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ART IN EARLY INFECTION IMPROVES NEUROCOGNITION REGARDLESS OF INFECTION DURATION

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BACKGROUND

HIV in Central Nervous System (CNS):
-sanctuary
-reservoir
-enters within days of infection

Neurocognitive Performance (NP)
-in some, HIV can lead to poor NP, HIV Associated Neurocognitive Dysfunction (HAND)
-even on effective ART, HAND in ~20%

Does early ART improve neurocognitive performance (NP)?

Hypothesis: Even among patients treated during early HIV infection limiting CNS infection with rapid ART initiation will improve NP.

METHODS

Sabes study: men who have sex with men (MSM) and transgender women (TW) in Lima, Peru
-Randomized to start ART at:
-diagnosis vs. 6 month later.

As treated analysis: time from estimated date of detectable infection (EDDI) to ART start.

Blood, lumbar puncture, Neurocognitive assessments at weeks 0, 12, 24, 48, 72, 96 and 120 after randomization.

EDDI to ART

EDDI: computed with algorithm using parameters of last HIV- and first HIV+ tests & VL.

NP OUTCOMES

Total z scores

Global Deficit Score(GDS)
-Average of 15 scores in 9 domains:

1. Language/Premorbid
2. Fine Motor
3. Gross Motor
4. Verbal Learning
5. Verbal Memory
6. Speed of Processing
7. Fluency
8. Executive Functioning
9. Attention/Working Memory

RESULTS

N=112 participants
Hispanic MSM/TW
Age 26.4 years (SD 7.4)
Education 12.5 (SD 2.3)
Baseline
CD4 count 443.4 (SD 210)
Log_{10} VL 5.6 (SD 1.14)

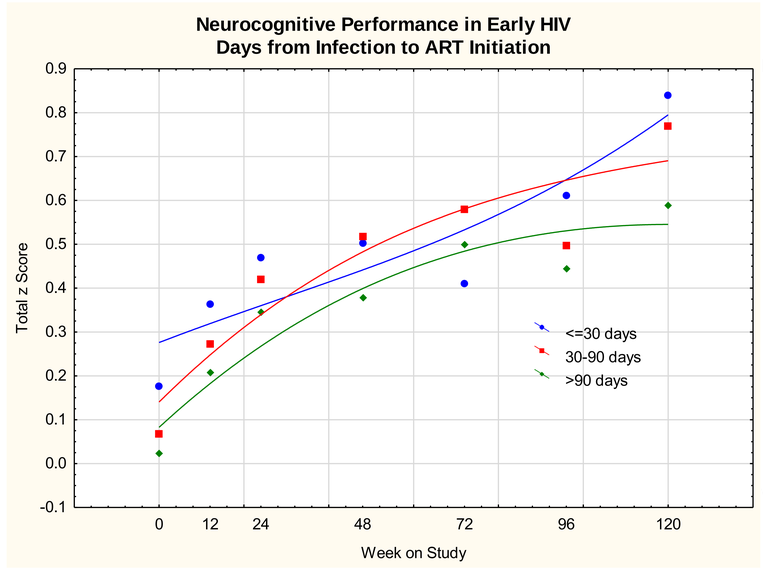
EDDI to ART initiation:
In Overall Cohort:
Mean of 128.4 (87.5) days
<=30 days: 21.9 (SD 4.3)
31-90 days: 52.5 (SD 14.9)
>90 days: 210.3 (SD 29.9)

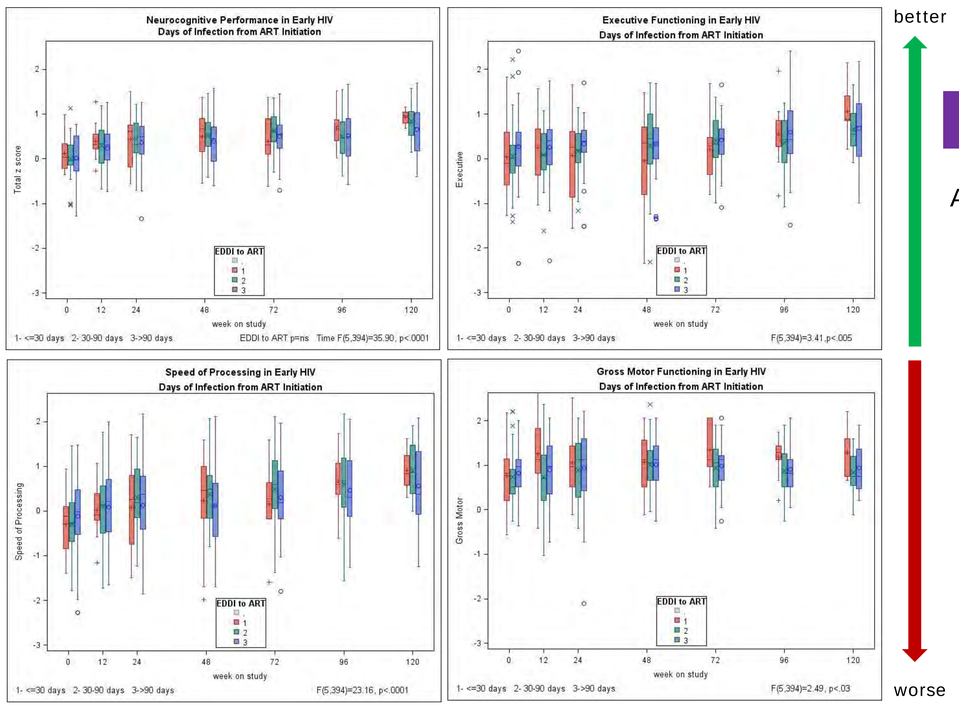
Observations (study visits)
<=30 days = 77 (14.5%)
31-90 days = 190 (36%)
>90 days = 262 (49.5%)

Baseline NP

total z	0.25 (SD .46)
attention	-0.31 (SD .65)
executive	0.17 (SD .84)
fine	0.37 (SD .76)
fluency	-0.23 (SD .81)
gross	0.78 (SD .57)
learning	-0.27 (SD .89)
memory	-0.18 (SD 1.02)
speed	-0.21 (SD .78)

RESULTS





RESULTS

EDDI to ART initiation:
Total z score (p=ns)
<=30 days .42 (SE .12)
31-90 days .39 (SE .08
>90 days .32 (SE .07)

ART and NP over time:
NP significantly improved with ART over time to 120 weeks of follow up ($F=(5, 394)=35.9$, $p<.0001$), in all three categories

Learning/Practice:
As a check for practice effects-
Gait (resistant to practice) significantly improved over time ($F(5.391)=2.94$, $p<.05$), indicating that ART had a substantial impact on NP.

CONCLUSIONS

ART in EARLY HIV and NEUROCOGNITION

- Unique early infection cohort: diagnosed within 3 months of HIV acquisition and initiated ART within 6 months of diagnosis
- Time between infection and ART initiation
  Not associated with NP
- ART improved NP regardless of time from EDDI to ART initiation
- Increased time on ART
  Better NP performance
- Important to initiate ART early to protect CNS

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