

# CICU Current Awareness: July

## Citrate Therapy for Continuous Renal Replacement Therapy

### UpToDate

#### [Anticoagulation for continuous renal replacement therapy](#)

“Regional citrate anticoagulation has been widely used as an alternative to heparin in all modalities of CRRT, including continuous venovenous hemodiafiltration (CVVHDF). During citrate anticoagulation, sodium citrate is infused into the inflow ("arterial") limb of the extracorporeal circuit, chelating calcium and, thereby, inhibiting clotting. Intravenous calcium must be infused systemically to maintain a normal ionized serum calcium concentration. The use of citrate anticoagulation may require modification of the dialysate composition.”

To read the full text, you will need an Athens login. Register here: <https://openathens.nice.org.uk/>

### Articles

#### [Citrate versus heparin anticoagulation for continuous renal replacement therapy: an updated meta-analysis of RCTs](#)

**Citation:** Intensive care medicine, Dec 2015, vol. 41, no. 12, p. 2098-2110

**Author(s):** Bai, Ming et al.

**Aim:** To evaluate the effect and safety of citrate versus heparin anticoagulation for continuous renal replacement therapy (CRRT) in critically ill patients by performing a meta-analysis of evidence.

**Methods:** Randomized controlled trials (RCTs) assessing the effect of citrate versus heparin anticoagulation for CRRT were considered eligible for inclusion.

**Results:** Citrate for CRRT significantly reduced the risk of circuit loss compared to regional and systemic heparin. Citrate also reduced the incidence of filter failure. The citrate group had a significantly lower bleeding risk than the systemic heparin group and a similar bleeding risk to the regional heparin group. The incidences of heparin-induced thrombocytopenia (HIT) and hypocalcemia were increased in the heparin and citrate groups, respectively.

**Conclusions:** Given the lower risk of circuit loss, filter failure, bleeding, and HIT, regional citrate should be considered a better anticoagulation method than heparin for CRRT in critically ill patients without any contraindication.

#### [Incidence of Adverse Events during Continuous Renal Replacement Therapy](#)

**Citation:** Blood purification, Jan 2015, vol. 39, no. 4, p. 333-339, 1421-9735 (2015)

**Author(s):** Akhondi, Abbasali et al.

**Aim:** We report the incidence of mechanical, metabolic, and hemodynamic CRRT AEs.

**Methods:** This is a retrospective study of all consecutive adult patients who underwent CRRT from January 2007 to December 2009. Out of 595 patients who underwent CRRT, 366 (62%) were male and 500 (84%) were Caucasian. Regional citrate anticoagulation was used in 98.6% of all patients.

**Results:** The most common clinically significant electrolyte derangements were ionized hypocalcemia (22%), ionized hypercalcemia (23%), and hyperphosphatemia (44%). Almost all (97%) patients had at least one additional AE including new onset hypotension (within the first hour after

CRRT initiation) (43%), hypothermia (44%), new onset arrhythmias (29%), new onset anemia (31%) and thrombocytopenia (40%).

**Conclusions:** ICU patients who require CRRT have a high incidence of AEs. Although the extent to which these complications are attributable to CRRT is not known, clinicians need to be cautious and aware of their high prevalence in this patient population.

### [Is Regional Citrate Anticoagulation the Future of Hemodialysis?](#)

**Citation:** Therapeutic apheresis and dialysis, Jun 2016, vol. 20, no. 3, p. 234-239

**Author(s):** Buturovic-Ponikvar, Jadranka

Citrate has many characteristics of the ideal anticoagulant for hemodialysis. In addition to immediate and complete anticoagulation in the dialysis circuit, citrate has important effects beyond anticoagulation, mainly in reducing inflammatory response induced by hemodialysis. Citrate has already become the standard anticoagulant in acute kidney injury requiring continuous renal replacement therapy (CRRT), both for adults and children, with the citrate module being a part of modern CRRT monitors. Although the citrate module is not yet available for intermittent hemodialysis, precise infusion pumps, point-of-care ionometers and high citrate clearance from high flux dialyzers increase safety while reducing the risk of metabolic complications, both in adult and pediatric patients.

*For full text articles, email [library@uhbristol.nhs.uk](mailto:library@uhbristol.nhs.uk).*

## NHS Behind the Headlines

### [Heart attacks linked to media statin reports ... reports media](#)

**Wednesday Jun 29 2016**

"Don't give up your statins: Experts say warnings that made patients stop taking vital drug have put lives at risk," the Daily Mail reports. This was the same newspaper that told us two weeks ago that "statins may be a waste of time"...

### [Study says there's no link between cholesterol and heart disease](#)

**Monday Jun 13 2016**

"Controversial report claims there's no link between 'bad cholesterol' and heart disease," the Daily Mail reports. Researchers, looking at previous data, argue that there is no connection between "bad cholesterol" and heart disease deaths in the over 60s...

## Upcoming Lunchtime Drop-in Sessions

The **Library and Information Service** provides free specialist information skills training for all UHBristol staff and students. To book a place, email: [library@uhbristol.nhs.uk](mailto:library@uhbristol.nhs.uk)

If you're unable to attend we also provide **one-to-one** or **small group** sessions. Contact [library@uhbristol.nhs.uk](mailto:library@uhbristol.nhs.uk) or [katie.barnard@uhbristol.nhs.uk](mailto:katie.barnard@uhbristol.nhs.uk) to arrange a session.

### **July (1pm)**

Tue 5th	<b>Critical Appraisal</b>
Wed 13 <sup>th</sup>	<b>Statistics</b>
Thurs 21 <sup>st</sup>	<b>Information resources</b>
Fri 29 <sup>th</sup>	<b>Literature Searching</b>

### **August (12pm)**

Tue 2nd	<b>Critical Appraisal</b>
Wed 10th	<b>Statistics</b>
Thurs 18th	<b>Information resources</b>
Fri 26th	<b>Literature Searching</b>

Library and Information Service: [library@uhbristol.nhs.uk](mailto:library@uhbristol.nhs.uk)

Library website: <http://www.uhbristol.nhs.uk/for-clinicians/library-and-information-service/>