Project Title

Nursing-led Protocol to Identify Semi Critical Results for Earlier Intervention and Reduce Risk of Critical Conditions

Project Lead and Members

- Sponsor & Facilitator: Dr Chionh Chang Yin
- Leader: SSN Yang Ko Chun
- Co Leader: ANC Zhang Wei

  Changi General Hospital

Organisation(s) Involved

Changi General Hospital

Healthcare Family Group(s) Involved in this Project

Nursing, Medical

Applicable Specialty or Discipline

Renal Medicine

Aim(s)

- Shorten time from reporting of the semi critical results to a decision on action required
- Evaluate the frequency in which semi critical results require urgent actions
- Evaluate our current practices on identifying semi critical results

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Conclusion

See poster appended/ below

Additional Information

Singapore Healthcare Management (SHM) Congress 2022 – Merit Prize (Risk Management category)

Project Category

Care & Process Redesign

Quality Improvement, Workflow Redesign

Keywords

Nurse Led Protocol, Laboratory Results, Early Intervention

Name and Email of Project Contact Person(s)

Name: Yang Ko Chun

Email: singaporehealthcaremanagement@singhealth.com.sg

Nursing-led Protocol to Identify Semi-critical Results for Earlier Intervention and Reduce Risk of Critical Conditions

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Singapore Healthcare Management 2022

Changi General Hospital
SingHealth

Introduction

Renal medicine clinic provides care for those patients with various phases of kidney disease and multiple comorbidities such as diabetes and ischemic heart disease. Patients with chronic kidney disease may suffer from acute derangements in laboratory indicators without any overt symptoms until late stages. Early detection of such derangements is vital for initiating timely intervention.

CGH has a hospital-wide protocol to ensure that critical results are communicated urgently in order to provide appropriate treatment. However, other abnormal results outside of the reference range are not flagged through the critical results notification system. However, patients with non-critical abnormal results may still benefit from earlier intervention and correction to reduce the chances of the condition becoming critical. We term these results as "semi-critical results". We have found that most semi-critical results are related to abnormalities with haemoglobin, serum potassium and serum creatinine.

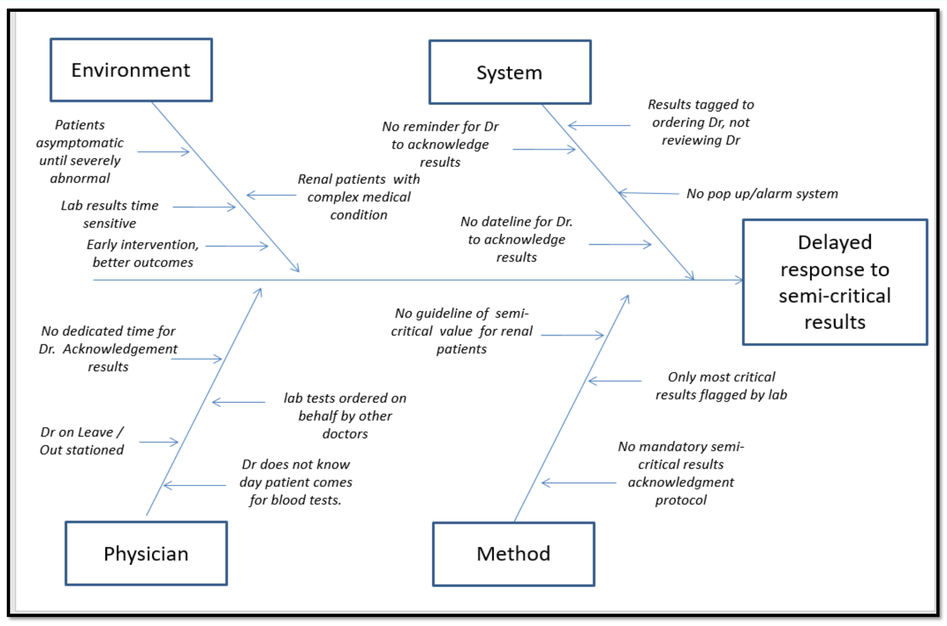
To avoid long waiting times, or to coincide with other appointments, patients are frequently scheduled for tests at the Renal Medicine Clinic up to a month before the appointment with the renal physician. The renal physician would not be aware if their patients turn up for the tests. While there is a hospital electronic system for all doctors to acknowledge the results, it may take a few days to weeks for the results to be acknowledged. Often, the acknowledgement of results also takes place after office hours. Laboratory tests are also often ordered by doctors from other disciplines (for example, after discharge from the wards) and the results acknowledgement system can only send results to the ordering doctor.

Aims:

The objective of this project is to:

1. Shorten time from reporting of the semi-critical results to a decision on action required
2. Evaluate the frequency in which semi-critical results require urgent actions
3. Evaluate our current practices on identifying semi-critical results

Problem Analysis



Methodology

Clinic nurse is aware when patient has been done laboratory tests. Therefore, to identify semi-critical results would be through the clinic nurse.

1. A Semi-critical screening guideline (Fig.A) was designed by renal consultant for nurses to use as a screening tool.

*** Eligible criterial: Patients who are doing laboratory test 1 week up to 1 month prior consultation.**

*** Ineligible criterial: Patients who are doing laboratory test at the same date of consultation.**

*** Tracing category: Haemoglobin, Serum Potassium and Serum Creatinine**

A Semi-critical screening guideline

Lab Results Screening For Renal Patients (Semi-Critical Results)

Ranges	Action	Usual Actions by Doctors (to be ordered by Dr)
Potassium		
>6.0 (critical lab)	1. Check if patient is on dialysis 2. Check BP / HR 3. Call Dr (within 1h of call from lab)	Do ECG KIV Admit KIV Resonium / usual dialysis
5.6 to 6.0	1. Check if patient is on dialysis 2. If not on dialysis: Inform Dr (within 24h) 3. If on dialysis: keep TCU	PO Resonium 15g TDS x 3 days Repeat K on arrival next visit
3.1 to 5.5	1. Keep TCU	NIL
2.5 to 3.0	1. Inform Dr (within **4h**)	PO Potassium replacement Repeat K on arrival next visit
<2.5 (critical lab)	1. Call Dr (within **1h** of call from lab)	Oral K or admit for IV K
Creatinine		
>500	1. Check if dialysis - no action if on dialysis 2. Check last creatinine within 6 months: If Cr ↑ ≥2X – Inform Dr (within 24h) 3. No creatinine within 6 months, if Urea ≥35.0 Inform Dr (within 24h)	Case by case basis
Haemoglobin		
7.1 to 8.5	1. Check last Hb within 6 months. 2. If ≥2.0g/dL drop, inform Dr (within 24h)	Admit for transfusion and investigation if symptomatic
5.0 to 7.0	1. inform Dr (within **4h**)	Admit for transfusion
<5.0 (critical lab)	1. Call Dr (within **1h** of call from lab)	Admit for transfusion
Calcium		
<1.75 or >3.25 (critical lab)	1. Call Dr (within **1h** of call from lab)	Adjust oral calcium / admit

Contact the doctor who is following-up the patient
If on leave / not contactable, within timeframe or after 3pm, to call:
1. The Renal Registrar-on-call 2. The Renal Consultant-on-call

Note: Tests performed after 2pm / Saturday morning / PH eve may only be screened on the next workday.

Dr Chionh Chang Yin (on 09 Oct 2018)
Approved at Renal Department Meeting 18 Oct 2018

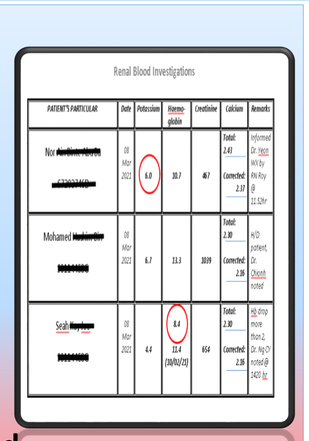
Methodology (Con't)

2. Nurses will then trace the laboratory results via Citrix (Fig.B)

3. Semi-critical results will be highlighted to Dr. for earlier action
Common actions:
1) Send patient to A&E
2) Stat admission
3) Prescribe medication
4) Bring forward Dr's appointment
5) Repeat Laboratory tests on the following appointment date

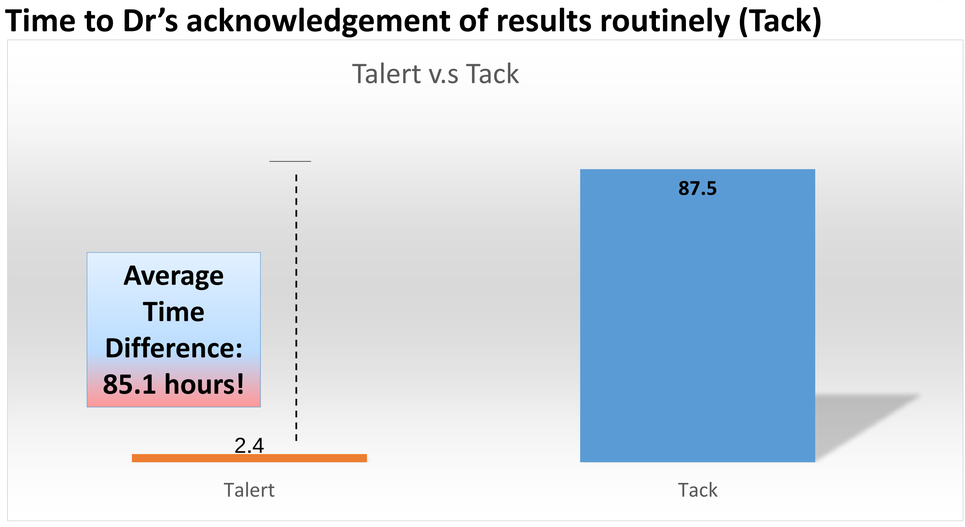
4. Documentation will be done by nurses once action is completed

B Renal Blood Investigations

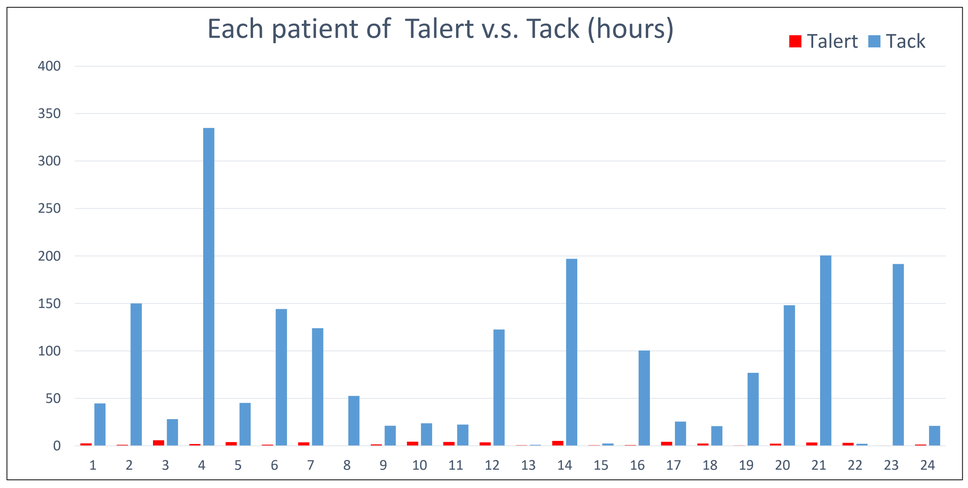


Results

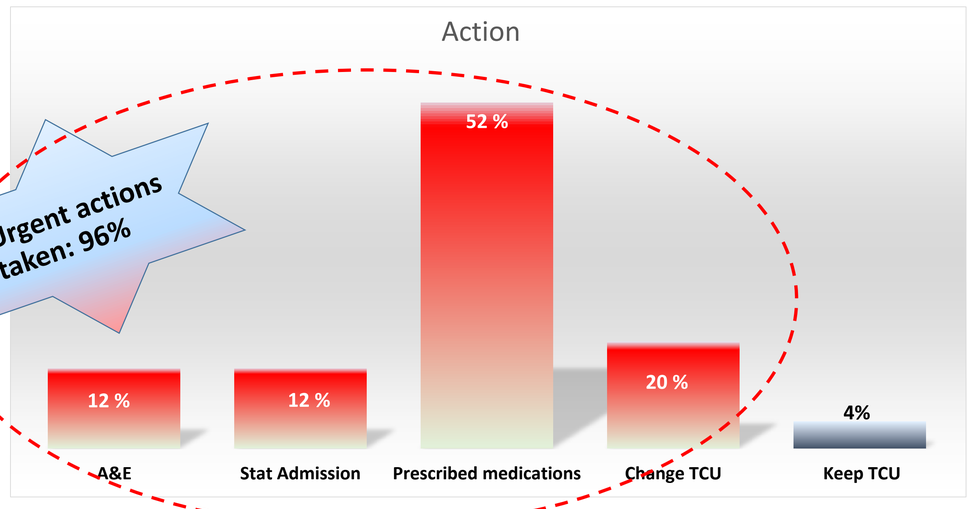
1. Average Time to Dr's action on semi-critical results with screening alert (T_{alert}) v.s. Average Time to Dr's acknowledgement of results routinely (Tack)



2. Compared to the same patient ,Time to Dr's action on semi-critical results with screening alert (T_{alert}) v.s. Time to Dr's acknowledgement of results routinely (T_{ack})



3. Evaluate the frequency in which semi-critical results require urgent actions: Actions $_{Semi-C}$ %



Conclusion

The implementation of Nursing-led protocol to trace semi-critical results and provide screening alerts has significantly shortened time from reporting to a decision on action. It enhanced patient's safety and reduced the chances of the condition becoming critical.

The challenge is that this requires more time and manpower for nurses to trace results, report to doctors and communicate with patients. Moving forward, it is proposed that our protocol can be integrated with laboratory systems to provide automatic alerts and direct to the correct doctor to acknowledge and act on the semi-critical results within predefined time.