

Misericordia University

## Misericordia Digital Commons

---

Student Research Poster Presentations 2026

Student Research Poster Presentations

---

2026

### Computed Tomography: Contrast Induced Acute Kidney Injury

Keileen E. Trochez Tome  
*Misericordia University*

Follow this and additional works at: [https://digitalcommons.misericordia.edu/research\\_posters2026](https://digitalcommons.misericordia.edu/research_posters2026)



Part of the [Medicine and Health Sciences Commons](#)

---

#### Recommended Citation

Trochez Tome, Keileen E., "Computed Tomography: Contrast Induced Acute Kidney Injury" (2026). *Student Research Poster Presentations 2026*. 13.

[https://digitalcommons.misericordia.edu/research\\_posters2026/13](https://digitalcommons.misericordia.edu/research_posters2026/13)

This Poster is brought to you for free and open access by the Student Research Poster Presentations at Misericordia Digital Commons. It has been accepted for inclusion in Student Research Poster Presentations 2026 by an authorized administrator of Misericordia Digital Commons. For more information, please contact [mcech@misericordia.edu](mailto:mcech@misericordia.edu).

## Introduction

Acute Kidney injury (AKI) is a significant clinical concern, particularly in patients undergoing computed tomography (CT) imaging with contrast media (Choi et al., 2025). As the use of contrast enhanced imaging continues to grow, understanding its potential impact on kidney function has become increasingly important (Jones et al., 2025). This overview examines current evidence on contrast associated AKI, compares outcomes between contrast and non contrast CT scans, and highlights key findings from recent research (Mehdi, 2025). Special attention is given to patients at higher risk, including those with pre-existing kidney disease or reduced glomerular filtration rate (GFR). As research continues to evolve, these findings contribute to a more informed perspective on the role of contrast.

## Computed Tomography

- CT (computed tomography) scans use multiple x-ray images taken from different angles to create cross sectional images of the body
- CT images can be reconstructed in different planes, such as axial, coronal and sagittal to improve diagnostic accuracy
- Images produced provide clearer visualization of bones, blood vessels, and soft tissues compared to standard x-rays
- CT scans are fast and widely used in emergency settings to quickly assess conditions such as internal injuries or traumas
- Iodinated contrast may be used in some cases to enhance image clarity

(Mayo Clinic, n.d)



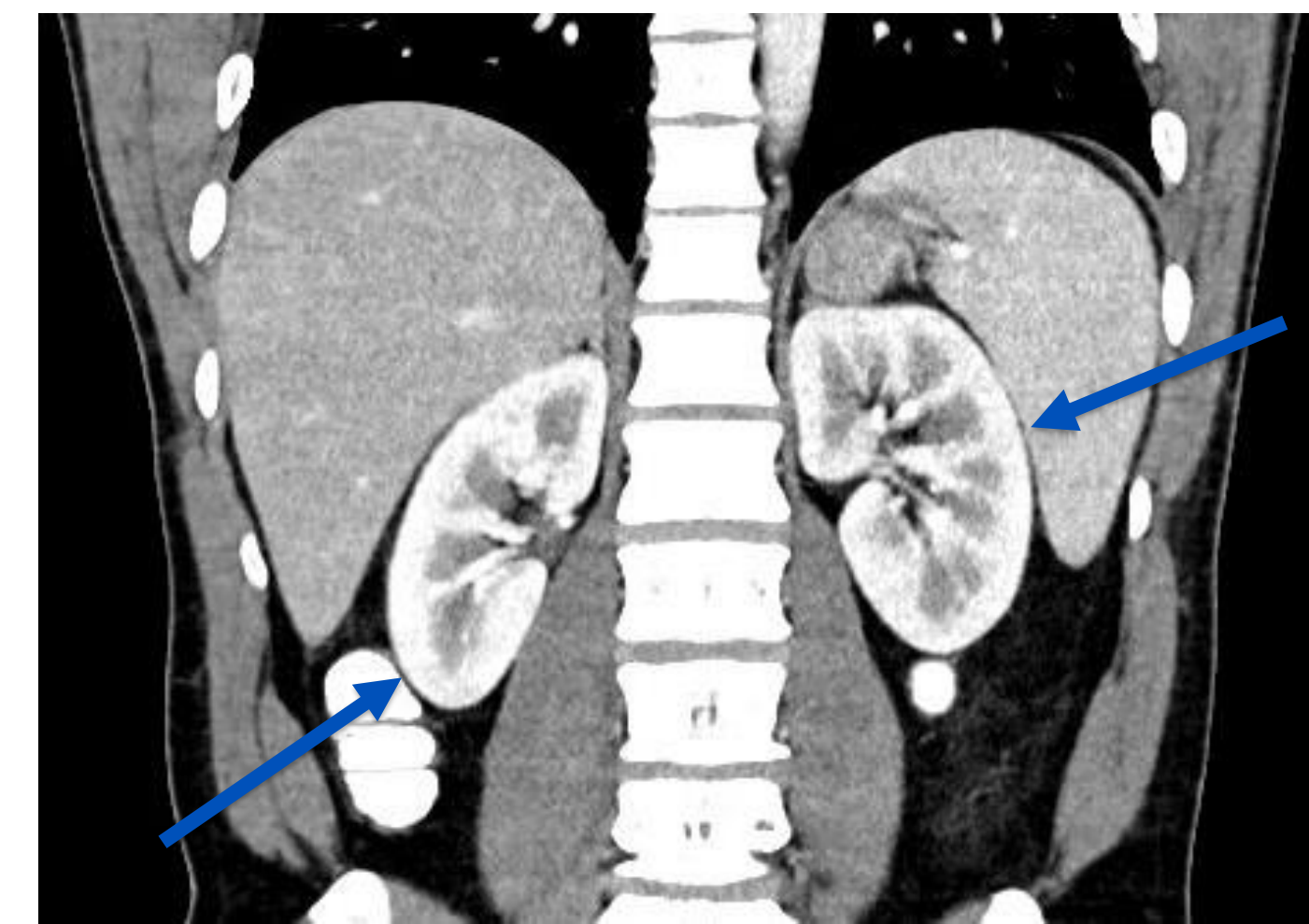
CT Scanner

(iStock, n.d)

## Iodinated Contrast

- Contrast is used in CT imaging to enhance the visibility of internal structures and improve image clarity.
- The appearance of blood vessels and tissue are enhanced helping detect abnormalities more clearly
- Commonly used in diagnostic imaging to improve accuracy

(Jones et al., 2025)



Sagittal view of kidneys with contrast

(Clinical Affiliate Site, 2026)

## Kidney Function

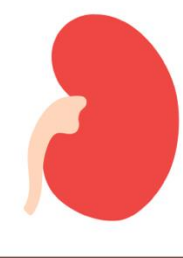
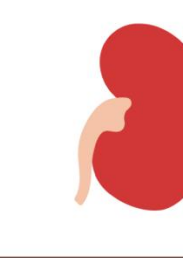


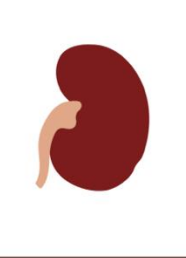
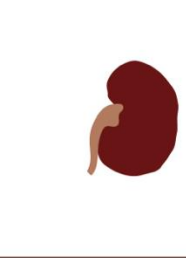
- Kidney function refers to the ability of the kidneys to filter waste and maintain internal balance in the body
- They remove waste products such as urea and creatinine from the blood
- Help regulate fluid levels, electrolytes, and acid base balance
- Produce hormones involved in blood pressure regulation and red blood cell production (Gouden et al., 2024)
- Some studies have linked contrast use to changes in kidney function (Jones et al., 2025)

## Laboratory Values

- Creatinine and glomerular filtration rate (GFR) are key laboratory indicators of kidney function
- Creatinine is a waste product filtered by the kidneys; elevated levels may indicate impaired kidney function
- GFR measures how well the kidneys filter blood
- Lower GFR values suggest reduced kidney function and possible kidney disease
- These values are used together to assess renal health and help detect conditions such as acute kidney injury (AKI)

(Gouden et al., 2024)

## 5 Stages Of Kidney Disease

Stage 1	Stage 2	Stage 3A	Stage 3B	Stage 4	Stage 5
GFR ≥ 90	89 ≥ GFR ≥ 60	59 ≥ GFR ≥ 40	44 ≥ GFR ≥ 30	29 ≥ GFR ≥ 15	GFR < 15
					
Normal or high function	Mildly decreased function	Mild to moderately decreased function	Severely decreased function	Kidney failure	

Kidney GFR lab values

(My CT Registry Review, n.d)

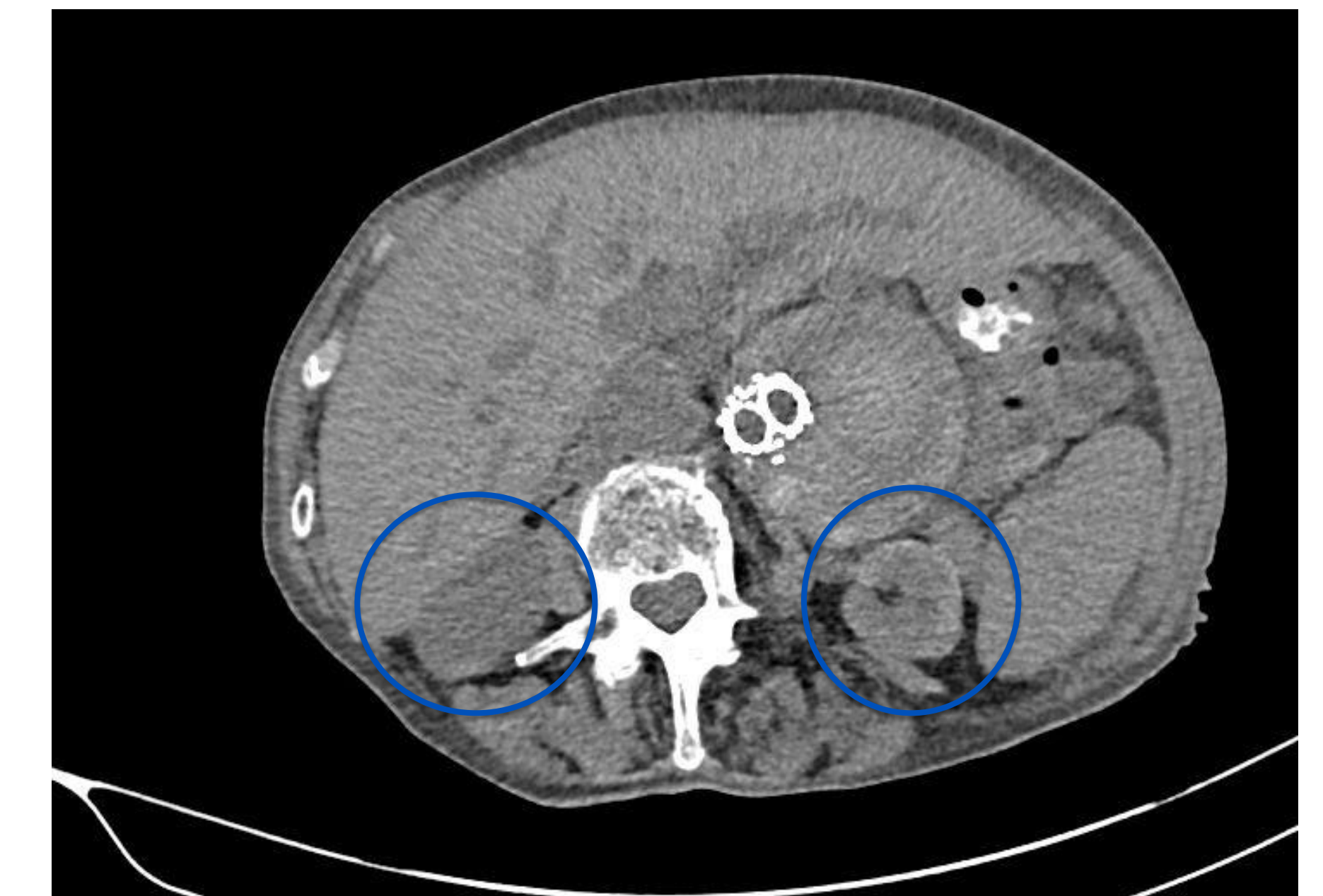
## Acute Kidney Injury

- Acute kidney injury (AKI) is a sudden decline in kidney function, identified by increased creatinine levels or reduced urine output
- It can develop within hours to days and may be associated with illness, dehydration, or exposure to contrast media in imaging
- While historically linked to contrast use, recent evidence suggests the overall risk may not be significantly increased in most patients (Choi et al., 2025)
- AKI can range from mild, temporary dysfunction to severe cases requiring dialysis
- Its commonly defined by a rise in creatinine within 48-72 hours after a triggering event (Kelemen et al., 2020)
- Risk Factors include chronic kidney disease, diabetes, older age, and dehydration
- Early recognition is important, as severe AKI can lead to long term complications despite being reversible in many cases (Modi et al., 2025)



Sagittal CT non-contrast kidney study; 29 ≥ GFR ≥ 15

(Clinical Affiliate Site, 2026)



Axial CT non-contrast kidney study; 29 ≥ GFR ≥ 15

(Clinical Affiliate Site, 2026)

## Statistics and Risk Values

- A large multicenter study of over 182,000 matched CT scans found no significant increase in overall AKI risk with contrast use (Choi et al., 2025)
- Increased risk was mainly seen in patients with pre-existing kidney dysfunction, particularly those with low glomerular filtration rate (GFR) (Choi et al., 2025)
- In patients, approximately 14% developed contrast induced nephropathy (Kelemen et al., 2022)
- Overall, evidence indicates that while contrast is generally safe for most patients, careful risk assessment remains essential in vulnerable populations (Kelemen et al., 2022)

## Conclusion

Acute kidney injury (AKI) remains an important consideration in patients undergoing contrast enhanced imaging, particularly in those with pre-existing kidney disease or other risk factor (Choi et al., 2025). Evidence from large scale studies suggests that contrast media is generally safe for most patients, with only a small subset demonstrating increased susceptibility to kidney injury (Choi et al., 2025). While the overall risk appears low, current research highlights the importance of identifying vulnerable populations and applying appropriate clinical judgement when contrast imaging is indicated (Jones et al., 2025). Continued emphasis on careful patient assessment, risk stratification, and preventative strategies such as adequate hydration and close monitoring of kidney function can significantly reduce the likelihood of AKI. Ultimately, these strategies promote safer use of contrast imaging by minimizing renal injury (Kelemen et al., 2025).