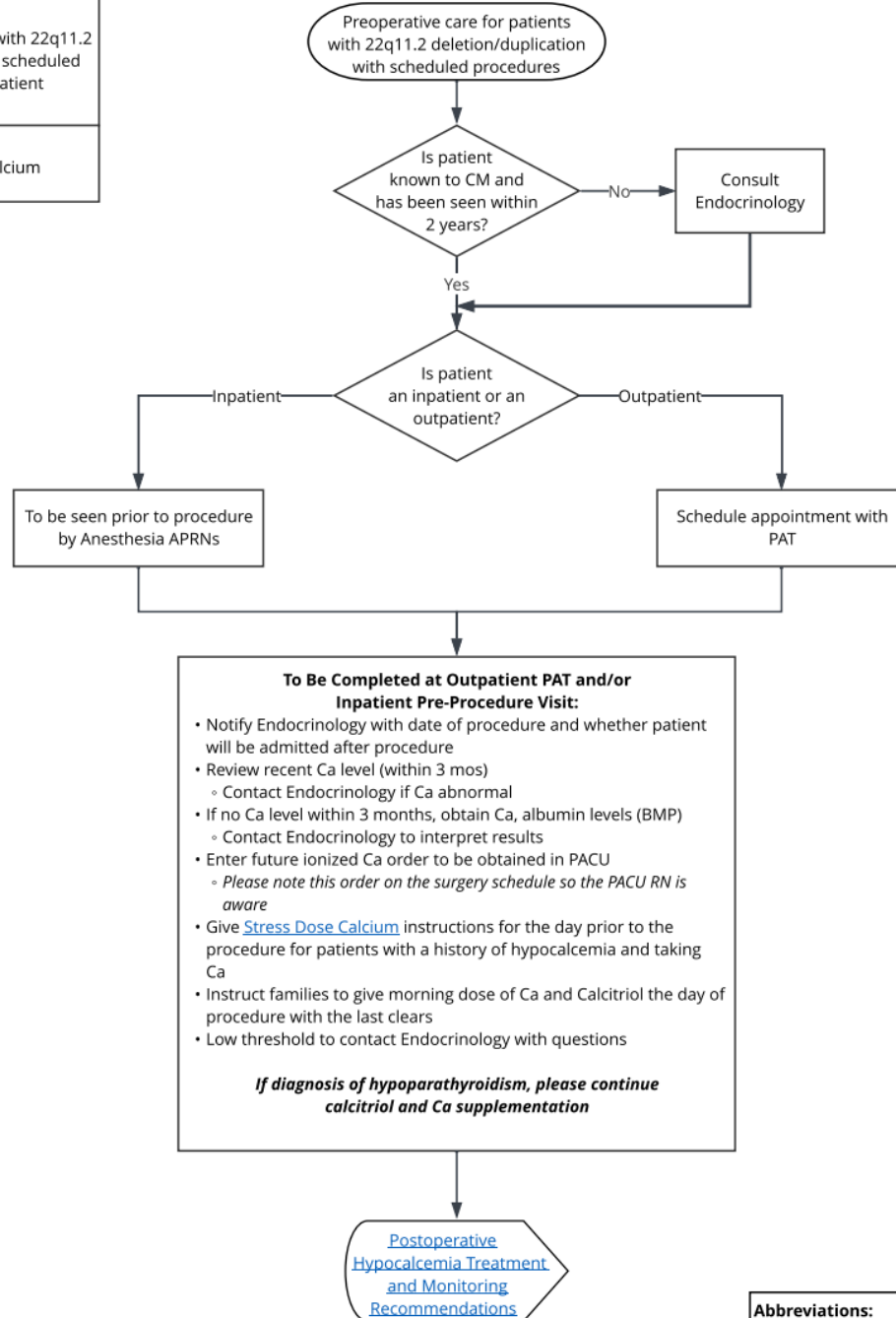




22q11.2 Enhanced Recovery After Surgery Pathway (ERAS) Synopsis

22q11.2 ERAS: Preoperative Algorithm

Inclusion criteria:
• Patients diagnosed with 22q11.2 deletion/duplication scheduled for inpatient or outpatient procedures
Exclusion criteria:
• Patients receiving calcium infusion

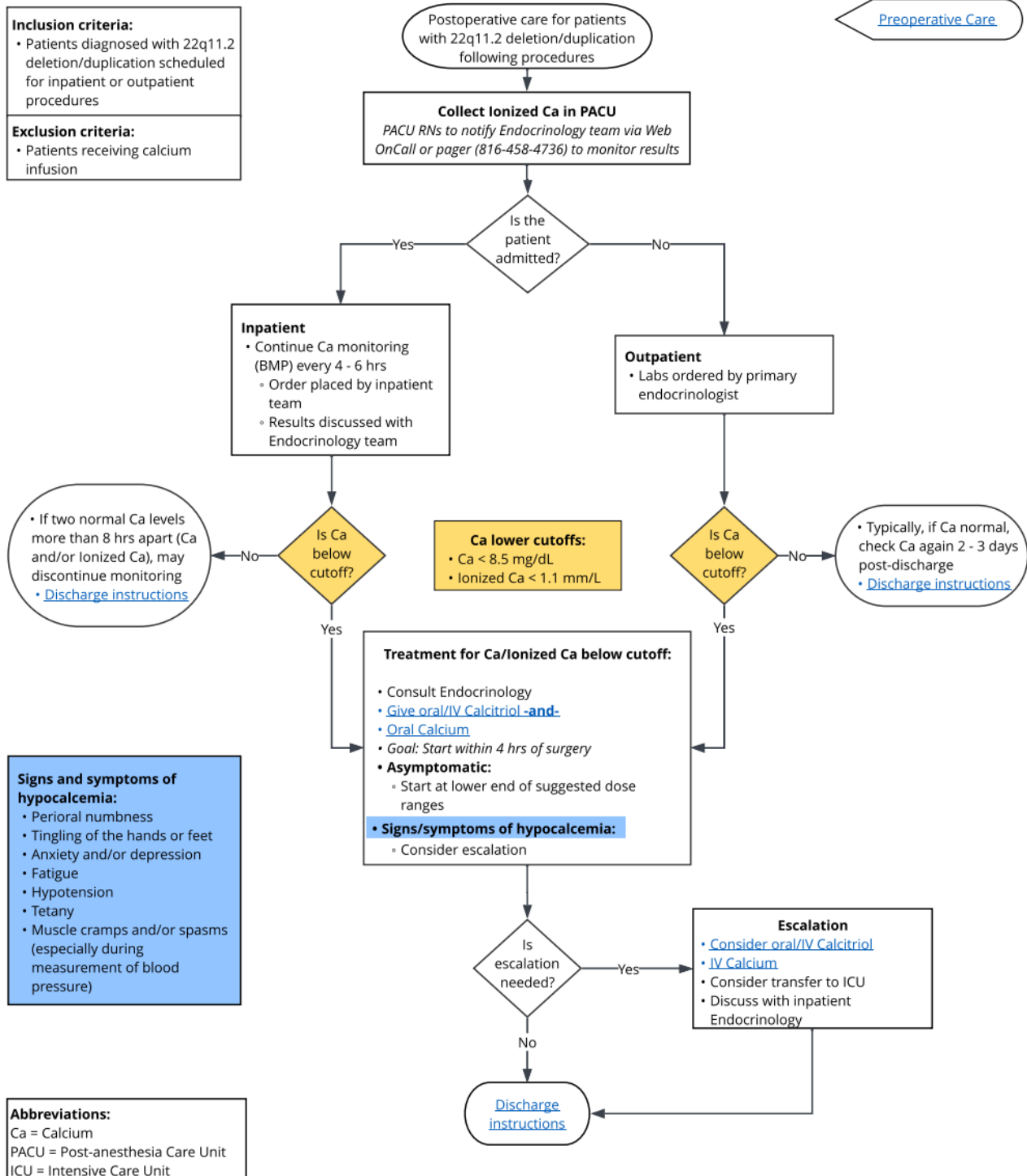


Abbreviations:
PAT = Preadmission Testing
PACU = Post-anesthesia Care Unit
Ca = Calcium

These clinical pathways do not establish a standard of care to be followed in every case. It is recognized that each case is different, and those individuals involved in providing health care are expected to use their judgment in determining what is in the best interests of the patient based on the circumstances existing at the time. It is impossible to anticipate all possible situations that may exist and to prepare a clinical pathway for each. Accordingly, these clinical pathways should guide care with the understanding that departures from them may be required at times.



22q11.2 ERAS: Postoperative Algorithm



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Objective of ERAS Pathway

This ERAS pathway provides perioperative care standards for patients diagnosed with 22q11.2 deletion or duplication syndrome. The aim is to guide the appropriate monitoring of these patients for hypocalcemia and administration of calcium treatment as clinically warranted in the preoperative and postoperative phases.

Background

Patients with 22q11.2 deletion or duplication syndrome risk hypocalcemia during procedures due to low parathyroid reserves and procedure-induced stress. Monitoring and correcting calcium levels before and after surgery are crucial to prevent and treat hypocalcemia in these patients (Arganbright et al., 2022). This pathway provides recommendations for calcium monitoring and administration for patients with 22q11.2 undergoing procedures.

Target Users

- Physicians (Endocrinology, Ear, Nose, and Throat (ENT), Critical Care Medicine, Anesthesiology, Orthopaedic Surgery, Heart Center)
- Advanced Practice Nurses and Physician Assistants
- Nurses
- Pharmacists

Target Population

Inclusion Criteria

- Patients diagnosed with 22q11.2 deletion or duplication syndrome scheduled for inpatient or outpatient procedures

Exclusion Criteria

- Patients receiving calcium infusion

ERAS Management Recommendations

Pre-Operative Care

- Consultation and/or notification of Endocrinology before procedure, with orders placed for calcium levels
- Review of calcium levels and administration of stress dosage of calcium prior to the procedure

Post-Operative Care

- Monitoring calcium levels
- Treatment for calcium levels below the cutoff with administration of calcium and calcitriol
- Escalation with admission to the intensive care unit for patients exhibiting signs and symptoms of hypocalcemia
- Recommendations for follow-up monitoring, treatment, and an Endocrinologist appointment

Additional Questions Posed by the ERAS Committee

No clinical questions were posed for this review.

Measures

- Utilization of the 22q11.2 ERAS Pathway

Value Implications

The following improvements may increase value by reducing healthcare costs and non-monetary costs (e.g., missed school/work, loss of wages, stress) for patients and families and reducing costs and resource utilization for healthcare facilities.

- Increased frequency of appropriate calcium monitoring
- Increased frequency of appropriate, timely administration of calcium and calcitriol
- Decreased unwarranted variation in care

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Organizational Barriers and Facilitators

Potential Barriers

- Variability of an acceptable level of risk among providers
- Variability of utilization of the ERAS pathway
- Challenges with follow-up faced by some families

Potential Facilitators

- Collaborative engagement across care continuum settings during ERAS development
- High rate of use of the ERAS pathway

Bias Awareness

This pathway aims to recognize bias awareness in social determinants of health and minimize healthcare disparities while realizing that unconscious bias can contribute to these disparities.

Associated Policies

- There are no policies associated with this clinical pathway.

ERAS Pathway Preparation

This pathway was prepared by the Evidence Based Practice (EBP) Department in collaboration with the 22q11.2 ERAS Committee composed of content experts at Children's Mercy Kansas City. If a conflict of interest is identified, the conflict will be disclosed next to the committee member's name.

22q11.2 ERAS Committee Members and Representation

- Max Feldt, DO | Endocrinology | Committee Chair
- Jill Arganbright, MD | ENT | Committee Member
- Seth Campbell, PharmD, BCPPS | Pharmacy | Committee Member
- Gabriel Gallegos, MD | Anesthesiology | Committee Member
- Jennifer Flint, MD | Critical Care Medicine | Committee Member
- Charles Maloy, DO | GME Fellowship Education | Committee Member
- Aimee Reed, MSN, RN, CPNP | Anesthesiology | Committee Member
- Sanket Shah, MD, MHS, FAAP | Heart Center | Committee Member
- Anne Stuedemann, MSN, RN, CPNP | Orthopaedic Surgery | Committee Member

EBP Committee Members

- Todd Glenski, MD, MSHA, FASA | Anesthesiology, Evidence Based Practice
- Megan Gripka, MT (ASCP) SM | Evidence Based Practice

ERAS Development Funding

The development of this ERAS pathway was underwritten by the following departments/divisions: Endocrinology, ENT, Critical Care Medicine, Anesthesiology, Heart Center, Orthopaedic Surgery, Pharmacy, and Evidence Based Practice.

Conflict of Interest

The contributors to the 22q11.2 ERAS Pathway have no conflicts of interest to disclose related to the subject matter or materials discussed.

Approval Process

- This pathway was reviewed and approved by the 22q11.2 ERAS Committee, Content Expert Departments/Divisions, and the EBP Department, after which the Medical Executive Committee approved it.
- Pathways are reviewed and updated as necessary every 3 years within the EBP Department at CMKC. Content expert teams are involved with every review and update.

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Review Requested

Department/Unit	Date Requested
Anesthesiology	May 2025
Critical Care Medicine	May 2025
ENT	May 2025
Endocrinology	May 2025
Evidence Based Practice	May 2025
Heart Center	May 2025
Orthopaedic Surgery	May 2025
Pharmacy	May 2025

Version History

Date	Comments
June 2025	Version one – development of pre- and post-operative algorithms, including guidance for calcium/calcitriol dosing and discharge recommendations

Date for Next Review

- June 2026

Implementation & Follow-Up

- Once approved, the pathway was presented to appropriate care teams and implemented. Care measurements will be assessed and shared with appropriate care teams to determine if changes need to occur.
- Education was provided to all stakeholders:
 - Nursing units where the 22q11.2 ERAS pathway is used
 - Departments of Anesthesiology and Endocrinology
 - Providers from Critical Care Medicine, Ear, Nose, and Throat, Heart Center, and Orthopaedic Surgery
 - Resident physicians
- Additional institution-wide announcements were made via email, the hospital website, and relevant huddles.

Disclaimer

When evidence is lacking or inconclusive, care options are provided in the supporting documents and the power plan(s) that accompany the ERAS pathway.

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Reference

Arganbright, J. M., Tracy, M., Feldt, M., Narayanan, S., Mahadev, A., & Noel-MacDonnell, J. (2022). Postoperative Hypocalcemia following Non-Cardiac Surgical Procedures in Children with 22q11.2 Deletion Syndrome. *Genes*, 13(10), 1905. <https://doi.org/10.3390/genes13101905>

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