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# Best Practice and Interventions in Survivorship

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CANCER CENTER



CANCER  
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# Outline

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- Complexity of survivorship care in hematopoietic stem cell transplantation (HSCT)
- Interventions to promote physical functioning post HSCT
- Interventions to promote mental functioning post HSCT
- Future directions

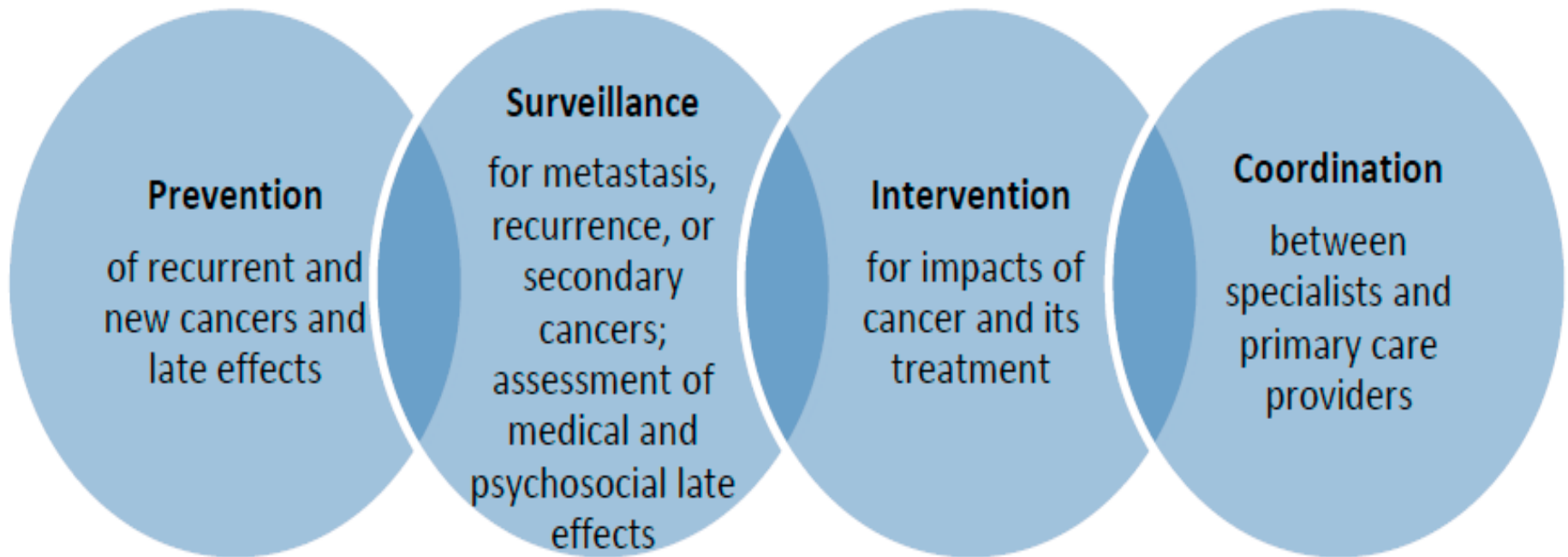
# Complexity of Survivorship Care

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# Complexity of Survivorship Care

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- Multidisciplinary long-term follow-up and survivorship clinics to address the unique needs of HSCT recipients:
  - Dermatology
  - Ophthalmology
  - Oral health
  - Cardiology
  - Pulmonary
  - Endocrine
  - Sexual health and fertility
  - Physical therapy and rehabilitation
  - Occupational therapy
  - Psychology
  - Infectious disease
  - Neurology
  - Gastroenterology



# Barriers to Survivorship Care

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- Approximately 50% of transplant programs have long-term follow up clinics
- Clinics vary widely in services provided
- Logistics and costs
- Lack of expertise
- Sense of ownership over addressing the survivorship care needs of HSCT recipients

Hashmi SK, et al. BBMT 2018

Dignan FL, et al BMT 2021



# Interventions to Promote Physical Functioning

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- Multiple randomized clinical trials tested exercise intervention during HSCT
- **Most studies:** interventions started before or during HSCT, duration 4 weeks – 6 months
- **Physical exercise:** both aerobic and muscle strengthening interventions
- Supervised or partially supervised interventions, variable intensity
- **Outcomes:** cardiorespiratory fitness, quality of life, fatigue

# Interventions to Promote Physical Functioning

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- Moderate positive effects on cardiorespiratory fitness
- Moderate positive effects on lower extremity strength
- Small to moderate positive effects on global quality of life (QOL)
- Small to moderate positive effects on fatigue
- Numerous methodological limitations
- Variability across the HSCT recovery



Mohananey D, et al. JACC Cardio Oncol 2021

Prins MC, et al. Support Care Cancer 2021



# Interventions to Promote Physical Functioning

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- We need physical exercise interventions in patients with chronic graft-versus-host disease (GVHD)
  - Major cause of disability
  - Reduced functional capacity
  - Muscular and functional limitations
  - Inflammatory disease
  - Sarcopenic obesity
  - Preclinical evidence to support its promise



Fiuza-Luces C, et al. BMT 2016

# Interventions to Promote Mental Functioning

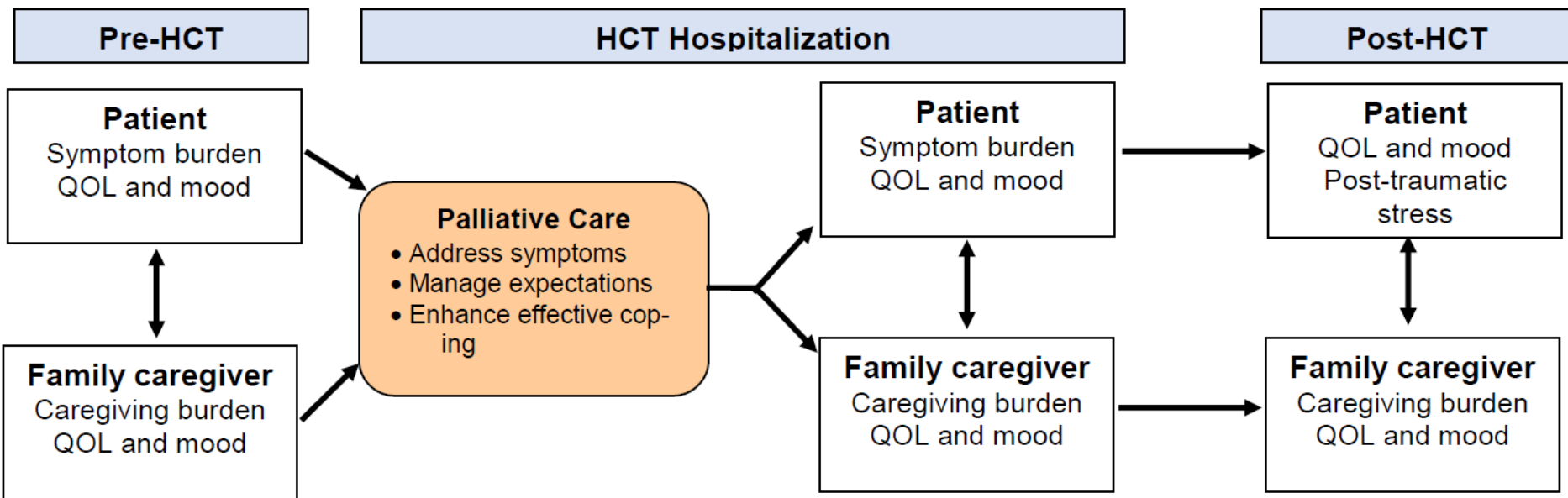
Type of Intervention	Intervention intensity	Timing Intervention	Outcomes	Limitations
<b>Mind-body &amp; stress management</b>	Relaxation guided imagery, breathing exercises, progressive muscle relaxation.	During HSCT Short follow-up	Small effects on anxiety, depression, and fatigue.  QOL improvement seen in more comprehensive coping programs.  Small effect sizes compared to cognitive behavioral therapy	Poor adherence in self-directed interventions  Includes autologous and allogeneic HSCT collectively
<b>Cognitive and behavioral therapy (CBT)</b>	CBT methods  Some relaxation in addition to CBT  Face-to-face interventions.	During or immediately following HSCT	Some benefits with lower distress, improved emotional functioning.  Enduring benefits at 3 and 12 months post-HSCT.  More intensive interventions yielded larger and more significant effects.	Mostly White participants  Includes autologous and allogeneic HSCT collectively  Did not target high-risk patients

Bevans M, et al. BBMT 2017; Baliousis M, et al. Psychooncology 2016

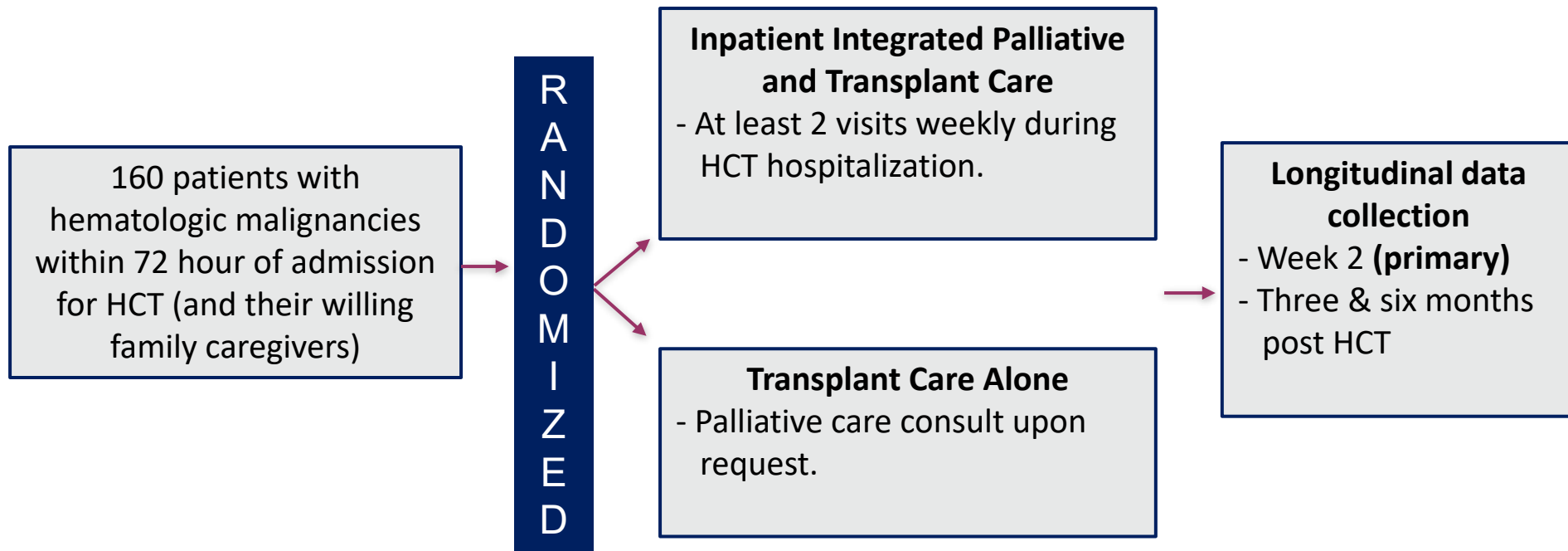
# Interventions to Promote Mental Functioning

## Conceptual Model:

Figure 1



# Interventions to Promote Mental Functioning



El-Jawahri, et al. JAMA 2016

# Interventions to Promote Mental Functioning

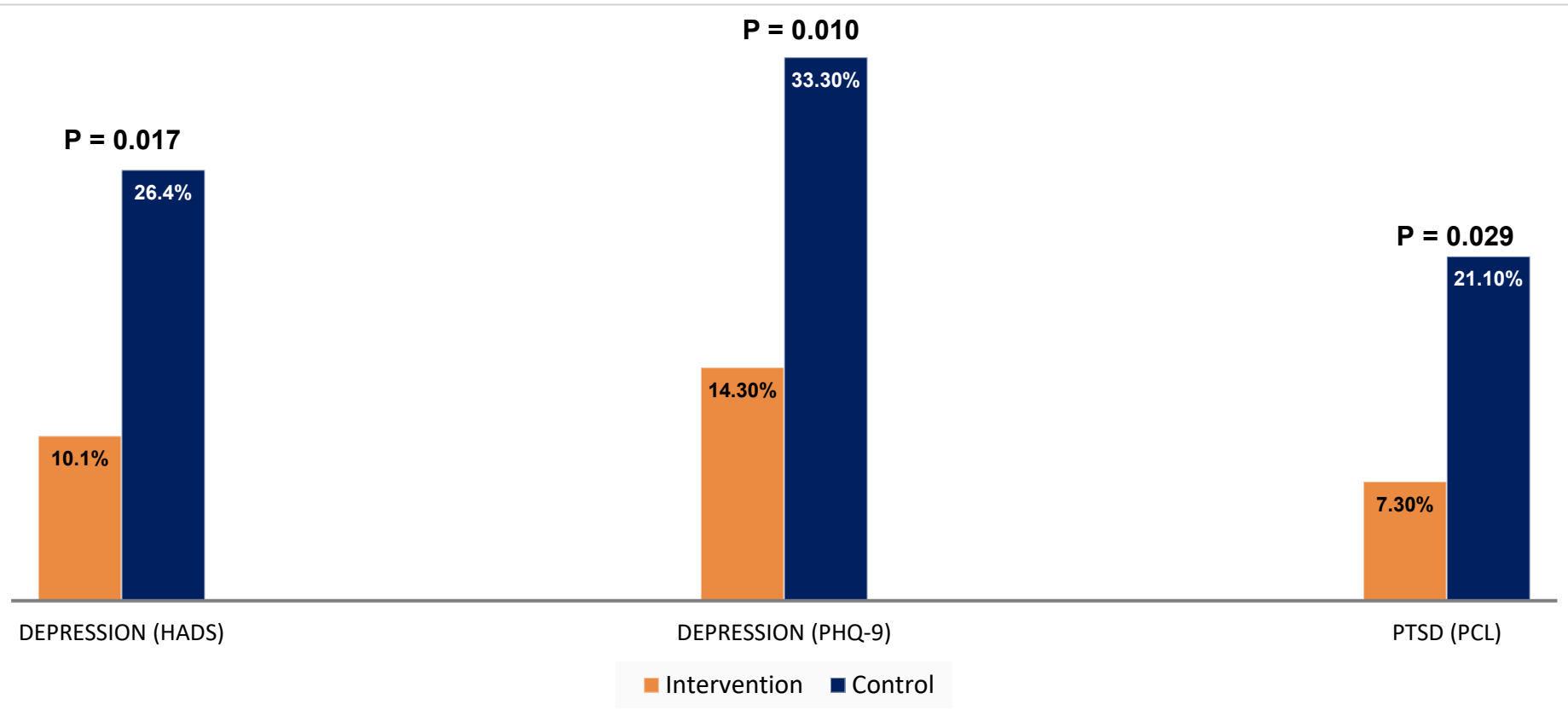
Week-2 Outcomes	Adjusted Mean Difference	95% CI	P- Value
QOL: FACT – BMT	7.73	1.27 to 14.19	<b>0.019</b>
Fatigue: FACT – Fatigue	3.88	0.21 to 7.54	<b>0.038</b>
Symptom burden: ESAS	-6.26	-11.46 to -1.05	<b>0.019</b>
Depression symptoms: HADS-D	-1.74	-3.01 to -0.47	<b>0.008</b>
Anxiety symptoms: HADS-A	-2.26	-3.22 to -1.29	<b>&lt;0.001</b>
Depression: PHQ-9	-1.28	-2.82 to 0.27	0.104

El-Jawahri JAMA 316(20) 2016



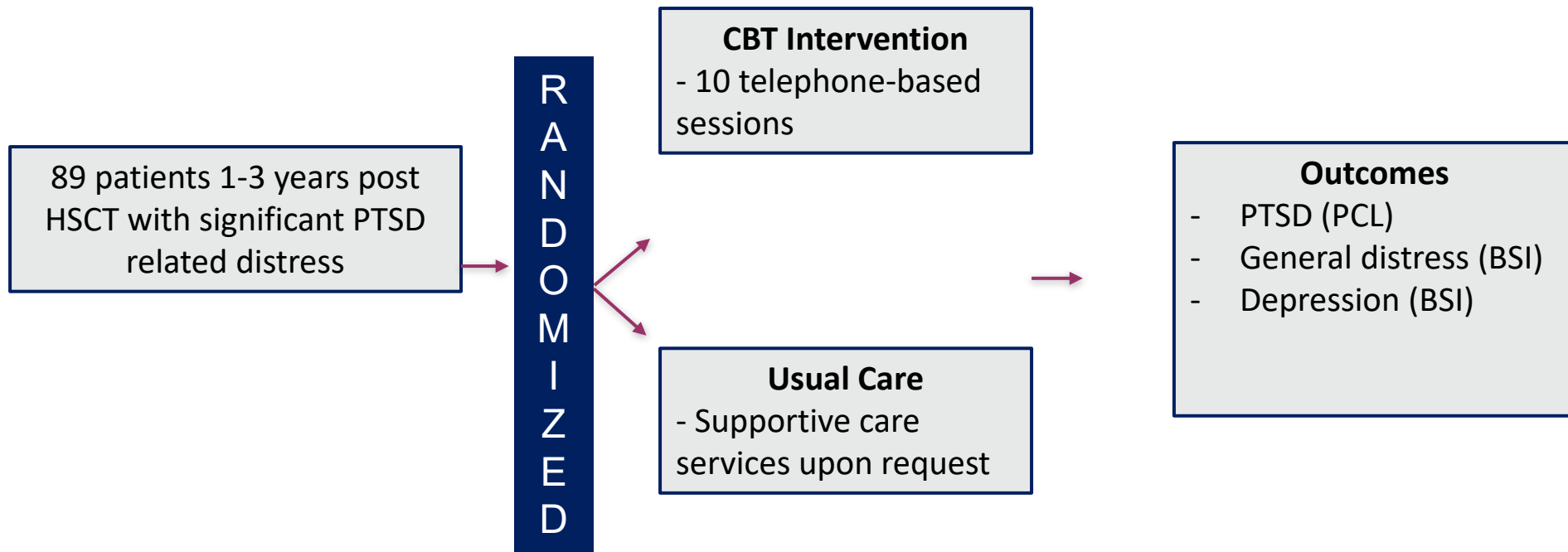
# Interventions to Promote Mental Functioning

## Six Months Post-HSCT



El-Jawahri, et al JCO 2017

# Interventions to Promote Mental Functioning



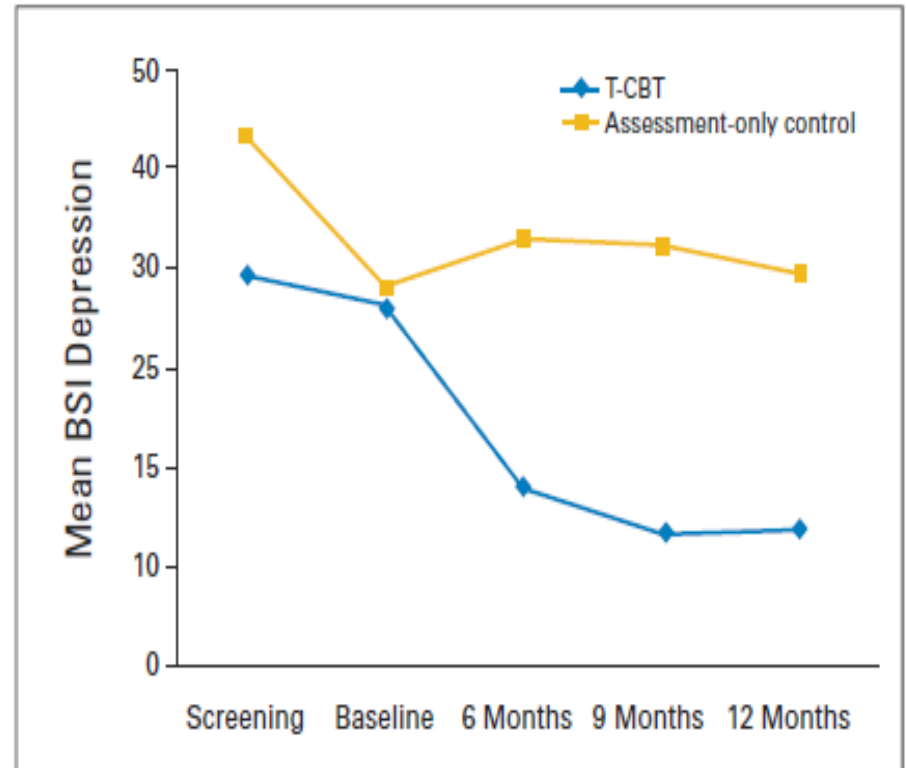
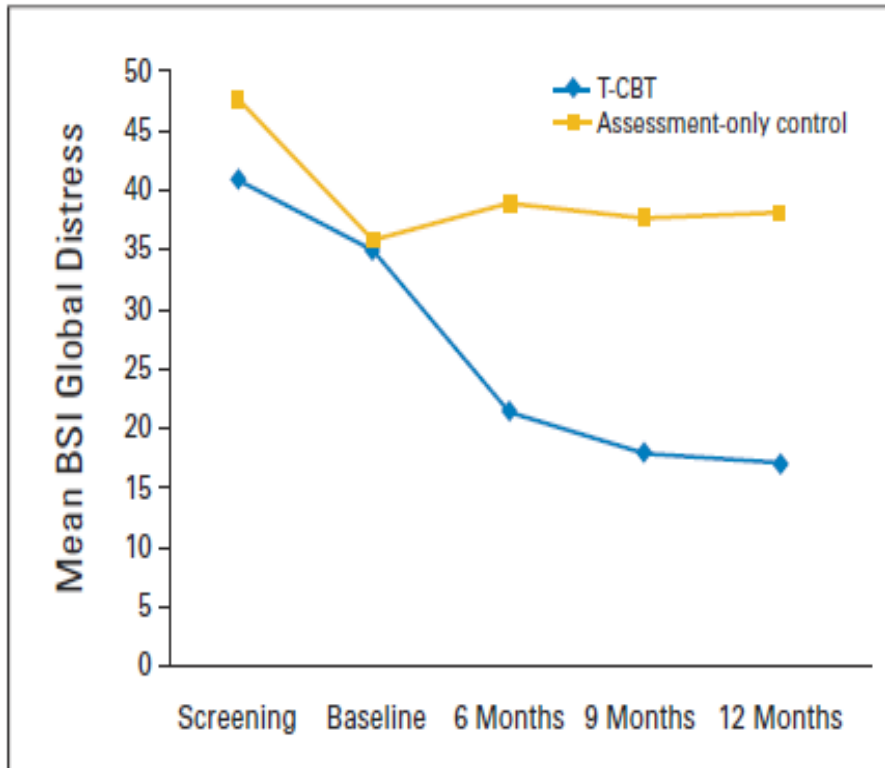
Du Hamel, JCO 2010

# Interventions to Promote Mental Functioning

Outcome	T-CBT Group		Assessment-Only Group	
	Mean	95% CI	Mean	95% CI
Total PCL-C				
Screening	34.01	30.79 to 37.24	38.23	35.27 to 41.20
Baseline	32.05	28.60 to 35.50	33.97	30.18 to 37.76
6 months postbaseline	25.38	21.69 to 29.07	32.05	27.18 to 36.93
9 months postbaseline	24.63	21.08 to 28.18	31.99	27.42 to 36.56
12 months postbaseline	24.00	19.20 to 28.01	30.89	26.33 to 35.45



# Interventions to Promote Mental Functioning



# Why is Mental Functioning Important?

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Allogenic HSCT	N	HR	95% CI	P-value
Overall survival Depression	1095	1.13	1.04-1.23	<b>p=0.003</b>
Acute GVHD, II-IV Depression	1115	1.25	1.14-1.37	<b>p&lt;0.0001</b>
Chronic GVHD Depression	1109	1.06	0.96-1.16	p=0.26
Length of stay Depression	1093	0.97	0.95-0.99	<b>p=0.002</b>

El-Jawahri, Cancer 2016



# Future Directions

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- Physical Medicine and Rehabilitation (PM&R) interventions for HSCT recipients
- Strategies to tailor and enhance physical exercise and recovery interventions in HSCT recipients
- Need to focus on patients with chronic GVHD: physical and mental functioning interventions
- Strategies to increase access and scalability of these interventions – Digital Therapeutics

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