Hello everyone and welcome! We really appreciate your continued interest in this collaborative and look forward to getting started. First we will start with a few housekeeping reminders:

1) To reduce the likelihood of feedback during the call, we’ve muted everyone.
2) Please use the chat function to ask questions. We have time at the end of the presentations to respond to any questions submitted during the webinar, and, we’ll open to a Q&A format at the end
3) The webinar is being recorded. We will post it later and provide a link so you can review or share with any member of your team unable to be on the call. Please frame any questions with the understanding it will be part of the recording.
Meeting Agenda

- Welcome- Fisher
- Project Background- Lally
- Methods and Findings- Hu
- Case Study- 
  - David Gourlay-Wisconsin Children’s
  - Aaron Lipskar-Cohen
- Coaching Sessions- Raval
- Q&A

Here is our agenda for today.

1) Welcome
   1) Introduce new PSQC member hospitals since our last meeting in April 2021

2) Project background-why we chose to tackle this
   1) Ionizing radiation stewardship is important in the pediatric population
   2) CT use is binary-you either got one or you didn’t
   3) Literature is clear on the risk
   4) Imaging modality is within the hospital’s span of control

3) Methods-how we made our assessment
   1) Conduct qualitative interviews with select group of high performers and all low performers on July 2020 Appy CT report
   2) Interview guide is based on Theoretical Domains Framework
   3) Want to find practice differences between high and low
   4) Success in reducing CT use variable
   5) Key factors necessary to achieve change

4) Case Studies
   1) Wisconsin Children’s
2) Cohen Children’s (Long Island)

1) Coaching Sessions
   1) Have conducted 3
   2) More to come

2) Q&A
First, let me say I’m proud that we are on track with the timeline we shared with you in October last year. Despite the pandemic.
Welcome!

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Second-welcome to our new PSQC member hospitals. We are now 72 members strong.
Membership covers a far greater proportion of the U.S.
Project Background

Kevin Lally, MD, MS, FACS
PSQC Executive Director
Surgeon-in-Chief, Children’s Memorial
Hermann Hospital
Houston, TX
Why did we choose to work on CT use reduction as our first PSQC project? Several reasons.
Upon inception, the PSQC has focused on Appys as a procedure with high volume across all our settings. Reviewing the collaborative report in February, it looked like OS and SSI reduction in complex appys was a good place to start. The Jul 2020 SAR had consistent rates.
However, when we started to chart it out we found too much variability in this measure between SAR cycles.

For example, in Jan, the PSQC SAR for comp OS/SSI we have 3 high performers and 1 low performer. In July, we had 6 high performers and 2 low performers. Of those, only 1 low performer was the same and 2 high performers were the same.

This could all be attributed to the fact not enough data points yet and we will continue to track this of course. But that kind of variability makes any QI project very difficult to initiate. Plus, given the many contributing factors outside our control in SSI reduction-bathing, patient compliance with discharge instructions, antibiotic regimen- we felt our focus should narrow to a project with some consistency.
As we looked deeper at the data, we saw the CT utilization might be a better place to start. It is relatively easy to measure. It does not require must in the way of risk adjustment—it’s binary so the patient either got a CT scan or didn’t. And as is clear from this graph, many of our PSQC hospital members are still using CT a lot. This made this project, we felt, a better first project for the PSQC.
We’ve known about the risk of exposing pediatric patients to ionizing radiation for some time. In August 2001, the Society for Pediatric Radiology sponsored its first ALARA conference. Since then the topic has gained attention and understanding across the pediatric care community. In December 2014, Dr. Gary Freed and his colleagues at UMich proposed a quality measure to ARHQ’s CHIPRA core measure project titled: Overuse of Imaging: Policy for ALARA Specific to Imaging Children. The CHIPRA PQMP (pediatric quality measures program) adopted this quality measure in April 2015. Measure compared performance at those sites with a stated ALARA policy in place to those without.
Over the years, several studies have found a correlation between early age radiation exposure to later age cancer development. This study, Radiation Exposure from Pediatric CT scans and Subsequent Cancer Risks in the Netherlands, from Dr. Meulepas and colleagues, was a large retrospective study covering the time frame of 1979-2014. The study demonstrated a statistically significant dose-effect for brain tumors.
In January of this year, the above study from South Korea looked at the effects on dose-efffect from CT scans performed specifically for appendicitis, both pre and post appendectomy. The study found a significant relationship between CT exposure and incidence of leukemia. The age group most at risk is 0-15 years.
Given the evidence, it's pretty clear that we should do CT scans on children as seldom as we reasonably can. However, you can see from this graph from Jan 2020 Appy SAR that many NSQIP children’s hospitals do use a CT as a primary imaging modality.
Okay. So we know what the challenge is—reduce CT use. But how are we going to do that? The PSQC implementation committee decided to undertake a qualitative approach to find out why some hospitals do pretty good on this measure and others don’t. I’m going to let Dr. Andrew Hu, a surgical research scholar at Northwestern working with Mehul Raval, and helping us out on this project, tell you more about that.
Findings

Andrew Hu, MBChB
Surgical Research Scholar
Division of Pediatric Surgery, Ann & Robert H. Lurie Children’s Hospital of Chicago
1) Identify high and low performers from July 2020 Targeted Appy SAR
   We have 7 member hospitals who fall into the high outlier status (aka needs improvement) category (red dots)
   18 hospitals who fall into the low outlier status (aka exemplary) category (green dots)

2) Dr. Lally reached out to all 7 of the high outliers and 7 of the low outliers, inviting them to participate in the project by participating in a qualitative interview around their imaging practices. This would necessitate unblinding to the implementation committee members. All 14 agreed to do so.
Methods

- 13 hospitals interviewed (6 low performers, 7 high performers)
  - 13 surgeons
  - 5 PEM
  - 5 radiology
  - 5 SCRs
Theoretical Domains Framework

Sources of behaviour

TDF Domains

Soc - Social influences
Env - Environmental Context and Resources
Id - Social/Professional Role and Identity
Bel Cap - Beliefs about Capabilities
Opt - Optimism
Int - Intentions
Goals - Goals
Bel Cons - Beliefs about Consequences
Rew - Reinforcement
Em - Emotion
Know - Knowledge
Cog - Cognitive and Interpersonal skills
Mem - Memory, Attention and Decision Processes
Beh Reg - Behavioural Regulation
Phys - Physical skills
The interview guide we developed using TDF, starts with basic demographic questions like years of experience and average number of suspected appendicitis patients you help take care of per month.

Imaging practice questions fall along the TDF domains we highlighted before. We ask about how a case is managed when arrives in ED to OR. The responses and any follow up from the interviewer get at knowledge (awareness of ALARA); organization/institution (resources/clinician skills); patient (patient type influences care approach); social and professional role (consultation on imaging); and social influences (clinicians’ have different practice patterns based on their own experiences).

The last area of questions addresses potential barriers to implementation/change (systemic/practice patterns).
Approach

- Theoretical Domains Framework-steps*
  - Select target behavior
  - Be specific
  - Select methodology
  - Sampling strategy
  - Develop interview guide
  - Data collection method
  - Data analysis plan

As we used qualitative interviews as our data collection approach, we needed to use a framework which provided the best approach for our desired goal. The theoretical domains framework (TDF) is the approach we chose. It is useful for identifying barriers and facilitators that influence behavior change. It is frequently used in implementation science and knowledge translation. In the case of the PSQC, for our first project our behavior targeted for change is the use of CT in pre-op imaging of appendicitis patients. Our goal is specific: who needs to change; when the change should occur (pre-op); How often it should be done (a % of cases); with whom they need to work to achieve the behavior change.

Our project methodology is qualitative.

The sampling strategy includes the appropriate stakeholders using qualitative interviews. Recommended minimum sample size for this approach is 10. We are using 14.

An interview guide was developed using 10 of the 14 domains with an emphasis on 5 including: knowledge, organization, patient, social/professional role and social influences.
As we started to talk with our hospitals, we identified practice gems which may be replicable across the PSQC member hospitals. We appreciate that being able to invest in technology or staff may seem the obvious ‘fix’-but-that is not practical, especially in the current fiscal environment.
As we completed interviews, we would transcribe and code them using MAXQDA. You can see here how we organized the coding using the TDF. We consulted with a healthcare quality improvement assistant professor with a special interest in implementation science and knowledge translation to provide independent review of our coding method to assure our approach was appropriate. The coding results play a huge role in how the implementation guide was developed.

To introduce what we discovered from this process, I’ll turn the presentation over to my colleague Dr. Andrew Hu.
4 key themes impacting CT usage

1. Imaging resources
2. Protocol implementation and adherence
3. Presence of a champion
4. QI resources and experience
Case Studies in Ultrasound

Aaron Lipskar, MD
Associate Professor
Cohen Children’s Medical Center
Northwell Health

Joshua A. Rocker, MD
Chief Pediatric Emergency Medicine
Cohen Children’s Medical Center
Northwell Health
Brief overview of Northwell and where Cohen fits. Roughly 55% of patients are on Medicaid. It is the principal payer.
Change at Cohen started with a champion-Dr. Jeanne Choi Rosen, the chief of pediatric radiology. She was an advocate for reducing radiation exposure in kids. When someone in the ED ordered a CT scan, she’d call and ask why. She started Cohen on the path to ultrasound first in any suspected appendicitis presentation.
Ultrasound First

We’ve tried a various approaches-enema, full bladder vs empty bladder-but ultimately investing in training our sonographers to accurately image the appendix was instrumental in the sustainability of US first. Only after consult with a surgeon can a CT be ordered. US is obtained before an appy score and before CBCs return. If an appendix isn’t seen on first pass, the practice is to screen again. We find that 60-75% of US are unequivocal. For the remainder several options are pursued including ordering a CT scan. We end up doing that maybe 15% of cases. The rest are based on clinical judgment.
We developed this algorithm although it hasn’t gone through all the processes to make it standard practice. But it is essentially our practice at Cohen.
This from your latest SAR. Up to you whether you want to share. Just thought you might want to.
Lessons Learned

- Can only control what happens at our hospital
  - More challenging to enforce algorithm across entire Northwell system
  - Even more challenging to enforce algorithm from referring hospitals outside of the Northwell system
- Takes a team and a dedicated champion
- Any change must be inter-disciplinary
  - Needs complete buy-in from administration, surgery, radiology and ED
- 24-hour ultrasound availability and accuracy critical for success
- For change to be sustained, must be continuously reinforced and adapted

Good place to discuss how the sonographers are trained; how fellows/residents must defer to attending when making treatment decisions in ED; any resistance you may have encountered when making the changes; etc.
Questions

Terry Cell: 832-441-6314
Aaron e-mail: alipskar@northwell.edu
Coaching Sessions

Terry Fisher, MPH, PMP
Sr. Program Manager
Pediatric Surgery Quality Collaborative
UT McGovern Medical School
We’ve hosted 3 coaching sessions with 15 different sites participating. I’d like to thank all our volunteer peer coaches and all those who have participated. Terry will be checking in with our participating sites over the next few months to see what progress you’ve made in changing practice patterns and if we can provide any other assistance. Even initiating a multi-disciplinary strategic group at your hospital is a step in the right direction.
The slide deck and a link to the recording of this webinar will be forwarded to all as soon as it is available. It will also be posted on our website. There is an appendix which includes the complete interview guide as it currently stands as well as other resources of interest.
Resources

- Children’s Health Insurance Program Reauthorization Act (CHIPRA). Overuse of Imaging: Policy for ALARA Specific to Imaging Children Measure 0243.
- Children’s Health Insurance Program Reauthorization Act (CHIPRA). Overuse of Imaging: Policy for ALARA Specific to Imaging Children Measure 0243 Measure Fact Sheet.