

Reducing the Rays

Reducing Unnecessary Abdominal X-rays in Older Patients Presenting with Acute Abdominal Pain

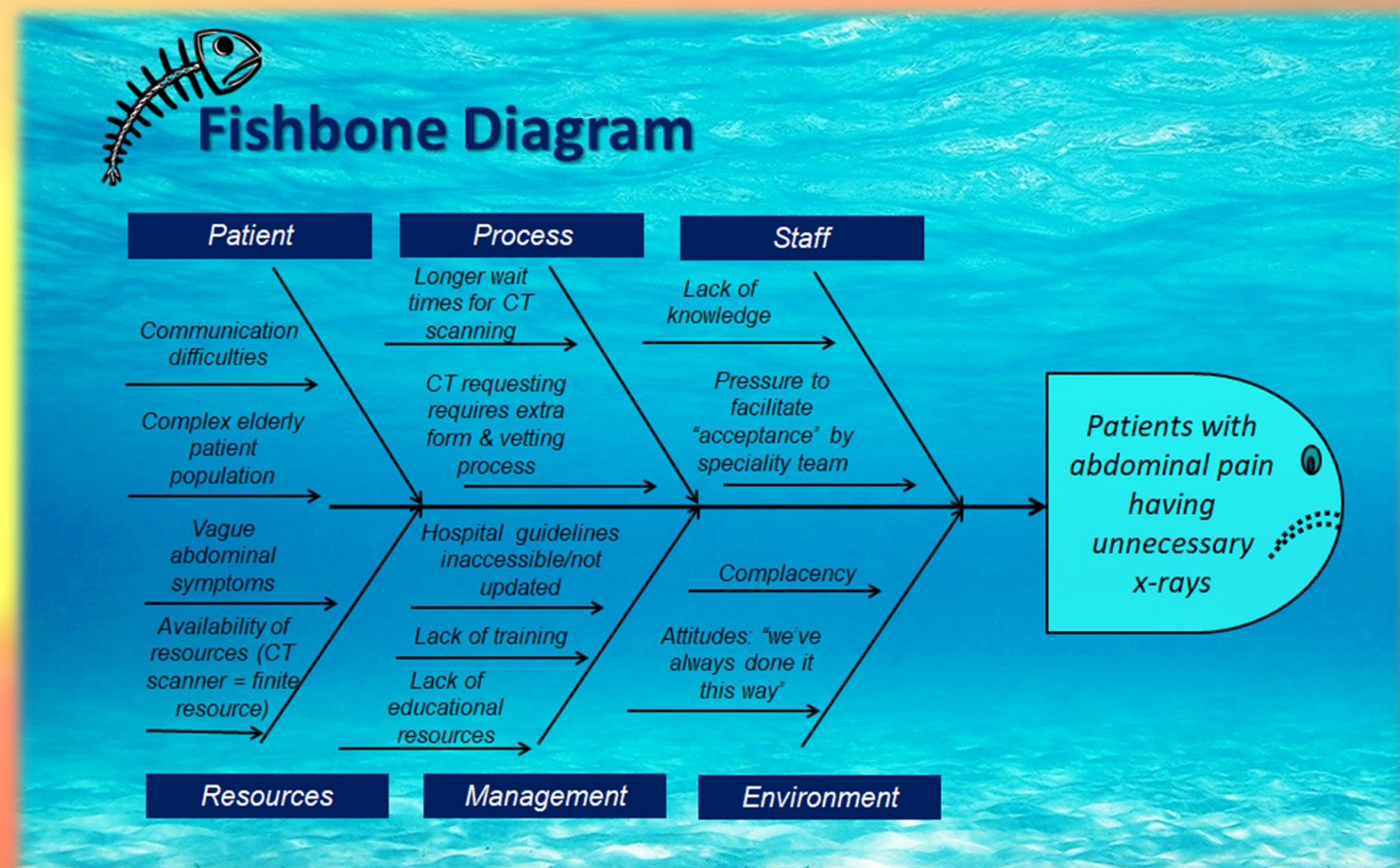
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BACKGROUND: DEFINING THE PROBLEM

6/10 older patients with abdominal pain have BOTH an abdominal x-ray AND a CT abdomen in our Emergency Department.

This exposes them to more radiation & delays their diagnosis & treatment.

Serious pathology can be missed on an abdominal x-ray.



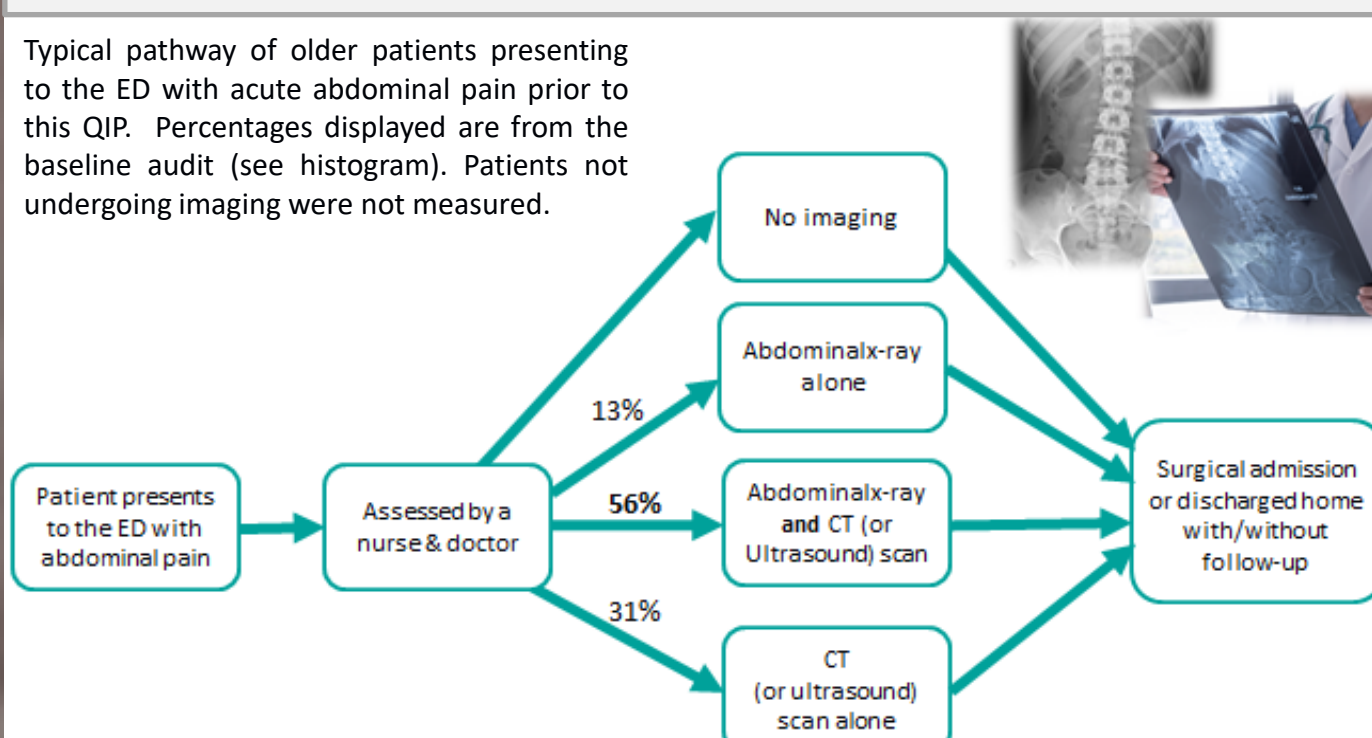
AIM & MEASUREMENT DEFINITION

By February 2021 we aimed to reduce the number of unnecessary abdominal x-rays performed in older patients presenting with abdominal pain by 50%.

We measured the number of older patients undergoing an abdominal x-ray (AXR) and subsequent CT abdomen scan within 24 hours of presenting to the Emergency Department (ED) using continuous daily retrospective data from 1 September 2020 to 30 April 2021.

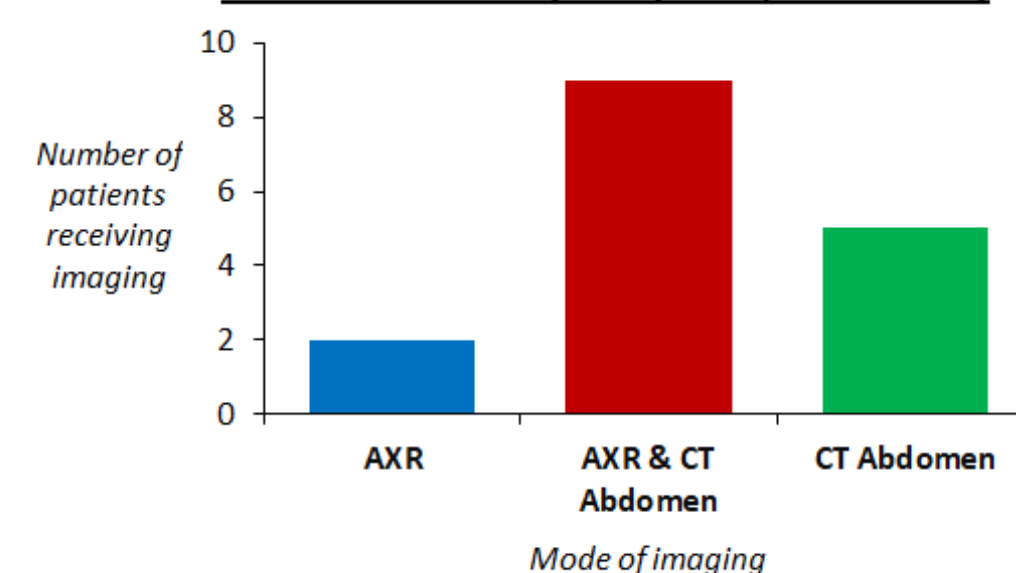
- Inclusions:** Patients aged ≥65 years old with acute abdominal pain undergoing radiological imaging.
- Exclusions:** Patients who had a CT abdomen within the preceding 24 hours of presenting to the ED.

HIGH LEVEL PROCESS MAP



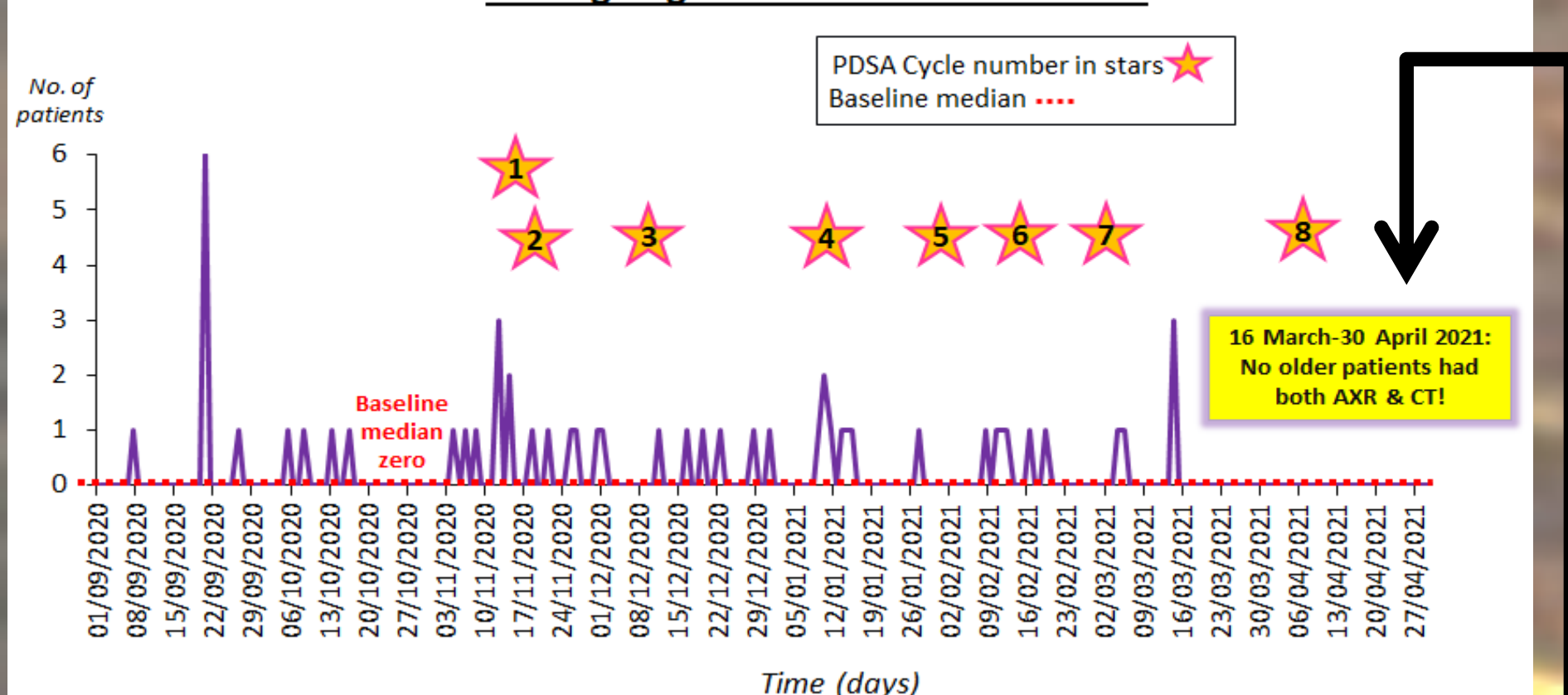
DIAGNOSTICS: BASELINE DATA HISTOGRAM

Imaging performed in patients ≥65-years-old presenting with abdominal pain (n=16, Nov 2020)

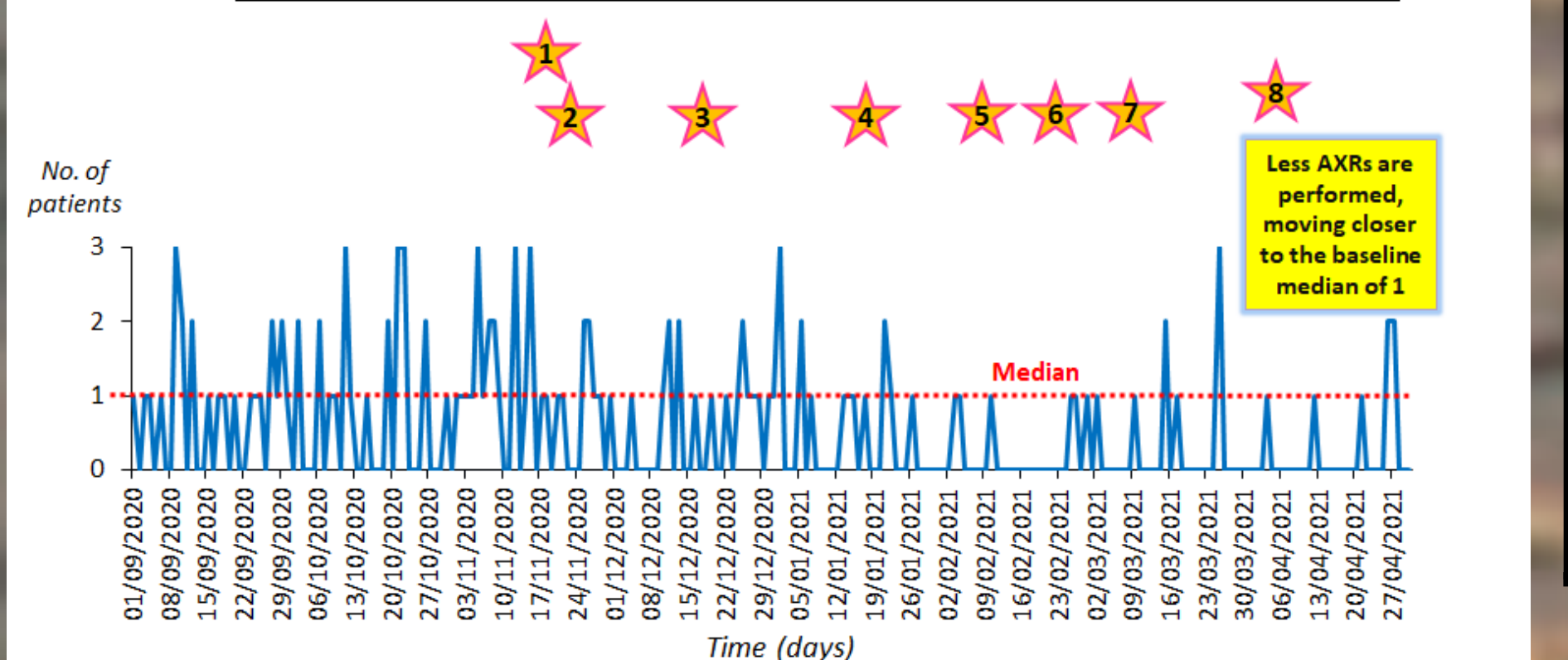


RESULTS: RUN CHARTS & PDSA CYCLES

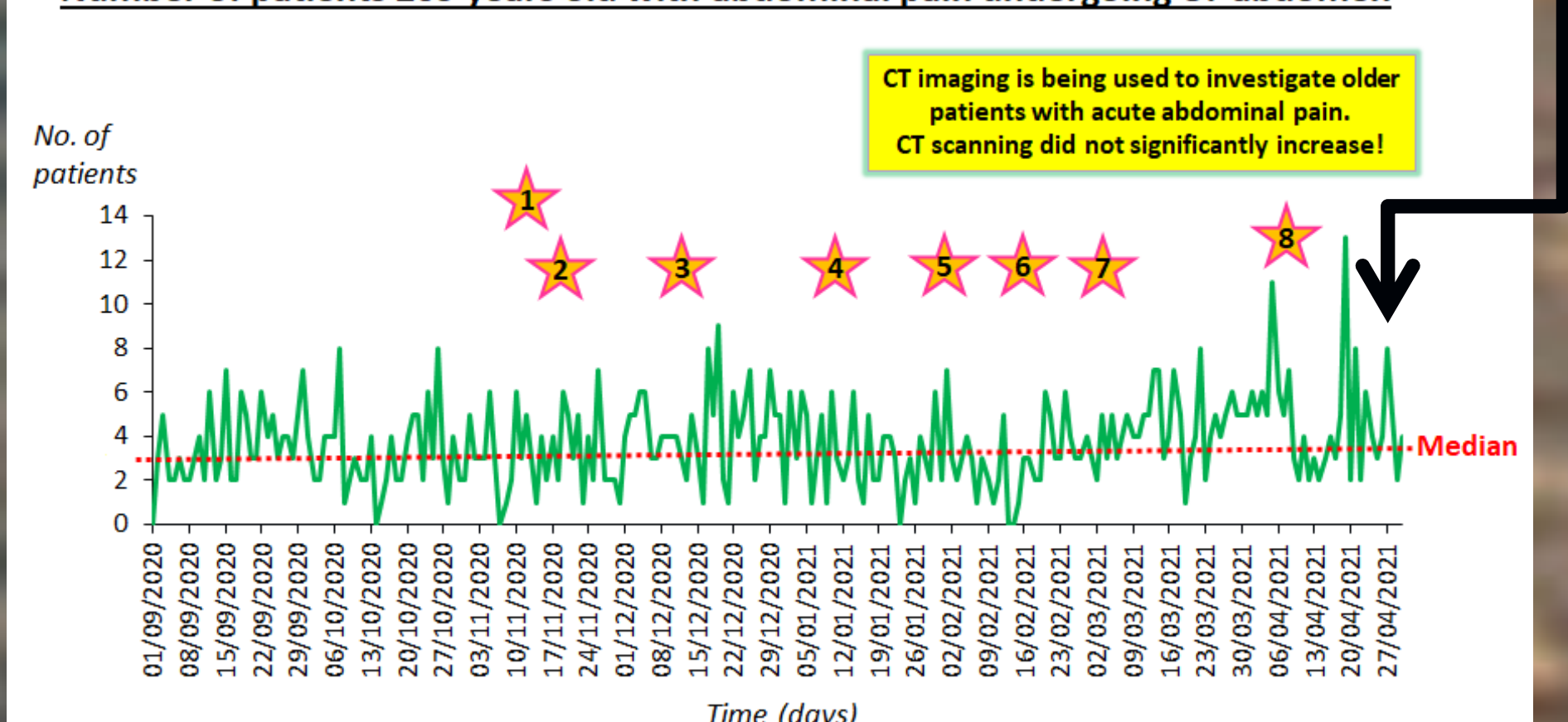
Number of patients ≥65 years old with abdominal pain undergoing BOTH AXR & CT abdomen



Number of patients ≥65 years old with abdominal pain undergoing AXR

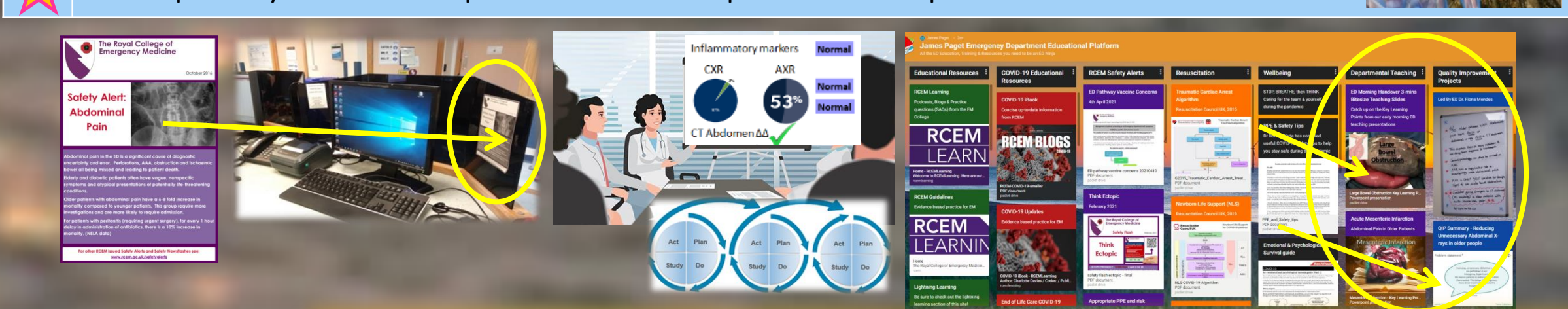


Number of patients ≥65 years old with abdominal pain undergoing CT abdomen



PDSA (Plan-Do-Study-Act) CYCLES

- 3-minute Elevator Pitch raised awareness
- Discussed change ideas with ED clinicians, radiographers, surgical & medical leads → generated change ideas
- ED Morning Bitesize teaching presentations on abdominal pathology, featuring evidence based medicine → Gained insight into clinician decision making & tailored sessions to our target audience
- Learning Board reminders
- Royal College of Emergency Medicine Safety Alert poster displayed at ED workstations
- Designed & launched an online ED educational platform featuring accessible abdominal pathology teaching slides (also available as an app)
- Launched an interactive teaching survey across specialities:
 - ED clinicians
 - Surgeons
 - Medics
 → Qualitative data analysed from 65 clinicians across 3 main specialities
- Multi-speciality Grand Round presentation with expert consultant panel discussion



- Overall reductions were seen in AXRs preceding a CT abdomen & as a solo event.
- From 16 March 2021 – 30 April 2021, no older patients underwent both AXR & CT abdomen. This is a significant reduction that exceeded our aim and was not due to chance alone!
- CT abdomen is increasingly the investigation of choice to exclude the differential diagnoses in older patients with acute abdominal pain. Certain stakeholders were concerned CT imaging would significantly increase; however, this did not happen, due to multifactorial reasons.

REFLECTIONS & LEARNING

- Our Trust's 2019 Radiology GIRFT report identified the trust as an outlier in requesting abdominal x-rays (AXR). The national average is 34.7 AXRs per 1000 x-rays. Our Trust performed 60.8 AXRs per 1000 x-rays.
- In 2020, there were 3 serious incidents where misinterpreted and normal AXRs in older patients contributed to the diagnostic delay of fatal acute bowel obstruction and perforation.
- This QIP increased awareness that AXRs have a limited role in investigating acute abdominal pain and significantly reduced unnecessary AXRs being performed in older patients.
- 8 PDSA cycles successfully reduced the reliance on AXRs as a diagnostic investigation, across different clinical specialities.
- Introducing frequent, continuous change ideas through PDSA cycles helped us hone our most successful interventions & abandon or quickly develop the less successful 'change' ideas. This has motivated our multidisciplinary team to continue to engage our stakeholders to ensure these changes are sustainable in the future.



Background image: Gorleston-on-Sea, Great Yarmouth