

Depression and Stress in Orthopaedic Trauma: The Patient & The Surgeon

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This represent a thorough
Literature Review of PTSD and
Depression in the Orthopaedic
Trauma Patient and short
discussion of Physician Wellness

OBJECTIVES

- **UNDERSTAND WHY POST TRAUMATIC STRESS DISORDER (PTSD) AND DEPRESSION IS IMPORTANT TO US AS ORTHOPAEDIC SURGEONS**
- **UNDERSTAND PREVALENCE AND RISK FACTORS FOR PTSD AND DEPRESSION**
- **DISTINGUISH BETWEEN PTSD AND DEPRESSION**
- **OPTIONS FOR PREVENTION AND INTERVENTION**
- **UNDERSTAND HOW STRESS AFFECTS ORTHOPAEDIC SURGEONS AND THEIR FAMILIES**

WHY PTSD AND DEPRESSION ARE IMPORTANT TO US

- **ORTHOPAEDISTS ARE OFTEN THE MOST CONSISTENT DOCTOR SEEING THE PATIENT AFTER THE INJURY**
- **DEPRESSION AND PAIN ARE INTERRELATED AND CAN AFFECT OPIOID USE --WHICH WE ARE ALL TRYING TO AVOID**
- **DEPRESSION AND PTSD DIRECTLY AFFECT OUTCOMES ADVERSELY AND PREVENT MANY PATIENTS FROM RETURNING TO WORK CAUSING THEM TO LOSE THEIR HEALTH INSURANCE AND EFFECT LIFESTYLE ADVERSELY**
- **MENTAL HEALTH ISSUES INCREASE POST OPERATIVE COMPLICATIONS**

Mental Illness as an Independent Risk Factor for Unintentional Injury and Injury Recidivism

Jennifer J. Wan, MD, Diane J. Morabito, RN, MPH, Linda Khaw, MS, M. Margaret Knudson, MD, and Rochelle A. Dicker, MD

- 347/1709 ADMITTED W TRAUMA -20% MENTAL ILLNESS
- MOST COMMON DIAGNOSES –
 - 51% DEPRESSION
 - 29% SCHIZOPHRENIA
 - 16% ANXIETY DISORDER

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- INCREASED RISK FOR UNINTENTIONAL INJURY- MOST COMMONLY FALLS AND HIT BY CAR
- LONGER HOSPITAL STAYS
- MORE LIKELY TO DISCHARGE TO SKILLED FACILITY

12% OF USA POPULATION DIAGNOSED AND TREATED FOR MENTAL ILLNESS

Mental Illness as an Independent Risk Factor for Unintentional Injury and Injury Recidivism

Jennifer J. Wan, MD, Diane J. Morabito, RN, MPH, Linda Khaw, MS, M. Margaret Knudson, MD, and Rochelle A. Dicker, MD

- **MENTALLY ILL WERE ADMITTED TWICE AS OFTEN FOR UNINTENTIONAL INJURY THAN THOSE WHO WERE NOT MENTALLY ILL**

NO AVOIDING IT IN ORTHO TRAUMA

SUBSTANCE ABUSE- A SUBSET OF MENTAL ILLNESS

43 % OF TRAUMA FATALITIES HAD POSITIVE TOXICOLOGY RESULTS

Demetriades et al, J Am Coll Surg, 2004;199:687-692

PTSD AND DEPRESSION ARE BIG ISSUES

MENTAL HEALTH ISSUES ARE ASSOCIATED WITH
HIGHER COMPLICATIONS
WORSE OUTCOMES
POOR ADHERENCE

ROSENBERGER PH JOKL P ISKOVICS : PSYCHOSOCIAL FACTORS AND SURGICAL OUTCOMES – AN EVIDENCE BASED LITERATURE REVIEW,
JAAOS, 2008





Post Traumatic Stress Disorder (PTSD)

DEFINITION OF PTSD:

**ANXIETY DISORDER FOLLOWING AN EXPOSURE TO AN
EVENT THAT WAS PERCEIVED AS LIFE THREATENING OR
HAS POTENTIAL TO CAUSE SERIOUS INJURY**

Posttraumatic Stress Disorders in Civilian Orthopaedics

JAAOS, 2011

Daniel L. Aaron, MD

Paul D. Fadale, MD

Colin J. Harrington, MD

Christopher T. Born, MD

- **INTRUSION:** RECURRING NIGHTMARES, FLASHBACKS, AND INTRUSIVE MEMORIES
- **AVOIDANCE:** EMOTIONAL NUMBING, FEELING DETACHED FROM OTHERS, AVOIDING REMINDERS OF THE EVENT
- **AROUSAL:** IRRITABILITY, INSOMNIA, INCREASED STARTLE, VIGILANCE
 - ACUTE STRESS DISORDER <1MO
 - ACUTE PTSD < 3MO
 - CHRONIC PTSD >3 MO

PTSD different assessment tools

Summary of Outcome Measurement Instruments Used to Evaluate for Posttraumatic Stress Disorder

Instrument

Measurement

- Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*
Clinician-administered questionnaire
- Posttraumatic Stress Disorder (**PTSD**) Checklist
17-item self-report
- Civilian Mississippi Scale for Posttraumatic Stress Disorder
30-item questionnaire with four domains: intrusion, arousal, avoidance, impairment
- Revised Civilian Mississippi Scale for Posttraumatic Stress Disorder
30-item questionnaire with four domains: intrusion, arousal, avoidance, impairment
- Brief Symptom Inventory
53-item questionnaire with global severity indices and multiple subscales
- Michigan Critical Events Perception Scale
5-item form scored with the Likert scale (1-5)
- Sickness Impact Profile
Self-reported instrument with multiple subscales, including physical health, mental health, and work status

Multiple axis I disorders with PTSD supplement

PTSD

PTSD

PTSD

Psychological distress

Peritraumatic dissociation

Health status



WHAT IS THE PREVALENCE OF PTSD FOLLOWING ORTHOPAEDIC TRAUMA?

J Bone Joint Surg Am. 2003 Sep;85-A(9):1689-97.

Psychological distress associated with severe lower-limb injury.

McCarthy ML¹, MacKenzie EJ, Edwin D, Bosse MJ, Castillo RC, Starr A; LEAP study group.

- **569 PATIENTS- NO PATIENTS WITH DOCUMENTED PREEXISTING PSYCH DISORDER ENROLLED**
- **BSI: BRIEF SYMPTOM INVENTORY (53 ITEMS- SELF REPORTED MEASURE OF PSYCHOLOGICAL DISTRESS)**
- **IF POSITIVE THEY ARE CONSIDERED TO HAVE A PSYCHOLOGICAL DISORDER AND NEED MENTAL HEALTH EVAL**
 - **42% POSITIVE AT 24 MONTHS**
 - **19% WITH SEVERE PHOBIC ANXIETY AND DEPRESSION**

Posttraumatic Stress, Problem Drinking, and Functional Outcomes After Injury

*Douglas F. Zatzick, MD; Gregory J. Jurkovich, MD; Larry Gentilello, MD;
David Wisner, MD; Fredrick P. Rivara, MD, MPH*

ZATZICK ET AL ARCH SURG, 2002;137:200-2005

- **100 PTS-**
 - **30% PERSISTENT PTSD 1 YR LATER**
 - **WAS THE STRONGEST INDEPENDENT PREDICTOR OF AN ADVERSE OUTCOME IN 7/8 DOMAINS OF THE SF-36 COMPARED TO NON-PTSD PATIENTS**
 - **8% OF PATIENTS WITH PROBLEM DRINKING AND PTSD BOTH**

Symptoms of Posttraumatic Stress Disorder After Orthopaedic Trauma

Starr, Adam J.; Smith, Wade R.; Frawley, William H.; Borer, Drake S.; Morgan, Steven J.; Reinert, Charles M.; Mendoza-Welch, Maxine

JBJS. 86(6):1115-1121, June 2004.

- **580 ortho trauma pts—Revised Civilian Mississippi Scale for PTSD questionnaire**
- **51% met diagnostic criteria for PTSD**

Of those 51% with PTSD

- Higher ISS scores
- Higher Extremity Abbreviated Injury Score (AIS)
- Longer duration since injury
- BUT– these scores could NOT be used to identify those patients with PTSD
- BEST CORRELATION—yes to the question “ the emotional problems caused by the injury are more difficult than the physical problems”
 - Simple question can be used as a screening tool

Symptoms of Posttraumatic Stress Disorder After Orthopaedic Trauma

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JBJS. 86(6):1115-1121, June 2004.

- PTSD in this ortho trauma population is higher than other studies that just studied general trauma populations
- It may be that musculoskeletal trauma has a major impact on the development of PTSD



Long-Term Posttraumatic Stress Disorder Persists after Major Trauma in Adolescents: New Data on Risk Factors and Functional Outcome

Holbrook, Troy L. PhD; Hoyt, David B. MD, FACS; Coimbra, Raul MD, FACS; Potenza, Bruce MD, FACS; Sise, Michael MD, FACS; Anderson, John P. PhD

The Journal of Trauma: Injury, Infection, and Critical Care: April 2005 - Volume 58 - Issue 4 - p 764-771
doi: 10.1097/01.TA.0000159247.48547.7D

- **Rate of long term PTSD in adolescents at 24 month follow-up - 27%**

The Journal of Trauma: Injury, Infection, and Critical Care: April 2005 - Volume 58 - Issue 4 - p 764-77



Prevalence of Depression and Posttraumatic Stress Disorder After Acute Orthopaedic Trauma: A Systematic Review and Meta-Analysis

Stefano Muscatelli, BA, Hayley Spurr, BSc,† Nathan N. O'Hara, MHA,‡ Lyndsay M. O'Hara, MPH,§
Sheila A. Sprague, PhD,||¶ and Gerard P. Slobogean, MD, MPH, FRCSC‡*

- **27 STUDIES/ 7109 SUBJECTS**
- **WEIGHTED POOLED PREVALENCE OF PTSD: 26%**
- **WEIGHTED POOLED PREVALENCE OF PTSD AND DEPRESSION: 16.8%**

WHAT ARE THE RISK FACTORS ASSOCIATED WITH PTSD?

J Bone Joint Surg Am. 2003 Sep;85-A(9):1689-97.

Psychological distress associated with severe lower-limb injury.

McCarthy ML¹, MacKenzie EJ, Edwin D, Bosse MJ, Castillo RC, Starr A; LEAP study group.

Per LEAP study

- **Drinking problem before injury-more likely to have psychological distress after**

Factors associated with increased psychological stress

- LEAP study -2003

- More physical impairment(↑Sickness Impact Profile Score) was associated with more distress
 - Those who could go up and down stairs or walk had less distress
- Younger age
- Poverty status
- Lack of self efficacy (belief in oneself)
- Lack of social support
- Neuroticism
- Nonwhite

Long-Term Posttraumatic Stress Disorder Persists after Major Trauma in Adolescents: New Data on Risk Factors and Functional Outcome

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The Journal of Trauma: Injury, Infection, and Critical Care: April 2005 - Volume 58 - Issue 4 - p 764-771

doi: 10.1097/01.TA.0000159247.48547.7D

- **Long term PTSD in adolescents at 24 months**
- **Strongly associated with:**
- **Female gender**
- **Older age**
- **Low socioeconomic status**
- **Drug and alcohol abuse**
- **Other behavioral problems**



Post traumatic Stress Disorder after Injury: Impact on General Health outcome and Early Risk Assessment

AJ Michaels et al, J Trauma 1999;47(3): 460-467.

- **100 pts w/o neurologic injury**
- **Measured ISS, SF-36, MCEPS (measures peritraumatic dissociation), and RCMS**
- **PTSD rate was 42% at 6 months– directly associated with MCEPS which was performed within hours after injury**
- **MCEPS identifies patients who are 3X more likely to develop PTSD**

Ethnic Differences in Posttraumatic Stress Disorder After Musculoskeletal Trauma

Allison E. Williams, ND, PhD, Wade R. Smith, MD, Adam J. Starr, MD, Denise C. Webster, PhD, Ruby J. Martinez, PhD, Carol P. Vojir, PhD, Jurate A. Sakalys, PhD, and Steven J. Morgan, MD

- **96 HISPANIC VERSUS 115 WHITE NONHISPANIC**
- **HISPANIC PARTICIPANTS - 7 TIMES MORE LIKELY TO BE POSITIVE FOR PTSD**
- **US BORN HISPANICS WERE STATISTICALLY SIGNIFICANT MORE LIKELY TO HAVE PTSD THAN NON US BORN HISPANICS**
- **UP TO 40% HISPANICS NOT INSURED COMPARED TO 10.7% WHITE**
- **26% WHITES WITH SUBSTANCE ABUSE VS 14% HISPANIC**

The Journal of Trauma: Injury, Infection, and Critical Care: November 2008 - Volume 65 - Issue 5 - p 1054-1065

Acute stress disorder and post-traumatic stress disorder following traumatic amputation.

Copuroglu C¹, Ozcan M, Yilmaz B, Gorgulu Y, Abay E, Yalniz E.

- **AT 6 MONTHS POST TRAUMATIC AMPUTATION 17/22 - (77.2%) HAD PTSD AND NEEDED PYSCHIATRIC SUPPORT**

Pain in the aftermath of trauma is a risk factor for post-traumatic stress disorder

S. B. Norman ^(a1), M. B. Stein ^(a1), J. E. Dimsdale ^(a1) and D. B. Hoyt ^(a1) 

DOI: <https://doi-org.proxy.library.vanderbilt.edu/10.1017/S0033291707001389> Published online: 10 September 2007

- 115 patients at level 1 trauma center
- Visual Analog Scale (VAS) identified pain as a risk factor for the development of PTSD
- An increase of $\frac{1}{2}$ of a standard deviation on VAS
 - 5 fold increase in risk for PTSD at 4 months
 - 7 fold increase in risk for PTSD at 8 months

A Prospective Investigation of Long-Term Cognitive Impairment and Psychological Distress in Moderately Versus Severely Injured Trauma Intensive Care Unit Survivors Without Intracranial Hemorrhage

James C. Jackson, PsyD, Kristin R. Archer, PhD, Rebecca Bauer, MD, Christine M. Abraham, MA, Yanna Song, MA, Robert Greevey, PhD, Oscar Guillamondegui, MD, E. Wesley Ely, MD, and William Obremskey, MD

• INJURY SEVERITY, CONCUSSION STATUS AND DELIRIUM DURATION WERE NOT RISK FACTORS FOR DEVELOPMENT OF PTSD OR DEPRESSION

The Journal of Trauma: Injury, Infection, and Critical Care: October 2011 - Volume 71 - Issue 4 - p 860-866



Association Between 6-Week Postdischarge Risk Classification and 12-Month Outcomes After Orthopedic Trauma

Renan C. Castillo, PhD, MS; Yanjie Huang, ScM; Daniel Scharfstein, ScD; Katherine Frey, PhD, MS, MPH; Michael J. Bosse, MD; Andrew N. Pollak, MD; Heather A. Vallier, MD; Kristin R. Archer, PhD, DPT; Robert A. Hymes, MD; Anna B. Newcomb, PhD, MSW; Ellen J. MacKenzie, PhD; Stephen Wegener, PhD; and the Major Extremity Trauma Research Consortium (METRC)

- Prospective Study 352 pts w/ ortho trauma at level 1 center
- 6 weeks post op- measured 5 risk factors and 4 protective factors
- Factors were sorted into 4 clinically relevant groups
 - Low risk/high protection (BEST)
 - High risk/ low protection (WORST)
- 1 yr. SF-36: between group 1-2 ↓ 7.8 pts., group 2-3 ↓ 10.3pts
group 3-4 ↓ 18.4 pts

PTSD Predictors

THE BEST GROUP (GRP 1)

- LOW PAIN
- LOW DEPRESSION
- LOW PTSD SCORE
- NO ETOH OR TOBACCO
- HIGH RESILENCE
- GOOD SOCIAL SUPPORT
- GOOD SELF EFFICACY-RTW
- GOOD SELF EFFICACY- MANAGE FINANCES

THE WORST GROUP (GRP 4)

- HIGH PAIN
- HIGH DEPRESSION
- HIGH PTSD SCORE
- YES ETOH AND TOBACCO
- LOW RESILENCE
- POOR SOCIAL SUPPORT
- POOR SELF EFFICACY-NO RTW
- POOR SELF EFFICACY-CANNOT MANAGE FINANCES



Groups 1 and 2

- **54% of patients**
- **SFMA Scores within population norms at 1 year**
- **Depression and PTSD scores below disability threshold**
- **Group 2 - scores normal but worse by one clinical important difference**
- **Group 1 – standard clinical care plus monitoring all that is needed**
- **Group 2 - standard clinical care plus additional monitoring**

High risk/low protection group 4:

- **15.3% of the patients**
- **90% of this group - SFMA scores exceeded disability thresholds at 1 yr.**
- **75% of this group screened positively for PTSD and depression**

**OPPORTUNITY TO INTERVENE EARLY IN THIS
GROUP OF PATIENTS**

WHAT IS THE IMPACT OF PTSD ON OUTCOMES AFTER ORTHOPAEDIC TRAUMA?



Post traumatic Stress Disorder after Injury: Impact on General Health outcome and Early Risk Assessment

- 100 pts w/o neurologic injury
- Measured ISS, SF-36, MCEPS (measures peritraumatic dissociation), and RCMS
- PTSD rate was 42% at 6 months– directly associated with MCEPS
- **PTSD contributes more to patients perceived general health at 6 mo –more than physical function or injury severity**



A National US Study of Posttraumatic Stress Disorder, Depression, and Work and Functional Outcomes After Hospitalization for Traumatic Injury

Douglas Zatzick, MD, Gregory J. Jurkovich, MD,† Frederick P. Rivara, MD, MPH,‡ Jin Wang, PhD, MS,‡ Ming-Yu Fan, PhD,* Jutta Joesch, PhD,* and Ellen Mackenzie, PhD§*

- **At 12 months - 20% had PTSD and 6.6% depression**
- **Previously working patients with**
 - **one of these conditions had 3 fold  in odds of not returning to work at 1 year**
 - **With both conditions had a 5-6 odds fold  of not returning to work**

Early acute care interventions targeting these disorders may improve functional recovery after injury.

WHAT ARE THE STRATEGIES FOR PREVENTING PTSD?

PREVENTION

- **CANNOT USE THE SAME SYSTEM IN CIVILIANS AS IN THE MILITARY—**
 - **SYMPTOMS WERE WORSENERD!!!**

Mayou RA, Ehlers A, Hobbs M: Psychological debriefing for Road traffic accident victims: three year follow-up of a randomized controlled trial. Br J Psychiatry 2000;176:589-593

PREVENTION

- **FIRST STEP: RECOGNIZE THE AT-RISK PATIENTS**
- **SYMPTOMS OF ACUTE STRESS DISORDER (ASD) < 1MO AFTER INJURY**
- **EARLY INTERVENTION MAY PREVENT ASD FROM BECOMING PTSD**

Bryan RA, Mastrodomenico J, Felmingham KL, et al: Treatment of acute stress disorder: A randomized controlled trial. Arch Gen Psychiatry 2008;65(6): 659-667



PREVENTION

- **90 pts who screened positive for ASD randomized to treatment and nontreatment groups**
- **Those patients in the intent to treat groups (5 weekly 90 min sessions) at 6 month follow up were more likely not to meet PTSD criteria and were more likely to achieve full remission**

Bryan RA, Mastrodomenico J, Felmingham KL, et al: Treatment of acute stress disorder: A randomized controlled trial. Arch Gen Psychiatry 2008;65(6): 659-667



PREVENTION – Patient Screening

- **SCREEN PATIENTS WITH THE 5 ITEM (Likert scale 1-5) MICHIGAN CRITICAL EVENTS PERCEPTION SCALE(MCEPS)**
- **SCREEN WITH THE STATEMENT (Likert scale 1-5): “ the emotional problems caused by the injury have been more difficult than the physical problems”**

ON A POSITIVE NOTE:

- **POSITIVE ATTITUDINAL FACTORS SUCCESSFULLY PREDICTED IMPROVED SURGICAL OUTCOMES EVEN AFTER ACCOUNTING FOR CLINICAL FACTORS**
 - **MOST IMPORTANTLY ARE POSITIVE EXPECTATIONS AND SELF EFFICACY**
 - **ALSO - OPTIMISM AND DESIRE FOR INVOLVEMENT PREDICTED IMPROVED SURGICAL OUTCOMES**

Patricia H. Rosenberger, PhD
Peter Jokl, MD
Jeannette Ickovics, PhD

Psychosocial Factors
and Surgical Outcomes:
An Evidence-Based
Literature Review

JAAOS, JULY 2006



**Early cognitive–behavioural therapy
for post-traumatic stress symptoms
after physical injury[†]**

Randomised controlled trial

JONATHAN I. BISSON, JONATHAN P. SHEPHERD, DEBORAH JOY,
RACHEL PROBERT and ROBERT G. NEWCOMBE

- 152 pts randomized to nothing verses 4 Cognitive Behavior Therapy sessions starting 5-10 wks post injury
- At 13 months – intervention group had statistically significantly lower total Impact of Event Scale Score

- **Symptoms in both groups decreased significantly over 13 months**
- **Higher initial intrusion and depression scores were predictive of worse outcomes at 3 months**
- **Higher initial intrusion scores and higher initial levels of reported pain without intervention were predictive of worse outcome at 13 months**
- **Treatment effect was modest- clinician administered scores did not drop**
- **Not enough sessions**
- **No effect on anxiety and depression**

The Trauma Collaborative Care Study (TCCS)

Stephen T. Wegener, PhD, Andrew N. Pollak, MD,† Katherine P. Frey, RN, MPH,‡
Robert A. Hymes, MD,§ Kristin R. Archer, PhD, DPT,|| Clifford B. Jones, MD,¶
Rachel B. Seymour, PhD,** Robert V. O'Toole, MD,† Renan C. Castillo, PhD,‡ Yanjie Huang, ScM,‡
Daniel O. Scharfstein, ScD,†† Ellen J. MacKenzie, PhD,‡ and METRC*

FOR PATIENTS:

- **INITIATED COGNITIVE BEHAVIORAL BASED SELF MANAGEMENT PROGRAMS**
- **PEER SUPPORT AND PEER VISITATION PROGRAMS**

• FOR PROVIDERS:

- **COACHING ON HOW TO SUPPORT PATIENTS ENGAGING IN THEIR CARE AND ENSURING CONTINUITY OF PATIENT CARE BASED UPON THEIR NEEDS**

TRAUMA SURVIVORS NETWORK

- **DEVELOPED BY THE AMERICAN TRAUMA SOCIETY**
- **[HTTP://WWW.TRAUMASURVIVORSNETWORK.ORG](http://www.traumasurvivorsnetwork.org)**
- **Connects survivors to increase their support network, self-efficacy and self management skills**
- **Handbook for Trauma Patients and their Families**
- **TSN Coordinator – coordinates peer visitation in hospital**
- **TSN Family Support Classes- to prepare family members for caregiving**

TRAUMA SURVIVORS NETWORK

- **TSN COORDINATOR:**
 - phone call 2, 4 weeks
 - In person assessment at 6 weeks using the Recovery Assessment (35 item questionnaire) 5 risk factors , 3 protective factors
- **Recovery Assessment used to develop a Recovery Plan**
 - Peer support groups
 - Self management training (Next Steps Program)
 - <http://nextsteponline.org>
- **Recovery Reassessment at 6 months, and 12 months**

Trauma Collaborative Care Intervention: Effect on Surgeon Confidence in Managing Psychosocial Complications After Orthopaedic Trauma

Stephen T. Wegener, PhD, Eben A. Carroll, MD,† Joshua L. Gary, MD,‡ Todd O. McKinley, MD,§
Robert V. O'Toole, MD,|| Debra L. Sietsema, PhD, RN,¶ Renan C. Castillo, PhD,**
Katherine P. Frey, MPH, PhD, RN,** Daniel O. Scharfstein, ScD,†† Yanjie Huang, ScM,**
Susan C. J. Collins, MS,** and Ellen J. MacKenzie, PhD,**
The Major Extremity Trauma Research Consortium (METRC)‡‡*

- **Surveyed surgeons about their ability to manage psychosocial issues following orthopaedic trauma**
- **Those surgeons with the TCC program had improved perceptions of the available resources to patients as well as increased confidence in managing the psychosocial sequelae by making appropriate referrals**

PREVENTION

- **EARLY RESEARCH ON PHARMACOLOGIC PREVENTION**
 - **USE OF PSYCHOTROPIC MEDICATION(beta blockers, SSRI's, SNRI's, cortisol releasing factor antagonists) IN THE ACUTE PHASE MAY INTERRUPT THE FEAR CONDITIONING RESPONSE**

PREVENTION

- **OTHER PHARMACOLOGIC INTERVENTION**

- **BENZODIAZAPINES --- ALLEVIATE ANXIETY , DECREASE AROUSAL, PROMOTE SLEEP**

- **TRICYCLIC ANTIDEPRESSANTS—SUPPRESS RAPID EYE MOVEMENTS AND LIMIT NIGHTMARES**

HOW TO MANAGE PTSD IN THE ORTHOPAEDIC TRAUMA PATIENT?

INTERVENTION

- **REFERRAL TO PSYCHIATRIC PROFESSIONAL**
- **COGNITIVE BEHAVIORAL THERAPY --FOCUS ON ACTIVELY AND CONSCIOUSLY MODIFYING THOUGHTS AND BEHAVIORS**
 - **CHANGING PERCEPTION**
 - **CONTROLLED EXPOSURE TO EVOCATIVE STIMULI**

INTERVENTION

- **PHARMACOLOGICAL**
 - **ANTIDEPRESSANTS**
 - **SSRI'S, MAO INHIBITORS, TRICYCLIC ANTIDEPRESSANTS, ANTICONVULSANTS, PRAZOSIN HCL**

DIFFERENCE BETWEEN PTSD AND DEPRESSION?

**YOU DON'T NEED TO HAVE A MAJOR
TRAUMATIC EVENT TO BE DEPRESSED BUT YOU
NEED A MAJOR TRAUMATIC EVENT TO HAVE
PTSD**

**PTSD MEANS TRAUMA
“POST TRAUMATIC STRESS DISORDER”**



DEPRESSION

- **A MOOD DISORDER WITH PERSISTENT FEELINGS OF SADNESS, LOSS OF INTEREST IN DOING NORMAL ACTIVITIES OF DAILY LIVING AND CAN COME WITH FEELINGS OF WORTHLESSNESS**
- **IT CAN BE ACCOMPANIED BY FEELINGS OF ANGER, FRUSTRATION, IRRITABILITY, ANXIETY**
- **SLEEP DISTURBANCES-TOO MUCH OR TOO LITTLE**
- **DIFFICULTY CONCENTRATING**
- **THOUGHTS OF DEATH AND THAT LIFE IS NOT WORTH LIVING**

WHAT IS THE PREVALENCE OF DEPRESSION IN ORTHOPAEDIC TRAUMA?

DEPRESSION IN ORTHOPAEDIC TRAUMA PATIENTS

PREVALENCE AND SEVERITY

BY RENN J. CRICLOW, MD, PATRICIA L. ANDRES, MS, PT,
SUZANNE M. MORRISON, MPH, STEPHEN M. HALEY, PhD, PT, AND MARK S. VRAHAS, MD

Investigation performed at Brigham and Women's Hospital and Massachusetts General Hospital, Boston, Massachusetts

- **161 patients 3-12 months post injury**
- **45% of pts had clinically relevant depression using the self reported outcome Beck Depression Inventory**
- **3.7% with severe depression**

- **Compared to general population with a prevalence of up to 19.8%**
- **Compared to LEAP study- 42% with mod-severe depression, 15.3% with severe depression (used a different measuring tool)**

- **SFMA- short version of the Musculoskeletal Function Assessment with 46 items**
- **As the SFMA scores worsened, the depression scores increased**
- **NO CORRELATION between injury severity or fracture severity and depression**
- **OPEN fracture — 4.5 times more likely to have moderate to severe depression than with closed fracture**

Prevalence of Depression and Posttraumatic Stress Disorder After Acute Orthopaedic Trauma: A Systematic Review and Meta-Analysis

Muscatelli, Stefano BA^{*}; Spurr, Hayley BSc[†]; O'Hara, Nathan N. MHA[‡]; O'Hara, Lyndsay M. MPH[§]; Sprague, Sheila A. PhD^{||}; Slobogean, Gerard P. MD, MPH, FRCSC[‡]

Journal of Orthopaedic Trauma: January 2017 - Volume 31 - Issue 1 - p 47-55

doi: 10.1097/BOT.0000000000000664

- **27 STUDIES/ 7109 SUBJECTS**
- **WEIGHTED POOLED PREVALENCE OF DEPRESSION: 32.6%**
- **WEIGHTED POOLED PREVALENCE OF PTSD AND DEPRESSION: 16.8%**

WHAT IS THE RELATIONSHIP BETWEEN DEPRESSION/ANXIETY AND PAIN?

Psychological Factors Predict Disability and Pain Intensity After Skeletal Trauma

Ana-Maria Vranceanu, PhD, Abdo Bachoura, MD, Alexander Weening, MD, Mark Vrahas, MD,
R. Malcolm Smith, MD, and David Ring, MD, PhD

Investigation performed at Massachusetts General Hospital, Boston, Massachusetts

- **152 pts screened at 1-2 mo. and 5-8 months post injury**
- **Rate of clinical depression remained the same from time 1 and time 2 at 23% and 21%**
- **Catastrophic thinking in response to pain was the most important predictor of disability and pain**
- **Coping style of rumination and helplessness when in pain may be a primary risk factor for long term disability and pain**

Longitudinal relationships between anxiety, depression, and pain:
Results from a two-year cohort study of lower extremity trauma patients



Renan C. Castillo ^{a,b,*}, Stephen T. Wegener ^{a,b}, Sara E. Heins ^a, Jennifer A. Haythornthwaite ^c,
Ellen J. MacKenzie ^a, Michael J. Bosse ^d, the LEAP Study Group ¹

^a Department of Health Policy and Management, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD, USA

^b Department of Physical Medicine and Rehabilitation, Johns Hopkins University, Baltimore, MD, USA

^c Department of Psychiatry & Behavioral Sciences, Johns Hopkins University, Baltimore, MD, USA



^d Department of Orthopaedic Surgery, Carolinas Medical Center, Charlotte, NC, USA

- **545 pts over 2 yrs. w/ BSI and VAS – LEAP Study Group**
- **Increased Pain intensity weakly predicted anxiety and depression over the first year**
- **Anxiety predicted pain symptoms over all time periods**
- **In the second year ONLY increased anxiety predicted increased pain intensity with the relationship almost doubling**

HOW DOES DEPRESSION EFFECT OUTCOMES AFTER ORTHOPAEDIC TRAUMA?

A National US Study of Posttraumatic Stress Disorder, Depression, and Work and Functional Outcomes After Hospitalization for Traumatic Injury

Douglas Zatzick, MD, Gregory J. Jurkovich, MD,† Frederick P. Rivara, MD, MPH,‡
Jin Wang, PhD, MS,‡ Ming-Yu Fan, PhD,* Jutta Joesch, PhD,* and Ellen Mackenzie, PhD§*

- At 12 months - 20%PTSD and 6.6% depression
- Previously working patients with either disorder- had 3 fold  in odds of not returning to work at 1 year
- Pts with both disorders – had a 5-6 fold  in odds of not returning to work

WHAT ARE THE OPTIONS FOR TREATMENT FOR DEPRESSION IN ORTHOPAEDIC TRAUMA PATIENTS?

**Early cognitive–behavioural therapy
for post-traumatic stress symptoms
after physical injury[†]**

Randomised controlled trial

JONATHAN I. BISSON, JONATHAN P. SHEPHERD, DEBORAH JOY,
RACHEL PROBERT and ROBERT G. NEWCOMBE

- **Symptoms in both groups decreased significantly over 13 months**
- **Higher initial intrusion and depression scores were predictive of worse outcomes at 3 months**
- **Higher initial intrusion scores and higher initial levels of reported pain without intervention were predictive of worse outcome at 13 months**
- **Treatment effect was modest- clinician administered scores did not drop**
- **Not enough sessions**
- **No effect on anxiety and depression**

DEPRESSION

- **May not respond to standard treatment used for PTSD**
- **Surgeons may need to be aware of depressive symptoms such as insomnia, anorexia, anxiety, poor concentration, and lassitude so that they can make a psychiatric referral**

Stress Not Limited to Our Patients

SIGNIFICANT IMPACT OF STRESS ON ORTHOPAEDIC SURGEONS AND THEIR FAMILIES

- AOA Critical Issues
- Managing Stress in the Orthopaedic Family
- Avoiding Burnout, Achieving Resilience*
- By M. Catherine Sargent, MD, Wayne Sotile, PhD, Mary O. Sotile, MA, Harry Rubash, MD, Peter S. Vezeridis, MD, Larry Harmon, PhD, and Robert L. Barrack, MD
- JBJS 93A(8)e340(1-13), April 2011

STRESS

- OCCUPATIONAL STRESS IN HIGH-PRESSURE PROFESSIONS,
 - INCLUDING ORTHOPAEDIC SURGERY,
 - IS DIRECTLY RELATED TO 7 OF TOP 10 CAUSES OF DEATH
- STRESS MAY BE MANIFESTED BY BURNOUT
 - IN ORTHOPAEDIC SURGEONS
 - IN FAMILY MEMBERS OF ORTHOPAEDIC SURGEONS

STRESS AND PHYSICIAN IMPAIRMENT

- AMA DEFINITION OF PHYSICIAN IMPAIRMENT: INABILITY TO PRACTICE MEDICINE WITH REASONABLE SKILL AND SAFETY TO PATIENTS BY REASONS OF PHYSICAL OR MENTAL ILLNESS
 - Increased risk of medical errors
- FACTORS ASSOCIATED WITH IMPAIRMENT IN PHYSICIANS
 - BURNOUT
 - DEPRESSION
 - SUBSTANCE ABUSE
 - DISRUPTIVE BEHAVIOR

BURNOUT

- CAUSES OF BURNOUT IN ORTHOPAEDIC RESIDENTS
 - FINANCIAL PRESSURES INCLUDING MEDICAL SCHOOL DEBT
 - SLEEP DEPRIVATION
 - COMPETITION WITH CO-WORKERS
 - HARASSMENT
 - LACK OF FREE TIME AND EXCESSIVE TIME AT WORK
 - WORK-RELATED STRESS INCLUDING CONCERNS ABOUT PATIENT OUTCOMES, LEGAL/MALPRACTICE ISSUES, AND EDUCATIONAL PRIORITIES
 - DAILY MICROSTRESSORS
 - FAMILY AND LIFE BALANCE CONFLICTS

BURNOUT

- 3 COMPONENTS OF BURNOUT:
 - EMOTIONAL EXHAUSTION
 - DEPERSONALIZATION
 - DECREASED SENSE OF PERSONAL ACCOMPLISHMENT

- EARLY SIGNS OF BURNOUT
 - DECREASED PERFORMANCE AND MORALE
 - PHYSICAL AND SOMATIC SYMPTOMS
 - BEHAVIORAL CHANGES

- LATE SIGNS OF BURNOUT
 - SELF-MEDICATION
 - SERIOUS SELF-DOUBT

BURNOUT CONSEQUENCES

- BURNOUT CONTRIBUTES TO MEDICAL ERRORS
 - AMERICAN COLLEGE OF SURGEONS SURVEY
 - EACH 1 POINT INCREASE IN DEPERSONALIZATION SCORE INCREASES RISK OF ERROR BY 11%
 - EACH 1 POINT INCREASE IN EMOTIONAL EXHAUSTION INCREASES RISK OF ERROR BY 5%
 - SURGEONS COMMITTING ERRORS 2X AS LIKELY TO ALSO HAVE DEPRESSION.
 - EFFECT OF BURNOUT ON MEDICAL ERRORS STATISTICALLY SIGNIFICANT
 - EFFECT OF NUMBER OF HOURS WORKED, FREQUENCY OF NIGHT CALL, PRACTICE SETTING, AND COMPENSATION ON MEDICAL ERRORS NOT STATISTICALLY SIGNIFICANT.

AAOS/OREF SURVEY: RESIDENTS, FACULTY, AND SPOUSES

- 64 RESIDENCY PROGRAMS
- HIGH LEVELS OF BURNOUT IN 56% RESIDENTS, 30% RESIDENT SPOUSES, 28% FACULTY, AND 13% WORKING FACULTY SPOUSES
- BURNOUT RISK HIGHEST FOR PGY2 RESIDENTS, FEMALE RESIDENTS, AND RESIDENTS IN LARGER TRAINING PROGRAMS (>5 RESIDENTS/YR)
- 92% RESIDENTS AND 79% FACULTY REPORTED SLEEP DEPRIVATION LEADING TO STATISTICALLY SIGNIFICANT INCREASES IN BURNOUT, PSYCHOLOGIC DISTRESS AND MARITAL DISSATISFACTION.

PHYSICIAN DEPRESSION

- >29% RESIDENTS ARE CLINICALLY DEPRESSED
- SIGNS OF DEPRESSION
 - DECREASED PERFORMANCE INCLUDING LOSS OF MOTOR SKILLS
 - TARDINESS AND CHANGES IN SLEEP PATTERNS
 - WEIGHT LOSS OR GAIN
 - DECREASED ABILITY TO CONCENTRATE AND INDECISIVENESS
- AOA 2006 SURVEY ORTHOPAEDIC CHAIRS
 - ONLY 15% SATISFIED WITH PERSONAL-PROFESSIONAL LIFE BALANCE

RESILIENCE

- CONTROL STRESS WITH RESILIENCE (THE OPPOSITE OF BURNOUT)
 - ACCEPT THAT RESILIENCE MATTERS – DECREASES BURNOUT
 - ACCEPT THAT YOU ARE AT RISK
 - DO NOT IGNORE THE OBVIOUS EFFECT OF STRESS ON YOU, FAMILY, PATIENTS
 - RECOGNIZE GOOD WORK – INCREASES SELF ESTEEM
 - BE COLLABORATIVE – INCREASES SUPPORT NETWORKS
 - FIND AND PROTECT MEANING IN WORK AND FAMILY LIFE
 - ACCEPT THAT LIFE IN ORTHOPAEDICS IS A FAMILY AFFAIR
 - ACCEPT POSITIVE CHANGE

IMPROVED FAMILY LIFE DECREASES BURNOUT

Sargent MC, Sotile W, Sotile MO, Rubash H, Barrack RL. Quality of life during orthopaedic training and academic practice. Part 1: orthopaedic surgery residents and faculty. J Bone Joint Surg Am. 2009;91:2395-405.

GUIDELINES

1. SPEND AVERAGE OF 90+ MINUTES DAILY WITH YOUR SIGNIFICANT OTHER.
2. REGULARLY ENGAGE YOUR SIGNIFICANT OTHER IN MEANINGFUL DISCUSSION REGARDING YOUR WORK EXPERIENCES.
3. HONOR YOUR SIGNIFICANT OTHER'S ROLE
4. REMEMBER TO PLAY WITH YOUR FAMILY REGULARLY

FAR MORE EFFECTIVE TO MAINTAIN RELATIONSHIPS TO TAKE MULTIPLE BRIEF BREAKS FROM YOUR INTENSE WORK SCHEDULE THAN IT IS TO WORK EXCESSIVELY FOR LONG STRETCHES AND THEN TAKE A LENGTHY VACATION.



SUMMARY

- **ORTHOPAEDISTS ARE OFTEN THE PATIENTS MOST CONSISTENT DOCTOR POST OP**
- **PTSD AND DEPRESSION ARE PREVALENT IN ORTHOPAEDIC TRAUMA, AND BURNOUT IS PREVALENT IN ORTHOPAEDISTS**
- **PTSD,DEPRESSION, AND BURNOUT NEGATIVELY IMPACT PATIENT OUTCOMES**
- **IDENTIFYING RISK FACTORS HELPS SELECT PATIENTS AND PHYSICIANS FOR INTERVENTION**
- **EARLY INTERVENTION HAS A POSITIVE IMPACT**

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THANK YOU

