

Frequency and Duration of Treatment for Whiplash Injuries

There is surprisingly little written about the duration and frequency of treatment for whiplash injuries. Individual authors have published their recommendations based upon personal experience, and a few good studies have been published primarily on the duration of treatment. This published information has appeared over a span of nearly 50 years, displaying similarities and trends that are reviewed below:

Billig, 1953

An early article concerning whiplash injuries was published in 1953 by physician Harvey Billig in the Journal of the International College of Surgeons, and titled:

Traumatic Neck, Head, Eye Syndrome

**Journal of the International College of Surgeons
November 1953; 20(5): pp. 558-61**

In this article Dr. Billig makes several statements concerning the duration and frequency of treatment for whiplash injuries. He notes that whiplash trauma causes pain with muscle spasm and restriction of motion in the neck and upper back, which in turn causes a ligamentous fascial contracture during the ensuing weeks causing a persistent restriction of motion. For treatment of this pathophysiology he states:

This restriction of motion can be released with "progressive accumulative mobilization stretching."

"This mobilization stretching usually takes several months to accomplish and is something like climbing up three stairs and sliding back two."

This is best accomplished with "forced active rotation of the head, neck and thorax to each side."

Initially this treatment is given three times daily, then three visits weekly, always done by a therapist.

In all cases, "when motion is attempted past the point of restriction, the symptoms complained of, including those radiating to the head and arm, are exacerbated, so that it is possible to guide the stretching by elicitation of symptoms and make sure that the proper directions for loosening are carried out."

"On the basis of this line of reasoning, a carefully planned remobilization of the neck and the upper part of the back by means of progressive stretching exercises has been carried out in order to free the nerves from their constriction stimuli in their foraminal pathways through the contracted fascial ligamentous structures."

"It has been attended with gratifying elimination of symptoms and signs."

"It has been noted that, once full rotatory range of motion in the neck and upper dorsal portion of the spine has been obtained, the patients become symptom free."

"However, it has also been noted that if they do not continue sufficient mobilization stretching exercises to maintain the full range of motion they are subject to recurrence."

Dr. Billig's specific comment on the duration of treatment is that it can take "several months" to achieve maximum improvement. His specific comment of frequency of treatment "initially three times daily and then three times weekly."

Seletz, 1958

In 1958, neurosurgeon Emil Seletz, MD from Beverly Hills, CA and associated with the medical school at the University of California, Los Angeles (UCLA), published in the Journal of the American Medical Association an article titled (1):

Whiplash Injuries Neurophysiological Basis for Pain and Methods Used for Rehabilitation

In this article, Dr. Seletz comments on the frequency of the treatment of whiplash injuries, stating:

"Treatment must be started early and must be administered by those expertly trained in physical therapy and rehabilitation."

"Those patients not receiving adequate therapy will not improve and will soon become discouraged and resentful."

"Because of continued complaints, many of these patients finally see a psychiatrist. The couch would serve a better purpose in this instance if it were equipped with a traction apparatus and supplemented by a gentle massage."

"In reviewing the types of treatment with a number of specialists in this field, it is found that, while therapy naturally varies to suit the individual

need, it consists primarily of local heat in the form of hot wet packs and cervical traction, followed by very gentle massage and manual rotations.”

“Local hot packs relieve the muscle spasm, increase the circulation, and frequently stop severe occipital pain and headaches.”

“The importance of a carefully planned scheme of treatment must be emphasized to the patient, and treatments must be religiously carried out daily during the first two or three weeks (and then about three times weekly), depending, of course, on the individual case.”

“Delay or faulty treatment leads to adhesions about the facets and scarring about the capsular ligaments, persistent spasm, congestive lymph edema, and fibrosis of muscles, swelling, and eventual adhesions of nerves within the nerve root canals.”

“The resultant faulty posture in neglected cases enhances the degeneration of the intervertebral disks, as well as spur formation in the lateral co-vertebral articulations, which on the roentgenogram has come to be known as traumatic arthritis.”

“I cannot too strongly emphasize the urgency of early and persistent therapy, always by a specialist in this field.”

“Occasionally, a patient is seen with persistent complaints of head, neck, and shoulder pain, who has had on surgical exposure persistent swelling and adhesions of several nerve roots within the dural sleeve of exit. It is most likely that early, persistent, and adequate therapy by those expertly trained in physical medicine will prevent most patients from developing a surgical condition.”

In this article, Dr. Seletz makes no mention of duration of treatment. However, with respects to frequency of treatment, he makes two important recommendations:

- 1) Treatment must begin early and it must be persistent.
- 2) “The importance of a carefully planned scheme of treatment must be emphasized to the patient, and treatments must be religiously carried out daily during the first two or three weeks (and then about three times weekly), depending, of course, on the individual case.”

Jackson, 1978

Historically, the most authoritative book concerning whiplash injuries is The Cervical Syndrome, authored by Ruth Jackson, MD. Dr. Jackson’s credentials are

impressive. She was Assistant Clinical Professor of Orthopedic Surgery at the Southwestern Medical School of the University of Texas, Consulting Orthopedic Surgeon at Baylor Medical Center, Chief of Orthopedic Surgery at Parkland Hospital, and Instructor in Orthopedic Surgery at Baylor University College of Medicine. The fourth edition of Dr. Jackson's book is published in 1978. Relevant to duration and frequency of treatment for whiplash injuries, Dr. Jackson states (3):

"Treatment schedules will vary somewhat for each individual."

"Some patients may require daily treatments for a week or two, after which the treatments should be given two or three times per week."

"As the symptoms decrease the treatments can be spaced farther apart unless the patient experiences an exacerbation of symptoms, in which event more frequent treatments may be necessary."

Once again, we have an experienced, expertly trained clinician, Dr. Ruth Jackson, noting that some patients require a treatment frequency of daily for a week or two followed by a frequency of two or three times per week. Dr. Jackson makes no comment on duration other than to state that if there is an exacerbation of symptoms, "more frequent treatments may be necessary."

Ameis, 1986

In 1986, Arthur Ameis, MD published an article in which he comments on the duration of whiplash treatment (4). Dr. Ames practices physical medicine and rehabilitation, and is on the Faculty of Medicine at the University of Toronto. The title of his article is:

Cervical Whiplash: Considerations in the Rehabilitation of Cervical Myofascial Injury

Canadian Family Physician Volume 32, September 1986

In this article, Dr. Ameis notes:

Mild (first degree spinal myofascial strain) soft tissue injuries to the neck "may develop immediately or more slowly after injury, will heal rapidly, with minimal work time loss and a symptom-free status about six months post injury. 'Mild' may inadvertently connote the trivial."

Moderate (second degree spinal myofascial strain) may develop symptoms over 24 hours. "These persons will experience serious problems with substantial work loss of weeks or months, but will recover a normal lifestyle within six months to two years."

"Within one year, about 50% of patients in the 'moderate' category will have recovered to the level of 'functional recovery': a full range of activities of daily living will be restored, but often with intermittent symptoms of rheumatism in damp or cold, and intolerance of a prolonged neck position or of extreme turning or extension."

"After 18 – 24 months, almost all patients [with moderate injury] will have reached functional recovery, although some report recovery up to five years later."

"For second-degree spinal myofascial injuries, the plateau will be reached between 12 and 36 months post injury."

"15% of patients fail to achieve a full functional recovery, and some 40% - 70% find some mild symptom persistence."

"Severe injuries (third degree) are disabling in the very long term or even permanently."

"About 10% - 15% of motor vehicle cervical injuries fail to achieve a functional recovery even after the passage of two to three years. This failure may be the result of physical impairment, minimal brain damage from head injury, or chronic pain syndrome."

"Overall, a patient with a neck injury has a 85% - 90% chance of achieving a functional recovery. Anywhere from 40% - 70% of such patients retain some degree of intermittent, unpleasant, unnatural symptoms in the injured tissues."

About 50% of the more seriously injured will have recovered by the end of the first year. About 25% additionally will recover in the next 6 months (18 months since injury). About 15% will recover 18 months post injury. Therefore, it is premature to claim that a patient has failed to recover until at least 18 months after injury, and possibly even longer.

As noted, Dr. Ameis does not comment on the frequency of treatment. However, he had quite a bit to say about duration. Specifically, he notes that the simplest of injuries require 6 months, moderate injuries require up to two years, and occasionally some individuals require 3 – 5 years before they reach maximum improvement.

Gargan and Bannister, 1990

In 1990, physicians Martin Gargan and Gordon Bannister published a long-term prognosis study on whiplash victims (5). Drs. Gargan and Bannister are

from the University of Bristol in the United Kingdom, and they have published a number of long-term prognosis and treatment studies pertaining to whiplash trauma. Dr. Gargan is additionally distinguished as Registrar in Accident and Emergency Surgery at John Radcliffe Hospital, Headington, England, and Dr. Bannister is additionally distinguished as Consultant and Senior Lecturer, Department of Orthopaedic Surgery, Southmead General Hospital, Westbury-on-Trym, Bristol, England. The title of their 1990 article is:

Long-term Prognosis of Soft-Tissue Injuries of the Neck

Journal of Bone and Joint Surgery (Br) VOL. 72-B, No. 5, September 1990.

In this study, the authors reviewed 43 patients who had sustained soft-tissue injuries of the neck after a mean 10.8 years. They concluded that most of the patients had reached their maximum improvement within two years of being injured. Specifically, they state:

“After two years, symptoms did not alter with further passage of time.”

Although Drs. Gargan and Bannister make no comment on the frequency of treatment, they do present a rationale for treatment to extend for two years.

Mercy Document, 1992

In 1989, the United States federal government established the Agency for Health Care Policy and Research. “At that time the message was clear - either the health professions developed their own guidelines or third parties would impose them.” (p. xxxvii)

In the chiropractic profession, the task of attempting to do something was taken up by the Congress of Chiropractic State Associations or COCSA. The COCSA has approximately 48 association representatives from approximately 40 different states. The COCSA assembled an initial steering committee of nine members. Through a slow and detailed process, the nine-member steering committee chose 35 chiropractors to be participants for the commission to develop a consensus document on chiropractic quality assurance and parameters of practice. With broad support from chiropractic colleges and organizations, the 35 consensus commission members completed a long and arduous process of creating their document. The results of their efforts is commonly referred to as The Mercy Guidelines (6), or The Mercy Document.

The Mercy Document is 222 pages in length and it discusses essentially every aspect of chiropractic clinical practice. The suggested adoption for these guidelines was of July 1, 1993. (p. iv) Even though the literature referenced in this document almost exclusively pertain to low back issues, page xl notes that

the Guidelines “apply to patients with neck pain and headache as well as low back pain.”

Chapter Eight of the Mercy Document is tilted: **Frequency and Duration of Care**. Page 117 of the Mercy Document notes that the frequency and duration of treatment is:

“Based on the expectation of outcome for the uncomplicated case.”

Additionally, page 125 notes that, “*only* acute episodes can truly be considered uncomplicated.”

My interpretation of chiropractic care for patients with musculoskeletal spine pain from reading Chapter Eight of the Mercy Document, including acute whiplash trauma, is as follows:

- 1) Treatment five days per week for the initial first two weeks.
- 2) Three times per week for the second two weeks.
- 3) Three times per week for weeks five and six, although this is vague in the document.
- 4) Two times per week for the next ten weeks.

This adds up to a total treatment of 42 patient treatment visits over a period of 16 weeks for the management of an acute uncomplicated musculoskeletal problem.

Importantly, the Mercy Document says that to this number (42 visits over 16 weeks), one could add in:

- 1) Additional treatment for acute exacerbations.
- 2) Additional treatment for significant deterioration of clinical status.
- 3) Elective treatment that does not create physician dependence.
- 4) Additional treatment determined by multipliers of specific historical factors.

These specific historical factors include:

- A) Length of time the patient had the problem.
- B) Severity of the symptoms.
- C) The number of previous episodes of similar complaints.
- D) Existence of any pre-existing complicating conditions.

These historical factors are not given in a specific formula format, so the treating doctor would use them on a case-by-case basis.

Also, listed in the Mercy Document are what is implied as complicated cases. Complicated cases are allowed additional treatment. This information is scattered over several pages (pp. 119, 121, 125, and 129), and are here listed:

- 1) Inflammation of the disc, ligament or muscle.
- 2) Degenerative processes.

- 3) Intra-articular adhesions.
- 4) Meniscoid entrapments.
- 5) Occupational hazards, such as prolonged static postures and/or high peak spinal loads.
- 6) Anomalous structure.
- 7) Re-injury and exacerbation from unexpected events.
- 8) Biomechanical stress.
- 9) Spondylolithesis.

By reviewing this list, it appears clear that many acutely whiplash-injured patients will be classified as complicated cases. The Mercy document acknowledges that such complicated cases may require additional duration and frequency of treatment. Yet, the Mercy Document is vague enough on a formula for such additional treatment, especially if more than one factor exists. At the minimum, it appears that the Mercy Document suggests increasing treatment by 50% if one factor exists. This would increase duration to 24 weeks and the treatments to 63 visits. There appears to be no hard application when more than one factor exists. A defensible argument would suggest a doubling of the treatment allowed for the acute uncomplicated case, which would increase duration to 32 weeks and the treatments to 84 visits.

In terms of disclosure and exceptions, the Mercy Document makes the following points:

- 1) "These recommendations do not give a 'cookbook' approach to the duration of care or number of treatments." (p. xl)
- 2) "They are NOT designed as a prescriptive or cookbook procedure for determining the absolute frequency and duration of treatment/care for any specific case." (p. 117)
- 3) "No attempt has been made to select for individual conditions by region of complaint or by diagnosis."
- 4) "Note: statistical descriptions of treatment frequency such as mean/median/mode, should NOT be used as a standard to judge care administered to an INDIVIDUAL patient." (p. 124)

Consistent with the prior references, treatment frequency begins with daily treatment for acute problems and graduates to three times and then two times per week. The Mercy Document would argue for a duration between 4 months to 8 months, and possibly longer for unique individual cases.

Schofferman and Wasserman, 1994

In 1994, orthopedic surgeon Jerome Schofferman published a unique study on whiplash-injured patients, as follows (7):

Successful treatment of low back pain and neck pain after a motor vehicle accident despite litigation

Spine

May 1, 1994;19(9):1007-10

In this study, Drs. Schofferman and Wasserman do not mention frequency of treatment, but they do document the duration of treatment required for whiplash-injured patients to achieve maximum improvement. The 39 patients in this study were acute or subacute, "not entrenched chronic pain patients." Using the standard measurement outcome tools of the McGill Pain Questionnaire the Oswestry Low Back Disability Questionnaire, these authors concluded:

"Patients with low back pain or neck pain resulting from a motor vehicle accident showed a statistically significant improvement with treatment despite ongoing litigation."

"Patients remained in treatment until they were pain free and functionally normal or until a permanent and stable plateau was reached despite continuing symptoms."

Patients were treated until they became pain free, or until they reached maximum improvement. Maximum improvement was claimed after "mild-to-moderate pain remained stable for approximately 8 weeks."

"The mean duration of treatment was 29 weeks [7 months 1 week]."

The range of treatment was 8 weeks (2 months) to 108 weeks (2 years and 1 month).

The most important finding from this study is that the range for recovery for patients suffering from acute or subacute whiplash injuries is between 2 months and 2 years, with a mean of 7 months of treatment.

Barnsley, 1994

In October of 1994 the Australian research team of Leslie Barnsley, Susan Lord, and Nikoli Bogduk, published a detailed, 24 page, Clinical Review of Whiplash Injuries, as follows (8):

Whiplash Injury, Clinical Review Pain 58, October 1994, pp. 283-307

Once again, these authors did not comment on the frequency of treatment, but they did comment on the duration of symptomology, as follows:

"75% of patients with whiplash injuries will heal spontaneously in 2-3 months. These patients sustained minor injuries to their muscles and ligaments, but not to their discs or zygapophysial joints."

"25% of patients with whiplash injuries will progress to chronic symptoms. These patients injured their intervertebral discs, zygapophysial joints, or alar ligaments. These patients will not resolve spontaneously and they do become chronic. These patients may improve over a periods of 2 years, and are unlikely to improve after 2 years."

Once again, in accordance with other studies above, duration of treatment for symptoms can span a period of a few months to two years.

Tomlinson, 2005

In 2005, British researcher P.J. Tomlinson teamed up with physicians Martin Gargan and Gordon Bannister, and published a 7.5 year prospective review on 42 whiplash-injured patients, as follows (9):

The fluctuation in recovery following whiplash injury 7.5-year prospective review

Injury

Volume 36, Issue 6, June 2005, Pages 758-761

Once again, these authors did not comment on the frequency of treatment, but they did comment on the duration of symptomology, noting:

"Symptoms [from whiplash injuries] largely stabilised within 3 months but there was significant fluctuation in symptom severity between 3 months and 2 years." This suggests that outcome cannot be accurately assessed during this time [during the first 3 months].

"Our results support the work of previous authors, demonstrating little alteration in symptoms by 3 months and stabilising at 2 years."

By 7.5 years 64% of patients have the same symptom severity they had at 3 months, and in 36% their symptom status changed: 17% improved and 19% deteriorated.

"Between 3 months and 2 years symptoms fluctuate significantly and during this time any estimation of patients' prognosis will be unreliable."

The cause of this fluctuation is "important in medico-legal reporting since patients' outcome can only be predicted at 3 months and not confirmed until 2 years."

Once again, in accordance with other studies noted above, duration of treatment for symptoms can span for a period of two years.

A summary of these articles is in the table below:

Year	Author	Duration	Frequency
1953	Billig	Several Months	3X/day Then 3X/wk
1958	Seletz	N/A	Start Early Daily 2-3 wks Then 3X/wk
1978	Jackson	N/A	Daily 1-2 wks Then 3X/wk
1986	Ameis	Mild: up to 6 mo Mod: 6mo-3 yrs	N/A
1990	Gargan	2 yrs	N/A
1992	Mercy Document	Uncomplicated: 16 wks Complicated: 24 -32 wks	Daily for 2 wks Then 3X/wk for 4 wks Then 2X/wk for 10 wks = 42 visits 1.5 or 2X the uncomplicated frequency
1994	Schofferman	2 mo - 2 yr 1 mo Mean: 7mo 1 wk	N/A
1994	Barnsley	3 mo - 2 yrs	N/A
2005	Tomlinson	3 mo - 2 yrs	N/A

Croft, 2002

The greatest amount of work concerning the frequency and duration for treatment of whiplash injuries has been done by Arthur Croft, DC. The Croft Whiplash Guidelines are the most accepted and used duration and frequency guidelines for the treatment of whiplash injuries. Dr. Croft is a noted whiplash lecturer, researcher and author (10). Dr. Croft's guidelines are based on his analysis of approximately 2,000 randomly selected cases from a number of treating practitioners' files. In the chiropractic profession, Dr. Croft's Whiplash Guidelines have been adopted by 11 states (Alaska, Arkansas, Colorado, Kentucky, Minnesota, North Carolina, Ohio, Oklahoma, Oregon, South Dakota, Washington) and the International Chiropractic Association.

For whiplash injuries, Dr. Croft originated 5 grades of injury which have been universally accepted, as follows:

Grades	Severity	Anatomical and Clinical Description
I	minimal	no limitation of range of motion, no ligamentous injury, no neurological symptoms
II	slight	limitation of range of motion, no ligamentous injury, no neurological findings
III	moderate	limitation of range of motion, some ligamentous injury, neurological findings present
IV	moderate to severe	limitation of range of motion, ligamentous instability, neurological findings present, fracture or disc derangement
V	severe	requires surgical treatment and stabilization.

Dr. Croft’s Frequency and Duration Guidelines are based upon these 5 grades of whiplash injury, and are found below:

Croft’s Frequency & Duration Table for the Different Grades of Whiplash Injury

Grade	Daily	3x/wk	2x/wk	1x/wk	1x/m	Total Duration	Total Number of Visits
Grade I	1 wk	1-2 wks	2-3 wks	4 wks		10 wks	21
Grade II	1 wk	4 wks	4 wks	4 wks	4 mo	29 wks	33
Grade III	1-2 wks	10 wks	10 wks	10 wks	6 mo	56 wks	76
Grade IV	2-3 wks	16 wks	12 wks	20 wks	**	**	**
Grade V	Surgical stabilization necessary - chiropractic care is post surgical						

**may require permanent monthly or permanent palliative care

Like the Mercy Document, Dr. Croft provided several complicating factors that might influence the frequency and duration of treatment. The Croft complicating factors are:

- | | |
|------------------------------------|--|
| Advance Age | Disc protrusion/herniation |
| Prior vertebral fracture | Metabolic disorders |
| Spondylosis and/or facet arthrosis | Osteoporosis or bone disease |
| Congenital anomalies of the spine | AS or other spondyloarthropathy |
| Development anomalies of the spine | Paraplegia/tetraplegia |
| Degenerative disc disease | Prior cervical or lumbar spine surgery |
| Prior spinal injury; scoliosis | Spinal or foraminal stenosis |
| Arthritis of the spine | |

Dan Murphy, DC

REFERENCES

- 1) Billig, Harvey, MD; Traumatic Neck, Head, Eye Syndrome; Journal of the International College of Surgeons November 1953; 20(5): pp. 558-61.
- 2) Seletz, Emil, MD; Whiplash Injuries: Neurophysiological Basis for Pain and Methods Used for Rehabilitation; Journal of the American Medical Association; November 29, 1958, pp. 1750 – 1755.
- 3) Jackson, Ruth, MD; The Cervical Syndrome; Fourth Edition, Charles C Thomas publisher, 1978, p 291.
- 4) Ameis, Arthur, MD; Cervical Whiplash: Considerations in the Rehabilitation of Cervical Myofascial Injury; Canadian Family Physician Volume 32, September 1986.
- 5) Gargan M. F., Bannister G. C.; Long-term Prognosis of Soft-Tissue Injuries of the Neck; Journal of Bone and Joint Surgery (British); VOL. 72-B, No. 5, September 1990.
- 6) Mercy Document, Appleton, 1992.
- 7) Schofferman J, Wasserman S; Successful treatment of low back pain and neck pain after a motor vehicle accident despite litigation; Spine May 1, 1994;19(9):1007-10.
- 8) Barnsley L, Lord S, Bogduk N; Whiplash injury, Clinical Review; Pain 58, October 1994, pp. 283-307.
- 9) P.J. Tomlinson, M.F. Gargan and G.C. Bannister; The fluctuation in recovery following whiplash injury: 7.5-year prospective review; Injury Volume 36, Issue 6, June 2005, pp. 758-761.
- 10) Foreman SM, Croft AC Whiplash Injuries: The Cervical Acceleration/Deceleration Syndrome; 3rd edition, Philadelphia, Lippincott Williams & Wilkins, 2002, pp. 525-526.