OVERVIEW
Your child has been diagnosed with a fracture of the lower part of the humerus (upper arm bone) involving the lateral condyle. In children this effectively crosses the growth plate and enters the joint, which is sometimes classified as a Salter Harris 4 fracture. Non-displaced fractures can be treated with a cast for 4-6 weeks, but must be followed closely as the fracture can displace in the cast. If the fracture is displaced, it is treated with surgery to reposition the displaced fragment and stabilize it with pins. The fracture is then treated with a cast for 4-6 weeks. Pain and swelling improving after 1-2 weeks and healing is usually pretty good by 6 weeks, with most patients recovering good motion and returning to full activities by 8 weeks.

BACKGROUND
This fracture occurs most commonly in the 6 - 10 year old age group. The usual mechanism is a fall with an extended elbow causing the arm to bend to the side. Supracondylar fractures are a more common type of elbow fracture in children. Lateral condyle fractures represent roughly 20% of all pediatric elbow fractures. Some of these fractures show little or no displacement, but most do displace. Fractures that initially are not displaced, can displace, even in a cast, due to the pull of the forearm muscles. The fracture occurs partially through growing cartilage, but if the fracture heals with good alignment, growth problems are uncommon.

CLINICAL PRESENTATION AND DIAGNOSIS
Children who present with nondisplaced fractures may initially have minimal swelling. A young child may present with vague pain which can confuse the diagnosis with nursemaid’s elbow, other subtle fractures, or infection in the joint. Children with displaced fractures may show obvious deformity and swelling. Xrays are usually diagnostic. A non-displaced fracture may not show a fracture line, but blood inside the joint will expand the joint capsule and displace the anterior and posterior fat pads on the lateral xray.

TREATMENT
Non-displaced fractures are protected with a splint. Displaced fractures will require surgery, which typically involves open reduction and internal fixation. "Open" means
that an incision is made to expose the fracture. "Reduction" means that the deformity at the fracture site is reduced as the fracture is put back in place. "Internal Fixation" means that pins are used to hold the fracture in the proper place. A temporary cast is also applied to hold the fracture. After 5-7 days, an xray is obtained to confirm that the fracture is still properly aligned. The temporary cast is then converted into a solid cast. After 4 weeks, the cast and pins are removed so that motion exercises can be started. Use of the arm is limited by wearing a sling during the day. After 6 weeks, the fracture is well healed and activities can be gradually increased.

**PAIN MANAGEMENT**

Fractures hurt and appropriate pain management is important. With good pain management, children will eat better, sleep better, heal better, and have less apprehension when they have the cast removed and start working on motion. Elements of pain management include treating the injury, resting the elbow, elevation to decrease swelling, pain medications, and other supplementary measures.

Ibuprofen and Lortab, when given together, work well and provide good pain relief for most children. It is worth while to set an alarm (even in the middle of the night) to stick to the schedule. It takes a few minutes to wake up and take the medicine, as opposed to letting pain build up and spending hours trying to get it under control. Ibuprofen is a non-steroidal anti-inflammatory medication, which has few side effects and low risk. For best effect, it should be given every 8 hours for at least 5 days and as long as needed after that. Lortab is a mild narcotic medication, which will provide better pain relief, but also has more side effects, which often include sleepiness, nausea, constipation, etc. Pain relief is best and side effects are minimized if dosing is adjusted based on the pain severity. Start by giving a full dose every 4 hours. If pain relief is good, continue at the same dose or decrease the dose by half. If pain relief is not adequate, increase the dose. In summary, give ibuprofen every 8 hours for 5 days and on top of the ibuprofen, give the Lortab every 4 hours, adjusting the dose based on the level of pain. Most kids are off the Lortab within 2-3 days and off the ibuprofen by 5-7 days. Children usually do very well are usually pain free within 5-10 days.

**CAST CARE AND ACTIVITY**

Cast care is also important. A partial cast or splint is used initially to allow for swelling. It is usually put on with an ACE wrap, but it is not meant to be adjusted. If the temporary cast starts getting loose, tape should be applied to reinforce it as needed.

For the first 48 hours, the elbow should be elevated to minimize swelling and pain. It is possible for the swelling to increase to the point that the cast or the skin may get too tight. This is a serious problem. The first and most reliable sign of trouble is that the pain is not well controlled. If pain is severe and increasing over 2-4 hours despite elevation and appropriate pain medicine, it is very important to return to the hospital. Do not remove or loosen the cast, as this can make things worse.
It is also important to keep the cast clean and dry. If the cast gets wet, it will not dry well and it will start to irritate the skin. A wet cast usually needs to be replaced. Sponge baths are recommended to minimize risk of getting the cast wet in a shower or tub. While a plastic bag may protect the cast in the tub, if the plastic bag leaks and the cast gets wet, it typically takes hours and hours to get the cast replaced. The time and risk you take using a plastic bag to get into the tub are far greater than just doing a nice quick and safe sponge bath.

While in the cast, it is important to take it easy. The cast will protect the arm, but it is not strong enough for most physical activities. Sports and gym should be avoided. There should be no running, jumping, climbing, and definitely no falling. This includes staying off bikes, skates, skateboards, scooters, trampolines, monkey bars, slides, swings, etc. A general rule of thumb is to keep 2 feet on the ground at all times.

EXPECTED OUTCOMES AND POTENTIAL COMPLICATIONS
For children, elbow fractures are common and generally heal very reliably and without problems. Minor nerve injuries occur in up to 12% of patients. Fortunately, there is usually full recovery. Arterial injuries occur rarely but usually do not cause problems because of good collateral blood flow. It is uncommon, but possible for growth to be impaired and may lead to a “gunstock” deformity. Despite deformity, motion and function are usually good. Surgery can be done to realign the joint to correct the cosmetic problem. Rarely, during the first 24-48 hours, swelling can increase to the point of blocking blood flow into the arm. This is called a compartment syndrome and typically is accompanied by severe pain. If pain is not well managed despite elevating the arm and using appropriate pain medicine, the child should be urgently brought back to the hospital. With early treatment, a compartment syndrome can be effectively treated with surgery. However, prevention during the first 24-48 hours is even better and this is done by taking it easy, elevating the elbow above the heart, and appropriately managing pain.

MORE INFORMATION
Further information can be obtained on the internet. Your local public library can help you explore these sources if you are interested. Two good sites for expert and peer reviewed information are the American Academy of Orthopedic Surgeons at www.aaos.org and www.emedicine.com.

FEEDBACK
If you have questions or comments, please contact the office or submit them to the web site at www.pedortho.com.