

**Evidence-Based Practice Group Answers to Clinical  
Questions**

**“Duration between Injury and Onset of  
Complex Regional Pain Syndrome – First  
Update”**

**A Rapid Systematic Review**

By

**WorkSafeBC Evidence-Based Practice Group**

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*First Update - October 2017*

## About this report

# Duration between Injury and Onset of Complex Regional Pain Syndrome – First Update

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### About the Evidence-Based Practice Group

The Evidence-Based Practice Group was established to address the many medical and policy issues that WorkSafeBC officers deal with on a regular basis. Members apply established techniques of critical appraisal and evidence-based review of topics solicited from both WorkSafeBC staff and other interested parties such as surgeons, medical specialists, and rehabilitation providers.

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## Background and Objective

In 2010, the Evidence-Based Practice Group conducted a systematic review investigating the timing or the onset (especially for potential delayed onset incidences of as late as about 18 months/78 weeks), of Complex Regional Pain Syndrome (CRPS) type 1 or 2 post (any kind of) injury ([http://teamsites/sites/ts\\_clinicalref/ebpg/Document%20Library1/1/CRPSDiagnosisLatency.pdf#search=delayed%20onset](http://teamsites/sites/ts_clinicalref/ebpg/Document%20Library1/1/CRPSDiagnosisLatency.pdf#search=delayed%20onset)).

This systematic review provided some evidence that:

- Signs and symptoms of CRPS may initially develop up to 6 months post injury although two studies suggested that onset of symptoms may also occur at over 6 months post injury.
- Further, Veldman<sup>(174)</sup>, a renown expert on CRPS, discounted any potential causal association between an inciting injury and CRPS when there was a time lag of over one year.

Recently, the Evidence-Based Practice Group was asked to investigate the likelihood of CRPS developing 40 years after the initial injury (c.q. healed stage 1 and 2 burn injury).

## Methodology

- A systematic literature search was conducted on October 4, 2017.
- The search was done on commercial medical literature databases, including BIOSIS Previews<sup>®</sup> (1969 to 2008), Embase<sup>®</sup> (1974 to 2017 October 03), Medline Epub Ahead of Print<sup>®</sup>, Medline In-Process & Other Non-Indexed Citations<sup>®</sup>, Medline Daily Update<sup>®</sup> and Medline<sup>®</sup> (1946 to Present), that are available through the Ovid<sup>®</sup> platform.
- The following combination of keywords were employed in this literature search:

((complex **ADJ** regional **ADJ** pain **ADJ** syndrome) **OR** crps **OR** causalgia **OR** (reflex **ADJ** sympathetic **ADJ** dystrophy) **OR** (Sudeck **ADJ** atrophy) **OR** algodystrophy **OR** (post **ADJ** traumatic **ADJ** vasomotor **ADJ** syndrome) **OR** (complex **ADJ** regional **ADJ** pain **ADJ** syndrome **ADJ** type **ADJ** 1) **OR** (complex **ADJ** regional **ADJ** pain **ADJ** syndrome **ADJ** type **ADJ** 2) **OR** (complex **ADJ** regional **ADJ** pain **ADJ** syndrome **ADJ** type **ADJ** I) **OR** (complex **ADJ** regional **ADJ** pain **ADJ** syndrome **ADJ** type **ADJ** II) **OR** algoneurodystrophy **OR**

(painful **ADJ** post **ADJ** traumatic **ADJ** osteoporosis) **OR**  
 (transient **ADJ** migratory **ADJ** osteoporosis) **OR** (painful **ADJ**  
 post **ADJ** traumatic **ADJ** dystrophy) **OR** (shoulder **ADJ** hand  
**ADJ** syndrome) **OR** (chronic **ADJ** pain) **OR** (neuropathic **ADJ**  
 pain)) **AND** (onset **OR** (delayed **ADJ** onset))

- Since this is an update of a previous systematic review, the literature search was limited to those studies published from 2010 onwards. Except for the date of publication, no other limitations, such as on the study design or language, were implemented in the literature search.
- A manual search of the references of the fully retrieved articles was also done.

## Results

- Literature search results:
  - One and hundred seventy-two<sup>(1-172)</sup> published studies were identified through this search.
  - Upon examination of the titles and abstracts of these 172<sup>(1-172)</sup> studies, eleven<sup>(3,9,18,22,39,41,45,76,111,123,162)</sup> were thought to be relevant and were retrieved in full for further appraisals.
  - After a full examination of these eleven studies<sup>(3,9,18,22,39,41,45,76,111,123,162)</sup>, nine<sup>(3,9,18,22,39,41,45,76,111)</sup> studies did not provide any onset data and hence will not be discussed further.
  - One additional study<sup>(173)</sup> was identified from the manual search and was retrieved in full. In this expert review (level of evidence 5. Appendix 1), the authors stated that symptoms of CRPS could be identified as early as 2 weeks post-fracture. However, the authors did not provide supporting data to this statement. As such, this study will not be discussed further.
  - Per the above search results, this systematic review update identified only two<sup>(123,162)</sup> new studies providing data on the onset of CRPS since the day of injury and will be discussed further.
- In a small case series (n=18) (level of evidence 5. Appendix 1), Pons et al.<sup>(123)</sup> reported the use of physiotherapy in treating patients diagnosed with CRPS in South Island of New Zealand. Of the 18 patients included in this case series, 16 (85%) had their time to diagnosis from injury at 1-3 months while 2 (15%) were reported with a time to diagnosis from injury at between 3-7 months. It should be noted that the Budapest criteria to diagnose CRPS was employed in this study.

- Wolter et al.<sup>(162)</sup> reported a small case series (n=6) (level of evidence 5. Appendix 1) on the occurrence of CRPS after spine surgery. In this group of patients, they found that the first symptoms of CRPS could be observed 1-14 days after surgery. It should be noted that the authors employed the IASP criteria in diagnosing CRPS for their study.

## Summary

- This update on our 2010 systematic review investigating the onset of CRPS post-injury found two new studies showing that symptoms of CRPS can first be observed up to seven months post-injury.
- As such, at present, conclusions from our 2010 systematic review investigating the duration between injury and the first onset of CRPS remains the same.

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## Appendix 1

### WorkSafeBC - Evidence-Based Practice Group Levels of Evidence

(adapted from 1,2,3,4)

<b>1</b>	Evidence from at least 1 properly randomized controlled trial (RCT) or systematic review of RCTs.
<b>2</b>	Evidence from well-designed controlled trials without randomization or systematic reviews of observational studies.
<b>3</b>	Evidence from well-designed cohort or case-control analytic studies, preferably from more than 1 centre or research group.
<b>4</b>	Evidence from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled
<b>5</b>	Opinions of respected authorities, based on clinical experience, descriptive studies or reports of expert committees.

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