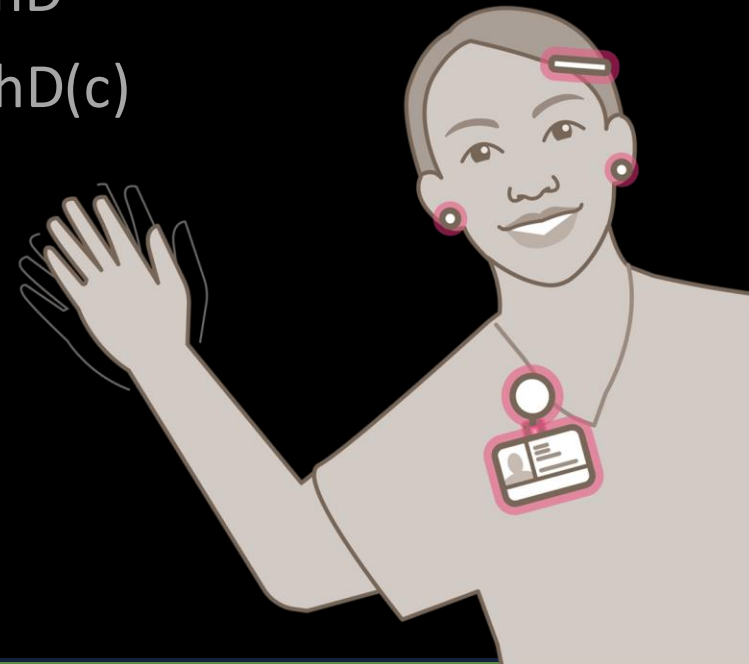


Tess the MRI Safety Mascot:

A Creative Approach to Radiology Safety and Education

Brittany Bennett, MA, CMI, Ethan Larsen, PhD
Joice Prodigios, MD, Elizabeth Silvestro, MS, PhD(c)



Disclosures

- None



Learning Objectives

- Understand the role of unconventional visual aids like life-size mascot signage in improving MR safety compliance and awareness
- Identify the key steps and team needed to commission life-size mascot signage in your hospital

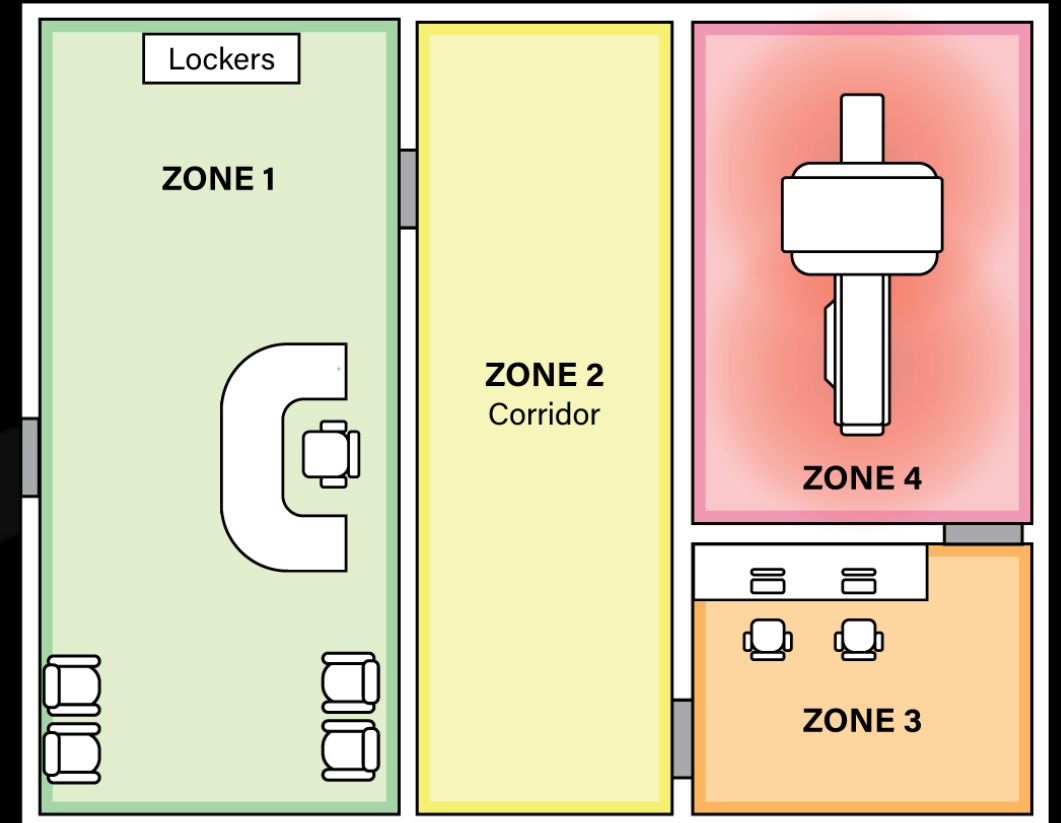
Background

- Magnetic Resonance (MR) safety education is essential to protect patients and staff from hazards



- Ferrous items are prohibited in **Zone 3** (control & changing areas) and **Zone 4** (magnet room)

- American College of Radiology recommends appropriate signage at the **Zone 3 / 4** boundary [1]



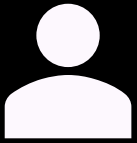
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Bennett/CHOP

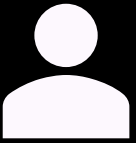
Background

To address this, the Radiology Department's MR Safety Committee sought to **improve safety signage**

- **Our MR Safety Committee:**



Radiology
Manager 1



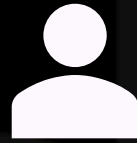
Radiology
Manager 2



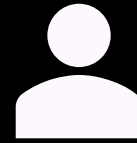
Sr. Manager
Radiology Strategic
Operations



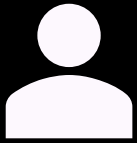
Team Leader
MRI



Team Leader
MRI, US,
Nuc. Med.



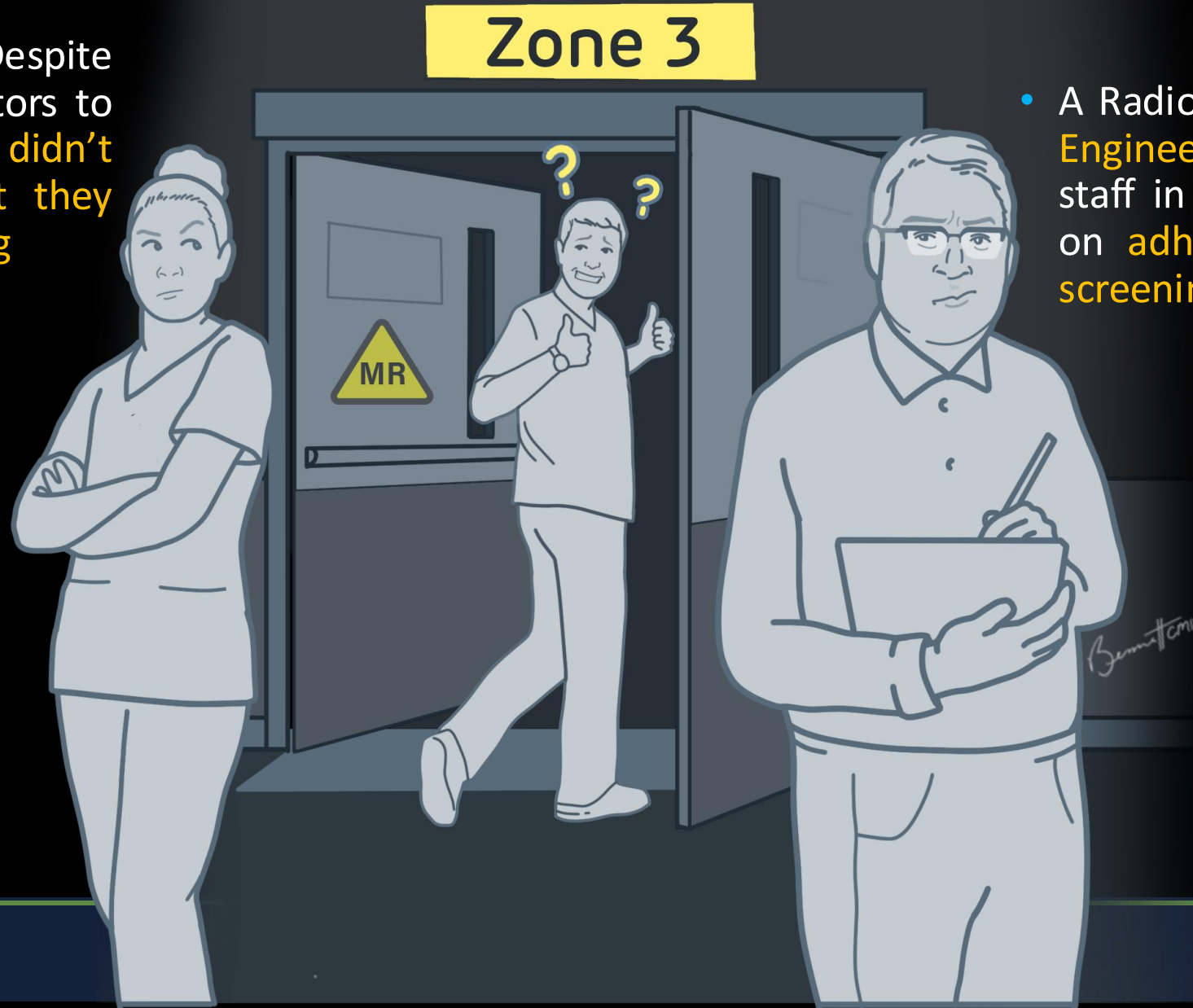
Sr. Quality
Manager -
Radiology



Sr. Director
Radiology Clinical
Operations

The problem

- "Are you clear?" Despite answering yes, visitors to MRI disclosed they didn't always know what they were acknowledging

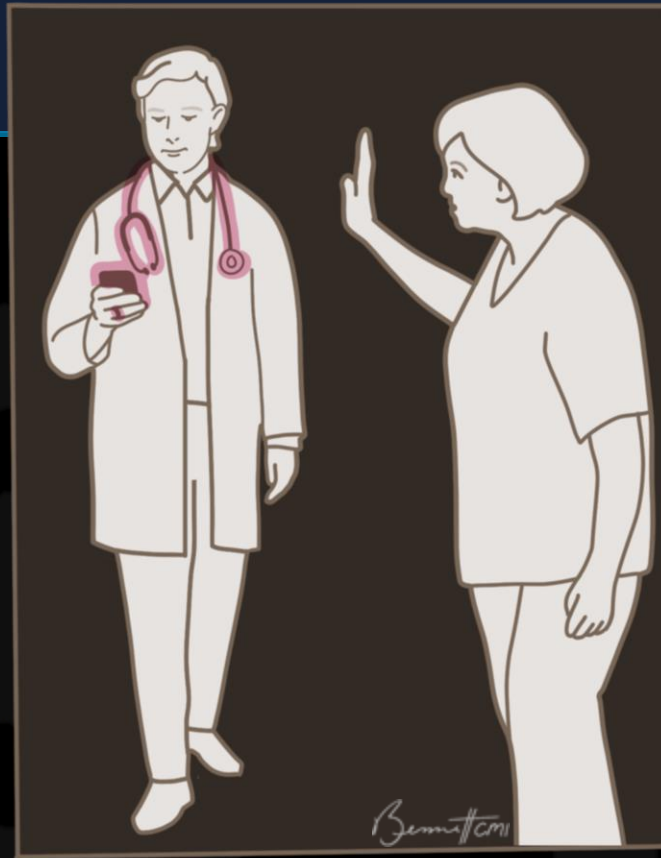


- A Radiology Human Factors Engineer (HFE) observed staff in MR zones, focusing on adherence to entrance screening protocols

The problem

Observations revealed:

- There were risks of non-MR personnel entering with hazardous items
- Staff may safety-check on first entry but not always on re-entry



So, new signage needs to be **eye-catching & memorable!**

A creative solution



- In 2023, the committee introduced "Tess," a life-size MR Safety mascot
- Tess highlights common ferrous items to check for, head-to-toe
- Concept and information designed by the Human Factors Engineer & MR team; created by a Medical Illustrator in Adobe Illustrator, & printed by an external vendor

HEADING TO MRI?

ARE YOU CLEAR?

C Check for metal items by spinning in front of the **SOLO** unit

L Leave everything in the **Zone 2 lockers**

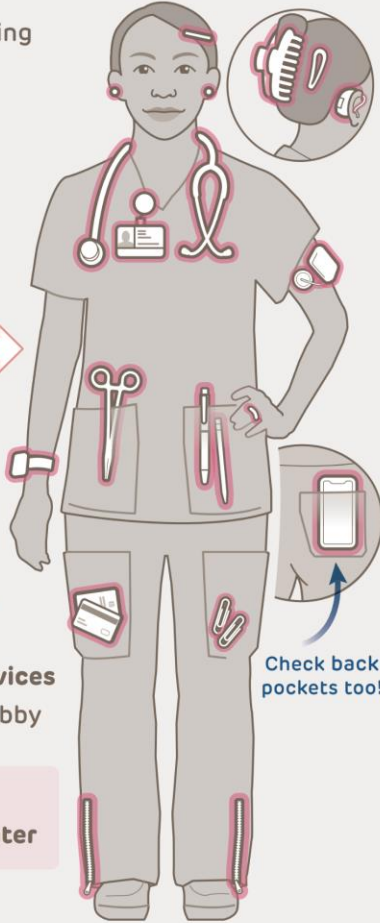
Remove:

PERMANENT JEWELRY	Watch
Earrings	Personal phone
Bobby pins	Hemostats
Hair clips	Pens & Pencils
Stethoscope	Rings
ID Badge	Magnetic stripe cards
Insulin pumps / wearable medical devices	Stapled paperwork

E Empty your pockets before entering Zone 3/ Control Room

A ALL necessary patient-care devices in the Zone 3/ Control Room cubby

R Repeat screening if you exit Zone 3/ Control room and re-enter



Check back pockets too!

HEADING TO MRI?

C Check for metal items by spinning in front of the **SOLO** unit

L Leave everything in the **Zone 2 lockers**

Remove:

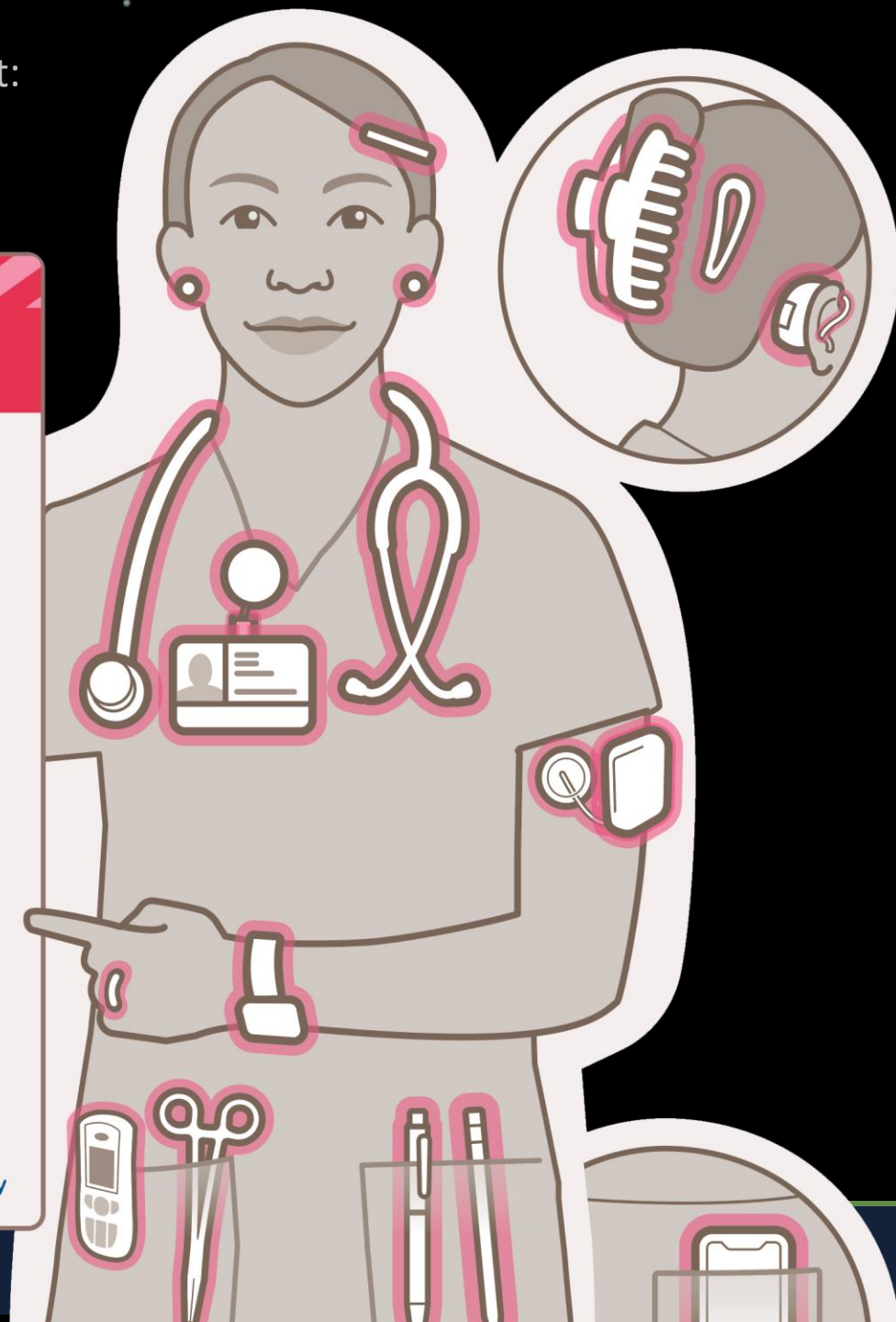
PERMANENT JEWELRY	Watch
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Insulin pumps / wearable medical devices	Stapled paperwork

E Empty your pockets before entering Zone 3/ Control Room

A ALL necessary patient-care devices in the Zone 3/ Control Room cubby

R Repeat screening if you exit Zone 3/ Control room and re-enter

The MRI Tech has the *final* say on entry



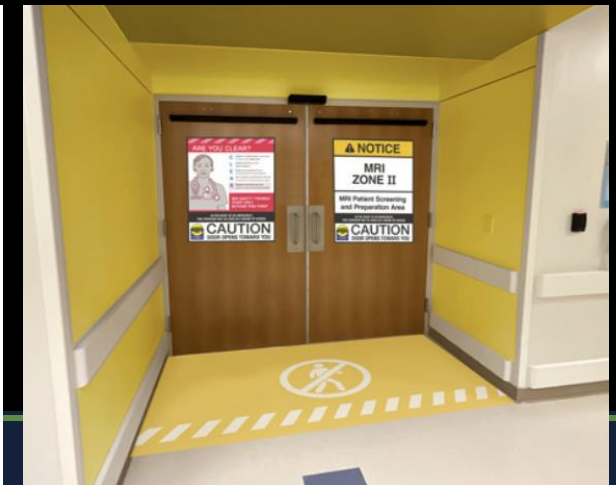
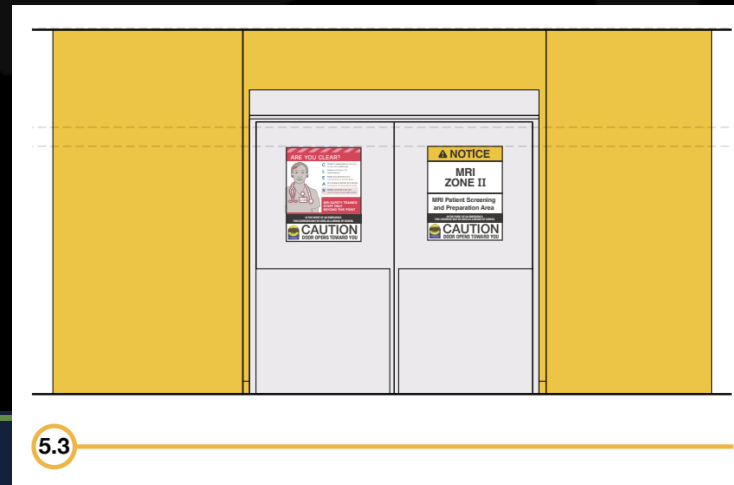
The case for mascots

Mascots are more than decoration; they are a tool to deliver a message. They engage viewers, enhance recall, and foster emotional connections.

- Effective mascots **simplify a complex message** and create an **emotional connection** with a target audience [2]
- The design and implementation of mascots must align with institutional values and messaging to maximize their impact; effective mascots are visually appealing and possess distinct personalities that **reflect the brand's identity** [3]
- Mascots can serve as a bridge between brands and consumers, facilitating a deeper connection through **anthropomorphism**—attributing human-like characteristics to non-human entities [4]
- This strategy has been shown to improve consumer experience and foster positive brand attitudes, **particularly among younger demographics** who are more likely to empathize with animated characters [5]

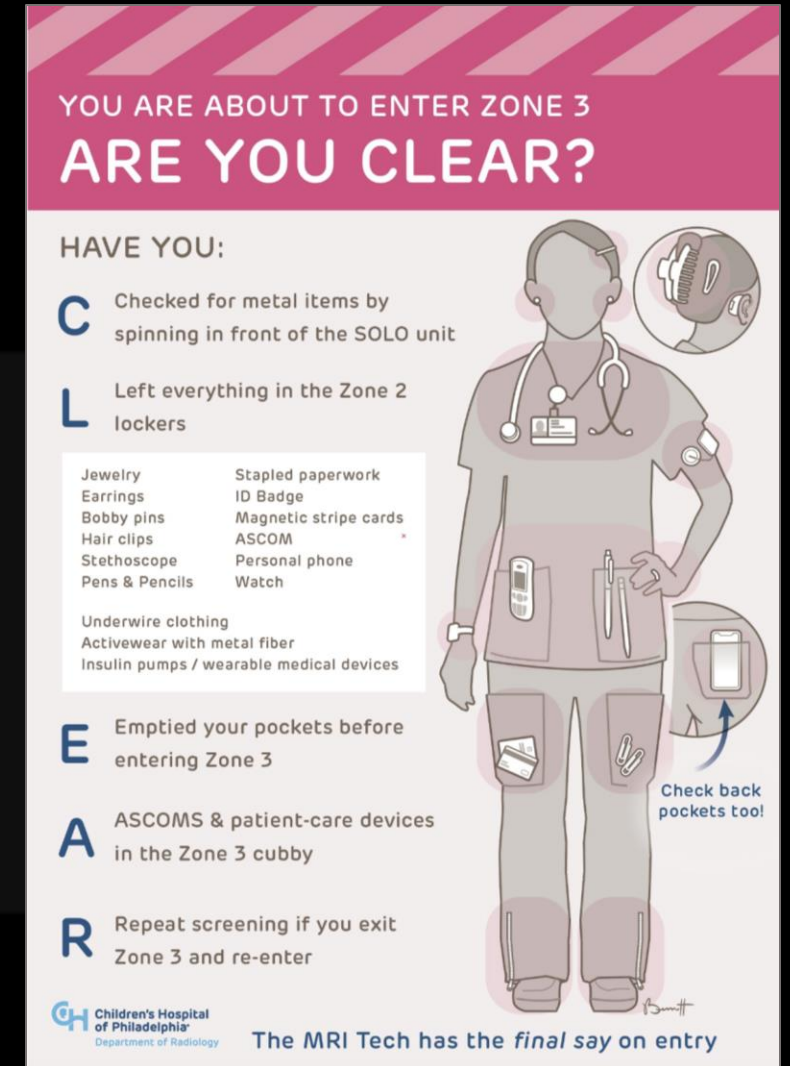
Creative solution - Locations

- Tess was placed at Zone 3 entrances in three MR areas across two campuses
- Positive feedback led to expanded use by Facilities team (below)
- The MR redesign plan includes mock-up of large vinyl Tess signage on Zone 3 door



Feedback & Design Changes

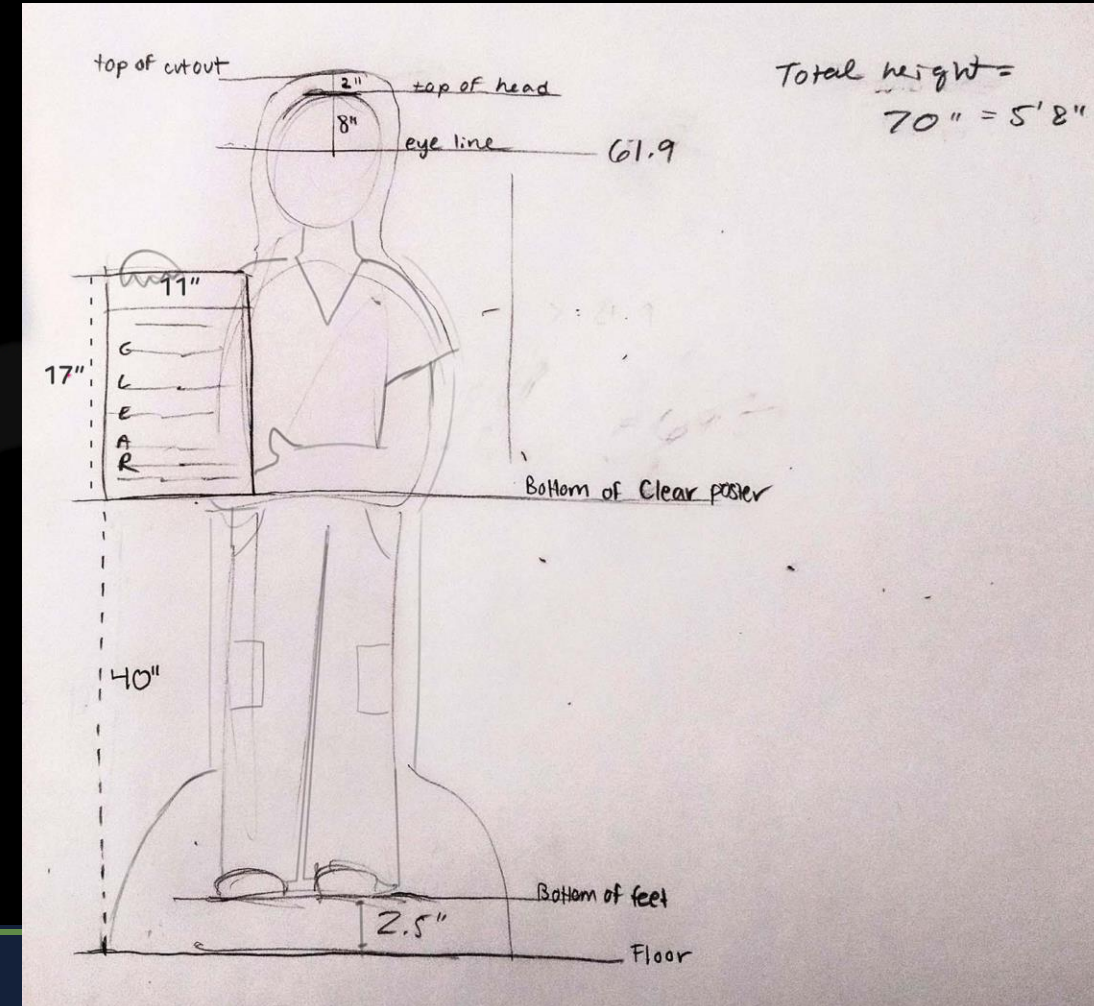
- Initially, 11"x17" posters were printed (right)
 - Staff commented that these added to **visual clutter** in the MR environment
 - These posters were often mistakenly removed
- A face was requested for the life-size model



Design considerations

Follow the Americans with Disabilities Act (ADA) guidance for accessible public signage [6]:

- Signage should be mounted between 48 and 60 inches from the floor to be easily accessible by touch and sight
- Text should be at least 0.5 inches in height
- High color contrast between text and background
- Use standardized pictograms to convey information visually



Design considerations

EXPANDED PRECAUTIONS

REQUIRED BEFORE ENTRY:

1. GOWN
2. N-95 + EYE PROTECTION *or* PAPR
3. HAND HYGIENE
4. GLOVES

NEGATIVE PRESSURE:

- Keep door closed at all times.
- Do not remove N95 or PAPR until after exiting patient room.

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Revision 03.03.21

Patient-facing material must adhere to the institution's brand identity

← We used previously-made alert signage as a style reference

**YOU ARE ABOUT TO ENTER ZONE 3
ARE YOU CLEAR?**

HAVE YOU:

- C** Checked for metal items by spinning in front of the SOLO unit
- L** Left everything in the Zone 2 lockers
- E** Emptied your pockets before entering Zone 3
- A** ASCOMS & patient-care devices in the Zone 3 cubby
- R** Repeat screening if you exit Zone 3 and re-enter

Check back pockets tool

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The MRI Tech has the final say on entry

Steps to Production

Step 1

Background work

Identify problem



Define all stakeholders



Observe

*(Human Factors Engineer
or Quality Improvement
Professional)*



Brainstorm solution

*with all QI team and
stakeholders*



Decide where it will be
displayed

Step 2

Find creative design assistance

Does your institution have a
Creative Services team?



→ **Yes** Contact **Creative Services**



→ **No** Search for **external vendor**

Ask marketing
department if there
is a recommended
vendor

OR

Outsource the
work via Upwork
or related talent
search website

Does your design need medical
or scientific content to be
depicted accurately?



→ **Yes** Work with a
medical illustrator



→ **No** Work with a
graphic designer

Step 3

Designer leads the iterative design process

Designer produces
First draft of design



Stakeholders give feedback



Second draft



Stakeholders give feedback



Third & final draft



Stakeholders approve

Step 4

Print, display, observe

Connect with a printing
vendor that can make
life-size cardboard
cutouts



Designer liaisons with
printer & sends the
design file



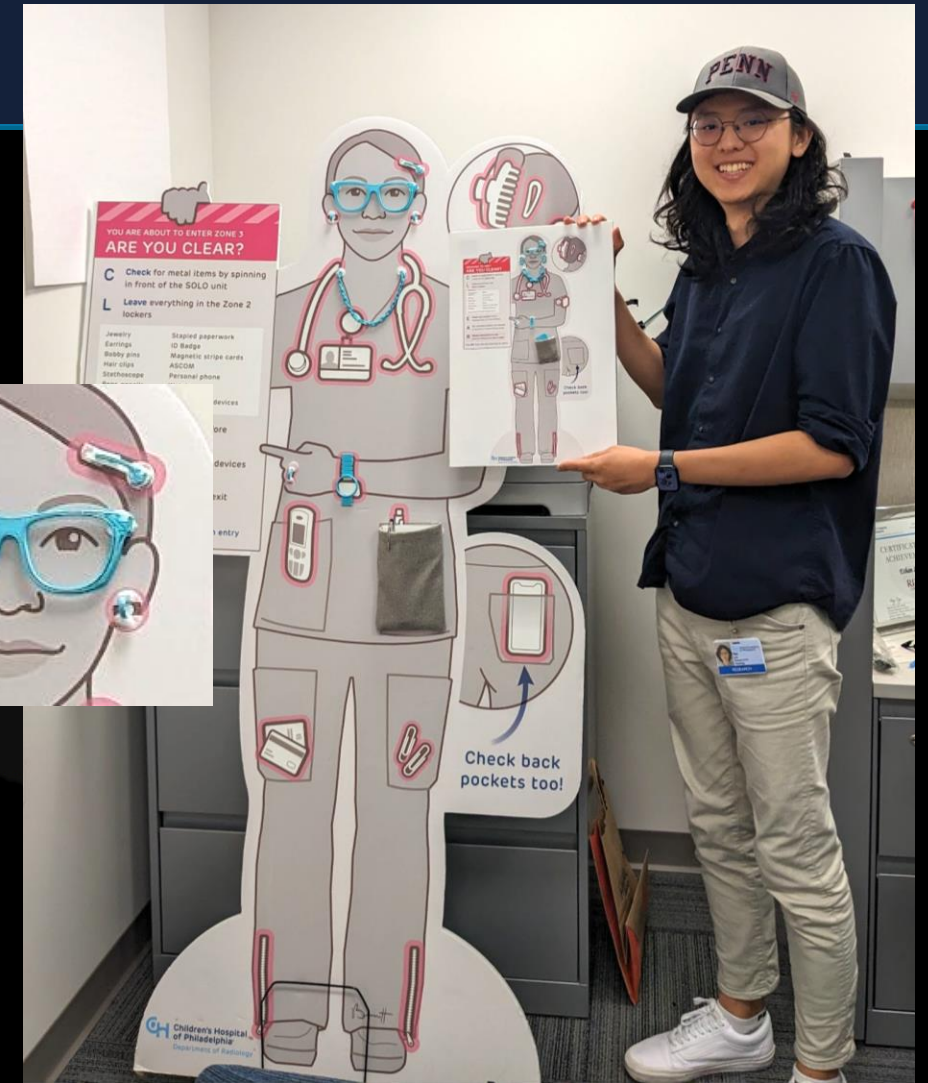
Receive product &
display it

Observe outcome &
collect any feedback



Same design, many uses

- Tess featured in hands-on education during 2024 MR Safety Week
- Radiology interns 3D-printed the 'ferrous' items and attached them with hook/loop fastener.
- Staff engaged interactively by identifying and removing the items
- Activity boosted awareness of MR safety practices



CHAMP intern Ray Liu with Tess for MR Safety week education (FY24)

Same design, many uses

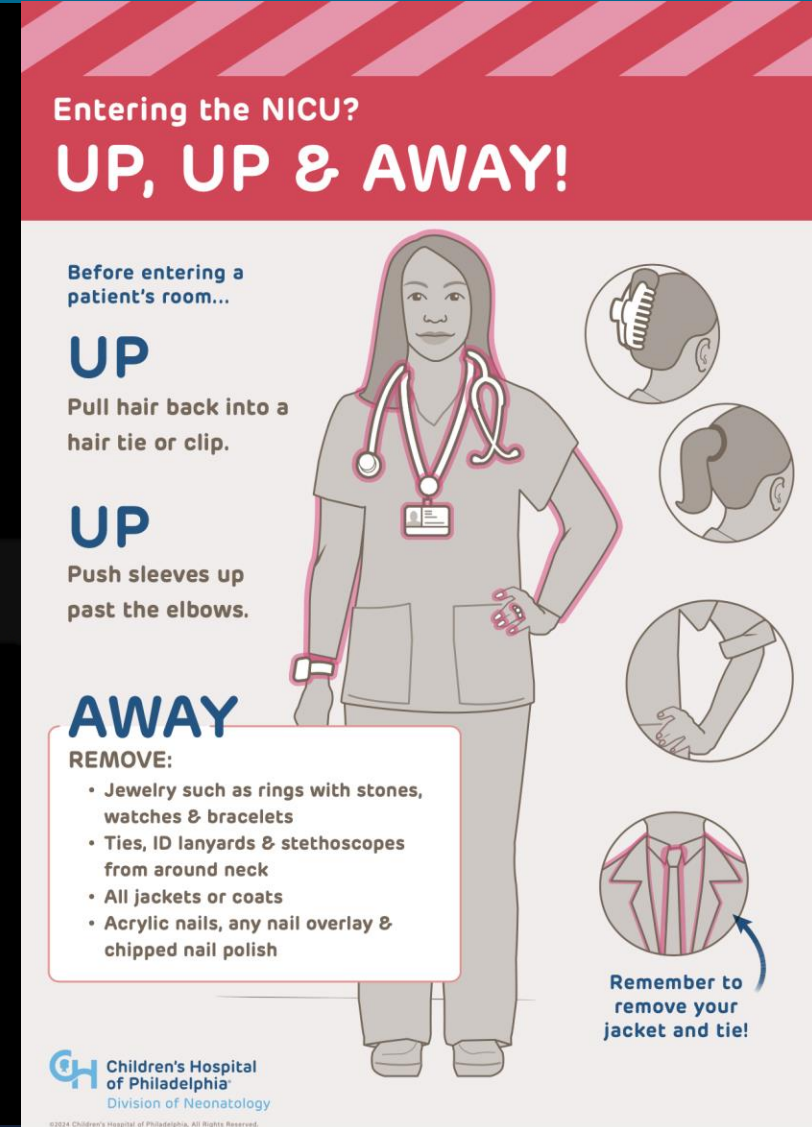
THE C.L.E.A.R. PROCESS INTERACTION



- The hospital's Digital Learning team integrated Tess into an **online MR safety training module**
- **Interactive activity:** users drag ferrous items from Tess to a locker
- **Repetitive** action **reinforces** habit of checking for ferrous objects

Same design, many uses

- After deploying the sign, other teams took notice.
- The hospital's Neonatology team requested a similar version for the Neonatal Intensive Care Unit (NICU)
- The design files were given to the hospital's Creative Services team, who adapted the design.



Next steps

- After the success of sharing the design with the NICU, there is potential for further adaptation in other high-risk areas (e.g., operating rooms, interventional radiology)
- The hospital's MR Safety Committee will monitor Tess's impact on compliance and safety

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