Brain Injury In Youth Offenders:

A Hidden Disability

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BRAIN INJURY ASSOCIATION OF PENNSYLVANIA

pennsylvania DEPARTMENT OF HEALTH

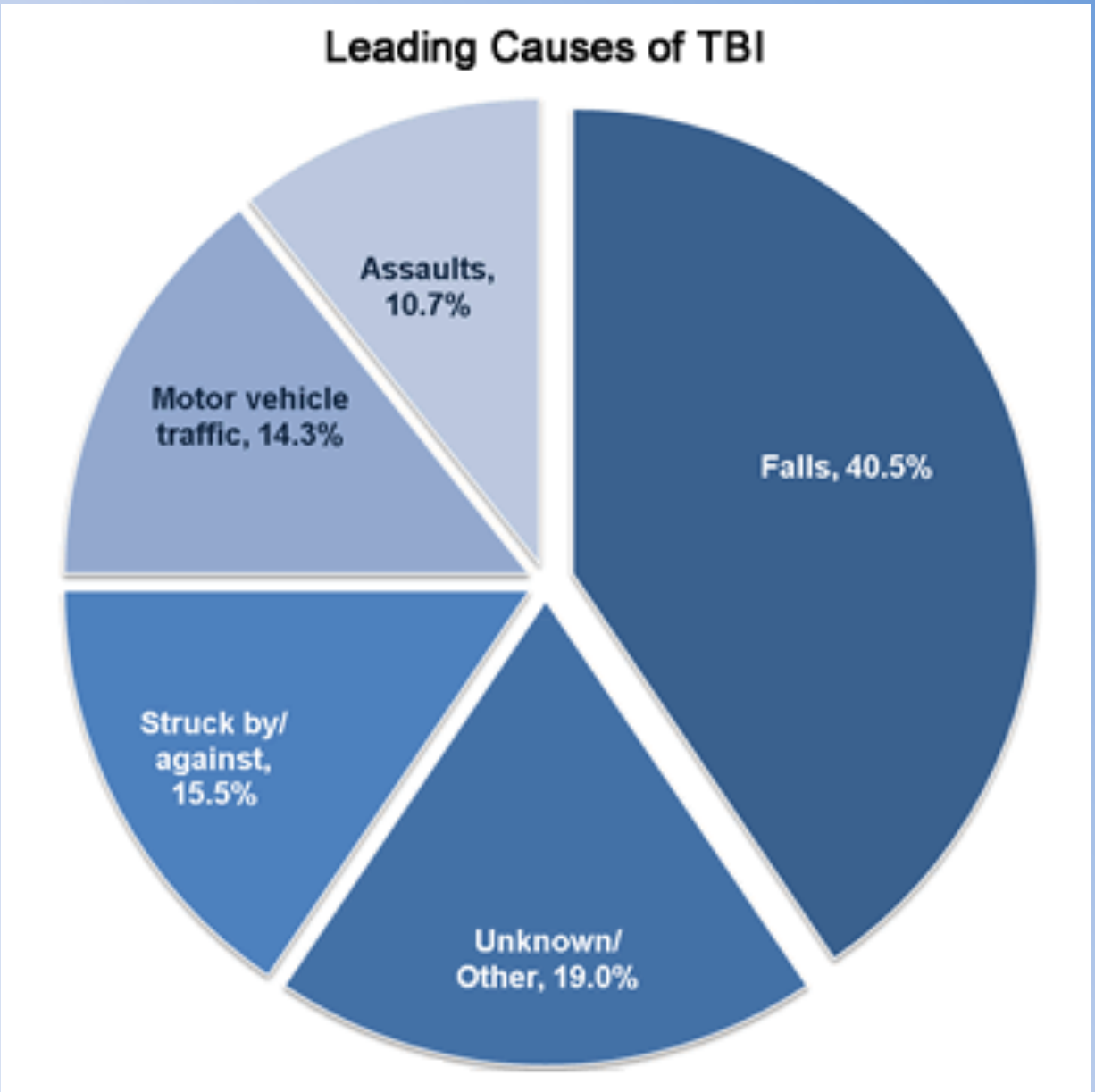
What We Will Cover

- Facts about brain injury
- Impact on youth in offenders
- Highlights of ongoing projects in PA
- Implications and Resources

Funded by TBI State Implementation Partnership Grant #90TBSG0010-01-00 from the U.S. Department of Health and Human Services, Administration for Community Living (ACL). Contents are the responsibility of the authors and no not necessarily represent the official view of ACL."

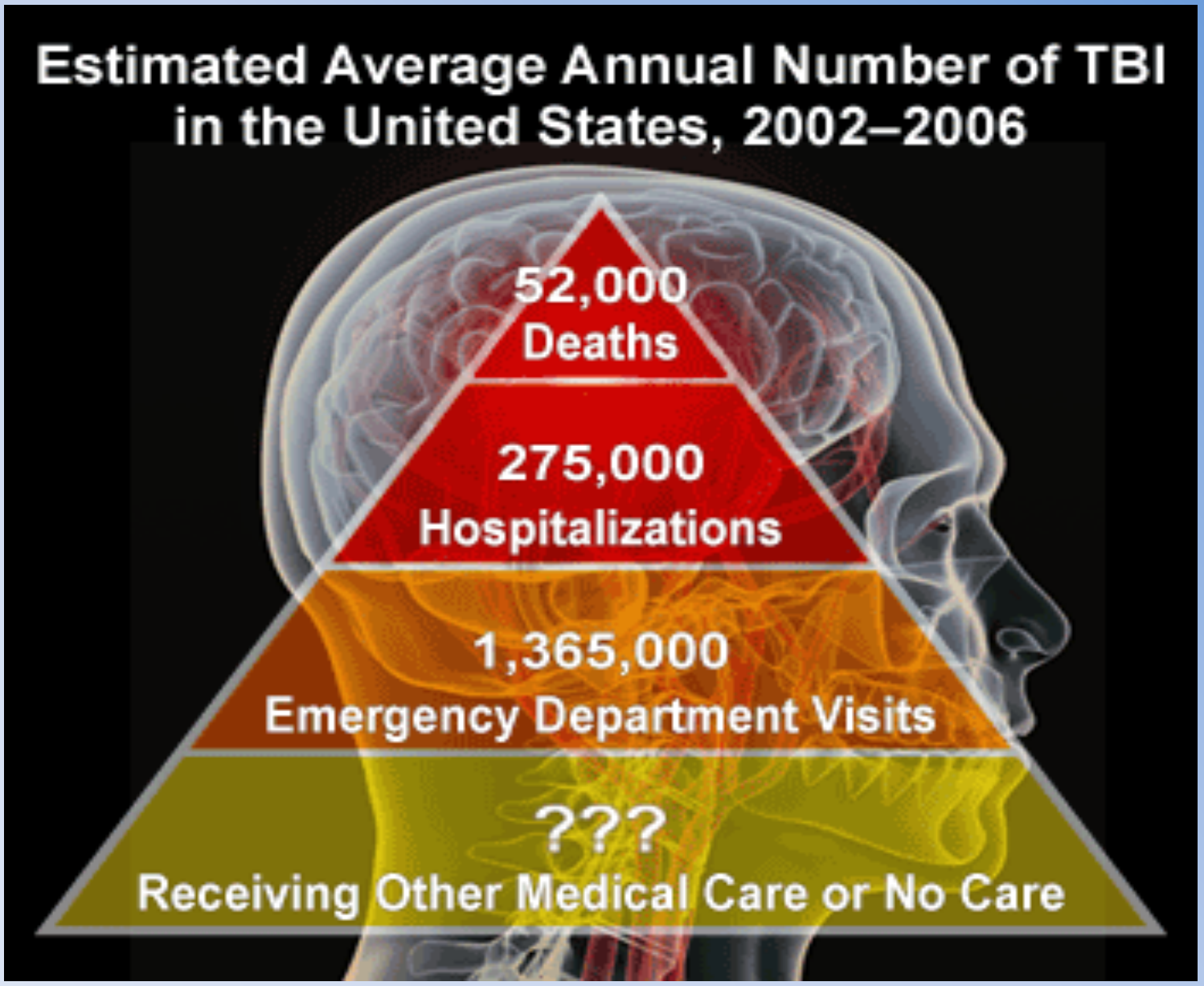
Learning Objectives:

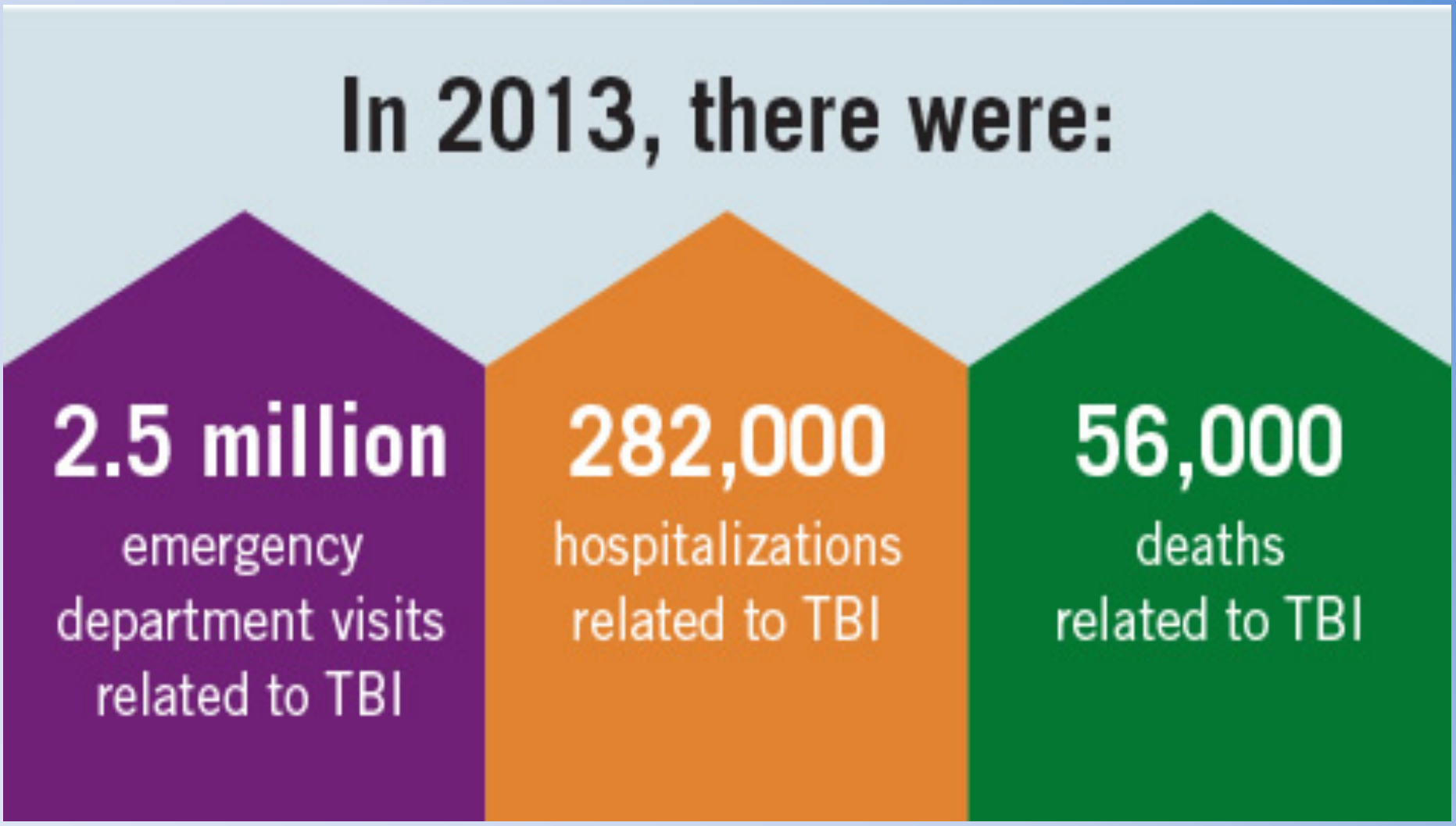
- **Attendees will be able to—**
  - Describe ways in which brain injury affects responsivity to treatment and success in juvenile justice settings and the community;
  - Describe key elements of an ongoing project in PA which identifies youth offenders with brain injury and connects them to resources;
  - Describe the project data related to the outcomes of screening and assessment;
  - Discuss potential resources for these youth and how to access them.


Leading Causes of TBI
Assaults, 10.7%
Motor vehicle traffic, 14.3%
Falls, 40.5%
Struck by/ against, 15.5%
Unknown/ Other, 19.0%

Causes of non-traumatic brain injury:

- Brain Tumors
- Anoxia/Hypoxia
- Infections of the Brain
- Stroke
- Aneurysm
- Ingestion of Toxic Substances


Estimated Average Annual Number of TBI in the United States, 2002–2006
52,000
Deaths
275,000
Hospitalizations
1,365,000
Emergency Department Visits
???
Receiving Other Medical Care or No Care



Brain Injury Association of Pennsylvania

In Pennsylvania:

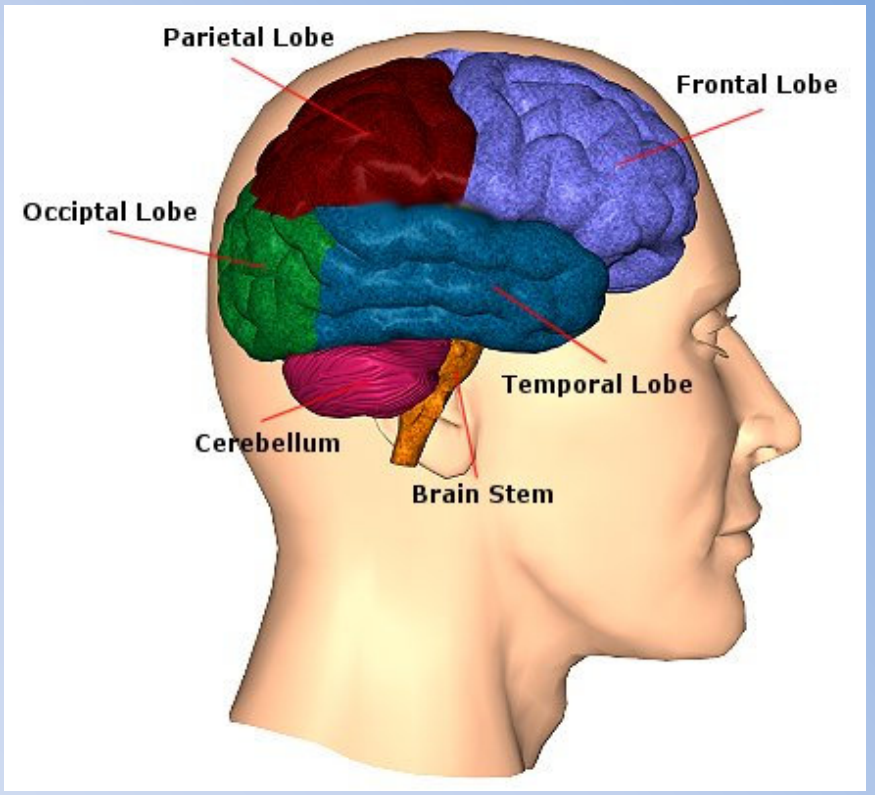
- 100,000 Pennsylvanians sustain a brain injury each year
- 2,000 Pennsylvanians die every year from complications following TBI
- 280,000 Pennsylvanians are living with lifelong disabilities from brain injury
- 88,000 Pennsylvanians are treated in emergency departments following brain injuries each year

Who is Most at Risk?

- Age groups most likely to sustain a TBI:
  - 0-4
  - 15-19
  - >65
- In every age group, TBI rates are higher for males than females
- Males aged 0-4 years have the highest rates of TBI-related emergency department visits, hospitalizations, and deaths combined

Brain Behavior Relationships

Frontal Lobe
- Initiation
- Problem solving
- Judgment
- Inhibition of behavior
- Planning/anticipation
- Self-monitoring
- Motor planning
- Personality/emotions
- Awareness of abilities/limitations
- Organization
- Attention/concentration
- Mental flexibility
- Speaking (expressive language)



Parietal Lobe
- Sense of touch
- Differentiation: size, shape, color
- Spatial perception
- Visual perception

Occipital Lobe
- Vision

Cerebellum
- Balance
- Coordination
- Skilled motor activity

Temporal Lobe
- Memory
- Hearing
- Understanding language (receptive language)
- Organization and sequencing

Brain Stem
- Breathing
- Heart rate
- Arousal/consciousness
- Sleep/wake functions
- Attention/concentration

What are the Long-Term Consequences of Brain Injury?

- **Problems in**
  - Thinking
  - Memory and Learning
  - Language and Communication
  - Sensation, Motor Skills, Balance, Vision
  - Behavioral and Emotional Regulation

- **Mental Health Problems**
- **Other Disorders**
  - **Epilepsy**
  - **Increased risk for Alzheimer's and Parkinson's diseases, Chronic Traumatic Encephalopathy (CTE)**

And what about Concussion?

- Incidence of diagnosed concussions among people under age 20 increased 71% between 2010 and 2015 among the general population
- Greatest increase among girls, up 119%
- Impact of a single concussion…

The New York Times 10.05.2016

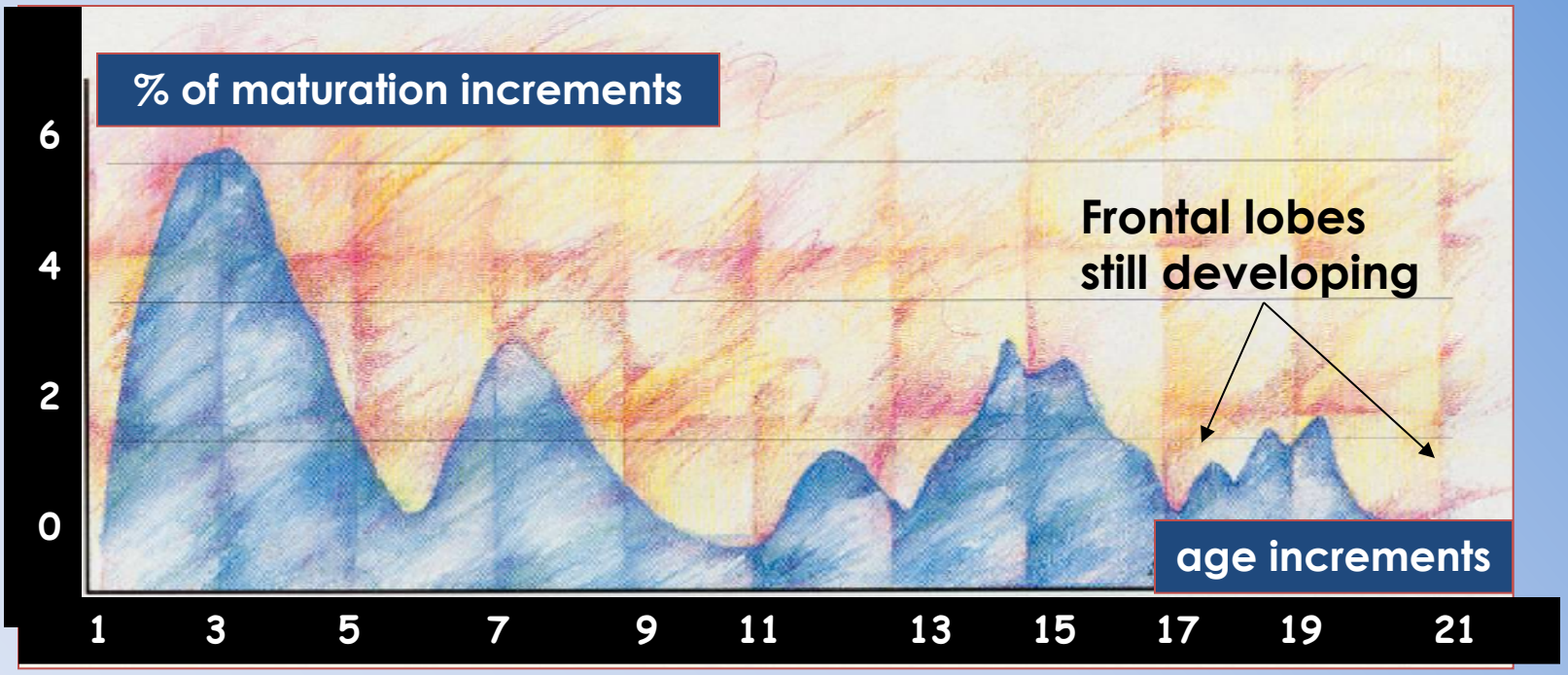
A Single Concussion May Have Lasting Impact

BRAIN INJURY ASSOCIATION OF PENNSYLVANIA

A Child's Brain

- **Underdeveloped**
  - the younger the child → less developed is their brain
- **Brain needs time & experience to mature**
- **Undifferentiated**
  - specialization develops in the brain as learning occurs
- **The earlier the injury → the more pervasive the impact**

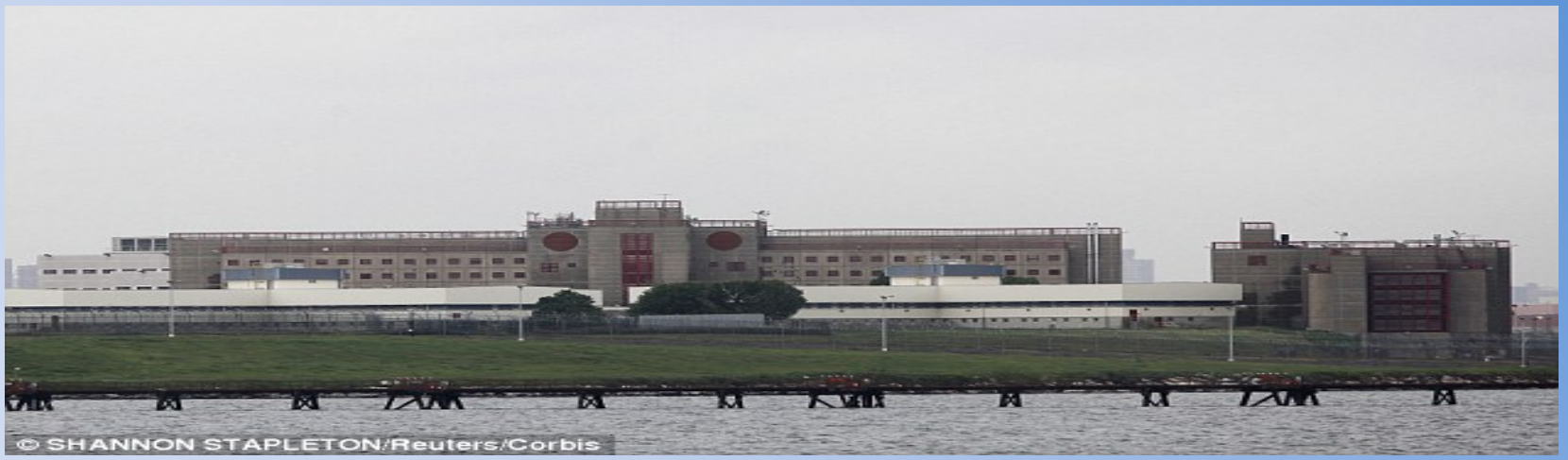
Rates of Development:
5 Peak Maturation Periods



Peak Maturation Periods
FIVE distinct stages between the ages of 1 and 21 yrs.

Impact on justice-involved populations

- 60% of adult inmates have a history of brain injury *prior* to incarceration (Shiroma, et al., 2010;)
- Rate of TBI is 3 to 8 times higher among juvenile offenders (Hughes et al., 2015)
- Half of youth offenders have a history of loss of consciousness, with repeat injuries being very common (Davies et al., 2012; Kaba et al., 2014)



- 67.4% of adolescents in NY City Jails reported a history of at least one brain injury (Kaba et al., 2014)
- 50% of males and 49% of females reported moderate to severe injuries
- Most frequent causes were assaults (55.5%) followed by falls (41%)
- Youth with brain injury were more likely to use mental health services

TBI Among Justice Involved Youth

- **Youth with ADHD are at greater risk of TBI**
  (Keenan, Hall, & Marshall, 2008)
- **Youth with TBI display:**
  - Significantly more psychiatric distress
  - Earlier onset of criminal behavior
  - Earlier onset substance abuse behavior
  - More lifetime substance abuse and suicidality (Walker et al., 2003)
- **Lifetime prevalence of TBI will continue to climb as youth enter early and middle adulthood**

  (Perron & Howard, 2008; Walker et al, 2003)
- **TBI is a risk factor for arrest and re-offending**
  (Elbogen et al., 2015; Farrer & Hedges, 2011; Huw Williams et al., 2010)

Many brain injuries in justice involved youth are undiagnosed…

Undiagnosed Brain Injuries

- Systems that have primary functions other than brain injury do not document brain injury
    - Unless medical documentation is available or brain injury screening is in place
- Many brain injuries are unreported and/or undiagnosed
- A need for screening exists

Undiagnosed Brain Injuries

- **Brain Injury is often referred to as the "hidden" disability**
- **Individuals may**
  - Drop out of school
  - Start misusing substances
  - Fail at relationships
  - Become victims
  - Become homeless
  - End up in Mental Health System
  - Be unable to obtain or maintain employment
  - Get into trouble with the law

Characteristics of Brain Injury and How they can Look in Juvenile Justice Settings

Characteristic	Behavior
Poor cognitive skills including memory and organization	Can't recall information or retell stories consistently; Misses appointments; Decreased academic engagement
Slowed processing and poor attention	Responds slowly to directives; Appears distracted or disinterested; Does not participate effectively in group treatment
Poor problem-solving/reasoning and judgment	Doesn't anticipate consequences of actions; Susceptible to negative peer influence; Can't generate alternative solutions
Poor initiation	Has trouble getting started – chores, homework, etc.; Doesn't ask for help
Limited ability to self-monitor or evaluate	Doesn't see self as others do; Has trouble setting realistic goals; Does not see mistakes or ask for help
Emotional dysregulation and/or anxiety and depression	Over-reacts emotionally; Tends to feel nervous/worried or depressed; Sleep issues

Why does it matter? Why do youth with brain injury need a different approach?

- Executive dysfunction
- Emotional dysregulation
- Memory impairment
  - Variability of memory
  - Prospective memory

These are neuropsychological functions, mediated by the brain, not always under willful control.

The impact of brain injury may not be immediately evident given age-related demands.

How does brain injury impact risk and responsivity to treatment?

What can be done about it?

Criminal Thinking Or Cognitive Challenge?…

Victim Stance

Assumes Hostility/Threat in Others

Lack of Emotional Awareness in Self

Lack of Empathy

Blaming Others

Misinterpretation of Social Cues

Poor Emotional Regulation

"I can't" Attitude

Rationalization

Black-and-White Thinking

Lack of Effort

Egocentricity

Sensitive to Failure

Concrete Thinking vs. Abstract Thinking

Unrealistic Expectations

Demand for Instant Gratification

"Should" Statements

Poor Decision-Making

Pride

Entitlement/Ownership

Vagueness/Inconsistency

From a survivor's perspective

I need a lot more rest than I used to. I'm not being lazy. I get physical fatigue as well as a "brain fatigue." It is very difficult and tiring for my brain to think, process, and organize. Fatigue makes it even harder to think.

My stamina fluctuates, even though I may look good or "all better" on the outside. Cognition is a fragile function for a brain injury survivor. Some days are better than others. Pushing too hard usually leads to setbacks.

I am not being difficult if I resist social situations. Crowds, confusion, and loud sounds quickly overload my brain, it doesn't filter sounds as well as it used to. Limiting my exposure is a coping strategy, not a behavioral problem.

If there is more than one person talking, I may seem uninterested in the conversation. That is because I have trouble following all the different "lines" of discussion. It is exhausting to keep trying to piece it all together. I'm not dumb or rude; my brain is getting overloaded!

Try to notice the circumstances if a behavior problem arises. "Behavior problems" are often an indication of my inability to cope with a specific situation and not a mental health issue. I may be frustrated, in pain, overtired or there may be too much confusion or to find my words and follow my thoughts.

Patience is the best gift you can give me. It allows me to work deliberately and at my own pace, allowing me to rebuild pathways in my brain. Rushing and multi-tasking inhibit cognition.

If I seem sensitive, it could be emotional lability as a result of the injury or it may be a reflection of the extraordinary effort it takes to do things now. Tasks that used to feel "automatic" and take minimal effort, now take much longer, require the implementation of numerous strategies and are huge accomplishments for me.

Lost & Found: What Brain Injury Survivors Want You to Know

Barbara J. Webster, Lash & Associates

How to best address brain injury in these settings:

- **Adjust expectations**
  - Behaviors may be related to impairments in memory and executive functioning and not "willful"
- **Connect to appropriate resources**
- **Utilize strategies to maximize success**
  - Reminders, routines, written info
  - Allow additional time for processing
  - Check-ins on comprehension
  - Provide context when asking questions, especially in group settings
  - Provide support/direction for problem-solving and follow through
  - Utilize 1:1 supports at home, school, etc.

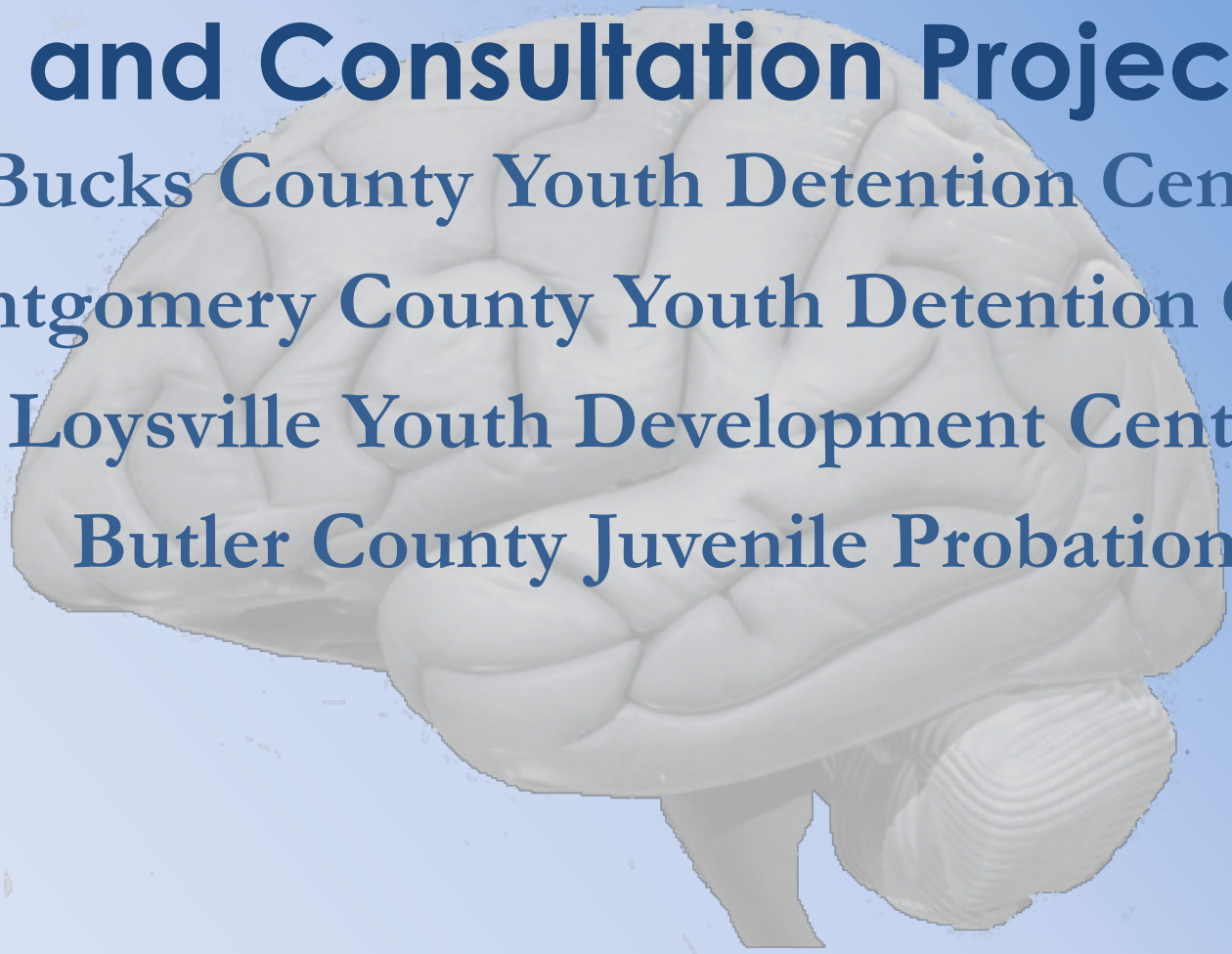
Brain Injury Education, Training and Consultation Project:

Bucks County Youth Detention Center

Montgomery County Youth Detention Center

Loysville Youth Development Center

Butler County Juvenile Probation



Brain Injury Association of Pennsylvania

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History of the Project

- Informed by a prior BIAPA project involving men at SCI-Graterford
- Funded by Health Resources and Services Administration HRSA for a 4-year period (2014 - 2018). Moved to ACL in 2016.
- Part of the TBI Implementation Partnership Grant Program
- Designed to address common barriers to access in care

Common Barriers to Access to Care

- Lack of information regarding available services and supports
- Shortage of healthcare professionals who have training in TBI (specifically, an ability to identify TBI and treat the resulting symptoms)
- Frequent absence of a TBI diagnosis or the assignment of an incorrect diagnosis
- TBI services spread across a variety of agencies resulting in services being difficult for families to find and/or navigate

Grant Activities

- Screening to identify individuals with TBI
- Building a trained TBI workforce
- Providing information about TBI to families Facilitating access to services through resource facilitation

The goal of is to build a sustainable service delivery infrastructure for individuals with TBI and those at high risk for TBI.

Populations at high risk for TBI

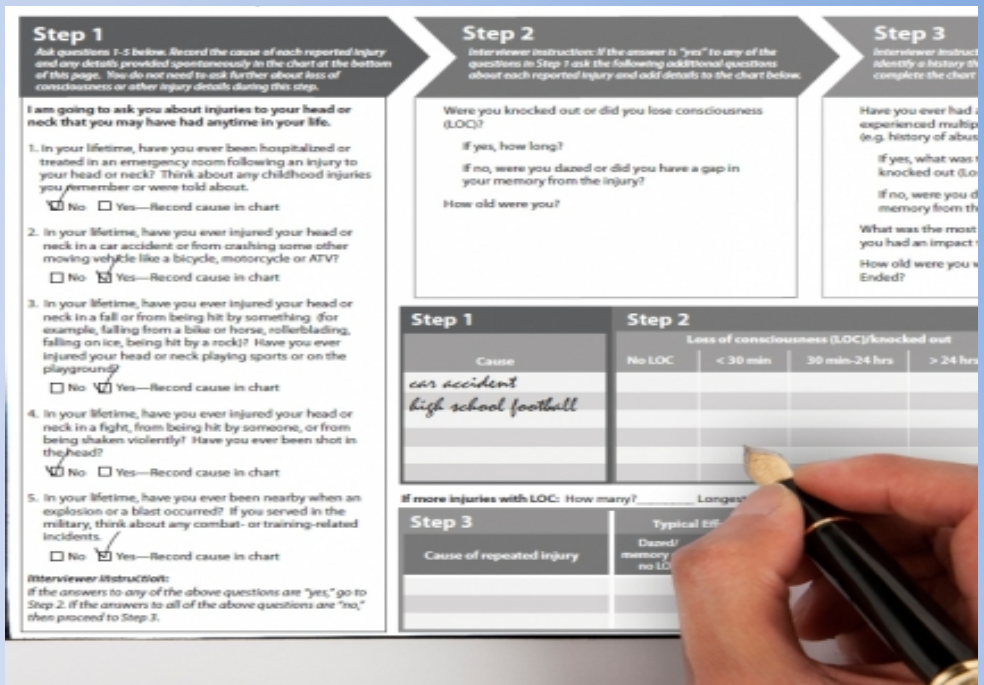
- Children 0 – 4 (African American children have the highest rate for this age group)
- Youth aged 15 -19 (African American youth have the highest rate for this age group)
- The elderly
- Athletes of all ages
- Homeless individuals of all ages
- Incarcerated individuals, including juvenile offenders
- Individuals harmed by domestic violence

Juvenile Justice Project Elements

- Formal Screening
- Neurocognitive Testing
  - Brief neurocognitive assessment battery
- Brain Injury Education and Counseling
- Education and Support for Related Systems
- NeuroResource Facilitation

Screening

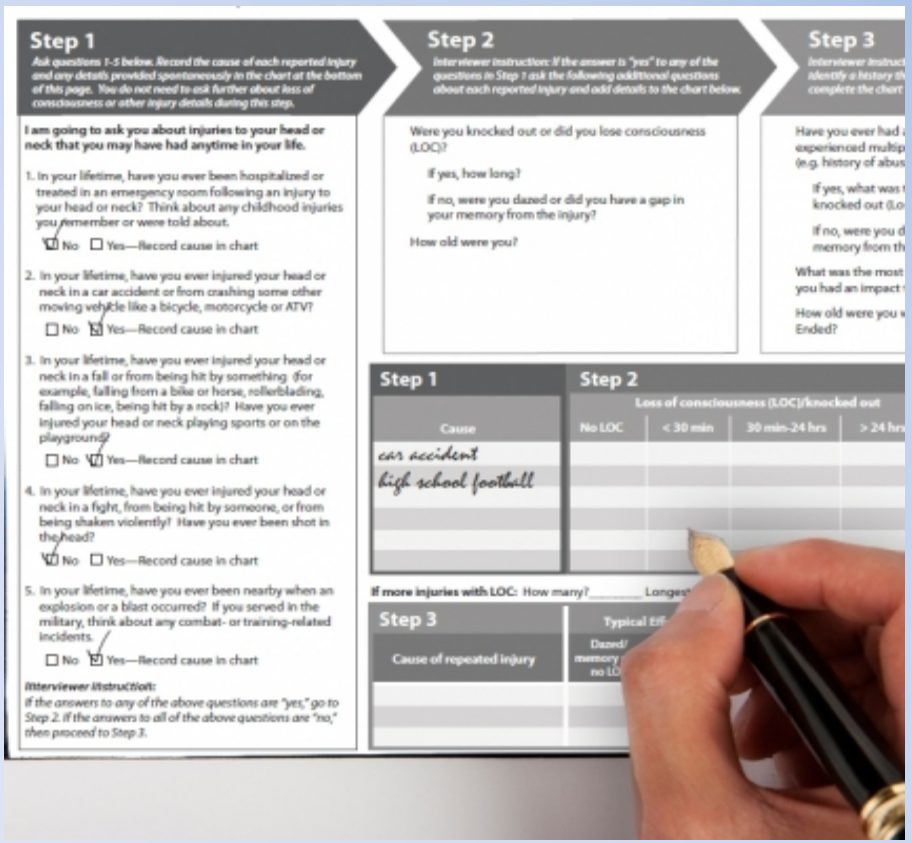
- A semi-structured interview reviewing a lifelong history of events that could have caused a brain injury is the BEST way to identify possible history
- OSU-TBI Identification Method
- Certain episode characteristics are associated with a greater likelihood of long-lasting effects



The Ohio State University Traumatic Brain Injury Identification Method

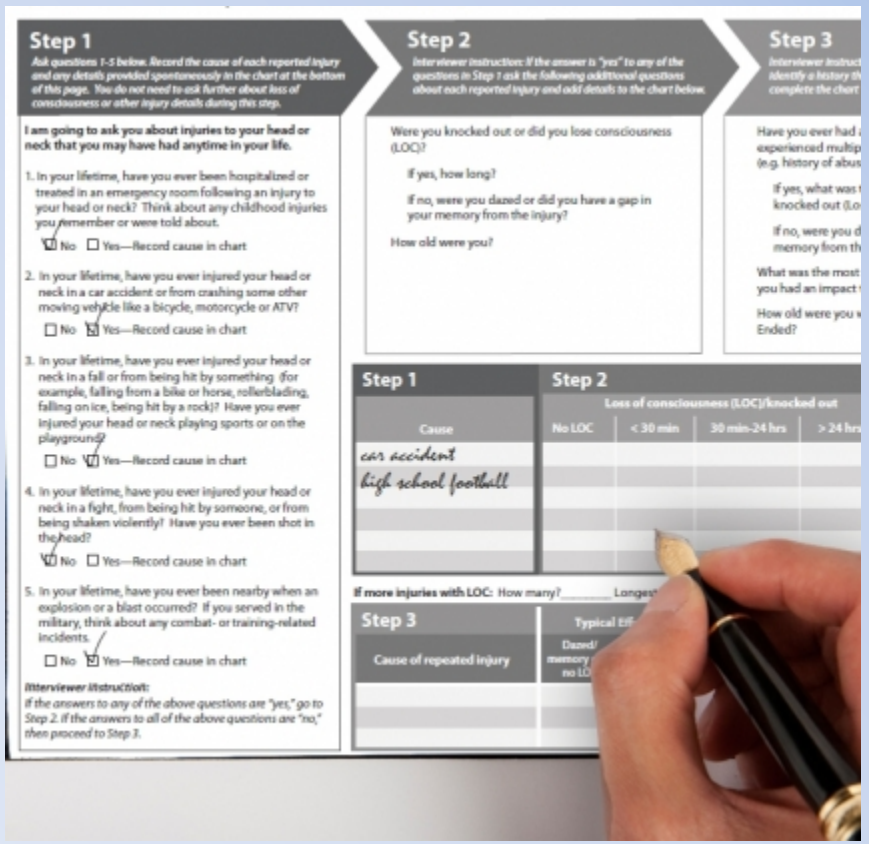
- Standardized procedure for eliciting a person's lifetime history of TBI
- Short (5 minute) structured interview
- Self-report remains the gold standard for research and clinical use
- Proven useful in many settings, including medical, mental health, substance abuse, domestic violence, corrections and aging

STEP 1: Recalling injuries



- Interviewer asks five questions
- Records data related to the causes of any injuries

STEP 2: Injury details



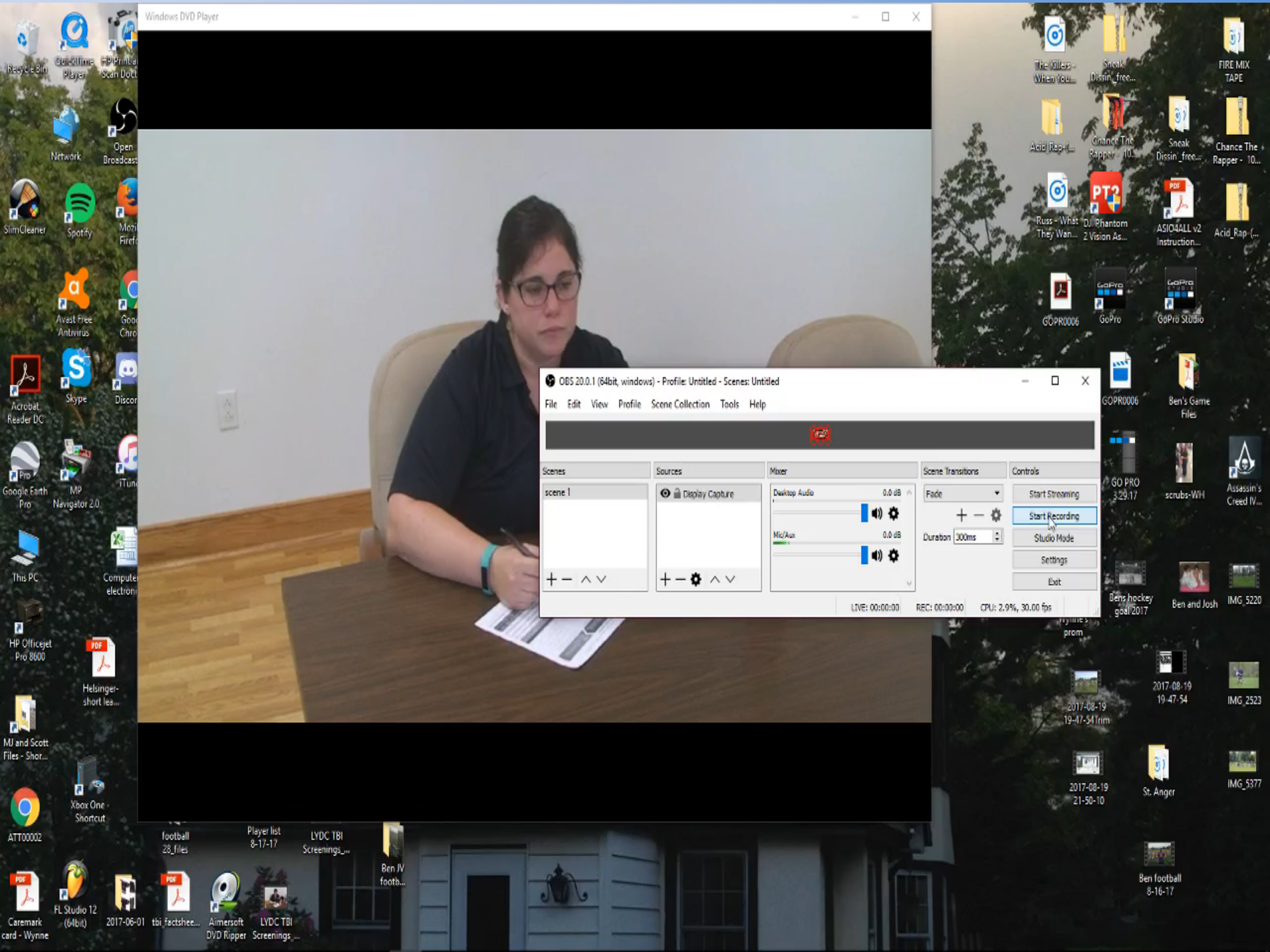
- For each injury, ask about age at time of injury, loss of consciousness and/or dazing
- Record details

STEP 3: History of multiple blows to the head

- Interviewer probes whether the participant has ever sustained multiple blows to the head which may not have even been "injuries"
- Examples can include child abuse, boxing, sub-concussive blows in football, repeated exposure to IEDs
- Determine the age range of this exposure
- Determine typical and most serious effects

CNS Supplement

- Other Central Nervous System (CNS) Compromise
- Used in conjunction with the OSU TBI-ID
- Identifies other causes of possible ABI
- Asks about history of:
  - Attention deficit/Hyperactivity Learning disability
    Developmental disability Intellectual disability
    Epilepsy/seizures Oxygen deprivation (anoxia)
    Cerebral palsy Brain infections like Meningitis
    Lead exposure Chemotherapy or poisoning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Scenes
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Sources
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Mixer
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Fade
Duration 300ms
Controls
Start Streaming
Start Recording
Studio Mode
Settings
Exit
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REC: 00:00:00
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Interpreting findings

- OSU TBI-ID form offers guidelines for interpretation to identify those who are more likely to have lasting impairment
- Based on WORST, FIRST, RECENT, and MULTIPLE injuries
- Also considers of OTHER SOURCES of possible brain impairment

What does a positive screening mean?

- Not all possible episodes of brain injury lead to cognitive impairment
- Certain episode characteristics are associated with a greater likelihood of long-lasting effects
- Neurocognitive testing can be used to look at the likely effects of brain injury

Neurocognitive Assessment

- Focuses on Memory and Executive Functioning
- Compares an individual's performance to a sample of peers (same age, gender, education)
- Determines if individual is likely to have difficulty in school, work, and independent living
- Offers a profile of strengths and weaknesses and suggest strategies to compensate for problems
- Suggest possible resource connections and interventions and can serve as a "qualifier" for resources

NeuroCognitive Assessment

Battery of tests used in this project:

- WRAML, Wide Range Assessment of Memory and Learning- Second Edition (WRAML-2)
- Wechsler Individual Achievement Test-Third Edition (WIAT-III) - Reading Comprehension and Math Problem-Solving
- Behavior Rating Inventory of Executive Function-Self-Report Version (BRIEF-SR) and Parent Version
- Delis-Kaplan Executive Functioning System (D-KEFS)

NeuroResource Facilitation

- **Assists individuals with brain injury to:**
  - Understand and navigate programs that support persons with disabilities
  - Find and apply for the most relevant programs and services to meet their needs and attain their goals
  - Problem-solve any barriers that may arise
- **Goes beyond making referrals-- NRF continues throughout the process until services are in place**

Connection to Services

- Special Education/School Re-Entry (BrainSTEPS)
- Vocational Rehabilitation
  - Transition services
  - Pre-employment assistance
  - Supported employment
- Medical Providers
  - Physiatry or neurology
  - Related therapies
- Support Groups/Counseling

Project Findings…

Brain Injury Association of Pennsylvania

Summary of Findings: Adult Corrections

PA 2013-2015	N=164
Screened Positive Events that could have caused a Brain Injury	75.95%
Average Number of Events per Individual	4.1
Percentage of Events that Occurred before age 21	75%
Showed Evidence of Neurocognitive Impairments on Standardized Testing	71.59%

JUVENILE Summary of Data
Bucks and Montgomery Counties

(through 9/5/17)

Screened for Brain Injury	392
Screened Positive for an Event that could have caused a Brain Injury	208 (53%)
Administered NeuroCognitive Testing	133
Showed Evidence of Impairments	74 (56%)

Loysville Youth Development Center

- A project inspired by presentations and prior work
- "Embedded" within the Loysville system
- Managed by the Loysville team
- BIAPA provides training and consultation as part of this grant

Loysville Process - Readiness

1. TBI overview training
2. OSU-TBI observation/training
3. NeuroCognitive Assessment observation/training
4. Preparing Assessment write-up
5. Referral process

Loysville Process

1. All youth screened within 60 days of admission with OSU TBI instrument
2. Youth with positive results are administered NeuroCognitive Assessment
3. Significant findings trigger referrals to BrainSteps and OVR
4. Treatment planning updated based on learning/behavioral strategies
5. Communication of results with probation and family

Summary of Data (through 8/11/17)

Loysville Youth Development Center	
Screened for Brain Injury	277
Screened Positive for an Event that could have caused a Brain Injury	69 (25%)
Administered NeuroCognitive Testing	13
Showed Evidence of Impairments	12 (92%)

Butler County Juvenile Court

- Judge requested assistance to develop brain injury project in their system
- Brain injury training provided to large group
- Juvenile Probation Officers have been formally trained to screen for brain injury using the OSU-TBI ID
- Screening began in September 2016
- Area neuropsychologist to provide assessments

Case Example: Juvenile

- 16 year old youth
- 3 possible events on screening, including a concussion "that changed everything"
- Evidence of post-concussion symptoms
- Severe neurocognitive impairment on testing
- Referrals to BrainSTEPS, OVR, and medical specialists in brain injury
  - Received medical care and vestibular therapy through concussion specialist
  - Received brain injury education and counseling
  - Received BrainSTEPS consult and adapted education, including credit recovery
  - Referred for Vocational Evaluation to determine realistic career plan and needed supports (OVR)

Resources in Pennsylvania

- School Re-Entry
- Vocational Rehabilitation
- Medical and Community-Based Rehabilitation
- Counseling

BrainSTEPS

Strategies Teaching Educators, Parents, & Students

A BRAIN INJURY SCHOOL RE-ENTRY CONSULTING PROGRAM

- BrainSTEPS is a joint project between the Brain Injury Association of Pennsylvania Inc., the Pennsylvania Department of Education, and the Pennsylvania Department of Health
- Anyone can make a referral
- www.brainsteps.net

- Contact: Brenda Eagan Brown, Program Coordinator

Phone: (724) 944-6542
Email: eaganbrown@biapa.org

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Vocational Rehabilitation

- **Early Reach Services** are available to youth with disabilities (brain injury and others)
- Can provide Pre-Employment Transition Services (PETS) to individuals aged 14-21
- Services are also available into adulthood
- Refer to your local office
  http://www.dli.pa.gov/Individuals/Disability-Services/ovr/Pages/OVR-Office-Directory.aspx

Medical Rehab, Counseling, & Support

- Individuals with newer injuries or unresolved symptoms after concussion may benefit from Medical Rehabilitation
- Consult with a Physiatrist or Neurologist
- Depression and Anxiety can follow TBI
- Supportive Counseling may be indicated—but provider should be aware of the brain injury as a variable

Other Brain Injury Resources:

- **PA Head Injury Program**
  - Must be 21 and meet specific requirements
  - Provides for $100,000 or 1 year of services if qualified
  - Services can be provided in community or in a facility
  - To apply: 1-866-412-4755
- **MA Waivers**
  - Provide funding for home an community-based services to qualified individuals
  - Must be 18 years or older to receive services
  - To apply: 1-877-550-4227

Questions and Implications for Juvenile Justice Professionals…

- How might your system identify those youth who have history of brain injury? And assess for cognitive difficulties?
- How will this information affect treatment recommendations and expectations?
- What resource connections can be made for these individuals and who can make them within your system?

Next steps…

- **In preparation for the grant's end in May of 2018, the following plans are in place to assist with sustainability:**
  - PrimeCare has taken on screening in one detention center
  - Plans for expansion to the other state BJJS sites are being considered
  - Training is being offered to private providers of psychological evaluations in 2 counties
  - NPJS is working on a national position statement regarding the issue of brain injury among youth offenders

Brain Injury Information Resources

www.brainline.org

www.cdc.gov/traumaticbraininjury/

www.biausa.org/

www.msktc.org/tbi/factsheets

For further information

BRAIN INJURY ASSOCIATION OF PENNSYLVANIA

pennsylvania DEPARTMENT OF HEALTH

www.biapa.org

www.health.pa.gov

Toll Free Brain Injury Resource Line

1-800-444-6443

PA Department of Health

1-717-772-2763