## Quick Reference Guide – Management of NAD Grade I and II

### Symptoms ≤ 3 months post-collision

For all injured persons with NAD I and II:
- **Risk for factors delaying recovery:** prior history of collision-related NAD, older age, high levels of initial pain, post-crash psychological factors (poor recovery expectation, depressed mood, anxiety or fear about pain, kinesiophobia, acute stress disorder (symptoms ≤ 4 weeks from injury), post-traumatic stress disorder (symptoms > 4 weeks), high levels of frustration or anger about pain, passive coping)
- **Offer** information on nature, management, course of collision-related NAD as a framework for initiation of a program of care
- **Conduct** ongoing assessment for symptom improvement or progression during intervention and refer accordingly
- **Reassess and Monitor** for presence of acute stress disorder, post-traumatic stress disorder, kinesiophobia, passive coping, depression, anxiety, anger, frustration, and fear
- **Discharge** injured person as appropriate at any point during intervention and recovery

Based upon shared decision making between the patient and provider, the following therapeutic interventions are recommended:

<table>
<thead>
<tr>
<th>Home and clinic based interventions:</th>
<th>Do Not Offer:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structured education (advice to stay active), reassurance and one of the following:</td>
<td>• Structured patient education alone, in either verbal or written formats</td>
</tr>
<tr>
<td>1. Unsupervised neck range of motion exercises</td>
<td>• Cervical collar</td>
</tr>
<tr>
<td>2. Multimodal care that includes the combination of:</td>
<td>• Electroacupuncture (electrical stimulation of acupuncture points with acupuncture needles or electrotherapy applied to the skin)</td>
</tr>
<tr>
<td>a) unsupervised neck range of motion exercises</td>
<td>• Acupuncture (insertion of needle into skin at acupuncture point(s))</td>
</tr>
<tr>
<td>b) manipulation or mobilization</td>
<td>• Botulinum toxin injections</td>
</tr>
<tr>
<td>3. Muscle relaxants</td>
<td>• TENS, EMS, pulsed shortwave diathermy, heat (clinic-based)</td>
</tr>
</tbody>
</table>

Refer to specific recommendation for treatment details (Section 4.1.3)

### Symptoms > 3 months post-collision

Based upon shared decision making between the patient and provider, the following therapeutic interventions are recommended:

<table>
<thead>
<tr>
<th>Home and clinic based interventions:</th>
<th>Do Not Offer:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structured education (advice to stay active), reassurance and one of the following:</td>
<td>• Programs solely of clinic-based supervised high dose strengthening exercises</td>
</tr>
<tr>
<td>1. Supervised combined exercises</td>
<td>• Strain-counterstrain or relaxation massage</td>
</tr>
<tr>
<td>2. Supervised qigong exercises</td>
<td>• Relaxation therapy for pain or disability outcomes</td>
</tr>
<tr>
<td>3. iyengar yoga</td>
<td>• TENS, EMS, pulsed shortwave diathermy, heat (clinic-based)</td>
</tr>
<tr>
<td>4. Multimodal care that includes the combination of (if not previously given in 1° 3 months of care):</td>
<td>• Electroacupuncture (electrical stimulation of acupuncture points with acupuncture needles or electrotherapy applied to the skin)</td>
</tr>
<tr>
<td>a) Neck range of motion exercises</td>
<td>• Non-steroidal anti-inflammatory drugs</td>
</tr>
<tr>
<td>b) Manipulation or mobilization</td>
<td>• Botulinum toxin injections</td>
</tr>
<tr>
<td>5. Clinical massage</td>
<td></td>
</tr>
<tr>
<td>6. Low-level laser therapy</td>
<td></td>
</tr>
<tr>
<td>7. Non-steroidal anti-inflammatory drugs</td>
<td></td>
</tr>
</tbody>
</table>

Refer to specific recommendation for treatment details (Section 4.1.4)

### Outcome:

<table>
<thead>
<tr>
<th>Recovered</th>
<th>Complete recovery → Initiate persistent protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrecovered:</td>
<td>NAD III care pathway</td>
</tr>
</tbody>
</table>

**Development of serious pathology (new or worsening physical, mental or psychological symptoms) → Refer to physician**

### Notes:

- Risk factors for serious pathologies (also known as red flags): Cancer (history of cancer, unexplained weight loss, nocturnal pain, age > 50), vertebral infection (fever, intravenous drug use, recent infection), osteoporotic fractures (history of osteoporosis, use of corticosteroid, older age), traumatic fracture (positive Canadian C-Spine rule), myelopathy – severe/progressive neurological deficits (painful stiff neck, arm pain and weakness, sensory changes in lower extremity, motor weakness and atrophy, hyper-reflexia, spastic gait), carotid/vertebral artery dissection (sudden and intense onset of headache or neck pain), brain haemorrhage/mass lesion (sudden and intense onset of headache), inflammatory arthritis (morning stiffness, swelling in multiple joints)

- This guideline does not include interventions for which there is a lack of evidence of effectiveness

- The ordering of interventions does not reflect superiority of effectiveness

- The evidence indicates that analgesia is the primary therapeutic benefit of the muscle relaxant and NSAID classes of medication. Pain reduction should be apparent during the initial period of usage; in the absence of therapeutic benefit, prolongation of usage is not warranted. There is no evidence of differential efficacy for the various drugs within each class. There is also no evidence that any combination of these medications provides added benefit. There are potentially significant adverse effects associated with use of these classes of medications. Finally, the non-opioid first ‘step’ in the Analgesic Ladder includes NSAIDs, muscle relaxant and acetaminophen (Vargas-Schaffer G. Is the WHO analgesic ladder still valid? Twenty-four years of experience. Vol 56: June 2010 Canadian Family Physician). However, the evidence does not indicate that acetaminophen is an effective analgesic for either NAD or low back pain; therefore, the use of acetaminophen is not recommended.

- Based on evidence of no benefit to patients
Based upon shared decision making by the patient and provider, the following therapeutic interventions are recommended.

**A. Home and clinic based interventions:**

1. Structured education (advice to stay active), reassurance & one of the following:
   - i) Unsupervised neck range of motion exercises
   - ii) Multi-modal care that includes the combination of:
     - a) Manipulation or mobilization
     - b) Unsupervised neck range of motion exercises
     - iii) Muscle relaxants

Refer to specific recommendation for treatment details (Section 4.1.3)

**Do Not Offer:**

1. Structured patient education alone, in verbal or written formats
2. Cervical collar
3. EMS, heat (clin-based)
4. Electropuncture (electrical stimulation of acupuncture points with acupuncture needles or electrotherapy applied to the skin)

**Reassess and Monitor** for the presence of acute stress disorder, post-traumatic stress disorder, kinesiophobia, passive coping, depression, anxiety, anger, frustration and fear

Based upon shared decision making between the patient and provider, the following therapeutic interventions are recommended.

**A. Home and clinic based interventions:**

1. Structured education (advice to stay active), reassurance & one of the following:
   - i) Supervised combined exercises
   - ii) Supervised qigong exercises
   - iii) Iyengar yoga
   - iv) Multimodal care that includes the combination of (if not previously given in 1-3 months of care):
     - a) Neck range of motion exercises
     - b) Manipulation or mobilization
     - c) Clinical massage
     - d) Low-level laser therapy
     - e) Multimodal care that includes the combination of (if not previously given in 1-3 months of care):
       - a) Neck range of motion exercises
       - b) Manipulation or mobilization
       - c) Clinical massage
       - d) Low-level laser therapy
       - e) Non-steroidal anti-inflammatory drugs

Refer to specific recommendation for treatment details (Section 4.1.4)

**Do Not Offer:**

1. Programs solely of clinic-based supervised high dose strengthening exercises
2. Strain-counterstrain or relaxation massage
3. Relaxation therapy for pain or disability outcomes
4. TENS, EMS, pulsed shortwave diathermy, heat (clin-based)
5. Electropuncture (electrical stimulation of acupuncture points with acupuncture needles or electrotherapy applied to the skin)
6. Botulinum toxin injections

**Reassess and Monitor** for the presence of acute stress disorder, post-traumatic stress disorder, kinesiophobia, passive coping, depression, anxiety, anger, frustration and fear

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* Risk factors for serious pathologies (also known as red flags): Cancer (history of cancer), unexplained weight loss, nocturnal pain, age >50, vertebral infection (fever, intravenous drug use, recent infection), osteoporotic fractures (history of osteoporosis, use of corticosteroid, older age), traumatic fracture (positive Canadian C-Spine rule), myelopathy – severe/progressive neurological deficits (painful stiff neck, arm pain and weakness, sensory changes in lower extremity, motor weakness and atrophy, hyper-reflexia, spastic gait), carotid/vertebral artery dissection (sudden and intense onset of headache or neck pain), brain haemorrhage/mass lesion (sudden and intense onset of headache), inflammatory arthritis (morning stiffness, swelling in multiple joints)

* If symptoms progress proceed to NAD III protocol or refer.

* Factors delaying recovery: Prior history of collision-related NAD, older age, high levels of initial pain, post-crash psychological factors (poor recovery expectation, depressed mood, anxiety or fear about pain, kinesiophobia, acute stress disorder symptoms ≤ 4 weeks of the injury), post-traumatic stress disorder (symptoms > 4 weeks), high levels of frustration or anger about pain, passive coping

* This guideline does not include interventions for which there is a lack of evidence of effectiveness

* The ordering of interventions does not reflect superiority of effectiveness

* The evidence indicates that analgesia is the primary therapeutic benefit of the muscle relaxant and NSAID classes of medication. Pain reduction should be apparent during the initial period of usage, in the absence of therapeutic benefit, prolongation of usage is not warranted. There is no evidence of differential efficacy for the various drugs within each class.

* There is also no evidence that any combination of these medications provides added benefit. There are potentially significant adverse effects associated with use of these classes of medications. Finally, the non-opioid ‘first step’ in the Analgesic Ladder includes NSAIDs, muscle relaxant and acetaminophen (Vargas-Schaffer G. Is the WHO analgesic ladder still valid? Twenty-four years of experience. Vol 56: June 2010 Canadian Family Physician). However, the evidence does not indicate that acetaminophen is an effective analgesic for either NAD or low back pain; therefore, the use of acetaminophen is not recommended.

* Based on evidence of no benefit to patients
## Quick Reference Guide – Management of NAD III

### Symptoms ≤ 3 months post-collision

**For all injured persons with NAD III:**
- **Rule out** risk factors for serious pathologies<br>
- **Assess** for factors delaying recovery: prior history of collision-related NAD, older age, high levels of initial pain, post-crash psychological factors [poor recovery expectation, depressed mood, anxiety or fear about pain, kinesiophobia, acute stress disorder (symptoms ≤ 4 weeks from injury), post-traumatic stress disorder (symptoms > 4 weeks), high levels of frustration or anger about pain, passive coping]
- **Offer** information on nature, management, course of NAD as a framework for initiation of a program of care
- **Conduct** ongoing assessment for symptom improvement or worsening/progress during intervention period and refer accordingly
- **Reassess and Monitor** the presence of acute stress disorder, post-traumatic stress disorder, kinesiophobia, passive coping, depression, anxiety, anger, frustration and fear
- **Discharge** injured person as appropriate at any point during intervention and recovery

**Based upon shared decision making between the patient and provider,** the following therapeutic interventions are recommended:

1. Structured education, reassurance
2. Supervised graded neck strengthening exercise

**Refer to specific recommendation for treatment details (Section 4.2.3)**

**Do Not Offer:**
- Cervical collar
- Structured patient education alone, in either verbal or written formats
- Low level laser therapy
- Intermittent traction

**Outcome:**
- **Recovered** → Discharge
- **Improvement (neurological signs no longer present)** → Refer to NAD I/II care pathway
- **Incomplete recovery** → Refer to physician
- **Major symptom change or development of serious pathology (new or worsening physical, mental or psychological symptoms)** → Refer to physician

### Symptoms > 3 months post-collision

**Refer to medical physician for consideration of further investigation of the neurological deficits**

* No admissible evidence of effective management of persistent NAD III

**Do Not Offer:**
- Cervical collar

**Outcome:**
- **Recovered** → Discharge
- **Improvement (neurological signs no longer present)** → Refer to NAD I/II care pathway
- **Incomplete recovery** → Refer to physician
- **Major symptom change or development of serious pathology (new or worsening physical, mental or psychological symptoms)** → Refer to physician

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*a Risk factors for serious pathologies (also known as red flags): Cancer (history of cancer, unexplained weight loss, nocturnal pain, age >50), vertebral infection (fever, intravenous drug use, recent infection), osteoporotic fractures (history of osteoporosis, use of corticosteroid, older age), traumatic fracture (positive Canadian C-Spine rule), myelopathy – severe/progressive neurological deficits (painful stiff neck, arm pain and weakness, sensory changes in lower extremity, motor weakness and atrophy, hyper-reflexia, spastic gait), carotid/vertebral artery dissection (sudden and intense onset of headache or neck pain), brain haemorrhage/mass lesion (sudden and intense onset of headache), inflammatory arthritis (morning stiffness, swelling in multiple joints)*

*b This guideline does not include interventions for which there is a lack of evidence of effectiveness

*c The ordering of interventions does not reflect superiority of effectiveness

*d Based on evidence of no benefit to patients*
Persons injured in a traffic collision with neck pain

Conduct an appropriate clinical evaluation

Risk factors for serious pathologies or NAD IV? Yes

Refer to physician

NAD III

Yes

NAD I or II

Go to care pathway for the management of NAD I/II

No

Poor prognostic factors?

Yes

Address modifiable prognostic factors

No

Offer information on nature, management, course of NAD III as a framework for initiation of a program of care.

Are symptoms ≤ 3 months?

Yes

1) Refer to medical physician for consideration of further investigation of the neurological deficits

Do not offer:

1) Cervical collar

No

Symptoms are > 3 months.

Yes

Refer to physician

No

Reassess and Monitor for the presence of acute stress disorder, post-traumatic stress disorder, kinesiophobia, passive coping, depression, anxiety, anger, frustration and fear

Reassess and Monitor for the presence of acute stress disorder, post-traumatic stress disorder, kinesiophobia, passive coping, depression, anxiety, anger, frustration and fear

Is injured person recovered?

Yes

Discharge

Are there neurological signs, major symptom change or development of serious pathology?

Yes

Refer to NAD I/II care pathway

No

Refer to medical physician for consideration of further investigation of the neurological deficits

Do not offer:

1) Cervical collar

Based upon shared decision making between the patient and provider, the following therapeutic interventions are recommended:

1) Structured education, reassurance
2) Supervised graded neck strengthening exercise

Refer to specific recommendation for treatment details (Section 4.2.3)

Do not offer:

1) Structured patient education alone, in either verbal or written formats
2) Low level laser therapy
3) Intermittent traction
4) Cervical collar

Assess for factors delaying recovery: prior history of collision-related NAD, older age, high levels of initial pain, post-crash psychological factors [poor recovery expectation, depressed mood, anxiety or fear about pain, kinesiophobia, acute stress disorder (symptoms ≤ 4 weeks from injury), post-traumatic stress disorder (symptoms > 4 weeks), high levels of frustration or anger about pain, passive coping]

This guideline does not indicate interventions for which there is a lack of evidence of effectiveness.

The ordering of interventions does not reflect superiority of effectiveness

1) Refer to medical physician for consideration of further investigation of the neurological deficits

Do not offer:

1) Cervical collar

Risk factors for serious pathologies (also known as red flags): Cancer (history of cancer, unexplained weight loss, nocturnal pain, age >50), vertebral infection (fever, intravenous drug use, recent infection), osteoporotic fractures (history of osteoporosis, use of corticosteroid, older age), traumatic fracture (positive Canadian C-Spine rule), myelopathy – severe/progressive neurological deficits (painful stiff neck, arm pain and weakness, sensory changes in lower extremity, motor weakness and atrophy, hyper-reflexia, spastic gait), carotid/vertebral artery dissection (sudden and intense onset of headache or neck pain), brain haemorrhage/mass lesion (sudden and intense onset of headache), inflammatory arthritis (morning stiffness, swelling in multiple joints)

Conduct ongoing assessment for improvement or worsening/progress of symptoms during intervention and refer accordingly.

* Based on evidence of no benefit to patients

† Based on evidence of evidence of effectiveness

‡ This guideline does not indicate interventions for which there is a lack of evidence of effectiveness

§ The ordering of interventions does not reflect superiority of effectiveness

¶ Risk factors for serious pathologies (also known as red flags): Cancer (history of cancer, unexplained weight loss, nocturnal pain, age >50), vertebral infection (fever, intravenous drug use, recent infection), osteoporotic fractures (history of osteoporosis, use of corticosteroid, older age), traumatic fracture (positive Canadian C-Spine rule), myelopathy – severe/progressive neurological deficits (painful stiff neck, arm pain and weakness, sensory changes in lower extremity, motor weakness and atrophy, hyper-reflexia, spastic gait), carotid/vertebral artery dissection (sudden and intense onset of headache or neck pain), brain haemorrhage/mass lesion (sudden and intense onset of headache), inflammatory arthritis (morning stiffness, swelling in multiple joints)
Care Pathway for the Management of Headaches

1. Persons injured in a traffic collision with headaches
   → Conduct an appropriate clinical evaluation

2. Risk factors for serious pathologies?*
   > Yes → Refer to physician
   > No → Go to Box 18

3. Are symptoms ≤ 3 months?
   > Yes → Accompanied by NAD?
   > No → NAD I or NAD II?
   > Yes → Refer to Care Pathway for Management of NAD Grade I, II
   > No → Refer to Care Pathway for Management of NAD Grade III

4. Is this cervicogenic headache?
   > Yes → Refer to Care Pathway for the Management of Cervicogenic Headache
   > No → Refer to Care Pathway for Management of Episodic Tension-type Headache

5. Is this episodic tension-type headache?
   > Yes → Refer to Care Pathway for the Management of Chronic Tension-type Headache
   > No → Headache is of another classification

6. Is this chronic tension type headache?
   > Yes → Refer to appropriate health care provider

* Risk factors for serious pathologies (also known as red flags): worsening headache with fever; sudden-onset headache (thunderclap) reaching maximum intensity within 5 minutes; new-onset neurological deficit; new-onset cognitive dysfunction; change in personality; impaired level of consciousness; recent (typically within the past 3 months) head trauma; headache triggered by cough, valsalva maneuver (trying to breathe out with nose and mouth blocked) or sneeze; headache triggered by exercise; headache that changes with posture; symptoms suggestive of giant cell arteritis; symptoms and signs of acute narrow-angle glaucoma; a substantial change in the characteristics of the patient's headache; new onset or change in headache in patients who are aged over 50; headache waking the patient up (migraine is the most frequent cause of morning headache); patients with risk factors for cerebral venous sinus thrombosis; jaw claudication or visual disturbance; neck stiffness; new onset headache in patients with a history of human immunodeficiency virus (HIV) infection; new onset headache in patients with a history of cancer.
**Quick Reference Guide – Management of Episodic Tension-type Headaches**

**Symptoms > 3 months post-collision**

<table>
<thead>
<tr>
<th>For all injured persons with episodic tension-type headaches, after ruling out risk factors of serious pathologies:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offer</td>
</tr>
<tr>
<td>Conduct</td>
</tr>
<tr>
<td>Reassess and Monitor</td>
</tr>
<tr>
<td>Discharge</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Based upon shared decision making between the patient and provider, the following therapeutic intervention is recommended:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Home and clinic-based interventions:</strong></td>
</tr>
<tr>
<td>1. Low load endurance craniocervical and cervicoscapular exercises</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Refer to specific recommendation for treatment details (Section 5.2.2)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Do Not Offer:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Manipulation of the cervical spine</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcome:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recovered → Discharge</td>
</tr>
<tr>
<td>Unrecovered/Incomplete recovery or major symptom change (new or worsening physical, mental or psychological symptoms) → Refer to physician</td>
</tr>
</tbody>
</table>

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* Risk factors for serious pathologies (also known as red flags): worsening headache with fever; sudden-onset headache (thunderclap) reaching maximum intensity within 5 minutes; new-onset neurological deficit; new-onset cognitive dysfunction; change in personality; impaired level of consciousness; recent (typically within the past 3 months) head trauma; headache triggered by cough, valsalva maneuver (trying to breathe out with nose and mouth blocked) or sneeze; headache triggered by exercise; headache that changes with posture; symptoms suggestive of giant cell arteritis; symptoms and signs of acute narrow-angle glaucoma; a substantial change in the characteristics of the patient’s headache; new onset or change in headache in patients who are aged over 50; headache wakening the patient up (migraine is the most frequent cause of morning headache); patients with risk factors for cerebral venous sinus thrombosis; jaw claudication or visual disturbance; neck stiffness; new onset headache in patients with a history of human immunodeficiency virus (HIV) infection; new onset headache in patients with a history of cancer |

**This guideline does not include interventions for which there is a lack of evidence of effectiveness**

**The ordering of interventions does not reflect superiority of effectiveness**

**Based on evidence of no benefit to patients**
Persons injured in a traffic collision with headaches

Conduct an appropriate clinical evaluation

Risk factors for serious pathologies?**

Offer information on nature, management, course of episodic tension-type headaches as a framework for initiation of a program of care.

Is treatment required?

Based upon shared decision making between the patient and provider, the following therapeutic intervention is recommended:**

A. Home and clinic-based interventions:
1) Low load endurance craniocervical and cervicoscapular exercises.

Do not offer:**
1) Manipulation of the cervical spine

Refer to specific recommendation for treatment details (Section 5.2.2)

Is injured person recovered?

1) Incomplete recovery: refer to physician
2) Major symptom change (new or worsening physical, mental or psychological symptoms): proceed to appropriate flowchart or refer to physician

* Risk factors for serious pathologies (also known as red flags): worsening headache with fever; sudden-onset headache (thunderclap) reaching maximum intensity within 5 minutes; new-onset neurological deficit; new-onset cognitive dysfunction; change in personality; impaired level of consciousness; recent (typically within the past 3 months) head trauma; headache triggered by cough, valsalva Maneuver (trying to breathe out with nose and mouth blocked) or sneeze; headache triggered by exercise; headache that changes with posture; symptoms suggestive of giant cell arteritis; symptoms and signs of acute narrow-angle glaucoma; a substantial change in the characteristics of the patient’s headache; new onset or change in headache in patients who are aged over 50; headache waking the patient up (migraine is the most frequent cause of morning headache); patients with risk factors for cerebral venous sinus thrombosis; jaw claudication or visual disturbance; neck stiffness; new onset headache in patients with a history of human immunodeficiency virus (HIV) infection; new onset headache in patients with a history of cancer

** This guideline does not include interventions for which there is a lack of evidence of effectiveness

*** The ordering of interventions does not reflect superiority of effectiveness

**** Based on evidence of no benefit to patients
Quick Reference Guide – Management of Chronic Tension-type Headaches

Symptoms > 3 months post-collision

For all injured persons with chronic tension-type headaches, after ruling out risk factors of serious pathologies:\(^a\):
Offer information on nature, management, course of chronic tension-type headaches as a framework for initiation of a program of care
Conduct ongoing assessment for symptom improvement or worsening/progress during intervention and refer accordingly
Reassess and Monitor the presence of acute stress disorder, post-traumatic stress disorder, kinesiophobia, passive coping, depression, anxiety, anger, frustration and fear
Discharge injured person as appropriate at any point during intervention and recovery

Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:\(^b,c\)

Home and clinic-based interventions:
  1. General exercise (warm-up, neck and shoulder stretching and strengthening, aerobic exercises);
  2. Low load endurance craniocervical and cervicoscapular exercises;
  3. Multimodal care that includes the combination of spinal mobilization, craniocervical exercises, and postural correction

Refer to specific recommendation for treatment details (Section 5.2.4)

Outcome:
Recovered → Discharge
Unrecovered/Incomplete recovery or major symptom change (new condition or worsening physical, mental or psychological symptoms) → Refer to physician

\(^a\) Risk factors for serious pathologies (also known as red flags): worsening headache with fever; sudden-onset headache (thunderclap) reaching maximum intensity within 5 minutes; new-onset neurological deficit; new-onset cognitive dysfunction; change in personality; impaired level of consciousness; recent (typically within the past 3 months) head trauma; headache triggered by cough, valsalva maneuver (trying to breathe out with nose and mouth blocked) or sneeze; headache triggered by exercise; headache that changes with posture; symptoms suggestive of giant cell arteritis; symptoms and signs of acute narrow-angle glaucoma; a substantial change in the characteristics of the patient’s headache; new onset or change in headache in patients who are aged over 50; headache wakening the patient up (migraine is the most frequent cause of morning headache); patients with risk factors for cerebral venous sinus thrombosis; jaw claudication or visual disturbance; neck stiffness; new onset headache in patients with a history of human immunodeficiency virus (HIV) infection; new onset headache in patients with a history of cancer

\(^b\) This guideline does not include interventions for which there is a lack of evidence of effectiveness

\(^c\) The ordering of interventions does not reflect superiority of effectiveness
Care Pathway for the Management of Chronic Tension-type Headaches

1. Persons injured in a traffic collision with headaches

2. Conduct an appropriate clinical evaluation

3. Risk factors for serious pathologies?* Yes → Refer to physician

4. Offer information on nature, management, course of chronic tension-type headaches as a framework for initiation of a program of care.

5. Is treatment required?

6. Discharge

Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:*\( ^{b,c} \)

A. Home and clinic-based interventions:
1. General exercise (warm-up, neck and shoulder stretching and strengthening, aerobic exercises)
2. Low load endurance cranio-cervical and cervico-scapular exercises;
3. Multimodal care that includes the combination of spinal mobilization, cranio-cervical exercises, and postural correction

Refer to specific recommendation for treatment details (Section 5.2.4)

7. Is injured person recovered?

8. Discharge

9. 1) Incomplete recovery: refer to physician

10. 2) Major symptom change (new or worsening physical, mental or psychological symptoms): proceed to appropriate flowchart or refer to physician

* Risk factors for serious pathologies (also known as red flags): worsening headache with fever; sudden-onset headache (thunderclap) reaching maximum intensity within 5 minutes; new-onset neurological deficit; new-onset cognitive dysfunction; change in personality; impaired level of consciousness; recent (typically within the past 3 months) head trauma; headache triggered by cough, valsalva Maneuver (trying to breathe out with nose and mouth blocked) or sneeze; headache triggered by exercise; headache that changes with posture; symptoms suggestive of giant cell arteritis; symptoms and signs of acute narrow-angle glaucoma; a substantial change in the characteristics of the patient’s headache; new onset or change in headache in patients who are aged over 50; headache waking the patient up (migraine is the most frequent cause of morning headache); patients with risk factors for cerebral venous sinus thrombosis; jaw claudication or visual disturbance; neck stiffness; new onset headache in patients with a history of human immunodeficiency virus (HIV) infection; new onset headache in patients with a history of cancer

* This guideline does not include interventions for which there is a lack of evidence of effectiveness

* The ordering of interventions does not reflect superiority of effectiveness
Quick Reference Guide – Management of Cervicogenic Headaches

Symptoms > 3 months post-collision

For all injured persons with cervicogenic headaches, after ruling out risk factors of serious pathologies:\footnote{a}

Offer information on nature, management, course of cervicogenic headaches as a framework for initiation of a program of care

Conduct ongoing assessment for symptom improvement or worsening/progress during intervention and refer accordingly

Reassess and Monitor the presence of acute stress disorder, post-traumatic stress disorder, kinesiophobia, passive coping, depression, anxiety, anger, frustration and fear

Discharge injured person as appropriate at any point during intervention and recovery

Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:\footnote{b,c}

Home and clinic-based interventions\footnote{b,c}:

1. Low load endurance craniocervical and cervicoscapular exercises;
2. Manual therapy (manipulation with or without mobilization) to the cervical and thoracic spine

Refer to specific recommendation for treatment details (Section 5.2.6)

Do Not Offer:\footnote{d}

- Multimodal program of care that includes the combination of spinal manipulation, spinal mobilization, and low load endurance exercises

Outcome:

Recovered → Discharge

Unrecovered/Incomplete recovery or major symptom change (new condition or worsening physical, mental or psychological symptoms) → Refer to physician

\footnote{a} Risk factors for serious pathologies (also known as red flags): worsening headache with fever; sudden-onset headache (thunderclap) reaching maximum intensity within 5 minutes; new-onset neurological deficit; new-onset cognitive dysfunction; change in personality; impaired level of consciousness; recent (typically within the past 3 months) head trauma; headache triggered by cough, valsalva maneuver (trying to breathe out with nose and mouth blocked) or sneeze; headache triggered by exercise; headache that changes with posture; symptoms suggestive of giant cell arteritis; symptoms and signs of acute narrow-angle glaucoma; a substantial change in the characteristics of the patient’s headache; new onset or change in headache in patients who are aged over 50; headache wakening the patient up (migraine is the most frequent cause of morning headache); patients with risk factors for cerebral venous sinus thrombosis; jaw claudication or visual disturbance; neck stiffness; new onset headache in patients with a history of human immunodeficiency virus (HIV) infection; new onset headache in patients with a history of cancer

\footnote{b} This guideline does not include interventions for which there is a lack of evidence of effectiveness

\footnote{c} The ordering of interventions does not reflect superiority of effectiveness

\footnote{d} Based on evidence of no benefit to patients
Care Pathway for the Management of Cervicogenic Headaches

1. Persons injured in a traffic collision with headaches

2. Conduct an appropriate clinical evaluation

3. Risk factors for serious pathologies? Yes → Refer to physician
   No → Offer information on nature, management, course of cervicogenic headaches as a framework for initiation of a program of care.

4. Is treatment required?
   Yes → Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:

A. Home and clinic-based interventions:
   1) Low load endurance craniocervical and cervicoscapular exercises;
   2) Manual therapy (manipulation with or without mobilization) to the cervical and thoracic spine

Do not offer:
   1) Multimodal program of care that includes the combination of spinal manipulation, spinal mobilization, and low load endurance exercises

Refer to specific recommendation for treatment details (Section 5.2.6)

5. Is injured person recovered?
   Yes → Discharge
   No → 1) Incomplete recovery: refer to physician

6. Is treatment required?
   No → Discharge

7. Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:

   A. Home and clinic-based interventions:
      1) Low load endurance craniocervical and cervicoscapular exercises;
      2) Manual therapy (manipulation with or without mobilization) to the cervical and thoracic spine

Do not offer:
   1) Multimodal program of care that includes the combination of spinal manipulation, spinal mobilization, and low load endurance exercises

Refer to specific recommendation for treatment details (Section 5.2.6)

8. Is injured person recovered?
   Yes → Discharge
   No → 1) Incomplete recovery: refer to physician

9. Is treatment required?
   No → Discharge

10. Is injured person recovered?

11. Incomplete recovery: refer to physician

* Risk factors for serious pathologies (also known as red flags): worsening headache with fever; sudden-onset headache (thunderclap) reaching maximum intensity within 5 minutes; new-onset neurological deficit; new-onset cognitive dysfunction; change in personality; impaired level of consciousness; recent (typically within the past 3 months) head trauma; headache triggered by cough, valsalva maneuver (trying to breathe out with nose and mouth blocked) or sneeze; headache triggered by exercise; headache changes with posture; symptoms suggestive of giant cell arteritis; symptoms and signs of acute narrow-angle glaucoma; a substantial change in the characteristics of the patient’s headache; new onset or change in headache in patients who are aged over 50; headache waking the patient up (migraine is the most frequent cause of morning headache); patients with risk factors for cerebral venous sinus thrombosis; jaw claudication or visual disturbance; neck stiffness; new onset headache in patients with a history of human immunodeficiency virus (HIV) infection; new onset headache in patients with a history of cancer

** This guideline does not include interventions for which there is a lack of evidence of effectiveness

† The ordering of interventions does not reflect superiority of effectiveness

‡ Based on evidence of no benefit to patients
# Quick Reference Guide – Management of Epicondylitis

## Symptoms ≤ 3 months post-collision

For all injured persons with epicondylitis:
- **Rule out** risk factors for serious pathologies
- **Offer** information on nature, management, course of epicondylitis as a framework for initiation of a program of care
- **Conduct** ongoing assessment for symptom improvement or worsening/progress during intervention and refer accordingly
- **Discharge** injured person as appropriate at any point during intervention and recovery

### Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:

#### Home and clinic based interventions:
1. Elbow brace (lateral epicondylitis)
2. Multimodal care that includes the combination of:
   - a) Elbow manipulation or mobilization
   - b) Deep tissue massage
   - c) Forearm strengthening and stretching exercise
   - d) Advice to stay active, and ergonomic and activity modification to avoid symptom provocation

Refer to specific recommendation for treatment details (Section 6.1.3)

### Do Not Offer:
- Transcutaneous electrical nerve stimulation (TENS)
- Elbow brace added to multimodal physical therapy (lateral epicondylitis)

### Outcome:
- **Recovered** → Discharge
- **Unrecovered:** Incomplete recovery → Initiate persistent protocol
  - Major symptom change (new or worsening physical, mental or psychological symptoms) → Refer to physician

---

## Symptoms > 3 months post-collision

### Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:

#### Home and clinic based interventions:
1. Muscle energy technique massage
2. Myofascial release
3. Elbow brace (lateral epicondylitis)
4. Home-based strengthening and/or stretching exercise
5. Multimodal care that includes the combination of (if not previously given in 1st 3 months of care):
   - a) Elbow manipulation or mobilization
   - b) Deep tissue massage
   - c) Forearm strengthening and stretching exercise
   - d) Advice to stay active, and ergonomic and activity modification to avoid symptom provocation

Refer to specific recommendation for treatment details (Section 6.1.4)

### Do Not Offer:
- Transcutaneous electrical nerve stimulation (TENS)
- Elbow brace to multimodal physical therapy (lateral epicondylitis)

### Outcome:
- **Recovered** → Discharge
- **Unrecovered:** Incomplete recovery → Refer to physician
  - Major symptom change (new or worsening physical, mental or psychological symptoms) → Refer to physician

---

* Risk factors for serious pathologies (also known as red flags): History of significant trauma; history of inflammatory arthritis; history of unexplained, significant weight loss; fever; painful, swollen joints; progressive/widespread neurological symptoms/signs; severe, unremitting, night-time pain; widespread, unexplained pain; unremitting pain when at rest
* For medial epicondylitis special caution should be exercised to protect the ulnar nerve
* This guideline does not include interventions for which there is a lack of evidence of effectiveness
* The ordering of interventions does not reflect superiority of effectiveness
* Based on evidence of no benefit to patients
Care Pathway for the Management of Epicondylitis

1. Persons injured in a traffic collision with epicondylitis

2. Conduct an appropriate clinical evaluation

3. Risk factors for serious pathologies?
   - Yes → Refer to physician
   - No

4. Other injuries?
   - Yes → Go to appropriate clinical care pathways and co-manage
   - No

5. Offer information on nature, management, course of epicondylitis as a framework for initiation of a program of care.

6. Is treatment required?
   - No → Discharge
   - Yes

7. Are symptoms ≤ 3 months?
   - Yes
     - Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended: b, c, d
     - Home and clinic-based interventions:
       1) Elbow brace (lateral epicondylitis)
       2) Multimodal care that includes the combination of:
          a) Elbow manipulation or mobilization
          b) Deep tissue massage
          c) Forearm strengthening and stretching exercise
          d) Advice to stay active, and ergonomic and activity modification to avoid symptom provocation
     - Do not offer:
       1) Transcutaneous electrical nerve stimulation (TENS)
       2) Elbow brace added to multimodal physical therapy (lateral epicondylitis)
     - Refer to specific recommendation for treatment details (Section 6.1.3)
   - No → Symptoms are > 3 months.

8. Is injured person recovered after 3 months?
   - Yes
     - Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended: b, c, d
     - Home and clinic-based interventions:
       1) Muscle energy technique
       2) Myofascial release
       3) Elbow brace (lateral epicondylitis)
       4) Home-based stretching and/or stretching exercise
       5) Multimodal care that includes the combination of (if not previously given in 1st 3 months of care):
          a) Elbow manipulation or mobilization
          b) Deep tissue massage
          c) Forearm strengthening and stretching exercise
          d) Advice to stay active, and ergonomic and activity modification to avoid symptom provocation
     - Do not offer:
       1) Transcutaneous electrical nerve stimulation (TENS)
       2) Elbow brace added to multimodal physical therapy (lateral epicondylitis)
     - Refer to specific recommendation for treatment details (Section 6.1.4)
   - No → Refer to physician

9. Discharge

10. Is injured person recovered?
    - Yes
    - Incomplete recovery: refer to physician
    - Major symptom change (new or worsening physical, mental or psychological symptoms): refer to physician
    - Refer to specific recommendation for treatment details (Section 6.1.1)
    - No → Is injured person recovered after 3 months?

11. Symptoms are > 3 months.

12. Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended: b, c, d

13. Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended: b, c, d

14. Is injured person recovered after 3 months?
   - Yes
   - Incomplete recovery: initiate persistent protocol (Box 13)
   - Major symptom change (new or worsening physical, mental or psychological symptoms): refer to physician
   - Refer to specific recommendation for treatment details (Section 6.1.1)
   - No

15. Discharge

16. Is injured person recovered?
   - Yes
   - Incomplete recovery: refer to physician
   - Major symptom change (new or worsening physical, mental or psychological symptoms): refer to physician
   - Refer to specific recommendation for treatment details (Section 6.1.1)
   - No

17. Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended: b, c, d

18. Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended: b, c, d

---

*Risk factors for serious pathologies (also known as red flags): History of significant traumas; history of inflammatory arthritis; history of unexplained significant weight loss; fever, painful, swollen joints; progressive/widespread neurological symptoms/signs; severe, unremitting, night-time pain; widespread, unexplained pain; unremitting pain when at rest

*For medial epicondylitis, special caution should be exercised to protect the ulnar nerve

*This guideline does not include interventions for which there is a lack of evidence of effectiveness

*The ordering of interventions does not reflect superiority of effectiveness

*Based on evidence of no benefit to patients
# Quick Reference Guide – Management of Shoulder Pain

## Symptoms ≤ 3 months post-collision

For all injured persons with shoulder pain:
- **Rule out** risk factors for serious pathologies\(^a\)
- **Offer** information on nature, management, course of shoulder pain as a framework for initiation of a program of care
- **Conduct** ongoing assessment for symptom improvement or progression during intervention and refer accordingly
- **Discharge** injured person as appropriate at any point during intervention and recovery

Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:

### Home and clinic based interventions:\(^{b,c}\)
1. Low-level laser therapy for short-term pain reduction
2. Spinal manipulation and mobilization as an adjunct to usual care for shoulder pain with associated pain or restricted movement of the cervico-thoracic spine
3. Multimodal care that includes the combination of:
   - Heat/Cold
   - Joint mobilization
   - Range of motion exercise

Refer to specific recommendation for treatment details (Section 6.2.3)

### Do Not Offer:\(^d\)
- Diacutaneous fibrolysis
- Ultrasound
- Interferential current therapy

### Outcome:
- **Recovered** → Discharge
- **Unrecovered:** Incomplete recovery → Initiate persistent protocol
- Major symptom change (new or worsening physical, mental or psychological symptoms) → Refer to physician

---

## Symptoms > 3 months post-collision

Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:

### Home and clinic based interventions:\(^{b,c}\)
1. Low-level laser therapy for short-term pain reduction
2. Strengthening and stretching exercises
3. Usual GP care (information, recommendation, and pain contingent medical or pharmaceutical therapy)
4. Spinal manipulation and mobilization as an adjunct to usual care for shoulder pain with associated pain or restricted movement of the cervico-thoracic spine
5. Supervised combined strengthening and stretching exercises
6. Multimodal care that includes the combination of (if not previously given in 1st 3 months of care):
   - Heat/Cold
   - Joint mobilization
   - Range of motion exercise

Refer to specific recommendation for treatment details (Section 6.2.4)

### Do Not Offer:\(^d\)
- Diacutaneous fibrolysis
- Shock-wave therapy
- Cervical mobilizations
- Multimodal care that includes the combination of exercise, mobilization, taping, psychological interventions and massage
- Ultrasound
- Interferential current therapy

### Outcome:
- **Recovered** → Discharge
- **Unrecovered:** Incomplete recovery → Refer to physician
- Major symptom change (new or worsening physical, mental or psychological symptoms) → Refer to physician

---

\(^a\) Risk factors for serious pathologies (also known as red flags): Unexplained deformity or swelling or erythema of the skin; significant weakness not due to pain; past history of malignancy; suspected malignancy (e.g., weight loss or loss of appetite); fever/chills/malaise; significant unexplained sensory/motor deficits; pulmonary or vascular compromise; inability to perform any movements; pain at rest

\(^b\) This guideline does not include interventions for which there is a lack of evidence of effectiveness

\(^c\) The ordering of interventions does not reflect superiority of effectiveness

\(^d\) Based on evidence of no benefit to patients
Care Pathway for the Management of Shoulder Pain

1. Persons injured in a traffic collision with shoulder pain
   - Conduct an appropriate clinical evaluation
   - Risk factors for serious pathologies?
     - Yes
       - Refer to physician
     - No
       - Other injuries?
         - Yes
           - Go to appropriate clinical care pathways and co-manage
         - No
           - Offer information on nature, management, course of shoulder pain as a framework for initiation of a program of care.
   - Is treatment required?
     - Yes
       - Are symptoms ≤ 3 months?
         - No
           - Symptoms are > 3 months.
             - Based on shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:
               - Home and clinic based interventions:
                 1. Low-level laser therapy for short-term pain reduction
                 2. Spinal manipulation and mobilization as an adjunct to usual care for shoulder pain with associated pain or restricted movement of the cervico-thoracic spine
                 3. Multimodal care that includes the combination of:
                    a) Heat/Cold
                    b) Joint mobilization
                    c) Range of motion exercise
               - Do not offer:
                 1) Diacutaneous fibrolysis
                 2) Ultrasound
                 3) Interferential current therapy
               - Refer to specific recommendation for treatment details (Section 6.2.3)
             - Based on shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:
               - Home and clinic based interventions:
                 1. Low-level laser therapy for short-term pain reduction
                 2. Strengthening and stretching exercises
                 3. Usual GP care (information, recommendation, and pain contingent medical or pharmaceutical therapy)
                 4. Spinal manipulation and mobilization as an adjacent to usual care for shoulder pain with associated pain or restricted movement of the cervico-thoracic spine
                 5. Supervised combined strengthening and stretching exercises
                 6. Multimodal care that includes the combination of:
                    a) Heat/Cold
                    b) Joint mobilization
                    c) Range of motion exercise
               - Do not offer:
                 1) Diacutaneous fibrolysis
                 2) Shock-wave therapy
                 3) Cervical mobilizations
                 4) Multimodal care that includes the combination of exercise, mobilization, taping, psychological interventions and massage
                 5) Ultrasound
                 6) Interferential current therapy
               - Refer to specific recommendation for treatment details (Section 6.2.4)
     - No
       - Symptoms are ≤ 3 months?
         - Yes
           - Based on shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:
             - Home and clinic based interventions:
               1) Low-level laser therapy for short-term pain reduction
               2) Spinal manipulation and mobilization as an adjunct to usual care for shoulder pain with associated pain or restricted movement of the cervico-thoracic spine
               3) Multimodal care that includes the combination of:
                  a) Heat/Cold
                  b) Joint mobilization
                  c) Range of motion exercise
             - Do not offer:
               1) Diacutaneous fibrolysis
               2) Ultrasound
               3) Interferential current therapy
               - Refer to specific recommendation for treatment details (Section 6.2.3)
         - No
           - Based on shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:
             - Home and clinic based interventions:
               1. Low-level laser therapy for short-term pain reduction
               2. Strengthening and stretching exercises
               3. Usual GP care (information, recommendation, and pain contingent medical or pharmaceutical therapy)
               4. Spinal manipulation and mobilization as an adjacent to usual care for shoulder pain with associated pain or restricted movement of the cervico-thoracic spine
               5. Supervised combined strengthening and stretching exercises
               6. Multimodal care that includes the combination of:
                  a) Heat/Cold
                  b) Joint mobilization
                  c) Range of motion exercise
               - Do not offer:
                 1) Diacutaneous fibrolysis
                 2) Shock-wave therapy
                 3) Cervical mobilizations
                 4) Multimodal care that includes the combination of exercise, mobilization, taping, psychological interventions and massage
                 5) Ultrasound
                 6) Interferential current therapy
               - Refer to specific recommendation for treatment details (Section 6.2.4)
         - Is injured person recovered after 3 months?
           - Yes
             - Discharge
           - No
             - Refer to specific recommendation for treatment details (Section 6.2.3)
         - Is injured person recovered?
           - Yes
             - Discharge
           - No
             - Refer to specific recommendation for treatment details (Section 6.2.4)

4 Risk factors for serious pathologies (also known as red flags): Unexplained deformity or swelling or erythema of the skin; significant weakness not due to pain; past history of malignancy; suspected malignancy (e.g., weight loss or loss of appetite); fever/chills/malaise; significant unexplained sensory/motor deficits; pulmonary or vascular compromise; inability to perform any movements; pain at rest

4 This guideline does not include interventions for which there is a lack of evidence of effectiveness

4 The ordering of interventions does not reflect superiority of effectiveness

4 Based on evidence of no benefit to patients
**Management of Calcific Tendinitis**

For all injured persons with shoulder pain with calcific tendinitis:
- Rule out risk factors for serious pathologies
- Offer information on nature, management, course of shoulder pain with calcific tendinitis as a framework for initiation of a program of care
- Conduct ongoing assessment for symptom improvement or progression during intervention and refer accordingly
- Discharge injured person as appropriate at any point during intervention and recovery

Based upon shared decision making between the patient and provider, the following therapeutic intervention is recommended:

1. Shock-wave therapy with an amplitude ranging from 0.08mJ/mm²-0.6mJ/mm²

Refer to specific recommendation for treatment details (Section 6.3.2)

<table>
<thead>
<tr>
<th>Outcome:</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Recovered</td>
<td>Discharge</td>
</tr>
<tr>
<td>Unrecovered:</td>
<td>Incomplete recovery → Refer to physician</td>
</tr>
<tr>
<td></td>
<td>Major symptom change (new or worsening physical, mental or psychological symptoms) → Refer to physician</td>
</tr>
</tbody>
</table>

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a Risk factors for serious pathologies (also known as red flags): Unexplained deformity or swelling or erythema of the skin; significant weakness not due to pain; past history of malignancy; suspected malignancy (e.g., weight loss or loss of appetite); fever/chills/malaise; significant unexplained sensory/motor deficits; pulmonary or vascular compromise; inability to perform any movements; pain at rest

b This guideline does not include interventions for which there is a lack of evidence of effectiveness
Persons injured in a traffic collision with shoulder pain with calcific tendinitis

Conduct an appropriate clinical evaluation

Risk factors for serious pathologies? Yes

Refer to physician

No

Other injuries? Yes

Go to appropriate clinical care pathways and co-manage

No

Offer information on nature, management, course of shoulder pain with calcific tendinitis as a framework for initiation of a program of care.

Is treatment required? Yes

Discharge

No

Based on shared decision making between the patient and provider, the following therapeutic intervention is recommended:

1) Shock-wave therapy with an amplitude ranging from 0.08 mJ/mm² to 0.6 mJ/mm²

Refer to specific recommendation for treatment details (Section 6.3.2)

Is injured person recovered? Yes

Discharge

No

1) Incomplete recovery: refer to physician

2) Major symptom change (new or worsening physical, mental or psychological symptoms): proceed to appropriate flowchart or refer to physician

Risk factors for serious pathologies (also known as red flags): Unexplained deformity or swelling or erythema of the skin; significant weakness not due to pain; past history of malignancy; suspected malignancy (e.g., weight loss or loss of appetite); fever/chills/malaise; significant unexplained sensory/motor deficits; pulmonary or vascular compromise; inability to perform any movements; pain at rest

This guideline does not include interventions for which there is a lack of evidence of effectiveness
# Quick Reference Guide – Management of Patellofemoral Pain

## Symptoms ≤ 3 months post-collision

**For all injured persons with patellofemoral pain:**
- **Rule out** risk factors for serious pathologies⁴
- **Offer** information on nature, management, course of collision-related patellofemoral pain as a framework for initiation of a program of care
- **Conduct** ongoing assessment for symptom improvement or progression during intervention and refer accordingly
- **Discharge** injured person as appropriate at any point during intervention and recovery

1. Monitor and reassure

Refer to specific recommendation for treatment details (Section 7.1.3)

**Outcome:**
- **Recovered** → Discharge
- **Unrecovered:**
  - Incomplete recovery → Initiate persistent protocol
  - Major symptom change (new or worsening physical, mental or psychological symptoms) → Refer to physician

## Symptoms > 3 months post-collision

Based upon shared decision making between the patient and provider, the following therapeutic intervention is recommended:⁵

1. Supervised clinic-based combined exercise

Refer to specific recommendation for treatment details (Section 7.1.4)

**Outcome:**
- **Recovered** → Discharge
- **Unrecovered:**
  - Incomplete recovery → Refer to physician
  - Major symptom change (new or worsening physical, mental or psychological symptoms) → Refer to physician

---

⁴ Risk factors for serious pathologies (also known as red flags): history of major trauma; minor trauma (if >50 years, history of osteoporosis and taking corticosteroids); erythema, warmth, effusion and decreased range of motion; high velocity injury, absent pulses, foot drop, multiple plane laxity; past history of malignancy, unexplained weight loss, pain at multiple sites, night pain, pain at rest

⁵ This guideline does not include interventions for which there is a lack of evidence of effectiveness
Persons injured in a traffic collision with patellofemoral pain

Conduct an appropriate clinical evaluation

Risk factors for serious pathologies?  
No

Other injuries? 
Yes

Refer to physician

Risk factors for serious pathologies?  
Yes

Refer to physician

Other injuries? 
No

Go to appropriate clinical care pathways and co-manage

Offer information on nature, management, course of patellofemoral pain as a framework for initiation of a program of care.

Is treatment required? 
No

Discharge

Is treatment required? 
Yes

Are symptoms ≤3 months? 
Yes

Monitor and Reassure

Based upon shared decision making between the patient and provider, the following therapeutic intervention is recommended:

1) Supervised clinic-based combined exercise 
Refer to specific recommendation for treatment details (Section 7.1.4)

Are symptoms > 3 months? 
Yes

Symptoms are > 3 months.

Is injured person recovered after 3 months? 
Yes

Discharge

Is injured person recovered? 
Yes

Is injured person recovered? 
No

14

15

16

17

18

1) Incomplete recovery: Initiate persistent protocol (Box 13) 
2) Major symptom change (new or worsening physical, mental or psychological symptoms): refer to physician

1) Incomplete recovery: refer to physician 
2) Major symptom change (new or worsening physical, mental or psychological symptoms): refer to physician

Risk factors for serious pathologies (also known as red flags): History of major trauma; minor trauma (if >50 years, history of osteoporosis and taking corticosteroids); erythema, warmth, effusion and decreased range of motion; high velocity injury, absent pulses, foot drop, multiple plane laxity; past history of malignancy, unexplained weight loss, pain at multiple sites, night pain, pain at rest

This guideline does not include interventions for which there is a lack of evidence of effectiveness
Quick Reference Guide – Management of Ankle Sprain

### Symptoms ≤ 3 months post-collision

**For all injured persons with ankle sprain:**
- **Rule out** risk factors for serious pathologies\(^a\)
- **Offer** information on nature, management, course of collision-related ankle sprain as a framework for initiation of a program of care
- **Conduct** ongoing assessment for symptom improvement or progression during intervention and refer accordingly
- **Discharge** injured person as appropriate at any point during intervention and recovery

**Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:**

**Home and clinic-based interventions:**\(^bc\)
1. Initiate a home exercise program within one week post-collision based on patient preference
2. For grades I/II ankle sprains: Home-based cryotherapy
3. For grades II/III ankle sprains: Semi-rigid brace, semi-rigid boot or below-knee immobilization walking cast
4. Mobilization of the distal and proximal tibiofibular joints, talocrural, and subtalar joints

**Refer to specific recommendation for treatment details (Section 7.2.3)**

**Do Not Offer:**\(^d\)
- Supervised progressive exercise program
- Low-level laser therapy (includes high- or low-dose laser which stimulates tissue and alters its function)

**Outcome:**
- **Recovered** → Discharge
- **Incomplete recovery** → Initiate persistent protocol
- **Major symptom change (new or worsening physical, mental or psychological symptoms)** → Refer to physician

**Outcome:**
- **Recovered** → Discharge
- **Incomplete recovery** → Refer to physician
- **Major symptom change (new or worsening physical, mental or psychological symptoms)** → Refer to physician

### Symptoms > 3 months post-collision

**Based upon shared decision making between the patient and provider, the following therapeutic intervention is recommended:**\(^b\)

1. Mobilization of the distal and proximal tibiofibular joints, talocrural, and subtalar joints

**Refer to specific recommendation for treatment details (Section 7.2.4)**

\(^a\) Risk factors for serious pathologies (also known as red flags): positive Ottawa Ankle Rules; children <12 years of age, elderly patients; erythema, warmth; fever, chills, prolonged pain, swelling, catching and/or instability of the ankle joint; pain at rest, awakening due to pain at night, bilateral pain

\(^b\) This guideline does not include interventions for which there is a lack of evidence of effectiveness

\(^c\) The ordering of interventions does not reflect superiority of effectiveness

\(^d\) Based on evidence of no benefit to patients
Care Pathway for the Management of Ankle Sprain

1. Persons injured in a traffic collision with ankle sprain
2. Conduct an appropriate clinical evaluation

3. Risk factors for serious pathologies?
   - Yes: Refer to physician
   - No:
     5. Other injuries?
     - Yes: Go to appropriate clinical care pathways and co-manage
     - No:
       7. Offer information on nature, management, course of ankle sprain as a framework for initiation of a program of care.

8. Is treatment required?
   - Yes:
     10. Are symptoms ≤3 months?
     - Yes: Symptoms are > 3 months.
     - No:
       12. Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:
       - a) Initiate a home exercise program within one week post-injury based on patient preference
       - b) For grades I/II ankle sprains: Home-based cryotherapy
       - c) For grades I/II ankle sprains: Semi-rigid brace, semi-rigid boot or below-knee immobilization walking cast
       - d) Mobilization of the distal and proximal tibiofibular joints, talocrural, and subtalar joints

   - No: Discharge

11. Based upon shared decision making between the patient and provider, the following therapeutic intervention is recommended:
   - 1) Mobilization of the distal and proximal tibiofibular joints, talocrural, and subtalar joints

13. Is injured person recovered after 3 months?
   - Yes: Discharge
   - No: Is injured person recovered?
     - Yes: Discharge
     - No: Based upon shared decision making between the patient and provider, the following therapeutic intervention is recommended:
       - 1) Mobilization of the distal and proximal tibiofibular joints, talocrural, and subtalar joints

---

* Risk factors for serious pathologies (also known as red flags): Positive Ottawa Ankle Rules; children <12 years of age, elderly patients; erythema, warmth; fever, chills; prolonged pain, swelling, catching and/or instability of the ankle joint; pain at rest, awakening due to pain at night, bilateral pain

---

1) Incomplete recovery: Initiate persistent protocol (Box 13)
2) Major symptom change (new or worsening physical, mental or psychological symptoms): refer to physician

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1) Incomplete recovery: refer to physician
2) Major symptom change (new or worsening physical, mental or psychological symptoms): refer to physician

---

The ordering of interventions does not reflect superiority of effectiveness

Based on evidence of no benefit to patients
# Quick Reference Guide – Management of Achilles Tendinopathy

## Symptoms ≤ 3 months post-collision

- **For all injured persons with Achilles tendinopathy:**
- **Rule out** risk factors for serious pathologies⁴
- **Offer** information on nature, management, course of collision-related Achilles tendinopathy as a framework for initiation of a program of care
- **Conduct** ongoing assessment for symptom improvement or progression during intervention and refer accordingly
- **Discharge** injured person as appropriate at any point during intervention and recovery

| 1. Monitor and reassure | Based upon shared decision making between the patient and provider, the following therapeutic intervention is recommended: b
<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>1. Shock-wave therapy</td>
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</table>

**Refer to Specific recommendation for treatment details (Section 7.3.3)**

**Do Not Offer:** c
- Night splint
- Semi-rigid brace

<table>
<thead>
<tr>
<th>Outcome: Recovered</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrecovered:</td>
<td>Incomplete recovery → Initiate persistent protocol</td>
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<td></td>
<td>Major symptom change (new or worsening physical, mental or psychological symptoms) → Refer to physician</td>
</tr>
</tbody>
</table>

## Symptoms > 3 months post-collision

- **Outcome:** Recovered → Discharge
- **Unrecovered:**
  - Incomplete recovery → Refer to physician
  - Major symptom change (new or worsening physical, mental or psychological symptoms) → Refer to physician

---

⁴ Risk factors for serious pathologies (also known as red flags): positive Ottawa Ankle Rules; sudden snap or sharp pain in the Achilles region (Achilles tendon rupture); inability to plantar flex ankle; gap above the heel

⁵ This guideline does not include interventions for which there is a lack of evidence of effectiveness

⁶ Based on evidence of no benefit to patients
Persons injured in a traffic collision with Achilles tendinopathy

Conduct an appropriate clinical evaluation

Risk factors for serious pathologies?:

Yes → Refer to physician

No → Other injuries?

Yes → Go to appropriate clinical care pathways and co-manage

No → Offer information on nature, management, course of Achilles tendinopathy as a framework for initiation of a program of care.

Is treatment required?

Yes → Are symptoms ≤ 3 months?

Yes → Monitor and Reassure

1) Shock-wave therapy

Do not offer:

1) Night splint
2) Semi-rigid brace

Refer to specific recommendation for treatment details (Section 7.3.4)

No → Symptoms are > 3 months.

Base upon shared decision making between the patient and provider, the following therapeutic intervention is recommended:

1) Shock-wave therapy

Do not offer:

1) Night splint
2) Semi-rigid brace

Refer to specific recommendation for treatment details (Section 7.3.4)

No → Is injured person recovered?

Yes → Discharge

No → Is injured person recovered after 3 months?

Yes → Discharge

No → 1) Incomplete recovery: refer to physician
2) Major symptom change (new or worsening physical, mental or psychological symptoms): refer to physician

1) Incomplete recovery: Initiate persistent protocol (Box 13)
2) Major symptom change (new or worsening physical, mental or psychological symptoms): refer to physician

*Risk factors for serious pathologies (also known as red flags): positive Ottawa Ankle Rules; sudden snap or sharp pain in the Achilles region (Achilles tendon rupture); inability to plantar flex ankle; gap above the heel

*This guideline does not include interventions for which there is a lack of evidence of effectiveness

*Based on evidence of no benefit to patients
# Quick Reference Guide – Management of Plantar Fasciitis and Heel Pain

## For all injured persons with plantar fasciitis and heel pain:

**Rule out** risk factors for serious pathologies\(^a\)

**Offer** information on nature, management, course of collision-related plantar fasciitis and heel pain as a framework for initiation of a program of care

**Conduct** ongoing assessment for symptom improvement or progression during intervention and refer accordingly

**Discharge** injured person as appropriate at any point during intervention and recovery

---

## Based upon shared decision making between the patient and provider, the following therapeutic intervention is recommended:\(^b\)

1. Plantar fascia stretching

Refer to specific recommendation for treatment details (Section 7.4.3)

---

## Do Not Offer:\(^d\)

- Trigger point therapy to the gastrocnemii
- Radial shock-wave therapy

---

## Outcome:

<table>
<thead>
<tr>
<th>Recovered</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrecovered:</td>
<td>Incomplete recovery</td>
</tr>
<tr>
<td></td>
<td>Major symptom change (new or worsening physical, mental or psychological symptoms)</td>
</tr>
</tbody>
</table>

---

## Based upon shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:\(^b,c\)

**Home and clinic based interventions:**

1. Prefabricated foot orthoses for short-term improvement in function
2. Multimodal care that includes the combination of:
   - Manipulation or mobilization of the hip, knee and ankle as indicated
   - Clinical massage
   - Home exercise

Refer to specific recommendation for treatment details (Section 7.4.4)

---

## Do Not Offer:\(^d\)

- Trigger point therapy to the gastrocnemii
- Home-based static stretching of calf muscles
- Low-Dye taping

---

## Outcome:

<table>
<thead>
<tr>
<th>Recovered</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrecovered:</td>
<td>Incomplete recovery</td>
</tr>
<tr>
<td></td>
<td>Major symptom change (new or worsening physical, mental or psychological symptoms)</td>
</tr>
</tbody>
</table>

---

\(^a\) Risk factors for serious pathologies (also known as red flags): positive Ottawa Ankle Rules; bruising, redness, edema; pain and/or burning in medial plantar region; atrophy of plantar pad; multiple joint pain, bilateral heel pain; acute injury with intense tearing sensation on the plantar surface of the foot; pain not relieved by rest

\(^b\) This guideline does not include interventions for which there is a lack of evidence of effectiveness

\(^c\) The ordering of interventions does not reflect superiority of effectiveness

\(^d\) Based on evidence of no benefit to patients
Care Pathway for the Management of Plantar Fasciitis and Heel Pain

1. Persons injured in a traffic collision with plantar fasciitis and heel pain
2. Conduct an appropriate clinical evaluation
3. Risk factors for serious pathologies?
4. Refer to physician
5. Other injuries?
6. Go to appropriate clinical care pathways and co-manage
7. Offer information on nature, management, course of plantar fasciitis and heel pain as a framework for initiation of a program of care.
8. Treatment required?
9. Are symptoms (≤ 3 months)?
10. Symptoms are ≥ 3 months.
11. Discharge
12. Is treatment required?
13. Are symptoms (≤ 3 months)?
14. Symptoms are ≥ 3 months.
15. Discharge
16. Is injured person recovered after 3 months?
17. Discharge
18. Is injured person recovered?
19. Incomplete recovery: refer to physician
20. Major symptom change (new or worsening physical, mental or psychological symptoms): refer to physician

Risk factors for serious pathologies (also known as red flags):
- Positive Ottawa Ankle Rules
- Bruising, redness, edema
- Pain and/or burning in medial plantar region
- Atrophy of plantar pad
- Multiple joint pain, bilateral heel pain
- Acute injury with intense tearing sensation on the plantar surface of the foot
- Pain not relieved by rest

Based upon clinical decision making between the patient and provider, the following therapeutic interventions are recommended:
1) Plantar fascia stretching
2) Trigger point therapy to the gastrocnemii
3) Radial shock-wave therapy

Do not offer:
1) Trigger point therapy to the gastrocnemii
2) Radial shock-wave therapy

Refer to specific recommendation for treatment details (Section 7.4.3)

Based upon clinical decision making between the patient and provider, any one of the following therapeutic interventions is recommended:
1) Manipulation or mobilization of the hip, knee and ankle as indicated
2) Clinical massage
3) Home exercise
4) Low-Dye taping

Do not offer:
1) Trigger point therapy to the gastrocnemii
2) Home-based stretching of calf muscles alone

Refer to specific recommendation for treatment details (Section 7.4.4)

Based upon clinical decision making between the patient and provider, any one of the following therapeutic interventions is recommended:
1) Prefabricated foot orthoses for short-term improvement in function
2) Multimodal care that includes the combination of:
   a) Manipulation or mobilization of the hip, knee and ankle as indicated
   b) Clinical massage
   c) Home exercise

Do not offer:
1) Trigger point therapy to the gastrocnemii
2) Home-based stretching of calf muscles alone

*Note factors for serious pathologies (also known as red flags): positive Ottawa Ankle Rules; bruising, redness, edema, pain and/or burning in medial plantar region; atrophy of plantar pad; multiple joint pain, bilateral heel pain; acute injury with intense tearing sensation on the plantar surface of the foot; pain not relieved by rest

*This guideline does not include interventions for which there is a lack of evidence of effectiveness

*The ordering of interventions does not reflect superiority of effectiveness

*Based on evidence of no benefit to patients
## Quick Reference Guide – Management of Temporomandibular Disorders

### Symptoms ≤ 3 months post-collision

For all injured persons with temporomandibular disorders and no risk factors for serious pathologies:

- **Offer** information on nature, management, course of TMD as a framework for initiation of a program of care
- **Conduct** ongoing assessment for symptom improvement or worsening/progress during intervention period and refer accordingly
- **Reassess and Monitor** the presence of acute stress disorder, post-traumatic stress disorder, kinesiophobia, passive coping, depression, anxiety, anger, frustration and fear
- **Discharge** injured person as appropriate at any point during intervention and recovery

**Based upon shared decision making between patient and provider, the following therapeutic option is recommended:**

1. **Monitor and reassure**

Refer to section 8.1.3

**Outcome:**
- **Recovered** → Discharge
- **Incomplete recovery** → Initiate persistent protocol
- **Major symptom change (new or worsening physical, mental or psychological symptoms)** → Refer to physician or dentist

**Based upon shared decision making between patient and provider, any one of the following therapeutic options is recommended:**

**Home and clinic based interventions:**
1. Self-care management program (TMD education, monitoring patient expectations, attention)
2. Intraoral myofascial therapy
3. Cognitive-behavioural therapy by a health care professional trained in cognitive-behavioural therapy

Refer to specific recommendation for treatment details (Section 8.1.4)

**Do Not Offer:**
- Occlusal device for pain and range of motion

**Outcome:**
- **Recovered** → Discharge
- **Incomplete recovery** → Refer to physician or dentist
- **Major symptom change (new or worsening physical, mental or psychological symptoms)** → Refer to physician or dentist

### Symptoms > 3 months post-collision

**Risk factors for serious pathologies (also known as red flags):** Fracture of the mandible (swelling, malocclusion, limited movement), dislocation of the mandibular condyle (muscle spasm, inability to close the mouth, anxiety), fracture/dislocation of the cervical spine (positive Canadian C-Spine rule), cancer (history of cancer, unexplained weight loss, nocturnal pain, age >50), infection (fever, intravenous drug use, recent infection), osteoporotic fractures (history of osteoporosis, use of corticosteroid, older age)

**Selection of therapeutic options in the guideline should be based upon shared decision making between patient and provider**

**Unlisted interventions are not recommended due to lack of admissible quality of evidence to make an informed decision**

**The ordering of interventions does not reflect superiority of effectiveness**

**Based on evidence of no benefit to patients**

---

Note: The table is enclosed in a cell for better readability and organization.
Management of Injured Persons with Temporomandibular Disorders

1. Persons injured in a traffic collision with a temporomandibular disorder (TMD)

2. Conduct an appropriate clinical evaluation

3. Risk factors for serious pathologies? Yes

4. Refer to physician or dentist

5. Other injuries? No

6. Go to appropriate clinical care pathways and co-manage

7. Offer information on nature, management, course of TMD as a framework for initiation of a program of care

8. Symptoms are ≤ 3 months? Yes

9. Symptoms are > 3 months? No

10. Monitor and Reassure

11. Based upon shared decision making between patient and provider, any one of the following therapeutic options is recommended:

   a) Home and clinic based interventions:
      1) Self-care management program (TMD education, monitoring patient expectations, attention);
      2) Intraoral myofascial therapy; or
      3) Cognitive-behavioural therapy by a health care professional trained in cognitive-behavioural therapy

   b) Do Not Offer:
      - Occlusal device for pain and range of motion

12. Is injured person recovered after 3 months? Yes

13. Discharge

14. Is injured person recovered? Yes

15. No

16. 1) Incomplete recovery: refer to physician or dentist
    2) Major symptom change (new or worsening physical, mental or psychological symptoms): refer to physician or dentist

---

*bRisk factors for serious pathologies (also known as red flags): Fracture of the mandible (swelling, malocclusion, limited movement), dislocation of the mandibular condyle (muscle spasm, inability to close the mouth, anxiety), fracture/dislocation of the cervical spine (positive Canadian C-Spine rule), cancer (history of cancer, unexplained weight loss, nocturnal pain, age >50), infection (fever, intravenous drug use, recent infection), osteoporotic fractures (history of osteoporosis, use of corticosteroid, older age)

*bSelection of therapeutic options in the guideline should be based upon shared decision making between patient and provider

*The ordering of interventions does not reflect superiority of effectiveness

*Based on evidence of no benefit to patients
<table>
<thead>
<tr>
<th>Symptoms ≤3 months post-injury</th>
<th>Symptoms &gt; 3 months post-injury</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For all injured persons with non-specific low back pain:</strong></td>
<td><strong>Consider the following therapeutic options based upon shared decision making between patient and provider:</strong></td>
</tr>
<tr>
<td>Rule out risk factors for serious pathologies&lt;sup&gt;a&lt;/sup&gt;</td>
<td><strong>Home and clinic based interventions:</strong></td>
</tr>
<tr>
<td>Offer information on nature, management, course of non-specific low back pain as a framework for initiation of a program of care</td>
<td>Structured education (advice to stay active), reassurance, and:</td>
</tr>
<tr>
<td>Conduct ongoing assessment for symptom improvement or worsening/progression during intervention and refer accordingly</td>
<td>1. Exercise</td>
</tr>
<tr>
<td>Reassess and Monitor for presence of depression, passive coping strategies, job dissatisfaction, higher disability levels, disputed compensation claims, or somatization.</td>
<td>2. Manipulation or mobilization</td>
</tr>
<tr>
<td>Discharge injured person as appropriate at any point during intervention and recovery</td>
<td>3. Clinical and relaxation massage</td>
</tr>
<tr>
<td><strong>Consider the following therapeutic options based upon shared decision making between patient and provider:</strong></td>
<td>4. Non-steroidal anti-inflammatory drugs&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Home and clinic based interventions:</td>
<td>5. Needle acupuncture</td>
</tr>
<tr>
<td>Structured education (advice to stay active), reassurance, and:</td>
<td>6. Multimodal care for patients who have high levels of disability or significant distress:</td>
</tr>
<tr>
<td>1. Manipulation</td>
<td>a) Exercise</td>
</tr>
<tr>
<td>2. Muscle Relaxants&lt;sup&gt;d&lt;/sup&gt;</td>
<td>b) Cognitive/behavioural approaches</td>
</tr>
<tr>
<td><strong>Refer to specific recommendation for treatment details (Section 10.1.3)</strong></td>
<td><strong>Do Not Offer:</strong>&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Outcome:</strong></td>
<td>• Passive physical modalities</td>
</tr>
<tr>
<td>Recovered</td>
<td>• Botulinum toxin injections</td>
</tr>
<tr>
<td>Unrecovered:</td>
<td><strong>Outcome:</strong></td>
</tr>
<tr>
<td>Discharge</td>
<td>Recovered</td>
</tr>
<tr>
<td>Incomplete recovery</td>
<td></td>
</tr>
<tr>
<td>Initiate persistent protocol</td>
<td></td>
</tr>
<tr>
<td><strong>Signs of lumbar disc herniation with radiculopathy</strong></td>
<td><strong>Signs of lumbar disc herniation with radiculopathy</strong></td>
</tr>
<tr>
<td><strong>Signs progress to serious pathology (new or worsening physical, mental or psychological symptoms)</strong></td>
<td><strong>Signs progress to serious pathology (new or worsening physical, mental or psychological symptoms)</strong></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Risk factors for serious pathologies (also known as red flags): Cancer (history of cancer, unexplained weight loss, nocturnal pain, age >50), vertebral infection (fever, intravenous drug use, recent infection), cauda equina syndrome (urinary retention, motor deficits at multiple levels, fecal incontinence, saddle anesthesia), osteoporotic fractures (history of osteoporosis, use of corticosteroid, older age), ankylosing spondylitis (morning stiffness, improvement with exercise, alternating buttock pain, awakening due to back pain during the second part of the night, younger age), inflammatory arthritis (morning stiffness, swelling in multiple joints)

<sup>b</sup> This guideline does not include interventions for which there is a lack of evidence of effectiveness

<sup>c</sup> The ordering of interventions does not reflect superiority of effectiveness

<sup>d</sup> The evidence indicates that analgesic is the primary therapeutic benefit of the muscle relaxant and NSAID classes of medication. Pain reduction should be apparent during the initial period of usage; in the absence of therapeutic benefit, prolongation of usage is not warranted. There is no evidence of differential efficacy for the various drugs within each class. There is also no evidence that any combination of these medications provides added benefit. There are potentially significant adverse effects associated with use of these classes of medications. Finally, the non-opioid first ‘step’ in the Analgesic Ladder includes NSAIDs, muscle relaxant and acetaminophen (Vargas-Schaffer G. Is the WHO analgesic ladder still valid? Twenty-four years of experience. Vol 56: June 2010 Canadian Family Physician). However, the evidence does not indicate that acetaminophen is an effective analgesic for either NAD or low back pain; therefore, the use of acetaminophen is not recommended.

<sup>e</sup> Based on evidence of no benefit to patients
Care Pathway for the Management of Non-specific Low Back Pain

1. Persons injured in a traffic collision with non-specific low back pain

2. Conduct an appropriate clinical evaluation

3. Risk factors for serious pathologies?
   - Yes: Refer to physician
   - No: Continue with non-specific low back pain evaluation

4. Non-specific low back pain
   - Yes: Refer to physician
   - No: Continue with non-specific low back pain evaluation

5. Poor prognostic factors?
   - Yes: Adjust modifiable prognostic factors
   - No: Continue with non-specific low back pain evaluation

6. Offer information on nature, management, course of non-specific low back pain as a framework for initiation of a program of care.

7. Is treatment required?
   - Yes: Continue with treatment
   - No: Discharge

8. Are symptoms ≤ 3 months?
   - Yes: Refer to physician
   - No: Continue with treatment

9. Is injured person recovered after 3 months?
   - Yes: Discharge
   - No: Continue with treatment

10. Incomplete recovery: Initiate persistent protocol (Box 15)

11. Signs of lumbar disc herniation with radiculopathy: Proceed to lumbar disc herniation with radiculopathy care pathway

12. Signs progress to serious pathology (new or worsening physical, mental or psychological symptoms): Refer to physician

13. Symptoms are > 3 months.

14. Based on shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:
   - Structured education (advice to stay active, reassurance, and:
     1) Manipulation
     2) Muscle relaxants
   - Exercise
   - Clinical or relaxation massage
   - Clinical or relaxation massage
   - Non-steroidal anti-inflammatory drugs (NSAIDs)
   - Needle acupuncture
   - Multimodal care that includes the combination of (for patients who have high levels of disability or significant distress):
     a) Exercise
     b) Cognitive/behavioural approaches
   - Do not offer:
     1) Passive physical modalities
     2) Botulinum toxin injections

15. Is injured person recovered?
   - Yes: Discharge
   - No: Continue with treatment

16. Incomplete recovery: refer to physician

17. Signs of lumbar disc herniation with radiculopathy: proceed to lumbar disc herniation with radiculopathy care pathway

18. Signs progress to serious pathology (new or worsening physical, mental or psychological symptoms): Refer to physician

19. Based on evidence of no benefit to patients:
   - 1) Passive physical modalities
   - 2) Botulinum toxin injections

20. This guideline does not include interventions for which there is a lack of evidence of effectiveness

*Factors delaying recovery:
- Depression
- Passive coping strategies
- Job dissatisfaction
- High disability levels
- Disputed compensation claims
- Somatization

Optional factors delaying recovery:
- Opioids
- Antidepressants
- Pain medications

Based on evidence of no benefit to patients:
- 1) Passive physical modalities
- 2) Botulinum toxin injections

*Risk factors for serious pathologies (also known as red flags):
- Cancer (history of cancer, unexplained weight loss, nocturnal pain, age >50)
- Vertebral infection (fever, intravenous drug use, recent infection)
- Cauda equina syndrome (urinary retention, motor deficits at multiple levels, saddle anesthesia)
- Osteoporotic fractures (history of osteoporosis, use of corticosteroid, older age)
- Ankylosing spondylitis (morning stiffness, improvement with exercise, alternating buttock pain, awakening due to back pain during the second part of the night, younger age)
- Inflammatory arthritis (morning stiffness, swelling in multiple joints)

**Adjusting modifiable prognostic factors:**
- Structured education (advice to stay active, reassurance, and:
  1) Manipulation
  2) Muscle relaxants

---

1. Persons injured in a traffic collision with non-specific low back pain
2. Conduct an appropriate clinical evaluation
3. Risk factors for serious pathologies?
   - Yes: Refer to physician
   - No: Continue with non-specific low back pain evaluation
4. Non-specific low back pain
   - Yes: Refer to physician
   - No: Continue with non-specific low back pain evaluation
5. Poor prognostic factors?
   - Yes: Adjust modifiable prognostic factors
   - No: Continue with non-specific low back pain evaluation
6. Offer information on nature, management, course of non-specific low back pain as a framework for initiation of a program of care.

7. Is treatment required?
   - Yes: Continue with treatment
   - No: Discharge

8. Are symptoms ≤ 3 months?
   - Yes: Refer to physician
   - No: Continue with treatment

9. Is injured person recovered after 3 months?
   - Yes: Discharge
   - No: Continue with treatment

10. Incomplete recovery: Initiate persistent protocol (Box 15)

11. Signs of lumbar disc herniation with radiculopathy: Proceed to lumbar disc herniation with radiculopathy care pathway

12. Signs progress to serious pathology (new or worsening physical, mental or psychological symptoms): Refer to physician

13. Symptoms are > 3 months.

14. Based on shared decision making between the patient and provider, any one of the following therapeutic interventions is recommended:
   - Structured education (advice to stay active, reassurance, and:
     1) Manipulation
     2) Muscle relaxants
   - Exercise
   - Clinical or relaxation massage
   - Clinical or relaxation massage
   - Non-steroidal anti-inflammatory drugs (NSAIDs)
   - Needle acupuncture
   - Multimodal care that includes the combination of (for patients who have high levels of disability or significant distress):
     a) Exercise
     b) Cognitive/behavioural approaches
   - Do not offer:
     1) Passive physical modalities
     2) Botulinum toxin injections

15. Is injured person recovered?
   - Yes: Discharge
   - No: Continue with treatment

16. Incomplete recovery: refer to physician

17. Signs of lumbar disc herniation with radiculopathy: proceed to lumbar disc herniation with radiculopathy care pathway

18. Signs progress to serious pathology (new or worsening physical, mental or psychological symptoms): Refer to physician

19. Based on evidence of no benefit to patients:
   - 1) Passive physical modalities
   - 2) Botulinum toxin injections

20. This guideline does not include interventions for which there is a lack of evidence of effectiveness

*Factors delaying recovery:
- Depression
- Passive coping strategies
- Job dissatisfaction
- High disability levels
- Disputed compensation claims
- Somatization

Optional factors delaying recovery:
- Opioids
- Antidepressants
- Pain medications

*Risk factors for serious pathologies (also known as red flags):
- Cancer (history of cancer, unexplained weight loss, nocturnal pain, age >50)
- Vertebral infection (fever, intravenous drug use, recent infection)
- Cauda equina syndrome (urinary retention, motor deficits at multiple levels, saddle anesthesia)
- Osteoporotic fractures (history of osteoporosis, use of corticosteroid, older age)
- Ankylosing spondylitis (morning stiffness, improvement with exercise, alternating buttock pain, awakening due to back pain during the second part of the night, younger age)
- Inflammatory arthritis (morning stiffness, swelling in multiple joints)
Quick Reference Guide – Management of Lumbar Disc Herniation with Radiculopathy

<table>
<thead>
<tr>
<th>Symptoms ≤ 3 months post-collision</th>
<th>Symptoms &gt; 3 months post-collision</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For all injured persons with lumbar disc herniation with radiculopathy:</strong></td>
<td><strong>Refer to medical physician for consideration of further investigation of the neurological deficits.</strong></td>
</tr>
<tr>
<td><strong>Rule out</strong> risk factors for serious pathologies⁰</td>
<td></td>
</tr>
<tr>
<td><strong>Offer</strong> information on nature, management, course of lumbar disc herniation with radiculopathy as a framework for initiation of a program of care</td>
<td></td>
</tr>
<tr>
<td><strong>Conduct</strong> ongoing assessment for symptom improvement or worsening/progression during intervention and refer accordingly</td>
<td></td>
</tr>
<tr>
<td><strong>Reassess and Monitor</strong> for presence of depression, passive coping strategies, job dissatisfaction, higher disability levels, disputed compensation claims, or somatization.</td>
<td></td>
</tr>
<tr>
<td><strong>Discharge</strong> injured person as appropriate at any point during intervention and recovery</td>
<td></td>
</tr>
<tr>
<td>**Based upon shared decision making between the patient and provider, the following therapeutic interventions are recommended.**⁰²</td>
<td></td>
</tr>
<tr>
<td><strong>Home and clinic based interventions:</strong></td>
<td></td>
</tr>
<tr>
<td>Structured education (advice to stay active), reassurance, and:</td>
<td></td>
</tr>
<tr>
<td>1. Manipulation for symptomatic relief</td>
<td></td>
</tr>
<tr>
<td><strong>Refer to specific recommendation for treatment details (Section 10.2.3)</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Outcome:</strong></th>
<th><strong>Discharge</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recovered</strong> →</td>
<td>Improvement (neurological signs no longer present) → Refer to non-specific low back pain care pathway</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Unrecovered:</strong></th>
<th><strong>Incomplete recovery</strong> → Initiate persistent protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Signs progress to serious pathology (new or worsening physical, mental or psychological symptoms)</strong></td>
<td><strong>Refer to physician</strong></td>
</tr>
</tbody>
</table>

⁰ Risk factors for serious pathologies (also known as red flags): Cancer (history of cancer, unexplained weight loss, nocturnal pain, age >50), vertebral infection (fever, intravenous drug use, recent infection), cauda equina syndrome (urinary retention, motor deficits at multiple levels, fecal incontinence, saddle anesthesia), osteoporotic fractures (history of osteoporosis, use of corticosteroid, older age), ankylosing spondylitis (morning stiffness, improvement with exercise, alternating buttock pain, awakening due to back pain during the second part of the night, younger age), inflammatory arthritis (morning stiffness, swelling in multiple joints)

² This guideline does not include interventions for which there is a lack of evidence of effectiveness

³ The ordering of interventions does not reflect superiority of effectiveness
Care Pathway for the Management of Lumbar Disc Herniation with Radiculopathy

1. Persons injured in a traffic collision with lumbar disc herniation with radiculopathy

2. Conduct an appropriate clinical evaluation

3. Risk factors for serious pathologies?*
   - Yes → Refer to physician
   - No → Other injuries?

4. Refer to physician (risk factors for serious pathologies?)

5. Other injuries?
   - Yes → Go to appropriate clinical care pathways and co-manage
   - No → Poor prognostic factors?

6. Poor prognostic factors?
   - Yes → Adjust modifiable prognostic factors
   - No → Offer information on nature, management, course of lumbar disc herniation with radiculopathy as a framework for initiation of a program of care.

7. Offer information on nature, management, course of lumbar disc herniation with radiculopathy as a framework for initiation of a program of care.

8. Is treatment required?
   - Yes → Are symptoms ≤ 3 months?
   - No → Discharge

9. Are symptoms ≤ 3 months?
   - Yes → Refer to medical physician for consideration of further investigation of the neurological deficits.
   - No → Symptoms are > 3 months.

10. Symptoms are > 3 months.

11. Discharge

12. Based upon shared decision making between the patient and provider, the following therapeutic interventions are recommended: a, b, c

13. Home and clinic based interventions:
   - Structured education (advice to stay active), reassurance, and:
     1) Manipulation for symptomatic relief
   - Refer to specific recommendation for treatment details (Section 10.2.3)

14. Refer to medical physician for consideration of further investigation of the neurological deficits.

15. Is injured person recovered after 3 months?
   - Yes → Discharge
   - No → 1) Incomplete recovery: Initiate persistent protocol (Box 15)
   - 2) Major symptom change (new or worsening physical, mental or psychological symptoms): refer to physician

* Risk factors for serious pathologies (also known as red flags): Cancer (history of cancer, unexplained weight loss, nocturnal pain, age >50), vertebral infection (fever, intravenous drug use, recent infection), cauda equina syndrome (urinary retention, motor deficits at multiple levels, fecal incontinence, saddle anesthesia), osteoporotic fractures (history of osteoporosis, use of corticosteroid, older age), ankylosing spondylitis (morning stiffness, improvement with exercise, alternating buttock pain, awakening due to back pain during the second part of the night, younger age)

b Unlisted interventions are not recommended due to lack of admissible quality of evidence to make an informed decision

The ordering of interventions does not reflect superiority of effectiveness.