

STATE OF MICHIGAN
IN THE SUPREME COURT

ELLEN M. ANDARY, a legally incapacitated adult, by and through her Guardian and Conservator, MICHAEL T. ANDARY, M.D., PHILIP KRUEGER, a legally incapacitated adult, by and through his Guardian, RONALD KRUEGER & MORIAH, INC., d/b/a/ EISENHOWER CENTER, a Michigan corporation,

Supreme Court Case No.164772
Court of Appeals Case No. 356487
Ingham County Circuit Court
Case No. 19-738-CZ

Plaintiffs-Appellees,

v.

USAA CASUALTY INSURANCE COMPANY, a foreign corporation, and CITIZENS INSURANCE COMPANY OF AMERICA, a Michigan Corporation,

Defendants-Appellants.

MOTION OF AMICUS CURIAE MICHIGAN OSTEOPATHIC ASSOCIATION FOR LEAVE TO FILE AN AMICUS CURIAE BRIEF

Amicus Curiae Michigan Osteopathic Association (MOA), pursuant to MCR 7.311 and MCR 7.312(H), seeks leave to file an amicus curiae brief in support of Plaintiffs-Appellees Ellen M. Andary, by and through her Guardian and Conservator Michael T. Andary, M.D., Philip Krueger, by and through his Guardian Ronald Krueger & Moriah, Inc. d/b/a Eisenhower Center, and Eisenhower Center’s Brief on Appeal. In support of this motion, Amicus Curiae states the following.

1. MOA is the largest statewide osteopathic organization representing osteopathic physicians, interns, residents, and medical students in Michigan. Since 1898, the MOA has been dedicated to the promotion of quality patient care and to the educational, informational, and legislative needs of its members.

2. Over the course of many years, the appellate courts of this State have graciously allowed MOA to share its views when legal issues affecting physicians have been presented.

3. In 2019, the Michigan Legislature made substantial amendments to the No-Fault Act, MCL 500.3101 *et seq.* Among these changes are limitations on in-home attendant care provided by family members and the creation of statutory caps on amounts that can be reimbursed to providers of medical services to victims of motor vehicle accidents.

4. Plaintiffs raised a number of constitutional challenges to these amendments, and the trial court upheld the legislative changes, dismissing the complaint.

5. The Court of Appeals reversed that decision in part, holding that claimants injured before the effective date of the amendments are not subject to the limitations on benefits and that retroactive application of the amendments would violate the contracts clause of the Michigan Constitution, Const 1963, art 1, § 10. The Court remanded the case for further discovery on the issues of whether the amendments violate the equal protection and due process clauses of the Constitution.

6. The issues pending before this Court are of immense interest to Amicus Curiae and its members, who are concerned about the deleterious effects retroactive application of the amendments will have on catastrophically injured patients in Michigan. Amicus Curiae believe that it can best assist this Court in understanding the issues from the perspective of practitioners by presenting an amicus curiae brief that provides examples of the real-world ramifications of these amendments to severely injured patients who have a stable care regime in place.

Wherefore, Amicus Curiae Michigan Osteopathic Association respectfully requests that this Court grant this motion and accept the attached amicus curiae brief and supporting exhibits for filing.

Respectfully submitted,

KERR, RUSSELL AND WEBER, PLC

By: *Jacquelyn A. Klima*

Jacquelyn A. Klima (P69403)

Attorney for Amicus Curiae Michigan

Osteopathic Association

500 Woodward Avenue, Suite 2500

Detroit, MI 48226-3427

(313) 961-0200

jklima@kerr-russell.com

Dated: February 6, 2023

RECEIVED by MSC 2/6/2023 3:04:16 PM

CERTIFICATE OF SERVICE

Jacquelyn A. Klima, being first duly sworn deposes and says that she is employed with the law firm of Kerr, Russell and Weber, PLC, attorneys for Amicus Curiae Michigan Osteopathic Association, and on February 6, 2023, she caused to be served a copy of the foregoing Motion of Amicus Curiae Michigan Osteopathic Association for Leave to File an Amicus Curia Brief and Certificate of Service upon counsel by e-filing the same, which will serve the attorneys of record.

By: /s/Jacquelyn A. Klima
Jacquelyn A. Klima (P69403)

RECEIVED by MSC 2/6/2023 3:04:16 PM

STATE OF MICHIGAN
IN THE SUPREME COURT

ELLEN M. ANDARY, a legally incapacitated adult, by and through her Guardian and Conservator, MICHAEL T. ANDARY, M.D., PHILIP KRUEGER, a legally incapacitated adult, by and through his Guardian, RONALD KRUEGER & MORIAH, INC., d/b/a/ EISENHOWER CENTER, a Michigan corporation,

Supreme Court Case No.164772

Court of Appeals Case No. 356487

Ingham County Circuit Court
Case No. 19-738-CZ

Plaintiffs-Appellees,

v.

USAA CASUALTY INSURANCE COMPANY, a foreign corporation, and CITIZENS INSURANCE COMPANY OF AMERICA, a Michigan Corporation,

Defendants-Appellants.

BRIEF OF AMICUS CURIAE MICHIGAN OSTEOPATHIC ASSOCIATION IN SUPPORT OF PLAINTIFFS-APPELLEES AND AFFIRMANCE OF THE COURT OF APPEALS DECISION

Jacquelyn A. Klima (P69403)
KERR, RUSSELL AND WEBER, PLC
Attorney for Amicus Curiae Michigan
Osteopathic Association
500 Woodward Avenue, Suite 2500
Detroit, MI 48226-3427
(313) 961-0200
jklima@kerr-russell.com

TABLE OF CONTENTS

INDEX OF AUTHORITIES.....2
STATEMENT OF QUESTIONS PRESENTED.....3
STATEMENT OF INTEREST OF AMICUS CURIAE4
INTRODUCTION5
ARGUMENT5
I. Case Studies Reviewed by Dr. James Sylvain, D.O.; Dr. Rani Gebara, D.O.; and Dr. Erika Erlandson, M.D.6
II. Case Studies Reviewed by Dr. Owen Z. Perlman, M.D.10
RELIEF REQUESTED.....18
CERTIFICATE OF COMPLIANCE19

INDEX OF AUTHORITIES

Cases

House Speaker v Governor, 443 Mich 560; 506 NW2d 190 (1993) 6

Padilla v Kentucky, 559 US 356; 130 SCt 1473; 176 LEd2d 284 (2010) 6

People v Tyburski, 445 Mich 606; 518 NW2d 441 (1994)..... 6

United States v Michigan, 940 F2d 143 (CA 6, 1991)..... 6

Statutes

MCL 500.3101 *et seq.*..... 5

MCL 500.3107(1)(a)..... 5

Rules

MCR 7.212(H)(3) 4

STATEMENT OF QUESTIONS PRESENTED

1. Did the Court of Appeals correctly hold that claimants injured before the effective date of 2019 PA 21 are not subject to the limitations on benefits set forth in MCL 500.3157(7) and (10)?

The Trial Court would say “no.”

The Court of Appeals would say “yes.”

Plaintiffs-Appellees say “yes.”

Defendants-Appellants say “no.”

Amicus Curiae Michigan Osteopathic Association says “yes.”

2. Did the Court of Appeals correctly hold that application of the amended statute to claimants injured before the effective date of 2019 PA 21 would violate the Contracts Clause of the Michigan Constitution, Const. 1963, art. 1, § 10?

The Trial Court would say “no.”

The Court of Appeals would say “yes.”

Plaintiffs-Appellees say “yes.”

Defendants-Appellants say “no.”

Amicus Curiae Michigan Osteopathic Association says “yes.”

3. Did the Court of Appeals correctly remand the case to the circuit court for discovery to determine whether the no-fault amendments, even when applied only prospectively, pass constitutional muster?

The Trial Court would say “no.”

The Court of Appeals would say “yes.”

Plaintiffs-Appellees say “yes.”

Defendants-Appellants say “no.”

Amicus Curiae Michigan Osteopathic Association says “yes.”

STATEMENT OF INTEREST OF AMICUS CURIAE ¹

Amicus Curiae Michigan Osteopathic Association (MOA) is the largest statewide osteopathic organization representing osteopathic physicians, interns, residents, and medical students in Michigan. Since 1898, the MOA has been dedicated to the promotion of quality patient care and to the educational, informational, and legislative needs of its members.

MOA was permitted to submit an amicus curiae brief when this case was pending in the Ingham County Circuit Court and appreciates the opportunity to express its views to this Court.

¹ Pursuant to MCR 7.312(H)(4), Michigan Osteopathic Association (MOA) states that neither party's counsel authored this brief in whole or in part. MOA further states that none of the parties or their counsel contributed money that was intended to fund the preparation or submission of the brief and that no person other than MOA and its members made such a monetary contribution.

INTRODUCTION

In addition to Plaintiffs in this action, there are approximately 16,880 catastrophically injured persons in Michigan who are receiving No-Fault benefits under insurance policies that vested before the amendments to Michigan’s No-Fault Act, MCL 500.3101 *et seq.* At the time of their respective automobile accidents, MCL 500.3107(1)(a) provided for the recovery of PIP benefits for “[a]llowable expenses consisting of all reasonable charges incurred for reasonably necessary products, services and accommodations for an injured person’s care, recovery, or rehabilitation.” These individuals paid premiums for insurance policies that guaranteed these benefits and obtained services reasonably necessary for their care, rehabilitation, and survival. Since the amendments took effect, these patients have suffered disruptions to necessary benefits and services and a decline in the level of care they receive. Amicus Curiae Michigan Osteopathic Association (MOA) submits this brief to assist the Court in understanding the detrimental impact a change in a long-term care routine can have on catastrophically injured patients.

MOA joins in the position of Plaintiffs Ellen M. Andary, by and through her Guardian and Conservator Michael T. Andary, M.D. (collectively, “Andary”), Philip Krueger (Krueger), by and through his Guardian Ronald Krueger & Moriah, Inc. d/b/a Eisenhower Center (Eisenhower Center), and Eisenhower Center, with respect to the constitutional and retroactivity issues in this appeal. Rather than repeat their legal arguments, MOA submits this amicus brief to assist the Court with understanding the real-world ramifications of applying the 2019 amendments to the No-Fault Act retroactively and disrupting the stable care regimes for catastrophically injured patients.

ARGUMENT

“Historically, ‘amicus curiae’ was defined as one who interposes ‘in a judicial proceeding to assist the court by giving information, or otherwise, or who conduct[s] an investigation or

other proceeding on request or appointment therefor by the court.” *United States v Michigan*, 940 F2d 143, 164 (CA 6, 1991), quoting 4 Am Jur 2d, Am Cur § 1, at 109 (1962); *Leigh v Engle*, 535 F Supp 418, 419-420 (ND Ill, 1982). “Its purpose was to provide impartial information on matters of law about which there was doubt, especially in matters of public interest.” *Id.* Courts have taken into consideration real-world information provided by amici curiae. See, e.g., *Padilla v Kentucky*, 559 US 356, 364 n 7; 130 SCt 1473; 176 LEd2d 284 (2010) (considering in discussion of deportation issue real-world examples from Asian American Justice Center as amicus curiae); *People v Tyburski*, 445 Mich 606, 625 n 15; 518 NW2d 441 (1994) (discussing examples of juror bias in voir dire transcript from separate case and letter between district court judges, shared by amici curiae Criminal Defense Association of Michigan and National Jury Project); *House Speaker v Governor*, 443 Mich 560, 589-590; 506 NW2d 190 (1993) (considering examples submitted by amicus former governor of non-use of procedures in determining whether current governor was bound to follow procedures).

For the purpose of providing examples to this Court of the impact retroactive application of the No-Fault amendments will and have had on the catastrophically injured throughout the State of Michigan, attached are several case studies of such individuals and affidavits from physicians who reviewed those studies. Exhibits A, B.

I. Case Studies Reviewed by Dr. James Sylvain, D.O.; Dr. Rani Gebara, D.O.; and Dr. Erika Erlandson, M.D.

Case Study No. 1

The first case involves a 65-year-old woman who had suffered an incomplete cervical spinal cord injury in a motor vehicle accident in 1992. This injury resulted in incomplete quadriplegia, partial paralysis of her arms and legs. This injury affected not only her ability to move and feel sensation, but also to breathe normally and control her bowel and bladder. The

patient was able to live at home for 29 years with daily assistance from commercial agency home health aides. Her care and rehabilitation involved getting her out of bed every day, exercising her, and involving her in activities of daily living by well-trained staff. An essential element of the patient's care involved the use of a Hoyer Lift to transfer her in and out of bed. The patient regularly saw her family, went shopping, and tended her plants.

In July 2021, as a result of the No-Fault amendments, the agency was no longer able to continue employing the patient's regular aides due to the decrease in compensation. The agency hired new health aides who did not have the same level of training, competence, and experience to provide the care she had been receiving. Some of the new aides did not know how to use the Hoyer Lift, so the patient could not get out of bed. She was toileted in bed and often forced to stay there for 24 to 48 hours. The patient became bedridden, and her respiratory function steadily worsened, ultimately resulting in her death from respiratory failure in October 2021. The case study conclusion is that "[a]lthough the patient's medical condition was complicated, there is little doubt that the decreased level of home health aide care that the patient began receiving in July 2021 was a significant contributing cause of her precipitous decline and ultimate death in October 2021." Exhibit A.1.

Case Study No. 2

The second case involves an 81-year-old man who had suffered a traumatic brain injury, a left above-knee amputation, and a T4 spinal cord injury in a motor vehicle accident in 2019. This injury resulted in paralysis of the legs, an inability to control his bowel and bladder, and loss of sensation to skin below his ribs. He had a moderate traumatic brain injury but was able to interact, laugh, tell jokes, follow commands, move his arms, participate in his care, and live at home with his wife. He watched television, played games, socialized, and was participating in

physical therapy, occupational therapy, speech pathology, and was making progress toward independence in a wheelchair. The patient had a home health aide and nursing 24 hours a day.

After July 2021, the home health aide company could no longer staff the patient due to decreased compensation from the fee schedules, and only sent nurses for 20 hours a week. The company that transported him to medical and rehabilitation appointments stopped handling automobile no-fault cases due to the changes in reimbursement, and he missed multiple appointments to the wound clinic. The patient's care fell to his elderly wife, who put in over 100 hours of care per week and had to work to acquire a wheelchair accessible van to transport him to appointments. She was not able to roll him over as frequently, clean his skin, or change the colostomy, and his condition gradually declined. In May 2022, the patient died from complications from decubitus ulcers on his buttocks that caused infection, sepsis, blood clots, and organ failure until he could not eat or drink. The case study conclusion is that "[a]lthough this patient's medical situation was complicated and multifactorial, there is little doubt that the decreased level of HHA, and transportation starting in July of 2021 were significant contributing factors to his gradual decline and death in May of 2022." Exhibit A.2.

Case Study No. 3

The third case involves a 53-year-old man who was in a motor vehicle accident in 2012 and suffered a C6 cervical spinal cord injury resulting in paraplegia, loss of normal bowel and bladder function, and a serious traumatic brain injury resulting in cognitive and communication deficits. In 2013, the patient was sent to a long-term residential care facility where he received 24-hour care. The patient also received additional care from an outside home health care agency which consisted of four hours of care for his bowel and bladder program and other aspects of his daily care. The patient received transportation services to other outside care.

After July 2021, the patient's outside home health care agency could no longer provide consistent aide staffing for the bowel and bladder care as a result of the fee schedules, and the staff at the facility was not able to render that care. Nor was any other outside agency willing to provide such care at the reduced rates. The patient's necessary daily care decreased, and his condition steadily deteriorated. He required five hospitalizations from October 2021 to January 2022 due to urinary tract infections, elevated blood sugars, acute respiratory failure with hypoxia, and worsened brain damage. The case study conclusion is:

Even though this patient's medical situation was complicated and multifactorial, there is little doubt that his decreased level of home health aide care and related transportation assistance, which began in July of 2021, were significant contributing factors to the patient's development of urinary tract infections, respiratory failure, elevated blood sugar, and further brain damage, all of which ultimately necessitated his multiple hospitalizations. [Exhibit A.3.]

Physician Opinions

Dr. James Sylvain, D.O.; Dr. Rani Gebara, D.O.; and Dr. Erika Erlandson, M.D. are licensed to practice medicine in Michigan and Board-certified in the field of Physical Medicine and Rehabilitation (Physiatry). Exhibit A, ¶ 1. They focus their practice on caring for severely disabled patients, many of whom have suffered catastrophic injuries in motor vehicle accidents. Exhibit A, ¶ 2. With respect to the three case studies, these three physicians reviewed each patient's medical file, personally interviewed their attending physicians, and reviewed the case summaries. Exhibit A, ¶ 4. All three physicians concurred in the conclusions of the case summaries, believe it is more probable than not that the reductions in patient care expense reimbursement imposed by the changes to the No-Fault law were significant contributing causes to the death or worsened medical condition of each patient, and believe that these case studies demonstrate the medical expense reimbursement reductions pose a significant threat to the health

and safety of catastrophically injured patients, particularly those injured years ago who must now endure major changes in their daily health care regime. Exhibit A, ¶ 5.

II. Case Studies Reviewed by Dr. Owen Z. Perlman, M.D.

Case Study No. 1

The first case involves a 61-year-old woman who was a pedestrian hit by a motor vehicle in 1977 when she was only 15 years old. At the time of her accident, she required CPR twice in the first 24 hours, mechanical ventilation, and extensive ICU hospitalization. After six months in a coma, she was released from hospital and required tube feedings. She weighed only 65 pounds and was not expected to make it through the winter. However, with quality care at home and extensive treatments, she began to make people aware that she was “locked in” there. She achieved the ability to communicate through a non-vocal communication device on a computer, write poetry, participate in conversations, send emails, and participate in all family activities.

This patient has traumatic brain injury, brainstem injury, spasmodic torticollis, cerebral spastic quadriparesis, oral motor apraxia, aphasia, acquired hypothyroidism, acquired osteopenia, acquired scoliosis, and vitamin D insufficiency, which affect her ability to chew, swallow, and speak. In addition, spasmodic torticollis causes tightness in her neck and pulls her ear down toward her shoulder. Cerebral spastic quadriparesis causes weakness in all four extremities and resistance to movement. Her decreased mobility caused osteopenia and scoliosis, which led to pulmonary problems. She has lived at home since 1977, and her parents are now 87 and 85 years old. She had been receiving nursing care around the clock and had access to physical therapy, massage therapy for myofascial release to decrease tone and increase range of motion, occupational therapy, and speech therapy.

However, after the amendments took effect in July 2021, the patient’s providers of in-home physical therapy and massage therapy were denied reimbursement and ceased services. As

a result, the patient suffered from a life-threatening episode of aspiration pneumonia on May 17, 2022, which resulted in hospitalization, increased medication and care assistance, and an increased need for supportive equipment. Her physical, cognitive, and emotional condition significantly declined as a result of the discontinued treatments that had been prescribed by her neurosurgeon, neurologist, and physical medicine and rehabilitation physician. She has a decreased ability to perform daily functions, including eating a regular diet, consuming normal fluids, interacting with the community, digestive complications, walking with a specialized walker, independent mobility, transferring to and from her wheelchair, and the ability to use her communication system and computer for cognitive stimulation and social interaction.

The conclusion of the case study is that as a direct result of the No-Fault reforms, there is a deterioration of the patient's condition and increased risk of morbidity and mortality. The insurance company's refusal to pay for physical and massage therapy directly impacted aspects of her life that were healthy, active, and safe. Family members have been forced to use their own savings to pay for skilled care, and the patient has become an "observer" rather than a participant in life. Exhibit B.2.

Case Study No. 2

The second case involves a 22-year-old man with primarily complete C2 quadriplegia with ventilator dependence, neurogenic bowel, neurogenic bladder, tracheostomy, and bilateral diaphragmatic pacers as a result of being a passenger in a motor vehicle accident on November 24, 2004. He is paralyzed from the neck down and is dependent on a ventilator to breathe. He is able to hear, see, talk, taste and smell. Through therapy, he has regained some strength in his neck, can move his head, and has some movement in his shoulders. He received nursing care from his family and outside agencies. The patient is able to type with specialized computer

equipment and has been able to function within his home and in society with the care he was receiving. He attended mainstream school accompanied by an attendant and graduated from high school in 2019.

This patient was receiving home care services from Health Partners, a statewide agency with expertise in caring for catastrophically injured individuals. This agency closed on June 30, 2021 in anticipation of the implementation of the amendments to the No-Fault Act. After a long search, the family found a new agency, but it would only employ one of the parents for care services and has been unable to recruit a single nurse to assist with the patient's care. Nurses with skills in ventilator-dependent patients have been highly recruited by hospitals at rates nearly double those paid for home care, plus signing bonuses. The patient's parents have covered the shifts that should have been filled by professionals, working up to 522.5 hours per month but only receiving reimbursement for one parent at 56 hours per week. The family has had to borrow money to cover living expenses, asked the younger son to move back home to help out, asked the older son to send money, asked community organizations for help, and the parents have stopped paying for their own health insurance. Their bank accounts have been depleted, and they are afraid they will become homeless.

In December 2022, home-based therapy services were discontinued due to the reimbursement rates. The patient now receives physical therapy from his parents and nurses, which includes neuromuscular electrical stimulation. The elimination of massage therapy causes tightness to his neck and shoulders, which has caused an increase in pain and more difficulty with breathing. The conclusion to be taken from this case study is that the 56-hour limit on family-provided attending care and the fee caps limiting reimbursement have significantly

impacted the care this patient can receive and have placed the family in a precarious position financially. Exhibit B.2.

Case Study No. 3

The third case involves a 33-year-old woman who suffers from incomplete T8 paraplegia, mild traumatic brain injury, neurogenic bowel, and neurogenic bladder as a result of a motor vehicle accident on June 15, 2006, right before her senior year of high school. She required surgeries for a fractured humerus and to stabilize her lumbar spine. In addition, her large intestine exploded, and she lost 80 percent of it. The patient had problems with her bowel and bladder requiring intermittent catheterization and a specialized bowel program.

The patient initially received around the clock care and went to outpatient therapy at the Rehabilitation Institute of Michigan three days a week. With daily assistance from well-trained aides, she had integrated well into her community. The patient was able to graduate from high school and then attended a small college with an accessible campus. After graduating from college, she moved to Florida to attend the University of Florida and ultimately obtained a master's degree and a PhD in psychology. She was able to marry and has two young daughters.

After the No-Fault amendments, the insurance company stopped reimbursing the patient for supplies for her bladder program, including catheters, wipes, and gloves, as well as supplies for her wheelchair, including a cushion, tubes, and tires. She incurred \$114,500 in family attendant care expenses, \$6,900 in non-family attendant care expenses, and \$60,000 in therapy, equipment, and supplies. She had to sell her accessible home to pay these bills, and her family moved into one room in her mother's non-accessible house. The patient has torn ligaments in her wrists attempting to propel her wheelchair over the carpet in that room, and has fallen and fractured a toe. She can no longer shower independently or cook. Her post-traumatic stress

disorder (PTSD) from the accident has returned more intensely, and she has become afraid to drive herself. She had been receiving 14-20 hours per day of home health aide care but now is only reimbursed for 8 hours. The insurance company also refuses to pay for a non-family caregiver. In conclusion, as a result of the No-Fault reforms, the patient has incurred significant health care expenses that were previously reimbursed, was forced to sell her wheelchair accessible home, and has had increased pain and emotional problems, including anxiety, panic attacks, and reactivation of PTSD. Exhibit B.2.

Case Study No. 4

The fourth case involves a 47-year-old woman who was involved in a motor vehicle on May 28, 1994, in which she was ejected from the vehicle. The patient has C5 motor and sensory complete quadriplegia with neurogenic bowel and bladder, neurogenic scoliosis and osteoporosis. She had surgeries for a cervical fracture, scoliosis, and had an intrathecal baclofen pump placed to control spasticity and avoid joint contractures. The patient can only move her head, neck, shoulders, and has limited movement of her arms. She has suffered from a number of conditions over the years, including deep vein thrombosis, bilateral kidney stones, infection from her urinary catheter, hyperreflexia, gastroparesis, and required a specialized bowel program. She has had two cardiac arrests and underwent placement of an internal defibrillator.

The patient received 12 hours per day of skilled nursing services and 12 hours of home health aide care per day from Arcadia Home Care (Arcadia). However, on June 15, 2022, Arcadia indicated that it could not continue providing services due to the fee caps. Another agency, Home Well, began working with the patient but did not have the training and experience to provide the same level of care to the patient. The patient's health declined, and she underwent three lithotripsy procedures. She experienced a leg wound with a possible bone

infection/osteomyelitis. Her blood pressure and heart rate dropped, and she was put on a ventilator. She declined placement of a tracheostomy tube and gastrostomy tube because the new agency would not be able to provide adequate care. On October 3, 2022, the patient passed away. The case study conclusion is that although the patient's medical condition was complicated, the decreased level of skilled nursing care and home health aide care the patient received as a result of the No-Fault reforms was a significant contributing cause to the patient's decline and death. Exhibit B.2.

Physician Opinion

Dr. Owen Z. Perlman, M.D. is a physician specialist Board-certified in the field of Physical Medicine and Rehabilitation. Exhibit B, ¶ 2. He focuses his practice on treating catastrophically injured individuals and can attest firsthand to the significant injuries that they have experienced and upheaval in their lives that the No-Fault amendments have caused. Exhibit B, ¶ 2. Dr. Perlman follows nearly a thousand patients chronically who have sustained traumatic brain injuries and/or spinal cord injuries. Exhibit B, ¶ 3. These injuries are much different than soft tissue or musculoskeletal injuries from more minor motor vehicle accidents, which for the majority are incidents. Exhibit B, ¶ 3. A catastrophic traumatic brain injury or spinal cord injury is not an incident, but a chronic disease. Exhibit B, ¶ 3; Exhibit B.1, Masel and DeWitt, *Traumatic Brain Injury: A Disease Process, Not an Event*, Journal of Neurotrauma, Vol 27, No 8 (2010).

The four case studies are patients of Dr. Perlman, and he has many patients who have been adversely affected by the No-Fault amendments. Exhibit B, ¶¶ 4, 6, 8, 10, 12, 18. Dr. Perlman has had a number of patients pass away as a direct consequence of the amendments. Exhibit B, ¶¶ 11, 12. The decreased number of attendant care hours that can be reimbursed

combined with the decreased rate of reimbursement per hour places a significant burden on families. Exhibit B, ¶ 5. Many family providers had not had raises in over 10 years, and when the fee deduction and decreased hours were put in place, they were unable to find agencies or private caregivers to make up the remaining hours. Exhibit B, ¶ 5. Family members may be elderly or may not have the energy level or training to provide the necessary medical oversight and structure that the patient requires. Exhibit B, ¶ 9. Family may not be able to manage transfers, give medications through a feeding tube, do necessary exercises to decrease and/or prevent joint contractures or redirect the patient from inappropriate and unsafe behaviors. Exhibit B, ¶ 9. Some family members who had been providing care have been forced to try to rejoin the work force. Exhibit B, ¶ 13.

Residential programs have moved patients to other programs because they have closed, downsized, or the patients and families chose to remove them because less resources are available than those they had been used to receiving. Exhibit B, ¶ 14. Many times, the new programs do not have the same level of professional oversight for services to address medical, emotional, and behavioral needs. Exhibit B, ¶ 14. For those who have remained in residential programs, due to the fee caps, there is less staffing, less individualized care, and more group treatments. Exhibit B, ¶ 15. As a result, there is more medical morbidity, increased hospitalizations, increased falls, elopement, behavioral incidents resulting in arrests and criminal justice system involvement, and staff injuries. Exhibit B, ¶ 15. Some residential programs are no longer providing in-house therapies such as physical therapy, occupational therapy, speech therapy, and mental health counseling. Exhibit B, ¶ 16. Finding these services has become a part of responsibility of external chronic care case managers, which has created a cascade of overwhelming need with internal coordinators of some residential programs no longer in the role

of overseeing those modalities and integrating them into the plan of care. Exhibit B, ¶ 16. This has caused a longer wait for care and reflects the disruption in the services and lack of continuity of care. Exhibit B, ¶ 16.

Transportation services have been cut by essentially all carriers across the board, which significantly limits the patients' access to therapy and doctors' appointments and interferes with the prescribed plan of care provided by the doctors. Exhibit B, ¶ 17. There is also decreased community participation, including the loss of sheltered workshop placements, on the job experiences in the community, and actual competitive employment. Exhibit B, ¶ 17. Complete cutoffs from physical therapy, massage therapy, and personal training can result in regression and physical deterioration for many patients with the need to substitute medicinal treatment as a secondary measure. Exhibit B, ¶ 19. The additional medication masks the more appropriate management of the injury and has side effects cognitively and physiologically. Exhibit B, ¶ 19. Patients and their families lived through tremendous trauma when the patients had their accidents. Exhibit B, ¶ 20. The change in the law by cutting services has resulted in decreased health status and more complications that have retraumatized the patients and their families. Exhibit B, ¶ 20.

The above case studies are only a few examples of the devastating effects the amendments can have on catastrophically injured patients who have a stable care regime already in place. Changes in personnel, services, treatments, and the overall level of expertise and care result in deterioration of patients' health and even death. The harshness of changing rules for those injured so severely that they are completely dependent upon others cannot be emphasized enough. In addition to the physical changes, the emotional trauma can also be life-destroying, especially to those accustomed to receiving certain care from family members. Patients become

reliant on a care routine and dependent upon their support structure. This stability is essential to their well-being and ability to cope with what has happened to them. There should be some amount of humanity and compassion for patients who have already gone through one catastrophic event – they should not have to suffer through another.

RELIEF REQUESTED

For the above reasons, Amicus Curiae Michigan Osteopathic Association respectfully requests that this Court affirm the Court of Appeals decision.

Respectfully submitted,

KERR, RUSSELL AND WEBER, PLC

By: Jacquelyn A. Klima
Jacquelyn A. Klima (P69403)
Attorney for Amicus Curiae Michigan
Osteopathic Association
500 Woodward Avenue, Suite 2500
Detroit, MI 48226-3427
(313) 961-0200
jklima@kerr-russell.com

Dated: February 6, 2023

CERTIFICATE OF COMPLIANCE

The undersigned counsel for Amicus Curiae Michigan Osteopathic Association certifies pursuant to MCR 7.312(A) and MCR 7.212(B)(1)-(3) that this brief is printed in Times New Roman 12-point typeface utilizing Microsoft Word 2016 and contains 4,231 words, including headings, footnotes, and quotations.

Respectfully submitted,

KERR, RUSSELL AND WEBER, PLC

By: Jacquelyn A. Klima
Jacquelyn A. Klima (P69403)
Attorney for Amicus Curiae Michigan
Osteopathic Association
500 Woodward Avenue, Suite 2500
Detroit, MI 48226-3427
(313) 961-0200
jklima@kerr-russell.com

Dated: February 6, 2023

RECEIVED by MSC 2/6/2023 3:04:16 PM

CERTIFICATE OF SERVICE

Jacquelyn A. Klima, being first duly sworn deposes and says that she is employed with the law firm of Kerr, Russell and Weber, PLC, attorneys for Amicus Curiae Michigan Osteopathic Association, and on February 6, 2023, she caused to be served a copy of the foregoing Brief of Amicus Curiae and this Certificate of Service upon counsel by e-filing the same, which will serve the attorneys of record.

By: /s/Jacquelyn A. Klima
Jacquelyn A. Klima (P69403)

RECEIVED by MSC 2/6/2023 3:04:16 PM

EXHIBIT A

AFFIDAVIT OF REVIEWING PHYSICIANS

STATE OF MICHIGAN)
)
COUNTY OF INGHAM)

The undersigned Affiants, being duly sworn, depose and say as follows:

1. We, the undersigned panel of Affiants: Dr. James Sylvain D.O.; Dr. Rani Gebara D.O.; and Dr. Erika Erlandson, M.D. are licensed to practice medicine in the state of Michigan and are Board-certified in the field of Physical Medicine and Rehabilitation (Physiatry).

2. We, the undersigned Affiants, focus our practice on caring for severely disabled patients, many of whom have suffered catastrophic injury in motor vehicle accidents.

3. We, the undersigned Affiants, have been requested to review the cases of several patients who suffered serious bodily injuries in motor vehicle accidents years ago and who, either recently died or recently experienced significant deterioration in their medical condition. In connection with that review, we have also been requested to express certain professional opinions with regard to these patients.

4. With respect to the above-referenced review of these patients, we, the undersigned Affiants, did the following:

- A. We personally reviewed each patient’s medical file;
- B. We personally interviewed each patient’s attending physician; and

C. We personally reviewed the “*Case Summary*” for each patient, which summaries are attached hereto and are identified as *Exhibit 1, Exhibit 2, and Exhibit 3*.

5. After conducting the patient reviews described above, we, the undersigned Affiants, collectively express the following professional expert opinions:

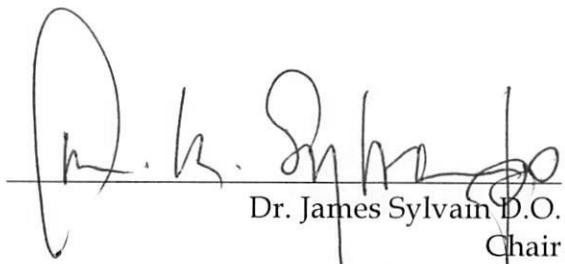
A. We concur in the accuracy of the conclusions set forth at the end of each *Case Summary* attached as exhibits hereto;

B. We believe that it is more probable than not that the reductions in patient care expense reimbursement imposed by the recent changes to the Michigan Auto No-Fault Law were significant contributing causes to the death or worsened medical condition of each referenced patient; and

C. We believe these case studies demonstrate that the medical expense reimbursement reductions imposed by the recent changes to the Michigan Auto No-Fault Law pose a significant threat to the health and safety of catastrophically injured patients, particularly those who were injured years ago and who now must endure major changes in their daily health care regime due to these benefit changes.

6. We, the undersigned Affiants, have offered our opinions herein without any compensation of any kind and do so solely because of our deep concern for the welfare of our patients.

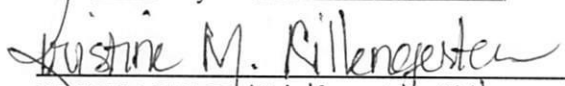
FURTHER AFFIANTS SAYETH NOT.



Dr. James Sylvain D.O.
Chair

Michigan State University College of Osteopathic Medicine
Department of Physical Medicine and Rehabilitation
Board Certified AOBPMR

Subscribed and sworn to before me
this 12th day of December, 2022.

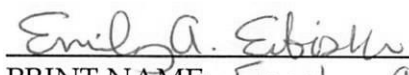

PRINT NAME: Kristine M. Gillengerten
Notary Public, State of MI, County of Lonia
My Commission Expires: September 1, 2025



Dr. Rani Gebara D.O.
Associate Professor

Michigan State University College of Osteopathic Medicine
Department of Physical Medicine and Rehabilitation
Board Certified AOBPMR


Subscribed and sworn to before me
this 13 day of December, 2022.


PRINT NAME: Emily A. Erbis
Notary Public, State of MI, County of Ingham
My Commission Expires: June 16, 2028



Dr. Erika Erlandson M.D.
Associate Professor
Michigan State University College of Osteopathic Medicine
Department of Physical Medicine and Rehabilitation
Board Certified ABPMR

Subscribed and sworn to before me
this 14 day of December, 2022.



PRINT NAME: Emily A Erbisch
Notary Public, State of MI, County of Ingham
My Commission Expires: June 16, 2028

RECEIVED by MSC 2/6/2023 3:04:16 PM

EXHIBIT 1

CASE SUMMARY: PATIENT #1 65 Y/O Female

Patient Identity: 65 y/o female with incomplete quadriplegia (partial paralysis of arms and legs) suffered as a result of a motor vehicle accident in 1992.

Patient Consequences: The patient died in October 2021 at her home, primarily as a result of respiratory failure. Her condition began to deteriorate in July 2021 when significant changes occurred in her home health aide care situation after insurance benefits payable for home health care were significantly reduced as a result of recent changes to the Auto No-Fault Law.

Fact Summary: As a consequence of her 1992 motor vehicle accident, the patient sustained catastrophic injuries, including an incomplete cervical spinal cord injury that significantly affected her ability to move her arms, legs, and trunk and to feel sensation. These spinal cord injuries also affected her ability to breathe normally and to fully control her bowel and bladder. She also suffered from depression and anxiety secondary to her disability. Although her medical situation was complicated, the patient was able to live at home for almost 29 years with the daily assistance of well trained commercial agency home health aides. An essential part of the patient's home care and rehabilitation program was to get her out of bed daily, exercise her, and involve her in activities of daily living (ADLs). Due to her complicated medical situation, including behavioral and psychological issues, her care staff needed to be trained to appropriately implement her rehabilitation and behavioral plan. An essential aspect of that daily care required that the home aides use a Hoyer Lift to transfer the patient in and out of bed so that she could participate in her daily care and rehabilitation and stay as physically active as possible. As a result of her excellent daily care, the patient lived a relatively good life, regularly saw her family, went shopping, and tended to her plants.

The patient's in-home health care regime went very well from 1992 until July 2021. However, when the new no-fault law changes went into effect, the patient's home care agency was not able to continue employing the patient's regular aides due to decreased compensation related to the new no-fault fee schedules. Consequently, new aides were hired who did not have the necessary training, competence, and experience to provide the care that the patient's condition required, and that she had been previously receiving. For example, some of the patient's new home health aides did not know how to use the Hoyer Lift to transfer the patient in and out of bed, thereby depriving her of the essential physical activity she required. As a result, the patient had to be toileted in bed and was often forced to stay in bed for 24 to 48 hours continuously. Consequently, the patient became bedridden and her respiratory function steadily worsened. The situation resulted in her death in October of 2021 from respiratory failure.

Relation to Auto No-Fault Reforms: As a result of the new auto no-fault reforms, the home health agency that provided the patient's care could no longer staff the patient's needs by continuing to employ her previous home health aides. Consequently, the agency hired new aides, at reduced wages who, unfortunately, did not have the training and experience to care for this patient. In particular, they did not have expertise in Hoyer Lift operation. Although the patient's medical condition was complicated, there is little doubt that the decreased level of home health aide care that the patient began receiving in July 2021 was a significant contributing cause of her precipitous decline and ultimate death in October 2021.

EXHIBIT 2

CASE SUMMARY: PATIENT #2 81 Y/O Male

Patient Identity: 81-year-old male with traumatic brain injury, left above knee amputation and T4 spinal cord injury, (causing paralysis of his legs). These injuries were suffered from a motor vehicle accident (MVA) in April 2019.

Patient Consequences: Patient died in May of 2022. He died in the hospital due to complications from decubitus ulcers on his buttocks that caused infection, sepsis, (infection in the blood), blood clots, and organ failure until he could not eat or drink. His condition began to deteriorate in the early fall of 2021 when his home health aide (HHA) care lessened significantly due to the limited availability of HHA care following the benefit reductions imposed by the new Auto No-Fault Law. Thus, his elderly wife was forced to take over his care and work long hours every day for many weeks. This directly contributed to his medical decline and death.

Fact summary: As a consequence of the MVA in April 2019 the patient sustained catastrophic injuries, including a complete thoracic spinal cord injury, that paralyzed his legs, made him unable to reliably control his bowel and bladder, and caused him loss of sensation to skin below his ribs. His moderate traumatic brain injury (TBI) interfered with his cognition, although he was able to interact, laugh and tell jokes, follow commands, move his arms normally, participate in and direct his care, and enjoy life at home with his wife. He liked watching television, eating, playing games and socializing. He also had a left above knee amputation that interfered with his ability to transfer, and he was hoping to get a cosmetic prosthesis.

After the accident in April 2019 and hospitalization from the original injury, he was able to live at home and be cared for by his wife with HHA and nursing 24 hours per day. He was participating in physical therapy, occupational therapy, speech pathology and making progress towards independence in a wheelchair. He enjoyed being at home and was happy. His treatment burden was very labor intensive given, his paralysis of legs, colostomy for his bowel, and suprapubic catheter for his bladder. He had skin care issues and developed decubitus skin ulcers. Until the fall of 2021 he was able to obtain transportation to his medical and rehabilitation appointments including the wound clinic.

Up to July of 2021 his HHA company was able to adequately staff the patient and his wife did not have to work alone for significant hours. After July 2021 his HHA and other companies were no longer able to staff the patient, primarily due to decreased compensation related to no-fault fee schedules. In addition, his transportation company stopped handling auto no-fault cases due to changes in reimbursement from the no fault law changes. His elderly wife started regularly working over 100 hours per week caring for her husband and tried to acquire a wheelchair accessible van to transport him. During this transportation transition the patient missed multiple appointments, contributing to his gradual deterioration.

Relation To Auto No-Fault Reforms: As a result of the new auto no-fault reforms, the home health agency that provided the patient's care could no longer staff the patient's needs by continuing to employ her previous home health aides. Consequently, the agency stopped sending HHA to the house and only nurses at less than 20 hours per week. This put the burden of care on his determined, elderly wife. She was not able to roll him over as frequently, clean his skin, change his colostomy, and perform other care. Also, because of the transportation company discontinuing transportation there were some missed appointments to the wound clinic that contributed to his decline. Although this patient's medical situation was complicated and multifactorial, there is little doubt that the decreased level of HHA, and transportation starting in July of 2021 were significant contributing factors to his gradual decline and death in May of 2022.

EXHIBIT 3

CASE SUMMARY: PATIENT #3 53 Y/O MALE

Patient Identity: 53 year old male who was involved in a motor vehicle accident on May 5, 2012 causing catastrophic injury, including a C6 cervical spinal cord injury resulting in paraplegia (paralysis); loss of normal bowel and bladder function; and serious traumatic brain injury resulting in cognitive and communication deficits.

Patient Consequences: Patient endured five (5) inpatient hospitalizations over a four-month period from October 2021 to January 2022 due to a significant decline in his physical and mental condition related to decreased home health aide care resulting from benefit reductions attributable to the recent auto no-fault insurance reforms. These hospitalizations were necessitated by urinary tract infections, elevated blood sugars, acute respiratory failure with hypoxia, and worsened brain damage.

Fact Summary: After sustaining his spinal cord and traumatic brain injury, the patient was transferred to a long-term residential care facility on March 1, 2013 for continuation of his total care. At the facility, the patient received, and was dependent upon, 24-hour care that was rendered to him by aides who were employed by the facility. The patient also required additional and essential care by an outside home health care agency whose aides rendered four hours of care per day for the patient's bowel and bladder program, as well as other aspects of his daily care. The patient also required and received transportation services in order to obtain other outside care. After July 2021, when the benefit reductions mandated by the new no-fault law reforms went into effect, the patient's outside home health care agency was no longer able to provide consistent aide staffing to the patient, particularly with regard to his bowel and bladder care, due to decreased reimbursements under the new no-fault fee schedules. Moreover, the facility staff was not able to provide the care that had been rendered by the outside agency. In addition, no other outside agency was willing to take over the patient's care due to the reimbursement reductions mandated by the recent no-fault legislation. Consequently, the patient's necessary daily care decreased and his condition steadily deteriorated. As a result of the patient's worsened medical condition, he required five (5) hospitalizations from October 2021 to January 2022.

Relation to Auto No-Fault Reforms: Even though the patient's medical situation was complicated and multifactorial, there is little doubt that his decreased level of home health aide care and related transportation assistance, which began in July of 2021, were significant contributing factors to the patient's development of urinary tract infections, respiratory failure, elevated blood sugar, and further brain damage, all of which ultimately necessitated his multiple hospitalizations.

EXHIBIT B

AFFIDAVIT OF DR. OWEN Z. PERLMAN

STATE OF MICHIGAN

COUNTY OF WASHTENAW

I, Dr. Owen Z. Perlman, being duly sworn, depose and say as follows:

1. I am filing an Affidavit related to the Andary Supreme Court Case. This includes my professional medical opinion discussing the serious and deleterious impact of applying, retroactively, the attendant care reimbursement restrictions of 56 hours per week by family providers and the fee schedule/caps set forth in PA21 for services to catastrophically-injured individuals who suffered their disabling injuries years ago, and who presently need and have become dependent upon, the scope and level of care they have been receiving over the subsequent years.

2. I am a physician specialist Board-Certified in Physical Medicine & Rehabilitation and I focus my practice on treating catastrophically injured individuals. I can attest firsthand to the significant injuries that they have experienced and the significant upheaval in their lives that this has caused.

3. I follow close to a thousand patients chronically who have sustained traumatic brain injuries and/or spinal cord injuries. It is important to recognize that these injuries are much different than soft tissue or musculoskeletal injuries from more minor motor vehicle accidents, which for the majority are incidents. However, a catastrophic traumatic brain injury or spinal cord injury is not an incident, but a chronic disease. Attached as *Exhibit 1* is an article attesting to this.

4. I personally have many patients who have been affected by the retroactive application of PA21. Attached as *Exhibit 2* are case summaries identifying several of these

patients and their stories. Additional patients will be discussed herein. Every workday since July 2, 2021, I am helping patients, families, and providers attempt to navigate these dangerous waters so that figuratively, the patients and families do not drown, and providers are not washed away.

5. The decreased number of attendant care hours that can be reimbursed combined with the decreased rate of reimbursement per hour placed a significant burden on families. The 56-hour per week limitation was arbitrary and not based on any clinical studies to support it. The expectation was that if someone were prescribed greater than 56 hours per week, it could be obtained from a home health care agency. But the home health care agencies were placed in the same position by the dramatic reduction in reimbursement. Many family providers had not had raises in over 10 years. When the 45% reduction was put in place along with the decreased hours, they were unable to find agencies or private caregivers to make up the remaining hours.

6. I have a patient in the Grand Rapids area. He is 22 years old. When he was 3 years old, he sustained a significant spinal cord injury in a motor vehicle accident making him paralyzed from the neck down and he has required a ventilator to sustain him subsequently. His home care agency, Health Partners, chose to go out of business on June 30, 2021, just two days before PA21 was implemented. Family was forced to look for a new agency to provide the care after they resigned. Eventually, another agency was found. However, they would only employ one of the parents for care services and thus the mother would be paid for 56 hours per week for her services by the agency. Of their professional care staff, only three of their nurses transferred from the first agency to the second. This is primarily due to their nursing skills with ventilator dependent patients being in high demand in the hospitals due to COVID-19. The nurses were being recruited by local hospitals with hourly rates near double of what they were paid for in-

home care plus there were signing bonuses attracting these nurses. If the nurse was available to travel, their salary would be even greater. The timing could not have been worse for replacing these care providers. The home care agency still has not been able to recruit one single nurse to assist with this patient's care. The parents still cover all shifts that the agency cannot staff, resulting in family working as many as 522.5 hours per month with no pay for the care they had provided to their ventilator dependent son who is total care. They have had to borrow money from family members to manage their living costs. They asked their youngest son to move back home to help cover household expenses. The older son who lives and works out of state is sending money to his parents. They stopped paying for their employer sponsored health insurance so they can maintain the household. They are asking local organizations to help with household maintenance projects to keep the home safe and livable.

7. Even if they could have potentially found caregivers, many families live in small homes and do not feel that they can accommodate more people in the house. They may want to maintain privacy. Also, since they have to stay at-home to supervise and provide orientation and training to private or agency caregivers, they choose to do the care themselves.

8. I have a case where a 55-year-old man who needs help with all mobility and weighs close to 300 pounds, is now cared for by his 80-year-old mother because they live in a rural area and cannot get caregivers at the level of reimbursement offered by his carrier. There was another patient whose family had to stop paying for their health insurance and life insurance due to spending their money on private caregivers because they cannot get an agency to continue.

9. Family members may be elderly or do not have the energy level or training to provide the necessary medical oversight and structure that the patient requires. Family may not

be able to manage transfers, give medications through a feeding tube, do necessary exercises to decrease and/or prevent joint contractures or redirect the patient from inappropriate and unsafe behaviors.

10. I had a 47-year-old patient who sustained quadriplegia from the neck down in a 1994 accident. She had much medical morbidity. When she had consistent trained nurses, she would intermittently need to go to the hospital for treatment of significant medical problems but was always able to recover at home. Most recently, during the summer and fall of 2022, she had further problems. After a surgical procedure, she ended up on a ventilator. When told she was going to require a tracheostomy, she was concerned that with less staff, she would not be able to be safely managed at home. As a result, she declined the tracheostomy. She passed away on October 3, 2022.

11. On March 1, 2022, I participated in a Memorial Service in Lansing for eight patients who had passed away as a direct consequence of the changes from PA21 leading to lack of access to the necessary level of care, some after they were forced to leave their homes. In preparation for that, I interviewed surviving family members who shared their stories of devastation with me. There have been at least two-three more patients who died as a direct consequence of the changes from PA21.

12. A 60-year-old school teacher with a below-knee amputation had aides coming to her home. Her temperature was checked with each visit. The aides stopped coming due to the reform parameters. Without aides, her temperature went without monitoring. She subsequently developed sepsis, but no one knew it until it was too late. She passed away at the hospital.

13. When it was recognized that family members would be limited to 56 hours per week collectively for providing care, some family members who had chosen to be caregivers and

did so for many years were forced to look to see if they could get back into the work force to earn money. Based on the number of years out of the work force and due to lack of current skills and age, they were not competitive to get a job in the work force.

14. Residential programs have moved the patients out to other programs because they have closed, downsized or the patients and families chose to remove them because of less resources available in the residential programs than they had been used to. Many times, the programs they had been moved to do not have the same level of professional oversight for services to address medical, emotional and behavioral needs. It must be recalled that a traumatic brain injury is an alteration in brain-behavioral relationships that can impact the person physically, cognitively, emotionally and/or behaviorally.

15. For those patients remaining in residential programs, due to the fee caps, there is less staffing and thus less individualized care and more group treatments. As a result, there is more medical morbidity, increased hospitalizations, increased falls, elopement, behavioral incidents resulting in arrests and criminal justice system involvement and staff injuries. Daily, I am fielding more calls regarding this. We have been attempting to try to find the right program for each patient's clinical needs.

16. The patients have access to less individualized services and more downtime resulting in more problems. Some residential programs were no longer providing in-house therapies such as PT, OT, speech therapy, and mental health counseling. As a result of this, it increased the need to find these services in the community. This has become a part of responsibility of external chronic care case managers. On top of this, the case managers have been asked to help find programs, negotiate rates with insurance carriers, arrange for transportation services, etc. This has created a cascade of overwhelming need with internal

coordinators of some residential programs no longer in the role of overseeing those modalities and integrating them into the plan of care. The cascade has caused a longer wait for care. This reflects the disruption in the services and lack of continuity of care.

17. Some programs have lost the day-to-day oversight of the patients. Transportation services have been cut by essentially all carriers across the board, some by the applying “Fair Health rate” which can result in a 70-80% decrease in reimbursement. This significantly limits the patients’ access to therapy appointments and doctors’ appointments. It also interferes with the prescribed plan of care provided by the doctors. Appointments are missed, therapy treatment is disrupted resulting in gains that are nominal if they are able to be achieved at all. There is also decreased community participation as a result including the loss of sheltered workshop placements, on the job experiences in the community, and actual competitive employment. The patients do not have the support to get ready for care or work or to be transported there.

18. I have a patient who is a 33-year-old woman injured in 2006. She sustained T7-T8 incomplete paraplegia and also sustained a minor traumatic brain injury. She ultimately moved to Florida after completing high school and college locally. At the University of Florida, she obtained her master’s degree and PhD in psychology. She had been hired to work in the student counseling center. She had also begun to establish a private practice. However, the carrier for no objective reasons stopped making payments for her attendant care. Allegedly, they thought that since she got married, had two children, and a PhD, she no longer required treatment. The patient had saved her money and had been living in a handicapped accessible house and was receiving between 14-20 hours of attendant care daily. That enabled her to complete her education, obtain a job, and be a productive tax-paying citizen. She had to pay out in the first 17 months after July 2, 2021, over \$100,000 in family attendant care hours for salary.

She had another \$60,000 related to non-family providers, therapies, equipment, and medical supplies. The total was close to \$190,000. As a result of this, she chose to sell her home and use that money to pay these expenses. However, that necessitated the patient, her husband, and two children to move in with her mother into a two-bedroom home. Thus, the four of them are living in one room. The house is not accessible. She can no longer shower herself. She can no longer cook in the kitchen nor show her daughters how to cook. She sustained ligament injuries in both wrists by attempting to propel her wheelchair over the carpeting.

19. Complete cutoffs from physical therapy and massage therapy along with personal training can result in regression and physical deterioration for many patients with the need to then substitute medicinal treatment as a secondary measure. The additional medication masks the more appropriate management of the injury and has side effects cognitively and physiologically. We have had patients who are able to manage their diabetes through exercise, but who are no longer able to do so, and therefore are now on insulin. Their pain has increased and so as their usage of narcotic medications.

20. Finally, we come to the most important point. The patients and families lived through tremendous trauma when the patients had their accidents. The Michigan Auto No-Fault Law before it was changed provided hope, health and healing for the patients and their families. The change in the law by cutting services has resulted in decreased health status and more complications that have retraumatized the patients and their families. They are having more panic attacks, and some are having symptoms of post-traumatic stress. That could not have been the intent of the changes in the law, but certainly is the outcome. People cry in my office every day. The delicately crafted plans of care for these patients have been interfered with by insurance companies.

21. I, Dr. Owen Z. Perlman, have offered my opinions herein without any compensation of any kind and do so solely because of my deep concern for the welfare of my patients.

FURTHER AFFIANT SAYETH NOT.

Owen Z. Perlman M.D.

Dr. Owen Z. Perlman, M.D.

Past Associate Chair, Department of Physical Medicine & Rehabilitation, University of Michigan Medical Center

Past Medical Director & Department Director of Physical Medicine & Rehabilitation, Trinity Health, Ann Arbor

Past President, Michigan Academy of Physical Medicine & Rehabilitation

National Board Member & Chair of Advocacy Committee, Brain Injury Association of America

Board Certified, American Board of Physical Medicine & Rehabilitation

Subscribed and sworn to before me
this 3 day of February, 2023.

Melissa L. Whittenberg

PRINT NAME: Melissa L. Whittenberg

Notary Public, State of MI, County of Wayne

My Commission Expires: 11-30-2023

Whittenberg

EXHIBIT 1



Traumatic Brain Injury: A Disease Process, Not an Event

Brent E. Masel and Douglas S. DeWitt

Published Online: 16 Aug 2010 | <https://doi.org/10.1089/neu.2010.1358>

[View Article](#)

Abstract

Traumatic brain injury (TBI) is seen by the insurance industry and many health care providers as an “event.” Once treated and provided with a brief period of rehabilitation, the perception exists that patients with a TBI require little further treatment and face no lasting effects on the central nervous system or other organ systems. In fact, TBI is a chronic disease process, one that fits the World Health Organization definition as having one or more of the following characteristics: it is permanent, caused by non-reversible pathological alterations, requires special training of the patient for rehabilitation, and/or may require a long period of observation, supervision, or care. TBI increases long-term mortality and reduces life expectancy. It is associated with increased incidences of seizures, sleep disorders, neurodegenerative diseases, neuroendocrine dysregulation, and psychiatric diseases, as well as non-neurological disorders such as sexual dysfunction, bladder and bowel incontinence, and systemic metabolic dysregulation that may arise and/or persist for months to years post-injury. The purpose of this article is to encourage the classification of TBI as the beginning of an ongoing, perhaps lifelong process, that impacts multiple organ systems and may be disease causative and accelerative. Our intent is not to discourage patients with TBI or their families and caregivers, but rather to emphasize that TBI should be managed as a chronic disease and defined as such by health care and insurance providers. Furthermore, if the chronic nature of TBI is recognized by government and private funding agencies, research can be directed at discovering therapies that may interrupt the disease processes months or even years after the initiating event.

Introduction

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

defines a chronic disease as having one or more of the following characteristics: it is permanent, caused by non-reversible pathological alterations, requires special training of the patient for rehabilitation, and/or may require a long period of observation, supervision, or care (World Health Organization, **2002**).

The purpose of this article is to encourage the classification of traumatic brain injury (TBI) as the beginning of a chronic disease process, rather than an event or final outcome. Head trauma is the beginning of an ongoing, perhaps lifelong, process that impacts multiple organ systems and may be disease causative and accelerative. Our intent is not to discourage patients with TBI or their families and caregivers, but rather to emphasize that TBI should be managed as a chronic disease, and defined as such by health care and insurance providers. Furthermore, if the chronic nature of TBI is recognized by government and private funding agencies, research can be directed at discovering therapies that may interrupt the disease processes months or even years after the initiating event.

Post-Traumatic Mortality

Traumatic brain injury increases long-term mortality and reduces life expectancy (Table 1). In a 2004 study of mortality at 1 year post-injury among 2178 moderate to severe TBI patients, Harrison-Felix and associates reported that individuals with a TBI were twice as likely to die as a similar non-brain-injured cohort, and had a life expectancy reduction of 7 years (Harrison-Felix et al., **2004**). A follow-up study on causes of death revealed that individuals surviving more than 1 year post-injury were 37 times more likely to die from seizures, 12 times more likely to die from septicemia, 4 times more likely to die from pneumonia, and 3 times more likely to die from other respiratory conditions, than a matched cohort from the general population (Harrison-Felix et al., **2006**). The greatest proportion of deaths (29%) was from circulatory problems. Although this number was not significantly greater than that of the general population, there was still a 34% increase over the expected number of circulatory-related deaths. In their most recent study, a retrospective analysis of charts from 1678 TBI patients admitted between 1961 and 2002, Harrison-Felix and colleagues observed that TBI patients were 49 times more likely to die of aspiration pneumonia, 22 times more likely to die of seizures, 3 times more likely to die of suicide, and 2.5 times more likely to die of digestive disorders than the general population matched for age, race, and gender (Harrison-Felix et al., **2009**).

Table 1. Relationship between Traumatic Brain Injury and Mortality

<i>n</i>	<i>Increase in mortality</i>	<i>Cause of death</i>	<i>Reference</i>
1448	5.29 MRR, mod-sev 1.33 MRR, mild	Not stated	(Brown et al., 2004)
642	2.78 SMR	Not stated	(Ratcliff et al., 2005)
2670	7 times ^a	Not stated	(Selassie et al., 2005)

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

n	<i>Increase in mortality</i>	<i>Cause of death</i>	<i>Reference</i>
	12 times	Septicemia	
	4 times	Pneumonia	
	3 times	Respiratory disorders	
1678	49 times^a	Aspiration pneumonia	(Harrison-Felix et al., 2009)
	22 times	Seizures	
	4 times	Pneumonia	
	3 times	Suicide	
	2.5 times	Digestive disorders	

^aGreater than in a general population matched for age, race, and gender.

MRR, mortality risk ratio; mod-sev, moderate to severe TBI; SMR, standardized mortality ratio; TBI, traumatic brain injury.

Shavelle and colleagues (Shavelle et al., 2001) reported that individuals with a TBI were three times more likely to die of circulatory conditions. Although it is somewhat intuitive that individuals with moderate to severe TBI would have a higher mortality rate than the general population, even individuals with mild TBI exhibited a small but statistically significant reduction in long-term survival (Brown et al., 2004).

Based on an examination of mortality among 3679 TBI patients within 1 year of discharge from acute care hospitals in South Carolina, Selassie and colleagues observed a sevenfold increased risk of death overall (standardized mortality ratio [SMR] = 7.1; 95% CI 6.3,7.9) within 15 months of discharge compared with the general U.S. population (Selassie et al., 2005). Patients treated at level 1 trauma centers were 44% (95% CI 0.4,0.8) less likely to die during the follow-up period than those treated at hospitals without a trauma center. Interestingly, patients with a TBI who were insured by Medicare were 1.6 times (95% CI 1.1,2.5) more likely to die than patients covered by commercial insurance.

In a retrospective cohort design study of 642 patients with a TBI discharged from a large rehabilitation hospital in the years 1974–1984, 1988, and 1989, Ratcliff and associates used a Poisson regression to estimate the ratio of

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

1.33 (range 1.05–1.65) in mild TBI patients. This indicates that patients with mild TBI exhibited a small but statistically significant reduction in long-term survival compared to the general population. Considering the far greater numbers of mild than moderate to severe TBI patients, the increased mortality among patients with mild TBI would result in considerable numbers of TBI-related deaths.

Post-Traumatic Morbidity

Although many patients survive the initial insult, TBI initiates a chronic disease process that may ultimately contribute to their deaths months to years later.

Neurological disorders

Epilepsy

Traumatic brain injuries are a major cause of epilepsy, accounting for 5% of all epilepsy in the general population (Hauser et al., 1991; Table 2). Individuals with a TBI are 1.5–17 times (depending on the severity of the TBI) more likely than the general population to develop seizures (Annegers et al., 1998). Brain injury is the leading cause of epilepsy in the young adult population. Seizures were observed over a week after a penetrating TBI in 35–65% of individuals. In a study of 309 individuals with moderate to severe TBI followed as long as 24 years post-injury, 9% were being treated for epilepsy (Yasseen et al., 2008). In general, the risk of developing post-traumatic epilepsy (PTE) after a penetrating TBI is higher than after the most severe closed head injury. Englander and colleagues (Englander et al., 2003) studied risk factors for the development of PTE in 647 patients with moderate to severe TBI. The highest probabilities of PTE were seen in individuals with dural penetration by bone and metal, bi-parietal contusions, multiple intracranial operations, multiple subdural contusions, subdural hematoma requiring evacuation, and/or midline shift of >5 mm. As the time from injury to the time of the first post-TBI seizure may be as long as 12 years (Aarabi et al., 2000), there is need for heightened awareness of the development of epilepsy on the part of the patient, family, and treating medical personnel.

Table 2. Incidence of Subsequent Neurological and Neuroendocrine Disorders after Traumatic Brain Injury (TBI)

<i>Disorder</i>	<i>n</i>	<i>Incidence after TBI</i>	<i>Reference</i>
PTE	4541	Severe TBI: 16.7%	(Annegers et al., 1998)
		Moderate TBI: 4.2%	
	137	13.1% late seizures in admitted patients	(Angeleri et al.,

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

<i>Disorder</i>	<i>n</i>	<i>Incidence after TBI</i>	<i>Reference</i>
	647	11% seizures within 2 years of TBI	(Englander et al., 2003)
SD	71	45% SD averaging 3 years	(Masel et al., 2001)
	87	46% SD; 23% OSA	(Castriotta et al., 2007)
	35	54% OSA; significantly worse performance on verbal and visual delayed recall and attention tests versus TBI patients without OSA	(Wilde et al., 2007)
PTH	100	35% severe GH deficiency in 21% of patients	(Aimaretti et al., 2004)
	70	33% at 3 months, 23% at 12 months	(Aimaretti et al., 2005)
	1137	27.5% in combined data from 19 studies	(Schneider et al., 2007a)

GH, growth hormone; OSA, obstructive sleep apnea; PTH, post-traumatic hypopituitarism; PTE, post-traumatic epilepsy; SD, sleep disorders.

Sleep disorders

Sleep complaints are common following TBI. Subjective complaints of sleep disturbances have been reported in 70% of TBI outpatients (McLean et al., 1984). Disturbed sleep as measured by polysomnography was reported in 45% of a group of 71 individuals averaging 3 years post-injury (Masel et al., 2001).

There is an increased incidence of obstructive sleep apnea (OSA) in TBI patients (Castriotta et al., 2007). OSA is not only associated with decreased cognitive functioning (Wilde et al., 2007), but also with hemodynamic changes and severe cardiac arrhythmias during sleep. Such changes may be profound, with normotensive individuals developing systolic pressures approaching 300 mm Hg after apnea termination (Weiss et al., 1999). Even

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

subset of individuals exhibits gradual declines in cognitive function after their injury (Tables 3 and 4). Till and colleagues (Till et al., 2008) performed serial neuropsychological assessments on 33 individuals with moderate to severe TBI over the first 5 years post-injury. Statistically significant cognitive declines on at least two neuropsychological measures were observed in 27.3% of subjects. Interestingly, the best predictor of decline was the amount of therapy received at 5 months post-injury. Those who received more therapy in the early post-injury months, regardless of severity of injury and level of neuropsychological impairment, were less likely to show declines over the long term. In its report on the Gulf War and Health, the Institute of Medicine concluded: “there is sufficient evidence of a relationship between sustaining a penetrating TBI and decline in neurocognitive function associated with the affected region of the brain and the volume of brain tissue lost” (Institute of Medicine, 2009). In addition, age is clearly a factor in long-term cognitive outcome after TBI. Older patients show a greater decline over the first 5 years following a TBI than younger patients (Marquez de la Plata et al., 2008)

Table 3. Clinical Evidence of a Relationship between Traumatic Brain Injury (TBI) and Subsequent Neurodegenerative Diseases

<i>Disease</i>	<i>Effects of TBI</i>	<i>Reference</i>
AD, PD, LBD	Increased NF, BACE, APP, PS-1, α-syn, and Aβ levels in brain tissue samples from TBI patients	(Uryu et al., 2007)
PD	30–60% reduction in antioxidant glutathione and increased iron levels in the substantia nigra of PD patients	(Dunnett and Bjorklund, 1999)
PD	Odds ratio for PD after severe TBI = 11.0 ($p = 0.02$)	(Bower et al., 2003)
AD	Aβ present at autopsy in 30% of severe TBI patients	(Roberts et al., 1994)
AD	Aβ present in 30% of severe TBI patients as early as 2 hours	(Ikonomic et al., 2004)
AD	Meta-analysis of 15 studies found that TBI is a risk factor for AD, but only in males	(Fleminger et al., 2003)

A β , amyloid- β ; AD, Alzheimer's dementia; APP, amyloid precursor protein; α -syn, α -synuclein; BACE, β -site APP cleavage enzyme; LBD, Lewy body dementia; NF, neurofilament protein; PD, Parkinson's disease; PS-1,

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

<i>Animal</i>	<i>TBI model</i>	<i>Neurodegenerative disease</i>	<i>Effects of TBI</i>	<i>Reference</i>
Mouse	CCI	MS, AD	Increased MMP expression; MMP KO led to reduced lesion volume, improved cognitive performance	(Wang et al., 2000)
Mouse	CCI	AD	Elevated A β levels and deposition impaired memory, increased lipid peroxidation	(Uryu et al., 2002)
Pig	RA	AD, PD	APP, A β , BACE, PS, and caspases-3 accumulation up to 6 months post-TBI	(Chen, 2004)
Rat	CCI	AD	Increased BACE-1 mRNA and protein expression and enzyme activity	(Blasko et al., 2004)
Rat	CCI	AD	Increased apolipoprotein D mRNA and protein expression	(Franz et al., 1999)
Rat	FPI	AD	Increased APP gene expression PID 2-7 days post-TBI; increased A β immunoreactivity and protein expression up to 1 year post-TBI	(Iwata et al., 2002)
Rat	FPI	AD	Increased APP in axons after TBI	(Bramlett and

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

<i>Animal</i>	<i>TBI model</i>	<i>Neurodegenerative disease</i>	<i>Effects of TBI</i>	<i>Reference</i>
Mouse	WDI	AD	Increased expression of PS and Nct in astrocytes and microglia after TBI	(Nadler et al., 2008)
Mouse	WDI	AD	Increased PS1 expression after TBI	(Cribbs et al., 1996)

A β , amyloid- β ; AD, Alzheimer's dementia; APP, amyloid precursor protein; BACE, β -site APP cleavage enzyme; CCI, controlled cortical impact; FPI, fluid percussion injury; KO, knock-out; MMP, matrix metalloproteinase; MS, multiple sclerosis; Nct, nicastrin; PS-1, presenilin 1; RA, rotational acceleration; WDI, weight-drop injury.

Alzheimer's disease

Although the precise cause of Alzheimer's disease (AD) is unknown, numerous studies have shown that TBI may be a risk factor (Jellinger et al., 2001). In a large study of World War II veterans, Plassman and colleagues (Plassman et al., 2000) found that any history of brain injury more than doubled the risk of developing AD, as well as the chances of developing non-Alzheimer's dementia. They also observed that the worse the brain injury, the higher the risk for AD. Moderate brain injury was associated with a 2.3-fold increase in the risk, while severe head injury more than quadrupled the risk of the subsequent development of AD. Even individuals with no known cognitive impairments after TBI exhibited an increased risk of an earlier onset of AD (Schofield et al., 1997).

In their excellent review on this subject, Lye and Shores suggested many possible etiologies for this connection: damage to the blood–brain barrier causing leakage of plasma proteins into the brain, liberation of free oxygen radicals, and loss of brain reserve capacity, as well as the deposition of amyloid- β (A β) plaques (Lye and Shores, 2000).

Neurofilament proteins (NF), amyloid precursor protein (APP), β -site APP cleaving enzyme (BACE), presenilin-1 (PS-1), α -synuclein protein (α -syn), and A β were detected in brain tissue samples harvested 4 weeks after TBI (Uryu et al., 2007). A β plaques and neurofibrillary tangles comprised of tau protein are pathological characteristics of AD (Braak and Braak, 1991; Forman et al., 2004). BACE and PS-1 are critical components of the anabolic pathway that cleaves APP into A β (DeStrooper et al., 1998; Selkoe, 2001).

Iwata and associates reported increased expression of the APP gene, APP751/770, 2–7 days after fluid percussion TBI in rats (Iwata et al., 2002). Interestingly, A β immunoreactivity and protein expression increased for as long as a year post-injury, indicating that A β accumulation may continue long after APP gene expression returns to normal. Apolipoprotein D (ApoD) mRNA and protein expression were increased in the cortex and hippocampus of adult rats 2–14 days after concussion. ApoD may contribute to neurodegeneration in AD, since elevated ApoD levels have been observed in the CSF and hippocampus of AD patients (Terrisse et al., 1998).

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

Chronic traumatic encephalopathy

Chronic traumatic encephalopathy (CTE, aka “punch drunk” or dementia pugilistica) is a distinct neuropathological entity caused by repetitive blows to the head. CTE begins insidiously with deterioration in concentration, attention, and memory, eventually affecting the pyramidal tract, resulting in disturbed coordination and gait, slurred speech, and tremors (McCrary et al., 2007). Although once thought to be a disease only seen in older retired boxers, the sporting world has recently been made aware of autopsy-confirmed findings of CTE in retired professional football players (Omalu et al., 2006). As repetitive head injuries occur in a wide variety of contact sports beginning at the junior high school level, there is clearly need for further study of this entity.

Parkinson's disease

Parkinson's disease (PD) has classically been characterized pathologically by the loss of neurons in the substantia nigra, leading to a selective loss of dopamine and its metabolites. Symptoms of PD include dementia, rigidity, tremor, postural instability, and slowness of movement (Dunnett and Bjorklund, 1999). Lewy bodies (concentric inclusion bodies in the neurons) are considered the histopathological signature of the disease (Zhang et al., 2000). Dopaminergic and noradrenergic neuronal loss have been observed in the locus caeruleus, as have Lewy bodies and neuronal loss in the cerebral cortex, anterior thalamus, hypothalamus, amygdala, and basal forebrain (Zhang et al., 2000).

Although the pathology of PD is well recognized, the mechanisms of neuronal death are uncertain. Experimental studies have implicated oxygen free radicals and oxidative stress (Zhang et al., 2000). α -Syn, which is implicated in other neurodegenerative diseases such as AD, may play a role in the development of PD after TBI (Bramlett and Dietrich, 2003). α -Syn immunoreactivity is a hallmark pathological finding in PD, Lewy body dementia, and multi-system atrophy (Norris et al., 2004; Smith et al., 2003). Increased brain tissue α -syn levels have been observed in brain tissue samples from TBI patients (Uryu et al., 2007). Other putative pathophysiological mechanisms of PD include endogenous and exogenous toxins, mitochondrial abnormalities (Rango et al., 2006), perturbations in the neuronal cytoskeleton and axonal transport, and calcium-induced injury, as well as apoptotic cell death (Dunnett and Bjorklund, 1999; Jenner and Olanow, 1998). Many of these mechanisms are thought to contribute to the pathophysiology of TBI (Bramlett and Dietrich, 2004)

Based on a study of 93 pairs of twins from a database of World War II veterans, Goldman and colleagues observed that if both twins had PD, the one with a TBI was more likely to have an earlier onset of the disease (Goldman et al., 2006). If only one twin had PD, that individual was more likely to have sustained a TBI. In a review of records of 196 PD patients from Olmstead County, Minnesota, Bower and colleagues observed an increased risk of PD in individuals who had sustained a TBI, a risk that increased with injury severity (Bower et al., 2003).

Neuroendocrine disorders

Post-traumatic hypopituitarism

TBI is associated with a host of neuroendocrine disorders, due perhaps to the induction of complex hormonal

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

that 5% of TBI patients studied had normal pituitary functioning at 3 months, but developed deficits a year post-injury, perhaps due to the loss of pituitary neuronal reserve (Aimaretti et al., **2005**).

Although the underlying causes of PTH are unclear, vascular and structural changes to the hypothalamus, pituitary stalk, and the pituitary itself have been theorized (Edwards and Clark, **1986**; Kelly et al., **2000**). Current routine clinical imaging techniques may be inadequate for clearly visualizing structural pathology in the pituitary gland and tiny (2–3 mm in diameter) pituitary stalk. Normal imaging does not rule out the possibility of PTH (Agha et al., **2004**; Schneider et al., **2007b**)

Chronic PTH results in several related neuroendocrine conditions, including growth hormone (GH) and gonadotropin deficiencies and hypothyroidism. GH deficiency/insufficiency was found in approximately 20% of moderate to severe TBI patients (Agha and Thompson, **2006**). GH deficiency (regardless of cause) was associated with an increased risk of fatigue, decreased exercise tolerance, depression, osteoporosis, hypercholesterolemia, and atherosclerosis, as well as a significant increase in mortality from vascular disease (Rosen and Bengtsson, **1990**). Insulin-like growth factor-1 (IGF-1) is the major mediator of the actions of GH, and a low IGF-1 level is a hallmark of GH deficiency (Carro et al., **2002**). In addition to enhancing neurogenesis and increasing neuronal excitability, IGF-1 enhances the clearance of A β from the brain (Carro et al., **2002**).

Gonadotropin deficiency was observed in approximately 10–15% of individuals post-TBI (Agha and Thompson, **2006**). Symptoms in adult males include decreased libido, muscle mass, and strength. A correlation has been found between low free testosterone levels and impaired cognitive function, although there is no clear consensus about testosterone supplementation therapy for cognition (Papaliagkas et al., **2008**).

Hypothyroidism was found in approximately 5% of individuals post-TBI (Agha and Thompson, **2006**). Associated signs and symptoms included weight gain, dyspnea, bradycardia, intellectual impairment (Agha and Thompson, **2006**), hyperlipidemia, depression, hypothermia, and cold intolerance, as well as irregular menses and infertility (Garber and Bergmann Khoury, **2009**). A recent study revealed a connection between hypothyroidism in females and the subsequent development of AD (Tan et al., **2008**).

The need for monitoring for the development of PTH was emphatically stated in the 2009 Institute of Medicine report on the Gulf War: “That hormonal alterations substantially modify the posttraumatic clinical course and the success of therapy and rehabilitation underscores the need for the identification and appropriate timely management of hormone deficiencies to optimize patient recovery from head trauma, to improve quality of life, and to avoid the long-term adverse consequences of untreated hypopituitarism” (Institute of Medicine, **2009**).

Psychiatric disease

In terms of impact on patients and their families and cost to society, psychiatric disorders are among the most important of the nation's health care issues. Current estimates in the U.S. suggest that the collective cost of psychiatric diseases could be as high as one-third of the total health care budget (Voshol et al., **2003**). It is therefore critical to note that psychiatric and psychological deficits are among the most disabling consequences of TBI (Table 5). Many individuals with a mild TBI, and the majority of those who survive moderate to severe TBI, are left with significant long-term neurobehavioral sequelae.

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

<i>Disorder</i>	<i>n</i>	<i>Incidence after TBI</i>	<i>Reference</i>
Depression	722	42% MDD in 30-month study period	(Kreutzer et al., 2001)
	66	42% MDD in 1-year study period	(Jorge et al., 1993)
	100	48% MDD in 8-year study period	(Hibbard et al., 1998)
	666	27% MDD in 35.3-month study period	(Seel et al., 2003)
	1422	7.1% minor depression, 18.5% major depression	(Holsinger et al., 2002)
Psychotic disorder	750	7.5%, latency 15–19 years	(Achte et al., 1991)
	284	8.8%, latency 4.6 ± 4.4 years	(Fujii and Ahmed, 2001)
	60	6.7% in 30-year study period	(Koponen et al., 2002)
Substance abuse	60	11.7% alcohol abuse or dependence	(Koponen et al., 2002)
	361^a	14%^b alcohol abuse or dependence; 10.9% drug dependence	(Silver et al., 2001)
Suicide	361^a	4.5 odds ratio for attempted suicide controlled for alcohol abuse	(Silver et al., 2001)

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

<i>Disorder</i>	<i>n</i>	<i>Incidence after TBI</i>	<i>Reference</i>
		4.05 suicide SMR for lesion^c	Engberg, 2001)
	39	33% considered at risk for suicide	(Leon-Carrion et al., 2001)
^a 5034 study subjects, 361 with TBI, 4673 without TBI ^b 24.5% alcohol abuse in TBI patients, 10.5% in control subjects (24.5–10.5 = 14%). ^c SMR, standardized mortality ratio (observed suicides in study population/predicted suicides in a matched population); concussion, TBI without fracture or lesion; fracture, TBI with cranial fracture; lesion, TBI with contusion or traumatic intracranial hemorrhage. MDD, major depressive disorder.			

In addition to the aggression, confusion, and agitation seen in the acute stages, TBI is associated with an increased risk of developing numerous psychiatric diseases, including obsessive-compulsive disorder, anxiety disorders, psychotic disorders, mood disorders, and major depression (Fleminger, 2008; Zasler et al., 2007), as well as substance abuse or dependence (Hibbard et al., 1998; Holsinger et al., 2002; Koponen et al., 2002; Silver et al., 2001). TBI is associated with high rates of suicidal ideation (Kishi et al., 2001; Leon-Carrion et al., 2001), attempted suicide (Silver et al., 2001), and completed suicide (Teasdale and Enberg, 2001). In chronic TBI, the incidence of psychosis is 20%. The prevalence in TBI patients was 18–61% for depression, 1–22% for mania, 3–59% for post-traumatic stress disorder, and 20–40% for post-traumatic aggression (Kim et al., 2007).

In a study of 60 patients with TBI followed for up to 30 years post-injury, Koponen and colleagues observed that 50% developed a major mental disorder that began after their TBI (Koponen et al., 2002). In a long-term follow-up study of 254 individuals at 2 and 5 years post-TBI, it was found that there was a higher incidence of cognitive, behavioral, and emotional changes at 5 years than at 2 years post-TBI (Olver et al., 1996). Thirty-two percent of those working at 2 years were unemployed at 5 years. Thus in many patients TBI results in long-term or perhaps permanent vulnerability to psychiatric illness.

This lasting susceptibility to psychiatric disorders may be especially prominent in children, perhaps due to frequent damage to pre-frontal brain structures (Anderson et al., 1999). Many functions subserved by the frontal lobes are more severely affected if the injury occurs in the early childhood years (Anderson et al., 1999). Moreover, as opposed to the anticipated improvement in behavior and cognitive functioning that normally occurs as a child matures, young children who have sustained a TBI tend to worsen over time. Even mild TBI in childhood may lead to psychiatric issues in adolescence and early adulthood. McKinlay and colleagues, who followed 1000 infants in New Zealand from birth, reported that children who required overnight hospitalization due to mild TBI showed no

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

Sexual dysfunction

Sexuality, both physiological and functional, plays an enormous role in our lives. Sexual dysfunction is an important issue in the general population, and is a major ongoing problem in the TBI population. Between 40 and 60% of TBI patients complain of sexual dysfunction (Zasler et al., **2007**). As noted previously, transient hypogonadism is common acutely following TBI, yet it persists in 10–17% of long-term survivors (Agha and Thompson, **2005**). Beyond just the fertility and psychosocial issues presented by hypogonadism, muscle weakness and osteoporosis may have a significant impact on long-term function and health, with the consequences exacerbated by prolonged immobility following a TBI (Agha and Thompson, **2005**).

Incontinence

One of the most frequent and psychologically devastating consequences of TBI is bladder and bowel incontinence. Brain injury frequently affects the cerebral structures that control bladder storage and emptying functions, resulting in a neurogenic bladder. Based on a review of the records of over 1000 TBI patients, Foxx-Orenstein and colleagues observed that one-third were incontinent of bowel at admission, 12% at discharge, and 5% at 1 year post-TBI (Foxx-Orenstein et al., **2003**). In their review of medical complications in 116 individuals with moderate to severe TBI, Safaz and colleagues found that 14% had fecal incontinence at over 1 year post-injury (Safaz et al., **2008**). Fecal incontinence is not only socially devastating, but it may contribute to skin breakdown, decubitus ulcers, and skin infections (Foxx-Orenstein et al., **2003**).

Urinary incontinence is an enormous social and medical problem. Chua and associates reviewed the records of 84 patients admitted to a rehabilitation unit within 6 weeks of injury and observed that 62% reported urinary incontinence (Chua et al., **2003**). This improved to 36% at discharge; however, 18% remained incontinent at 6 months. Safaz and colleagues found urinary incontinence in 14% of their cohort over a year post-injury (Safaz et al., **2008**). Urinary incontinence is associated with the development of frequent urinary tract infections and decubitus ulcers.

Musculoskeletal dysfunction

Spasticity, a common problem after moderate to severe TBI, is characterized by increased muscle tone that results in abnormal motor patterns that may interfere with general functioning, and limit self-care, mobility, and independence in the activities of daily living (Elovic et al., **2004**). Untreated, it will eventually lead to muscle contractures, tissue breakdown, and skin ulceration (Zafonte et al., **2004**).

The incidence of fractures in TBI is approximately 30%. TBI patients with fractures, especially fractures of the long bones, are at risk for heterotopic ossification (HO), which may develop as late as 3 months post-injury. HO is defined as “the development of new bone formation in soft tissue planes surrounding neurologically affected joints,” and has an incidence of 10–20% following TBI (State of Colorado Department of Labor and Employment, **2006**). This ectopic bone formation may eventually lead to limited joint mobility, pain, increased spasticity, neurovascular entrapment, and pressure ulcers. Safaz and colleagues found HO in 17% of their cohort over a year post-injury (Safaz et al., **2008**). Brain injury severity and autonomic dysregulation accurately predict HO in patients

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

post-traumatic osteogenesis is not fully understood; however, it is clear that there are unknown centrally-released osteogenic factors that enter into the systemic circulation following brain injury (Toffoli et al., 2008).

Metabolic dysfunction

A TBI appears to impact the way the body absorbs, utilizes, and converts amino acids. Amino acids play a critical role in brain function because they are incorporated into functional and structural proteins, and are the precursors of neurotransmitters involved in cognitive, motor, neuroendocrine, and behavioral functions. Aquilani and colleagues found significant plasma amino acid abnormalities in individuals with an acute (30–75 days) TBI (Aquilani et al., 2000). All the essential amino acids (EAA, those that cannot be synthesized by the body), and 50% of the non-essential amino acids (NEAA, those that can be synthesized by the body), were significantly lower in individuals with brain injuries than in controls. The same group also found that significant abnormalities at admission were essentially unchanged upon discharge. Most notable was a reduction in tyrosine, a NEAA precursor to serotonin (Aquilani et al., 2003).

Although the amino acid abnormalities in the acute and subacute phases of TBI could be due in part to muscle tissue depletion, hypercatabolic states, and inadequate nutritional supply, Borsheim and associates found significant abnormalities in plasma EAA and NEAA concentrations in chronic moderate to severe TBI patients (Borsheim et al., 2007). Compared to controls, TBI patients (17 ± 4 months post-injury) consuming a 2000-cal/d dietician-approved diet were found to have significantly lower plasma levels of the EAA valine. Valine competes with tryptophan for the same transporter system into the brain, and low valine levels will increase tryptophan concentrations in the brain (Borsheim et al., 2007). As tryptophan is a precursor to serotonin, an increase in tryptophan may increase serotonin production and consequently increase central fatigue.

When administered a drink containing 7 g of EAA, patients with TBI had significantly lower plasma levels of NEAA and valine than control subjects. The NEAA with the smallest increases in the TBI group were alanine and glutamine, which is a precursor to the excitatory neurotransmitter glutamate. Remarkably, TBI patients who were eating a normal diet and were partially back into society and performing activities of daily living, still exhibited abnormalities in plasma amino acids more than 1.5 years post-injury (Borsheim et al., 2007). Glutamine concentrations were reduced by 14% in temporal lobe biopsies in patients with AD, suggesting a glutaminergic cause for the decline in memory and learning seen in that disease (Francis et al., 1993). Moreover, abnormalities in amino acid metabolism may contribute to some of the symptoms (fatigue, decreased memory, and poor learning) seen in patients with TBI.

Etiology

Traumatic central nervous system injury often results in chronic disability with lasting cognitive and motor disorders (Levin et al., 1987). However, what remains uncertain is whether chronic damage is due to long-term consequences of the initial traumatic insult (i.e., Wallerian degeneration) (Adams et al., 2000; Graham et al., 1995), or progressive secondary injury (Bramlett and Dietrich, 2002; Bramlett et al. 1997; Dixon et al., 1999; Smith et al., 1997). Ng and associates (Ng et al., 2008) used MRI to evaluate 14 patients 4.5 months and 29 months post-moderate to severe TBI. In 10 individuals the MRIs showed progression of encephalomalacia. Greenberg and

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

and observed that the extent of ventricular expansion positively correlated with severe memory deficits. Furthermore, dilation of the anterior horn of the lateral ventricle was associated with atrophy of the corpus callosum (Anderson and Bigler, **1995**). MRI images recorded as long as 603 days after TBI revealed significant atrophy of the anterior hippocampus. Interestingly, the atrophy involved both anterior hippocampal regions, regardless of the location of the primary injury (Ariza et al., **2006**). A positive correlation between cognitive outcome and extent of brain atrophy has been observed in other studies of the chronic effects of TBI (Cullum and Bigler, **1986**; Reider-Groswasser et al., **1993**).

These studies suggest that the progression of symptoms seen in chronic TBI is due in part to defective apoptotic rather than necrotic cell death mechanisms. Genetic changes affecting cellular demise by apoptosis has also been proposed as a mechanism in delayed radiation vasculopathy syndrome (O'Connor and Mayberg, **2000**).

The mechanisms by which a brain injury can impact other organs is not known, but clearly there is an indirect effect. Mirzayan and colleagues (Mirzayan et al., **2008**) subjected mice to a controlled cortical impact brain injury and sacrificed them at 96 h. Histopathological changes were found in the liver and lung, suggesting that an isolated TBI can lead to the migration of immune incompetent cells to the peripheral organs, thus potentially leading to their dysfunction. The immune response is significantly impaired acutely following TBI ("post-traumatic immune paralysis"), and may be associated with the high prevalence of infections seen in TBI patients (Kox et al., **2008**).

Polio and subsequent post-polio syndrome (PPS) may well serve as a model for chronic post-traumatic disease (CPD). A 1987 National Health Interview Survey estimated that after a period of neurological and functional stability, of the 640,000 survivors of polio surveyed, approximately half had new late manifestations of the disease, with an average latency of 35 years. Weakness and fatigue were the most common symptoms (Jubelt et al., **1999**).

In the PPS patient, the terminal axons of the surviving motor neurons sprouted in an attempt to reinnervate muscle fibers that had lost innervation from non-surviving motor neurons (Dalakas **1995**). The phenomenon can be captured by single-fiber EMG measuring increased jitter in these patients (Jubelt and Agre, **2000**). Jitter measures the time difference of the depolarization of two muscle fiber potentials within the same motor unit upon successive firings. Jitter increases after an attack of polio and persists indefinitely, suggesting ongoing denervation and reinnervation (Jubelt et al., **1999**). Although the jitter in the axons of the peripheral nervous system cannot be measured within the axons of the brain, the concept of ongoing denervation and reinnervation within those axons certainly remains a possible explanation for the varying symptomatology displayed over time by individuals with TBI. This "impaired transmission model" may partly explain why some individuals with TBI have benefited from anticholinesterase medications (Silver et al., **2006**). This ongoing process of denervation and reinnervation can be stressing to the neuronal cell bodies, that may not be able to keep up with the required metabolic demands, causing them to fail. It is certainly possible that "injured" neurons may have a shorter-than-normal lifespan, and may succumb earlier to the normal aging process (Dalakas, **1995**).

Discussion

Historically, individuals living with a brain injury have been referred to as brain injury "survivors." Perhaps the concept of merely "staying alive" was used, because as few as 30 years ago the majority of individuals with a

We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

this article we have discussed only a small percentage of the causes of TBI-induced disability and the ongoing and developing medical conditions faced by TBI patients and their families. Presently, well over 3.5 million individuals in the U.S. are disabled due to the myriad sequelae of TBI (Zaloshnja et al., **2008**). Brain trauma has resulted in a condition that may be disease-causative and disease-accelerative. As a result of their brain trauma, those 3.5 million Americans now have a lifelong condition that might be termed “chronic traumatic brain injury disease.” Certainly by suggesting that a TBI should be approached differently than in the past, the authors do not wish to appear to depersonalize the individual with this disease. Rather, we would hope to achieve one of the goals of chronic disease management: to develop “expert patients” (Tattersall, **2002**), who truly understand their disease and can therefore take steps to mitigate all the medical issues that develop after a TBI. The goal is to treat the patient with the disease, as opposed to merely treating the disease in the patient.

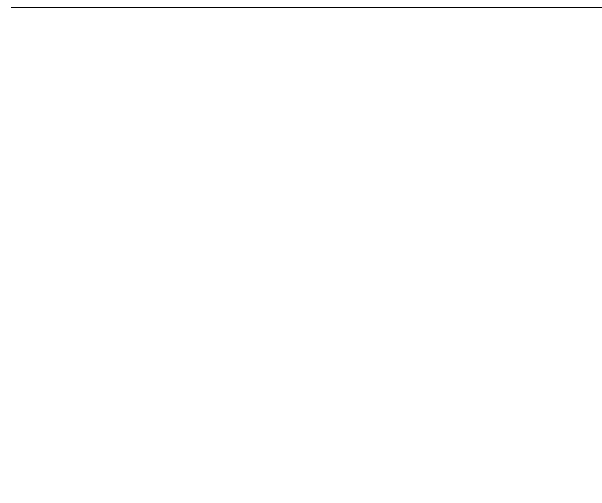
Chronic traumatic brain injury disease should be reimbursed and managed on a par with all other chronic diseases. Only then will the individuals with this condition get the medical surveillance, support, and treatment they so richly deserve. Only then will brain-injury research receive the funding it requires. Only then will we be able to truly talk about a cure.

Acknowledgments

The authors are grateful for support from the Moody Center for Traumatic Brain & Spinal Cord Injury Research/*Mission Connect*, and for editorial assistance from Andrew Hall and Patrick Enos in the Office of Grants & Manuscript Preparation in the Department of Anesthesiology of The University of Texas Medical Branch.

Author Disclosure Statement

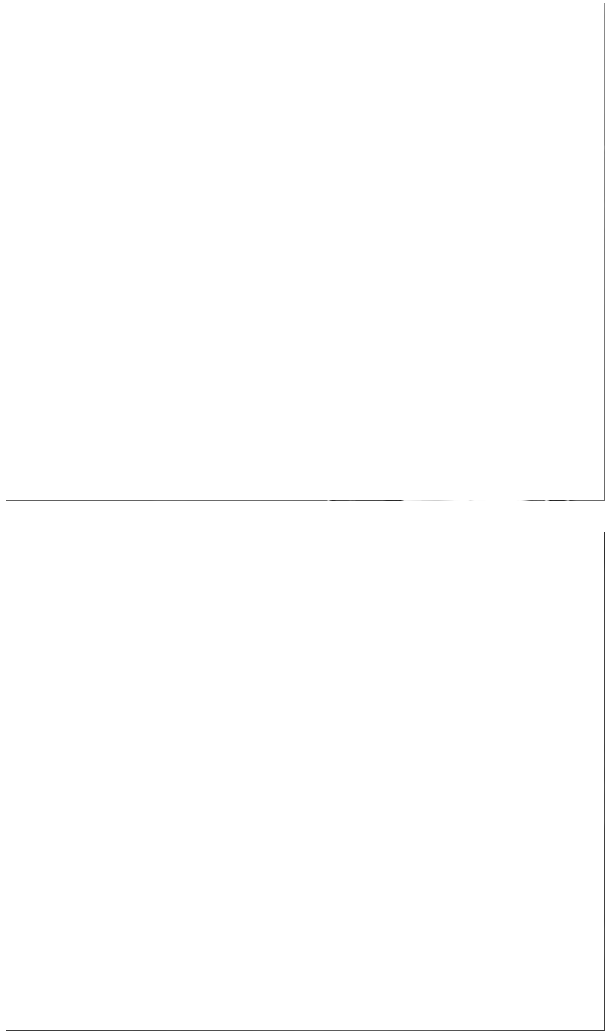
B.E.M. has received grant support from Pharmacial Pfizer and has been a consultant to Pfizer and NovoNordisk.



We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

RECEIVED by MSC 2/6/2023 3:04:16 PM



Call us toll free (800) M-LIEBERT

© 2021 Mary Ann Liebert, Inc., publishers. All rights reserved, USA and worldwide.
Call us toll free at (800) M-LIEBERT (800-654-3237).



We use cookies to give you a better experience on liebertpub.com. By continuing to use our site, you are agreeing to the use of cookies as set in our Cookie Policy.

OK

EXHIBIT 2

CASE SUMMARY: PATIENT #1 61-YEAR-OLD FEMALE

Patient Identity: 61-year-old female with traumatic brain injury, brainstem injury, spasmodic torticollis, cerebral spastic quadriparesis, oral motor apraxia, aphasia, acquired hypothyroidism, acquired osteopenia, acquired scoliosis, and vitamin D insufficiency as a result of being a pedestrian in a motor vehicle accident at age 15 in 1977.

Patient Consequences: The patient suffered a life-threatening aspiration episode on May 17, 2022, due to weakness and abnormal positioning of her neck secondary to the discontinuation of physical therapy and massage therapy for myofascial release that occurred soon after Auto No-Fault Reform of July 2021. She experienced significant decline in her physical, cognitive and emotional condition directly related to the discontinuation of prescribed treatments. The auto no-fault reform changes contributed to her decreased ability to perform daily functions such as eating a regular diet, consuming normal fluids, interacting in the community, increased digestive complications, walking with her specialized walker, independent mobility, transferring to and from her wheelchair, ability to use her communication system and computer for cognitive stimulation and social interaction. These changes also resulted in hospitalization, increased medication, increased care assistance, and increased need for supportive equipment.

Fact Summary: As a consequence of her 1977 motor vehicle accident, the patient sustained catastrophic injuries including a traumatic brain injury, brainstem injury that affected her ability to chew, swallow and speak, spasmodic torticollis causing tightness in her neck and pulling her ear down toward her shoulder, cerebral spastic quadriparesis resulting in weakness in all four extremities as well as resistance to movement. Also, oral motor apraxia making it difficult for her to form words and to eat normally. Due to decreased mobility, she has acquired osteopenia and acquired scoliosis because she was weaker on one side of her body compared to the other. This began to cause pulmonary problems. At the time of her accident, she required CPR twice in the first 24 hours, mechanical ventilation and extensive ICU hospitalization. After six months in a coma, she was released from hospital and required tube feedings. She was down to 65 pounds and the plan was to “go home and die.” She was not felt to be able to make it through the winter. However, with quality care at home and extensive treatments, she began to make people aware that not only was she in there but that she was “locked in” there. She achieved the ability to communicate through a non-vocal communication device on a computer, write poetry, participate in conversations, send e-mails, and participate in all family activities. She has lived at home since 1977 and her parents are now 87 and 85 years old. She had been receiving nursing care around the clock and had access to physical therapy, massage therapy for myofascial release to decrease tone and increase range of motion, occupational therapy, and speech therapy. Care staff needed to be trained to appropriately implement her medical program and rehabilitation program to avoid complication.

Her in-home healthcare regimen was successful from 1977 until July 2021. Reform took effect on 07-02-2021 and on 08-20-2021 the provider of in-home PT services already

received a denial of payment for overutilization. The therapy agency tried to resubmit and spoke numerous times to the Bill Review Service but was unsuccessful in collecting any reimbursement and by October ceased services due to non-payment. The therapy staff found that the Bill Review Service had no knowledge of the Jimmo Settlement, the standard for therapy services for those with chronic illnesses. A traumatic brain injury is a chronic medical illness. The Center for Medicare & Medicaid Services (CMS) frequently reminds the Medicare community of the Jimmo Settlement Agreement of January 2013 which clarified that the Medicare program covers skilled nursing care and skilled therapy services under Medicare Skilled Nursing Facility, home health and outpatient therapy benefits when a beneficiary needs skilled care in order to maintain function or to prevent or slow decline or deterioration. Specifically, the Jimmo Settlement Agreement required manual revisions to reinstate a “maintenance coverage standard” for both skilled nursing and therapy services under these benefits. Physical therapy was discontinued as the providers stated they could not afford to operate their small business with zero payment received for services and discontinued treatment services in October 2021 with no payment made for services provided. Massage therapy services fell into the same issue of denial for overutilization. They filed with DIFS under the utilization review option. They were still denied payment for services. Massage therapy services were officially discontinued following the decision dated 11-03-2021 which sided with the insurance company despite the Jimmo Settlement.

The patient continued to decline and had an episode of aspiration pneumonia on 05-17-2022 due to weakness affecting her swallowing. She was hospitalized for three days and discharged with antibiotic treatment for aspiration pneumonia. She developed C. difficile toxin diarrhea as a result of this treatment and remained in gastrointestinal distress with abdominal pain and frequent diarrhea. This resulted in extensive medications to control these symptoms for many months and visits to a GI specialist. It caused her to require using Thick It with thin liquids. She experienced a significant decline in her physical, cognitive, and emotional condition directly related to the discontinuation of these prescribed treatments.

With lack of Physical Therapy and massage therapy, she has had her Botox dosage increased to reduce the tone she was experiencing. Without stretching and movement needed to optimize the Botox after being injected the increase in Botox is not realized to the extent that would have been expected.

Relation To Auto No-Fault Reforms: As a result of the auto no-fault reforms, there was deterioration of her condition and increased risks of morbidity and mortality. Her neurosurgeon, neurologist and her physical medicine and rehabilitation physicians all were prescribing these treatments with justification. However, they were not able to get the insurance company to restore her physical therapy and massage therapy for myofascial release. These cuts directly impacted many aspects of her life that were believed to be healthy, active and safe. There was a clear and direct correlation between Auto No-Fault Reform and her health and safety. Delays in reimbursement for skilled nursing care and percentage cuts directly impacted the ability to provide staff. No agency would assist in providing the skilled care nurses. Family was left to provide open hours

for free and forced to utilize their own savings to pay for skilled care. Her parents are 87 years old and 85 years old. Her parents and her sister have utilized their own savings to pay for continued skilled care. She continues to experience negative health consequences as a direct result of these cuts to access to medical services.

The patient's medical situation has always been complicated since her injury. Prior to the reform, she worked hard daily to not be a burden to society. She worked hard to prove that she could be active and purposeful in her life, family and in her community. She was participating in life and now acknowledges that she has "become an observer" instead while family spends their savings to try to avoid even more serious complication.

Owen Z. Perlman, M.D.
OZP/STS501

CASE SUMMARY: PATIENT #2 22-YEAR-OLD MALE

Patient Identity: 22-year-old male with primarily complete C2 quadriplegia with ventilator dependence, neurogenic bowel, neurogenic bladder, tracheostomy, bilateral diaphragmatic pacers placed on 04-06-2011 as a result of being a passenger in a motor vehicle accident on November 24, 2004.

Patient Consequences: The patient and his family have been significantly impacted by the Auto No-Fault Reforms particularly related to the 56-hour limit on family-provided attending care and the fee caps limiting reimbursement by 45%.

Fact Summary: As a consequence of his 2004 motor vehicle accident, the patient sustained catastrophic injuries including an essentially complete C2 quadriplegia resulting in him being paralyzed from the neck down and also lacking sensation from the neck down. He is ventilator dependent with tracheostomy and relies on a ventilator to do his breathing for him. His bowel and bladder are also paralyzed. He can see, hear, taste and smell and touch with his head. He is able to talk. He can move his head and through therapy, he has regained some strength in his neck. He has some movements in his shoulders but nothing below. His family jumped in right away after the accident recognizing that he needed to accomplish life in different ways. He has been ventilator dependent and wheelchair dependent since the accident. He can type with special computer equipment and expresses thoughts and feelings. He has been able to thrive for almost two decades as a result of the no-fault auto insurance policy that his family had at the time of his accident. He received the medical care he required to address all the physical issues related to his spinal cord injury and ventilator dependence. He received the physical therapy he needed to help stabilize and maintain a limited level of function and strength and learn new skills in living with his severe injury. They were able to obtain the equipment he needed to function within his home and out in society. He had nursing care from his family and outside agencies to take care of his day-to-day needs. He attended mainstream school throughout his education and graduated from high school in 2019. He was always accompanied by an attendant while he was at school.

Initially, he was receiving home care services from Health Partners, a statewide agency with expertise in caring for catastrophically injured individuals including those forced to survive on ventilators. They closed on 06-30-2021 in anticipation of the implementation of the law on 07-02-2021 recognizing that they would not be able to afford the significantly decreased reimbursement. After a long search, an agreement was reached with AdvisaCare agency but they would only employ one of the parents for care services, thus the mother would be paid for 56 hours of her services by AdvisaCare. Of their professional staff, only three of their nurses transferred from Health Partners to AdvisaCare. This was primarily due to their nursing skills with ventilator dependent patients being in high demand from hospitals due to COVID. Nurses were being recruited by local hospitals with hourly rates near double what they were paid for home care. Plus they were assigning bonuses attracting those nurses. If a nurse were available to travel, their salary would be even greater. Thus, the timing could not have been worse for replacing those care providers. In fact, through this date, the home care agency has

not been able to recruit a single nurse to assist with his care. Thus, the parents have covered the shifts that were not filled by professionals. This resulted in the mother being paid for 56 hours as their total reimbursement for their son's care. The parents would cover all shifts if the agency could not staff, resulting in working as many as 522.5 hours per month with no pay for the care they provided to their ventilator dependent son who is total care.

In addition to the hours of work without pay, the family has had to borrow money from family members to cover living expenses. They asked their younger son to move back home to help cover household expenses. Their older son lives and works out of state and sends money to his parents. The parents have stopped paying for their employer-sponsored health insurance so that they can maintain the household. They have asked community organizations to help with household maintenance projects to keep the home safe and livable.

The family lives in fear that the home care agency will drop him due to the low reimbursement rate that is being paid by State Farm Insurance. If this occurred, family fears that they will become homeless. This stress has taken its toll on the entire family including extended family members. The parents worry about their future if the law is not changed as they will have no retirement, in part, due to their lack of payment to social security in recent years. Their bank accounts have already been depleted.

Home-based therapy services were discontinued in December 2022 due to refocus of the therapy company moving into a different model to reduce cost due to low reimbursement rates. Without professional therapists, the parents and the nurses are now forced to provide physical therapy for him, which involves use of therapy devices like neuromuscular electrical stimulation. His mother has indicated that this is not safe as she feels she lacks the knowledge to know if this is being done correctly and fears she could be causing more harm. Massage therapy services were also eliminated which causes problems due to the tightness it causes as he uses his shoulder and neck muscles for movement for function and to help with breathing. Due to constant use of these muscles for breathing and functioning, he is experiencing an increase in pain and more difficulty with breathing, even with the diaphragmatic pacers. This is a direct result of physical therapy and massage therapy being discontinued.

Relation To Auto No-Fault Reforms: As a result of the Auto No-Fault Reforms implemented on July 2, 2021, the home health care agency that had been providing his care since 2004 closed. A new agency was found but would employ one of the parents for care services. Thus, his mother would be paid for 56 hours of her services by them. Only three of the professional nurses transferred from Health Partners to AdvisaCare. This was primarily due to their nursing skills with ventilator dependent patients being in high demand at hospitals due to COVID. The nurses were being recruited by local hospitals with hourly rates near double what they were paid for home care plus signing bonuses. If the nurses were available to travel, their salaries were even greater. The timing could not have been worse for replacing these care providers. The new agency has not been able to recruit one single nurse to assist with his care. The parents cover all

shifts the agency cannot staff resulting in working as many as 522 hours per month with no pay for the care they provide to their ventilator dependent, totally paralyzed son. They had to borrow money from family members and stopped their health insurance to maintain the household. They are relying on community organizations to keep the home safe and livable. They are fearful that they will become homeless.

Owen Z. Perlman, M.D.
OZP/STS501

CASE SUMMARY: PATIENT #3 33-YEAR-OLD FEMALE

Patient Identity: 33-year-old female with incomplete T8 Paraplegia suffered as the result of a motor vehicle accident on June 15, 2006.

Patient Consequences: The patient was forced to sell her home, hire non-family caregivers as home health aides after insurance benefits payable for home health aide care was significantly reduced as a result of recent changes through the Auto No-Fault Law.

Fact Summary: As a consequence of her June 2006 motor vehicle accident as a back middle seat passenger, she sustained a T8-9 incomplete paraplegia along with mild traumatic brain injury, neurogenic bowel and neurogenic bladder. She required surgical interventions to stabilize her lumbar spine. Her large intestine exploded from the trauma and 80% of it was removed. She fractured her left humerus and required surgery for that as well. She was going into her senior year of high school and living with her parents at that time. She was able to graduate from high school and initially with around the clock care able to be transported to Detroit for outpatient therapy at Rehabilitation Institute of Michigan (RIM) three days per week. She began college in the fall of 2007. Going to school made her feel “more normal.” She went to a small college because it had a more accessible campus. She graduated within five years. She moved to Florida in 2014 to attend the University of Florida to obtain a Master’s Degree and a PhD in psychology. She completed that program in 2021. During that time, she was able to marry and has two young daughters. She had been hired by the student counseling center on campus to provide counseling services, but was laid off when COVID resulted in students not being on campus.

She continued to have problems with her bowel and bladder requiring intermittent catheterization and a specialized bowel program. She suffered from depression and posttraumatic stress subsequent to her accident but her accomplishments academically and personally made her feel better. With the daily assistance of well-trained aids, she had integrated well into her community. However, when the new no-fault law changes went into effect, the insurance company stopped paying for supplies for her bladder program including catheters, wipes, and gloves. They stopped paying for wheelchair seat cushion, wheelchair tubes and tires. Subsequently, she got occasional reimbursement but mostly no reimbursement. There were many consequences physically, emotionally and functionally. In the first 18 months since the reform, she had \$114,500 in family attendant care expenses and other \$6900 in non-family attendant care expenses. She had over \$60,000 in therapy, equipment, and supply expenses. As a result rather than losing her home, she chose to sell her accessible home to pay these bills. She, her husband and her two daughters moved into her mother’s home which was not accessible. It is a two-bedroom home meaning that four of them are living in one room. She has torn ligaments in both wrists attempting to propel herself over the carpeting in the home. She had hard surface flooring in her own home before she sold it. In December 2022, she fell and fractured her left great toe in that home. She has increased pain and is not able to get massage therapy. She is getting less therapy because she is paying out of pocket. She is

experiencing emotional pain because everything she was used to was “ripped out from underneath her.” She can no longer shower independently. She worked hard to get her PhD and become a business owner but now has a much harder time getting out. This has been exacerbated by the injuries to her wrists as well. She cannot cook anymore because she no longer has an accessible house. She feels bad that she cannot teach children how to cook. She had been re-traumatized. As mentioned, she had PTSD after the accident and it has been coming back. She notes it is coming back more intensely and she is having panic attacks. She is afraid to drive herself. She has more anxiety and fear and feels like the “rug has been ripped out from underneath her.”

Despite the court decision in Andary of August 25, 2022, her insurance carrier has not resumed making payments. She noted they were paying even less frequently. They made comments to her such as “you are married, you have children and a PhD.” Therefore, you do not need care. Prior to July 2, 2021, she was receiving 14-20 hours per day of home health aide care reimbursed at \$18 per hour. It was provided by her mother, sister and husband. After July 2, 2021, she has only been reimbursed for eight hours per day. They hired a non-family caregiver who they had no previous relationship with. That person turns their billing separately to the insurance company but the insurance company does not pay that person.

Relation To Auto No-Fault Reforms: As a result of the auto no-fault reforms, the patient has been limited to 56 hours per week of family provided attending care. Even hiring someone outside of the family has not resulted in that person being reimbursed. As a result of generating expenses exceeding \$170,000 over 15 months, the patient was forced to sell her accessible home and she and her husband and children have moved into a single bedroom in her mother’s home. That room is carpeted. This has resulted in the patient tearing ligaments in both wrists and also falling and sustaining a fracture to her left great toe. She has had increased pain. She has had significant out of pocket expenses resulting in need to sell her accessible home with an accessible showering kitchen. She and her husband and two daughters have moved into one room of her mother’s home which is not accessible and also has carpeting which is difficult for her to propel over in her wheelchair without increasing her pain. She has had increased emotional problems including anxiety, panic attacks and reactivation of her PTSD.

Owen Z. Perlman, M.D.
OZP/STS501

CASE SUMMARY: PATIENT #4 47-YEAR-OLD FEMALE

Patient Identity: 47-year-old female with C5 motor and sensory complete quadriplegia with neurogenic bowel and bladder. She was ejected from the vehicle in the accident of May 28, 1994. She sustained a cervical fracture and underwent surgery at that time for stabilization. She had acquired neurogenic scoliosis and osteoporosis. She underwent scoliosis surgery on January 9, 2006 with Harrington rods. She has acquired osteoporosis. She had an intrathecal baclofen pump placed initially in August 2011 to control spasticity and an attempt to avoid joint contractures. Her condition began to deteriorate in July 2021 when significant changes occurred in her home health aide care situation after insurance benefits payable for home health aide care were significantly reduced as a result of changes in the Auto No-Fault Law.

Fact Summary: As a consequence of her May 1994 motor vehicle accident, the patient sustained catastrophic injuries including the complete spinal cord injury at C5 allowing her to only move her head, neck, shoulders and with limited movement of her arms. She lost control of her bowel and bladder. She had severe spasticity requiring the placement of the intrathecal baclofen pump. In 2014, she was diagnosed with a deep vein thrombosis and was started on Coumadin, a blood thinner. She developed bilateral kidney stones requiring lithotripsy starting in 2017. She had a suprapubic urinary catheter that allowed her urine to drain consistently. It was attached to a leg bag. She developed a fissure and infection and in 2018 had the stoma for the suprapubic tube relocated. She had intermittent bouts of hyperreflexia common to people with that level of quadriplegia where she could develop life threatening complications of high blood pressure. She had been hospitalized for gastroparesis or for wounds and osteomyelitis. In 2018, she had a feeding tube placed through her abdomen which was subsequently changed to a gastrostomy-jejunostomy tube. She required a specialized bowel program. Despite all of the morbidity she has had, she was able to be weaned from narcotic medication and her mood had improved considerably as her medical condition had stabilized. In May 2019, she had a cardiac arrest from which she recovered. She had another cardiac arrest in July 2020, underwent placement of an AICD device or internal defibrillator.

Despite all of these medical challenges, she had bounced back each time receiving home care from Arcadia Home Care that included 12 hours per day of skilled nursing services and 12 hours of home health aide care per day. On June 15, 2022, Arcadia noted that they could not continue providing services because of the fee caps made them non-competitive in obtaining staff as well as the lack of payment. Another agency, Home Well, began working with the patient on June 26, 2022. Home Well hired some of the nurses and home health aide staff from Arcadia that were willing to be employed by them. However, Home Well was not a company that had experience in billing auto insurance. They had been found by the patient's auto insurance carrier. Home Well was not paid in full for their rates as well. Subsequent to that transition, the patient's health declined. She underwent lithotripsy procedures on July 11, 2022 and August 4, 2022. She had a left leg wound in August 2022 with possible bone infection/osteomyelitis. Another lithotripsy was done on September 22, 2022. Post procedures, she ended up on a

ventilator on September 24, 2022 after blood pressure, heart rate dropped. She was subsequently weaned off the ventilator but did not do well. They wanted to place a tracheostomy tube and gastrostomy tube. She declined feeling that she would not be able to get adequate care at home from the agency. She passed away on October 3, 2022.

Relation To Auto No-Fault Reforms: As a result of the auto no-fault reforms instituted on July 2, 2021, the home health care agency that had been providing the patient's care could no longer staff the patient's needs. Consequently, a new agency took over but did not have the training and experience to care for this patient. Although the patient's medical condition was complicated, the decreased level of skilled nursing care and home health aide care the patient began receiving in June 2022 was not at the same level she had been receiving prior. This was a significant contributing cause to her ultimate decline and death on October 3, 2022.

Owen Z. Perlman, M.D.
OZP/STS501