Use of Reminder Messages to Improve Utilization of an Automated Telephone-Based Treatment for Methadone Patients

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Yale SCHOOL OF MEDICINE

Opioid Use Disorder

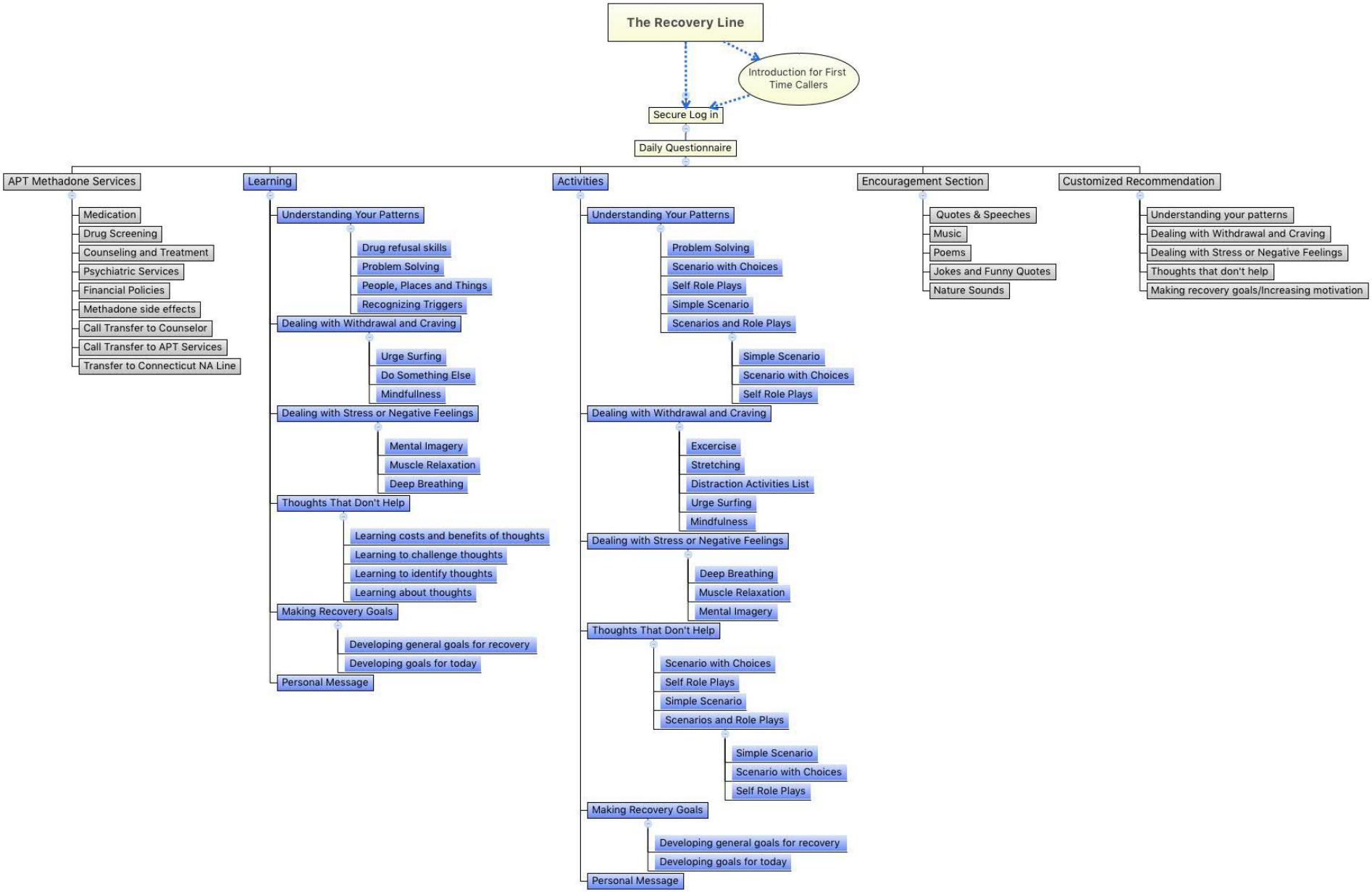
- From 2002-2013, there was an increase in heroin addiction among 18-25 year olds and the number of people who started to use heroin in the past year increased (CDC, 2014).
- In 2014, 1.9 million Americans had prescription opioid use disorder and 586,000 had heroin use disorder (SAMHSA, 2015).
- The rate of overdose deaths involving opioids has almost quadrupled since 1999 (CDC, 2015).
  - More deaths in 2014 were due to drug overdoses than any other year on record, with the majority of overdose deaths involving opioids (CDC, 2015).
  - 78 deaths in America per day (CDC, 2015).
  - Heroin overdose deaths among women have tripled in the last few years (Hedegaard et al., 2015).

Treatment for Opioid Use Disorder

- Continued drug use among agonist-maintained patients is common and associated with high rates of relapse and treatment drop-out (Sullivan et al., 2010; Maremmani et al., 2007).
- Counseling has been shown to be effective but it is costly and requires additional patient involvement (O'Brien et al., 1995).
- Some patients dislike counseling, while others have responsibilities that make attendance difficult (Connors et al., 2001).
- There is a clear need to develop additional acceptable and cost-effective treatments.
- Women seeking treatment were more likely than men to engage in electronic-based, supplemental treatments, and commonly cited 24-hour access and privacy as reasons for engagement (VanDeMark et al., 2010;White et al., 2010).

Therapeutic Interactive Voice Response (TIVR)

- Low Cost
- Mobile - highly flexible and convenient
  - Available 24 hours/day
  - Available for any phone anywhere
  - In patient's natural environment
- High accessibility
  - Rural areas and places with low access to treatment or few trained providers.
- Low "high tech"
  - Can be utilized by participants of all ages without training
  - More secure and less open to attacks than web or mobile web systems
- Easy to adapt and change content based on feedback and updates in the science.

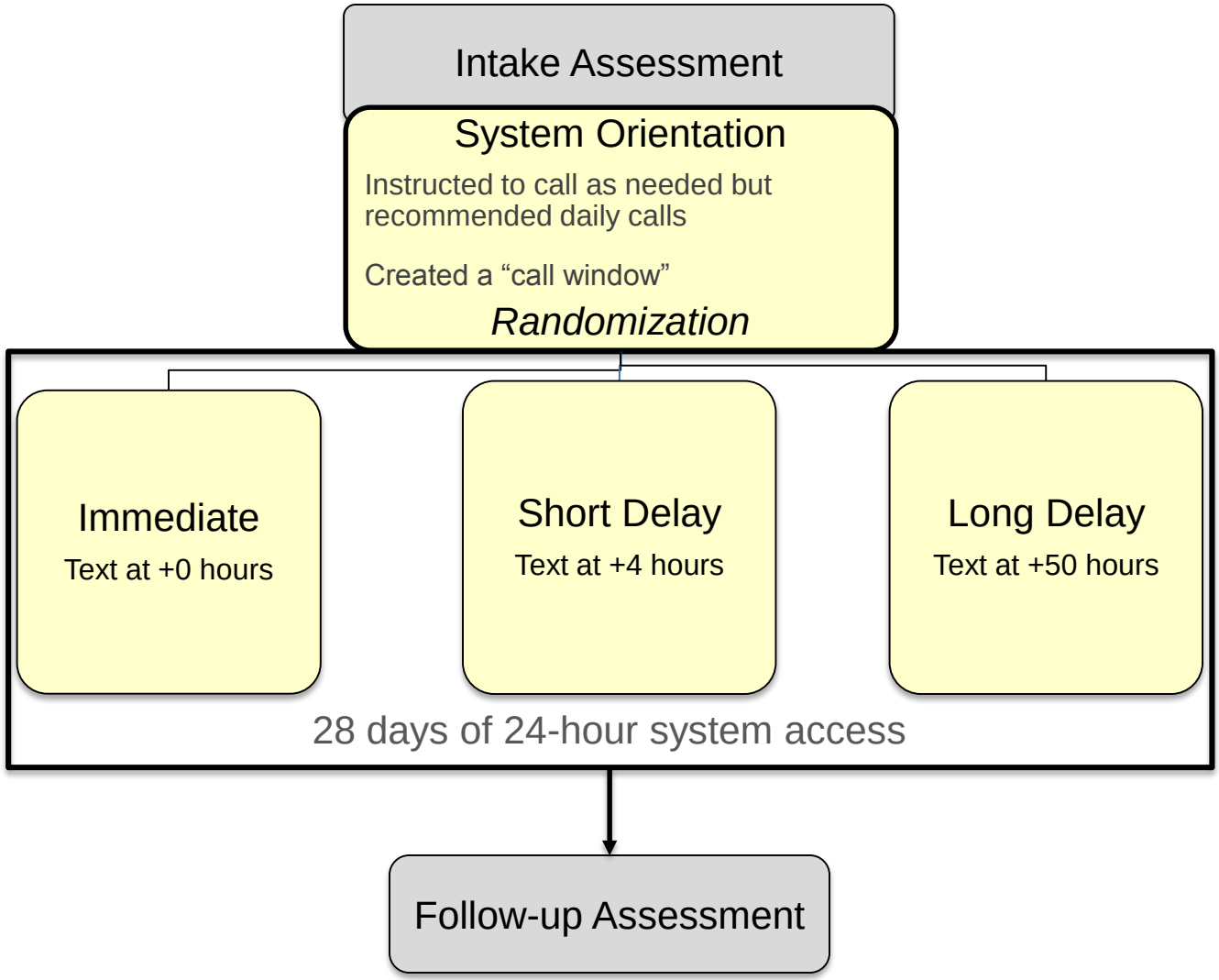

The Recovery Line
Introduction for First Time Callers
Secure Log in
Daily Questionnaire
APT Methadone Services
Medication
Drug Screening
Counseling and Treatment
Psychiatric Services
Financial Policies
Methadone side effects
Call Transfer to Counselor
Call Transfer to APT Services
Transfer to Connecticut NA Line
Learning
Understanding Your Patterns
Drug refusal skills
Problem Solving
People, Places and Things
Recognizing Triggers
Dealing with Withdrawal and Craving
Urge Surfing
Do Something Else
Mindfullness
Dealing with Stress or Negative Feelings
Mental Imagery
Muscle Relaxation
Deep Breathing
Thoughts That Don't Help
Learning costs and benefits of thoughts
Learning to challenge thoughts
Learning to identify thoughts
Learning about thoughts
Making Recovery Goals
Developing general goals for recovery
Developing goals for today
Personal Message
Activities
Understanding Your Patterns
Problem Solving
Scenario with Choices
Self Role Plays
Simple Scenario
Scenarios and Role Plays
Simple Scenario
Scenario with Choices
Self Role Plays
Dealing with Withdrawal and Craving
Excercise
Stretching
Distraction Activities List
Urge Surfing
Mindfulness
Dealing with Stress or Negative Feelings
Deep Breathing
Muscle Relaxation
Mental Imagery
Thoughts That Don't Help
Scenario with Choices
Self Role Plays
Simple Scenario
Scenarios and Role Plays
Simple Scenario
Scenario with Choices
Self Role Plays
Making Recovery Goals
Developing general goals for recovery
Developing goals for today
Personal Message
Encouragement Section
Quotes & Speeches
Music
Poems
Jokes and Funny Quotes
Nature Sounds
Customized Recommendation
Understanding your patterns
Dealing with Withdrawal and Craving
Dealing with Stress or Negative Feelings
Thoughts that don't help
Making recovery goals/Increasing motivation

Reminder Text Messages

- In the pilot trial, participants made fewer calls than expected and noted that they often forgot to call. Reminder messages may increase Recovery Line use and thus, efficacy.
- Optimal reminder message latency has not been previously evaluated.
  - We chose to evaluate 3 levels of latency (immediate, short, and long).
- In addition, some patients find simple reminders undesirable and the effects tend to dissipate over many repetitions (Wise & Operario, 2008).
  - More complex and varied messages may be more sustainable for continued use.
- We chose to evaluate message frame, providing all participants with gain and loss-framed messages.

  They can be presented briefly and have been evaluated with substance dependent populations (Toll et al., 2007; Fucito et al., 2010; Moorman, van den Putte, 2008).

Study Design



Participants

- 67 participants completed the study
  - Mean age = 41.0 years (11.0)
- Inclusion criteria
  - At least 18 years old
  - Currently receiving methadone maintenance treatment
  - Illicit drug use in the past 30 days or have a positive urine screen for any tested illicit drugs
- Exclusion criteria
  - Current suicide or homicide risk
  - Active psychosis
  - Unable to read or understand English

Demographic	Immediate	Short Delay	Long Delay
Gender			
Male	50% (11)	52% (12)	50% (11)
Female	50% (11)	48% (11)	40% (11)
Race			
White: Non-Hispanic	81% (17)	77% (17)	73% (16)
Other	19% (4)	23% (5)	27% (6)

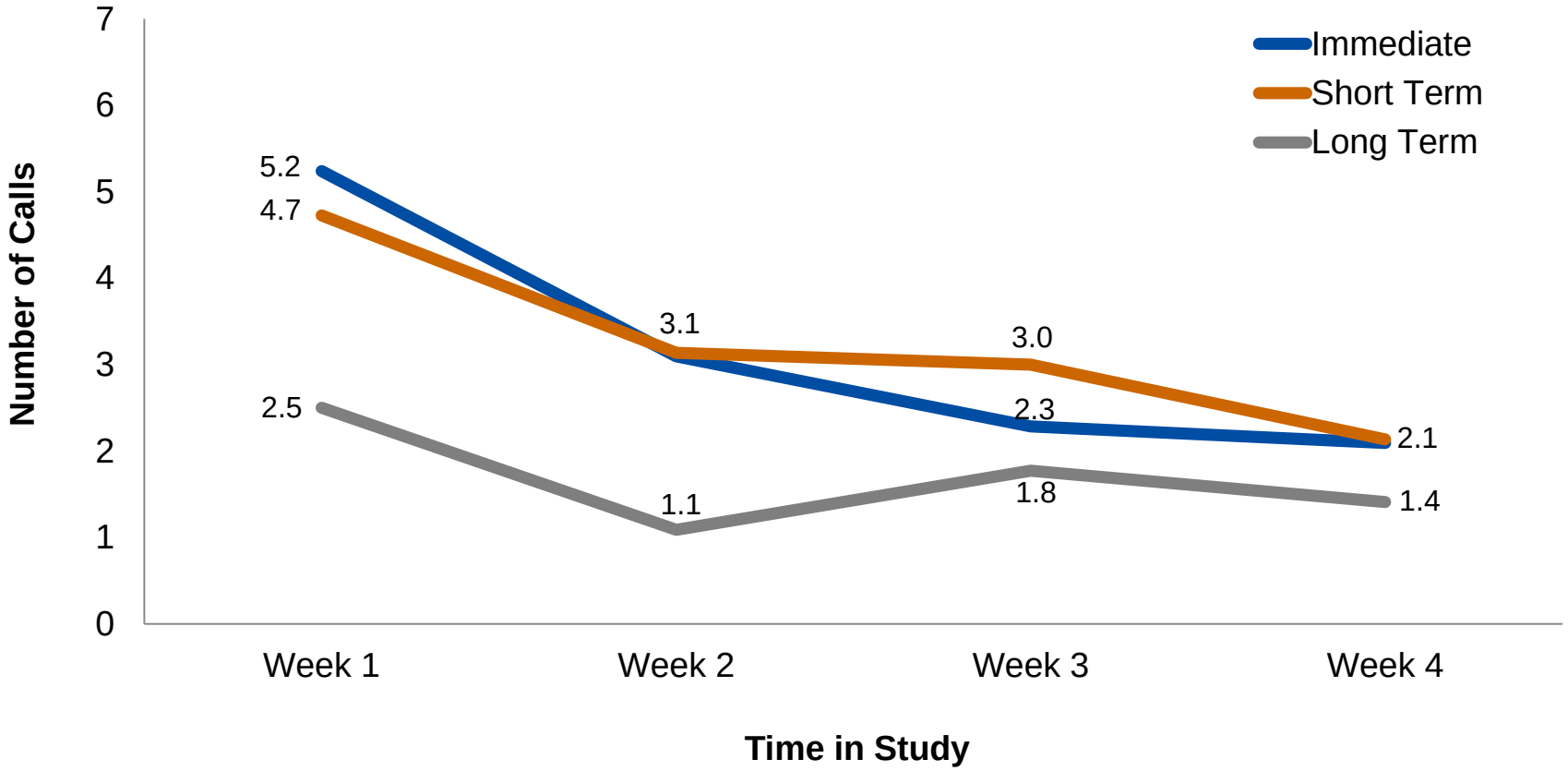
Methods

- Outcome Measures
  - Recovery Line system utilization
    - Number of calls, minutes, calls after a text
  - Substance use
    - Timeline Followback assessment
  - Coping
    - The Effectiveness of Coping Behaviours Inventory

- Data Analysis
  - T-tests and Chi-Square were used to evaluate differences in demographic and clinical characteristics and study outcomes.
  - Mixed factor ANOVA and GLM was used to evaluate outcome variables by gender and assigned condition.

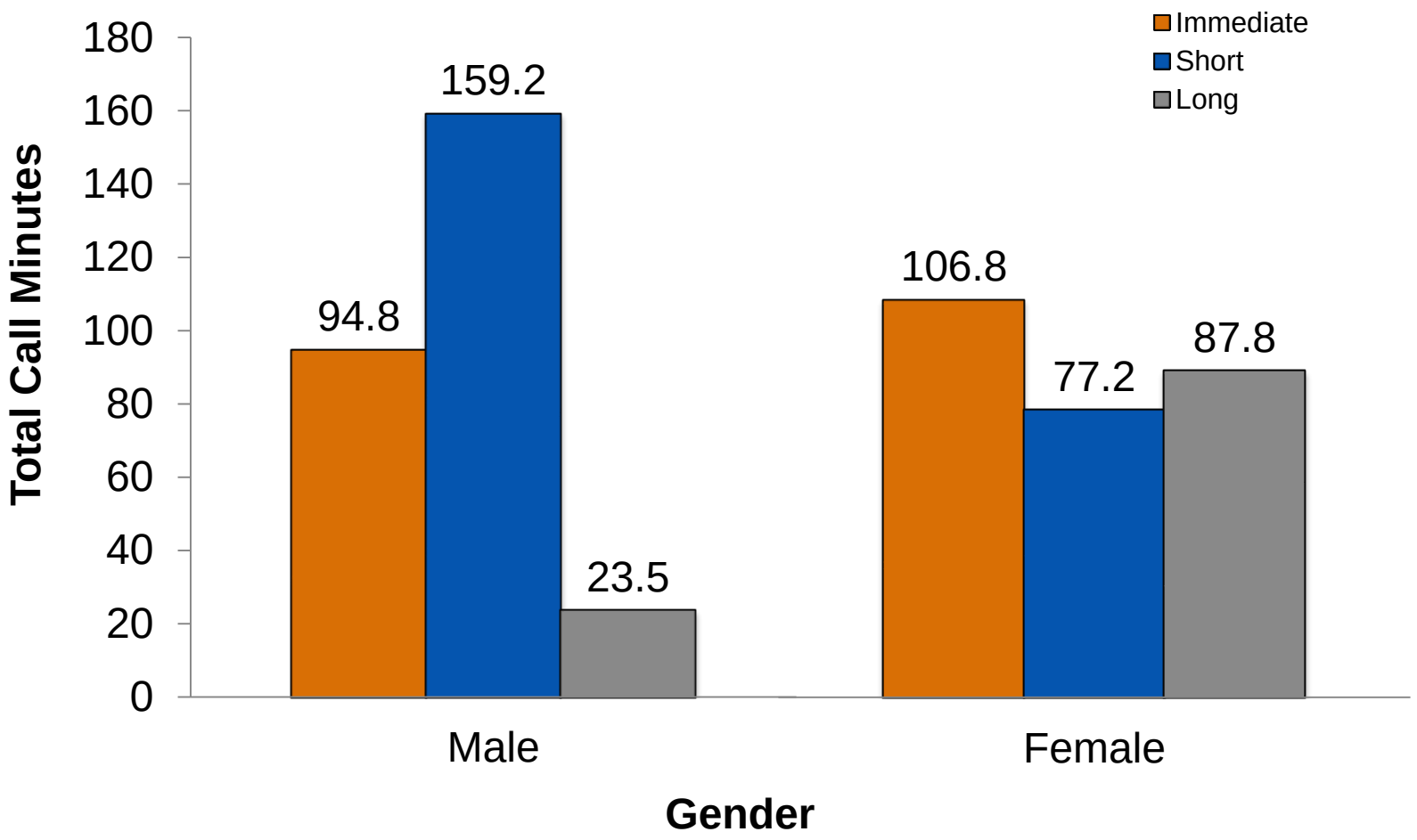
Results: Calls Per Week

- Calls per week across the 4-weeks (p=.003).
- In weeks 1 & 2, Immediate and Short Delay conditions had more calls than Long Delay (p=.005).



Results: Total Call Minutes

- Call minutes differed for males between Short Delay and Long Delay (p= <.001).



Results: Other Outcomes

- No differences in call response for gain- or loss-framed messages.
- No assigned group or gender differences on ratings of interest, perceived efficacy, or ease of use.
- No assigned group differences on self-reported coping skills efficacy or self-reported substance use.
- Coping efficacy increased for men but not women ($p=.04$).
- Weekly days of substance use decreased over time ($p=<.001$).
- Mean call length was positively correlated with substance use.

Summary and Conclusions

- Text message reminders may increase utilization of an automated mobile treatment but the effects may disipate over time.
  - Effects may differ by gender.
- No difference between groups in self reported days of substance use, coping efficacy, or system ratings.

- Future studies:
  - Three-month study period with methadone maintained patients.
  - Five-week treatment extender with a SUD Veteran population.

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