

Activities to improve the rate of patient evaluation before examination using radiographic contrast medium



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Introduction & Objectives

With improvement and increased use of imaging technologies, The risk of adverse reactions to radiologic contrast medium has been increasing. Acute kidney injuries from nephrotoxic contrasts (sometimes requiring dialysis) could rise length of stay, and mortality could be effected by contrast medium use. However, there is no appropriate screening process before contrast administration and patient-care protocol during pre and post-administration in my hospital. Therefore, we aim to achieve the following:

1. Establish **screening process** before contrast medium administration and **patient-care protocol** during pre and post – administration in hospital
2. **Increase the rate of renal function tests** for outpatients before CT and MRI scan using contrast medium
3. **Increase the rate of pretreatment** for patients with a history of adverse reactions to contrast medium
4. **Report all adverse reactions to contrast medium** through the in-hospital reporting system.

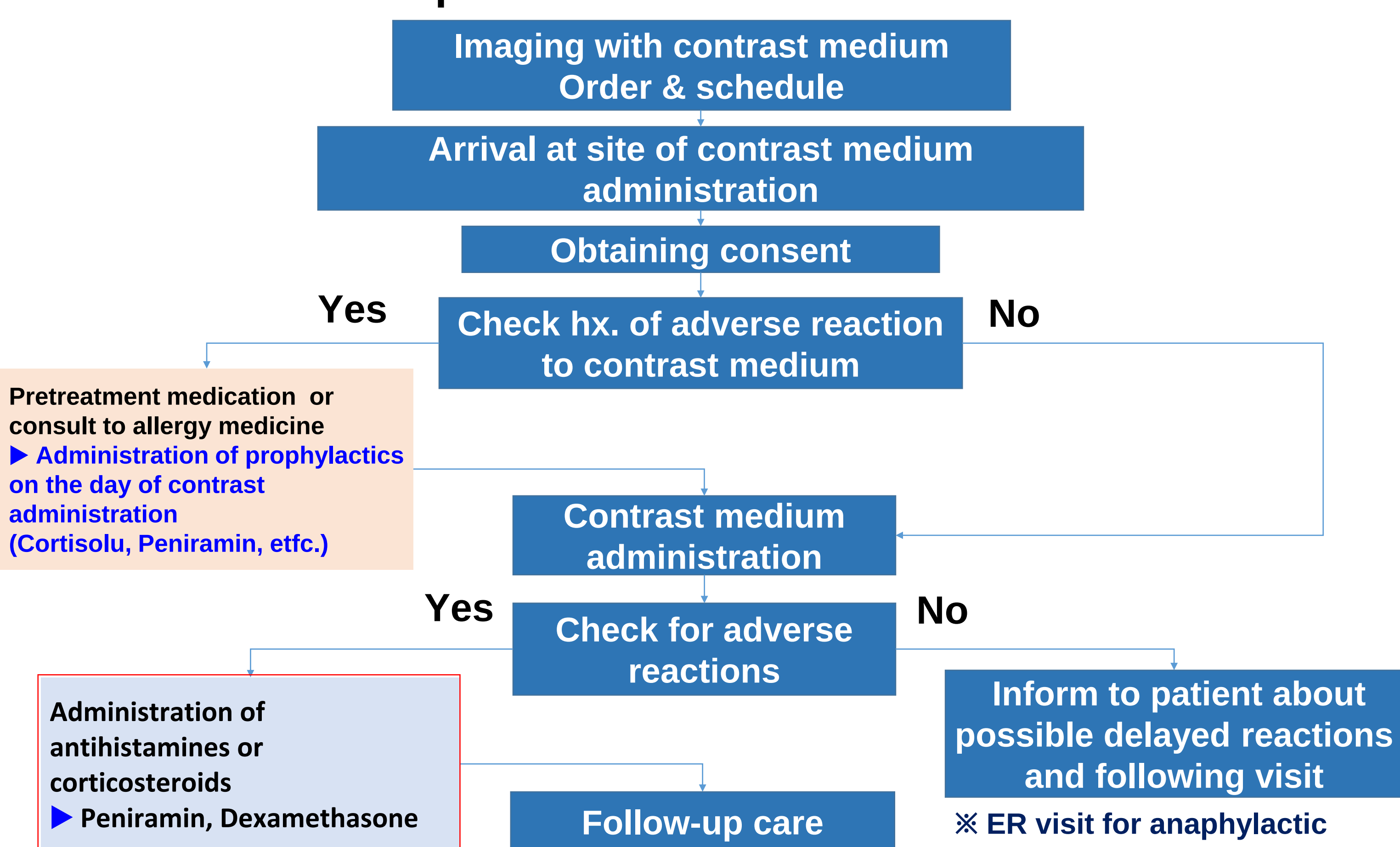
Core indicator

Indicator 1	Percentage of patients who receive renal function tests prior to contrast medium use
Definition	Percentage of outpatients who underwent renal function evaluation before CT/MRI using contrast medium.
Indicator 2	Pretreatment rate for patients with a history of adverse reactions to contrast medium
Definition	Among the outpatients that have a history of adverse reactions to contrast medium, the percentage of patients who receive pretreatment before contrast medium administration.
Indicator 3	Rate of severe adverse reaction to contrast medium in patients who receive screening evaluation before contrast medium administration
Definition	Percentage of patients with severe adverse reactions to contrast medium among those who get screening evaluation before undergoing imaging with contrast medium.

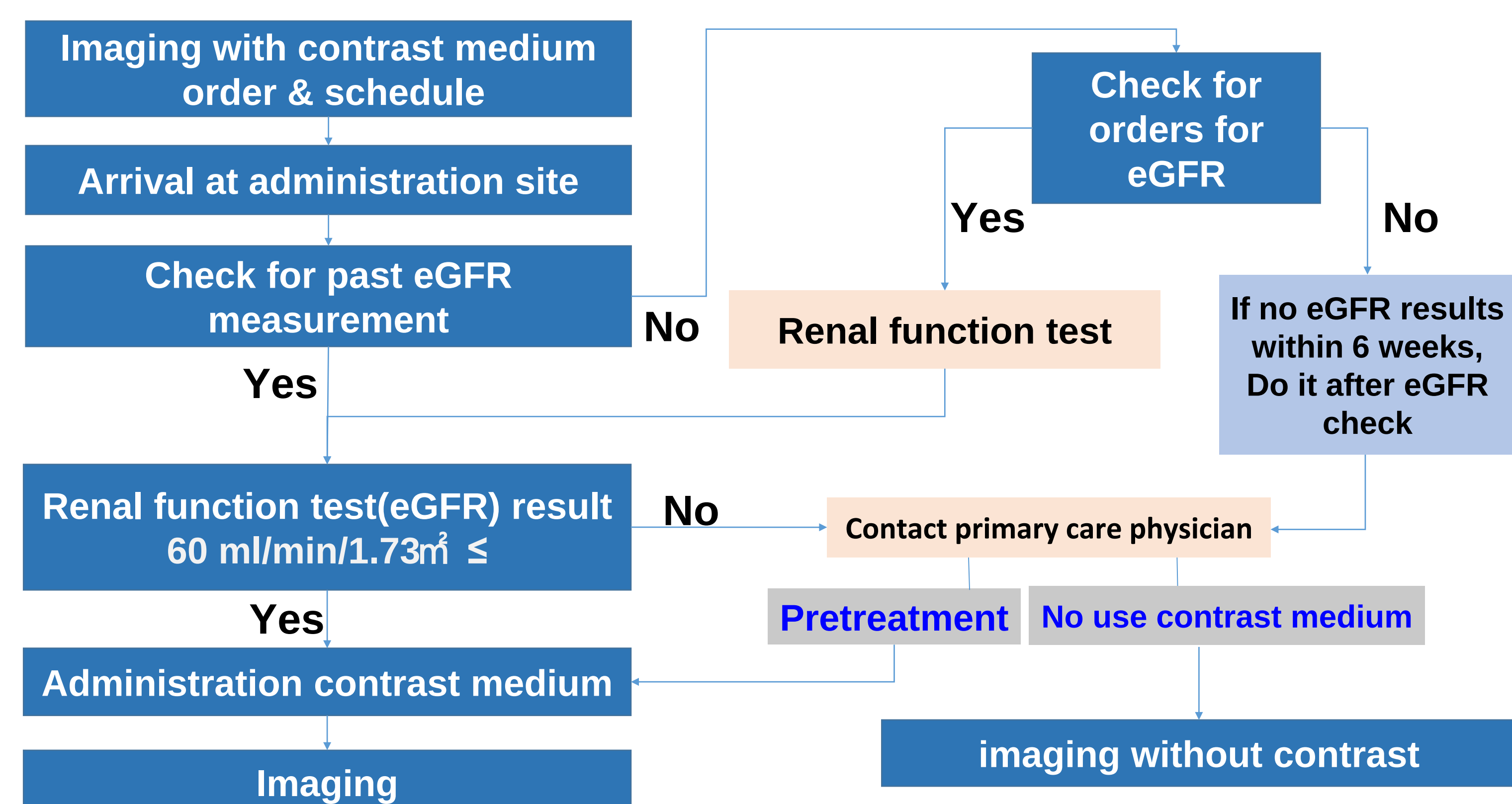
Methods & Improvement activities

Establishment of procedures

1. Establishment of protocol for contrast medium administration



2. Process for renal function test before contrast medium use



Methods & Improvement activities

Software implementation

3. Pop-up message appears when doctors prescribe CT or MRI scan

- Provide information of adverse reaction to contrast medium in EMR
- Pop-up message that informing doctor that no renal function test(eGFR) results have been obtained within 6 weeks
- Pop-up message that emphasizes explaining adverse reaction to contrast medium

4. Sharing information in EMR about patients with adverse reactions in the past.

- Pop-up message with information about the same ingredient as the allergy medication
- Description of adverse reaction to contrast medium in EMR

Indicator management

5. Quarterly check of indicators and improvement activity plan according to result

Quarterly indicator management Report(2022)



+ Indicator result feedback via e-mail to doctors and request cooperation for patient safety and to rise renal function screening rates

Information sharing & Safety alert Education

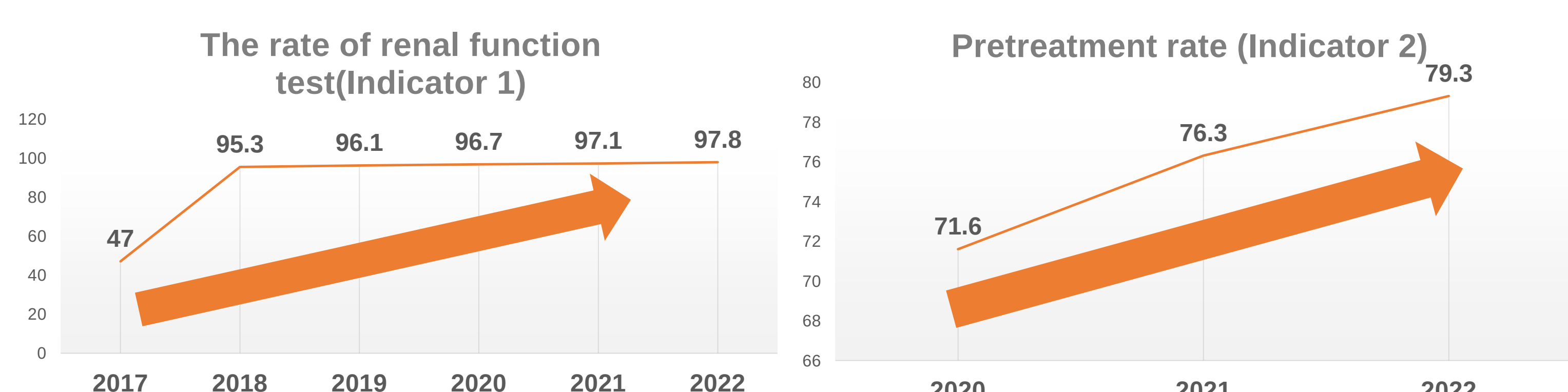
6. Information sharing related to patient's adverse reaction to contrast medium

- Screening patient's history of adverse reaction to contrast medium
- Pretreatment if necessary
- Write down the pretreatment on the receipt and share that with technician conducting the exam
- Provide information of adverse reaction to contrast medium in EMR

7. Safety alert Education about reporting of adverse reactions to contrast medium

- Education materials(Use of safe contrast medium)
- Reward of reporting of adverse drug events

Results



1. The rate of renal function tests for patients evaluation prior to contrast medium use increased from 47%(2017) to 97.8%(2022) after initiation of proposed improvements.
2. The pretreatment rate for patients with a history of adverse reactions to contrast increased to 79.3% from 71.6% before implementation
3. Severe contrast agent adverse reaction rate was 0% in patient group that received evaluation before using contrast..

Conclusion

Through this QI activity, the rate of eGFR test for renal function evaluation before contrast medium use was significantly improved, and patients with a history of adverse reactions to contrast medium were registered in EMR and shared with medical staff. Our activities contributed to improving patient safety during imaging exams with contrast medium by offering appropriate pretreatment according to patient evaluation results when contrast medium prescription occurs.