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# A Kidney Biopsy Simulation Training Program: First Year's Results

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## First Year's Results

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### BACKGROUND

- Nephrology attracts fewer medical graduates despite the growing care and workforce demand (1, 2).
- Interventional Nephrology could re-foster interest in this subspecialty (1, 2).
- Percutaneous kidney biopsy (PKB) is the most common procedure and should be adequately taught through simulation training according to ACGME requirements (3).
- By the end of a Nephrology training program fellows may lack confidence or even competence in kidney biopsy procedural skills. The solution could be an **simulation tool**.

### SPECIFIC AIMS

- Aim 1:** To **develop** a simulation tool for teaching and practicing real-time ultrasound-guided percutaneous kidney biopsy (PKB)
- Aim 2:** To **establish** the efficacy of this simulation training in reducing discomfort and adverse PKB outcomes in patients undergoing this procedure in UNMH
- Aim 3:** To **incorporate** this PKB simulation into the core curriculum of the UNMH Nephrology fellowship training program according to the ACGME requirements
- Aim 4:** To **increase** the confidence level and the procedural competence of the Nephrology trainees on PKBs .

### METHODS

- ✓ We initiated a **PKB simulation training program** and we designed a two-year study in order to examine its effect on the *confidence level, the procedural competence and the satisfaction with this training* of Nephrology fellows compared to historical controls (fellows trained on PKBs before the initiation of the program). [IRB approval date: 11/01/2017, No:17-396]
- ✓ All fellows were consented and trained at UNM's simulation center (**BATCAVE**) with a renal biopsy ultrasound training model (CAE Healthcare **Blue Phantom™**). Participants demographics and previous PKB experience was collected.
- ✓ Pre-assigned readings, online videos and hands-on practice on the simulation model were utilized as **educational strategies**.
- ✓ **Performance** of the trainee during each one-hour session was graded by the use of an **evaluation form** specifically designed for PKBs.
- ✓ **Pre-and post-simulation surveys** evaluated the participants' **confidence level** quantitatively.
- ✓ All participants completed the **satisfaction** with PKB simulation experience scale (PKB-SSE).

### RESULTS

- ❖ All three 1<sup>st</sup> and 2<sup>nd</sup> year renal fellows completed the simulation training (academic year 2017-2018). Each session lasted one hour. All sessions were facilitated by Dr. Owen (Interventional Nephrologist) and Dr. Roumelioti in BATCAVE.
- ❖ The following table summarizes the basic information acquired from their training. Overall, the program **enhanced the confidence level** of fellows without previous experience on performing PKBs.
- ❖ All fellows expressed a **high level of satisfaction** from their participation in this training.



Trainees	I	II	III
Age	36	53	40
Gender	male	male	male
Year of Training	1st	2nd	1st
Previous experience	no	yes	no
Number of sessions needed	1	1	3
Number of passes/session needed	5	3	6
Pre-training confidence level	4	5	3
Post-training confidence level	5	5	5
Satisfaction level	4	4	5

### CONCLUSIONS

- PKB simulation training may improve trainees' confidence level especially for those without prior experience as well as their satisfaction with the training.
- The procedural competence of the trainees on PKBs will be evaluated during the second year of their fellowship and will be compared to the procedural competence of historical controls (renal fellows trained before the initiation of this program).*



### REFERENCES

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