

Toddler Tibia Fracture Clinical Pathway Synopsis

Objective of Clinical Pathway

Standardize the care of toddler tibia fractures using Controlled Ankle Motion (CAM) boots and reduce the number of heel ulcers

Target Users

- Emergency Department Clinicians
- Urgent Care Clinicians
- Orthopedic Clinic Clinicians
- Pediatricians

Inclusion Criteria:

- Patients aged 1 to 4 years
- Stable tibial shaft or distal tibia fracture, defined as:
 - No cortical displacement
 - No fracture shortening
 - No angulation
 - No malrotation
 - Intact fibula
 - Can be spiral or buckle fracture pattern

Exclusion Criteria:

- Patients with multisystem trauma
- High energy mechanism
- Infection
- Neoplasm
- Non-accidental trauma
- Non-ambulatory
- Multiple fractures
- Metabolic bone disease
- Any amount of cortical displacement
- Any amount of fracture shortening
- Any amount of angulation
- Reduction required
- Associated fibula fracture

Outcome Measures:

- Complications of care
- Percent Usage of the CAM boot

Process Measures:

- Number of heel ulcers
- Prolonged limping
- Patient family satisfaction

Balance Measures:

- Change of treatment
- Fracture displacements

Potential Cost Implications:

- Decreasing cost of care through decreased clinic visit and decreased x-rays

Potential Organizational Barriers:

- Availability of CAM boots
- Clinic access (wound care)
- Delay in presentation from outside facility

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.

Supporting Tools:

- Patient education material (Appendix A)

Practice Recommendations

In lieu of a clinical practice guideline fully addressing the management of toddler fractures, guidance from pediatric literature was used in conjunction with the expert consensus of the Clinical Pathway Committee to inform the assessment, acute management, and referral guidance in this pathway.

Clinical Pathway Preparation

This pathway was prepared by the Evidence Based Practice Department in collaboration with the Toddler Fracture Clinical Pathway 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.

Clinical Pathway Representation

This clinical pathway was originally created in 2023 with representation from Orthopedic Surgery, Urgent Care, Emergency Department, Wound Care, and Evidence Based Practice.

Toddler Fracture Revision Representation

- Caleb Grote, MD, PhD | Orthopaedic Surgery | Committee Chair
- Emily Trester, MSN, RN-BC, CPNP-PC | Orthopaedic Surgery | Committee Member
- Brian Haney, BSN, RN, CWCN, WTA-C | Wound Care | Committee Member
- Lina Patel, MD | Emergency Medicine | Committee Member

Office of EBP Committee Members

- Todd Glenski, MD, MSHA, FASA | Anesthesiology & Evidence Based Practice
- Jarrod Dusin, PhD, RD, CPHQ | Evidence Based Practice

Clinical Pathway Development Funding

The development of this guideline was underwritten by the EBP and Orthopedic Surgery, Urgent Care, Emergency Department, and General Academic Pediatrics.

Approval Process

This pathway was reviewed and approved by the Department of EBP and the Toddler Fracture Clinical Pathway Committee.

Version History:

Date	Comments
May 2022	First Version
July 2025	Second Version – Updated Caregiver Education Handout and References
April 2026	Third Version – Not a full review, Transition to New EHR

Date for Next Review: July 2028

Implementation & Follow-Up

- Once approved, the pathway was implemented and presented to appropriate care teams:
 - Announcements made to relevant departments
 - Additional institution-wide announcements were made via the hospital website and relevant huddles
- Care measurements may be assessed and shared with appropriate care teams to determine if changes need to occur.
- Pathways are reviewed every 3 years (or sooner) and updated as necessary within the EBP Department at CM. Pathway committees are involved with every review and update.

Disclaimer

When evidence is lacking or inconclusive, options in care are provided in the pathway and the power plans that accompany the guideline. These 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.

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References

- Bradman, K., Stannage, K., O'Brien, S., Green, S., Bear, N., & Borland, M. (2021). Randomised controlled trial comparing immobilisation in above-knee plaster of Paris to controlled ankle motion boots in undisplaced paediatric spiral tibial fractures. *Emergency Medicine Journal*, 38(8), 600-606.
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Appendix A
TODDLER'S FRACTURE

TODDLER'S FRACTURE

- What is a Toddler's Fracture?
 - » An injury to the big bone below the knee, sometimes called the shin bone (tibia).
 - » The bone is broken, but it is held tightly together by the outer covering of the bone (periosteum).
 - » This happens in children ages 1-4 years old.
- How do you know it's a Toddler's Fracture?
 - » The child injured themselves from a fall, tripping, twisting or going down a slide.
 - » When the leg is pushed on over the shin bone it causes pain.
 - » Sometimes the child will limp or won't want to walk.
 - » X-rays are taken which show a broken bone near the ankle (see picture below).
 - » If the X-ray doesn't show a broken bone, it might still be broken. This is called a "suspected toddler's fracture."



HOW DO YOU CARE FOR YOUR CHILD WITH A "TODDLER'S FRACTURE"?

- To make an appointment in the Orthopedic Surgery Clinic
 - » Please call (816) 234-3075, or
 - » Visit our website at: <https://www.childrensmercy.org/your-visit/before-you-arrive/scheduling-an-appointment/>
- Your child should be evaluated in the Orthopedic Surgery clinic within 1 week of their injury.
 - » They do not need an X-ray at that visit.
- You will protect your child's leg by having them wear a special boot, called a "CAM" boot.
 - » (CAM = Controlled Ankle Motion)
- The boot must be removed to look at the skin at least 1 time per day.
 - » Check the skin every day at bedtime or bath time.
 - » Look for redness, blisters, bruising or openings of the skin.
 - » If you see any of these on your child's skin:
 - Please call the Orthopedic Surgery Clinic at (816) 234-3075 or send a picture through the Patient Portal.
 - This can be caused by the boot being too loose or too tight.
 - Stop wearing the boot until the you hear from your care team.
 - A visit to the clinic will be needed to check how the boot is fitting and look at the skin.
- Your child does not have to sleep in the boot.

HOW DO I KNOW THE BOOT IS ON RIGHT?

1. Place the heel firmly down the back of the CAM Boot.
2. Place padding over the foot and shin.
3. Ensure the toes are within the firm sole of the boot.
4. Fasten the Velcro straps so the boot doesn't move around on the foot.

HOW LONG DOES IT TAKE FOR THE BROKEN BONE TO HEAL?

- After your child has started to walk in the boot, they can start to wear it less.
- This usually happens between 2-4 weeks after the injury.
- Your child will have a second appointment in the Orthopedic Surgery Clinic 4 weeks after the injury.
 - » Their leg will be examined.
 - » They will have new X-rays taken.
 - » If they are still using the boot for walking, they won't need to wear it anymore after this doctor's appointment.
 - » Most of the time, they won't need to come back for any more appointments.

WILL MY CHILD HAVE PROBLEMS WITH THEIR LEG AFTER A TODDLER'S FRACTURE?

- Most of the time, this fracture has no long-term problems after it is healed.
- Your child might limp or walk differently for up to 1 month after they stop wearing the boot (up to 2 months after injury).

PLEASE CALL THE ORTHOPEDIC SURGERY CLINIC AT (816) 234-3075 FOR AN APPOINTMENT 2 MONTHS AFTER THE INJURY IF:

- Your child is still having pain, OR
- Your child is still walking with a limp.
- For more information, please visit: orthokids.org/en-US/I-Broke-My-Tibial-Shaft-Fractures



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