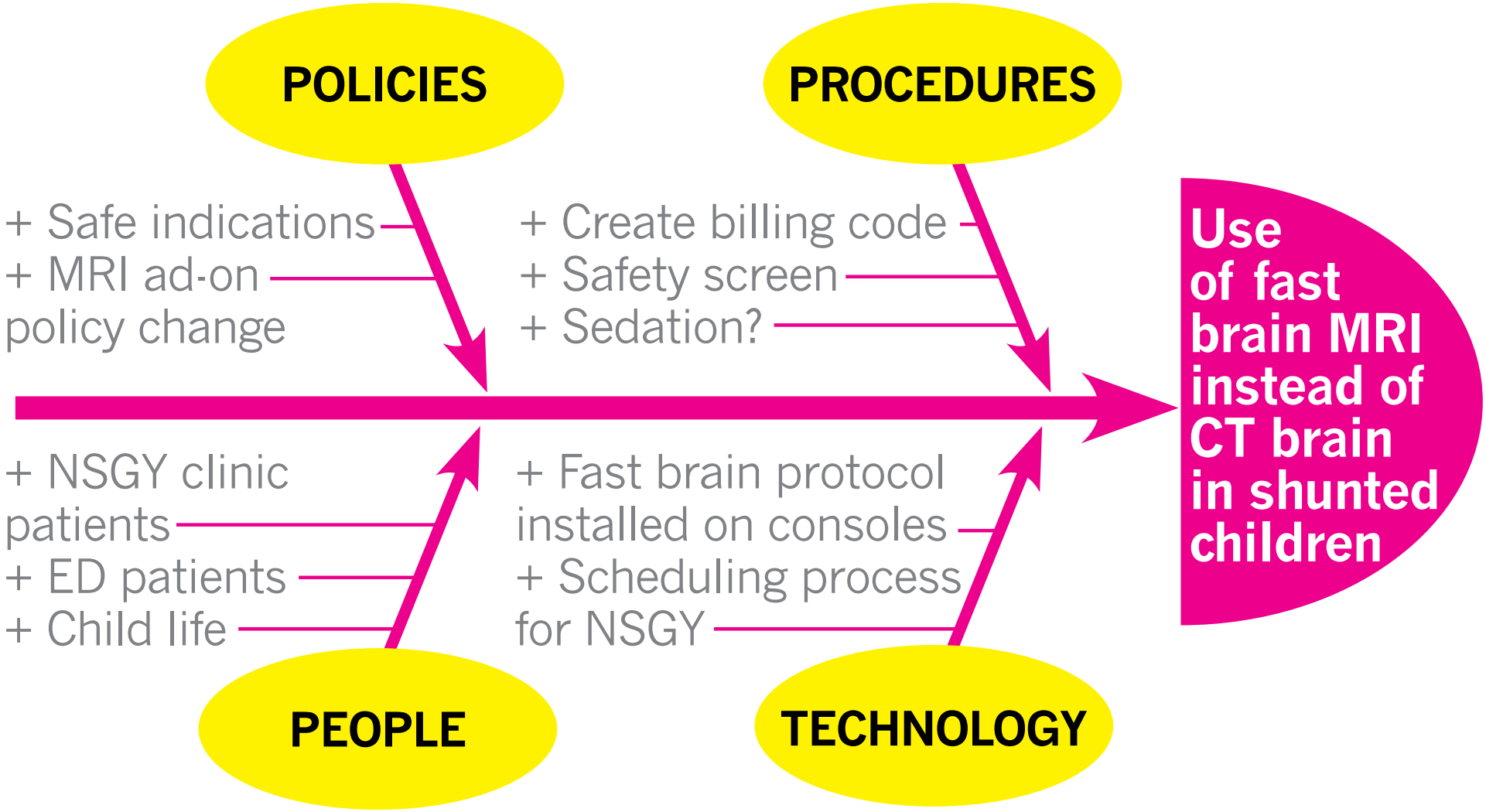
What changes can we make that will result in improvement? There are a bunch of “thinking tools” that help analyze processes and generate improvement ideas, especially when the whole team brainstorms. A commonly used tool is the Ishikawa cause-and-effects diagram, also called a “fishbone diagram”.

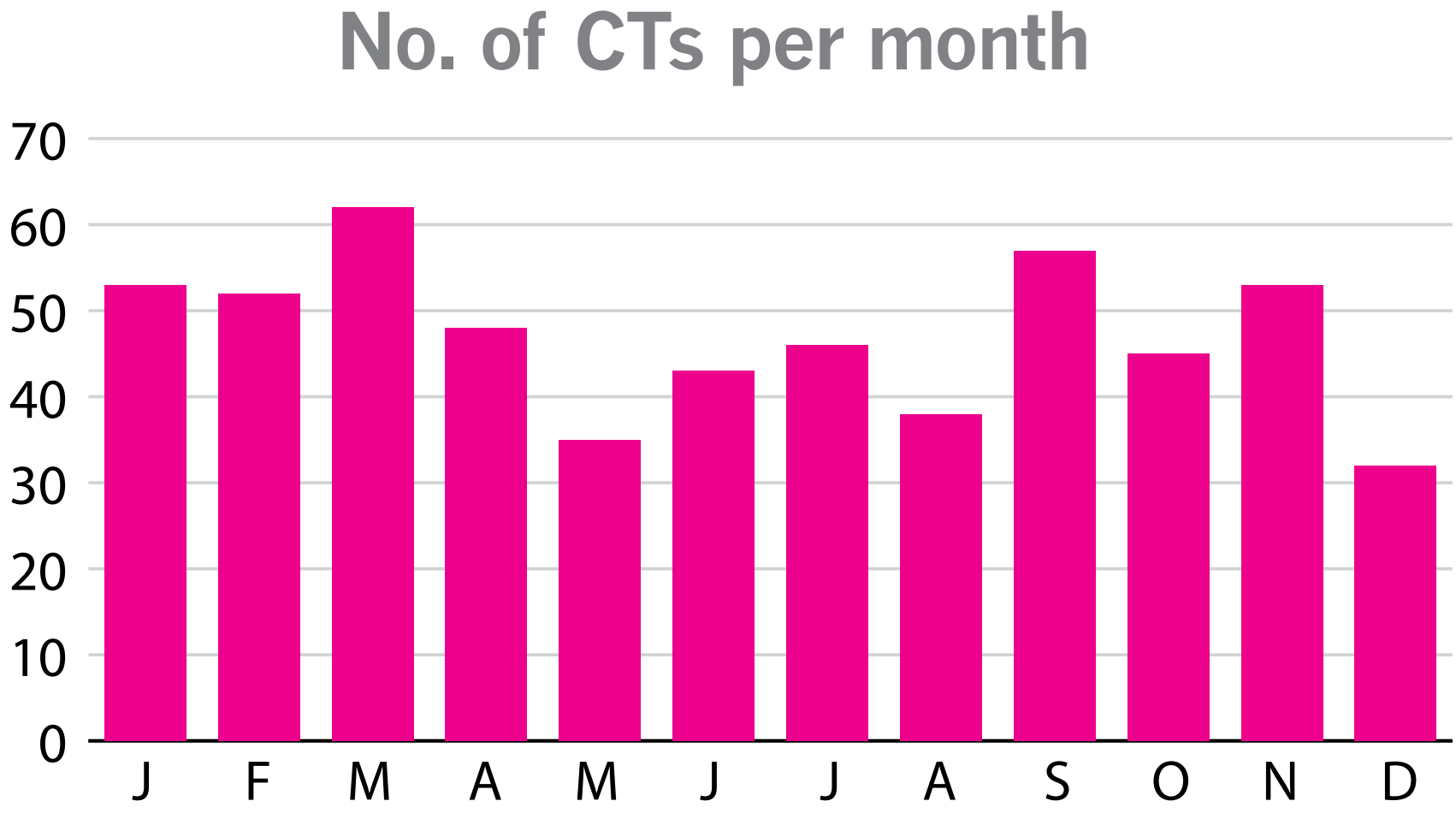


In a fishbone diagram, factors are grouped into various pre-determined categories. For our scenario the following four categories suit best: Policies, Procedures, People, and Technology. Now the team can think about how policies, procedures, human factors or our technology could contribute to the success of our project.



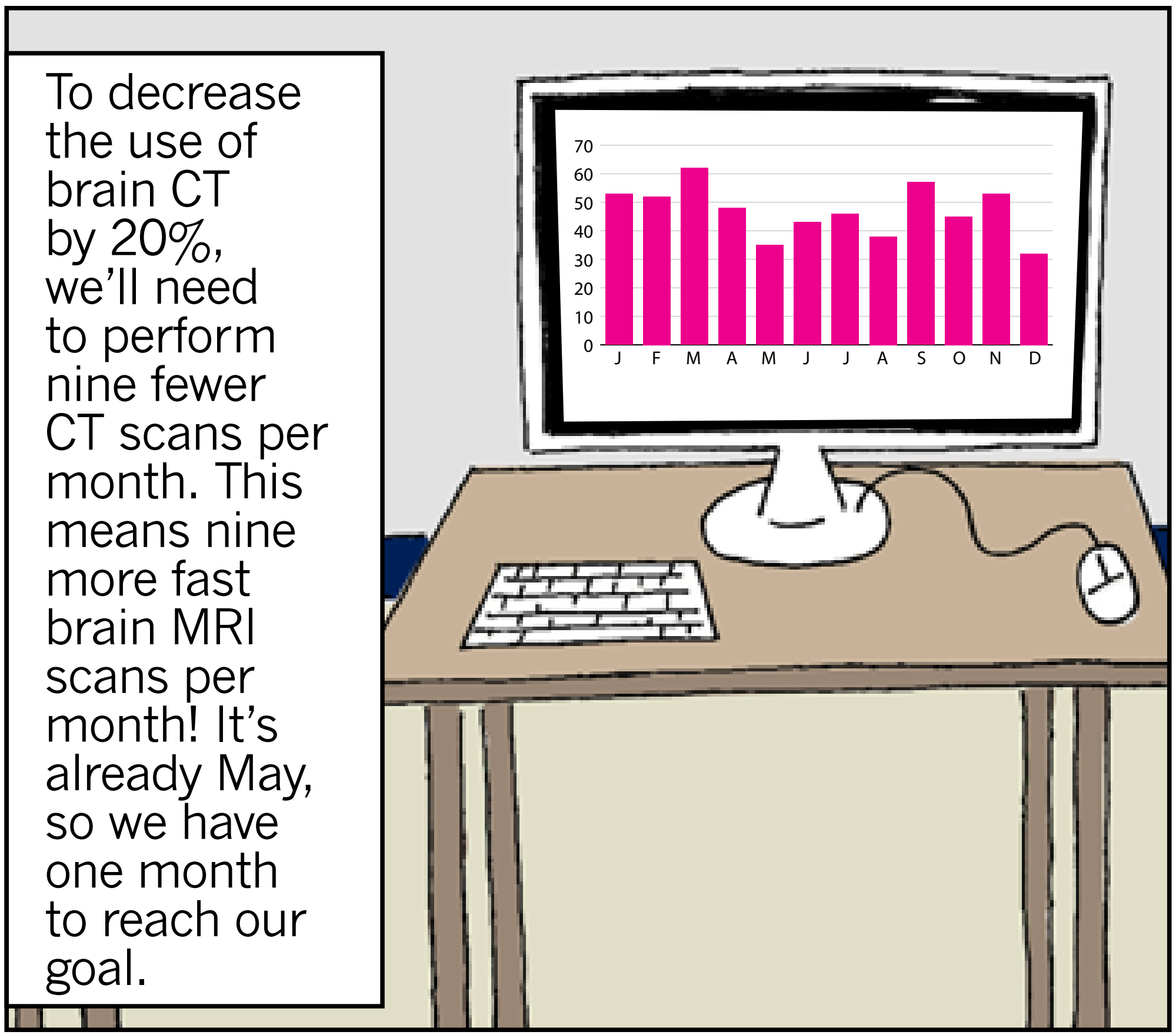
Wow! We had a team meeting and this diagram really filled up. I was not aware this requires a policy change in our department—glad I had that expert on my team!

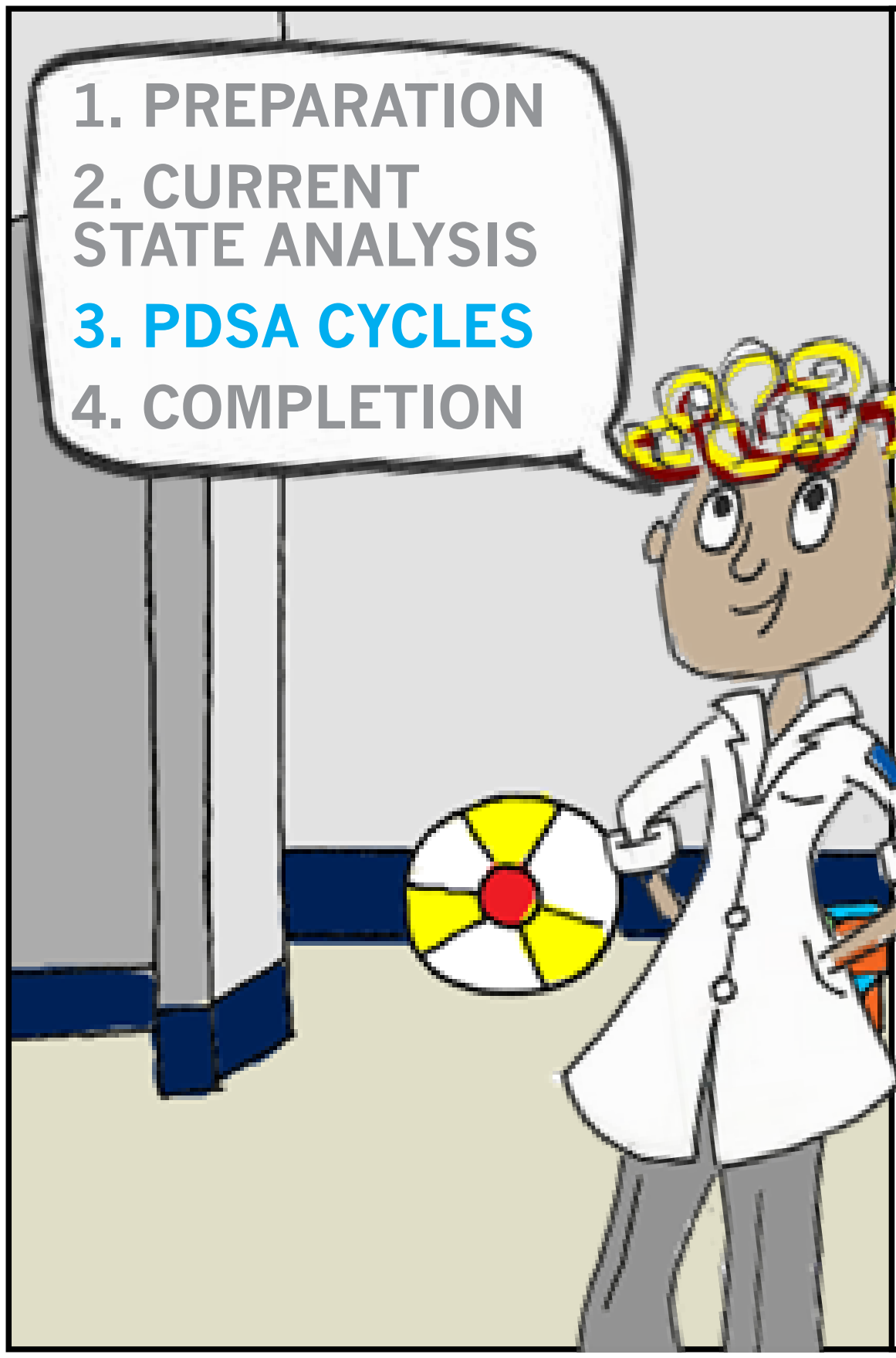




There was much more to do than I thought! Thankfully, my department is very supportive of this project and tasks have been divided up and are completed now. We're ready to offer this shunt MRI service. In the meantime, I gathered the baseline data—it looks like we're doing an average of 47 shunt CTs in outpatients every month.

To decrease the use of brain CT by 20%, we'll need to perform nine fewer CT scans per month. This means nine more fast brain MRI scans per month! It's already May, so we have one month to reach our goal.

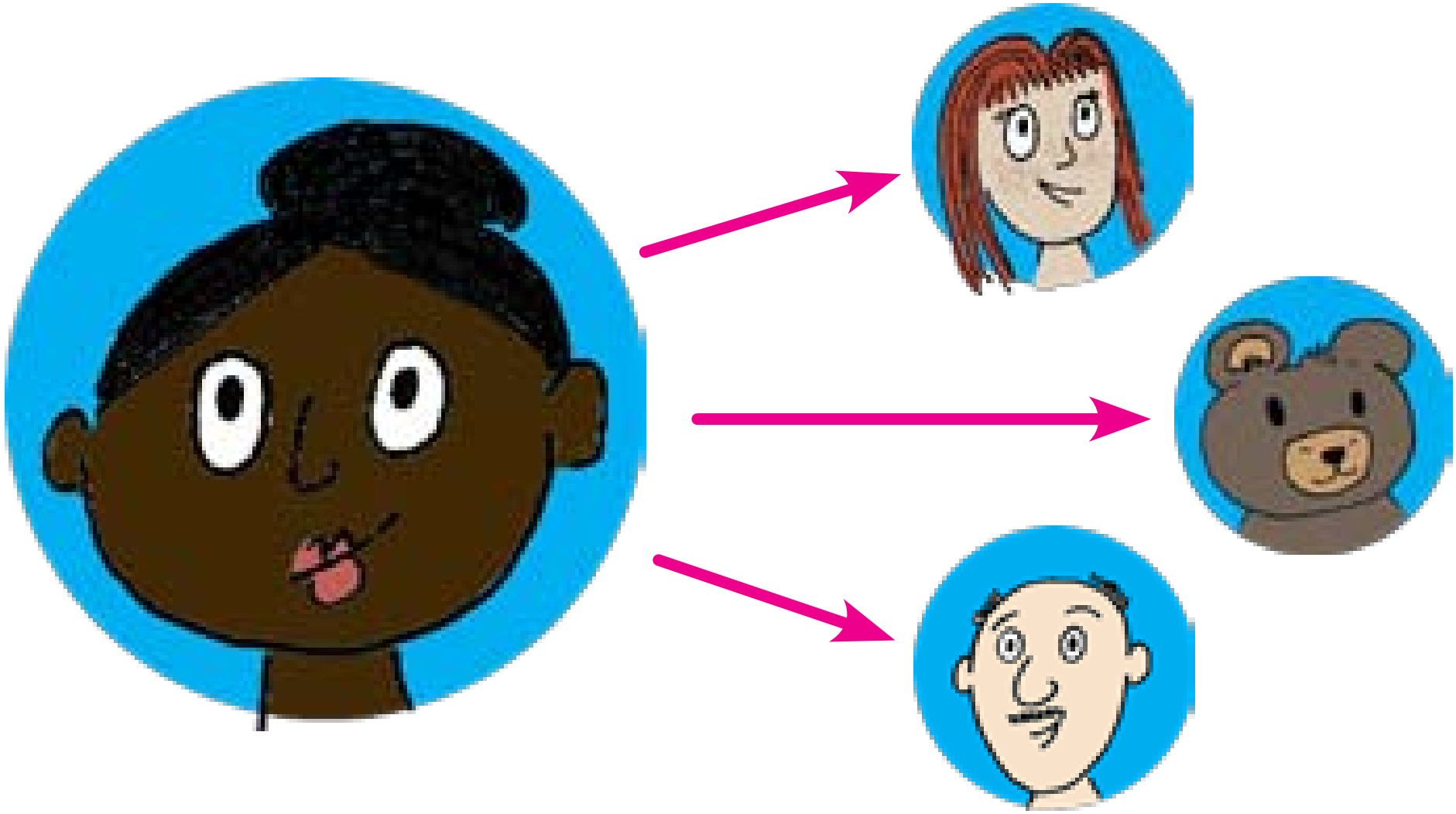


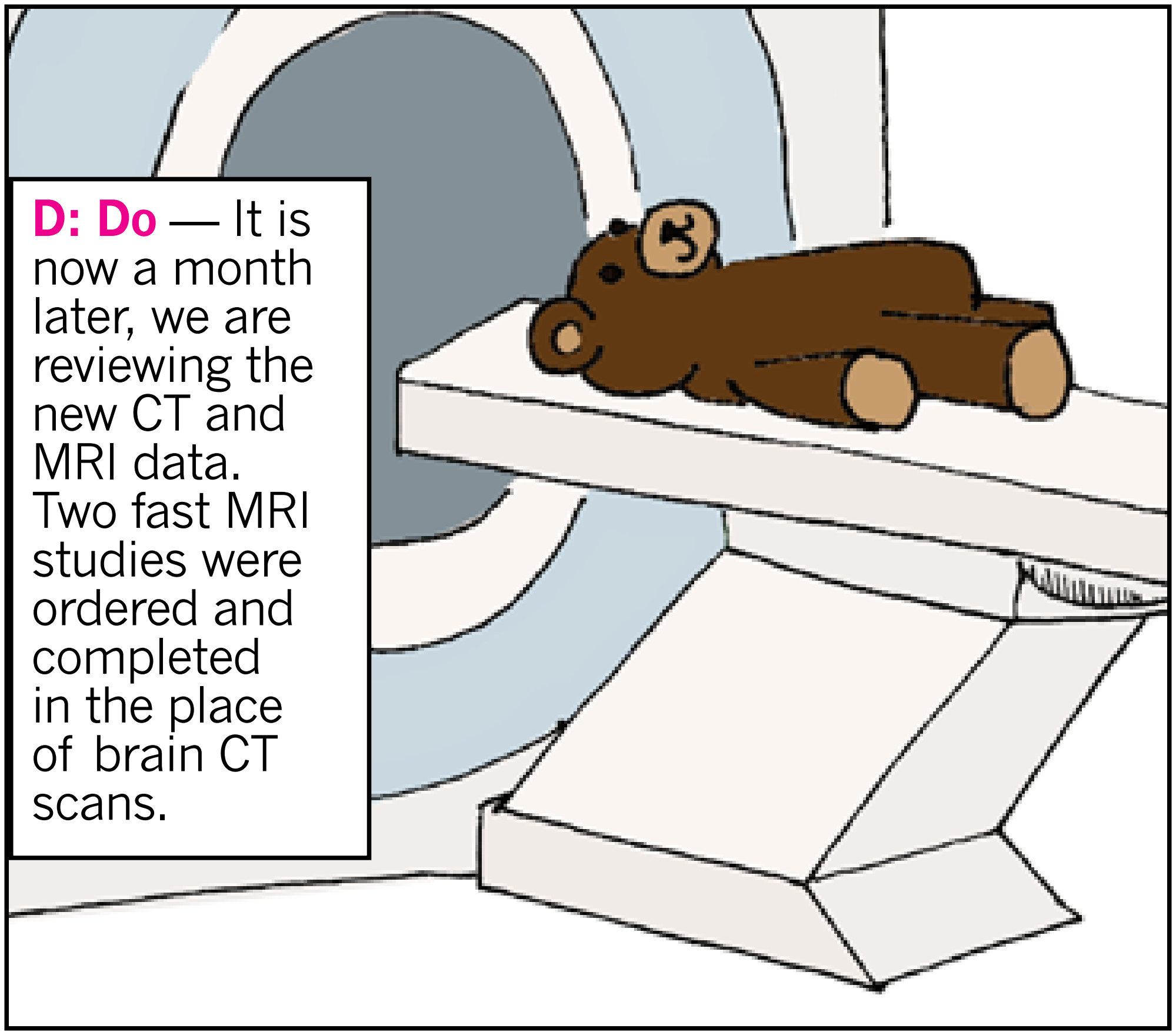


It's time to select, test, and implement some change ideas from our fishbone analysis in a real work setting in order to move towards our aim. We can use a PDSA cycle — Plan, Do, Study, Act. This four-phase process gives us a way to quickly test changes on a small scale, observe what happens, tweak the changes as necessary, and then test again.

Now that the new procedure is in place, we have to review all the ideas we had in the team meeting on how to get the word out about this new protocol. We decided first to try educating the neurosurgery PAs—they see all patients and are highly motivated!

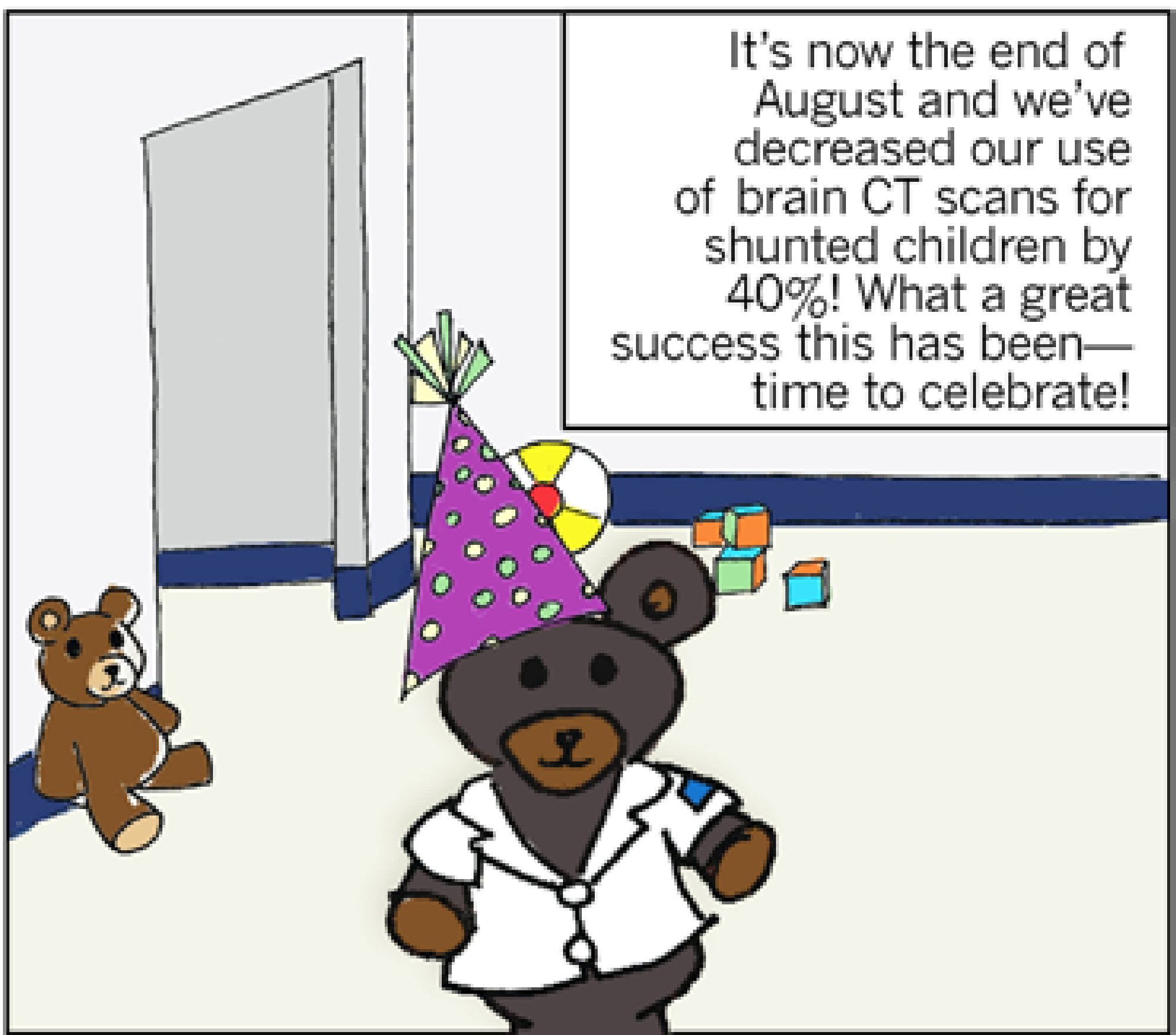
P: Plan — Inform PAs of new fast MRI procedure by email from the **Neuroradiology Director**.



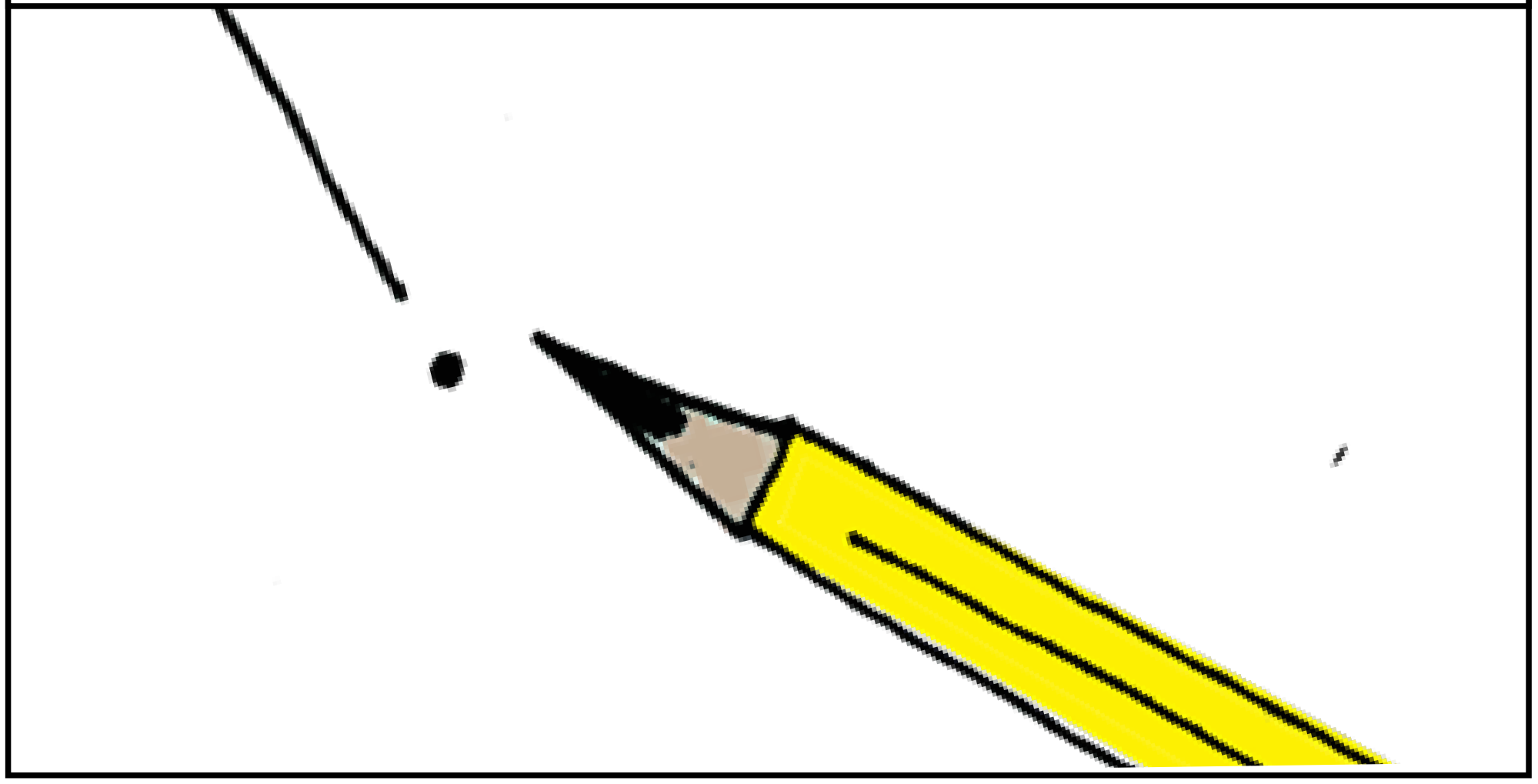

D: Do — It is now a month later, we are reviewing the new CT and MRI data. Two fast MRI studies were ordered and completed in the place of brain CT scans.

S: Study — The MRI technologists knew what to do, and scheduling and billing worked well too. The neuroradiologists were pleased with the image quality. However, we did not meet our goal of decreasing CT by 20% (nine studies). Upon questioning the PAs, it turns out they are not using the new protocol yet because the neurosurgery chair did not approve this new protocol. Plan for the 2nd PDSA cycle: Meet with the **Neurosurgery Chairman** to discuss the new protocol.

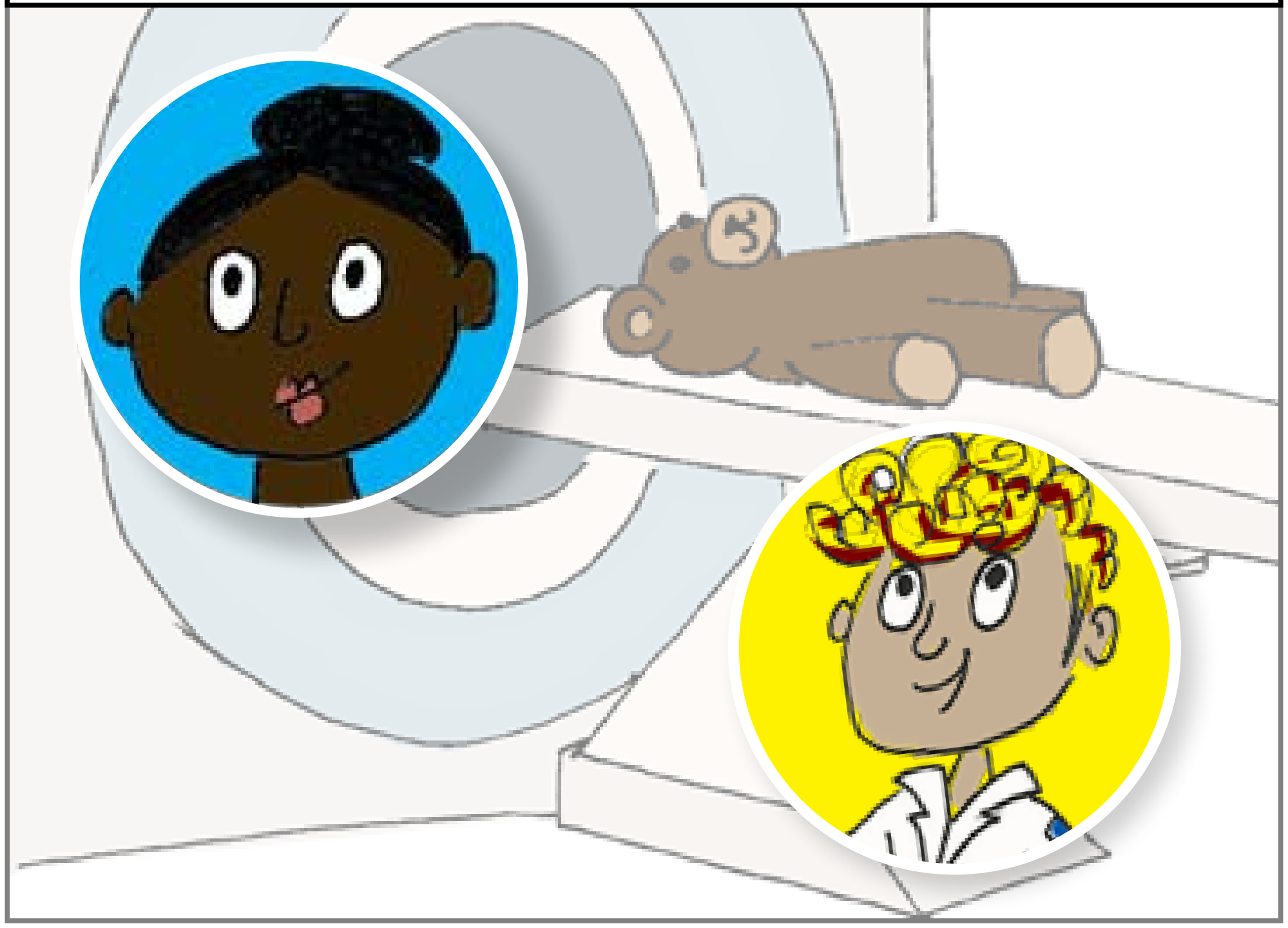
S: Study — Another month later, 10 MRI studies were done. Great joy—we exceeded our goal. The team comes together and we believe we can achieve even more and change our goal to 40%. Our next action is to expand use of fast MRI for children in inpatient locations. We have set a new deadline for September 30.


It's now the end of August and we've decreased our use of brain CT scans for shunted children by 40%! What a great success this has been—time to celebrate!

But my job doesn't end here — I need to take a moment to summarize the project. This means writing up a short narrative of our journey, noting the improvements we've made and the overall value added to patient care. I'll also document the things the team and I did well or could have done better. This sort of reflection will help me to do my next project more efficiently.



Finally, I want to be sure to share this success with my colleagues and my department chair to show them that the PDSA-cycle method worked!



"We implemented a new procedure: fast brain MRI for children with ventricular shunts. We achieved our aim of decreasing the use of the old procedure (brain CT scans) by 20% within the targeted pediatric population in three months.

As my first QI project, this has been a great experience and has given me the confidence to move forward with other QI projects.

I have learned to value my team — there were many aspects of the process I could not have anticipated on my own. In addition, I could not have made all of the necessary changes to policies and procedures, because I lack the expertise and authority."

THE
END