

# Prepared for Pre-Exposure Prophylaxis (PrEP): Evaluating a lecture-based presentation as a tool for improving provider preparedness to initiate HIV PrEP therapy

Shilpa Devanagondi, MD, MPH<sup>1</sup>, J'aime Moehlman, DO, MPH<sup>1</sup>, Laurent Truong, MD<sup>1</sup>, Fanglong Dong, PhD<sup>1,2</sup>, Sharon Wang, DO, MSHPE<sup>1,3</sup>

<sup>1</sup> Arrowhead Regional Medical Center, Department of Family Medicine, Colton, CA <sup>2</sup> Western University of Health Sciences, Graduate College of Biomedical Sciences, Pomona, CA

<sup>3</sup> San Bernardino County Department of Public Health, San Bernardino, CA

## Abstract

**Background.** The HIV/AIDS epidemic has been a significant cause of morbidity and mortality in the United States (US) since the late 1970s, disproportionately affecting minority groups.<sup>2</sup> HIV affects approximately 5,000 people in San Bernardino County.<sup>2,3</sup>

**Objectives.** We designed a study to evaluate a lecture-based presentation to improve provider knowledge and increase comfort of prescribing HIV PrEP therapy in post-graduate trainees.

**Methods.** The design is an observational, prospective pre- and post- lecture survey study using a Knowledge, Attitude, Practices (KAP) model to assess an educational lecture as a tool for improving provider readiness and comfort in PrEP prescription. Eligible study participants were resident physicians among Emergency Medicine, Family Medicine or Internal Medicine GME programs.

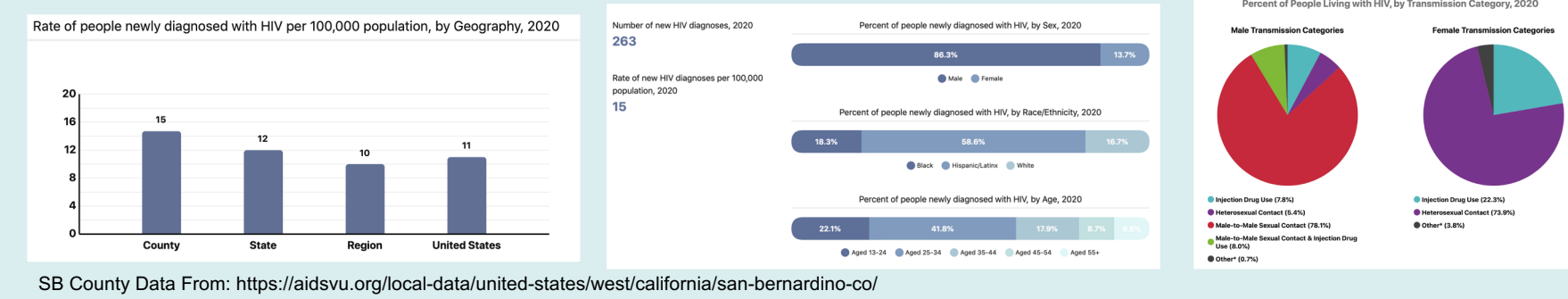
**Results.** Pre and post lecture data was analyzed for 31 participants. There was a statistically significant increase in the number of correct or partially correct answers on the choice of medication for PrEP (57.8% vs 96.8%,  $p < 0.0001$ ), the correct identification of medication with the highest risk for osteoporosis (19.4% vs 74.2%,  $p < 0.0001$ ), the correct choice of lab which should be checked periodically (25.8% vs 87.1%,  $p < 0.0001$ ), and the correct HIV screening schedule (12.9% vs 77.4%,  $p < 0.0001$ ). Furthermore, there was a statistically significant increase in the comfort level in prescribing/initiating PrEP in the primary care setting (median=0 for pre vs median=2 for post,  $p < 0.0001$ ).

**Conclusions & Implications.** These results were consistent with the hypothesis that lecture-based education is an effective tool in increasing provider knowledge and comfort in prescribing PrEP. Compared to similar studies, this research shows that educating resident physicians earlier may lead to higher PrEP prescription rates during and after their post-graduate training. Future research can expand on specialty specific provider readiness as well as comparison of readiness amongst various post graduate years.

## Introduction

- Lecture-based learning is defined as an approach to education where students receive instruction directly led by a teacher, or expert. Continued medical education is important to meet the needs of a rapidly evolving society with a variety of health conditions.
- Nearly half of those with HIV in San Bernardino County identify as Hispanic/LatinX, while 25% identify as black, and the remaining 25% identify as white.
- PrEP medications include Truvada (tenofovir disoproxil fumarate-emtricitabine), Descovy (tenofovir alafenamide-emtricitabine), and Apretude (cabotegravir), an injectable medication.
- The 2010 iPrEx multi-institutional trial showed that FTC-TDF (Truvada) reduced transmission of HIV.
- This indicates a specific need for prevention strategies, early identification and treatment within the community, with special consideration for the most vulnerable population of patients that we care for.

### San Bernardino County HIV Data



## Objectives

### Research Question

How effective is a lecture based presentation to post-graduate trainees in improving preparedness to prescribe PrEP?

### Objectives

- Aims to assess preparedness of post graduate trainees in prescribing PrEP through administration of pre and post presentation surveys
- Evaluate efficacy of teaching tool in improving provider confidence and preparedness

### Hypothesis

We hypothesize that there will be a statistically significant improvement in overall preparedness to prescribe PrEP amongst post graduate trainees after receiving a lecture based presentation.

## Methods

### Inclusion Criteria

- Resident physicians among Emergency Medicine, Family Medicine or Internal Medicine GME programs (PGY-1, PGY-2, PGY-3 and PGY-4).
- "Complete surveys", which means both pre and post test questions were completed in their entirety.

### Exclusion Criteria

- Medical students, pharmacy residents and attending physicians
- Partially completed surveys

### Recruitment of Study Participants

The study participants were recruited via a pre-planned series to be given at didactic lectures across various specialties and departments. Informed Consent was conducted via a written consent included along with the survey. There was no financial or other incentive to complete the survey.

### Study Design

An observational, prospective survey study using a Knowledge, Attitude, Practices (KAP) survey model was designed to assess an educational lecture as a tool for improving provider readiness and comfort in PrEP prescription. The paper survey was developed with multiple choice and Likert scale questions as shown below.

Level of Practice:  R1  R2  R3  Other: \_\_\_\_\_ Program (FM, IM, EM): \_\_\_\_\_

By responding to this survey, you are consenting to having your responses used for research purposes. Participation is voluntary, if you do not wish to participate please do not turn this survey in.

---

**HIV PrEP Pre-test Survey**

- Which medication(s) can be used for PrEP?  
 Biktarvy  Stribild  Truvada  Genvoya  Cabenuva  Descovy
- Which PrEP medication has highest risk for osteoporosis?  
 Biktarvy  Stribild  Truvada  Genvoya  Cabenuva  Descovy
- Which lab (select one) should be checked periodically (other than HIV screening)?  
 LFTs  CBC  Kidney function  Electrolytes
- How often should you screen for HIV?  
 Every month  Every 3 months  Every 6 months  Yearly
- Please rate your comfort level in prescribing/initiating PrEP in the primary care setting.  
 0  1  2  3  4  
Not Confident      Somewhat Confident      Very Confident
- Have you started HIV PrEP on a patient? If so, how long ago?  
 Yes  No  
 Less than one month  1-3 months  3-6 months  6-12 months  Other: \_\_\_\_\_

The educational lecture included a powerpoint presentation that had been created and presented by board certified Infectious Disease physicians. It included up to date guideline directed medical therapy for HIV current with IDSA guidelines and CDC recommendations.

Level of Practice:  R1  R2  R3  Other: \_\_\_\_\_ Program (FM, IM, EM): \_\_\_\_\_

By responding to this survey, you are consenting to having your responses used for research purposes. Participation is voluntary, if you do not wish to participate please do not turn this survey in.

---

**HIV PrEP Post-test Survey**

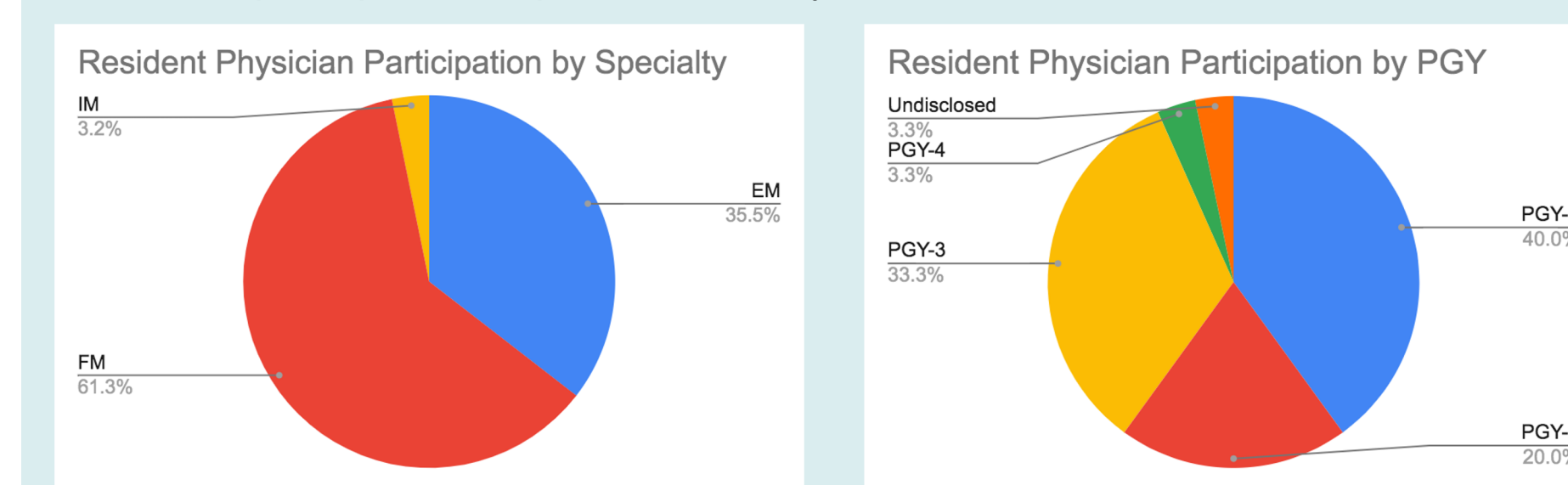
- Which medication(s) can be used for PrEP?  
 Biktarvy  Stribild  Truvada  Genvoya  Cabenuva  Descovy
- Which PrEP medication has highest risk for osteoporosis?  
 Biktarvy  Stribild  Truvada  Genvoya  Cabenuva  Descovy
- Which lab (select one) should be checked periodically (other than HIV screening)?  
 LFTs  CBC  Kidney function  Electrolytes
- How often should you screen for HIV?  
 Every month  Every 3 months  Every 6 months  Yearly
- Please rate your comfort level in prescribing/initiating PrEP in the primary care setting after this session?  
 0  1  2  3  4  
Not Confident      Somewhat Confident      Very Confident

### Data Analysis

- Knowledge based questions 1-4 were stratified based on the number of incorrect, partially correct and completely correct answers pre- and post-survey.
- Attitude based question 5 was stratified based on median aggregate comfort level pre and post survey. A ranking of 0-4 was available with 0 corresponding to Not Comfortable, 2 corresponding to Somewhat Comfortable and 4 corresponding to Very Comfortable.
- The difference between the pre and post was calculated.
- The median of difference was compared against zero using the Wilcoxon Rank Sum test.
- All statistical analyses were conducted using the SAS software for Windows version 9.4 (Cary, North Carolina, USA). IRB approval obtained from Arrowhead Regional Medical Center, PROTOCOL #23-07.

## Results

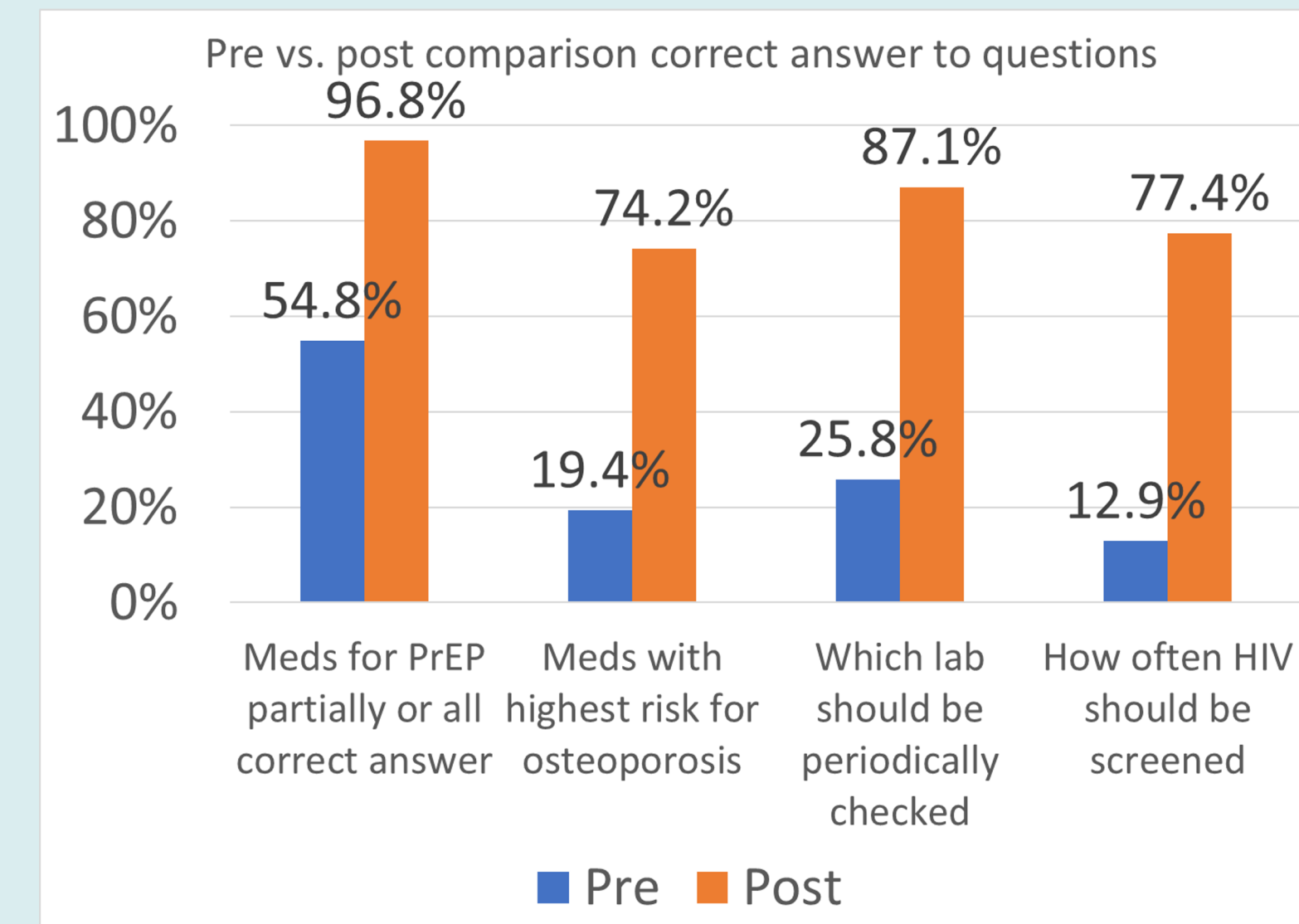
A total of 31 participants completed the survey.



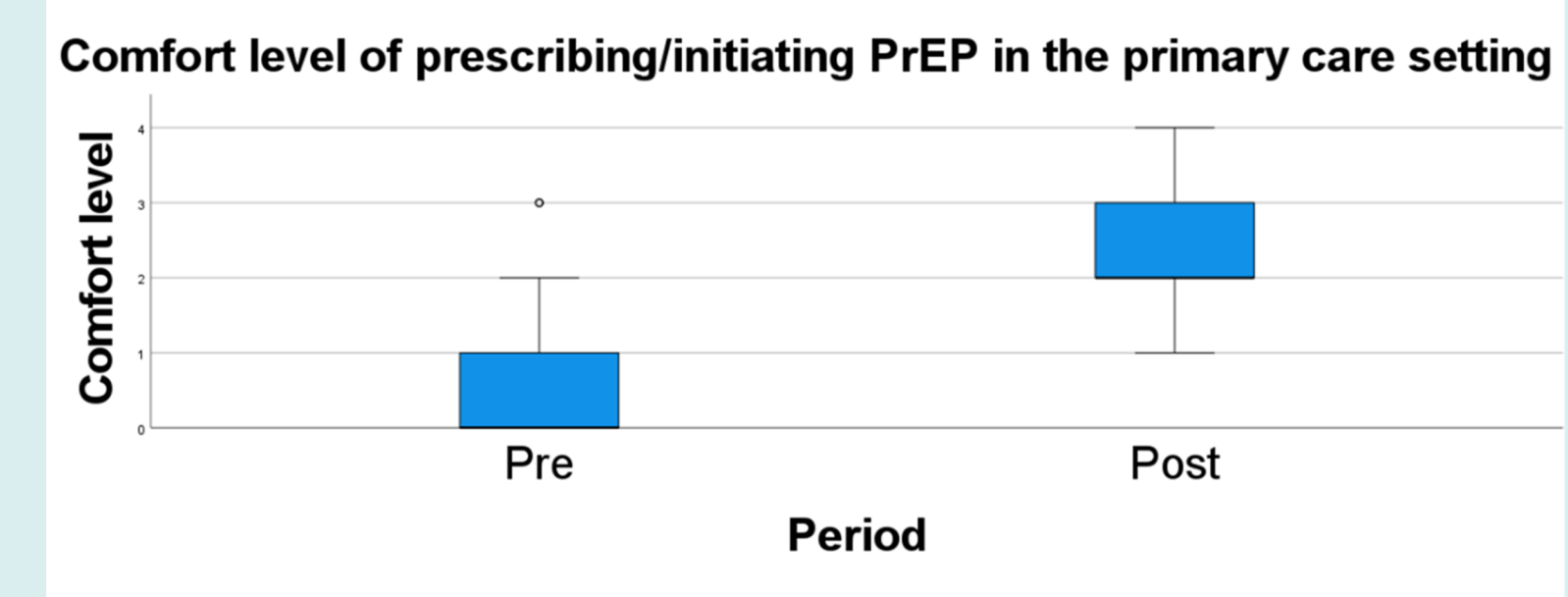
Amongst the 31 resident physicians surveyed, 2 had previously started PrEP on a patient.

There was a statistically significant increase in:

- The number of correct or partially correct answers on the choice of medication for PrEP (57.8% vs 96.8%,  $p < 0.0001$ ).
- The correct identification of medication with the highest risk for osteoporosis (19.4% vs 74.2%,  $p < 0.0001$ ).
- The correct choice of lab which should be checked periodically (25.8% vs 87.1%,  $p < 0.0001$ ).
- The correct HIV screening schedule (12.9% vs 77.4%,  $p < 0.0001$ ).



Furthermore, there was a statistically significant increase in the comfort level in prescribing/initiating PrEP in the primary care setting (median=0 for pre vs median=2 for post,  $p < 0.0001$ ).



## Conclusions

### Conclusions

- Our results were consistent with the hypothesis that lecture-based education is an effective tool in increasing provider knowledge and comfort in prescribing PrEP.
- In congruence with other PrEP efficacy and deployment studies, we know that an increase in provider knowledge and comfort is correlated to an increase in provider prescription rates.
- In comparison with similarly conducted studies, our research shows that educating resident physicians early on in training would likely lead to higher PrEP prescription rates during and after their post-graduate training.

### Strengths of this study:

- Ease of reproducibility
- low risk to participants
- increased efficiency due to low cost
- confidentiality due to complete anonymity

### Limitations of this study:

- Small sample size
- Incomplete participation likely due to lack of incentivization
- Inability of complete class participation due to hybridization of in person and online lectures
- Incomplete or improperly completed surveys
- No prior focus-group testing of survey questions.

### Future Considerations

- Assessment across specialties and PGY years*  
Future research can expand on specialty specific provider readiness as well as comparison of readiness amongst various post graduate years.

- Reassessment of Comfort and Knowledge*

It would be prudent to follow up the findings from this study by readministering this survey 6-12 months after initial lecture to determine if receiving education based lectures leads to a continued comfort with HIV PrEP prescription as well as track provider retention of knowledge related to HIV PrEP.

- Reassessment of Prescription Rate*

By re-administering the survey to post graduates throughout their training, we may also be able to assess the improvement in rate of PrEP prescription amongst these providers. Furthermore, by continuing to administer the post-survey to resident physicians of various GME specialties we can evaluate PrEP prescription rates in both an outpatient and inpatient setting.

## References

Please scan the following QR code for a list of references.

