COLLINGWOOD G&M HOSPITAL	Document: **Policy and Procedure**	Primary Manual: **Diagnostic and Therapeutic**	Folder: **Diagnostic Imaging-CT**

Title:

Hydration Protocol - Pre and Post CT Contrast
Risk Assessment & Prevention of Contrast Induced Nephropathy

Approved by:	Approval Date:	08/Apr/21
	Effective Date:	05/Jun/14
	Review/Revision due:	
	Version:	2

Located in Other Manuals:

Key Words: CT contrast, hydration, contrast induced nephropathy

NOTE: This is a **CONTROLLED** document for internal use only. Any document appearing in a paper form should **ALWAYS** be checked against the online version prior to use.

Purpose

Patients at risk for contrast induced nephropathy (CIN) will have preventative measures taken to minimize CIN occurring through adequate hydration via intravenous administration of fluids pre and post CT contrast injection.

Policy Statement

A CIN risk assessment will be completed using Table A for all patients who have been identified by the radiologist as requiring intravenous contrast media and are at risk for development of CIN.

The CT Contrast Hydration Order Set will be utilized for patient care. Appendix 1

Table A

Risk Assessment for CIN and Prevention Table		
eGFR	**Risk**	**Prevention**
≥ 60 mL/min/1.73m^2	Very low	No specific prophylaxis or follow up
46 – 59 mL/min/1.73m^2	Low	Patients must be encouraged to orally hydrate before and after their CT scan.
31 - 45 mL/min/1.73m^2	Moderate	IV hydration is required in all moderate risk patients receiving IV contrast.
≤ 30 mL/min/1.73m^2	High	The radiologist will first consider if IV contrast can be avoided and substituted by unenhanced CT and/or other modality. IV hydration is required in all high risk

		patients receiving IV contrast. Exception: There is no risk of CIN in permanently anuric dialysis patients. Coordination of contrast administration with the timing of hemodialysis is unnecessary.

Guiding Principles

The Canadian Association of Radiologists guidelines are intended as a practical approach to risk stratification and prevention of Contrast Induced Nephropathy (CIN) in patients with chronic kidney disease. The risk of CIN increases with declining renal function. Patients at risk for CIN due to compromised renal function should have preventative measures instituted including intravenous hydration pre and post CT contrast administration.

Despite widespread use in clinical practice, Serum Creatinine as an absolute measure is an unreliable indicatory of kidney function. Estimated Glomerular Filtration rate (eGFR) is considered to be a more appropriate index of kidney function.

Intravenous contrast media is generally contraindicated in patients with acute renal failure and the possibility of recovering renal function and in patients having dialysis-dependent ESRD (end stage renal disease) with residual urine output due to the high risk of CIN and permanent anuria. The residual renal function contributes to patient survival (1mL/min residual renal function = 7% increase survival). Exception is critically ill patients - when the risks of not having a diagnosis to guide management such as pulmonary embolism outweigh the risk of CIN and permanent anuria.

Definitions

Contrast-induced nephropathy (CIN) is an acute decline in renal function that occurs 48-72 hours after intravascular injection of contrast medium such as is used for CT imaging.

Procedure

1. Pre and Post CT Contrast Hydration Order Set is signed by radiologist when coding requisition that includes IV administration of CT contrast for patient who has an eGFR level below 45 mL/min/1.73m^2.
2. Central booking to book patient into Ambulatory Care on allotted day and time for pre hydration. The CT scan is to be entered into a booking slot reflecting the time the patient is to be scanned. Patient is given instructions to present in DI to have intravenous catheter inserted by CT technologist who will then escort them over to the ambulatory care area with the signed order set for hydration.
3. Ambulatory care will contact or escort patient to CT when the one hour pre CT contrast hydration is completed.
4. CT technologist to complete scan as per coded requisition.
5. Patient to be returned to ambulatory care area following CT scan to receive post CT contrast hydration fluids as per order set.

6. Patient to be discharged from ambulatory care when hydration protocol completed.

NOTE: For urgent cases that cannot be booked through Ambulatory Care but require hydration, central booking are to contact the ED resource nurse and arrange the patient through See & Treat to receive their pre and post CT contrast hydration.

The CT technologist will notify the emergency and inpatients' nurse that the radiologist has recommended following the Pre and Post CT Hydration Order set when a patient's eGFR is below the 45 mL/min/1.73m^2 threshold. The patient's nurse will access the CT Contrast Hydration Order Set and discuss recommendations with the ordering Physician.

References

Canadian Association of Radiologists; Consensus Guidelines for the Prevention of Contrast Induced Nephropathy, June 2011

Related Resources

CT Contrast Hydration Order Set
http://thepulse.collingwood.cgmh.on.ca/apps/files2000053/CT_Contrast_Hydration_OS_(1)_sn.pdf

PATH	COMMITTEE	DATE	PURPOSE	STATUS
Diagnostic Imaging	CGMH Radiology group	03/Feb/14	**DRAFT Agreement**	Completed
Reviewing Committee	DI, Emergency and Ambulatory Care Stakeholders	21/Apr/14	**Review & Agreement**	Completed
Approving Committee	Interprofessional Practice Advisory Committee	05/Jun/14	**FINAL Approval**	Completed
Revision	Interprofessional Practice Committee	25/Apr/21	**Revision Approval**	Completed
	Medical Advisory Commitee	08/Apr/21		

Historical Dates:	
Original Policy Date:	June 2014
List of Dates Reviewed and Revised:	Sept 2019, April 2021
Policies This Document Replaces	Mucomyst Protocol (Creatinine > 120)
Policy Archive Date:	