Home-Telehealth vs. In Person Delivery of Evidence Based Psychotherapy for Combat PTSD

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Some Context:
My ‘Work’

My Boat

My Work

Study Background/Rationale

- About 15 to 17% of current Iraq war veterans meet full diagnostic criteria for MH problems such as post-traumatic stress disorder (PTSD) (Hoge et al., 2004).
- ***Exposure Based treatments (PE)*** have good empirical support in treating PTSD (Foa 1997; Schnurr et al., 2007), and have been adopted by the VAMC
- **Many Veterans and Active Duty Personnel face obstacles (stigma, logistical) in receipt of this treatment.**
- **It is therefore important to employ treatment delivery methods that address these obstacles and maximize the likelihood that all veterans who need treatment receive treatment**
- ***Home Based Telemedicine Meets this Need and can demonstrate ability to reach active duty and veteran populations "where they're at"***

TWO Studies: Research Question(s)/Hypotheses

AIMS

- Compare delivery of Behavioral Activation/Therapeutic Exposure In Person vs. Home-Based Telemedicine
- Compare delivery of Prolonged Exposure In Person vs. Home-Based Telemedicine

HYPOTHESES

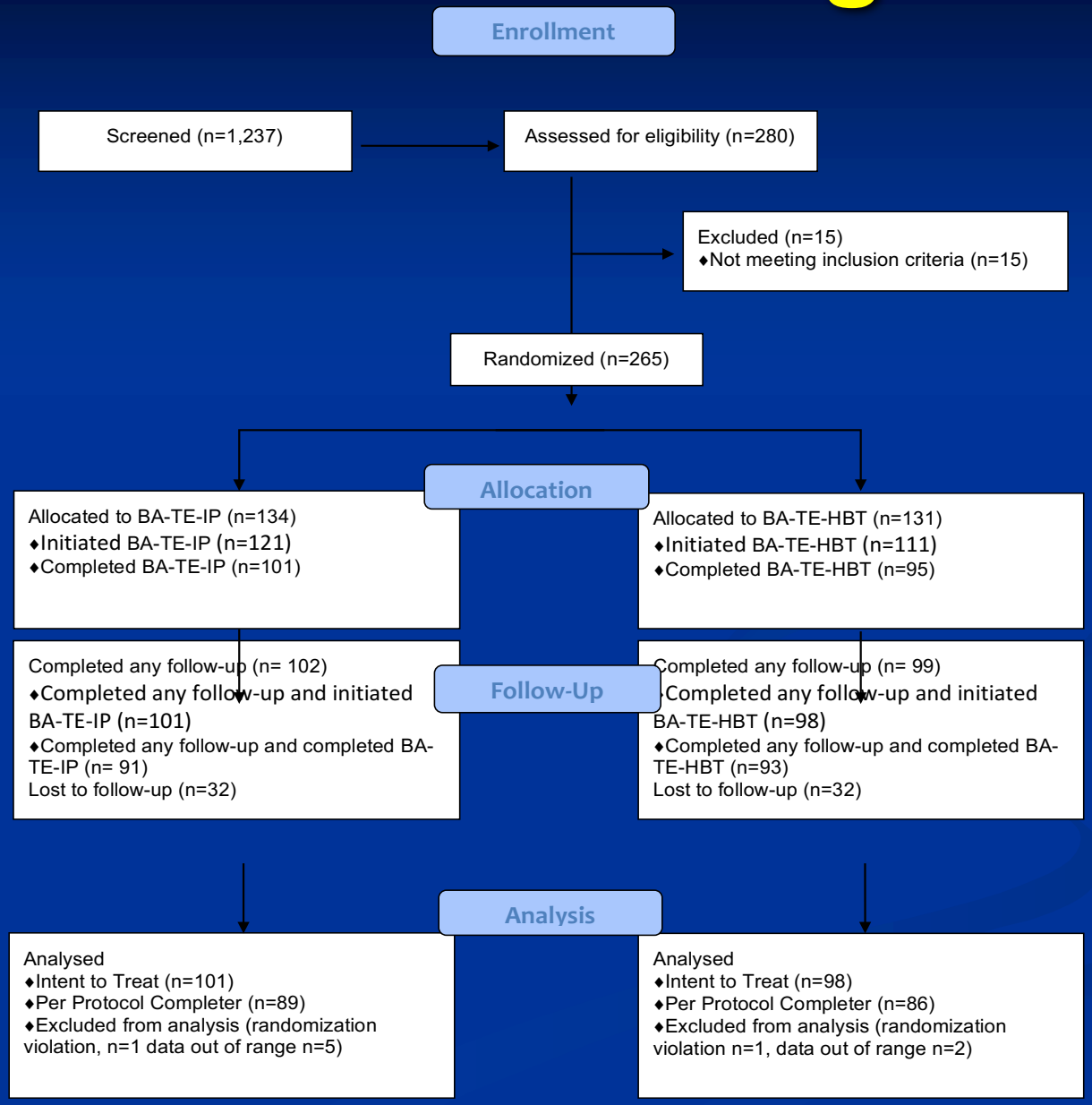
- Treatment delivered via home based telemedicine mediums will be 'as good as' in person treatment for PTSD and depression symptom relief.

- Participants in the Telepsychology treatment conditions will
  - incur lower costs
  - report greater satisfaction with treatment
  - evince lower attrition

Design and Methodology

- **Design:** RCT, Non-Inferiority, repeated measures (pre, post, 3 &6 month for VA Merit, 12 month for DOD)
- **Participants:;** Combat PTSD, non-psychotic, non suicidal.
- **TX Protocol:**
  - DoD Study: BA-TE: 8, 1.5 hour sessions Behavioral Activation (BA) for depression & Therapeutic Exposure (TE) for PTSD
  - VA Study: PE
- **Measures:** Primary PCL, BDI for PTSD and Depression. Also included are process and cost
- **Statistical Methods***:* The 90% confidence interval (CI) approach was used to evaluate noninferiority of HBT mode of intervention delivery compared to IP mode of delivery. A mixed effects repeated measures longitudinal modelling approach (MMRM) was used to estimate the 90% CI for difference in baseline-adjusted least squares means (treatment effect sizes) at each post-intervention time point

CONSORT Diagram BA-TE

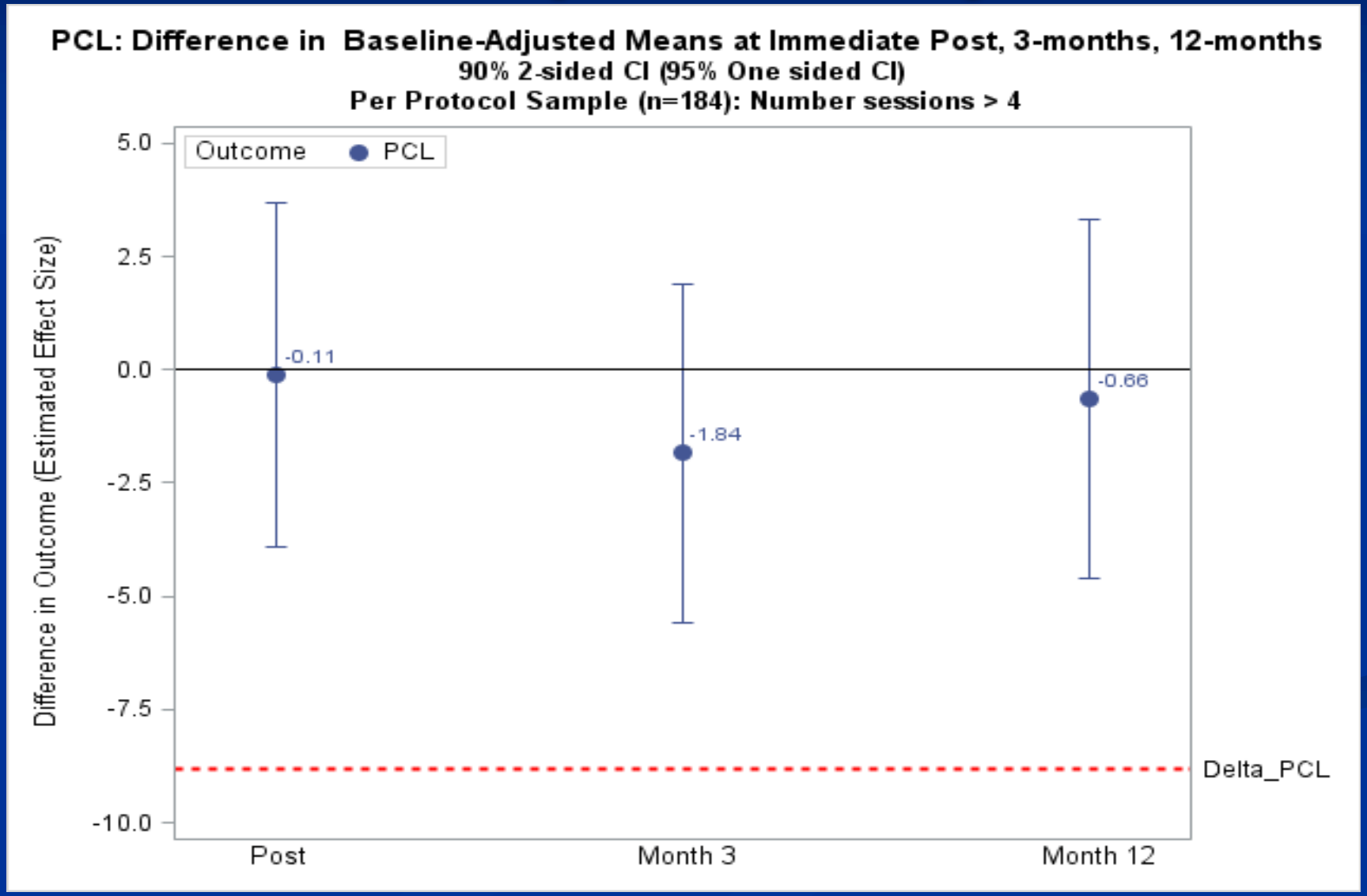


Final Sample Characteristics: BA-TE

Characteristics	N / Mean (SD / %)	Home Based Telemedicine n (%)	Office Based In Person n (%)	t / χ^2, *p*
Mean Age (years)	45.5 (SD=14.8)	46.1 (SD=14.7)	44.9 (SD=15.0)	0.51
Gender (%)				
Male	246 (91.8)	121 (45.7)	125 (47.2)	1.15, 0.48
Female	19 (6.8)	10 (3.8)	9 (3.4)	
Race/Ethnicity (%)				
White	133 (50.2)	68 (56.7)	75 (62.5)	1.14, 0.76
Black	125 (47.2)	58 (21.9)	67 (25.3)	
Hispanic	4 (1.5)	2 (0.8)	2 (0.8)	
Others	3 (1.1)	2 (0.8)	1 (0.4)	
Marital status (%)				
Never married	37 (14.5)	14 (5.5)	23 (9.0)	2.74, 0.43
Married	167 (65.2)	88 (34.4)	79 (30.9)	
Sep./Divorced	48 (18.8)	23 (9.0)	25 (9.8)	
Widowed	4 (1.6)	2 (0.8)	2 (0.8)	
Mean Years Education	12.2 (SD=4.3)	11.9 (SD=4.7)	12.6 (SD=4.0)	1.41, 0.24
Employed (%)				
No	122 (50.8)	62 25.8	60 25.0	1.23, 0.26
Yes	118 (49.2)	54 22.5	64 26.7	
Service Connection Rating	34.6 (SD=38.7)	34.1 (SD=38.5)	35.0 (SD=39.1)	0.86
Baseline CAPS PTSD	203 (77.2)	102 (50.2)	101 (49.8)	1.15, 0.37

- No significant differences on any baseline variables were evident.
- Additionally, attrition was 30% across treatment delivery medium
- Two-variable χ^2 tests and one-way ANOVA revealed no group differences between completers and dropouts in terms of gender, race age, baseline BDI, or PCL scores.

Results: Behavioral Activation and Therapeutic Exposure



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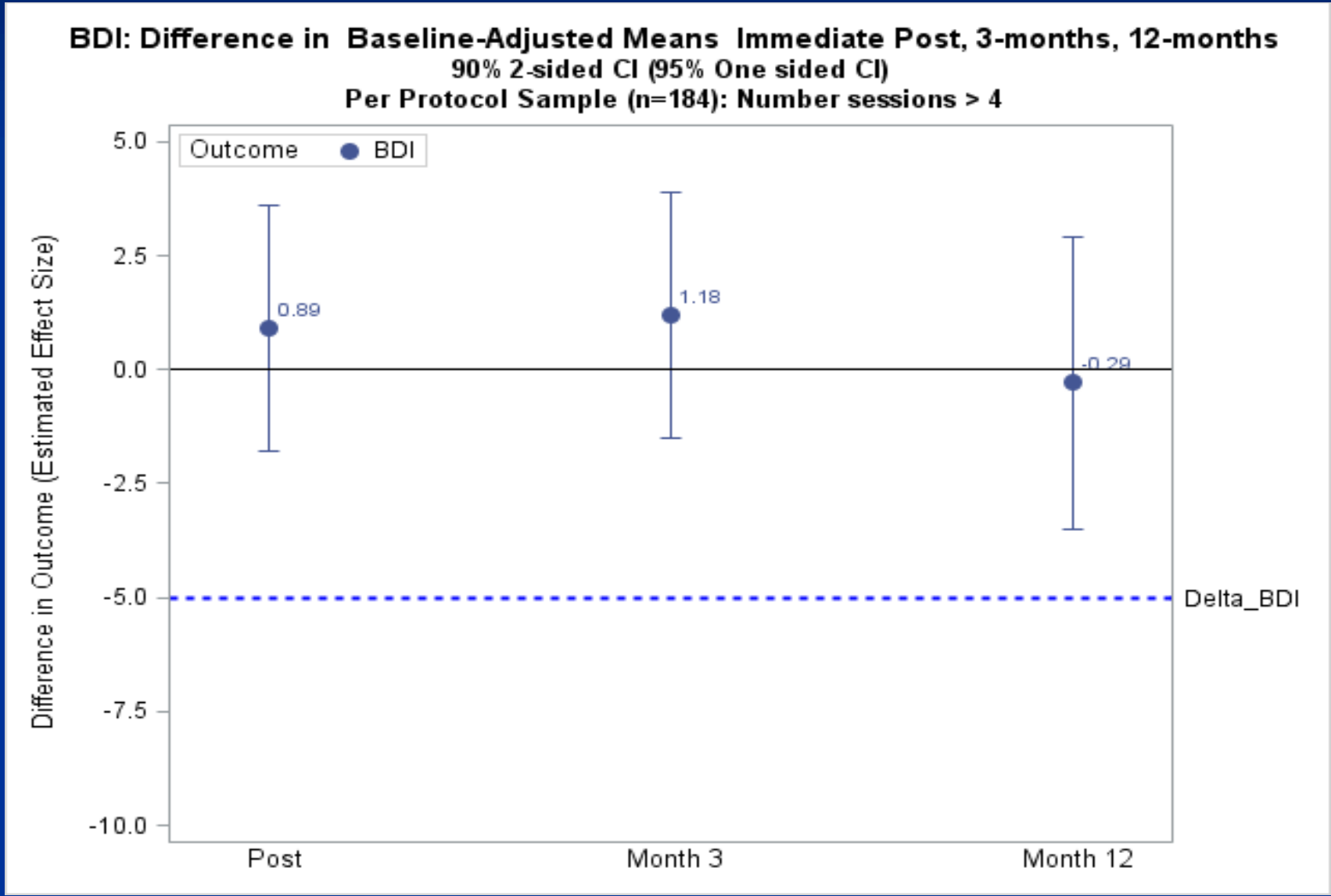
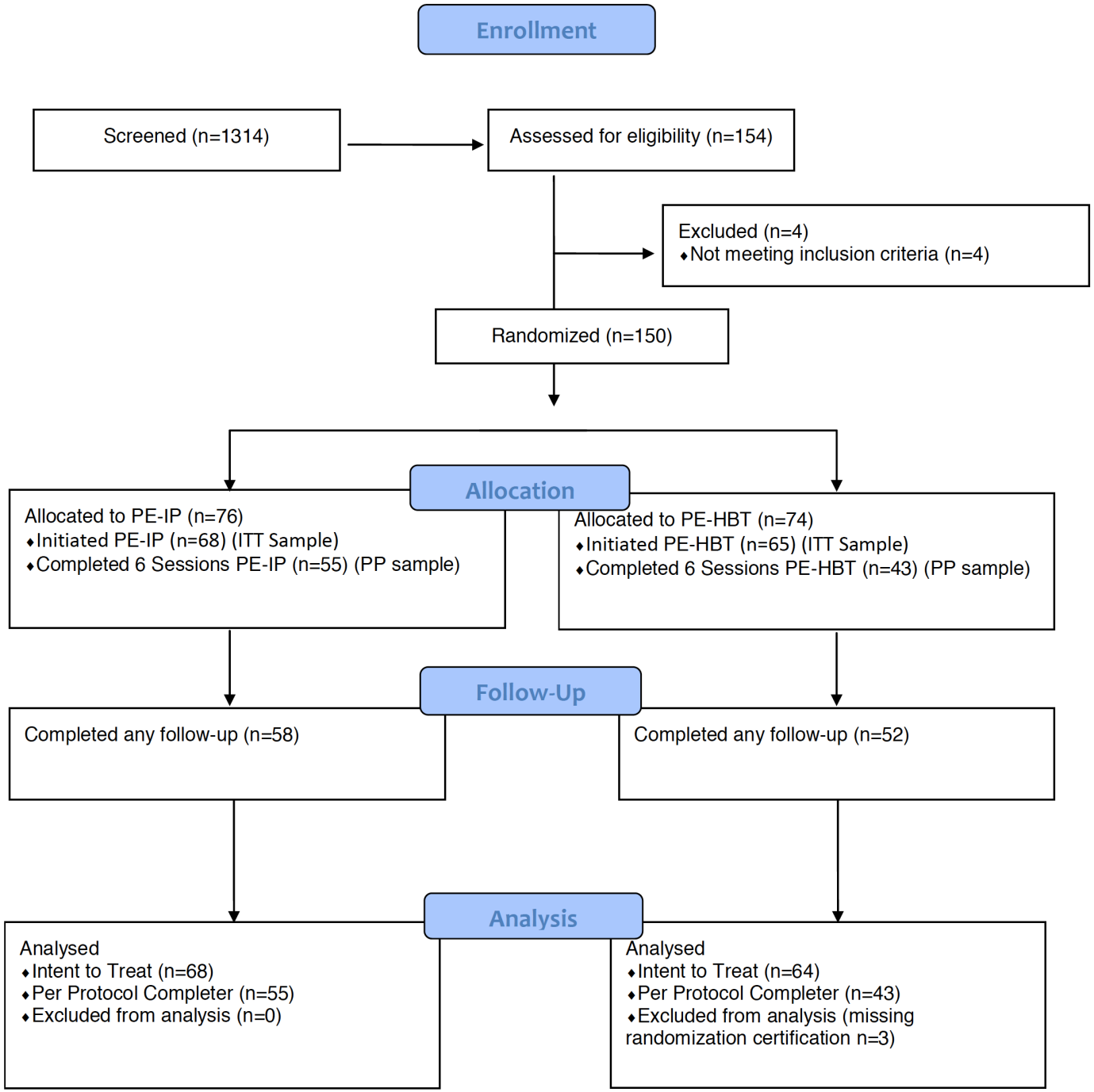


CONSORT 2016 Flow Diagram (PE)

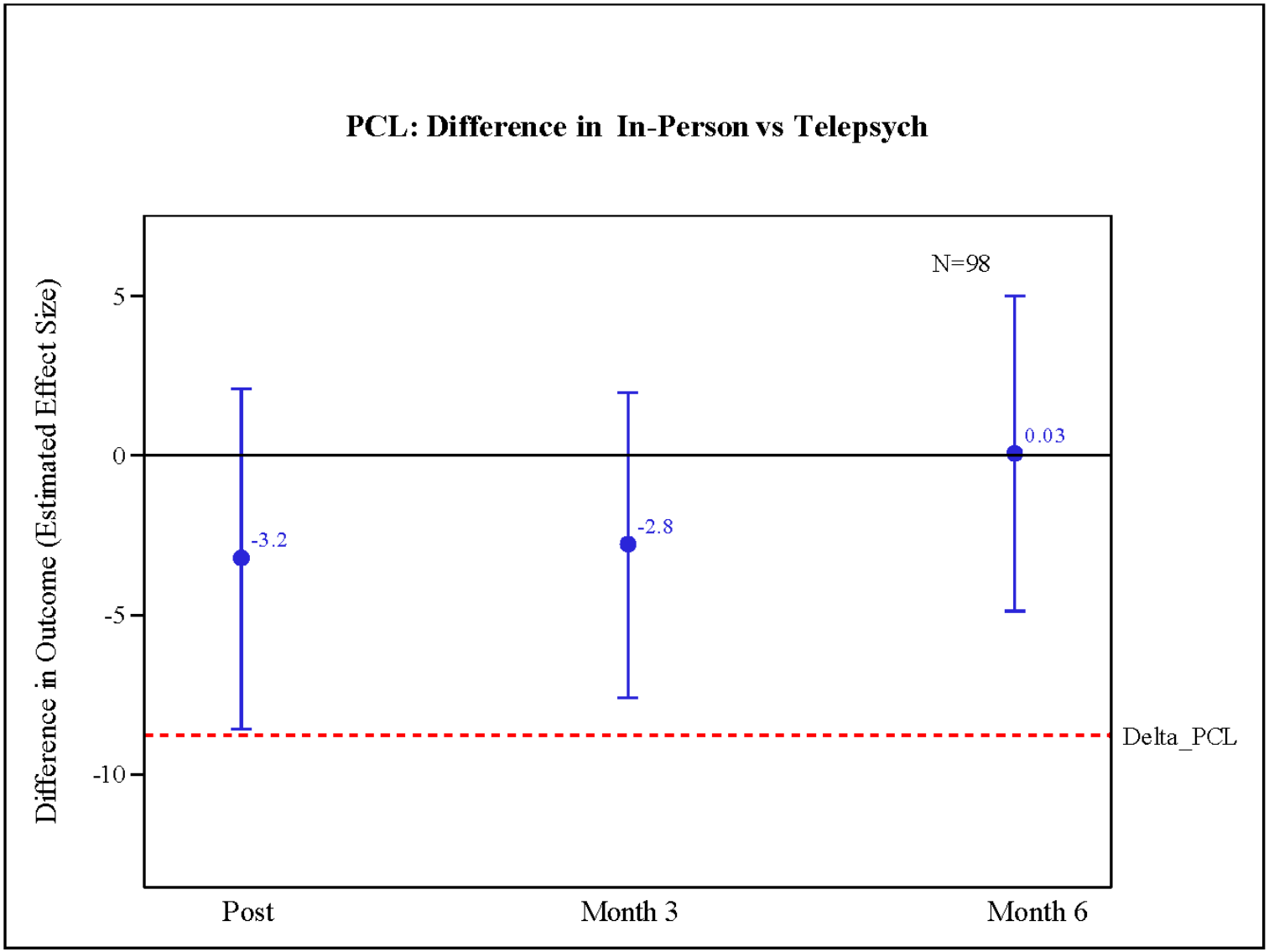


Final Sample Characteristics: PE

Table 1. Sample Characteristics of the Overall ITT Sample Population at Baseline.

Characteristics	Mean / Total N (SD / %)	PE-HBT n (%)	PE-IP n (%)	*F* or X^2, p
Mean Age (years)	41.8 (SD=14.5)	40.7 (SD=14.9)	42.9 (SD=14.1)	0.74, 0.39
Gender (%)				
Male	127 (96.2)	63 (98.4)	64 (94.1)	1.69, 0.20
Female	5 (3.8)	10 (1.6)	9 (5.9)	
Race/Ethnicity (%)				
White	80 (60.6)	39 (60.9)	41 (60.3)	1.16, 0.76
Black	44 (33.3)	21 (32.8)	23 (33.8)	
Hispanic	7 (5.3)	4 (6.3)	3 (45.4)	
Others	1 (0.8)	0 (0.0)	1 (1.5)	
Marital status (%)				
Never married	30 (23.3)	15 (23.8)	15 (22.7)	0.32, 0.96
Married	73 (56.6)	36 (57.1)	37 (56.1)	
Sep./Divorced	23 (17.8)	11 (17.5)	12 (18.2)	
Widowed	3 (2.3)	1 (1.6)	2 (3.0)	
Education (Years)	12.4 (SD=4.6)	12.2 (SD=4.9)	12.5 (SD=4.4)	0.09, 0.76
Employed (%)	55 (49.1)	26 (48.1)	29 (50.0)	0.04, 0.50
Baseline PCL	59.2 (11.2)	60.1 (11.3)	58.3 (11.1)	0.84, .36
Basline BDI	27.7 (12.1)	27.5 (13.0)	27.9 (11.4)	0.01, .87
Mean Service Connection Rating	53.5 (SD=37.9)	55.8 (SD=35.7)	51.4 (SD=40.2)	0.32, 0.57

Results: Prolonged Exposure (per protocol N = 98)



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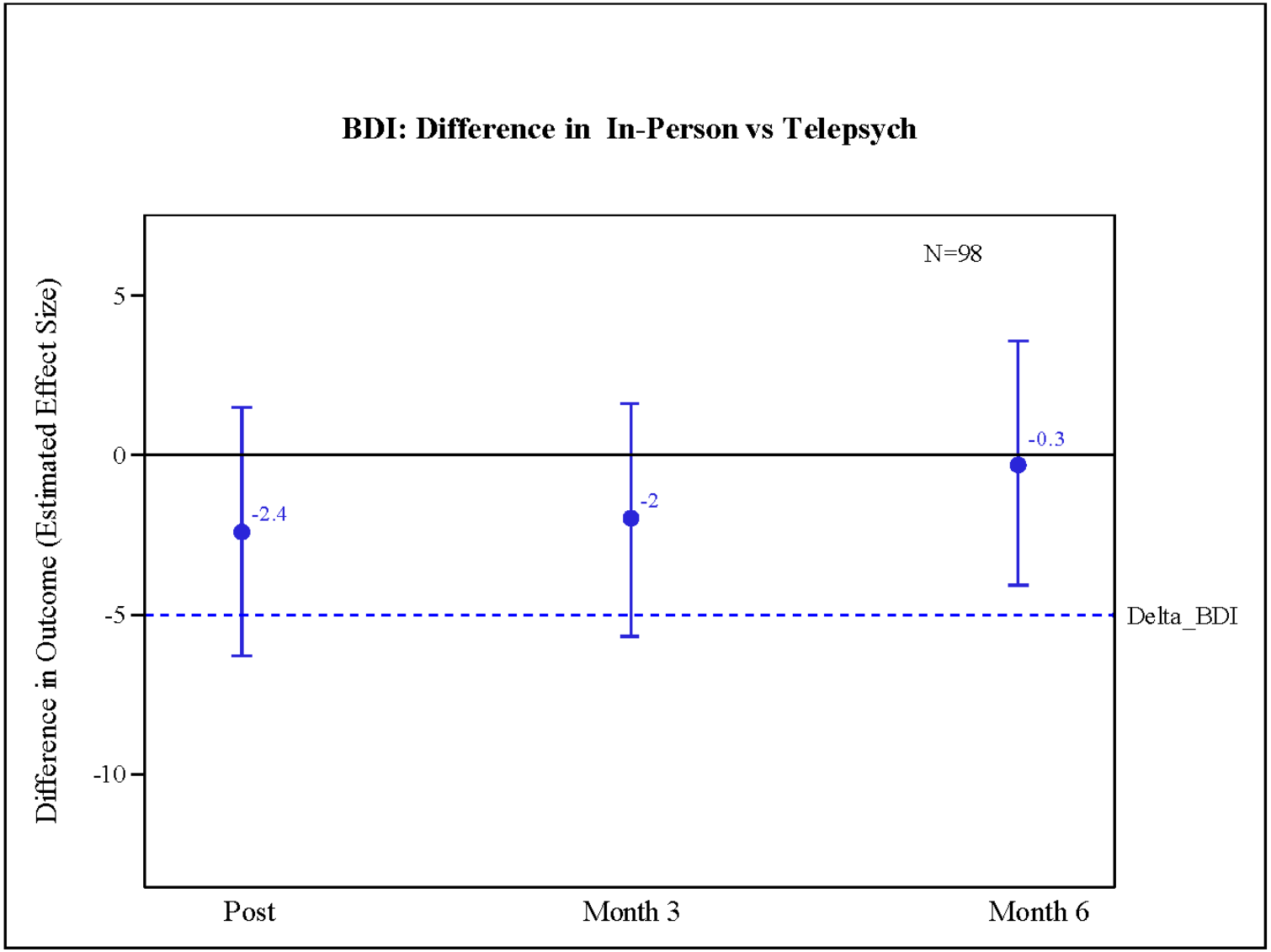
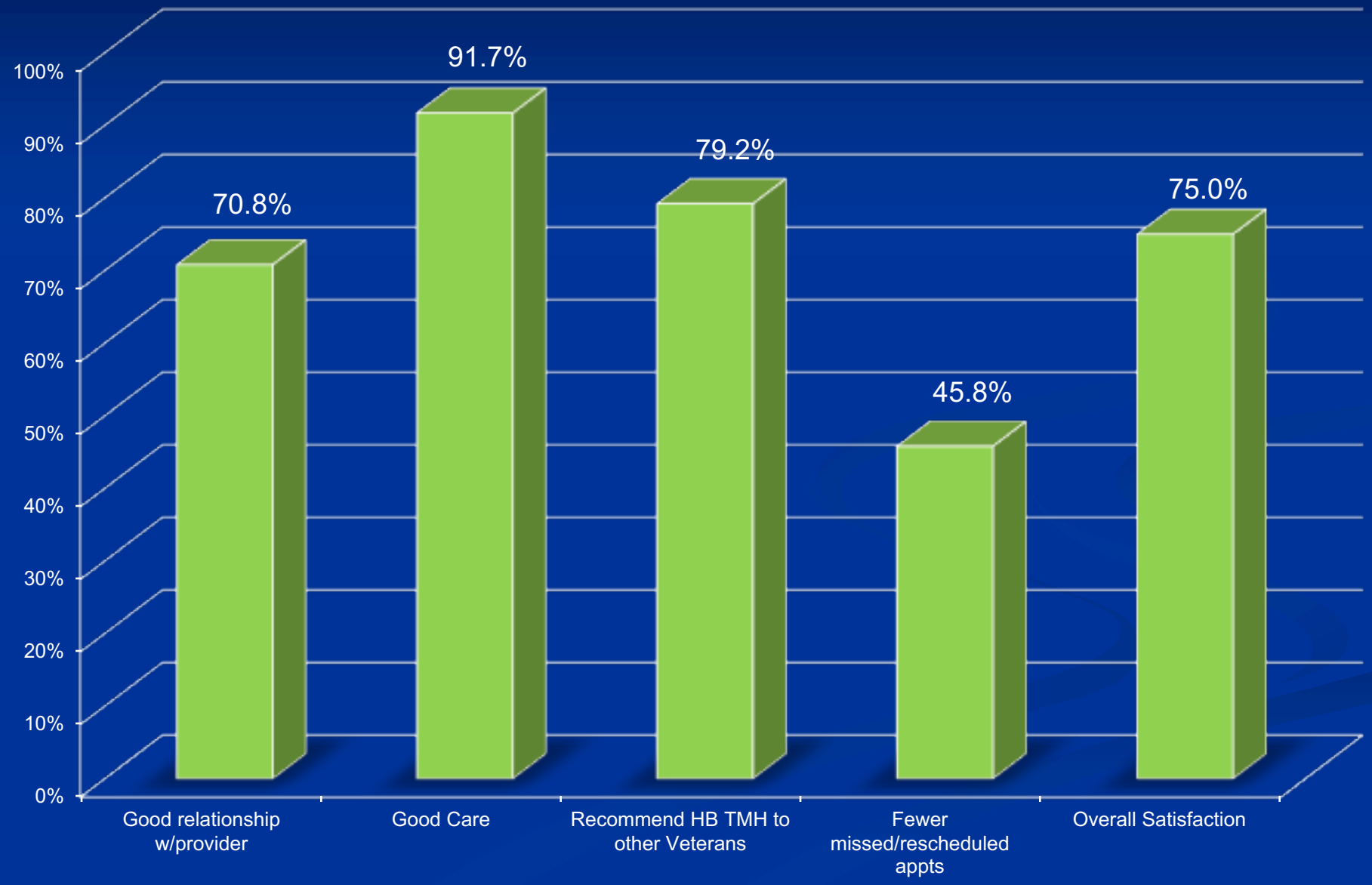


Switching Gears:

Satisfaction
Cost
Dropout

Satisfaction



Cost

- Costs of the intervention include
  - therapist
  - VA clinic space
  - mileage cost for face to face and all but mileage cost for telehealth.
- Benefits include
  - differences between post and pre intervention inpatient costs
  - outpatient costs
  - pharmaceutical VA costs
  - mileage savings for telehealth patients.
- Costs and benefits were adjusted to 2016 dollar values using the U.S. Department of Labor Consumer Price Index.

Cost-Benefit of PTSD Telehealth treatment in Veterans

- Student t tests were used to examine unadjusted differences in total cost and total benefits of the telehealth PTSD treatment relative to face to face.
- The cost of the intervention per Veteran was then compared with the estimated annual benefit per Veteran for the PTSD telehealth intervention relative to face to face.
- 100 Veterans were randomized to each group with 51 in face to face and 49 in telehealth.

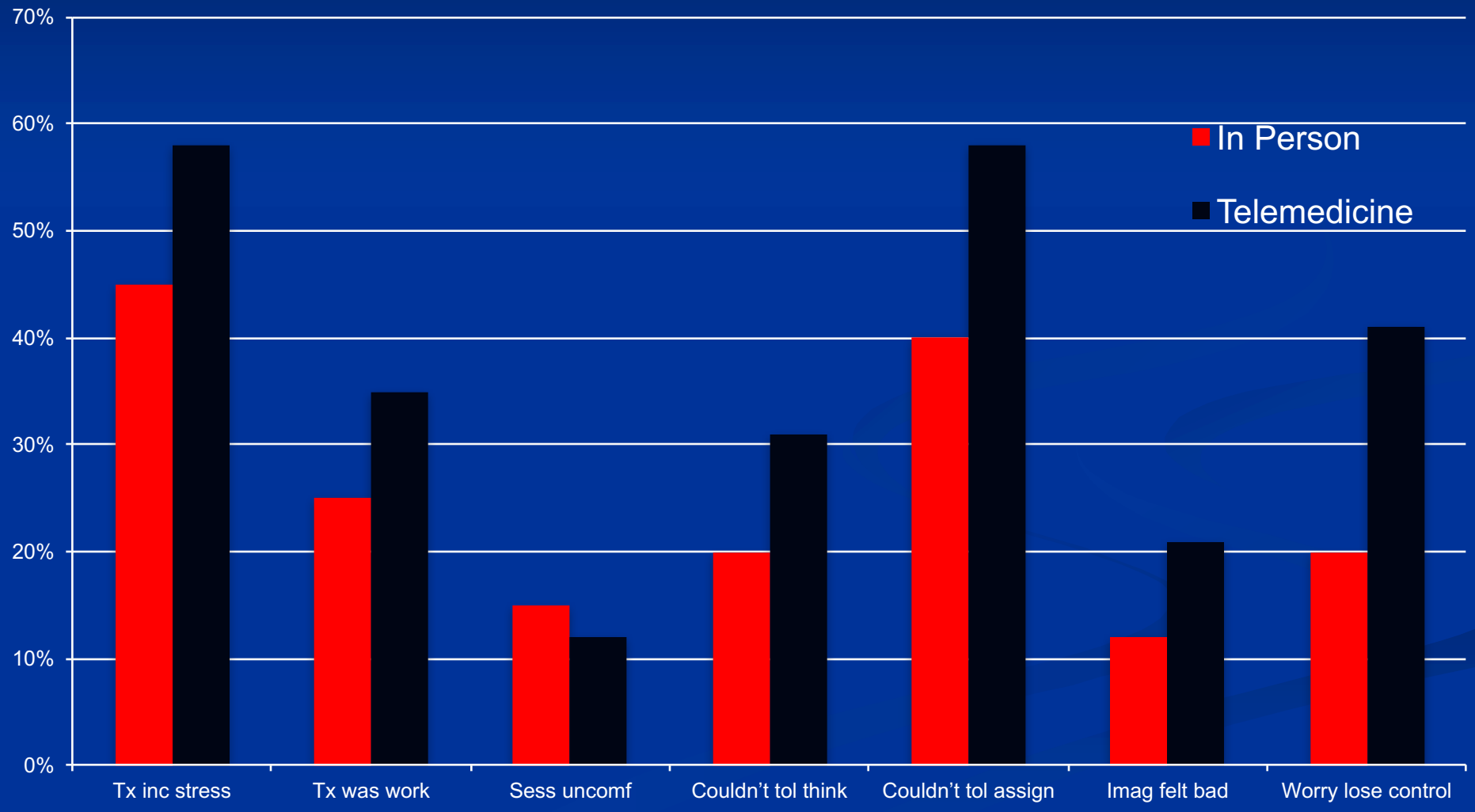
Cost-Benefit of PTSD Telehealth treatment in Veterans

- The estimated total cost of the PTSD intervention per Veteran was not significantly different between telehealth ($457) and face to face ($474).
- The unadjusted estimated mean benefit (total cost difference and mileage between post and pre intervention) for telehealth relative to face to face was $3,640.
- The telehealth intervention appears to be extremely cost effective for PTSD with a negligible difference in the cost and a very large benefit for the VA in reduced healthcare costs and mileage.

Dropout: A slightly disturbing trend

- Dropout was the same for both conditions: about 25% in BA=TE and about 20% in PE.
- Non sig, but a higher proportion of telemed participants *consistently* reported more problems with exposure therapy procedures

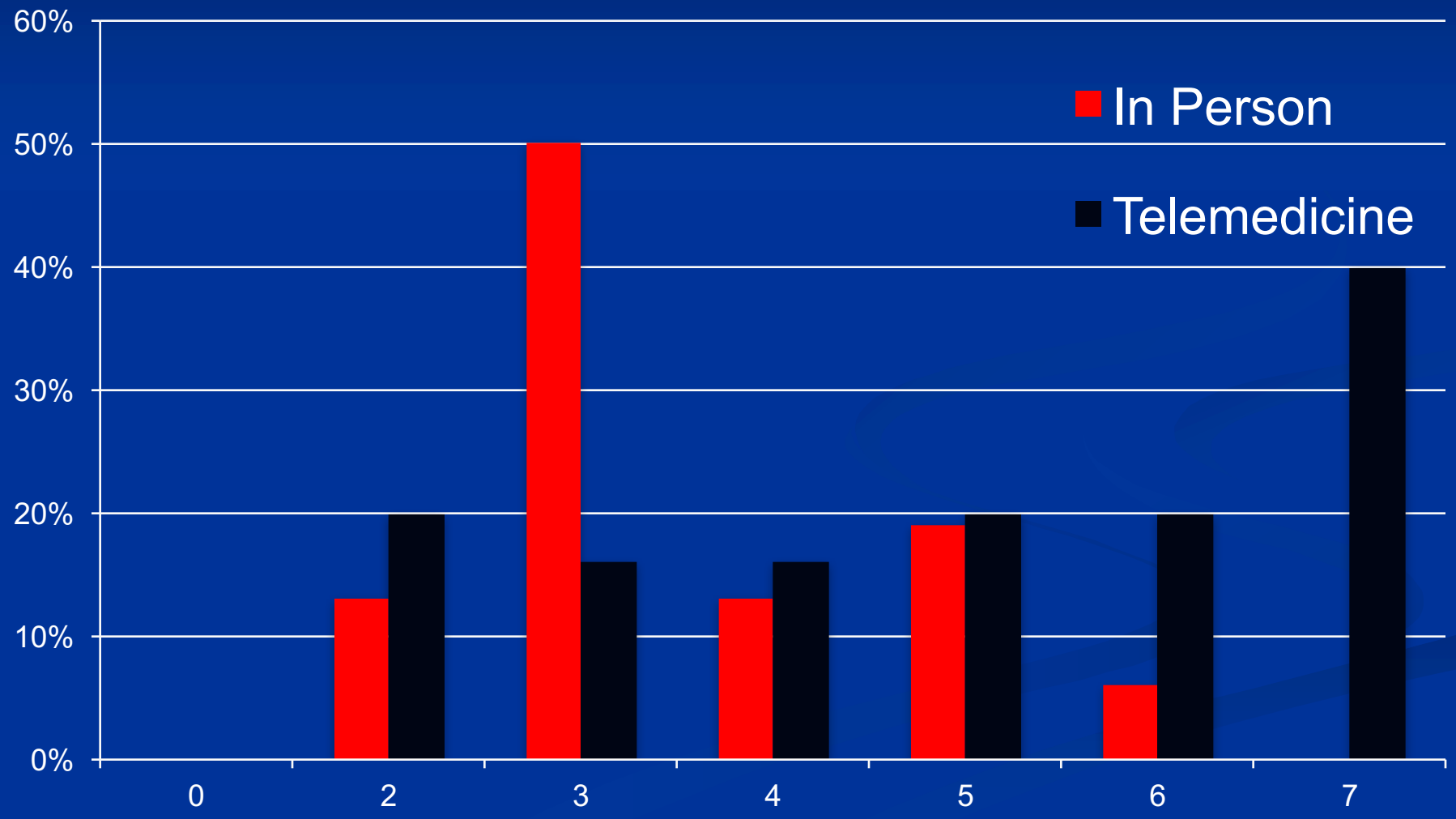
BTPS SUBCATEGORY 2: TREATMENT DEMANDS; ITEM LEVEL ILLUSTRATION



But…On the positive side…

- Dropout was delayed in the telemedicine group.

NUMBER OF SESSIONS UNTIL DROPOUT



Summary:

Hypothesis: Telemedicine will be associated with lower dropout rate

- Was not supported, and NO differential rate of dropout was observed.
- **HOWEVER, Participants receiving exposure therapy via telemedicine *tended to complete more sessions* prior to dropping out.**

Summary

Hypothesis: Telemedicine participants will report fewer problems, less discomfort, and lower cost treatment than In Person participants

- No statistically significant differences in tx demands were observed across conditions.
- However, AMONG DROPOUTS, some non-significant differences:
  - 11.8% of in person vs. 21.1% of telemedicine reported imaginal exposures made them feel bad.
  - 20.0% of in person vs. 41.2% of telemedicine reported feeling worried about losing control during exposure;
  - 40.0% of in person vs. 58.3% of telemedicine indicated that they could not tolerate assignments to go out in public.
- A very strong cost advantage for telemedicine

Summary

The Main Hypothesis: Home based telemedicine is non inferior to in person care

- Fully supported across both measures of PTSD and depression.
- The therapeutic results of Home based telemedicine treatment of PTSD and depression by behavioral activation and therapeutic exposure are as good as in person treatment.