

## **UC Irvine**

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Low-Cost, Mid-Fidelity Fracture Simulation & C-Arm Education using Goat Legs

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on procedural competency by developing a peer-reviewed procedure guide.

**Curricular Design:** 73 procedures were chosen for this project. Residents and attendings worked together to create a guide for each procedure. Each pair was given a standardized template to follow which included indications, contraindications, supplies, preparation, technique, aftercare, complications, follow-up, return precautions, video examples, and references. These guides will be published on an application with Apple and Android which will allow for greater accessibility while on shift. Residents and attendings were also asked to complete a survey about the project.

**Impact/Effectiveness:** By creating their respective guides, the residents and attendings should gain mastery at performing and teaching their assigned procedure. So far, we have received 6 completed procedure guides. The remainder are still in development with goal of completion by June 2022. An example guide is shown in Figure 1.

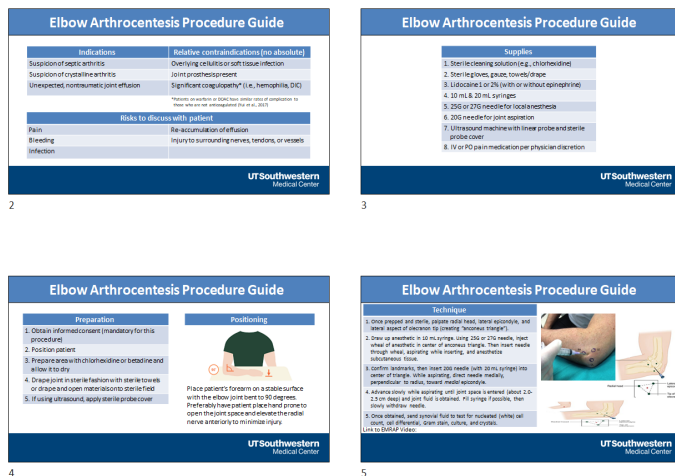


Figure 1. Elbow arthrocentesis procedure guide.

So far, 21 participants have completed the survey, and results are shown in Table 1. Comparing columns 4 and 5, preliminary results suggest that developing these guides help physicians become more confident with their procedure. We plan to implement the procedure guide application in 2022 and look forward to collecting more data to determine the effect on clinical confidence, competency, and bedside instruction.

Table 1. Procedure guide survey results.

	A procedure guide app would be useful for procedural guidance when performing procedures on shift.	A procedure guide app would be useful for procedural teaching on shift.	I am comfortable and confident performing my assigned procedure WITHOUT using a reference on shift.	Developing a procedure guide will enhance my confidence and competency performing the assigned procedure.	I would use a procedure guide app for reference when performing my assigned procedure on shift.	I would use a procedure guide app for reference when teaching my assigned procedure on shift.
Strongly Agree	17 (81%)	15 (71%)	2 (10%)	14 (67%)	12 (57%)	13 (62%)
Agree	4 (19%)	6 (29%)	5 (23%)	7 (33%)	7 (33%)	8 (38%)
Neutral	0 (0%)	0 (0%)	4 (19%)	0 (0%)	2 (10%)	0 (0%)
Disagree	0 (0%)	0 (0%)	8 (38%)	0 (0%)	0 (0%)	0 (0%)
Strongly Disagree	0 (0%)	0 (0%)	2 (10%)	0 (0%)	0 (0%)	0 (0%)

## 28 Low-Cost, Mid-Fidelity Fracture Simulation & C-Arm Education using Goat Legs

Nick Levin, Wesley Williams, Megan Fix

**Learning Objectives:** To orient emergency medicine residents and medical students to c-arm operation and dynamic utilization. Additionally to use the modality to teach fracture identification, reduction and splinting techniques.

**Introduction:** Adult and pediatric extremity fractures are a common presentation to Emergency Departments (EDs). Utilizing a c-arm dynamically helps facilitate more efficient and successful fracture reduction and splinting. The familiarization of utilizing a c-arm for fracture reduction is a critical skill for emergency medicine education and clinical practice.

**Objective:** To orient emergency medicine residents and medical students to c-arm operation and dynamic utilization. Additionally to use the modality to teach fracture identification, reduction and splinting techniques. We then assessed how effective this modality was at meeting those objectives for our learners.

**Curricular Design:** Fractures were simulated in cadaveric goat legs cast into an opaque gelatin mold. The fractures could not be identified visually and were interrogated by palpation and fluoroscopically using a c-arm. Participants were given tutorials on proper fluoroscopic technique and allotted time to practice reductions in a non-clinical setting. We sent a six-question follow-up survey inquiring how effective this simulation was on a seven-point Likert scale ranging from “Not Effective” (1) to

“Very Effective” (7). Twenty emergency medicine residents completed the post-simulation survey (74% response rate). For 40% of the residents, this was the first time using the c-arm. The simulation was quite effective at familiarizing residents to a c-arm with a mean score of 5.9 (SD=0.93), general fracture identification (4.9, SD=1.8) and reduction technique (5.1, SD=1.2), however it was even more effective at teaching those skills fluoroscopically (6.1, SD=1.1 and 5.7, SD=1.5, respectively).

**Impact/Effectiveness:** This innovation utilized materials found in many emergency departments and nearby communities and created low-cost, mid-fidelity fracture simulations in a non-clinical setting. This approach allows clinical trainees to utilize the equipment necessary for efficient and successful fluoroscopically-guided fracture identification and reduction.



Image 1.



Image 2.

## 29 Work for Idle Hands: A Simulation Model for Nail Bed Injury and Avulsion Repair

*Rebecca Kreston*

**Learning Objectives:** Wounds of the fingernail bed are a frequent injury encountered in the emergency department however residents often learn techniques for repair at the bedside. We aimed to develop and evaluate an economical and accessible simulation model of nail bed repair that could be used during online lecturing.

**Introduction:** Hand and fingertip trauma account for millions of visits to the emergency department annually. Nail bed injuries, including avulsions or unstable nails, are particularly common, however, there are limited opportunities for supervised practice and mastery of nail bed avulsion repair. We developed an economical and accessible simulation model to allow for practice of nail bed avulsion