Communication growth in minimally verbal children with ASD

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Novel Interventions Needed

- Few interventions specifically for minimally verbal children
- Language teaching is focus of early interventions
- Most early intervention studies focus on *preverbal* children
  - Children will talk, just not talking now

Spoken language by school entry

- Cannot currently predict with great confidence who will remain nonverbal at school age (Anderson et al, 2009; Kasari et al, 2012; Magiati et al, 2007; Thurm et al, 2007)

- Clear that speaking with spoken language by age 5 years is critical to later optimal outcomes (Rutter & Lockyer, 1967; Venter et al, 1992)

- Paradox: children not speaking by school age often receive *decreased* language services not more!

Who are the minimally verbal?

- Autism heterogeneity
- As many as 25-30% minimally verbal by school age
  - Up to 50% depending on definitions (Anderson et al, 2009)
- Clear that most children are not 'nonverbal'
  - There are some that cannot make sounds, words; we don't know extent but likely a small percentage
- Issue that most studies exclude children who may be nonverbal
  - <35 IQ
  - <12 months

Speech Acquisition in Older Nonverbal Individuals With Autism

A Review of Features, Methods, and Prognosis

Erin Pickett, MA, CCC-SLP, Olivia Pullara, MA,* Jessica O'Grady, MEd,* and Barry Gordon, MD, PhD*†*

Novel Interventions partially motivated by dismal results….

- Review suggests individuals with ASD can learn to speak after age 5
  - Most between 5-7 years (none older than 13 years)
  - Most with IQs above 50
  - Clear not enough description

- Interventions that give rise to later speech development
  - Examples mostly ABA based
  - 70% of individuals increase in words; 30% increase in phrases or sentences

Induction into this area

- Preverbal children
  - Nearly 80% of children from our early intervention studies obtained spoken language by age 8-9 years (Kasari et al, 2012) (funded by NIH)

- Characterizing Cognition in Nonverbal Individuals with Autism (CCINIA, 2008-2011) (funded by Autism Speaks)

- Adaptive Interventions for Minimally verbal children with ASD in the community (AIM-ASD) (funded by NIH)

CCNIA (Kasari, UCLA; Kaiser, Vanderbilt; KKI, Landa)

Funded by Autism Speaks

- 63 minimally verbal 5 to 8 year olds with ASD
- < 20 functional words; minimum of 24 months nonverbal cognition/receptive language; 2 years of early intervention
- 6 month treatment, 2 times per week; 3 month follow up
- Therapist-child intervention, augmented with parent training at month 3.
- Design considerations
  - Important to offer an efficacious intervention to all children
    - Already had 'failed' to make good language progress
  - SMART design
    - Sequential multiple assignment randomized trial (Murphy, 2005).
    - Goal is to test a 'sequence' of intervention and determine best sequence for different children

Summary

- Presentations at SRCD and IMFAR
- Nonverbal IQ range from 38 to 140
  - Not associated with socially communicative language changes
- Best sequence….starting with AAC + JASP-EMT from beginning
  - Language sample data at 4 timepoints
  - Non-AAC group catches up at time 4 (slower pace)
- Session data (taped sessions monthly)
  - Significant increase of 4+ matched conversational turns over time with AAC group still outperforming initially

Summary

- Suggests that access to communication is critical….
- An AAC device can be instrumental, but only in the context of an intervention where children learn to communicate with others, using the device

- These pilot data led directly to our ACE proposal

- Note: Few children have access to AAC speech generating devices in school settings (PECS most common AAC)
- Prompted our ACE to offer an AAC in both intervention arms

Adaptive Intervention for Minimally Verbal Children with ASD (AIM-ASD)

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Ann Kaiser, PhD

Tristram Smith, PhD

Catherine Lord, PhD

Daniel Almirall, PhD
Susan Murphy, PhD

Study Aims

- Goal: Construct an adaptive intervention (individualized treatment protocol adjusted based on child's response to initial treatment)
  - Primary Aim: To determine which intervention (JASP-EMT vs. CORE-DTT) produces greater increases in socially communicative utterances (SCU-primary outcome)
  - Secondary Aim 1: To determine whether adding a parent training component provides additional benefit for early responders.
  - Secondary Aim 2: Compare and contrast four pre-specified adaptive interventions in terms of primary and secondary outcomes.
  - Tertiary Aim 3: Identify moderators (e.g., parent buy into parent training)

Study Design

Participant Details:

- 48 children per site (total=192 children)
- Ages 5 to 8 years
- Minimally verbal, fewer than 20 words
- 18 months nonverbal cognitive age

Intervention Details:

- CORE-DTT versus JASP-EMT
- 4 months tx; 4 months follow up
- Daily contact in the community (schools)

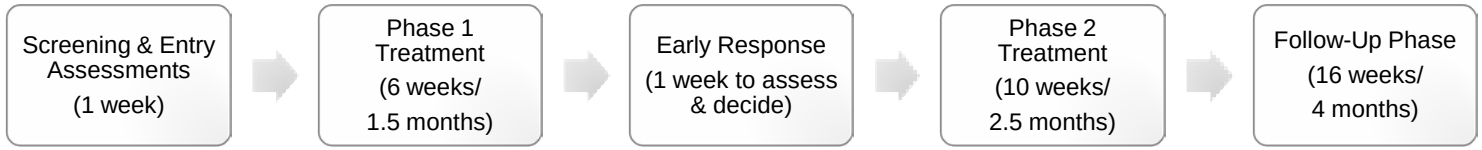
DTT vs. JASP-EMT

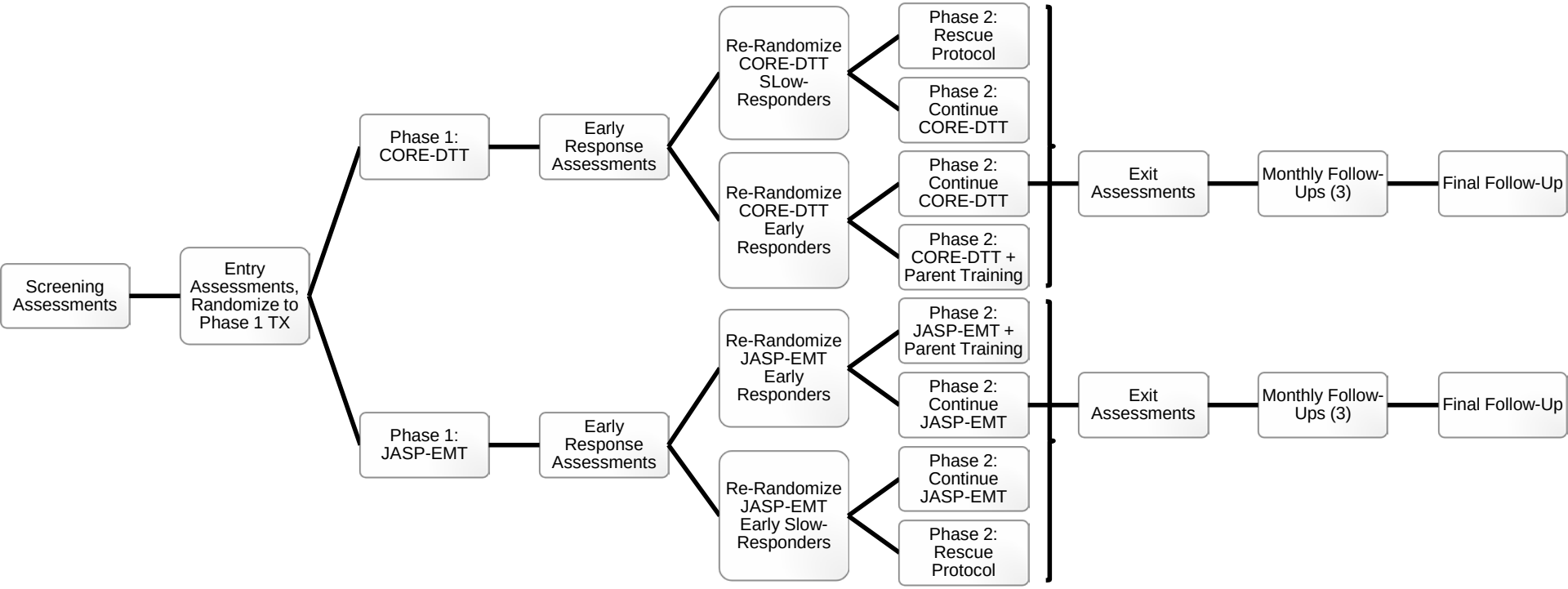
DTT: Adult directed discrete trials

JASP-EMT: Play based

AIM-ASD Design Overview

SMART Design





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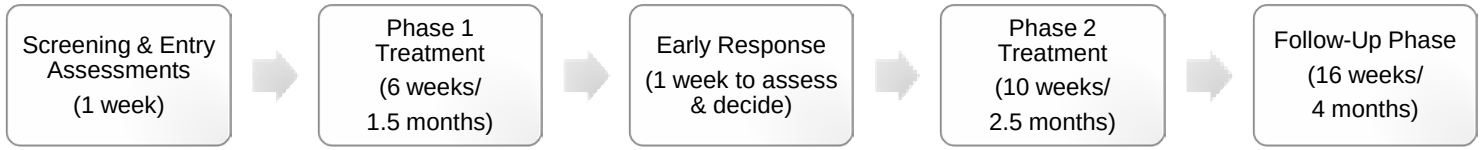

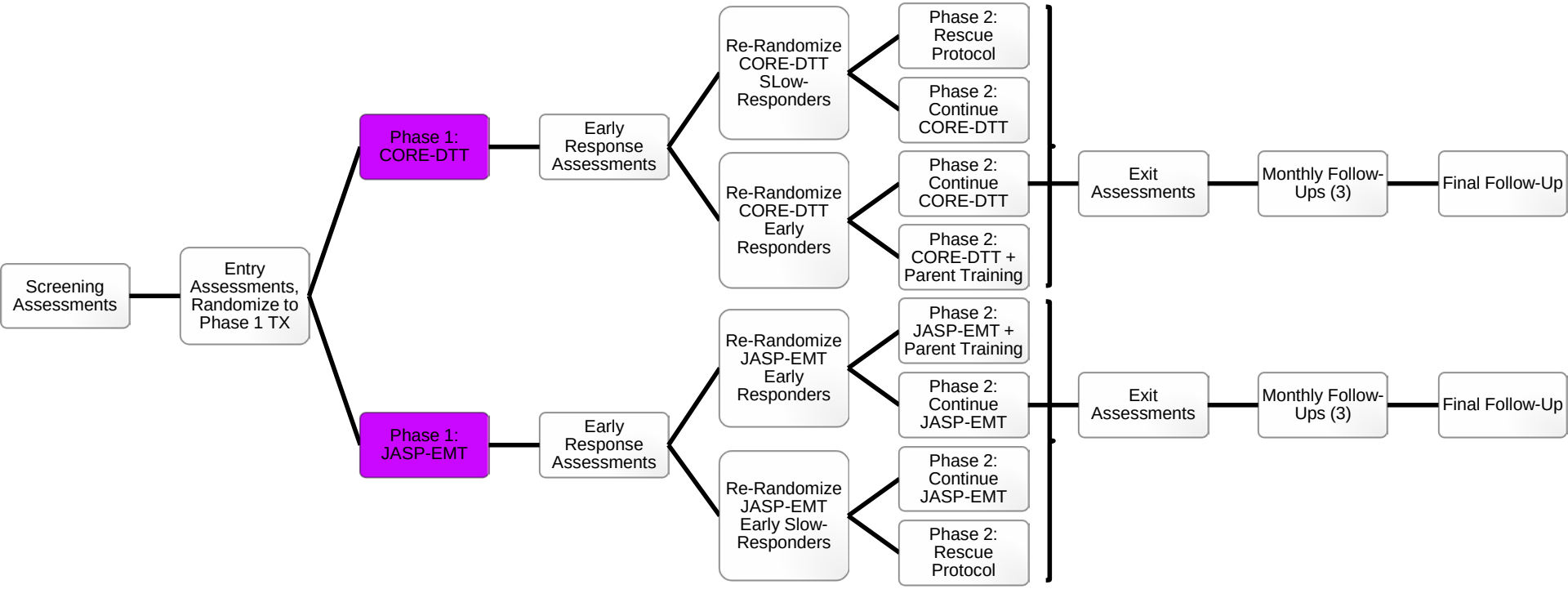

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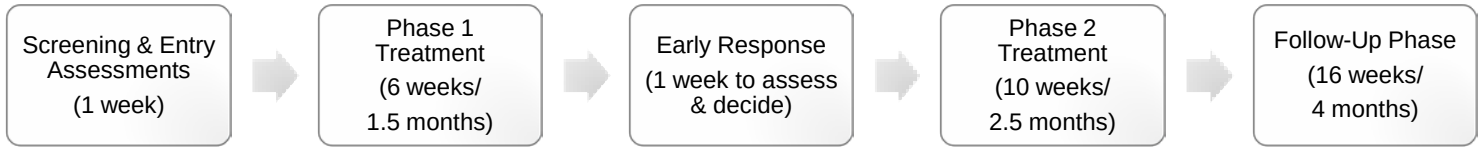

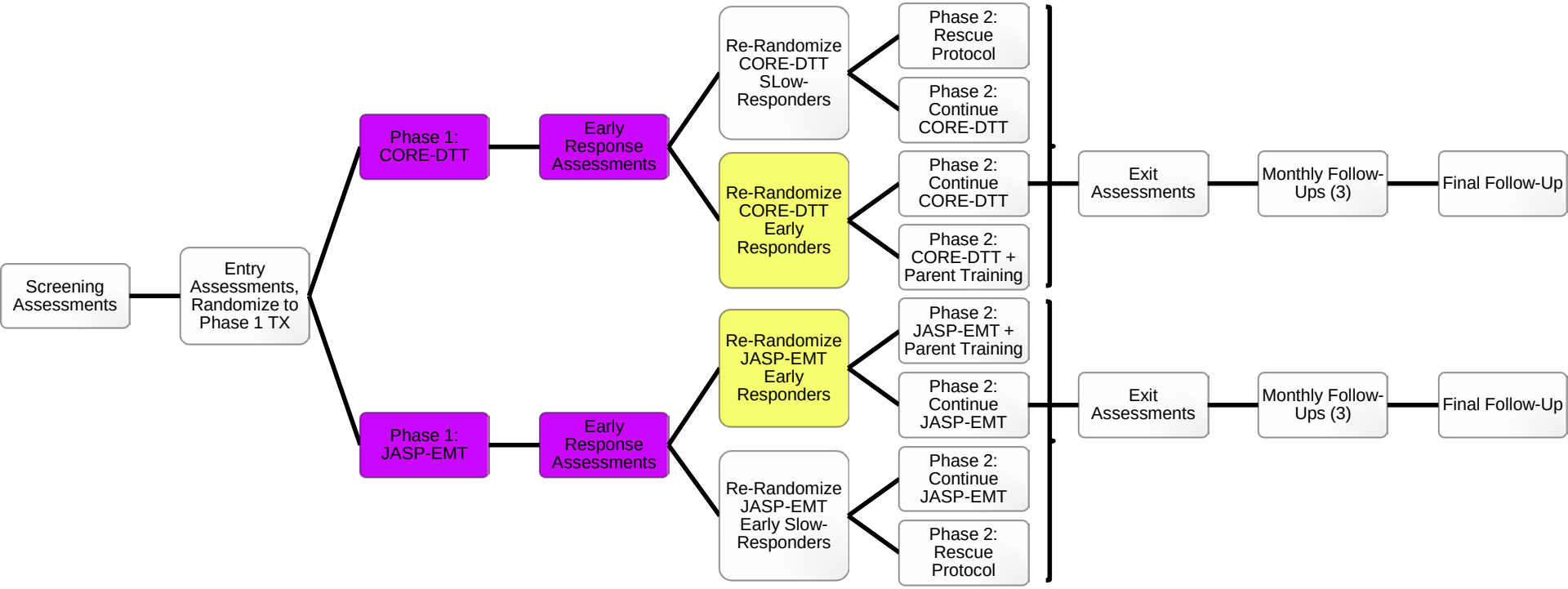

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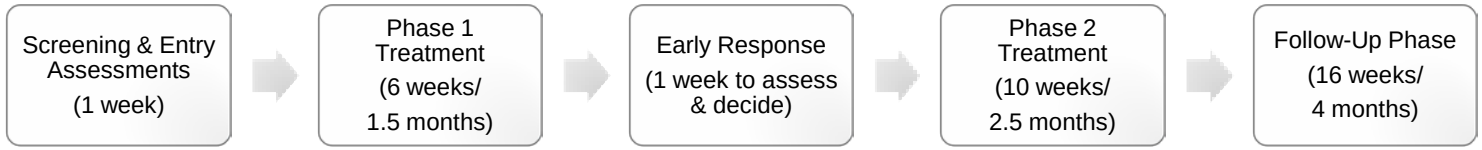

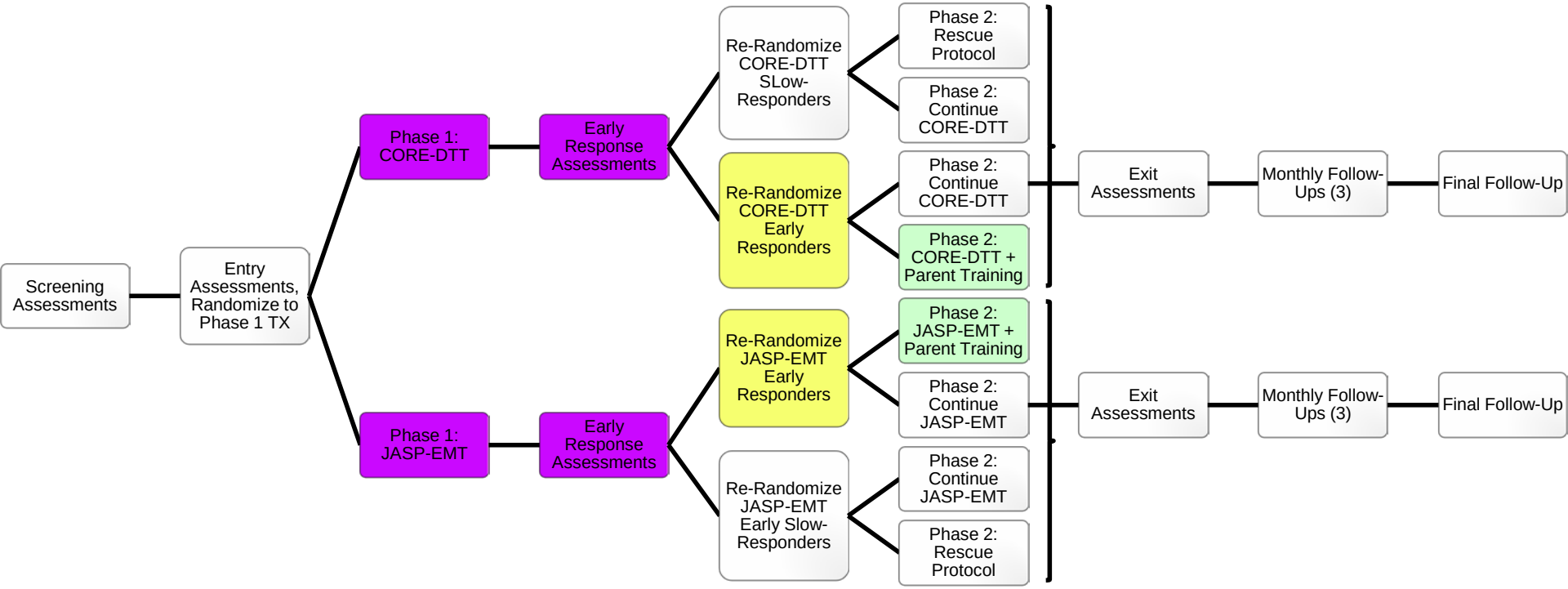

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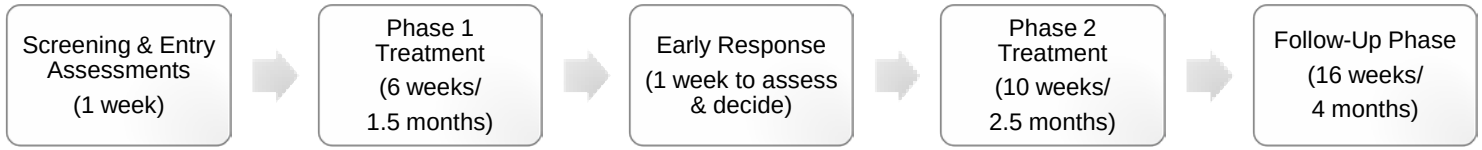

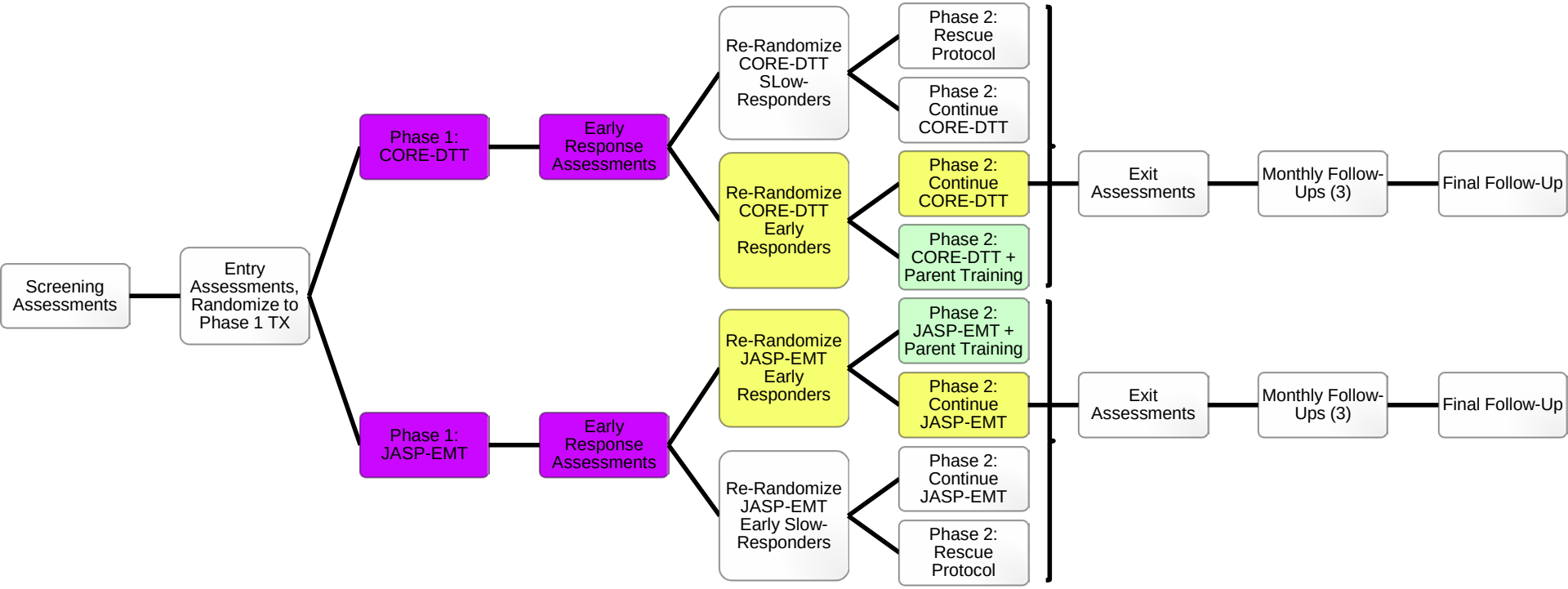

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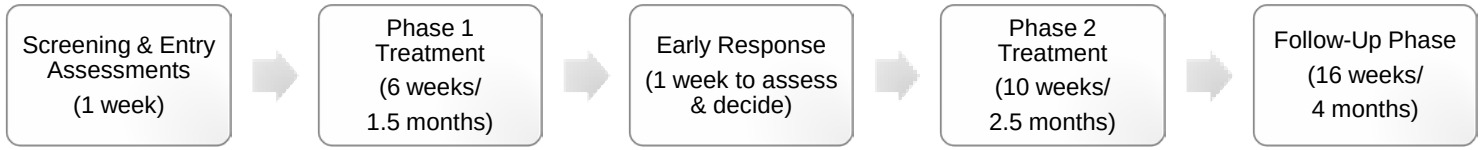

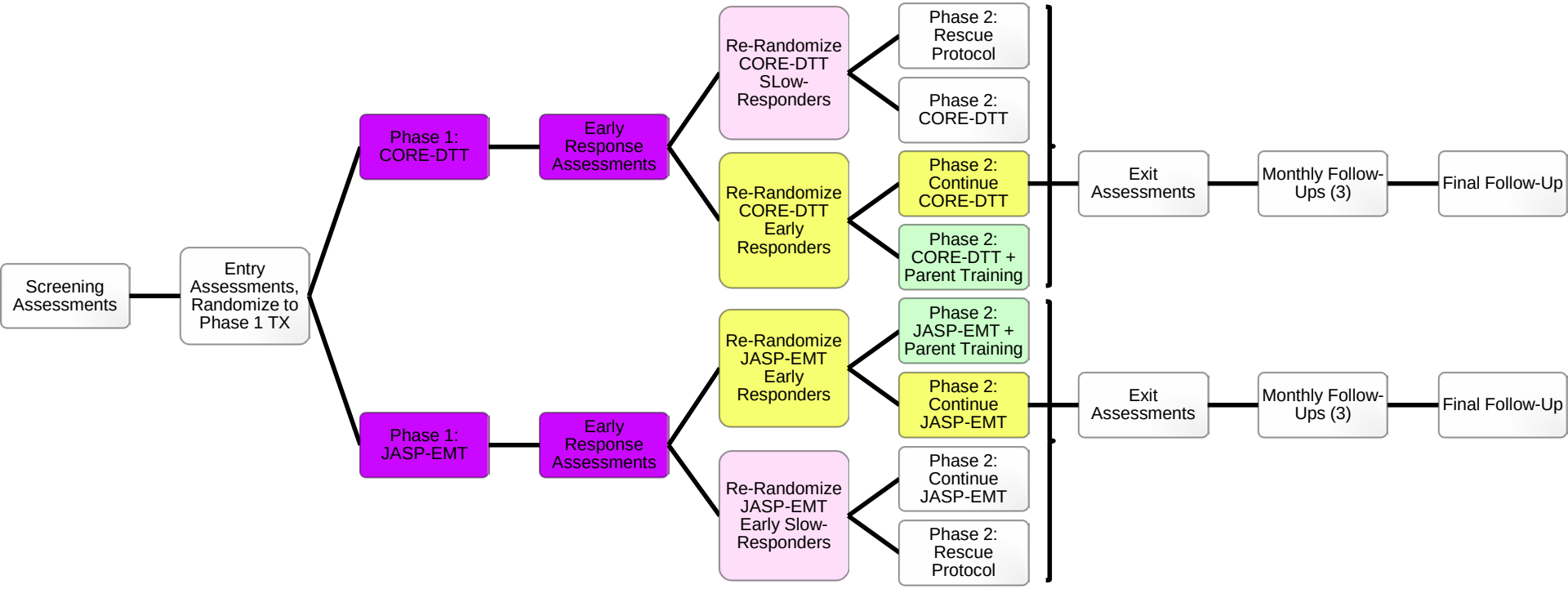

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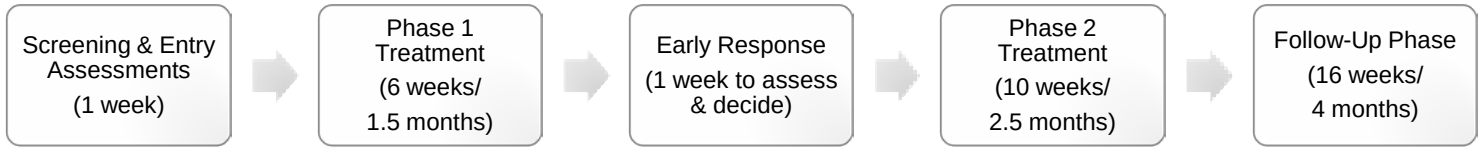

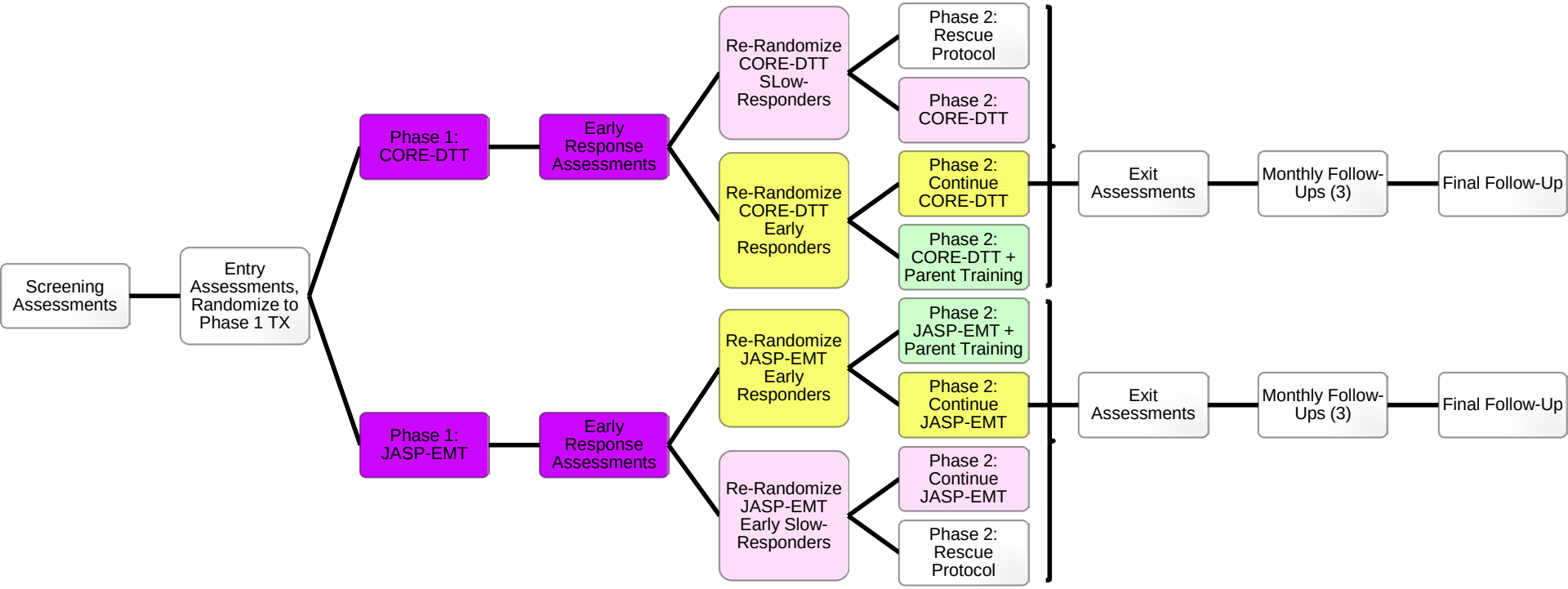

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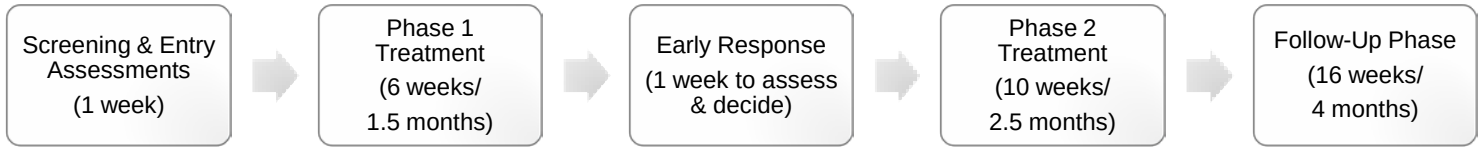

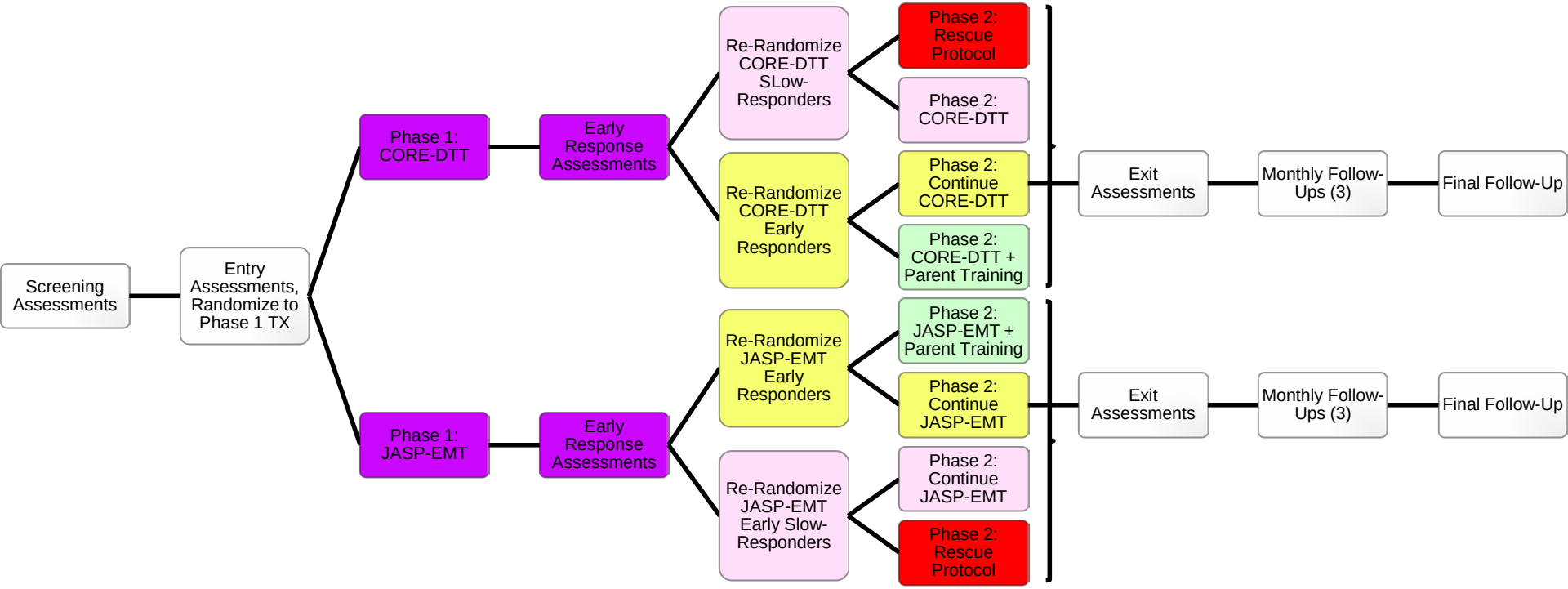

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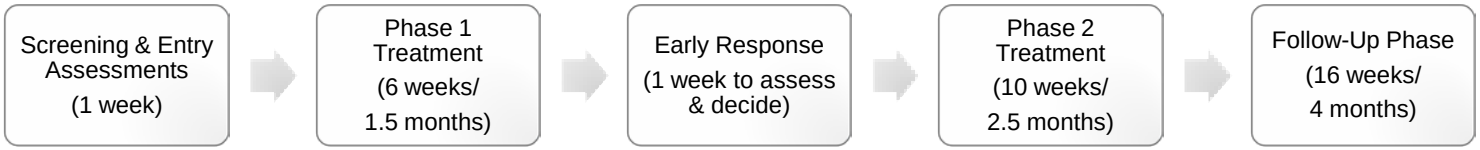

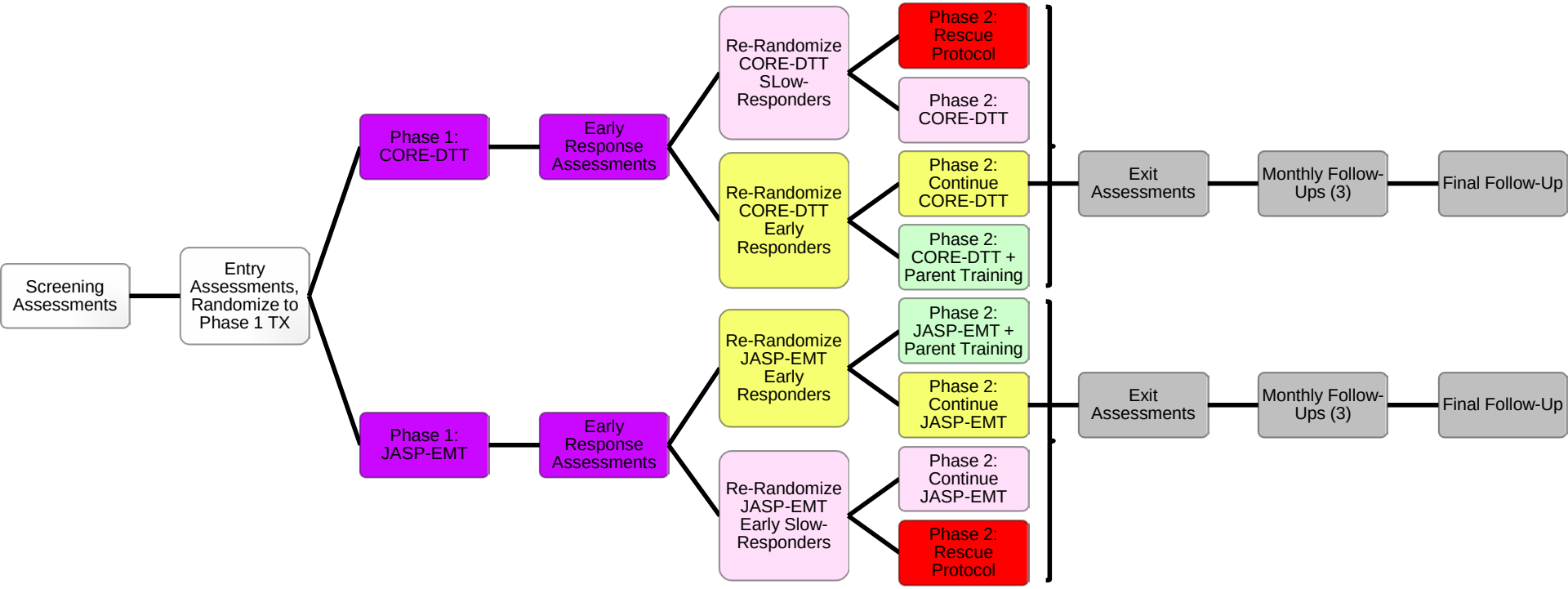

Expected Outcomes

- Sequence of treatment will be superior
- Some children will benefit more than others to a particular sequence
- Characteristics of children who are slow responders will become more clear

- Ultimate goal is to predict an effective sequence of interventions that personalizes intervention based on child response

Acknowledgements

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