NSCISC National Spinal Cord Injury Statistical Center

Approved Data Requests

Last update: November 14, 2017

Table of Contents

2017 2017	
2016	3
2015	3
2014	Δ
2013	5
2012	5
2011	6
2010	7
2007	
Projects conducted at the National Spinal Cord Injury Statistical Center before 2014	
Projects proposed by non-SCIMS investigators	9
DeVivo Mentored Research Award projects	11
Courtesy notice of SCIMS Database Research Site or Module data only	



The contents of this publication were developed under a grant from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR grant number 90DP0083). NIDILRR is a Center within the Administration for Community Living (ACL), Department of Health and Human Services (HHS). The contents of this publication do not necessarily represent the policy of NIDILRR, ACL, HHS, and you should not assume endorsement by the Federal Government.

Archives of Physical Medicine and Rehabilitation special issues published in November 1999, November 2004, March 2011, and October 2016 also feature the approved SCIMS Database Research projects over the years.

Projects proposed by investigators within SCIMS or Form II Data Collection Centers

This list does not include projects solely proposed for the SCIMS research special issues published by the Archives of Physical Medicine and Rehabilitation in 2011 and 2016.

2017

Month	Lead investigators	Collaborators	Project title
Aug	Katharine Tam, MD,	Botticello (Kessler),	Functional outcomes of older
	(<u>ktam02@sralab.org</u>), Deutsch,	Kolakowsky-Hayner	adults with a new spinal cord
	Chen; RIC	(Sinai), Schwab (OSU)	injury
Aug	Steven Kirshblum, MD	Heinemann (RIC),	Factors associated with return to
	(skirshblum@selectmedical.co	Taylor (TIRR),	education after spinal cord injury
	<u>m</u>), Kline-Quiroz, Donovan,	Kolakowsky-Hayner	
	Botticello; Kessler Foundation	(Sinai), Houlihan	
		(Spaulding)	
Apr	Huacong Wen, MS,	Botticello (Kessler),	Race, neighborhood, and obesity
	(<u>hcwen@uab.edu</u>), Chen	Heinemann (RIC),	after spinal cord injury
	(mentor); NSCISC	Boninger (Pitt),	
		Houlihan	
Mar	Steven Kirshblum, MD	(BU/Spaulding) Zafonte (Spaulding),	The impact of concern coord
IVIdi	(skirshblum@selectmedical.co	Marino (Thomas	The impact of sensory sacral sparing in motor complete SCI
	m), Waggeman, Botticello;	Jefferson)	spaning in motor complete sci
	Kessler Foundation	Jenersonj	
Mar	Ryan McGrath, PhD	Heinemann (RIC),	The effect of etiology of injury on
IVIGI	(mcgratry@med.umich.edu),	DeVivo (UAB)	the incidence of mortality in
	Hall, Peterson, Kalpakjian;	201110 (07.12)	persons with a spinal cord injury
	University of Michigan		,,,,
Mar	O Trent Hall, DO	Heinemann (RIC),	The burden of spinal cord injury in
	(ohall@med.umich.edu),	Taylor (TIRR), DeVivo	the United States: Disability-
	NcGrath, Chadd, Peterson,	(UAB)	adjusted life years
	Kalpakjian; University of		
	Michigan		
Jan	Christopher Elliott, MD, PhD	Stampas (TIRR),	Return of Volitional Voiding After
	(christopher.elliott@hhs.sccgov	Schwab (OSU)	Spinal Cord Injury
	.org), Shem; Santa Clara Valley		
	Medical Center		

Month	Lead investigators	Collaborators	Project title
Dec	Ryan McGrath, PhD (mcgratry@med.umich.edu), Hall, Forchheimer, Peterson, Kalpakjian; University of Michigan	Heinemann (RIC), Bogner (OSU)	The independent and joint effects of smoking and heavy drinking on diabetes in persons with a spinal cord injury
Sep	Stephen Burns, MD (Stephen.Burns@va.gov), Kou, Radkevich; University of Washington	Heinemann (RIC), Krause (Shepherd), Boninger (Pitt)	United States Veterans in the Spinal Cord Injury Model Systems (SCIMS) Database
Aug	Ralph Marino, MD (Ralph.Marino@jefferson.edu), Harrop, Leiby; Thomas Jefferson University	Chen (RIC), Kirshblum (Kessler), Donovan (Spaulding), Cardenas (Miami)	Trends in ASIA Impairment Scale conversion in spinal cord injury
Jun	Huacong Wen, MS, (hcwen@uab.edu), Bickel (mentor), Chen, He; NSCISC	Heinemann (RIC), Robinson-Whelen (TIRR)	Racial differences in weight gain after spinal cord injury

Month	Lead investigators	Collaborators	Project title
Nov	Kelli W. Gary, PhD, MPH, OTR/L	Heinemann (RIC),	Employment, Health, and Quality
	(williamsjonk@vcu.edu),	Burns (UW), Tate	of Life Outcomes after Spinal Cord
	Graham, McDonald; VCU/	(UM), Felix (Miami),	Injury: Comparison of Veterans
	Hunter Holmes McGuire VA	Cooper (Pitt)	and Non-Veterans
	Center. Hudson, Krause;		
	Shepard Center		
Sep	Mary Jo Roach, PhD	Bombardier (UW)	Long-term outcomes in patients
	(mroach@metrohealth.org),		with penetrating spine trauma: a
	Kelly, Nemunaitis;		multi-center longitudinal
	MetroHealth, Cleveland. Chen;		observational study
	NSCISC		
Jan	Christopher Elliott, MD, PhD		Why Do Patients with Spinal Cord
	(christopher.elliott@hhs.sccgov		Injury Stop Performing
	.org), Shem; Santa Clara Valley		Intermittent Catheterization? – A
	Medical Center		Risk Factor Analysis
Jan	Christopher Elliott, MD, PhD		What Improvements in Upper
	(christopher.elliott@hhs.sccgov		Extremity Function Should Spinal
	.org), Shem; Santa Clara Valley		Cord Injury Patients Expect as it
	Medical Center		Relates to Performing Intermittent
			Catheterization?
Jan	Dagmar Amtmann, PhD	Heinemann (RIC),	The Satisfaction with Life Scale

(dagmara@uw.edu),	Cardenas (Miami),	using Burn Model System, Spinal
Bombardier, Hoffman,	Richards (UAB)	Cord Injury Model System, and
Johnson, McMullen; UW Burn		Traumatic Brain Injury Model
Model system National Data		System Data
and Statistical Center, UW		
SCIMS, and UQ TBIMS		

Month	Lead investigators	Collaborators	Project title
Nov	James Krause, PhD	Cardenas (Miami),	Prevalence of smoking and alcohol
	(<u>krause@musc.edu</u>), Saunders	Richards (UAB),	use after spinal cord injury:
	& Cao; Medical University of	Bombardier (UW),	Relationship with secondary
	South Carolina/Shepherd	Heinemann (RIC), Tate	health conditions
	Center	(UM), Botticello	
		(Kessler)	
Oct	Michael Wandling, MD	Hoffman (UW)	The Effect of Payer on Acute
	(mwandling@gmail.com]),		Inpatient Rehabilitation Length of
	Chen, Deutsch, Heinemann &		Stay and Functional Status in
	Shapiro; Northwestern		Patients with Spinal Cord Injuries:
	University Feinberg School of		Do Payer-Based Outcome
	Medicine		Disparities Exist?
Mar	James Krause, PhD	DeVivo (UAB);	Risk and protective factors for
	(<u>krause@musc.edu</u>), Saunders	Heinemann (RIC)	cause-specific mortality after
	& Cao; Medical University of		spinal cord injury
	South Carolina/Shepherd		
	Center	De de Const	Polotico di cheta con consider
Mar	David Apple, MD & John	Borisoff & Cragg	Relationship between secondary
	Kramer, PhD	(University of British	complications following spinal
	(<u>John_Kramer@Shepherd.org</u>); Shepherd Center	Columbia); Chen (UAB); Hoffman (UW)	cord injury: a longitudinal analysis
Feb	·	Dijkers (Mt Sinai);	Life Satisfaction and Self-Perceived
reb	Jayne Donovan, MD (jdonovan13@partners.org),	Krause (Shepherd)	Health as Predictors of Mortality
	Vora, Morse & Zafonte ;	Krause (Shepheru)	and other Adverse Events in
	Spaulding Rehabilitation		Individuals with Spinal Cord Injury
	Hospital		individuals with Spinal Cold injury
Feb	Christopher Elliott, MD, PhD	Tate (UM)	Epidemiology of Bladder
	(christopher.elliott@hhs.sccgov	Tate (Olvi)	Management in Patient with
	.org), Shem, Kolakowsky-		Spinal Cord Injury
	Hayner & Wright; Santa Clara		Spiritar Cord Highly
	Valley Medical Center		
Feb	Timothy Belliveau, PhD, ABPP		Development of a clinical decision
	1,,	<u> </u>	

	(tbelliveau@hfsc.org), Alan		support tool for optimal
	Jette, PhD, PT (<u>ajette@bu.edu</u>),		prognostication of
	Seetharama, Breitburg, Axt,		functional recovery after spinal
	Rosenblum, Houlihan, Slavin &		cord injury
	Zazula; New England Regional		
	Spinal Cord Injury Center		
Jan	Shu Cole, PhD	Houlihan (BUMC)	The importance of travel to life
	(colest@indiana.edu) &		satisfaction of people with SCI
	Whiteneck; Craig Hospital		

Month	Lead investigators	Collaborators	Project title
June	Felipe Fregni, MD PhD MPH (felipe.fregni@ppcr.hms.harvar d.edu) & Morse; Spaulding Rehabilitation Hospital	Tate (UM)	A longitudinal analysis of the association of total score from functional independence measure and pain scores in individuals with spinal cord injury
May	Chuck Bombardier, PhD (chb@u.washington.edu); University of Washington	Heinemann (RIC), Tate (UM)	Validity of the TBI self-report questions (site data only); Incidence and correlates of probable TBI; Relationship between comorbid TBI and outcomes at one year post injury
Feb	Elham Mahmoudi, PhD (elham.mahmoudi@gmail.com) , Meade, Tate & Forchheimer; University of Michigan	Fyffe (Kessler) & Krause (Shepherd)	Racial/Ethnic Disparity in Re- hospitalization among Individuals with Spinal Cord Injury

Month	Lead investigators	Collaborators	Project title
Nov	Shilpa Krishnan, MS	Heinemann (RIC)	Association of presence of
	(shk59@pitt.edu), Boninger,		pneumonia and incidence of
	Brienza, Karg & Oyster;		pressure ulcers in individuals with
	University of Pittsburgh		spinal cord injury
Sep	Josie M Tyrer, BA	Aisen (Rancho), Taylor	The effect of trauma etiology and
	(<u>ityrer@uab.edu</u>), Richards,	(TIRR), Cardenas	depressive symptoms on pain
	Richardson, Vance & Galindo;	(Miami),	severity following spinal cord
	University of Alabama at	Bombardier (UW),	injury
	Birmingham	Tate (UM)	
June	Ralph Marino, MD	Kirshblum (Kessler)	Neurological recovery after

	(ralph.marino@jefferson.edu)		traumatic thoracic spinal cord
D.4	& Lee; Thomas Jefferson	Classifica (Costa) 0	injury
May	Juleen Rodakowski, OTD, OTR/L	Charlifue (Craig) &	The additive effect of age on
	(jur17@pitt.edu), Boninger,	Jensen (UW)	disability for adults aging with a
	Skidmore, Anderson & Buhule;		spinal cord injury
	University of Pittsburgh		
Apr	Chuck Bombardier, PhD	Taylor (TIRR) &	Evaluating differential item
	(chb@u.washington.edu),	Dyson_Hudson	function of the PHQ-9 depression
	Cook, Bamer & Kim;	(Kessler)	scale items between early and late
	University of Washington		injury persons with SCI
Apr	Narineh Hartoonian	Taylor (TIRR) &	Towards a SCI-Specific Model of
	(<u>narhart@uw.edu</u>), Bombardier	Kalpakjian (UM)	Depression: Spinal Cord Injury
	& Hoffman;		Model Systems data from the
	University of Washington		2006-2011 NSCI Database
Apr	Danielle K Powell, MD	Dyson_Hudson	Weight Changes after Spinal Cord
	(dkpowell@uab.edu) & Chen;	(Kessler) & Crane	Injury: Racial and Gender
	University of Alabama at	(UW)	Differences
	Birmingham		
Feb	Christopher R Pretz, PhD	Kozlowski, Heinemann	Modeling of Various Longitudinal
	(cpretz@craighospital.org),	(RIC), Chen (UAB),	Outcome Measures within the SCI
	Cuthbert & Charlifue;	Tate (UM), Krause	Model Systems National Database
	Craig Hospital	(Shepherd), Aisen	
		(Rancho) & Taylor	
		(TIRR)	

Month	Lead investigators	Collaborators	Project title
Nov	Jim Krause, PhD	Heinemann (RIC)	Work life after SCI
	(krause@musc.edu),		
	Saunders, Cao & McArdle;		
	Shepherd Center		
July	Denise Fyffe, PhD	Boninger (Pitt),	"Predictors of functional disparities
	(dfyffe@kesslerfoundation.org)	Krause (Shepherd),	among individuals living with SCI".
	, Dyson-Hudson, Botticello &	Deutsch (RIC) &	This project was recently awarded
	Kirshblum;	Ottenbacher	pilot grant through the Center for
	Kessler Foundation Research		Rehabilitation Research Using Large
	Center		Datasets (PI: Ottenbacher)
Jun	Jeffrey Cuthbert, MPH, MS	Heinemann (RIC),	Evaluation of the representativeness
	(JCuthbert@craighospital.org),	Dijkers (Mt Sinai),	of the SCIMS National Dataset
	Whiteneck, Charlifue &	Corrigan, Graham,	
	Lammertse;	Coronado,	
	Craig Hospital	Deutsch, D Chen	
		(RIC) & Y Chen	
		(UAB)	
Apr	Allan J Kozlowski, PhD	Botticello (Kessler),	"Modeling Post-Acute Recovery in

	(akozlowski@ric.org) &	Pretz, Cuthbert,	Activity Limitations for Persons with
	Heinemann;	Kreider (Craig)	Traumatic Spinal Cord Injury," will
	Rehabilitation Institute of		apply individual latent growth
	Chicago		modeling methodology to describe
			the long-term outcome after SCI as
			non-linear trajectories using FIM data
Apr	Juan Carlos Arango, PhD	Dijkers (Mt Sinai) &	1. "The association between FIM
	(jcarangolasp@vcu.edu),	investigators (RIC &	items and extended rehabilitation
	Ketchum, Cifu, Castillo &	Shepherd)	length of stay following traumatic
	Jennings;		SCI"
	Virginia Commonwealth		2. "Predictors of Extended Inpatient
	University		Rehabilitation Length of Stay after
			Traumatic SCI"
Jan	Dan Graves, PhD		PhD dissertation project to
	(<u>dgraves@bcm.edu</u>); TIRR		investigate the computer usage,
			internet access and depression

Month	Lead investigators	Collaborators	Project title
Nov	Jim Krause, PhD (krause@musc.edu); Shepherd Center		 Manuscript preparation: Relationship of behaviors and health conditions with all-cause mortality Development of models for specific causes of death, starting with a competing risk model
Nov	Stephen Burns, MD (Stephen.Burns@va.gov); University of Washington		Descriptive analysis of colorectal cancer deaths for a review article or commentary

- 1. David Chen, MD (<u>dchen@ric.org</u>) requested a copy of the database for research on:
 - a. Patients' characteristics in SCIMS database and Medicare assessment data for inpatient rehabilitation facilities
 - b. Relationship between raw FIM scores and Rasch-derived FIM measures
 - c. FIM data before and after the implementation of PPS.
- 2. Stephen Burns, MD (<u>Stephen.Burns@va.gov</u>) requested a copy of the database, in collaboration with colleagues in the VA Puget Sound Health Care System and Hines VA, to study:
 - a. SCI in OIF/OEF Veterans
 - b. SCI and Automobile Collisions

Projects conducted at the National Spinal Cord Injury Statistical Center before 2014

- In collaboration with Drs. Heinemann, Tate, and Saunders, NSCISC began a series of descriptive analyses in July 2013 to examine the external causes of spinal cord injury, documented by ICD-10 CM codes.
- 2. In partnership with the National SCI Statistical Center, Robert Shavelle, PhD (<u>Shavelle@lifeexpectancy.org</u>) from the Life Expectancy Project (<u>www.LifeExpectancy.org</u>) was provided access to the database in August 2011 to investigate:
 - a. Mortality after minimal deficit (AIS D) SCI. Collaborating investigators include Dr. DeVivo, Dr. Jim Krause, Dr. David Strauss, and Mr. Jordan Brooks.
 - b. Impact of secondary complications on all-cause mortality after SCI. Collaborating investigators include Dr. DeVivo, Dr. Jim Krause, Dr. Chuck Bombardier, Dr. David Strauss, and Mr. Jordan Brooks.
- 3. With support from the Paralyzed Veterans of America (2009-2010) and South Carolina Spinal Cord Injury Research funds (2009-2012), in collaboration with Drs. Krause, Cao, and Saunders, a series of analyses are conducted to examine:
 - a. Trends in mortality, causes of death, and related racial/ethnic disparity
 - b. Trends in risk and risk factors for suicide deaths
 - c. Mortality risk and risk factors for bladder cancer
 - d. SMR by different causes of death across various demographic and injury characteristics.
- 4. In partnership with the National SCI Statistical Center, Vieri Failli, PhD (vieri.failli@wingsforlife.com) and Jan Schwab, MD, PhD (jan.schwab@charite.de) from the Wing for Life Spinal Cord Research Foundation (www.wingsforlife.com) in Salzburg, Austria and Charité Universitätsmedizin Berlin, Germany were provided access to the database in July 2009 and October 2012 for a series of analyses to examine the impact of infection on neurologic recovery and functional outcomes:
 - a. Infections are associated with prolonged hospitalization time after traumatic SCI. Collaborating SCIMS investigators include Drs. Burns and Krause (December, 2014).
 - Effect of Pressure Ulcers as sources for chronified inflammation on neurological outcome after Spinal Cord Injury (SCI) – A role as Disease Modifying Factor?
 Collaborating SCIMS investigators include Drs. Brienza and Boninger (February, 2014).
 - c. Functional neurological recovery after spinal cord injury (SCI) is impaired in patients with pneumonia and wound infections: a longitudinal cohort study (April, 2011).
- 5. A longitudinal investigation on the impact of the loss to follow-up on SCI outcome research began in 2007.

Projects proposed by non-SCIMS investigators

July 2017

1. The InVivo Therapeutics Corporation (Alex Aimetti, PhD) was provided database statistics by the NSCISC to be used as comparators for the ongoing INSPIRE (InVivo Study of Probable Benefit of the Neuro-Spinal Scaffold™ for Safety and Neurologic Recovery in Subjects with Complete Thoracic AIS A Spinal Cord Injury) project. The responsible party agrees that these data will not be used for marketing purposes by InVivo and that the NSCISC and SCIMS Executive Committee will have an opportunity to review and approve a manuscript draft before submission to a journal for peer review.

June 2017

2. Brittney Otruba, MA (mentor: Henry Soper, PhD), a PhD student of Psychology at The Fielding Graduate University, was granted a limited data set for a project entitled "Premorbid Mental Health Impact Upon Post-Injury Perceived Life Satisfaction: Spinal Cord Injury Versus Concomitant Traumatic Brain Injury." Collaborators included Yuying Chen (SCIMS mentor), Allen Heinemann, and Liz Felix.

August 2016

3. The InVivo Therapeutics Corporation (Alex Aimetti, PhD) and Policy Analysis Inc (Gerry Oster, PhD and Ellen Dukes, PhD) were provided database statistics by the NSCISC to: 1) examine the relationship between AIS grade at post-injury year 1, functional outcomes, and healthcare utilization and 2) estimate expected financial burden for persons with these injuries. The responsible party agrees that these data will not be used for marketing purposes by InVivo and that the NSCISC and SCIMS Executive Committee will have an opportunity to review and approve a manuscript draft before submission to a journal for peer review.

December 2015

4. Larry Miller, PhD and Louise Anderson, PhD, Miller Scientific Consulting, Inc., were provided database statistics by the NSCISC to conduct Markov model and cost analysis to assess the influence of ambulatory ability on 5-year complication rates and health care costs. This project is financially supported by the ReWalk Robotics. The responsible party agrees that these data will not be used for marketing purposes by ReWalk and that the NSCISC and SCIMS Executive Committee will have an opportunity to review and approve a manuscript draft before submission to a journal for peer review.

May 2015

5. Kurt Herzer, MSc (mentor: Marlis Gonzalez-Fermandez, MD, PhD, mgonzal5@jhmi.edu), a MD/PhD student at Johns Hopkins University, was granted limited access to the database for a project entitled "Time-To-Rehabilitation and Outcomes in Spinal Cord Injury". Collaborators included Dr. Yuying Chen (SCIMS mentor) and Dr. Allen Heinemann.

December 2014

6. Annette Bourbonniere (mentor: Dr. James Opaluch <u>Jimo@uri.edu</u>), a doctoral student in the Department of Environmental and Natural Resource Economics, University of Rhodes Island, was granted limited access to the database for her dissertation project entitled "Using revealed preferences to eliminate work disincentives for persons with disabilities." Dr. Mike DeVivo served as the SCIMS mentor for this project.

September 2010

7. Josh Cohen, PhD (<u>icohen@tuftsmedicalcenter.org</u>) of the Tufts Medical Center, Boston, MA was granted limited access to the database for a project entitled "Clinical benefits and health care cost savings associated with improved Functional Independence Measure scores following spinal cord injury". Dr. Marcel Dijkers was appointed by projects directors as a mentor for this project.

December 2007

8. James Gear, PhD (<u>JGear@mwecc.com</u>) of the Midwest Employers Casualty Company was granted limited access to the SCIMS database to investigate occupational and work-related SCI and associated trend and costs. The results will primarily be for the internal use of Midwest Employers Casualty Company to help support internal risk analyses so that more precise future cost estimates can be derived and better decisions regarding such estimates may be made.

DeVivo Mentored Research Award projects

2017

 Cristina Kline-Quiroz, DO (mentor: Jayne Donovan, MD and Amanda Botticello, PhD), Rutgers-New Jersey Medical School, Kessler Institute for Rehabilitation, West Orange, NJ. Project title "Factors Associated with Return to Education after Spinal Cord Injury".

<u>2014</u>

- 2. Hannah W Mercier, MS, OTR/L (mentor: Alan Jette, PhD, PT), Massachusetts General Hospital Institute of Health Professions, Charlestown, MA. Project title "Effects of Rehospitalization among Adults with Spinal Cord Injury on Quality of Life, Independence, and Participation".
- 3. Jordan Garman, DO (mentor: Keneshia Kirksey, MD and Elizabeth Richardson, PhD, MSPH), UAB Department of Physical Medicine and Rehabilitation, Birmingham, AL. Project title "Factors Contributing to Transition of Bladder Management Method Following Traumatic Spinal Cord Injury".

2012

4. Hwasoon Kim, MS (mentor: Garry Cutter, PhD), UAB Department of Biostatistics, Birmingham, AL. Project title "Modeling to Predict Loss to Follow-up In the Spinal Cord Injury Model Systems Database".

2010

- 5. Katya Radkevich, MD (mentor: Stephen Burns, MD), VA Puget Sound Health Care Systems, Seattle, WA. Project title "United States Veterans in the Spinal Cord Injury Model Systems Database".
- Katherine W Stenson, MD (mentor: Anne Deutsch, PhD, CRRN, RN and David Chen, MD), Rehab Institute of Chicago, Chicago, IL. Project title "A Comparison of Medicare Patients in the SCI Model System Database and the National Medicare Databases

- 7. Gina Armstrong, MD (mentor: Marcel Dijkers, PhD), Mt. Sinai School of Medicine, New York, NY. Project title "Do Gender Differences Exist in Patterns and Consequences of Alcohol Use Following Spinal Cord Injury?"
- Yue Cao, MS (mentor: Sean-Shong Hwang, PhD), UAB Department of Sociology, Birmingham, AL.
 Project title "Cumulative Advantage of Education on the Health and Life Quality After Spinal
 Cord Injury".

Courtesy notice of SCIMS Database Research -- Site or Module data only 2015

Month	Lead investigators	SCIMS Sites	Project title
Nov	Alan Jette, PhD, PT; New England Regional Spinal Cord Injury Center	Module and Form I data from SCI-FI module collaborating centers	The Spinal Cord Injury Functional Index (SCI-FI) Enhancement and Evaluation study

Month	Lead investigators	SCIMS Sites	Project title
Feb	Don Gerber, PsyD MEd ABPP; Craig Hospital	Craig data only	Dual Diagnosis Spinal Cord Injury and Traumatic Brain Injury: the TBI Effect on Outcome