

# Neck and Back Pain in VA

## Incidence and Prevalence in VA Users

*Spotlight on Pain Management:*

Patsi Sinnott, PT, PhD, MPH

Sharon Dally, MS, Tigran Avoundjian, MPH,

Jody Trafton, PhD, Todd Wagner, PhD

Dec. 3, 2013

# Outline

- Background
- Data and Methods
- Prevalence
- Incidence
- Next steps



# Background

- Neck and back pain are pervasive
  - Poor understanding of the origins or source of pain
  - Highly recurrent and each recurrence associated with increasing severity and disability
  - High healthcare utilization.
-

# Background

- Evidence both within VA and in the general population of
  - increasing prevalence
  - rising costs
- Little known about incidence

# Whiteboard/Poll

- What proportion of Veterans in general medical clinics report chronic neck or back pain.
- What proportion of Veterans report back pain in the Veterans Health Study?
- Where does chronic low back pain rank in prevalence in VA?

# Background

- Few studies in VA about back or neck pain
  - Association of lower extremity amputation and back pain (Kusljugic et al., 2006) and back pain and diagnostic imaging (Selim et al., 2000)
  - Use of bipolar magnets and postop medications (Collacott et al., 2000)
  - Veterans walk to beat back pain (Krein, S.L.)

# Background

- More information is needed
  - to understand the natural history of back or neck pain
  - to understand progression/regression from acute to chronic pain
  - for strategic program planning

# Previous work

- Musculoskeletal Spine Pain in VA, Description and Guideline Adherence (IIR 09-062)
  - Observational study: Administrative data
  - Spine vs. neck vs. back
  - Acute, mechanical or non-specific spine pain

# Previous work

- First step: define codes to be used to identify patients with neck or back pain in administrative data.
  - Review methods used to identify patients with neck and back pain in administrative data.
  - Found inconsistency in definitions of back and low back
  - Found inconsistent coding algorithms.

# Previous work

- Establish a standard methodology to identify patients with spine pain in administrative data

# Objectives

- Describe the prevalence of neck and back pain among VHA users between 2002 and 2011
- Describe the incident neck or back pain event for these VHA users
- Describe the physical and mental health co-morbidities of these patients

# Methods

- Data:
  - VA inpatient (Patient Treatment Files) outpatient (Outpatient Event) and Fee Basis utilization files in FY2002-2011
  - DSS Outpatient National Data Extracts (OPAT and OPAT2), FY2002-2012
  - Vital status file

# Methods

- Patient identification
  - ICD codes from the literature
  - Categorized as: No spine pain, back pain, neck pain, non-specific spinal pain

# Methods

- ICD-9 codes

# ICD-9 All Spine Codes

ICD-9 Code	2009 ICD-9 Code Descriptions	Back, Neck, or Non-specific	Spine Segment
724	Other and unspecified disorder of back	Back	Back_Nonspecific
724.0	Spinal stenosis, other than cervical	Back	Back_Nonspecific
724.00	Spinal stenosis - unspecified region	Back	Back_Nonspecific
724.09	Spinal stenosis, other than cervical- other	Back	Back_Nonspecific
724.8	Other symptoms referable to back	Back	Back_Nonspecific
724.9	Other unspecified back disorders	Back	Back_Nonspecific
737	Curvature of the spine	Back	Back_Nonspecific
737.0	Adolescent postural kyphosis	Back	Back_Nonspecific
737.1	Kyphosis acquired	Back	Back_Nonspecific
737.10	Kyphosis (acquired)(postural)	Back	Back_Nonspecific
737.11	Kyphosis due to radiation	Back	Back_Nonspecific
737.12	Kyphosis, postlaminectomy	Back	Back_Nonspecific
737.19	Kyphosis acquired-other	Back	Back_Nonspecific
737.3	Kyphoscoliosis and scoliosis	Back	Back_Nonspecific
737.30	Scoliosis [and kyphoscoliosis], idiopathic	Back	Back_Nonspecific
737.31	Resolving infantile idiopathic scoliosis	Back	Back_Nonspecific
737.32	Progressive infantile idiopathic scoliosis	Back	Back_Nonspecific
737.33	Scoliosis due to radiation	Back	Back_Nonspecific
737.39	Other kyphoscoliosis and scoliosis	Back	Back_Nonspecific
737.4	Curvature of the spine associated with other conditions	Back	Back_Nonspecific
737.40	Curvature of the spine associated with other conditions, unspecified	Back	Back_Nonspecific
737.41	Curvature of the spine associated with other conditions, kyphosis	Back	Back_Nonspecific
737.43	Curvature of the spine associated with other conditions, Scoliosis	Back	Back_Nonspecific

# ICD-9 Codes, con't

ICD-9 Code	2009 ICD-9 Code Descriptions	Back, Neck, or Non-specific	Spine Segment
737.8	Other curvatures of the spine	Back	Back_Nonspecific
737.9	Unspecified curvature of the spine	Back	Back_Nonspecific
738.4	Acquired spondylolisthesis	Back	Back_Nonspecific
724.7	Disorders of the coccyx	Back	Coccygeal
724.70	Unspecified disorder of coccyx	Back	Coccygeal
724.71	Hypermobility of coccyx	Back	Coccygeal
724.79	Disorders of coccyx- other	Back	Coccygeal
847.4	Sprains and strains of other and unspecified parts of back- coccyx	Back	Coccygeal
721.42	Lumbar spondylosis w/o myelopathy	Back	Lumbar
722.93	Other and unspecified disc disorder, lumbar region	Back	Lumbar
724.02	Spinal stenosis, other than cervical- lumbar region	Back	Lumbar
724.2	Lumbago	Back	Lumbar
724.3	Sciatica	Back	Lumbar
737.2	Lordosis (acquired)	Back	Lumbar
737.20	Lordosis (acquired)(postural)	Back	Lumbar
737.21	Lordosis, postlaminectomy	Back	Lumbar
737.22	Other post surgical lordosis	Back	Lumbar
737.29	Lordosis acquired other	Back	Lumbar
737.42	Curvature of the spine associated with other conditions, Lordosis	Back	Lumbar
739.3	Nonallopathic lesions, lumbar region	Back	Lumbar
847.2	Sprains and strains of other and unspecified parts of back- lumbar	Back	Lumbar
721.3	Lumbosacral spondylosis w/o myelopathy	Back	Lumbar-Sacral
722.10	Displacement of lumbar inter-vertebral disc w/o myelopathy	Back	Lumbar-Sacral
722.32	Schmorl's nodes lumbar region	Back	Lumbar-Sacral

# ICD-9 Codes (49-72)

ICD-9 Code	2009 ICD-9 Code Descriptions	Back, Neck, or Non-specific	Spine Segment
722.52	Degeneration of lumbar or lumbosacral intervertebral disc	Back	Lumbar-Sacral
722.73	Intervertebral disc disorder with myelopathy, lumbar region	Back	Lumbar-Sacral
722.83	Postlaminectomy syndrome lumbar region	Back	Lumbar-Sacral
756.11	Spondylolysis, lumbosacral region	Back	Lumbar-Sacral
756.12	Spondylolisthesis	Back	Lumbar-Sacral
846.0	Sprains and strains of the lumbosacral (joint) (ligament)	Back	Lumbar-Sacral
720.1	Spinal enthesopathy	Back	Sacral
720.2	Sacroilitis, not elsewhere classified	Back	Sacral
724.6	Disorders of sacrum	Back	Sacral
739.4	Nonallopathic lesions, sacral region	Back	Sacral
846	Sprains and strains of sacroiliac region	Back	Sacral
846.1	Sacroiliac ligament	Back	Sacral
846.2	Sacrospinatus (ligament)	Back	Sacral
846.3	Sacrotuberous (ligament)	Back	Sacral
846.8	Other specified sites of sacroiliac region	Back	Sacral
846.9	Unspecified site of sacroiliac region	Back	Sacral
847.3	Sprains and strains of other and unspecified parts of back- sacrum	Back	Sacral
721.2	Thoracic spondylosis without myelopathy	Back	Thoracic
721.41	Thoracic spondylosis with myelopathy	Back	Thoracic
722.11	Displacement thoracic intervertebral disc without myelopathy	Back	Thoracic
722.31	Schmorl's nodes- thoracic region	Back	Thoracic
722.72	Intervertebral disc disorder with myelopathy- thoracic region	Back	Thoracic
722.82	Postlaminectomy syndrome- thoracic region	Back	Thoracic
722.92	Other and unspecified disc disorder- thoracic region	Back	Thoracic

# ICD-9 codes (73-96)

ICD-9 Code	2009 ICD-9 Code Descriptions	Back, Neck, or Non-specific	Spine Segment
724.01	Spinal stenosis, other than cervical- thoracic region	Back	Thoracic
724.1	Pain in thoracic spine	Back	Thoracic
737.34	Thoracogenic scoliosis	Back	Thoracic
739.2	Nonallopathic lesions, thoracic region	Back	Thoracic
847.1	Sprains and strains of other and unspecified parts of back- thoracic	Back	Thoracic
721.4	Thoracic or lumbar spondylosis with myelopathy	Back	Thoracic-Lumbar
722.1	Displacement of thoracic or lumbar inter-vertebral disc w/o myelopathy	Back	Thoracic-Lumbar
722.5	Degeneration of thoracic or lumbar intervertebral disc	Back	Thoracic-Lumbar
722.51	Degeneration of thoracic or thoracolumbar intervertebral disc	Back	Thoracic-Lumbar
724.4	Thoracic or lumbosacral neuritis or radiculitis, unspecified	Back	Thoracic-Lumbar
724.5	Backache, unspecified	Back	Thoracic-Lumbar
721.0	Cervical spondylosis without myelopathy	Neck	Cervical
721.1	Cervical spondylosis with myelopathy	Neck	Cervical
722.0	Displacement of cervical intervertebral disc without myelopathy	Neck	Cervical
722.4	Degeneration of cervical intervertebral disc	Neck	Cervical
722.71	Intervertebral disc disorder with myelopathy- cervical region	Neck	Cervical
722.81	Postlaminectomy syndrome- cervical region	Neck	Cervical
722.91	Other and unspecified disc disorder- cervical region	Neck	Cervical
723	Other disorders of the cervical region	Neck	Cervical
723.0	Spinal stenosis of cervical region	Neck	Cervical
723.1	Cervicalgia	Neck	Cervical
723.2	Cervico-cranial syndrome	Neck	Cervical
723.3	Cervicobrachial syndrome (diffuse)	Neck	Cervical
723.4	Brachial neuritis or radiculitis	Neck	Cervical

# ICD-9 Codes (97-120)

ICD-9 Code	2009 ICD-9 Code Descriptions	Back, Neck, or Non-specific	Spine Segment
723.5	Torticollis, unspecified	Neck	Cervical
723.6	Panniculitis specified as affecting neck	Neck	Cervical
723.7	Ossification of posterior longitudinal ligament in cervical region	Neck	Cervical
723.8	Other syndromes affecting cervical region	Neck	Cervical
723.9	Unspecified musculoskeletal disorders and symptoms referable to neck	Neck	Cervical
738.2	Acquired deformity of the neck	Neck	Cervical
739.1	Non allopathic lesions cervical	Neck	Cervical
756.16	Congenital anomalies of the spine - Klippel-feil	Neck	Cervical
847.0	Sprains and strains of other and unspecified parts of back- neck	Neck	Cervical
720	Ankylosing spondylitis and other inflammatory spondylopathies	Non-specific	Non-specific
720.0	Ankylosing spondylitis	Non-specific	Non-specific
720.8	Other inflammatory spondylopathies	Non-specific	Non-specific
720.81	Other inflammatory spondylopathies in diseases classified elsewhere	Non-specific	Non-specific
720.89	Other inflammatory spondylopathies - other	Non-specific	Non-specific
720.9	Unspecified inflammatory spondylopathy	Non-specific	Non-specific
721	Spondylosis and allied disorders	Non-specific	Non-specific
721.5	Spondylosis and allied disorders - Kissing Spine	Non-specific	Non-specific
721.6	Spondylosis and allied disorders - Ankylosing vertebral hyperostosis	Non-specific	Non-specific
721.7	Traumatic spondylopathy	Non-specific	Non-specific
721.8	Other allied disorders of the spine	Non-specific	Non-specific
721.9	Spondylosis of unspecified site	Non-specific	Non-specific
721.90	Spondylosis of unspecified site without mention of myelopathy	Non-specific	Non-specific
721.91	Spondylosis of unspecified site with myelopathy	Non-specific	Non-specific
722	Intervertebral disc disorders	Non-specific	Non-specific

# ICD-9 (121-142)

ICD-9 Code	2009 ICD-9 Code Descriptions	Back, Neck, or Non-specific	Spine Segment
722.2	Displacement of intervertebral disc, site unspecified, w/o myelopathy	Non-specific	Non-specific
722.3	Schmorl's nodes	Non-specific	Non-specific
722.30	Schmorl's nodes- unspecified region	Non-specific	Non-specific
722.39	Schmorl's nodes- other	Non-specific	Non-specific
722.6	Degeneration of intervertebral disc site unspecified	Non-specific	Non-specific
722.7	Intervertebral disc disorder with myelopathy	Non-specific	Non-specific
722.70	Intervertebral disc disorder with myelopathy- unspecified region	Non-specific	Non-specific
722.8	Postlaminectomy syndrome	Non-specific	Non-specific
722.80	Postlaminectomy syndrome- unspecified region	Non-specific	Non-specific
722.9	Other and unspecified disc disorder site unspecified	Non-specific	Non-specific
722.90	Other and unspecified disc disorder- unspecified region	Non-specific	Non-specific
738.5	Other acquired deformity of the back or spine	Non-specific	Non-specific
756.1	Anomaly of spine	Non-specific	Non-specific
756.10	Anomaly of spine, unspecified	Non-specific	Non-specific
756.13	Congenital anomalies of the spine - absence of a vertebra	Non-specific	Non-specific
756.14	Congenital anomalies of the spine - hemivertebra	Non-specific	Non-specific
756.15	Congenital anomalies of the spine - congenital fusion of the vertebrae	Non-specific	Non-specific
756.17	Congenital anomalies of the spine - spina bifida occulta	Non-specific	Non-specific
756.18	Congenital anomalies of the spine	Non-specific	Non-specific
756.19	Congenital anomalies of the spine - other	Non-specific	Non-specific
847	Sprains and strains of other and unspecified parts of back	Non-specific	Non-specific
847.9	Sprains and strains of other and unspecified parts of back- unspecified	Non-specific	Non-specific

# Methods – Definitions

- Neck pain = cervical spine ICD codes
- Back pain = thoracic, lumbar, sacral or coccygeal spine codes.
- Non-specific = codes that referred to the spine, but without reference to the spinal segment, or had encounters with both back and neck pain diagnoses.

# Methods - Exclusions

- Non-Veterans
- Fee-Basis inpatient records where the duration of care was  $>10$  years

# Prevalent cases

- VHA users who presented for care in CY2002-2011
- Neck, back or non-specific spine pain condition compared to no spine care
- Annual totals

# Incident cases

- First encounter for each Veteran, following a two year “clean period”
  - CY2004 - 2011
  - Veteran may have more than one incident event (each with a two year clean period)
  - Veteran has used VA services within preceding two years
-

# Comparisons

- Change rates
- Prevalence to incidence
- Demographics, co-morbidities of general population

# Results

# Demographics

	cy2004	cy2005	cy2006	cy2007	cy2008	cy2009	cy2010	cy2011
N	833,214	888,998	945,255	1,004,690	1,074,483	1,173,908	1,256,975	1,316,365
Age	58.7	58.7	58.7	58.6	58.2	57.9	57.8	57.9
Age (SD)	14.2	14.4	14.6	14.7	15.0	15.1	15.2	15.2
Age (n msg)	21	19	10	21	21	27	55	279
Sex (% Male)	93.7%	93.4%	93.2%	93.0%	92.7%	92.5%	92.3%	92.0%
Homeless (%)	3.2%	3.2%	3.1%	3.3%	3.5%	3.9%	4.5%	5.1%

# Prevalence in VHA Users

Calendar Year	Total Veterans Seeking Care	Prevalence of Back Pain (%)	Prevalence of Neck Pain (%)	Prevalence of Non-Specific Spine Pain (%)
2002	4,353,375	470,609 (10.8%)	69,496 (1.6%)	123,410 (2.8%)
2003	4,576,881	523,186 (11.4%)	78,003 (1.7%)	138,841 (3.0%)
2004	4,755,869	582,975 (12.3%)	91,592 (1.9%)	158,647 (3.3%)
2005	4,848,868	621,571 (12.8%)	95,975 (2.0%)	171,452 (3.5%)
2006	4,934,847	659,103 (13.4%)	101,193 (2.1%)	184,959 (3.7%)
2007	4,976,831	696,312 (14.0%)	107,802 (2.2%)	200,576 (4.0%)
2008	5,038,660	742,028 (14.7%)	114,823 (2.3%)	217,632 (4.3%)
2009	5,214,776	806,708 (15.5%)	125,008 (2.4%)	242,192 (4.6%)
2010	5,421,325	863,345 (15.9%)	134,389 (2.5%)	259,241 (4.8%)
2011	5,580,452	905,346 (16.2%)	139,731 (2.5%)	271,288 (4.9%)

# Co-Morbidities of Prevalent Cases

	cy2004	cy2006	cy2008	cy2009	cy2010	cy2011
N	833,214	945,255	1,074,483	1,173,908	1,256,975	1,316,365
Hypertension	53.90%	55.86%	56.61%	56.51%	56.44%	56.06%
Arthritis	29.64%	29.01%	27.47%	27.05%	26.69%	26.90%
Diabetes	20.51%	22.09%	22.94%	23.09%	23.42%	23.92%
Ischemic Heart Disease	18.79%	18.41%	17.48%	16.97%	16.54%	16.14%
Chronic Obstructive Pulmonary Disease	11.78%	11.72%	11.68%	11.66%	11.66%	12.08%
Congestive Heart Failure	4.16%	4.13%	3.98%	3.88%	3.82%	3.79%
Headache	7.47%	7.79%	8.96%	9.57%	9.85%	9.70%
Renal Failure	2.76%	3.74%	5.04%	5.38%	5.76%	6.08%
Osteoporosis	2.24%	2.36%	2.28%	2.20%	2.11%	1.96%

# Mental Health Co-Morbidities

	cy2004	cy2006	cy2008	cy2009	cy2010	cy2011
N	833,214	945,255	1,074,483	1,173,908	1,256,975	1,316,365
Tobacco/Nicotine Dep.	17.94%	19.12%	21.77%	22.30%	22.10%	21.75%
Alcohol Dep/Abuse	6.96%	7.02%	7.72%	8.20%	8.43%	8.47%
Any Drug Dep/Abuse	5.02%	5.24%	5.90%	6.28%	6.51%	6.89%
Opium Dep/Abuse	1.18%	1.19%	1.37%	1.49%	1.60%	1.68%
Cannabis Dep/Abuse	1.43%	1.54%	1.85%	2.06%	2.32%	2.45%
Sedatives Dep/Abuse	0.24%	0.24%	0.28%	0.32%	0.35%	0.39%
Cocaine Dep/Abuse	2.13%	2.16%	2.24%	2.23%	2.18%	2.13%
Depression	23.52%	23.90%	26.42%	27.68%	28.86%	29.32%
Post Traumatic Stress Disorder	11.14%	12.88%	15.74%	16.85%	17.77%	18.59%
Manic Depression	2.91%	3.03%	3.41%	3.54%	3.65%	3.65%
Schizophrenia	2.23%	2.08%	2.00%	1.97%	1.90%	1.84%

# Comparisons CY2011

	All Veterans	Spine Pain
<b>N</b>	5,580,452	1,316,365
<b>Age (mean)</b>	61.8	57.9
<b>Age (SD)</b>	16.1	15.2
<b>Sex (Percent Male)</b>	92.9%	92.0%
<b>Homeless (Percent)</b>	3.2%	5.1%

# Comparisons CY2011

	All Veterans	Spine Pain
<b>N</b>	5,580,452	1,316,365
<b>Hypertension</b>	55.0%	56.06%
<b>Arthritis</b>	18.3%	26.90%
<b>Diabetes</b>	24.7%	23.92%
<b>Ischemic Heart Disease</b>	17.5%	16.14%
<b>COPD</b>	10.2%	12.08%
<b>Congestive Heart Failure</b>	4.0%	3.79%
<b>Headache</b>	5.0%	9.70%
<b>Renal Failure</b>	6.3%	6.08%
<b>Osteoporosis</b>	1.4%	1.96%



# Comparisons CY2011

	All Veterans	Spine Pain
<b>Tobacco/Nicotine Dep</b>	15.4%	21.75%
<b>Alcohol Dep/Abuse</b>	6.1%	8.47%
<b>Any Drug Dep/Abuse</b>	3.9%	6.89%
<b>Opium Dep/Abuse</b>	0.8%	1.68%
<b>Cannabis Dep/Abuse</b>	1.4%	2.45%
<b>Sedatives Dep/Abuse</b>	0.2%	0.39%
<b>Cocaine Dep/Abuse</b>	1.2%	2.13%
<b>Depression</b>	18.4%	29.32%
<b>PTSD</b>	11.5%	18.59%
<b>Manic Depression</b>	2.3%	3.65%
<b>Schizophrenia</b>	1.7%	1.84%

# Incidence 2004 - 2011

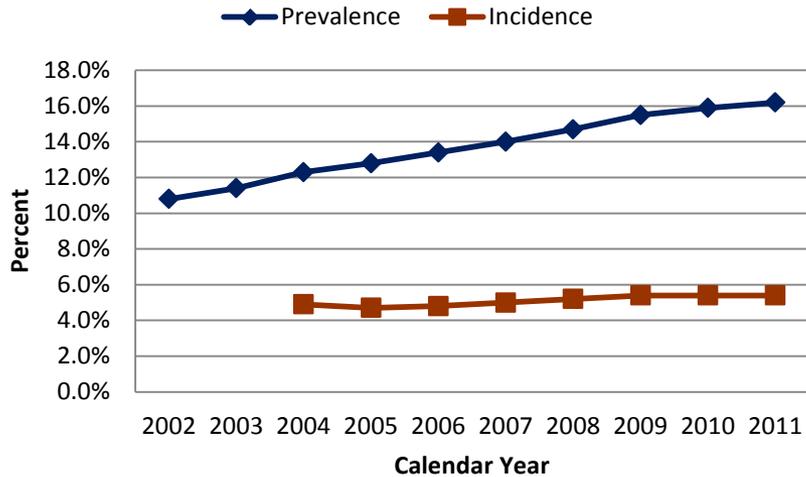
Calendar Year	Total Veterans Seeking Care	Incidence of Back Pain (%)	Incidence of Neck Pain (%)	Incidence of Non-Specific Spine Pain (%)
2004	4,755,869	233,050 (4.9%)	52,924 (1.1%)	27,394 (0.6%)
2005	4,848,868	229,732 (4.7%)	51,232 (1.1%)	27,523 (0.6%)
2006	4,934,847	237,477 (4.8%)	52,708 (1.1%)	28,866 (0.6%)
2007	4,976,831	247,053 (5.0%)	56,440 (1.1%)	29,990 (0.6%)
2008	5,038,660	261,049 (5.2%)	59,742 (1.2%)	30,990 (0.6%)
2009	5,214,776	282,599 (5.4%)	65,046 (1.2%)	33,768 (0.6%)
2010	5,421,325	294,535 (5.4%)	67,856 (1.3%)	35,065 (0.6%)
2011	5,580,452	300,526 (5.4%)	69,006 (1.2%)	35,745 (0.6%)

Incidence is calculated among Veterans seeking care.

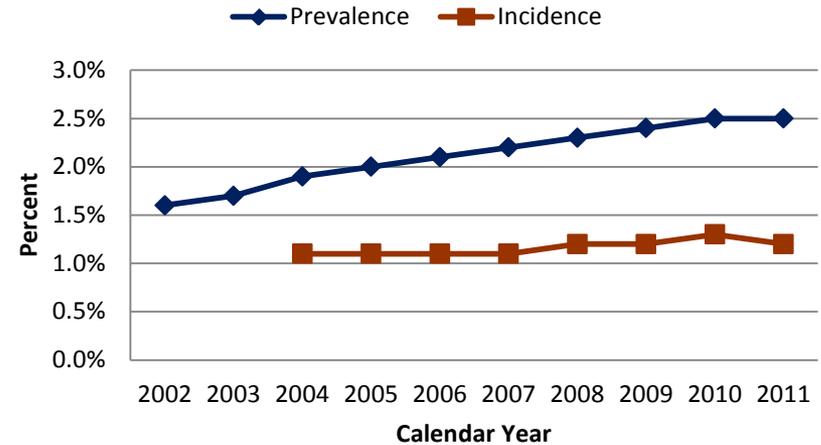
Incident cases are defined as having no spine pain diagnoses in the 2 years prior to the index event but patient has received some form of VA or Fee-Basis care within the prior 2 years.

# Comparisons

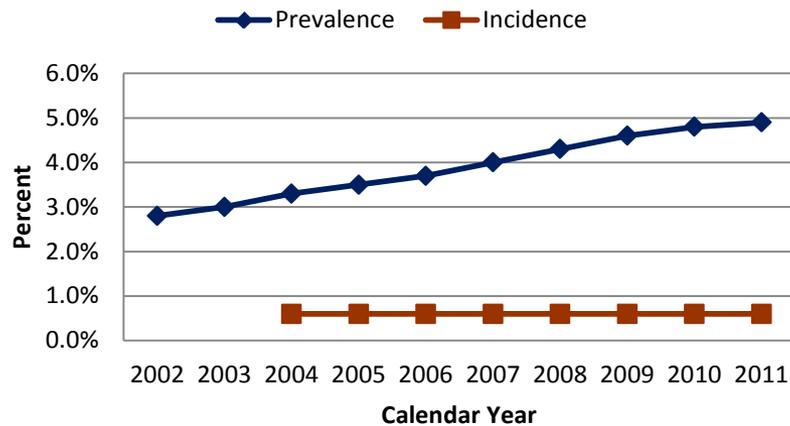
## Back Pain



## Neck Pain



## Non-Specific Spine Pain



# Change rates

- Annual change rates CY2004 – 2011

---

	<b>Back Pain</b>	<b>Neck Pain</b>	<b>Non-specific</b>
Prevalence	4.70%	4.68%	6.81%
Incidence	1.63%	1.46%	0.00%

---

# Whiteboard

- What does this suggest?

# Next steps

- Compare care to *VHA/DOD Clinical Practice Guideline for the Management of Low Back Pain or Sciatica in the Primary Care Setting*.
- Assess influence of guideline concordant care on recovery\*
- Assess influence of therapies on recovery
- Compare administrative data findings to chart review

# Questions