

**Subject:** Dynamic Spinal Visualization (Including Digital Motion X-ray and Cineradiography/ Videofluoroscopy)**Document #:** RAD.00034**Status:** Reviewed**Publish Date:** 06/28/2023**Last Review Date:** 05/11/2023

## Description/Scope

This document addresses the use of dynamic spinal visualization, digital motion x-ray, cineradiography or videofluoroscopy, to produce moving images of the spine for the detection or evaluation of structural or functional abnormalities.

## Position Statement

### Investigational and Not Medically Necessary:

Dynamic spinal visualization, including, but not limited to, digital motion x-ray of the spine, with or without digitization of spinal x-rays and computerized analysis of the back or spine, is considered **investigational and not medically necessary** for all indications.

Dynamic spinal visualization, including, but not limited to, cineradiography, also known as videofluoroscopy, when used to visualize movement of the back or spine, is considered **investigational and not medically necessary** for all indications.

## Rationale

The current literature evaluating the clinical utility of dynamic spinal visualization techniques, including but not limited to digital motion x-ray and cineradiography (videofluoroscopy), for the evaluation and assessment of the spine is limited to a few studies involving very small numbers of participants. While these studies do indicate that there may be some benefit from the use of these technologies, further evidence from large controlled trials is needed to demonstrate that the results have significant impact on clinical care and are superior to currently available alternatives. At this time, the data is insufficient to support the use of dynamic spinal visualization, including digital motion x-rays, cineradiography, and videofluoroscopy of the spine for any indication.

## Background/Overview

Dynamic spinal visualization is a general term addressing the use of several different imaging technologies, including digital motion x-ray, cineradiography, and videofluoroscopy. These technologies allow the simultaneous visualization of movement of internal body structures, such as the skeleton, intervertebral discs and ligaments, with corresponding external body movement. All of these methods use x-rays to create images either digitally or on film, to allow visualization of internal structures while an individual is moving. These technologies have been proposed for the evaluation of back pain, orthopedic issues, and other conditions.

The American College of Radiology (ACR) Appropriateness Criteria<sup>®</sup> Suspected Spine Trauma (2018) states that:

The literature has been uniformly negative in assessing the utility of static flexion-extension radiographs or dynamic fluoroscopy for detection of cervical spine ligamentous injuries. Studies have reported anywhere from 28% to 97% of flexion-extension studies are inadequate for evaluating ligament injury. Even when flexion-extension radiographs are technically adequate, they rarely demonstrate evidence of ligament instability, and positive studies rarely result in significant change in clinical management. The low rate of technically adequate studies along with the low sensitivity and specificity of flexion-extension radiographs makes this study undesirable for assessment of cervical spine ligament injuries. Furthermore, flexion-extension radiographs carry the real danger of producing neurologic injury. Flexion-extension radiographs fail to reveal most ligament injuries identified on MRI and can result in increased length of cervical immobilization.

Digital motion x-ray involves the use of either film x-ray or computer-based x-ray 'snapshots' taken in sequence as an individual moves in front of an x-ray camera. Film x-rays are digitized into a computer for manipulation while computer-based x-rays are automatically created in a digital format. The digitized snapshots are then put in order using a computer program and played on a video monitor, creating a moving image of the inside of the body. This moving image can then be evaluated by a physician alone or by using a computer that evaluates several aspects of the body's structure to determine the presence or absence of abnormalities.

Videofluoroscopy and cineradiography are different names for the same procedure that uses fluoroscopy to create real-time video images of internal body structures. Videofluoroscopy works like a video camera, providing motion pictures of the inside of the body. The results of these techniques can be displayed on a video monitor as the procedure is being conducted. They can also be viewed or digitally analyzed at a later time.

## Definitions

**Cineradiography (also known as Videofluoroscopy):** A radiological procedure that uses fluoroscopy, an x-ray procedure, to make it possible to see structures in the body in real-time; this procedure has been proposed as a tool to diagnose or evaluate disease or injuries of the spine.

**Digital motion x-ray:** A technology in which successive x-rays are digitized and sequenced to create a video representation of movement of internal body structures.

**Digitization:** The process by which information is transformed from analog format into digital computer-based format.

## Coding

*The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.*

**When services are Investigational and Not Medically Necessary:**

For the following procedure and diagnosis codes, or when the code describes a procedure indicated in the Position Statement section as investigational and not medically necessary.

**CPT**

76120	Cineradiography/videoradiography, except where specifically included
76125	Cineradiography/videoradiography to complement routine examination
76496	Unlisted fluoroscopic procedure (eg, diagnostic, interventional) [when specified as videofluoroscopy]

**ICD-10 Diagnosis**

M40.00-M40.57	Kyphosis and lordosis
M41.00-M41.9	Scoliosis
M42.00-M42.9	Spinal osteochondrosis
M43.00-M43.9	Other deforming dorsopathies
M45.0-M45.9	Ankylosing spondylitis
M46.00-M46.99	Other inflammatory spondylopathies
M47.011-M47.9	Spondylosis
M48.00-M48.9	Other spondylopathies
M49.80-M49.89	Spondylopathies in diseases classified elsewhere
M50.00-M50.93	Cervical disc disorders
M51.04-M51.9	Thoracic, thoracolumbar, and lumbosacral intervertebral disc disorders
M53.0-M53.9	Other and unspecified dorsopathies, not elsewhere classified
M54.00-M54.9	Dorsalgia
M80.08XA-M80.08XS	Age-related osteoporosis with current pathological fracture, vertebra(e)
M80.88XA-M80.88XS	Other osteoporosis with current pathological fracture, vertebra(e)
M81.0-M81.8	Osteoporosis without current pathological fracture
M88.1	Osteitis deformans of vertebrae
M88.89	Osteitis deformans of multiple sites
M99.00-M99.04	Segmental and somatic dysfunction of head, cervical, thoracic, lumbar, sacral regions
Q76.0-Q76.49	Congenital malformations of spine
S12.000A-S12.691S	Fracture of cervical vertebra
S13.0XXA-S13.0XXS	Traumatic rupture of cervical intervertebral disc
S13.100A-S13.181S	Subluxation and dislocation of cervical vertebrae
S13.20XA-S13.29XS	Dislocation of other and unspecified parts of neck
S13.4XXA-S13.4XXS	Sprain of ligaments of cervical spine
S22.000A-S22.089S	Fracture of thoracic vertebra
S23.0XXA-S23.0XXS	Traumatic rupture of thoracic intervertebral disc
S23.100A-S23.171S	Subluxation and dislocation of thoracic vertebra
S23.3XXA-S23.3XXS	Sprain of ligaments of thoracic spine
S32.000A-S32.059S	Fracture of lumbar vertebra
S32.10XA-S32.19XS	Fracture of sacrum
S32.2XXA-S32.2XXS	Fracture of coccyx
S33.0XXA-S33.0XXS	Traumatic rupture of lumbar intervertebral disc
S33.100A-S33.141S	Subluxation and dislocation of lumbar vertebra
S33.2XXA-S33.2XXS	Dislocation of sacroiliac and sacrococcygeal joint
S33.30XA-S33.39XS	Dislocation of other and unspecified parts of lumbar spine and pelvis
S33.5XXA-S33.9XXS	Sprain of ligaments of lumbar spine, sacroiliac joint, other and unspecified parts of lumbar spine and pelvis

**References****Peer Reviewed Publications:**

1. Harvey S, Hukins D, Smith F, et al. Measurement of lumbar spine intervertebral motion in the sagittal plane using videofluoroscopy. *J Back Musculoskelet Rehabil.* 2015; 29(3):445-457.
2. Hino H, Abumi K, Kanayama M, Kaneda K. Dynamic motion analysis of normal and unstable cervical spines using cineradiography. An in vivo study. *Spine (Phila Pa 1976).* 1999; 24(2):163-168.
3. Lindgren KA, Leino E, Manninen H. Cervical rotation lateral flexion test in brachialgia. *Arch Phys Med Rehabil.* 1992; 73(8):735-737.
4. Okawa A, Shinomiya K, Komori H, et al. Dynamic motion study of the whole lumbar spine by videofluoroscopy. *Spine (Phila Pa 1976).* 1998; 23(16):1743-1749.
5. Teyhen DS, Flynn TW, Childs JD, et al. Fluoroscopic video to identify aberrant lumbar motion. *Spine.* 2007; 32(7):E220-229.
6. Wong KW, Leong JC, Chan MK, et al. The flexion-extension profile of lumbar spine in 100 healthy volunteers. *Spine (Phila Pa 1976).* 2004; 29(15):1636-1641.

**Government Agency, Medical Society and Other Authoritative Publications:**

1. American College of Radiology (ACR) Appropriateness Criteria® Suspected Spine Trauma. Revised in 2018. Available at: <https://acsearch.acr.org/docs/69359/Narrative/>. Accessed on March 24, 2023.

**Websites for Additional Information**

1. National Institute of Neurological Disorders and Stroke. Back Pain. Available at: <https://www.ninds.nih.gov/health-information/disorders/back-pain>. Accessed on March 23, 2023.
2. National Library of Medicine. Health Topics: Back Pain. Available at: <http://www.nlm.nih.gov/medlineplus/backpain.html>. Accessed on March 23, 2023.

**Index**

The use of specific product names is illustrative only. It is not intended to be a recommendation of one product over another, and is not intended to represent a complete listing of all products available.

## Document History

Status	Date	Action
Reviewed	05/11/2023	Medical Policy & Technology Assessment Committee (MPTAC) review. Updated Rationale, References, and Websites section.
Reviewed	05/12/2022	MPTAC review. Updated Websites section.
Reviewed	05/13/2021	MPTAC review. Updated Background and Websites sections.
Reviewed	05/14/2020	MPTAC review. Updated Websites section.
Reviewed	06/06/2019	MPTAC review. Updated Websites section.
Reviewed	07/26/2018	MPTAC review. The document header wording updated from "Current Effective Date" to "Publish Date." Updated References section.
Reviewed	08/03/2017	MPTAC review. Updated References section.
Reviewed	08/04/2016	MPTAC review. Updated Coding and Reference sections. Removed ICD-9 codes from Coding section.
Reviewed	08/06/2015	MPTAC review.
Reviewed	08/14/2014	MPTAC review.
Reviewed	08/08/2013	MPTAC review.
Reviewed	08/09/2012	MPTAC review.
Reviewed	08/18/2011	MPTAC review.
Reviewed	08/19/2010	MPTAC review.
Reviewed	08/27/2009	MPTAC review.
Reviewed	08/28/2008	MPTAC review.
	02/21/2008	The phrase "investigational/not medically necessary" was clarified to read "investigational and not medically necessary." This change was approved at the November 29, 2007 MPTAC meeting.
Reviewed	08/18/2007	MPTAC review.
Reviewed	09/14/2006	MPTAC review.
Revised	09/22/2005	MPTAC Committee review. Revision based on Pre-merger Anthem and Pre-merger WellPoint Harmonization.

Pre-Merger Organizations	Last Review Date	Document Number	Title
Anthem, Inc.	10/28/2004	RAD.00034	Dynamic Spinal Visualization (Including Digital Motion X-ray and Cineradiography/Videofluoroscopy)
WellPoint Health Networks, Inc.		None	

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