

# Barriers to Vocational Outcome following Acquired Brain Injury (ABI)

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# Value of Return To Work following Brain Injury

- Potential benefits of return to work (RTW) after brain injury include:
  - Increased financial independence
  - Increased community participation
  - Increased social engagement
  - Decreased need for government assistance
  - Improved psychosocial well-being
  - Improved self-efficacy

Leung & Man (2005)

# Systematic Review

Van Velzen, et. al. (2009). How many people return to work after acquired brain injury: A systematic review. *Brain Injury*, 23(6): 473-488.

- traumatic and non-traumatic brain injury
- search yielded 2233 articles based on key words of brain injury and return to work
- 209 articles were then identified based on the following inclusion criteria:
  - non-progressive acquired brain injury,
  - return to work was mentioned in the title
  - Adults were included

# Systematic Review

Van Velzen, Van Bennekom et al (2009)

- 49 studies were selected for full review based on:
  - return to work was an outcome measure,
  - participants were working prior to their injury, and
  - the participants were 18-65 years of age.
- Results: Estimated post-injury at two years:
  - 40.8 % of the participants with traumatic brain injury were able to return to work
  - 39.3 % of the participants with non-traumatic brain injury were able to return to work

# Systematic Review

Van Velzen, Van Bennekom et al (2009)

- This study however was not able to separate outcomes by severity
  - One study<sup>1</sup> with a 12 year follow-up found 84% RTW rate which included mild head injury
  - One study<sup>2</sup> that only included mild TBI found a 78% RTW rate
- Three studies<sup>3,4,5</sup> looked at only severe TBI and found 0-18% RTW
- Therefore, the 40% RTW overall rate may overestimate rates of RTW for moderate to severe TBI

1. Groswasser Z., et al. (2002). Quantitative imaging in late TBI. Part II: Cognition and work after closed and penetrating head injury: A report of the Vietnam head injury study. *Brain Injury*; 16: 681-690.
2. Hanlon, R.E., Demery, J.A., Martinovich, Z., Kelly, J.P. (1999). Effects of acute injury characteristics on neuropsychological status and vocational outcome following mild TBI. *Brain Injury*; 13: 873-887.
3. Dikmen, S., Machamer, J., Temkin, N. (1993). Psychosocial outcome in patients with moderate to severe head injury: 2 year follow-up. *Brain Injury*; 7: 113-124.
4. Bounds, T.A., Schopp, L., Johnstone B., Unger, C., Goldman, H. (2003). Gender differences in a sample of vocational rehabilitation clients with TBI. *NeuroRehabilitation*; 18: 189-196.
5. Ruff, R.M., et al. (1993). Predictors of outcome following severe head trauma: Follow-up data from the traumatic coma databank. *Brain Injury*; 7: 101-111.

Indiana Vocational Rehabilitation  
Services successful closure  
(return to work) rate for brain  
injury = 18%  
in 2009

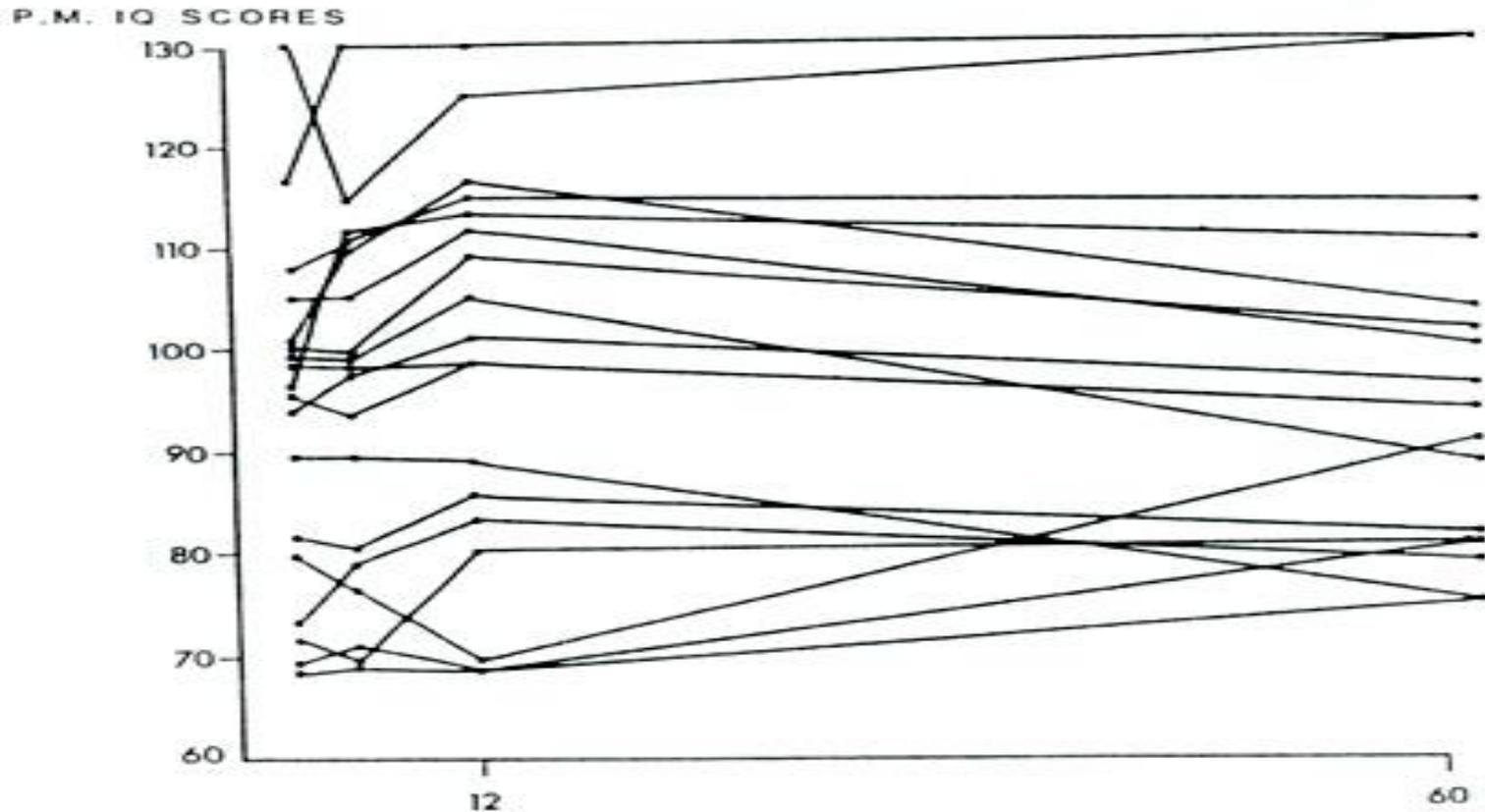
Why, at best, do only 40%  
of people with brain injury return to work?

Acute Care - - - - - Return to Work



# “Recovery” after TBI

(Brooks, 1984)



# Glasgow Outcome Scale-Extended (GOS-E)

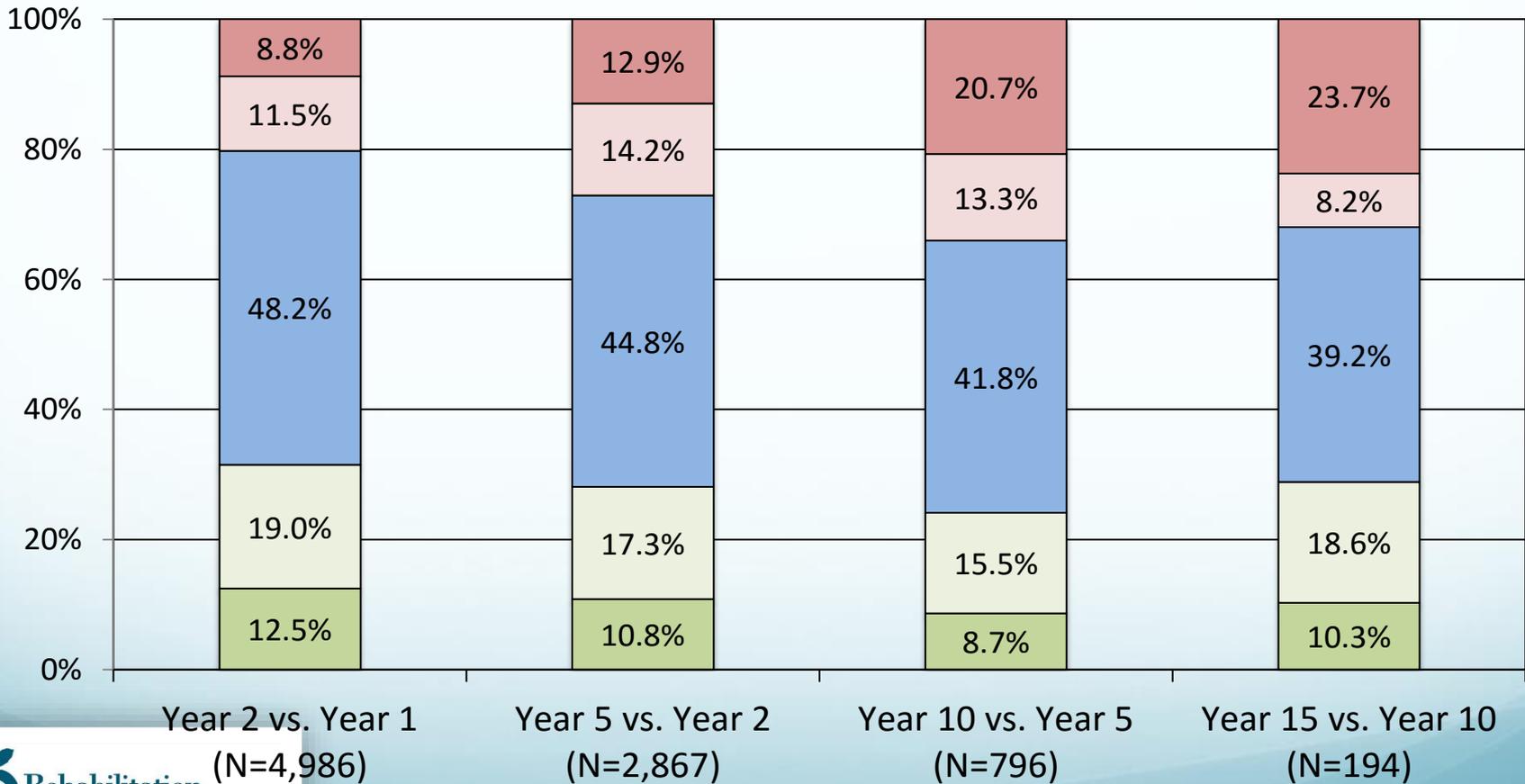
The Glasgow Outcome Scale (GOS) is a global scale for functional outcome that rates patient status into one of five categories: Dead, Vegetative State, Severe Disability, Moderate Disability or Good Recovery. The Extended GOS (GOSE) provides more detailed categorization into eight categories by subdividing the categories of severe disability, moderate disability and good recovery into a lower and upper category.

1	Death
2	Vegetative state
3	Lower severe disability
4	Upper severe disability
5	Lower moderate disability
6	Upper moderate disability
7	Lower good recovery
8	Upper good recovery

# Change in Function over Time: Glasgow Outcome Scale-Extended (GOS-E)

TBI Model System National Data & Statistical Center

■ % 2 categ. Declined  
 ■ % 1 categ. Declined  
 ■ % no change  
 ■ % 1 categ. Improved  
 ■ % 2 categ. Improved



## Change in GOS-E

Slide courtesy of Flora Hammond, M.D.

# Another look at the process of recovery post-brain injury



Pre-injury  
Psychological  
& Cognitive  
Resources

Donald Stein – “The  
Donut and the Hole”

# Case Example

- Maria is a 42-year-old, divorced female with 20 years of formal education. She earned her Ph.D. in Education.
- She has been employed as a Director of Educational Development and Outreach for a very large insurance firm for the past 9 years.
- She has an active lifestyle, maintains a healthy diet and regular exercise with little to no significant medical or psychiatric history.
- She reports her social support is “very good” and includes several close friends that she sees on a regular basis as well as her two adult children and one grandchild

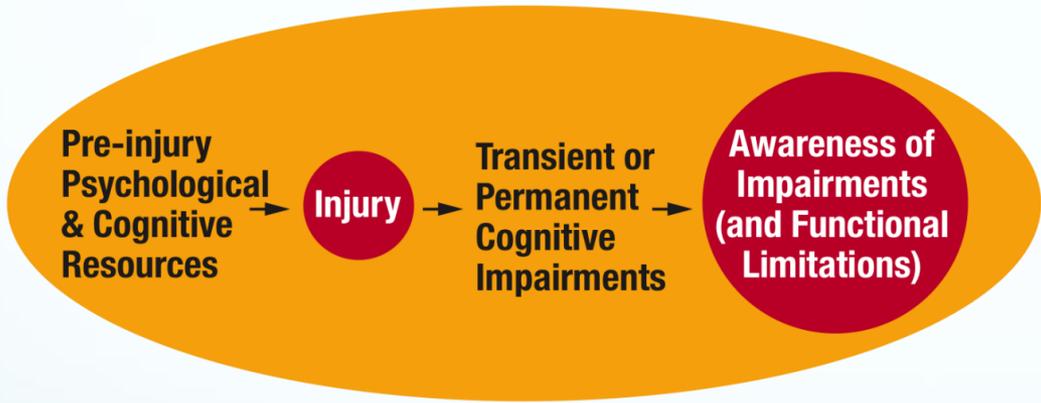
Pre-injury  
Psychological  
& Cognitive  
Resources →

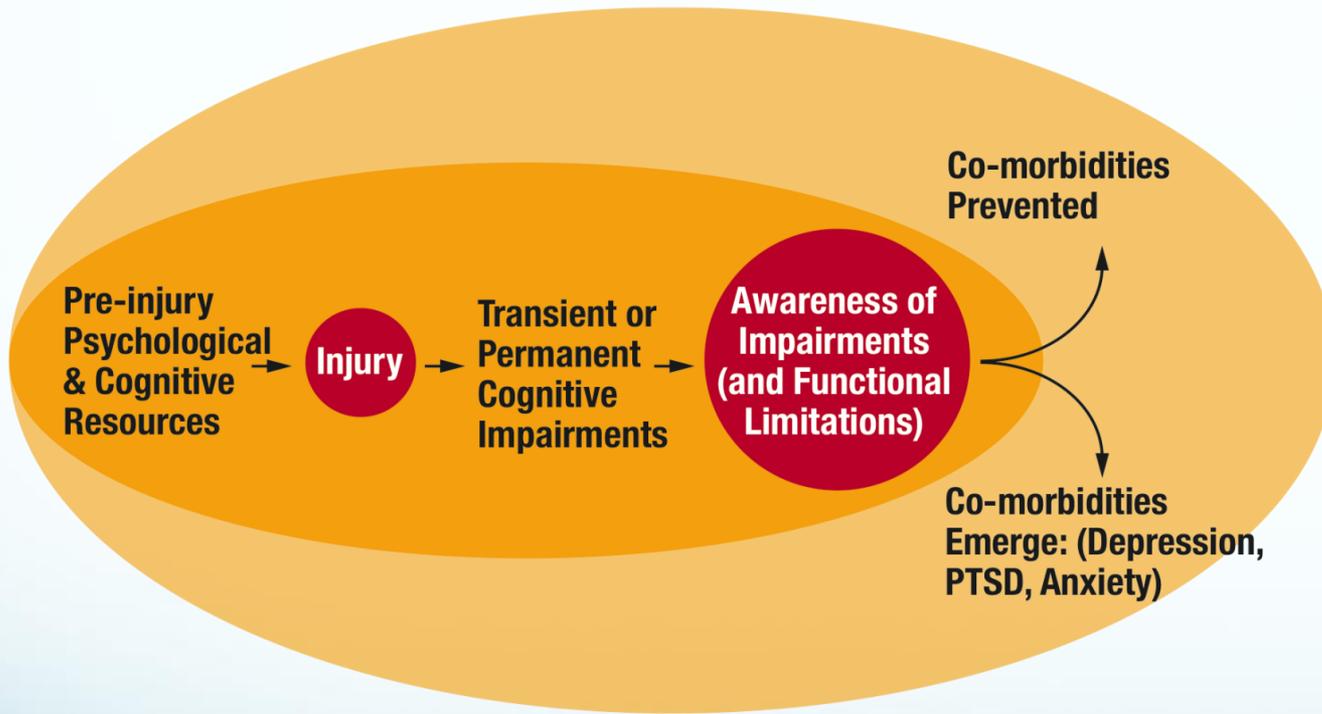
Injury

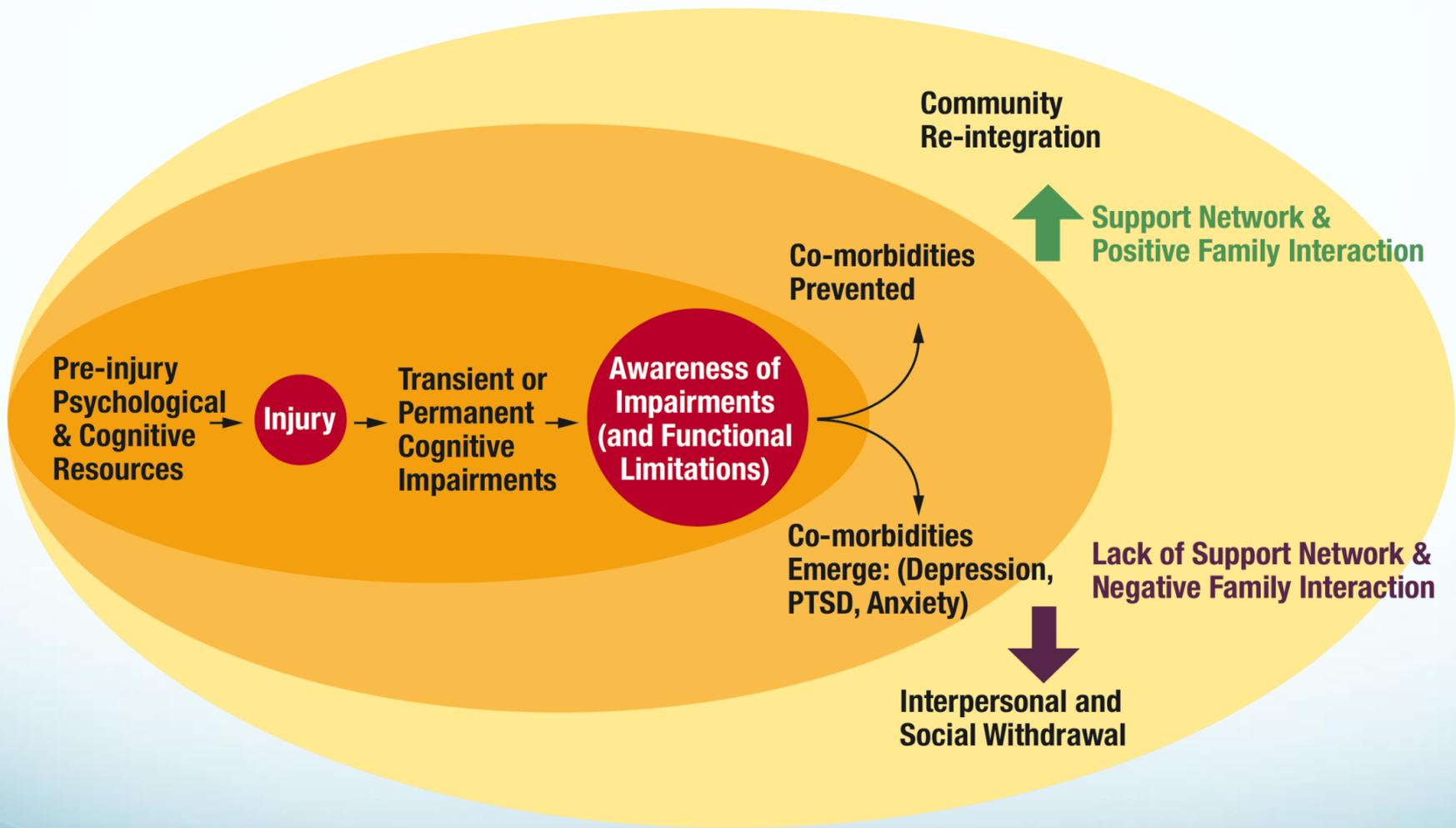
**Pre-injury  
Psychological  
& Cognitive  
Resources**

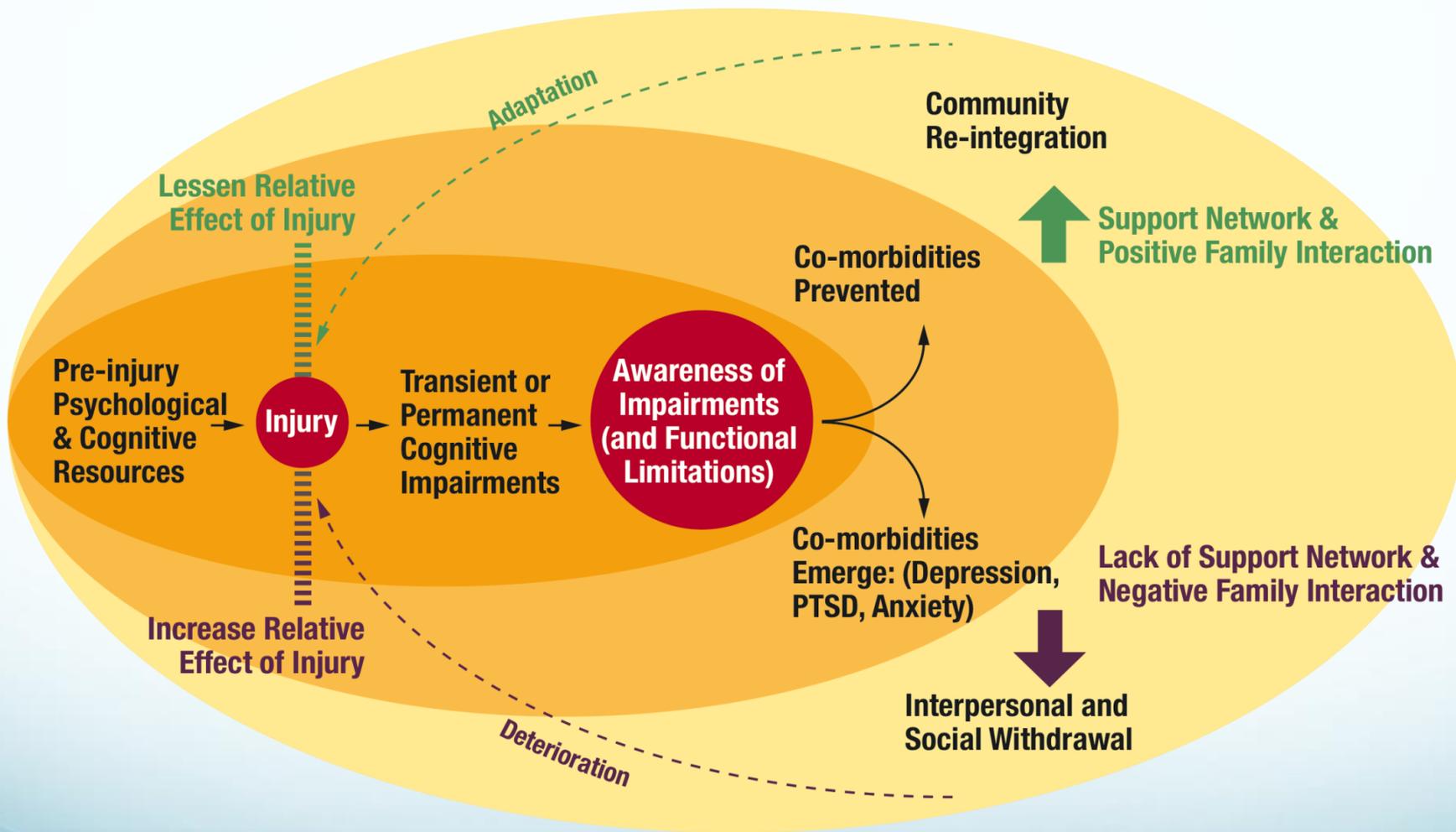
**Injury**

**Transient or  
Permanent  
Cognitive  
Impairments**









# What are the Barriers to Return to Work?



# What are the Barriers to Return to Work?

- Individual and Family
- Persisting Cognitive & Behavioral Impairments caused by brain injury
  - ~ 65% of moderate to severe TBI patients will have long-term cognitive problems
  - While TBI can cause many physical deficits, cognitive and behavioral changes are more closely associated with long-term disability
  - Cognitive and behavioral sequelae can lead to a reduced capacity for effective decision-making
    - Increased impulsivity
    - Reduced initiation / motivation / apathy

# What are the Barriers to Return to Work?

- Individual and Family:
  - Co-Morbidities

Examples of Co-morbidities	Prevalence post-TBI
Depression	27-42% <sup>1</sup>
Post-traumatic Epilepsy	1.9-30% <sup>2</sup> (incidence)
Headaches	30-90% <sup>3</sup>
Fatigue	32-73%

- Family burden / Role changes

<sup>1</sup>Lathif et al. (2014)

<sup>2</sup> D'Ambrosio & Perucca (2004)

<sup>3</sup> Hoffman et al. (2011)

<sup>4</sup> Ponsford (IBIA website)

# What are the Barriers to Return to Work?

- Environmental:
  - Availability of Brain Injury Specific Expertise
    - Comprehensive outpatient BI rehab programs are very limited
    - Professionals certified as Brain Injury Specialists by the Academy of Certified Brain Injury Specialists (ACBIS) may be hard to find outside of larger rehabilitation facilities
    - Scarce supply of Rehabilitation Neuropsychologists
    - Often community services providers have not had the resources available to them to accommodate the needs of a BI population

# What are the Barriers to Return to Work?

- Environmental:
  - Lack of Awareness of What Services do Exist
    - E.g. – Physical Medicine and Rehabilitation specialists in brain injury (physiatrists)
    - E.g. – Understanding the difference between traditional speech therapy and Brain Injury Cognitive Rehabilitation
  - Limited access to Services that do Exist
    - Inability to drive / lack of gas money
    - Lack of public or disabled transportation in rural areas
    - Limited insurance / reimbursement resources

# What are the Barriers to Return to Work?

- System:
  - Fragmentation and gaps between systems:

RF

**Medical**

**Rehabilitation**

**Vocational**

**Comm. Provider**



# What are the Consequences?

- Loss of pre-injury vocational skills, relationships and networks
- Increased risk for co-morbidities (e.g., depression, anxiety) secondary to decreased sense of self-worth
- Loss of economic productivity and financial stress for the patient and family
- Increased family burden
- Increased cost to society (e.g., disability, health care expense)

For these reasons, Resource Facilitation was designed to address these barriers

# What is Resource Facilitation?

- To provide brain injury specific education and promote awareness of resources to individuals with brain injury, their families, other providers and the community
- To proactively navigate the person and their family to needed instrumental, brain injury-specific, community and vocational supports and services
- To ensure collaboration, integration and coordination between providers and community-based resources

# Questions & Discussion