EVALUATING AETC DISTANCE LEARNING

September 23, 2014

Agenda

- Part I: Distance learning literature review
- Part II: AETC Telehealth center evaluation
  - Background and purpose
  - Clinician and clinic questions
  - Preliminary results of FY 12-13 data
  - Conclusions

Part I: Distance Learning Literature Review

Objective and Method

- **Objective:** Examine the literature on strategies used to evaluate distance learning (DL)
- **Methods:** Used several different search engines and a host of key words including: evaluation, distance learning, continuing medical education

Distance Learning Literature Review Results

Traditional and Distance Learning Taxonomy

Term	Definition
Traditional teaching	Delivering teaching face to face, typically in a classroom setting
Distance learning	Delivering teaching to learners who are not physically present. Also called eLearning, online learning, or Internet-based learning
Technology-assisted education	Computer-assisted instruction, web-based education simulation, and virtual reality technologies
Telemedicine	The use of telecommunication and information technologies to provide clinical health care at a distance, to eliminate distance barriers, and improve access to medical services that are not available in rural communities.
Telehealth	Health-related services and information delivered via telecommunications. Telehealth is an expansion of telemedicine which also encompasses preventive, promotive, and curative aspects.
Blended learning	An approach that combines distance learning with traditional instructor-led training e.g., a lecture is supplemented by an online tutorial

Results: Benefits of Distance Learning

- Easy access
- Flexible timing
- Ability to meet different learning styles
- Interactivity
- Not bound by geography
- Cost-effective

Results: Effectiveness of Distance Learning

- Meta-analysis of 76 studies comparing internet-based vs. traditional teaching interventions showed minor differences.

"neither inherently superior or inferior to traditional instruction; rather they are different and complementary"

- Though methods appear to be equal, they are not necessarily interchangeable.

Cook DA, Levinson AJ, Garside S, Dupras DM, Erwin PJ, Montori VM. Internet based learning in the health professions: A meta analysis. *JAMA* 2008;300(10):1181-1196

Results: Effectiveness of Distance Learning

Effective instructional design includes:

- Interactivity
- Practice exercises
- Repetition
- Feedback

Siemens, George. Instructional Design in Elearning

http://www.elearnspace.org

Results: Key Research Areas

- When and how to best use distance learning?
  - Synchronous or asynchronous
- What are the best interface design variables?
  - Navigation
  - Learnability
  - Accessability
  - Consistency
  - Visual design

- Kalet, AL, Song, HS, Sarpel, US, Schwartz R, Brenner J, Ark TK, Place J. Just enough, but not too much interactivity leads to better clinical skills performance after a computer assisted learning module. Med Teach. 2012;epub ahead of print. PMID: 22917265.
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- Casebeer L, Kristofco RE, Strasser S, Reilly M, Krishnamoorthy P, Rabin A, Zheng S, Karp S, Myers L. Standardizing evaluation of on-line continuing medical education: physician knowledge, attitudes, and reflection on practice. J Contin Educ Health Prof. 2004 Spring;24(2):68-75. PubMed PMID: 15279131.
- Cook, DA. If you teach them, they will learn: why medical education needs comparative effectiveness research. Adv in Health Sci. 2012a;17;305-310.
- Freire, L L. A literature review about usability evaluation methods for e-learning platforms. Work. 2012;41, 1038-1044.
- Cook DA, Dupras DM. A practical guide to developing effective web-based learning. J Gen Intern Med. 2004 Jun;19(6):698-707. Review. PubMed PMID: 15209610; PubMed Central PMCID: PMC1492389.
- Sandars J, Lafferty N. Twelve Tips on usability testing to develop effective e-learning in medical education. Med Teach. 2010;32(12):956-60. PubMed PMID: 21090948.

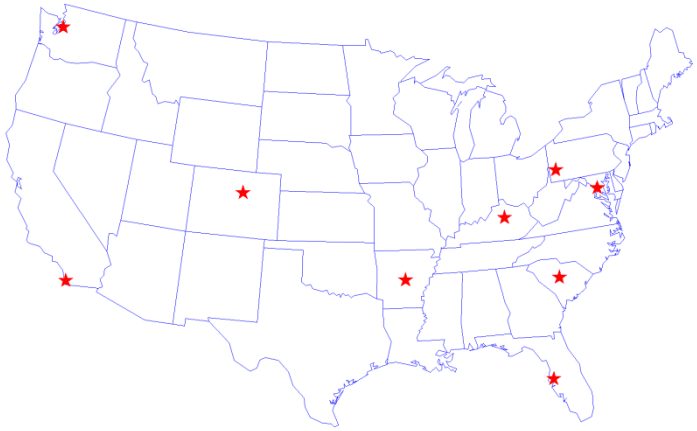
Questions?

Comments?

Part II: AETC Telehealth Center Evaluation

Telehealth Center background

- In 2011, the Northwest AETC, Pacific AETC, and Pennsylvania/Mid-Atlantic AETC collaborated with the AETC NEC to develop a cross-region evaluation of their Telehealth programs
  - Provider evaluation and clinic-level patient-care indicators were developed
- From July 2012-June 2013, this program expanded to nine funded Telehealth centers across the country



Telehealth Centers in 2013

- AETC Capitol Region Telehealth Project
- Northwest AETC Extension for Community Healthcare Outcomes (ECHO)
- Pacific AETC HIV Learning Network
- Telehealth AETC Appalachian Project (TAAP)
- Tri-State Telehealth Advancement Network
- HIV Health Education Assessment Research Telehealth (HEART)
- Florida/Caribbean Telehealth Education Training Center
- Mountain-Midwest HIV Telehealth Initiative
- Southern Central AIDS Education Telehealth Training Center

Telehealth Center Purpose

- Telehealth Center Trainings:
  - Target providers serving patient populations in rural and low HIV prevalence regions
  - Use innovative patient outreach methods, such as telemedicine
- This multi-site evaluation focuses on:
  - Provider self-efficacy
  - Patient care change at the clinic level over time

Data Collection

- Standard process data collected for each training on the Participant Information Form (PIF) and Event Record (ER) form
- Special AETC codes (50-58) for Telehealth events
- Evaluation data collected annually, one year after the initial Telehealth training event
  - Measurement of longitudinal outcomes
  - Pre and Post measures available for 3 regions

Telehealth Center Events

- AETC codes (50-58) used by funded-Telehealth Centers on ER forms:
  - Howard University = 54
  - Northwest AETC = 52
  - Pacific AETC = 50
  - Pennsylvania Mid-Atlantic = 51
  - South Carolina Research Foundation = 58
  - University of Arkansas for Medical Sciences = 55
  - University of Colorado Denver = 56
  - University of Kentucky Research Foundation = 53
  - University of South Florida = 57

Telehealth Cross-Site Evaluation Questions

Telehealth Cross-Site Clinician Questions

- ACRE Immediate-Post knowledge change question
  - How would you rate your level of knowledge about this content before the AETC Telehealth Project? *(Retrospective pre-post question)*

    (Novice) 1—— 2 —— 3 —— 4 —— 5 (Expert)

  - How would you rate your level of knowledge about this content after the AETC Telehealth Project? *(Retrospective pre-post question)*

    (Novice) 1—— 2 —— 3 —— 4 —— 5 (Expert)

Telehealth Cross-Site Clinician Questions

- Provider Self-Efficacy:
  - As a result of my involvement in the AETC Telehealth Project, I feel more capable in the clinical management of HIV disease

    1 (Cannot do at all) to 10 (Highly certain can do)
- *Optional Question:*
  - As a result of my involvement in AETC Telehealth Project, I feel more able to offer HIV testing and prevention counseling in my clinical practice

    1 (Cannot do at all) to 10 (Highly certain can do)

Telehealth Cross-Site Clinic Questions

- Patient Care Indicators:
  - 1. HIV Testing:
    - 1a. Total number of patients aged 13-64 with at least one visit in the calendar year prior to the first telehealth training/consultation
    - 1b. Among patients included in *1a.*, the number who received HIV testing
    - 1c. Among patients included in *1b.*, the number who tested positive for HIV

(cont.)

Telehealth Cross-Site Clinic Questions

- 2. Patients in Care
  - The number of HIV-infected patients with at least one visit in the calendar year prior to the first telehealth training/consultation
- 3. CD4 Count Monitoring
  - Among HIV patients in care, the number of patients receiving *at least* 2 CD4 tests in the last 12 months
- 4. VL Monitoring
  - Among HIV patients in care, the number of patients receiving *at least* 2 VL tests in the last 12 months

FY12-13 Telehealth Center Findings: Trainings and Trainees

Telehealth Center Training and Trainee Characteristics

- **Trainings:** There were 251 AETC Telehealth-funded training events in FY12-13 occurring at 9 Telehealth Centers
  - There was a mean of 7.8 (range: 1-27) participants at each FY12-13 Telehealth events (based on number of PIFs)
- **Trainees:** There were 1,676 Telehealth PIFs completed
  - Among these records, there were 1,635 linked ER-PIF records with a valid PIF ID
  - There were 351 unique Telehealth trainees de-duplicated by AETC and PIF ID.

Data source: Cross-region ER and PIF data FY 12-13

Telehealth Center Repeat Trainees

- **Repeat trainees:** Over half of these Telehealth trainees (n = 205; 58.4%) attended at least one other AETC training of any type during the fiscal year
  - Among these repeat trainees, the mean number of Telehealth Center trainings attended was 7.3 (range: 1-42)

Data source: Cross-region ER and PIF data FY 12-13

FY12-13 Telehealth Center Trainings by Region (N = 251)

AETC Region	N	%
[52] Northwest	67	26.7
[57] Florida/Caribbean	53	21.1
[51] Pennsylvania/Mid-Atlantic	31	12.4
[55] U. of Arkansas for Medical Sciences	27	10.8
[50] Pacific	18	7.2
[56] Mountain Plains	17	6.8
[58] Southeast	16	6.4
[53] University of Kentucky	12	4.8
[54] Howard University	10	4.0

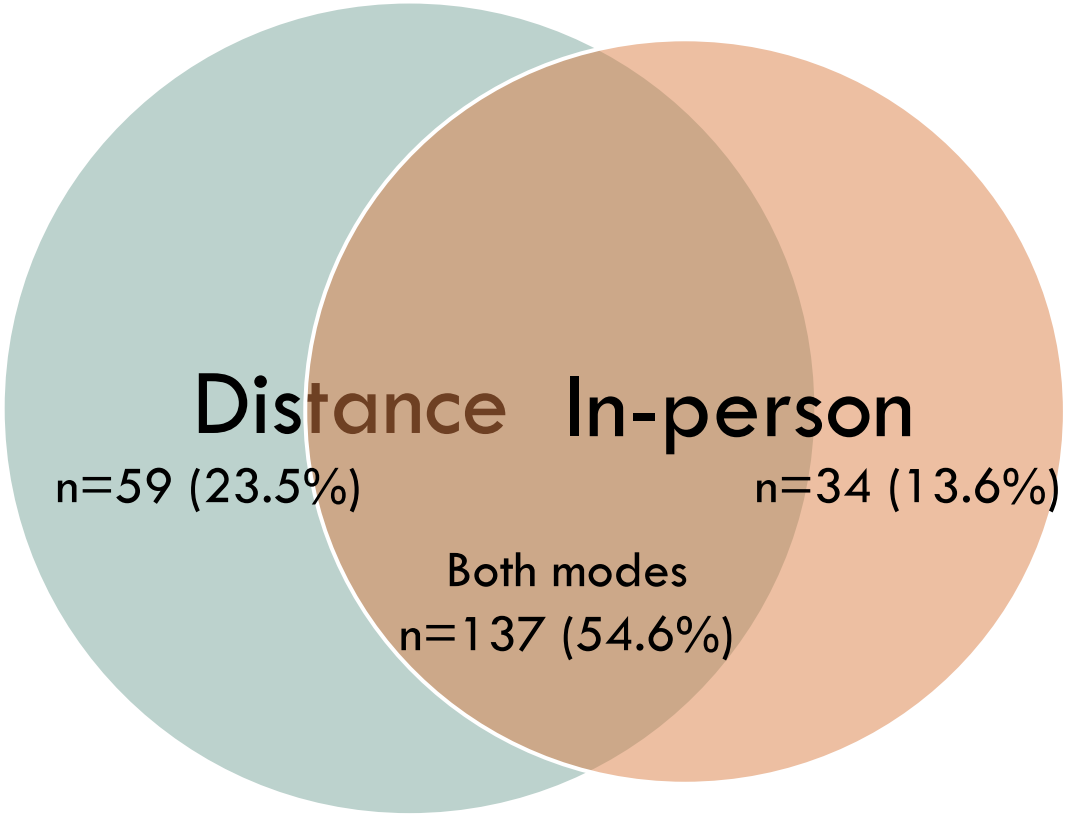
Data source: Cross-region ER data FY 12-13

FY12-13 Telehealth Center Training Modality

Training modality	N	%
Mixed modes	164	65.3
Single modes		
Chart/case review only	23	9.2
Computer-based only	14	5.6
Lecture/Workshop only	10	4.0
Webcast/Webinar only	10	4.0
Conference-call/Telephone only	8	3.2
Telemedicine only	1	0.4
Clinical preceptorship only	0	0.0
Role Play only	0	0.0
Self-study only	0	0.0
Unspecified mode	21	8.4

Data source: Cross-region ER data FY 12-13

FY12-13 Telehealth Center Training Mode Type



Mode not specified for n=21 (8.4%) Telehealth trainings.
Distance mode includes computer-based, conference call, telemedicine, webcast/webinar.
In-person mode includes chart/case review, clinical preceptorship, lecture/workshop, role play.
Data source: Cross-region ER data FY 12-13

FY12-13 Telehealth Center Training Topic Coverage (N = 251)

Event Record Topic Coverage (ER question 4)	ER topic numbers included	N trainings	%
Clinical Management	#1-16	209	83.3
Health Care Organization and Delivery Issues	#17-28	104	41.4
Prevention and Behavior Change	#29-31	67	26.7
Psychosocial Issues	#32-33	103	41.0
Targeted Populations	#34-44	104	41.4

- A mean of 8 topics were covered at Telehealth events (SD = 6.1; range: 0-29).

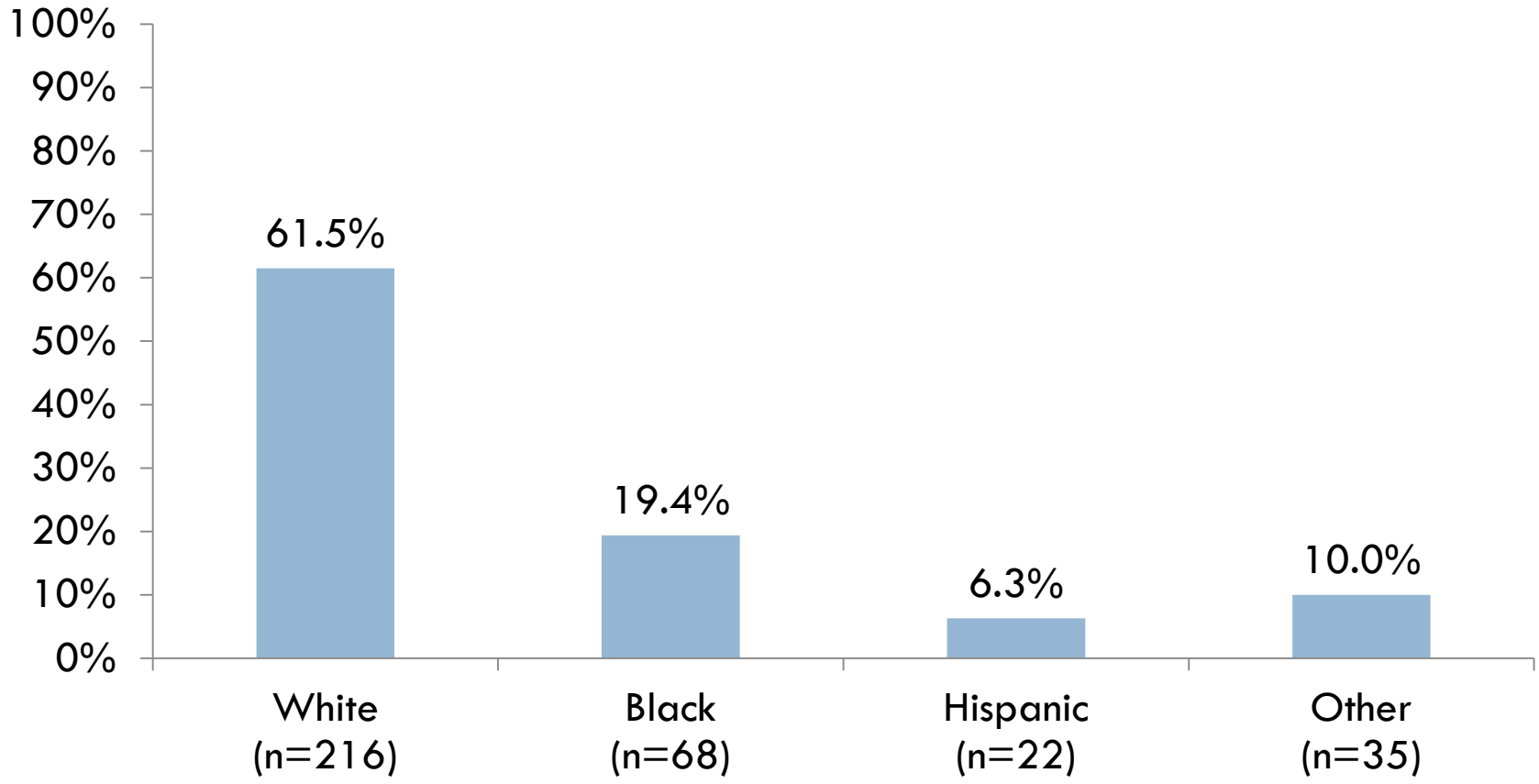
Topic coverage not mutually exclusive.
Data source: Cross-region ER data FY 12-13.

FY12-13 Telehealth Center Training Characteristics (N = 251)

- Over half of the Telehealth trainings (n=127; 50.6%) had Minority AIDS Initiative funding.
  - No other funding initiatives were indicated.
- Collaborations included:
  - Other AETCs (n=30; 12.0%)
  - Other training centers (n=5; 2.0%)
  - Other agencies (n=18; 7.2%)

Data source: Cross-region ER data FY 12-13

FY12-13 Telehealth Center Trainee Race/Ethnicity (N=351)



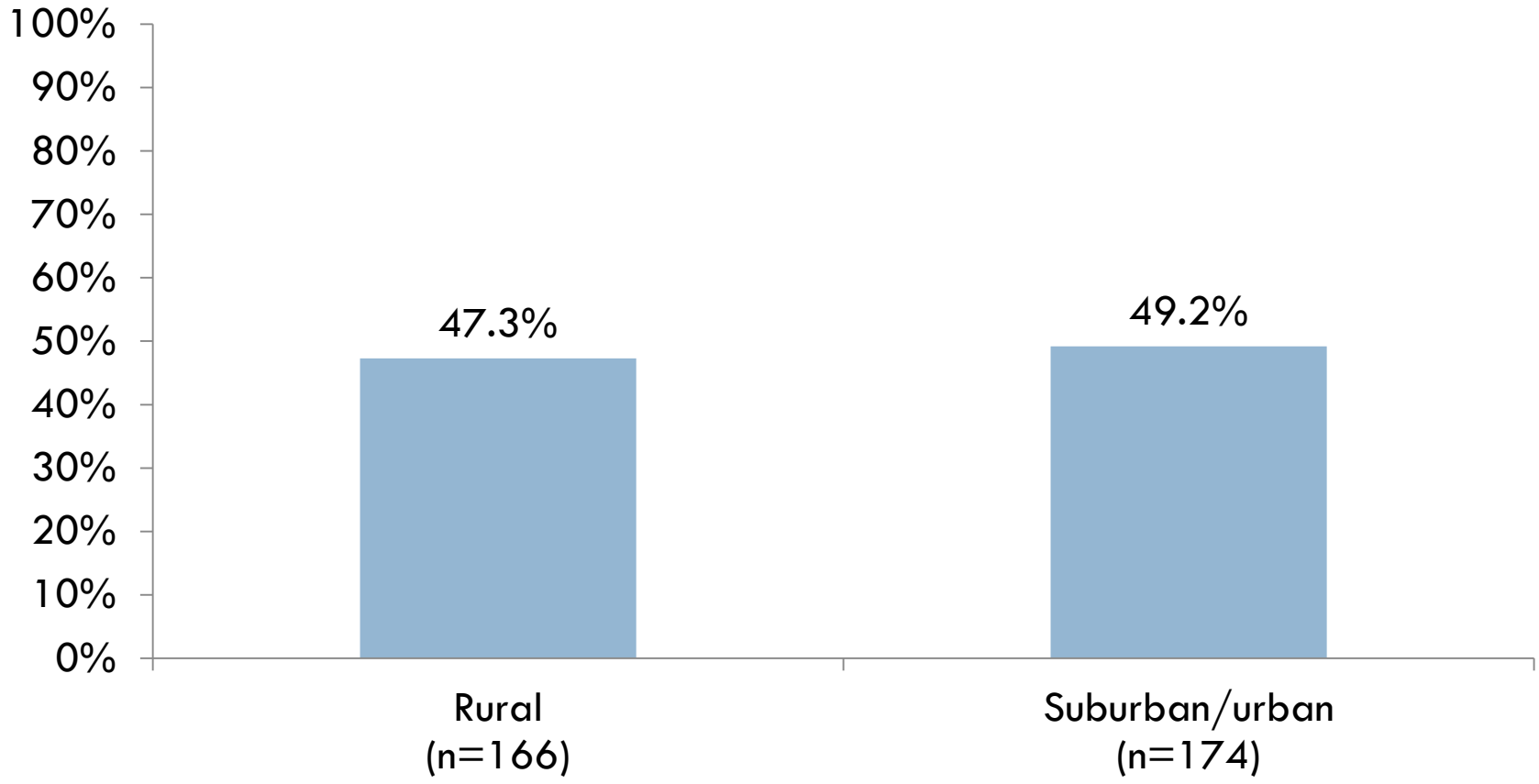
Other includes American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and Multiracial.
Unknown race/ethnicity (n=10) not shown but included in calculation.
Data source: Cross-region ER-PIF data FY 12-13. Last record included among repeat trainees.

FY12-13 Telehealth Center Trainee Principal Employment Setting (N=351)

Top 10 Principal Employment Settings	N	%
Community Health Center	120	34.2
Academic Health Center	52	14.8
State/Local Health Department	32	9.1
Rural Health Clinic	20	5.7
Private Practice	19	5.4
Hospital/ER	17	4.8
Community-Based Organization	16	4.6
Correctional Facility	14	4.0
HIV Clinic	13	3.7
Hospital-Based Clinic	11	3.1

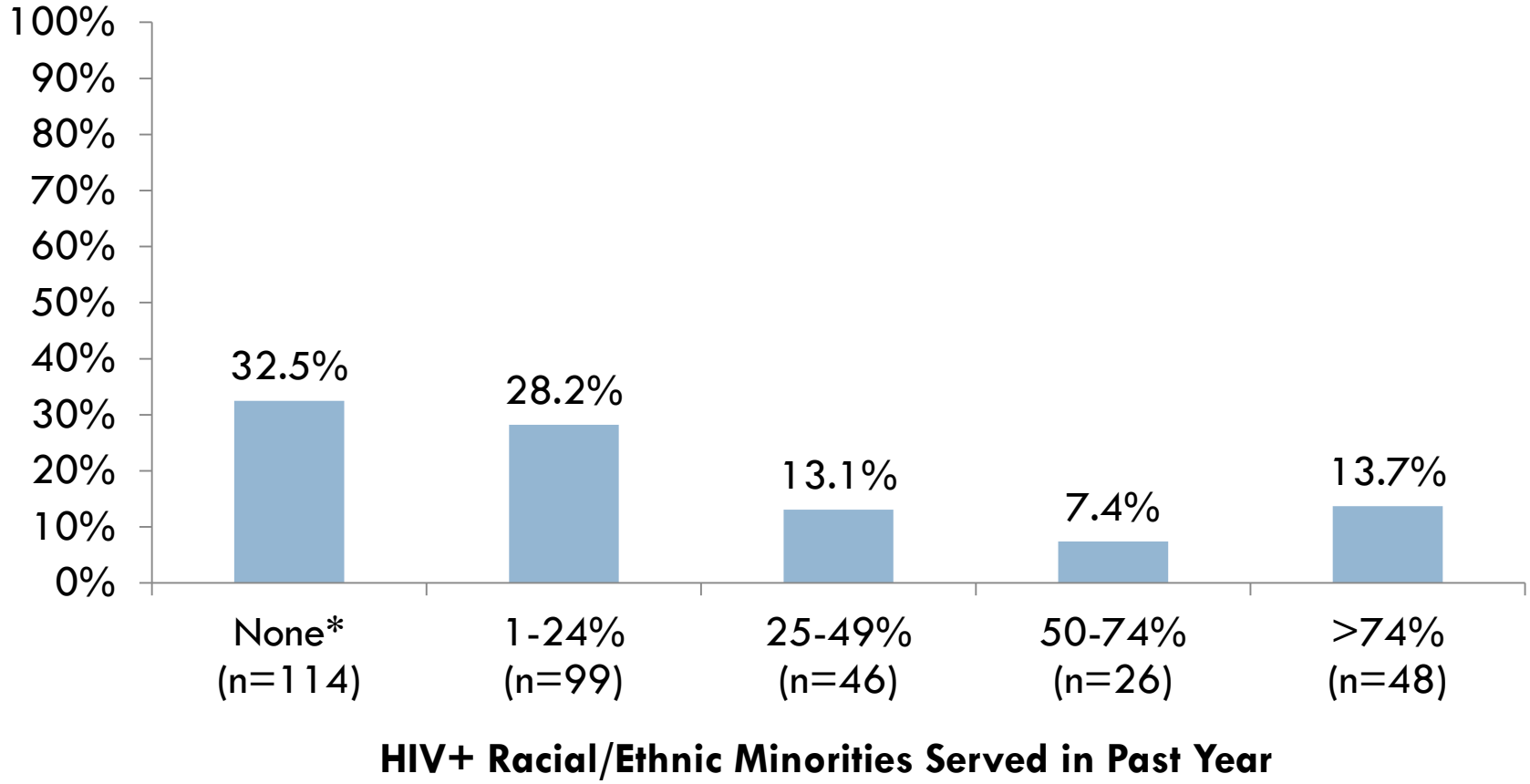
Other settings, unspecified and not applicable (because not working) (n=37) not shown but included in calculation.
Data source: Cross-region ER-PIF data FY 12-13. Last record included among repeat trainees.

FY12-13 Telehealth Center Trainee Primary Employment Setting (N=351)



Unspecified and not applicable (because not working) (n=11) not shown but included in calculation.
Data source: Cross-region ER-PIF data FY 12-13. Last record included among repeat trainees.

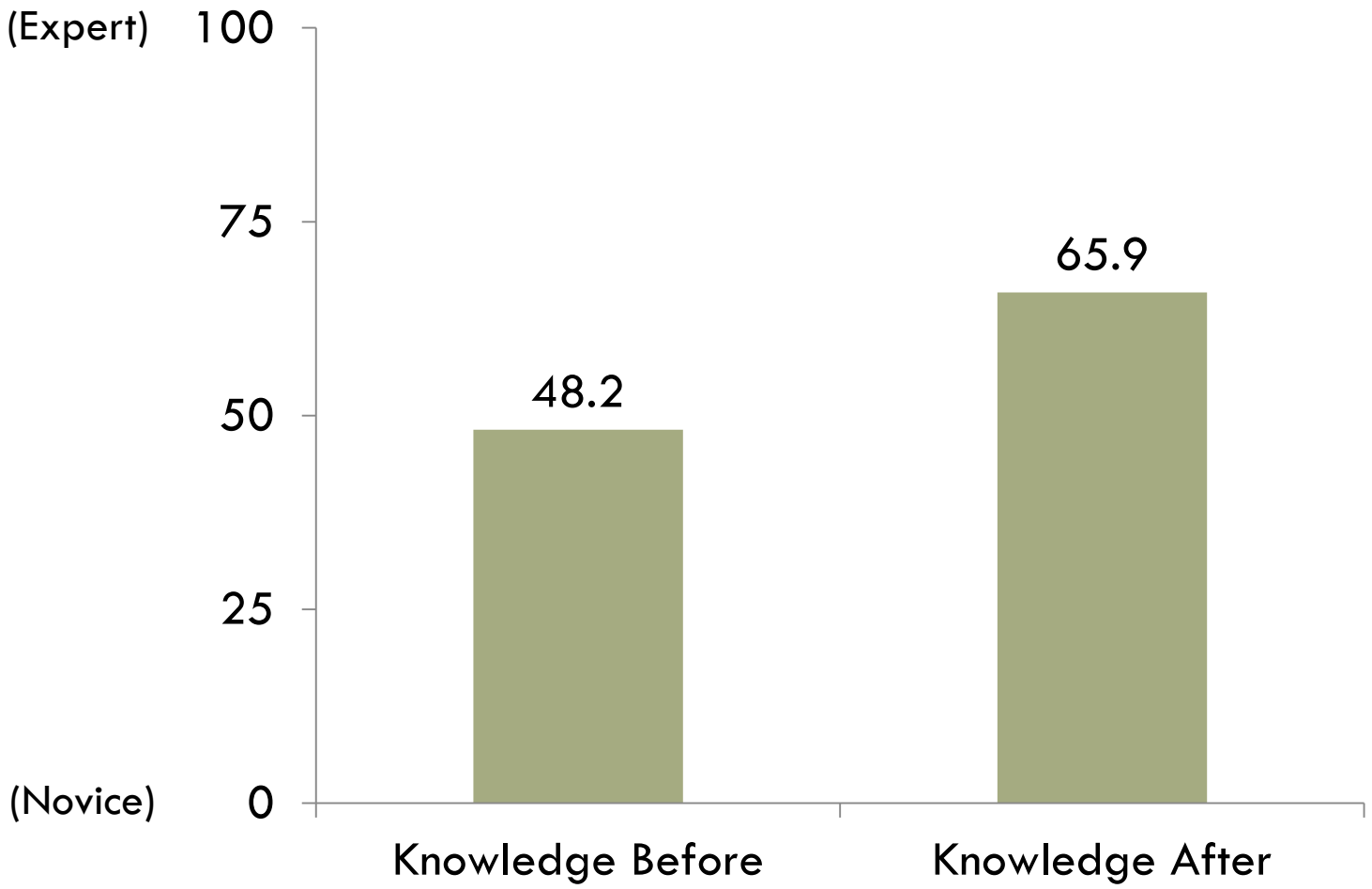
FY12-13 Telehealth Center Trainee Patient Population (N=351)



*None includes those who do not provide direct HIV services.
Unspecified (n=18) not shown but included in calculation.
Data source: Cross-region ER-PIF data FY 12-13. Last record included among repeat trainees.

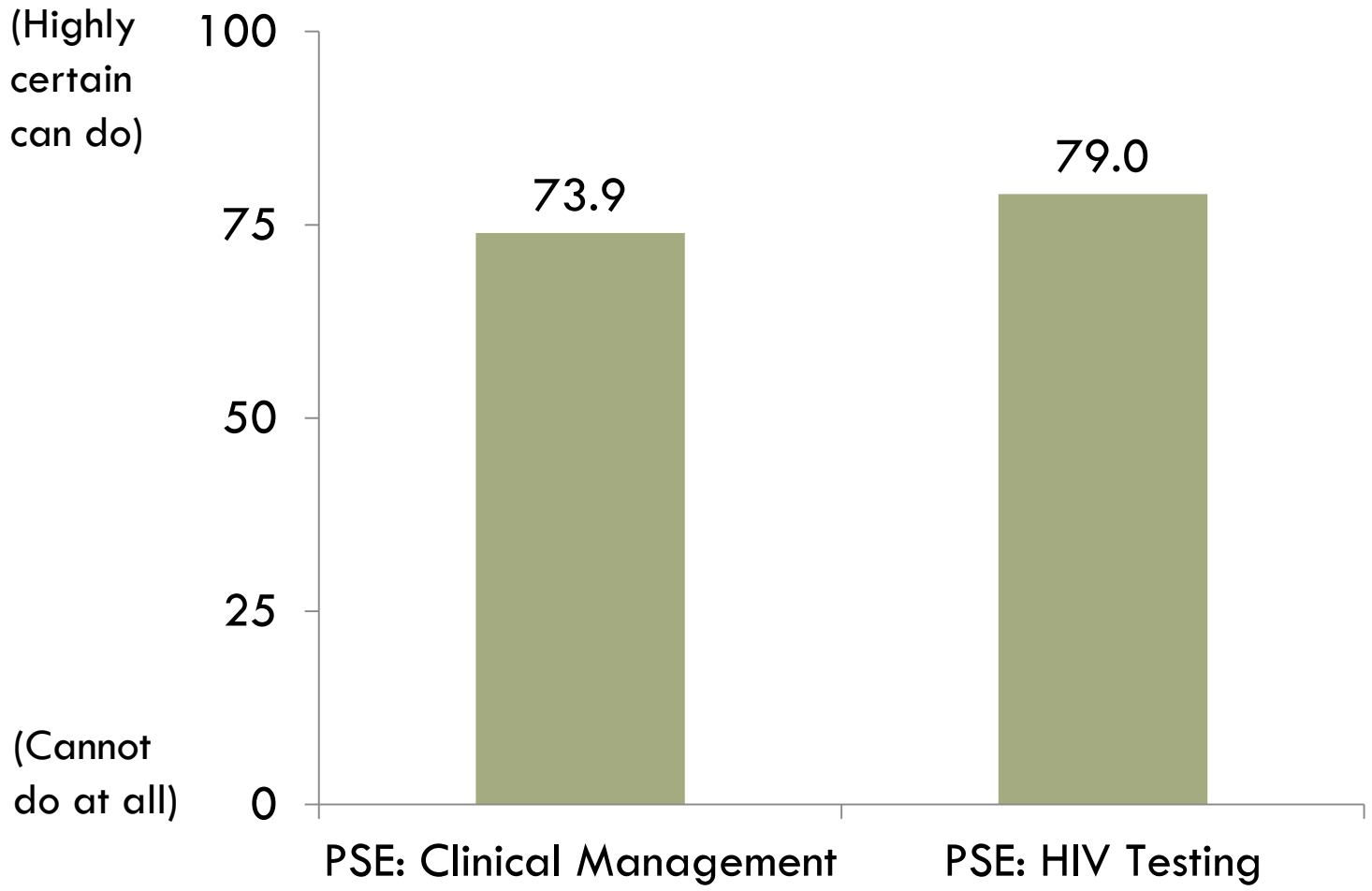
FY12-13 Telehealth Findings: Evaluation

FY12-13 Self-Reported Knowledge Rating Before and After Telehealth Project



Responses re-scaled from 1-5 to 0-100.
Data source: Cross-region Telehealth IP data FY 12-13.

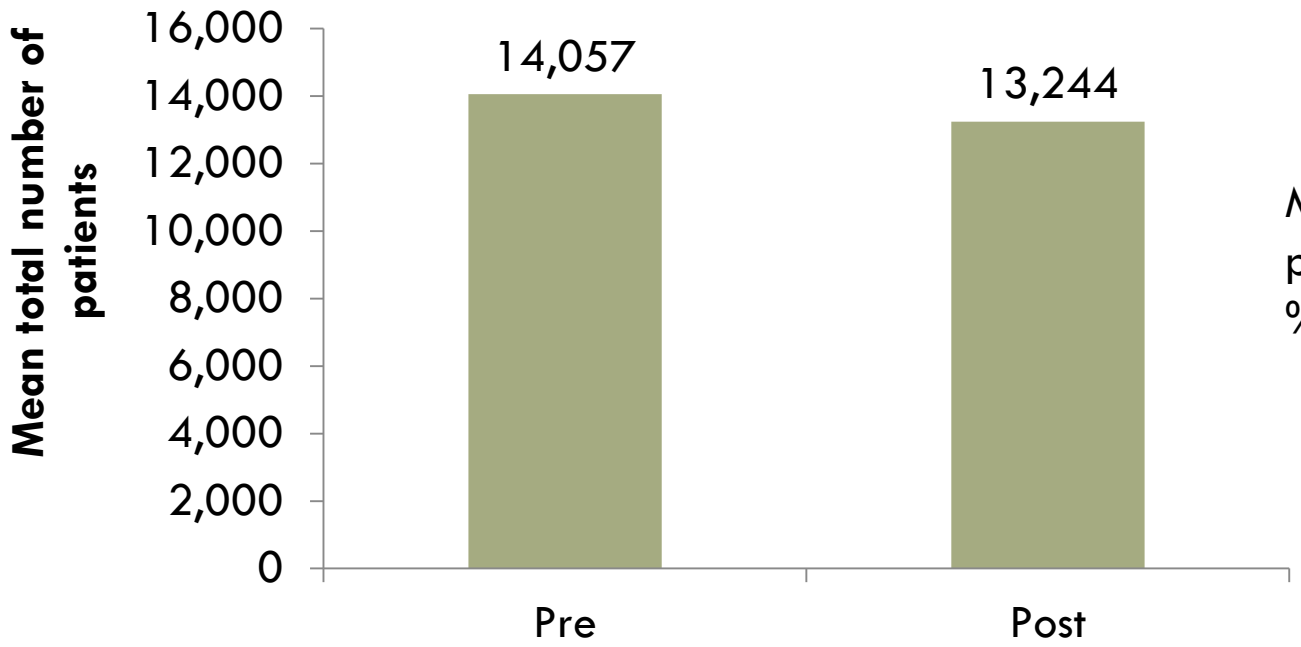
FY12-13 Reported Provider Self-Efficacy After Telehealth Project



Responses re-scaled from 1-10 to 0-100.
Data source: Cross-region Telehealth IP data FY 12-13.

FY12-13 Telehealth Clinic Indicator Results (1a) – HIV Testing

- 1a. Total number of patients aged 13-64 with at least one visit in the calendar year prior to the first Telehealth training/consultation

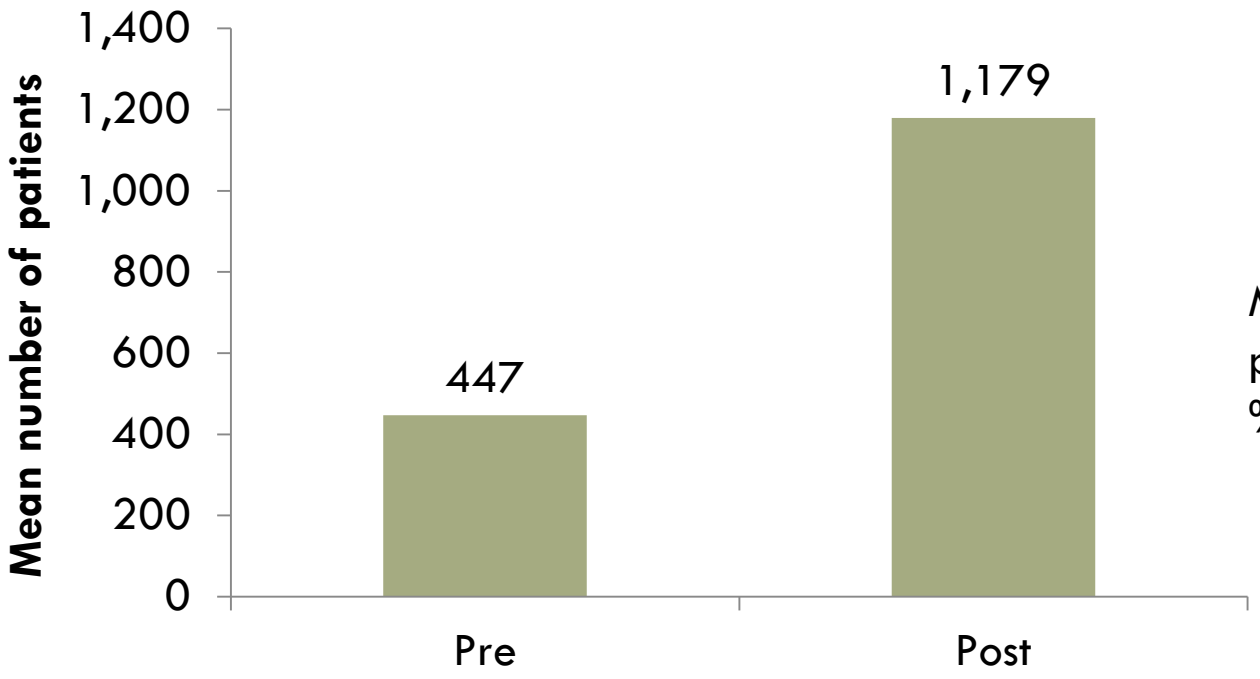


Mean difference: -813
p-value=0.31
% difference: -5.8%

Limited to Telehealth Centers with Pre and Post data available: Northwest AETC ECHO, Pacific AETC HIV Learning Network, and TAPP. Data source: Cross-region Telehealth IP data FY 12-13.

FY12-13 Telehealth Clinic Indicator Results (1b) – HIV Testing

- 1b. Among patients included in *1a.*, the number who received HIV testing

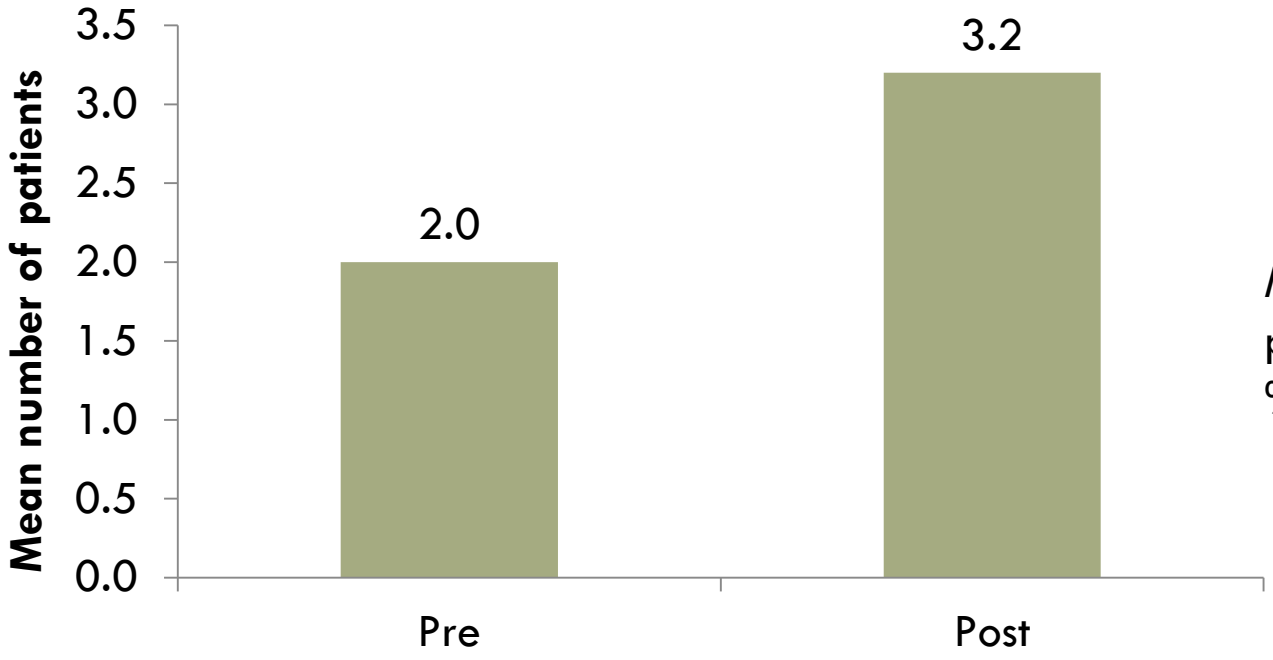


Mean difference:+732
p-value=0.36
% difference: +163.7%

Limited to Telehealth Centers with Pre and Post data available: Northwest AETC ECHO, Pacific AETC HIV Learning Network, and TAPP. Data source: Cross-region Telehealth IP data FY 12-13.

FY12-13 Telehealth Clinic Indicator Results (1c) – HIV Testing

- 1c. Among patients included in *1b.*, the number who tested positive for HIV

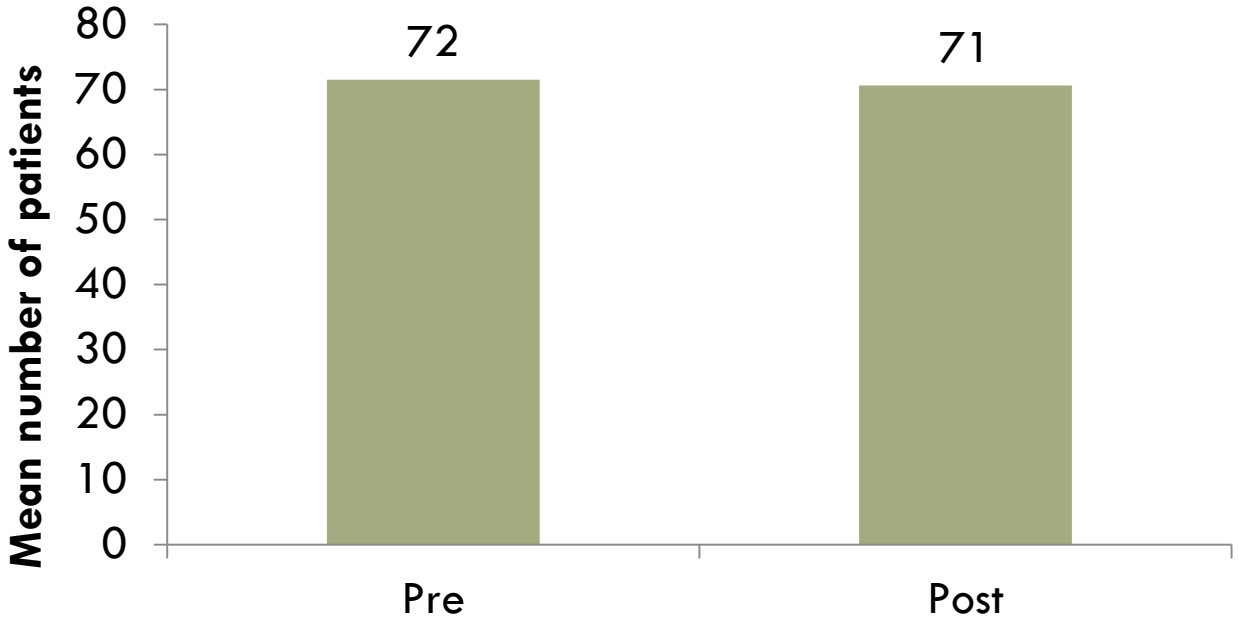


Mean difference: +1.2
p-value=0.33
% difference: +61.1%

Limited to Telehealth Centers with Pre and Post data available: Northwest AETC ECHO, Pacific AETC HIV Learning Network, and TAPP. Data source: Cross-region Telehealth IP data FY 12-13.

FY12-13 Telehealth Clinic Indicator Results (2) – Patients in Care

- The number of HIV-infected patients with at least one visit in the calendar year prior to the first telehealth training/consultation

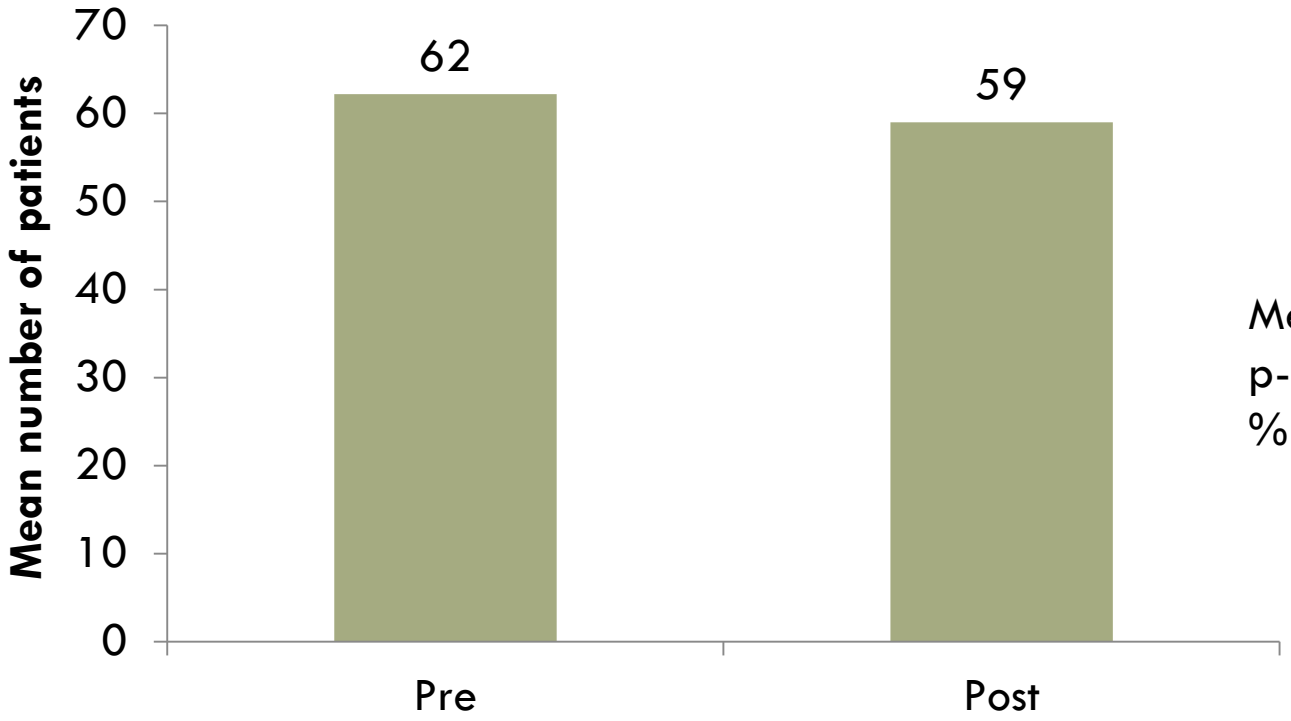


Mean difference: -0.9
p-value=0.84
% difference: -1.3%

Limited to Telehealth Centers with Pre and Post data available: Northwest AETC ECHO, Pacific AETC HIV Learning Network, and TAPP. Data source: Cross-region Telehealth IP data FY 12-13.

FY12-13 Telehealth Clinic Indicator Results (3) – CD4 Count Monitoring

- Among HIV patients in care, the number of patients receiving *at least* 2 CD4 tests in the last 12 months

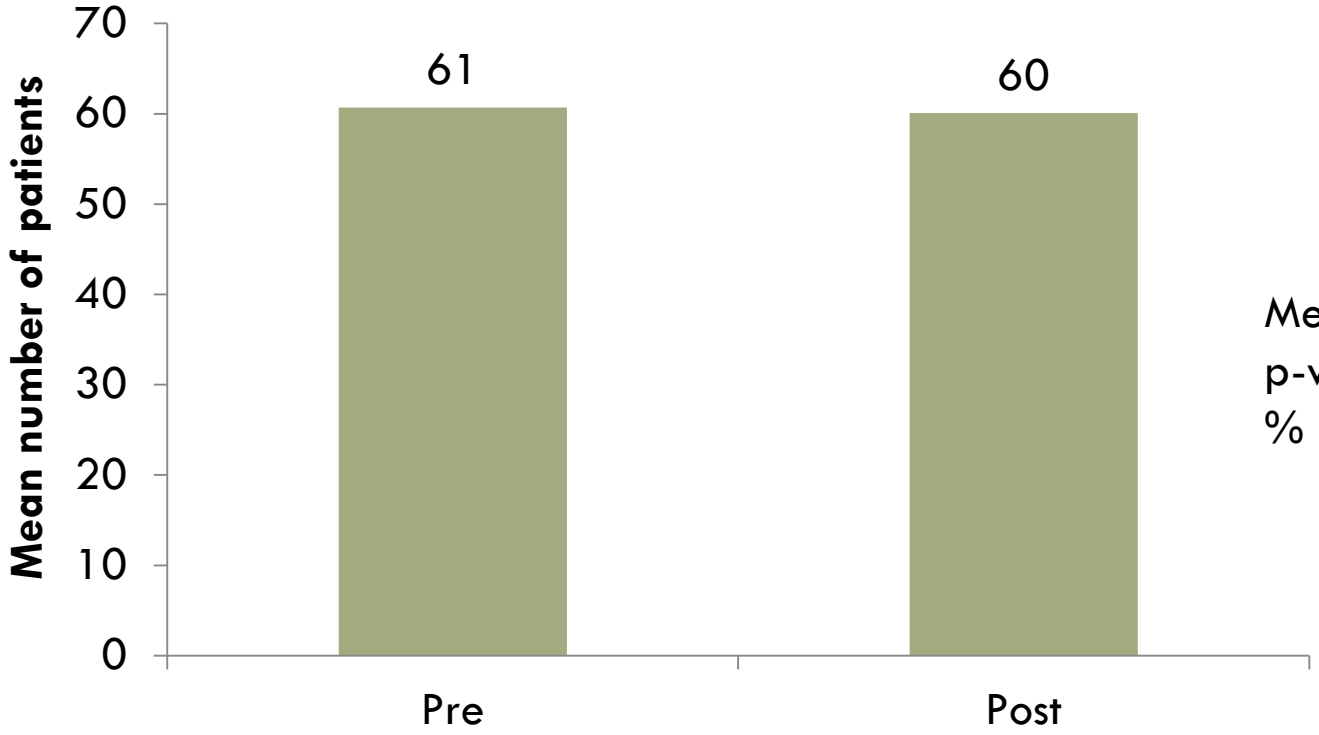


Mean difference: -3.2
p-value=0.74
% difference: -5.2%

Limited to Telehealth Centers with Pre and Post data available: Northwest AETC ECHO, Pacific AETC HIV Learning Network, and TAPP. Data source: Cross-region Telehealth IP data FY 12-13.

FY12-13 Telehealth Clinic Indicator Results (4) – VL Monitoring

- Among HIV patients in care, the number of patients receiving *at least* 2 VL tests in the last 12 months



Mean difference: -0.6
p-value=0.94
% difference: -0.9%

Limited to Telehealth Centers with Pre and Post data available: Northwest AETC ECHO, Pacific AETC HIV Learning Network, and TAPP. Data source: Cross-region Telehealth IP data FY 12-13.

Telehealth Center Evaluation Summary

- Telehealth center evaluation approach differed from other cross-site training evaluations
- Majority of trainings delivered through mixed modes, combining distance and in-person methods
- About half of the trainees practiced in rural settings
- Trainees self-reported greater knowledge and self-efficacy after the Telehealth Center training
- For longitudinal patient care indicators, higher mean numbers reported in the following year for HIV testing and positivity among the 3 Telehealth centers with Pre and Post data available
  - None of the clinic indicators were significantly different

Data source: Cross-region ER and PIF data FY 12/13

Conclusion

- As discussed during the Lit Review, numerous benefits of distance-based learning:
  - Easy access
  - Not bound by geography
  - Flexible timing
- There were some improvements
  - More data is coming in and needs to be analyzed
  - We recommend continuing with Telehealth Center initiatives

Future analyses

- Explore additional questions:
  - Are some trainings or topics more effective in person rather than remotely?
- Additional Telehealth Center Post data will be received
  - Preliminary findings on patient care clinic indicators based on 3 centers
  - Analyses will be expanded to include all Telehealth Centers

Questions?

Comments?

Thank you!