

What Contributes to Iatrogenesis in WAD?

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“Clinical iatrogenesis refers to the direct ways in which health care (as an institution) or health care professionals cause or prolong illness, disease, or disorders in their patients.”

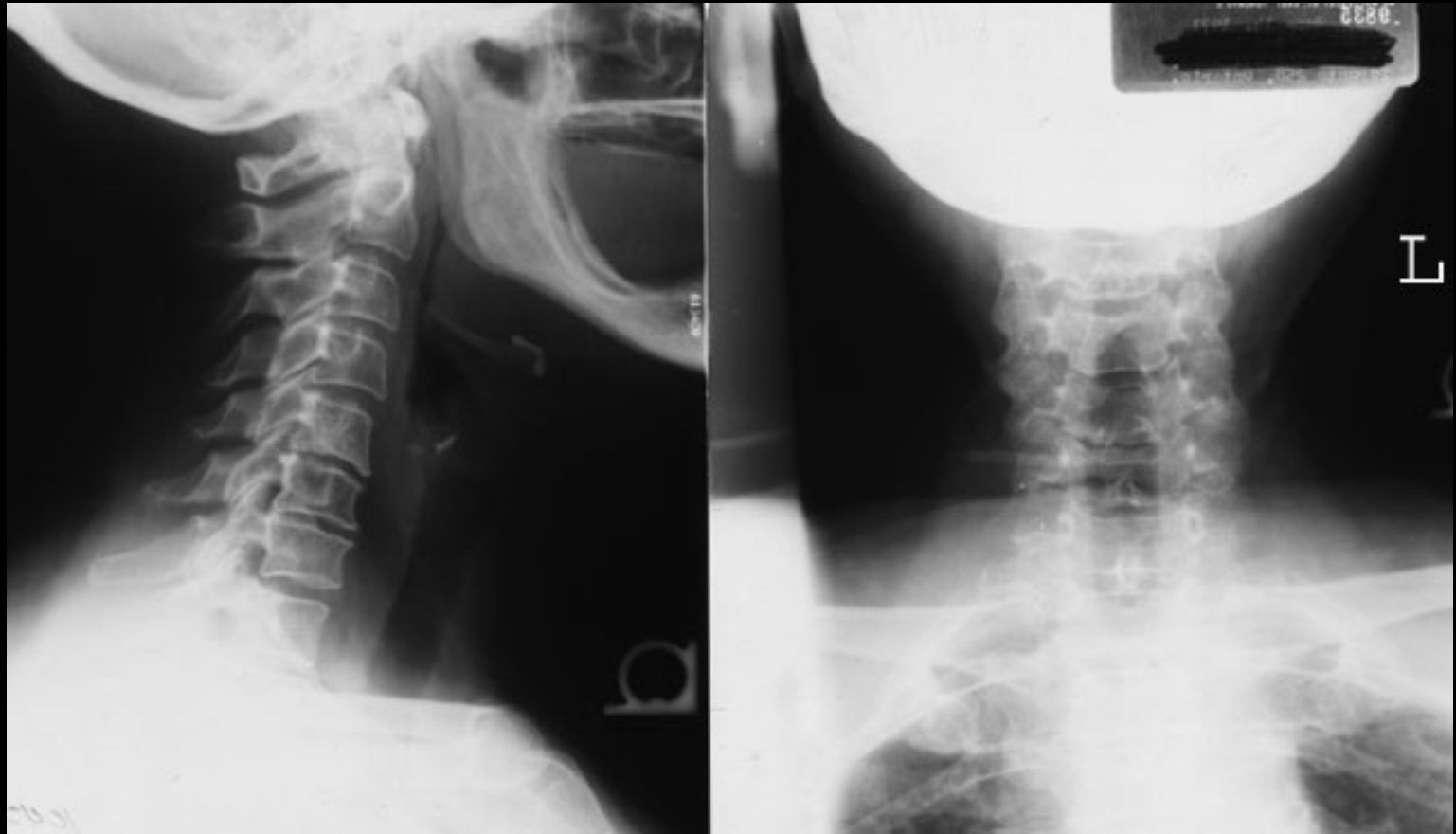
- Illich, 1976



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Lightspring

What can cause iatrogenic chronic pain
and disability in WAD patients?

Misdiagnosis / Overinvestigation



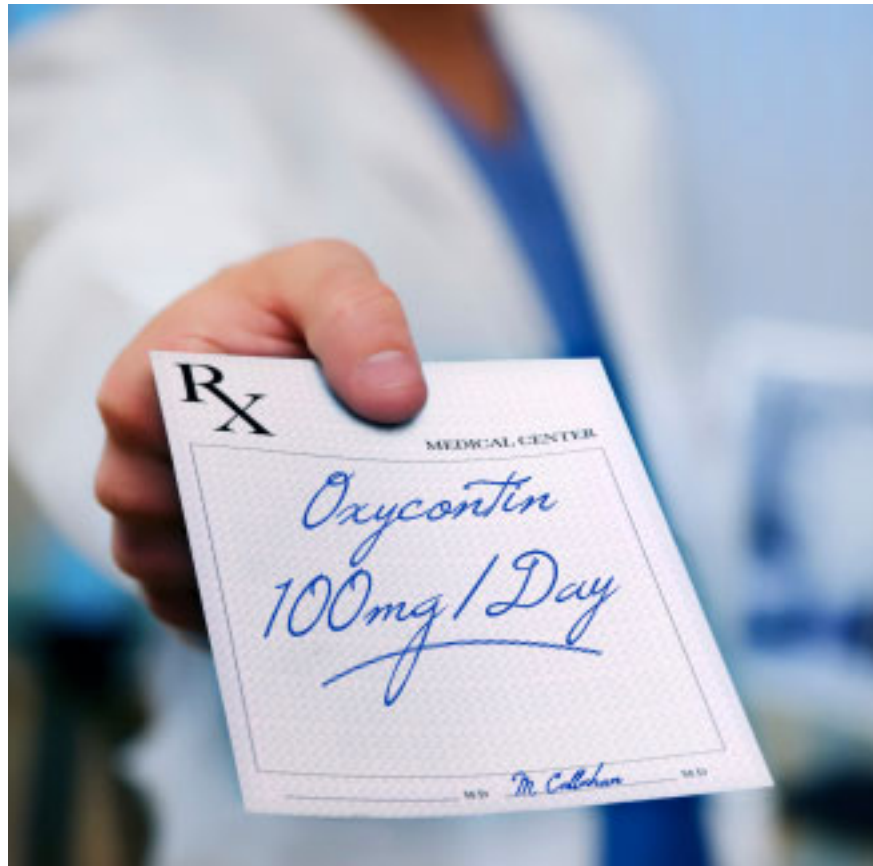
Ineffective Interventions



Harmful Interventions



Drug Indication / Dosage



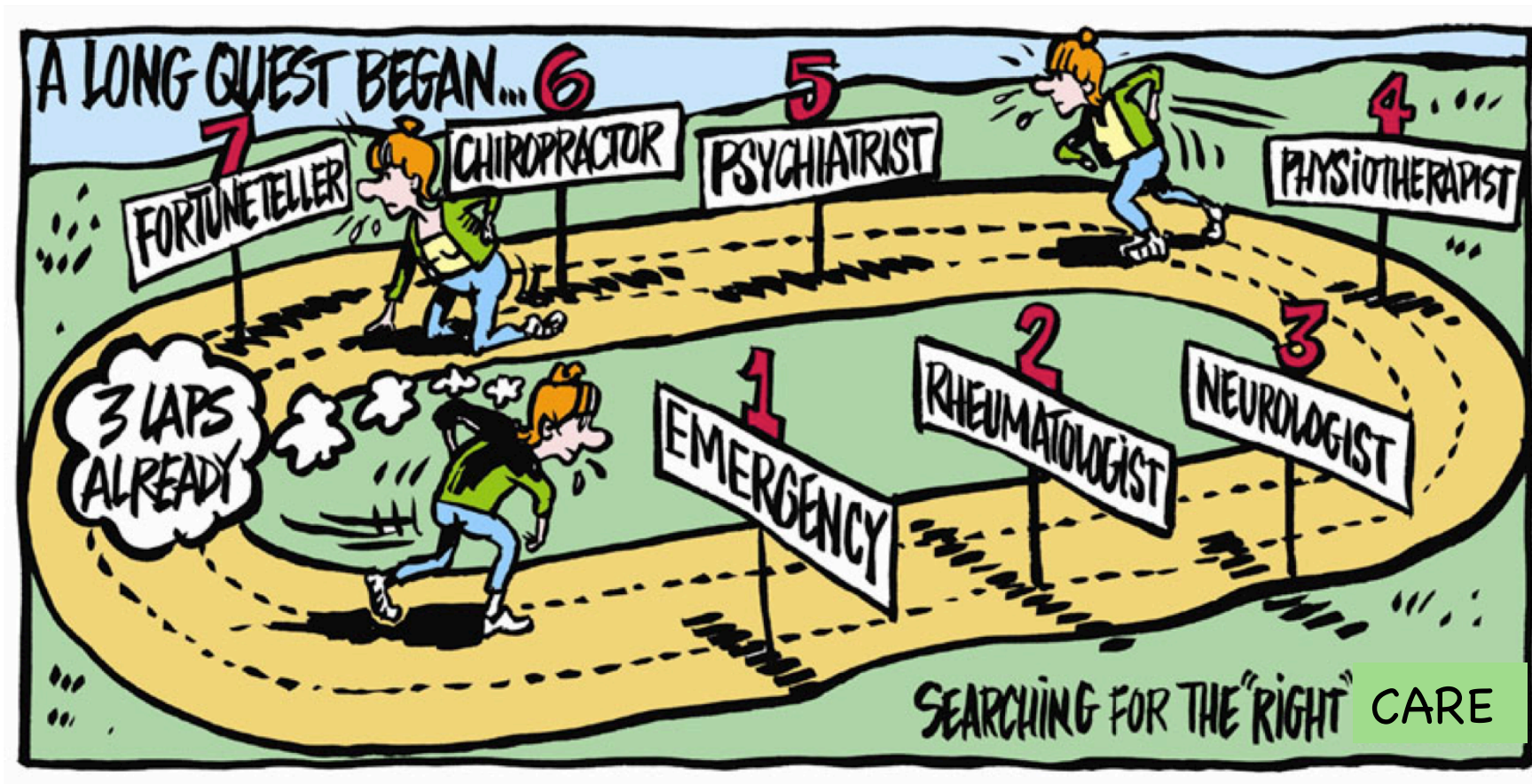
Endless Treatment



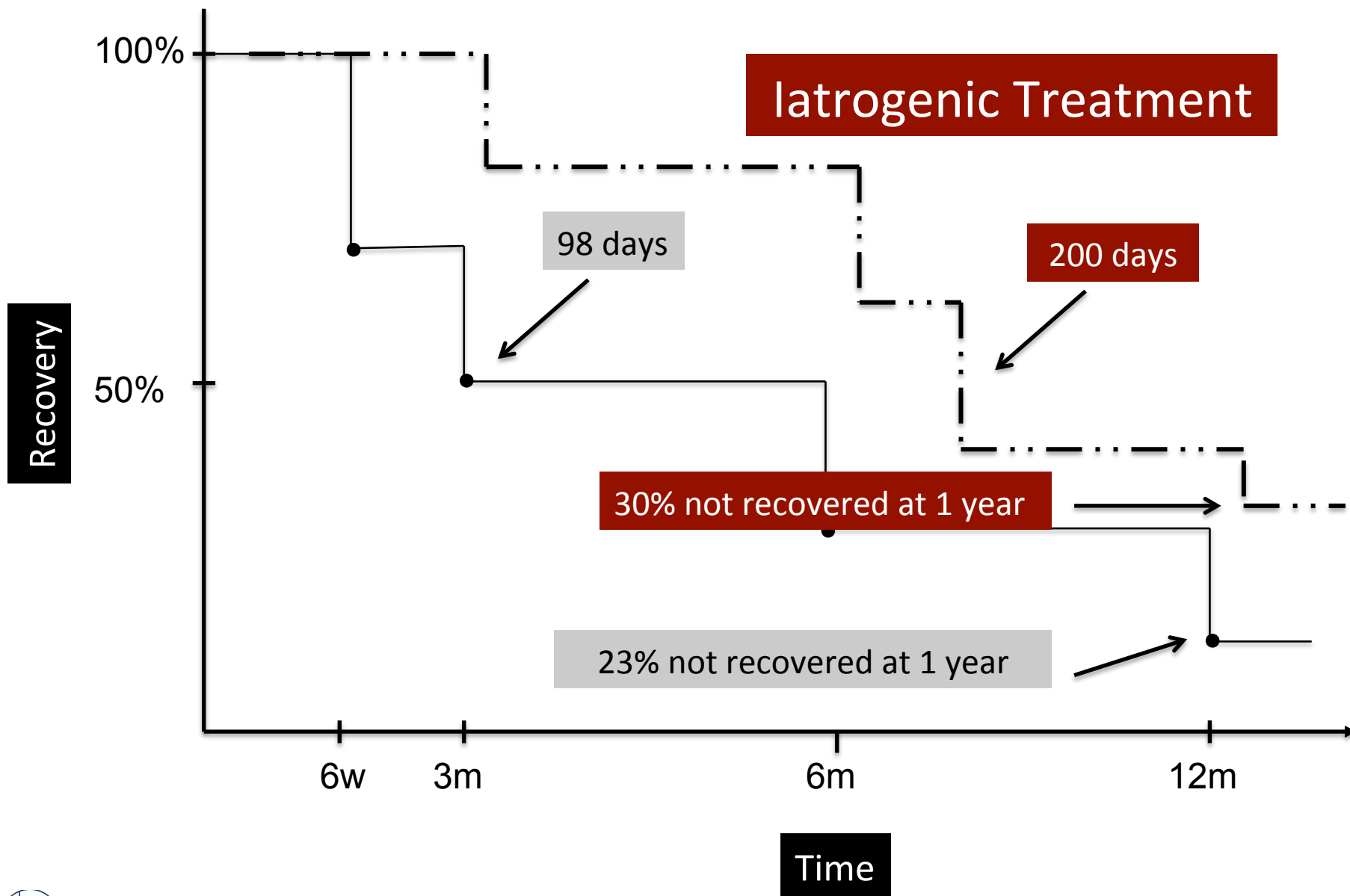
Nocebo: Creation of Fear and Negative Recovery Expectation



The Whiplash Marathon...

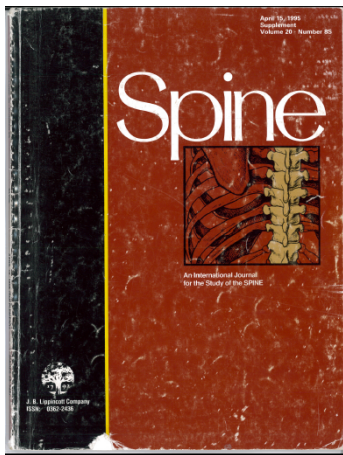


Determine if an intervention slows down
recovery



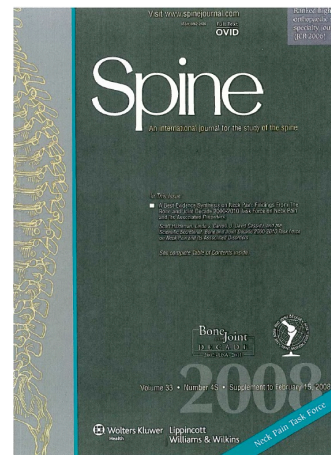
Recommendations for the Management of NAD and WAD

Québec Task Force



1995

2000-2010
BJD Task Force on
Neck Pain



2008

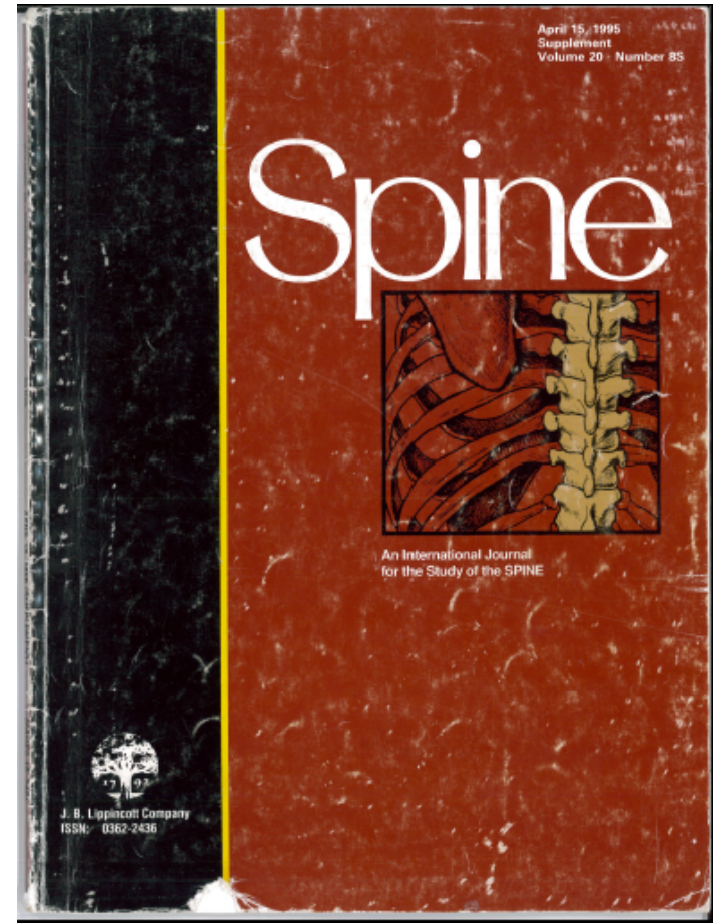
OPTIMa
Collaboration



2016

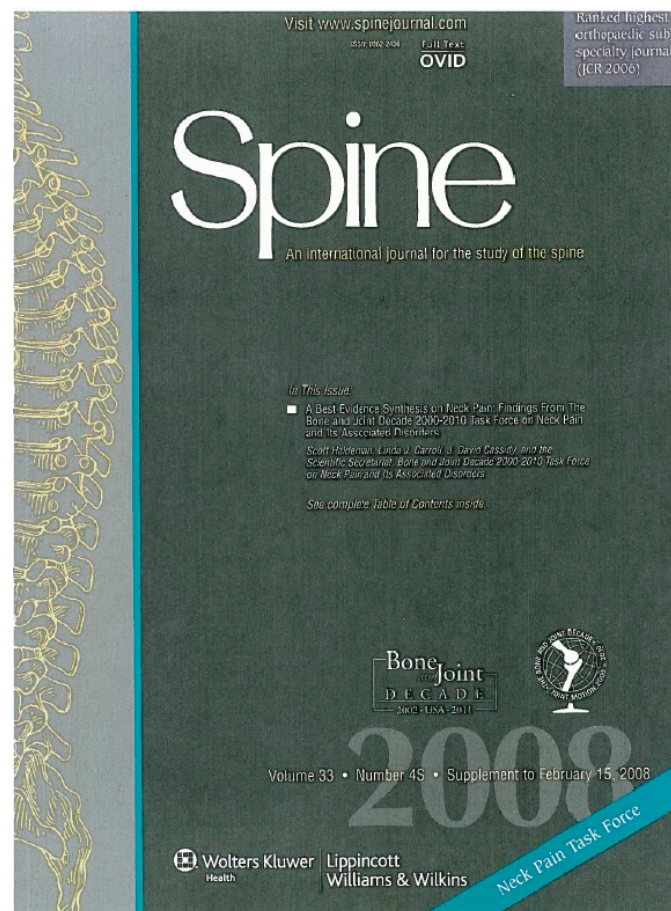
Recommended WAD Treatments (1995)

- Early return to usual activities
- Passive interventions (collar, rest) should be avoided
- Long courses of prescription drugs, manipulation and physiotherapy are not justified (avoid dependence)
- Study the impact of health care on recovery



Treatments NOT Supported by Scientific Evidence – NPTF (2008)

- Educational pamphlet
- Cortocosteroid injections
- Infusion of methylprednisone
- Immobilization in hard collar followed by mobilization
- TENS, ultrasound, diathermy
- Fitness or outpatient multidisciplinary rehabilitation
- High utilization of MD or DC care



What is the evidence?

Initial Patterns of Clinical Care and Recovery From Whiplash Injuries

A Population-Based Cohort Study

Pierre Côté, DC, PhD; Sheilah Hogg-Johnson, PhD; J. David Cassidy, DC, PhD, Dr Med Sc; Linda Carroll, PhD; John W. Frank, MD, MSc; Claire Bombardier, MD

Background: Little is known about the most effective pattern of clinical care for acute whiplash. We designed a cohort study to determine whether patterns of early clinical care (involving visits to general practitioners, chiropractors, or specialists) were associated with different rates of recovery.

Methods: We studied 2486 Saskatchewan adults with whiplash injuries. We defined 8 initial patterns of care that integrated type of provider and number of visits. We used multivariable Cox models to estimate the association between patterns of care and time to recovery while controlling for injury severity and other confounders.

Results: There was an independent association between the type and intensity of initial clinical care and time to recovery. We found that patients in the low-utilization general practitioner group had the fastest recovery, even after controlling for injury severity and other

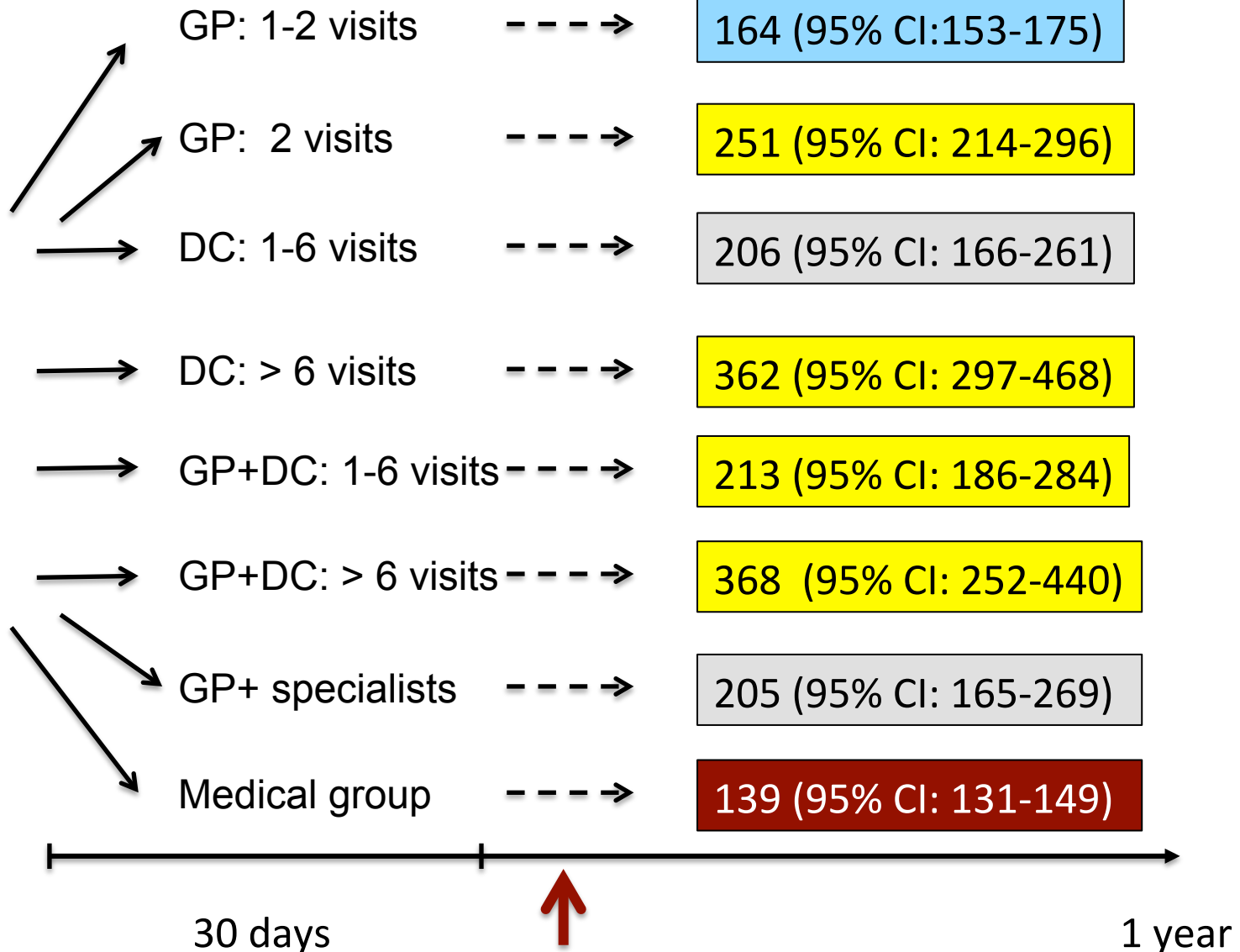
confounders. Compared with this group, the high-utilization general practitioner group experienced a 1-year rate of recovery that was 27% slower (adjusted hazard rate ratio [HRR], 0.73; 95% confidence interval [CI], 0.61-0.87); for the high-utilization chiropractic group it was 39% slower (HRR, 0.61; 95% CI, 0.46-0.81); for the high-utilization general practitioner plus chiropractic combined group it was 28% slower (HRR, 0.72; 95% CI, 0.57-0.91); and for those who consulted general practitioners and specialists, it was 31% slower (HRR, 0.69; 95% CI, 0.55-0.87).

Conclusions: The type and intensity of clinical care initiated within the first month after the injury is associated with the rate of recovery from whiplash injuries. Our study does not support the hypothesis that early aggressive care promotes faster recovery.

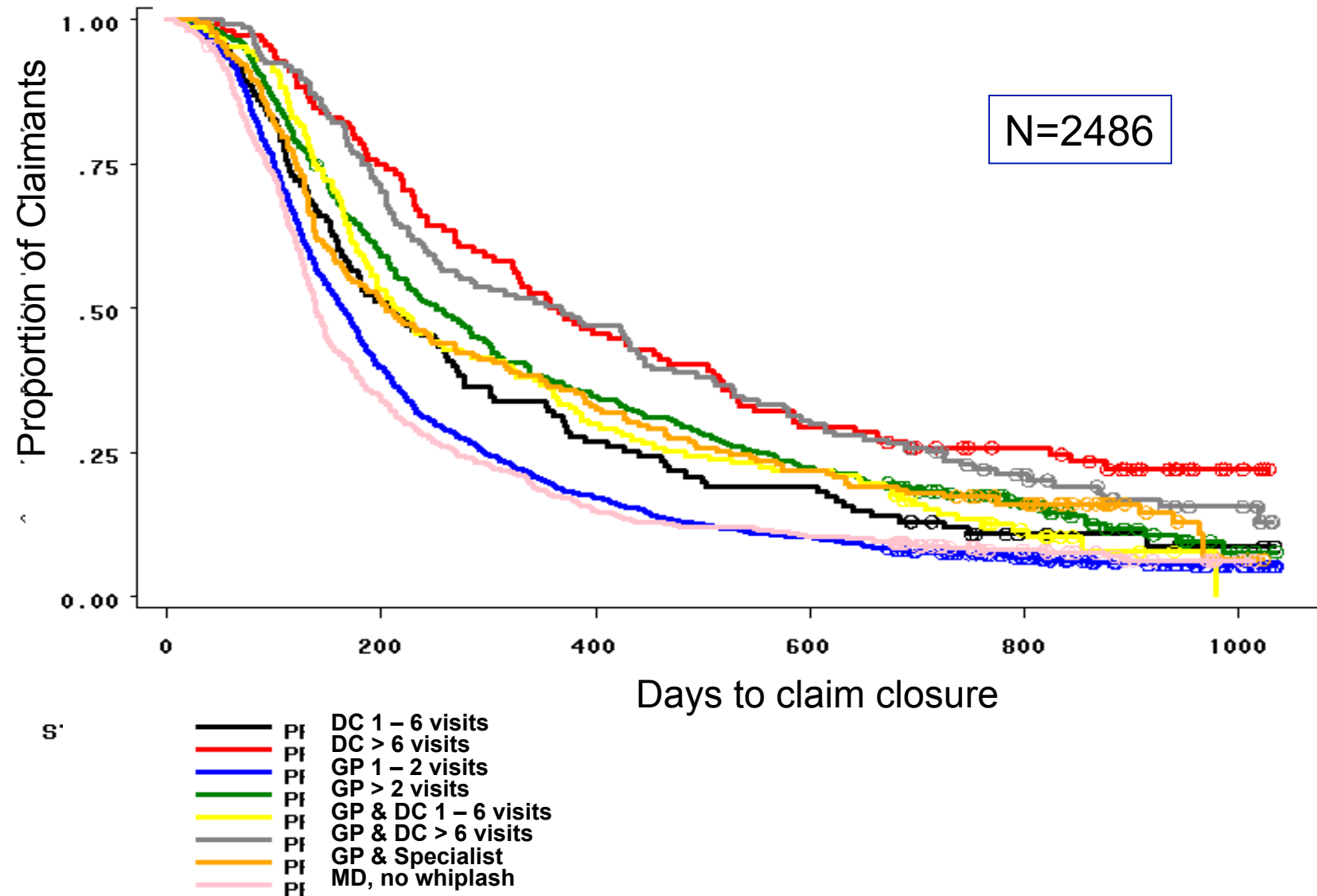
Arch Intern Med. 2005;165:2257-2263

Median Time to Recovery (days)

All claimants
with Acute
Whiplash
(n=2486)



Saskatchewan: No-Fault System



Early Aggressive Care and Delayed Recovery From Whiplash: Isolated Finding or Reproducible Result?

PIERRE CÔTÉ,¹ SHEILAH HOGG-JOHNSON,² J. DAVID CASSIDY,³ LINDA CARROLL,⁴
JOHN W. FRANK,⁵ AND CLAIRE BOMBARDIER⁶

Objective. To test the reproducibility of the finding that early intensive care for whiplash injuries is associated with delayed recovery.

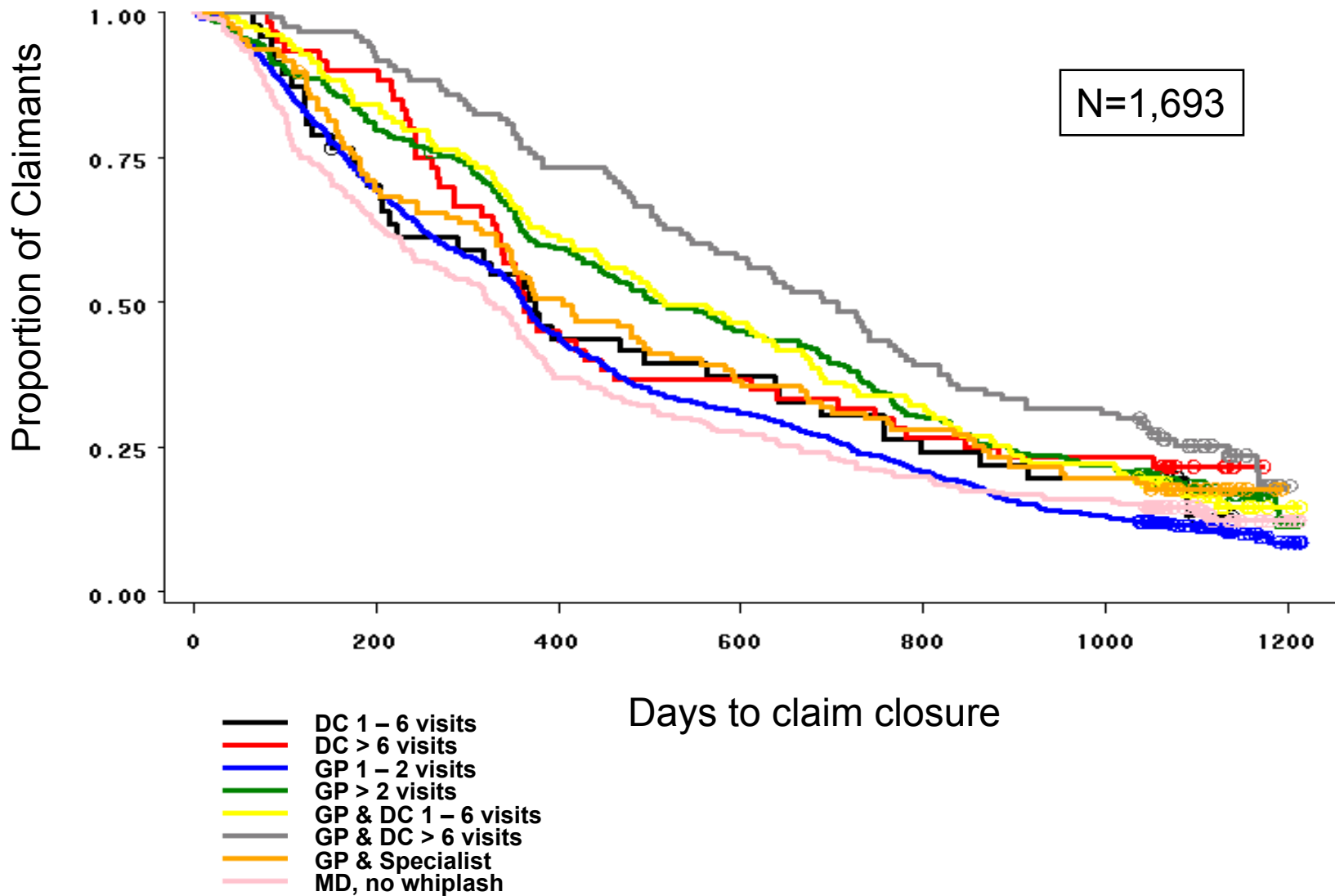
Methods. We analyzed data from a cohort study of 1,693 Saskatchewan adults who sustained whiplash injuries between July 1, 1994 and December 31, 1994. We investigated 8 initial patterns of care that integrated type of provider (general practitioners, chiropractors, and specialists) and number of visits (low versus high utilization). Cox models were used to estimate the association between patterns of care and time to recovery while controlling for injury severity and other confounders.

Results. Patients in the low-utilization general practitioner group and those in the general medical group had the fastest recovery even after controlling for important prognostic factors. Compared with the low-utilization general practitioner group, the 1-year rate of recovery in the high-utilization chiropractic group was 25% slower (adjusted hazard rate ratio [HRR] 0.75, 95% confidence interval [95% CI] 0.54–1.04), in the low-utilization general practitioner plus chiropractic group the rate was 26% slower (HRR 0.74, 95% CI 0.60–0.93), and in the high-utilization general practitioner plus chiropractic combined group the rate was 36% slower (HRR 0.64, 95% CI 0.50–0.83).

Conclusion. The observation that intensive health care utilization early after a whiplash injury is associated with slower recovery was reproduced in an independent cohort of patients. The results add to the body of evidence suggesting that early aggressive treatment of whiplash injuries does not promote faster recovery. In particular, the combination of chiropractic and general practitioner care significantly reduces the rate of recovery.

KEY WORDS. Whiplash injuries; Neck pain; Health services research; Episode of care; Primary health care; Prognosis; Recovery of function.

Saskatchewan: Tort System



Does Multidisciplinary Rehabilitation Benefit Whiplash Recovery?

Results of a Population-Based Incidence Cohort Study

J. David Cassidy, PhD, DrMedSc,*†‡ Linda J. Carroll, PhD,§ Pierre Côté, DC, PhD,†¶
and John Frank, MD, MSc†¶||

Study Design. Population-based, incidence cohort.

Objectives. To evaluate a government policy of funding community and hospital-based fitness training and multidisciplinary rehabilitation for whiplash.

Summary of Background Data. Although insurance benefits commonly include rehabilitation for whiplash, its effectiveness is unknown.

Methods. All Saskatchewan adults treated for whiplash ($n = 6,021$) over a 2-year period were followed up at 6 weeks, 3, 6, 9, and 12 months. Recovery was defined by self-report of improvement. Recovery times were compared between those attending fitness training at health clubs ($n = 833$), multidisciplinary outpatient rehabilitation ($n = 488$), and multidisciplinary inpatient rehabilitation ($n = 136$) to those receiving usual insured individual care.

Results. Recovery was 32% slower in those receiving fitness training within 69 days of injury ($P = 0.001$) and 19% slower when received within 119 days of injury ($P = 0.041$). Recovery was 50% slower in those receiving outpatient rehabilitation within 119 days of injury ($P = 0.001$). Attending inpatient rehabilitation did not influence recovery rates during the follow up ($P = 0.131$). Multivariable adjustment for important prognostic factors did not change these results.

Conclusions. We found no evidence to support the effectiveness of a population-based program of fitness training and multidisciplinary rehabilitation for whiplash. Rehabilitation programs should be tested in randomized trials before being recommended to injured populations.

Key words: whiplash, neck pain, cohort, rehabilitation, exercise, recovery, prognosis. *Spine* 2007;32:126-131

In 2000, whiplash was the most common emergency department-treated motor vehicle injury in the United States, with an incidence of 328 visits per 100,000 general population.¹ In the Canadian province of Saskatchewan, 83% of traffic injury claims were for whiplash in 1994 to 1995, giving an annual incidence of 677 insurance claims per 100,000 adult population.² Whiplash causes pain, suffering, and disability^{3,4} and increases the risk of future neck pain and other health complaints.^{5,6}

The evidence concerning intervention for whiplash injury is of low quality and not extensive.⁷⁻¹⁰ The majority of trials focus on acute whiplash and indicate that minimal care, such as home exercises and reassurance are helpful.¹¹⁻¹⁴ There is little evidence concerning effective therapies for chronic whiplash, and the most recent Cochrane reviews could draw no firm conclusions.^{10,15} Despite this, multidisciplinary rehabilitation is popular and usually funded by insurance benefits. Recent reports from Ontario and the United States have identified medical and rehabilitation costs for soft tissue injuries as the main reason for increases in automobile insurance premiums.^{16,17}

In 1995, the Saskatchewan Government Insurance (SGI) implemented a no-fault insurance policy that increased medical and rehabilitation benefits for traffic injuries.² As part of this policy, interested clinicians were encouraged to organize into multidisciplinary treatment teams to provide rehabilitation. Three levels of rehabilitation were funded by SGI: group fitness training at local health clubs, multidisciplinary outpatient rehabilitation at private clinics, and multidisciplinary hospital inpatient rehabilitation. Nineteen fitness centers and 16 outpatient rehabilitation clinics were operating during our evaluation, and inpatient rehabilitation was provided at 2 hospitals. In addition, SGI continued to fund the usual care provided by individual physicians, chiropractors, massage therapists, and physical therapists. Our purpose was to evaluate any added effectiveness of fitness training and multidisciplinary rehabilitation beyond that of the usual care.

■ Methods

Design and Population. A population-based, inception cohort of all traffic injuries occurring between December 1, 1997 and November 30, 1999 was formed in Saskatchewan, a Canadian province of approximately 1 million residents with universal health care. Baseline data from all subjects were available from insurance claims forms, including socio-demographic characteristics, collision-related factors, injury-related symptoms, pain inten-

In a cohort of 6,021 WAD patients, those attending fitness training, a multidisciplinary outpatient rehabilitation program or a multidisciplinary inpatient rehabilitation had worse recovery than those who received usual care.

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ORIGINAL RESEARCH

Effect of Early Intensive Care on Recovery From Whiplash-Associated Disorders: Results of a Population-Based Cohort Study

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Abstract

Objective: To determine whether the results from previous research suggesting that early intensive health care delays recovery from whiplash-associated disorders (WADs) were confounded by expectations of recovery and whether the association between early health care intensity and time to recovery varies across patterns of health care.

Design: Population-based inception cohort.

Setting: All adults (≥ 18 y) injured in motor vehicle collisions who received treatment from a regulated health professional or reported their injuries to the single provincially administered motor vehicle insurer.

Participants: Participants with WAD (N=5204). Self-report visits to physicians, chiropractors, physiotherapists, massage therapists, and other professionals during the first 42 days postcollision were used to define health care intensity.

Interventions: Not applicable.

Main Outcome Measure: Self-perceived recovery.

Results: Individuals with high utilization health care had slower recovery independent of expectation of recovery and other confounders. Compared with individuals who reported low utilization of physician services, recovery was slower for those with high health care utilization, regardless of the type of profession. For instance, those with high physician (hazard rate ratio [HRR]=.56; 95% confidence interval [CI], .42–.75), physician and high physiotherapy utilization (HRR=.68; 95% CI, .61–.77), physician and high chiropractor utilization (HRR=.74; 95% CI, .64–.85), and physician and high massage therapy utilization (HRR=.78; 95% CI, .68–.90) had significantly slower recovery.

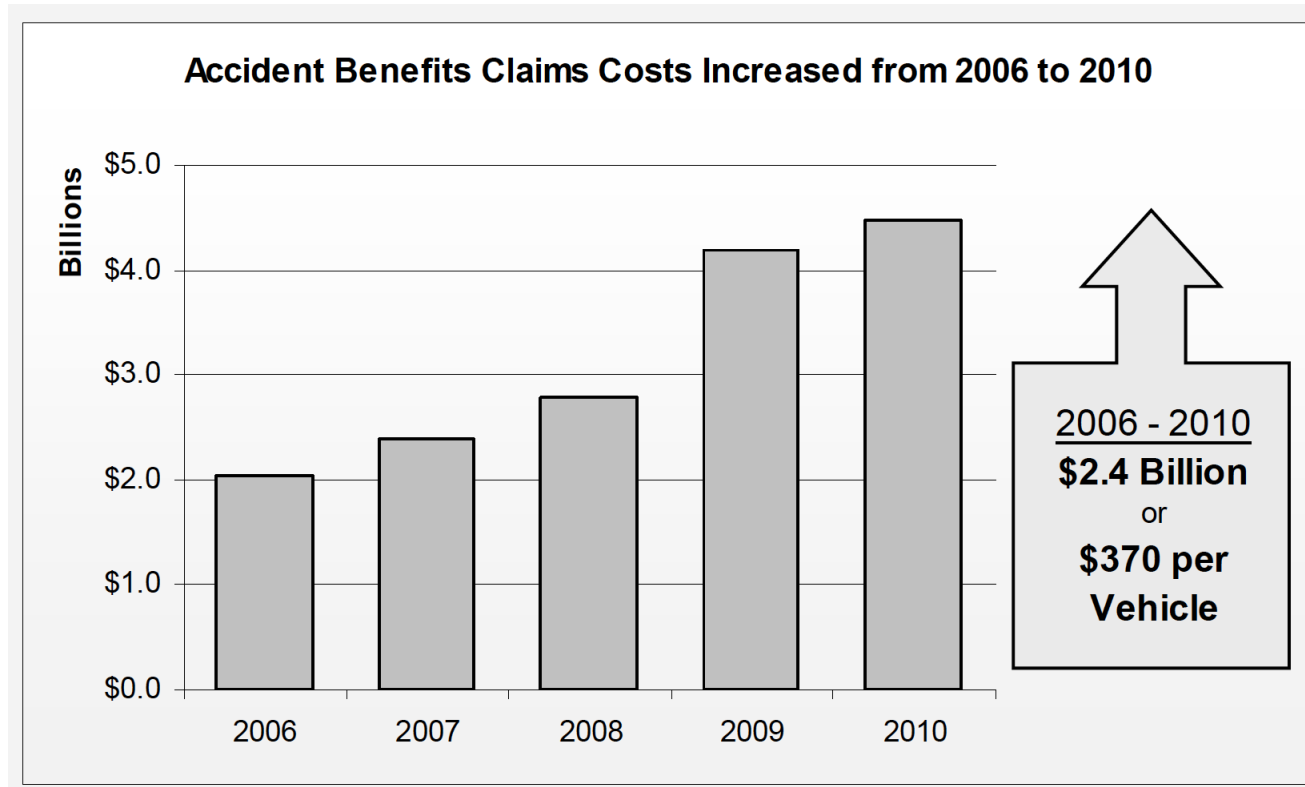
Conclusions: Our study adds to the existing evidence that early intensive care is associated with slower recovery from WAD, independent of expectation of recovery. The results have policy implications and suggest that the optimal management of WADs focuses on reassurance and education instead of intensive care.

Archives of Physical Medicine and Rehabilitation 2016;97:739-46

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Compared with individuals who reported low utilization of physician services, recovery was slower for those with high health care utilization, regardless of the type of profession (physiotherapists, chiropractors, massage therapists and physicians) independent of expectation of recovery and other confounders.

Costs of Medical/Rehabilitation Benefits in Ontario





**Ministry of Finance
Financial Services Commission of Ontario**

Request for Proposals

For

Consulting Services for the Development of a Minor Injury Treatment Protocol

Request for Proposals No.: OSS_00267175

Issued: November 23, 2011

Proposal Submission Deadline: January 9, 2012

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REVIEW ARTICLE

Management of neck pain and associated disorders: A clinical practice guideline from the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration

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Silvano Mior^{3,4} · Kristi Randhawa^{2,3,5} · Arthur Ameis⁶ · Linda J. Carroll⁷ ·
Margareta Nordin^{8,9} · Hainan Yu^{2,3} · Gail M. Lindsay⁴ · Danielle Southerst¹⁰ ·
Sharanya Varatharajan^{2,3,5} · Craig Jacobs^{2,11} · Maja Stupar² · Anne Taylor-Vaisey² ·
Gabrielle van der Velde^{12,13,14} · Douglas P. Gross^{15,16} · Robert J. Brison^{17,18} ·
Mike Paulden¹⁹ · Carlo Ammendolia^{14,20} · J. David Cassidy^{21,22} · Patrick Loisel^{3,23} ·
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Review Article

Is multimodal care effective for the management of patients with whiplash-associated disorders or neck pain and associated disorders? A systematic review by the Ontario Protocol for Traffic Injury Management (OPTIMA) Collaboration

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6 visits!

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Abstract

BACKGROUND CONTEXT: Little is known about the effectiveness of multimodal care for individuals with whiplash-associated disorders (WAD) and neck pain and associated disorders (NAD).

FDA device/drug status: Not applicable.

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(F, Paid directly to institution), Eurospine (D, Paid directly to institution), WCB Manitoba Scientific Research Competition (F, Paid directly to institution), CIHR (KRS-305362) (E, Paid directly to institution). **SAM:** Consulting fee or honorarium: Guideline Expert Panel member; MIG Project (B). **ALT-V:** Nothing to disclose. **MS:** Nothing to disclose.

The disclosure key can be found on the Table of Contents and at www.TheSpineJournalOnline.com.

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Recent-onset NAD/WAD I-II (0-3 months)

Intervention	Not Recommended
Structured education alone	×
Strain-counterstrain therapy	×
Relaxation massage	×
Cervical collar	×
Electro-muscular stimulation	×
Heat (clinic-based)	×
Electroacupuncture	×

Persistent NAD / WAD I-II (>3 months)

Intervention	Not Recommended
Relaxation therapy for pain or disability outcomes	×
Clinic-based supervised high dose strengthening Exercises alone	×
TENS	×
Pulsed shortwave diathermy	×
Botulinum toxin injections	×
Strain-counterstrain therapy	×
Relaxation massage	×
Cervical collar	×
Electro-muscular stimulation	×
Heat (clinic-based)	×
Electroacupuncture	×

Summary

- Clinical iatrogenesis in WAD is real!
- Type and intensity of care impact recovery... not necessarily in the expected direction
- The risk of iatrogenesis can be minimized by:
 - Avoiding non-effective interventions
 - Provide time-limited care using effective interventions
 - Providing patient-centered care

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Commission of Ontario





**UOIT-CMCC Centre for Disability
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