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An Invited Review

The Growth of Interventional Pain Management in the New Millennium: A Critical Analysis of Utilization in The Medicare Population

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Interventional pain management has been growing by leaps and bounds with the introduction of an array of new CPT codes, the expansion of interventional techniques, and utilization. Interventional pain management dates back to the origin of neural blockade and regional analgesia, in 1884. Over the years, pain medicine and interventional pain management have taken many approaches, including biological, biopsychosocial, and psychosocial.

In the late 1990s and early 2000s, a new philosophy of precision diagnosis and high-tech management has evolved. An interventional pain physician may be either a reductionist, a monotherapist or a combination of the two. Interventionalists have been criticized for excessive undisciplined application of needle procedures.

Interventional techniques are performed by many primary specialists (anesthesiology, physiatry, neurology, etc.) and physicians designated by CMS in interventional pain management (-09) and pain management or pain medicine (-72) which went into effect in 2003 and 2002.

Overall, the frequency of utilization of interventional procedures has increased substantially since 1998. It is estimated that among Medicare recipients, the frequency of interventional procedures, which includes epidural, spinal neurolysis, and adhesiolysis procedures; facet joint interventions and sacroiliac joint blocks; and other types of nerve blocks, excluding continuous epidurals, implantables, disc procedures, intraarticular injections, trigger point and ligament injections, had increased by 95% from 1998 to 2003. In the Medicare population, facet joint interventions and sacroiliac joint blocks have increased by 222% from 1998 to 2003. Overall, the utilization ofvarious nerve blocks (excluding epidurals, disc injections, and facet joint blocks) in Medicare recipients from 1998 to 2003 were performed approximately 50% of the time by non-pain physicians.

Interventional pain management is growing rapidly, under the watchful eye of the government, and third party payors. Establishing an algorithmic approach and following guidelines may improve compliance and quality of care without implications of abuse.

Keywords: Interventional pain management, pain medicine, utilization, clinical effectiveness, cost effectiveness, algorithmic approach, precision diagnosis, precision treatment

The National Uniform Claims Committee (NUCC) defined interventional pain management as the discipline of medicine devoted to the diagnosis and treatment of pain and related disorders with the application of interventional techniques in managing subacute, chronic, persistent, and intractable pain, independently or in conjunction with other modalities of treatments. The Medicare Payment Advisory Commission (MedPAC), in its report on access to interventional pain management services, described interventional techniques as minimally invasive procedures, such as needle placement of drugs in targeted areas, ablation of targeted nerves, and some surgical techniques, such as diskectomy and the implantation of intrathecal infusion pumps and spinal cord stimulators.

In the new millennium, interventional pain management has seen the introduction of an array of new CPT codes and the expansion of interventional techniques. Coupled with this progress, interventional pain management physicians have inherited a multitude of problems, which include controlled substance use and abuse, issues related to coding, billing, documentation, and excessive utilization along with allegations of fraud and abuse.

Historical Considerations

Interventional pain management dates back to the origins of neural blockade and regional analgesia. Fundamental to modern neural blockade and interventional techniques is the concept that pain is a sensory warning conveyed by specific nerve fibers, amenable, in principle, to modulation or interruption anywhere on the nerve's pathway. The concepts of neural blockade and interventional techniques are founded on the structural basis of chronic pain.

The origins of neural blockade and regional anesthesia date back to September 15, 1884, when Koller (a colleague of Sigmund Freud) reported the numbing effect of cocaine on the tongue (1). This observation took the world by storm. By the year's end, cocaine was used to provide effective local anesthesia for ophthalmology, urology, and general surgery. In 1899, Tuffer (2) described a therapeutic nerve block in pain management, using spinal cocaine to control pain from sarcoma of the leg. Further progress was advanced with Cushing's (3) description of pain relief with nerve blocks, description of caudal epidural injections in 1901 (4-6), report of trigeminal alcohol blockade by Schloesser (7) in 1903, and thereafter by a rapidly growing list of other interventional techniques (8-45).

Diagnostic blockade in pain management was pioneered when von Gaza (46) used procaine for determining the path-

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ways of obscure pain (sympathetic or sensory). Following this, White (47) in 1930, and Steindler and Luck (48) in 1938, described applications for diagnostic interventional techniques.

The presumed futility of treating pain without localizing the pain generator prompted Steindler and Luck (48) to employ procaine hydrochloride injections for identifying specific sources of pain in low back pain disorders. The application of clinical anatomy and an appreciation of the structural basis of spinal pain revolutionized diagnostic interventional techniques. Recent advances in our understanding of key principles of clinical anatomy of the spine, particularly for interventionalists, are credited to Bogduk and others (25, 49-63).

Evolution

Over the years, pain medicine and interventional pain management have taken many approaches including biological, biopsychosocial, and psychosocial. Each approach has its proponents and opponents. However, no single approach to the treatment of chronic pain has been validated. Consequently, almost all specialists agree that chronic pain and its management are too complex to be reduced to a single opinion or a single modality universally acceptable. From a historical perspective, the oldest strategies for managing chronic pain, particularly chronic low back pain, are conservative modalities and surgical interventions, which may be described as monotherapy. However, in the 1980s, the strategy of utilizing one modality of treatment in isolation, followed by a trial of another modality if the first one did not succeed, and finally leading to surgery has been challenged. Consequently, biopsychosocial approaches developed, which involved not only physical, but also psychological and behavioral management.

It was again recognized that conservative therapy, surgery, and even behavioral approaches did not work for some patients (64). This prompted innovations in the form of "high-tech treatments." Spinal cord stimulation and intraspinal drug delivery systems are hallmarks of these modalities. However, these also were considered as monotherapies. Even though these were high-tech interventions, they were also based on the principles of multidisciplinary therapy or behavioral therapy, without specific pathoanatomic diagnoses. Thus, treatment was considered symptomatic, without the requirement for a diagnosis.

In the late 1990s and early 2000s, a new philosophy of precision diagnosis and high-tech management evolved. Bogduk described this as reductionism (64). This strategy assumed that patients with chronic back pain did have a lesion, but it was not being diagnosed. As a result, conservative therapies and even surgery were being applied empirically and without attention to identifying a valid diagnosis. It was considered to be the main reason for the failure of many interventions. Further, many felt that it was inappropriate to conclude that all these patients needed behavioral therapy. Consequently, the objective of the reductionist strategy is to pin-point the source of pain and to stop the pain.

Bogduk (64) described a tri-polar system involving all three approaches. One pole is persistence with monotherapies – being single types of treatment delivered often by a single physician, and which includes non-surgical and non-interventional therapies, traditional surgery, and high-tech interventions. The second pole is multidisciplinary behavioral therapy – using multiple interventions, delivered by a team of professionals, but focusing on psychological distress, beliefs, attitudes and physical performance, rather than on pain. The third pole is the reductionist strategy, which involves finding the source of pain, with a view to stopping it. Thus, a simplified description of an interventional pain physician may be either a reductionist or a monotherapist, or a combination thereof. Of course, purists may believe that none of the other techniques work, except the one they believe in.

Interventional Pain Management

Interventionalists have been criticized for performing only needle procedures or, according to some, for abusing them. The reductionist approach faced criticism mainly for the undisciplined application of needle procedures or interventional techniques (64-66). Many of the diagnostic and therapeutic interventional techniques are based on evidence (67-75). However, some are acquiring a bad reputation due to their use in an undisciplined and unproductive manner, by providers who are not well qualified, and by performing them in inappropriate settings. Inappropriate documentation, lack of medical necessity criteria, and excessive utilization in interventional pain management will continue to be a source of criticism (76).

Documentation

Few issues in modern medical practice spark as much controversy as insufficient documentation and provision of inappropriate medical services. Documentation is closely interlinked with billing, coding, fraud, abuse, medical liability, and increasing health care costs. Documentation is to provide evidence or information. For physicians, documentation means providing information or evidence on multiple issues, including evaluation and management services, procedural services, billing and coding. If a physician wants to get paid for what was done or stay out of fraud and abuse investigations, one has to follow the dictum document, document and document. Even though healthcare is not so different from other industries and services, documentation has become an inevitable and even desirable part of medical practice (76).

A general accounting office, now known as Government Accountability Office (GAO), study submitted to the Ways and Mean Health Subcommittee on September 25, 2001, showed that Medicare carriers were often wrong and approximately 85% of the time provided incorrect or incomplete answers. The Office of Inspector General reported overpayments of $23.3 billion in 1996, $20.3 billion in 1997, $12.6 billion in 1998, $13.5 in 1999, $11.9 billion in 2000, $12.1 billion in 2001, $13.3 billion in 2002, and $11.6 billion in fiscal year 2003 in the Medicare program (Table 1). It has been demonstrated that increased efforts to prevent fraud and abuse have reduced the Medicare fee-for-service error rates significantly (Fig. 1).

The most important causes of the offensive on physician practices with heightened requirements for documentation are increasing healthcare costs, the Clinton administration, the Health Insurance Portability and Accountability Act (HIPAA) and the Balanced Budget Act.

Error rates also have been determined for Medicare carriers, ranging from 6.1% to 25.7% with an average of 14.4%. No such data is available for third party payors.

There is tremendous variation in documentation standards among payors.

Table 1. *Improper payments by type of error*

	Fiscal Year							
	1996	1997	1998	1999	2000	2001	2002	2003
Documentation errors	46.8%	44.3%	16.8%	40.4%	36.4%	42.9%	28.6%	63.5%
Medically Unecessary Services	36.8%	36.9%	55.6%	32.8%	43.0%	43.2%	57.1%	21.7%
Coding errors	8.5%	14.7%	18.0%	15.8%	14.7%	17.0%	14.3%	12.1%
Noncovered/others	7.9%	4.1%	9.6%	11.0%	5.9%	-3.1%*	0%	2.7%

* For 2001 the -3.1% applied primarily "other" errors. In these cases, medical reviewers determined that the amounts billed should have been higher or that amounts previously denied were correct.

For 2003, figures have been adjusted to account for non-response problem experienced in 2003.

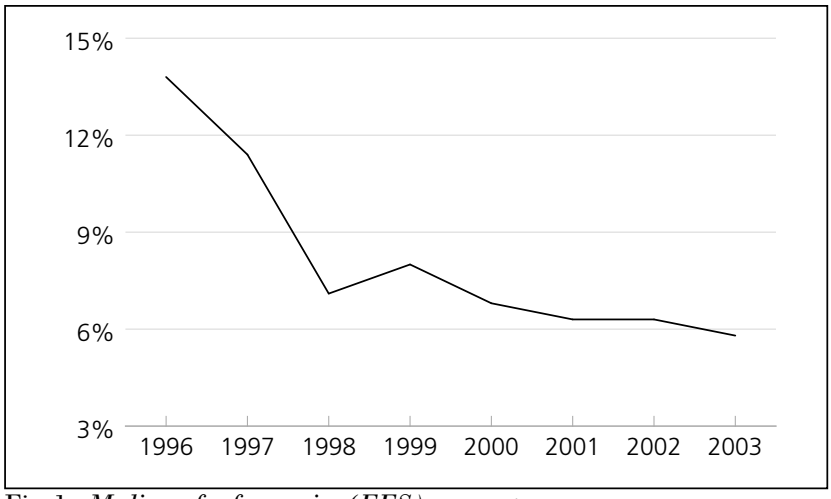

Fig. 1. *Medicare fee-for-service (FFS) error rate*

Further, the variation is not just among the carriers but even among individual carriers themselves there are regional policies. Even Medicare carriers who are believed to be consistent because they are all under the Medicare administration, publishe varying documentation policies. This also applies to large health insurance companies such as Aetna, Blue Cross and Blue Shield, and United Health Care. Given this great variation, the best way for the physician to entirely meet the documentation criteria is to use a checklist and cover all aspects:

- Should make it clear that the procedure was performed by the reporting or billing physician,
- Document with appropriate and specific diagnostic code such as, ICD-9 CM,
- Provide documentation of indications and medical necessity, which may be reviewed by payors at any time,
- Must document specific regulations governing procedures performed in chronic pain management by many carriers, and
- Follow correct coding initiatives, and Local Medicare Review Policies with the limitations, which become part of documentation.

Medical Necessity

The Centers for Medicare and Medicaid Services defines medical necessity as . . . "no payment may be made under Part A or Part B for any expense incurred for items or services which - - are not reasonable and necessary for the diagnosis or treatment of illness or injury or to improve the functionality of a malformed body member."

The American Medical Association defines medical necessity as, . . . "no payment may be made under Part A or Part B for any expense incurred for items or services which - - are not reasonable and necessary for the diagnosis or treatment of illness or injury or to improve the functionality of a malformed body member (77)."

The American Medical Association further defines medical necessity as, "Health care services or products that a prudent physician would provide to a patient for the purpose of preventing, diagnosing or treating an illness, injury, disease or its symptoms in a manner that is: 1) in accordance with generally accepted standards of medical practice; 2) clinically appropriate in terms of type, frequency, extent, site and duration; and 3) not primarily for the convenience of the patient, physician or other healthcare provider."

Black's *Dictionary of Law*, defines medical necessity as " An absolute physical necessity, an inevitability, or convenient, useful, appropriate, suitable, proper or conductive to the end sought".

Quinn (78) defined medical necessity as, "Ideally, it encompasses the shortest least expensive, or least intense level of treatment, care or service rendered, or supply provided, as determined to the extent required to diagnose or treat an injury or sickness".

Local Medical Review Policy

Local medical review policy (LMRP) is an administrative and educational tool to assist providers, physicians and suppliers in submitting correct claims for payment. Local policies outline how contractors will review claims to ensure that they meet Medicare coverage requirements. The Centers for Medicare & Medicaid Services (CMS) requires that LMRPs be consistent with national guidance (although they can be more detailed or specific), developed with scientific evidence and clinical practice, and are developed through certain specified federal guidelines. Contractor Medical Directors develop these policies (77).

Local Coverage Determination

A "Local Coverage Determination" (LCD) is a decision by a fiscal intermediary or carrier whether to cover a par-

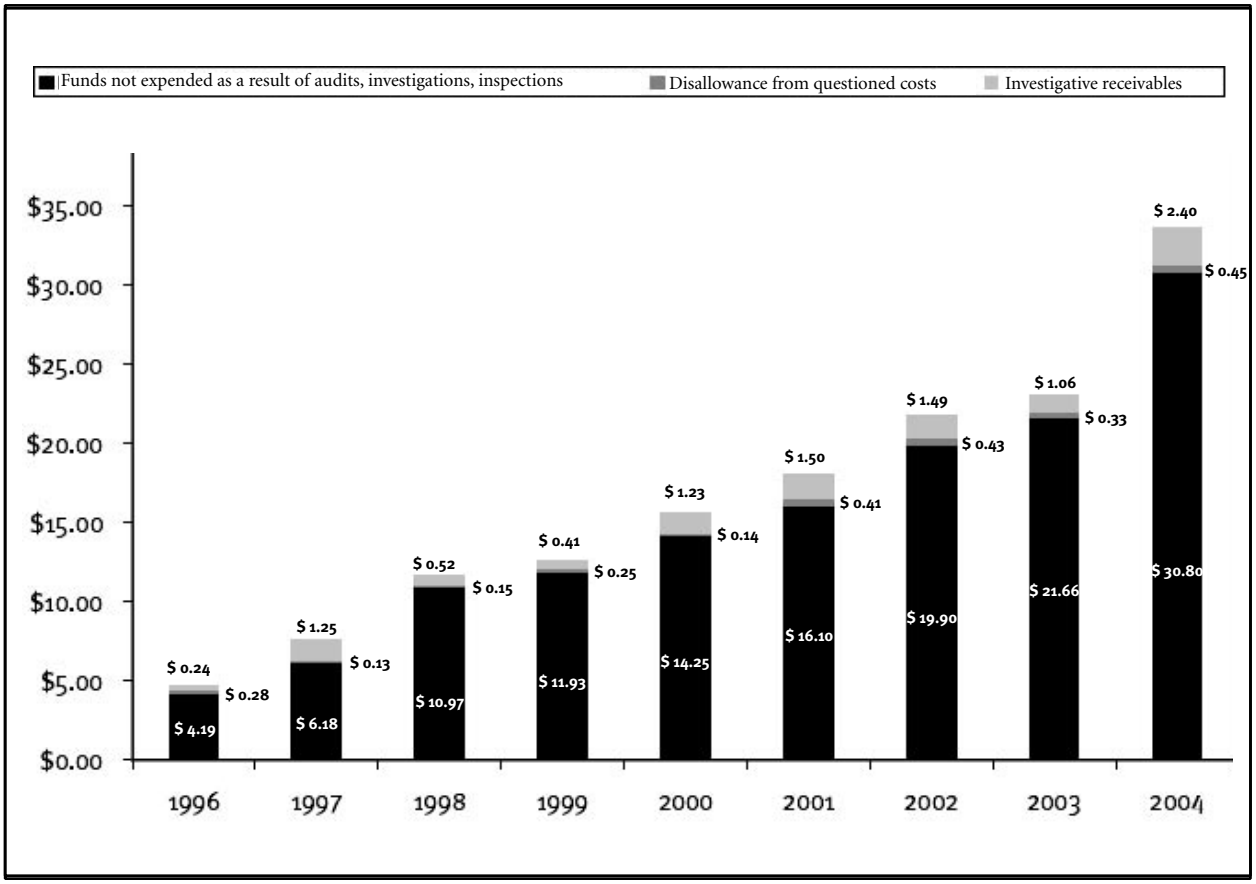

Fig. 2. *Cost savings reported by Department of Health and Human Services (DHHS), Office of Inspector General (OIG)*

ticular service on an intermediary-wide or carrier-wide basis in accordance with Section 1862(a)(1)(A) of the Social Security Act (i.e., a determination as to whether the service is reasonable and necessary). The difference between LMRPs and LCDs is that LCDs consist only of "reasonable and necessary" information, while LMRPs may also contain category or statutory provisions (77).

Fraud and Abuse

While the federal government has become far more aggressive in identifying and prosecuting healthcare professionals and entities for fraud and abuse, private insurers also are becoming not only more active but are also pursuing fraud and abuse. Recent Federal Bureau of Investigation statistics show that 60% - 75% of investigations are related to government agencies, either Medicare or Medicaid; whereas 25% - 40% of the cases are investigated secondary to the complaints of private insurers (79).

For the past 10 years, physician practices have been aggressively audited by the federal and state governments, along with major third-party payors across the nation. Since 1993, there have been a record number of investigations, indictments, convictions and settlements in almost every segment of the healthcare community (79). Figure 2 and Table 2 summarize savings, recoveries, civil and criminal penalties of healthcare fraud. US government fraud and abuse recoveries and savings are estimated at $115 per dollar invested or $9.7 million per each OIG employee.

The government also has recovered significant amounts and returned the funds to the Medicare trust fund compared to the funds appropriated from the federal budget on fraud and abuse. It also has been illustrated that the government's health related civil fraud recoveries have been gradually increasing not only in amount, but also in proportion compared to total civil fraud recoveries.

The OIG's 2004 work plan encompasses significantly increased levels of activity compared to 2003 as follows:

Outpatient Prospective Payment System

- Outpatient services delivered on the same day as a discharge and a readmission
- Procedure coding of outpatient and physician services
- Outlier payments under the outpatient prospective payment system

Table 2. *Provider exclusions and criminal convictions.*

Year	Exclusions	Criminal convictions
1996	1408	151
1997	2719	215
1998	3021	326
1999	2976	396
2000	3350	467
2001	3756	465
2002	3448	480
2003	3275	576
2004	3088	468

Source: DHHS, OIG reports. Additional convictions of Medicaid and other convictions are not included. In the first half of 1997, there were 341 Medicaid convictions.

Inpatient Prospective Payment System
- Consecutive inpatient stays
- Payments to acute-care hospitals operating under the Medicare prospective payment system
- Expansion of DRG payment window

Other payment issues
- Payment Error Prevention Program
- Periodic interim payments
- Payments for medical education
- Implementation of the Medicare program for critical-access hospitals

Miscellaneous issues
- Hospital privileging activities
- Peer review organizations' sanction authority
- Reporting of restraint and seclusion in psychiatric hospitals

Procedural Coding System

Current Procedural Terminology® (CPT), developed and updated by the American Medical Association (AMA), is the most commonly used coding system in the United States. CPT provides descriptive terms, guidelines, and identifies codes for reporting medical services and procedures. The first edition of CPT was published in 1966. CPT nomenclature for interventional procedures was non-specific and inadequate until 2000. Since then, sophisticated developments have taken place in interventional pain management coding with approval of many new codes. Consequently, there are now specific codes for facet joint nerve blocks, interlaminar epidural steroid injections, transforaminal epidural steroid injections, adhesiolysis, spinal endoscopic adhesiolysis, codes for multiple sympathetic and somatic nerve blocks, vertebroplasty, and refill and maintenance codes for implantables (80-85). The 2005 interventional pain management codes are as follows:

CPT

20526 Injection, therapeutic (eg, local anesthetic; corticosteroid), carpal tunnel
20550 tendon sheath, ligament injection
20551 Injection(s); single tendon origin/insertion
20552 Injection(s); single or multiple trigger point(s), one or two muscle(s)
20553 Injection(s); single or multiple trigger point(s), three or more muscle(s)
20600 Arthrocentesis, aspiration and/or injection; small joint or bursa
20605 Arthrocentesis, aspiration and/or injection; intermediate joint or bursa
20610 Major Joint Injection
22520 Vertebroplasty (Thoracic)
22521 Vertebroplasty (Lumbar)
27093 Injection procedure for hip arthrography
27096 Injection procedure for sacroiliac joint
62263 Percutaneous lysis of epidural adhesions; 2 or more days
62264 Percutaneous lysis of epidural adhesions; 1 day
62270 Spinal puncture, lumbar, diagnostic
62272 Spinal puncture, therapeutic, for drainage of CSF
62273 Injection, epidural, of blood or clot patch
62280 Injection/infusion of neurolytic substance; subarachnoid
62281 Injection/infusion of neurolytic substance; epidural, cervical or thoracic
62282 Injection/infusion of neurolytic substance; epidural, lumbar, sacral (caudal)
62284 Myelography
62287 Aspiration or decompression procedure, percutaneous
62290 Injection procedure for diskography, each level; lumbar
62291 Injection procedure for diskography, each level; cervical or thoracic
62292 Injection procedure for chemonucleolysis; lumbar
62310 Injection, single, epidural or subarachnoid, cervical or thoracic
62311 Injection, single, epidural or subarachnoid, lumbar, sacral (caudal)
62318 Injection, including catheter placement, epidural or subarachnoid, cervical or thoracic
62319 Injection, including catheter placement, epidural or subarachnoid, lumbar, sacral (caudal)
62350 Implantation, reservoir/infusion pump
62355 Removal of previously implanted intrathecal or epidural catheter
62360 Implantation or replacement of device; subcutaneous reservoir
62361 Implantation or replacement of device; non-programmable pump
62362 Implantation or replacement of device; programmable pump
62365 Removal of subcutaneous reservoir or pump, previously implanted
63650 Percutaneous implantation of neurostimulator electrode
63660 Revision or removal of spinal neurostimulator
63685 Insertion or replacement of spinal neurostimulator
63688 Revision or removal of implanted spinal neurostimulator
64400 Injection, anesthetic agent, trigeminal nerve
64402 Injection, anesthetic agent, facial nerve
64405 Injection, anesthetic agent, greater occipital nerve
64408 Injection, anesthetic agent, vagus nerve
64410 Injection, anesthetic agent, phrenic nerve
64412 Injection, anesthetic agent, spinal accessory nerve
64413 Injection, anesthetic agent, cervical plexus nerve
64415 Injection, anesthetic agent, brachial plexus nerve
64416 Injection, anesthetic agent, brachial plexus, continuous infusion by catheter
64417 Injection, anesthetic agent, axillary nerve
64418 Injection, anesthetic agent, suprascapular nerve
64420 Injection, anesthetic agent, intercostal nerve, single
64421 Injection, anesthetic agent, intercostal nerves, multiple
64425 Injection, anesthetic agent, ilioinguinal, iliohypogastric nerves
64445 Injection, anesthetic agent, sciatic nerve, single
64446 Injection, anesthetic agent, sciatic nerve, continuous infusion
64447 Injection, anesthetic agent, femoral nerve, single
64448 Injection, anesthetic agent, femoral nerve, continuous infusion
64449 Injection, anesthetic agent, lumbar plexus
64450 Injection, anesthetic agent, other peripheral nerve or branch
64470 Injection, anesthetic agent and/or steroid, cervical or thoracic, single
64472 Injection, anesthetic agent and/or steroid, cervical or thoracic, each additional level
64475 Injection, anesthetic agent and/or steroid, lumbar or sacral, single
64476 Injection, anesthetic agent and/or steroid, lumbar or sacral, each ad-

ditional level
64479 Injection, anesthetic agent and/or steroid, transforaminal epidural, cervical or thoracic, single
64480 Injection, anesthetic agent and/or steroid, transforaminal epidural, cervical or thoracic, each additional level
64483 Injection, anesthetic agent and/or steroid, transforaminal epidural, lumbar or sacral, single
64484 Injection, anesthetic agent and/or steroid, transforaminal epidural, lumbar or sacral, each additional level
64505 Injection, anesthetic agent, sphenopalatine ganglion
64508 Injection, anesthetic agent, carotid sinus
64510 Injection, anesthetic agent, stellate ganglion
64517 Injection, anesthetic agent, superior hypogastric plexus
64520 Injection, anesthetic agent, lumbar or thoracic
64530 Injection, anesthetic agent, celiac plexus
64600 Destruction by neurolytic agent, trigeminal nerve
64610 Destruction by neurolytic agent, trigeminal nerve second and third division, under radiologic monitoring
64612 Chemodenervation of muscles; muscle(s) innervated by facial nerve
64613 Chemodenervation of muscles; cervical spinal muscles
64614 Chemodenervation of muscles; extremity and/or trunk muscles
64620 Destruction by neurolytic agent; intercostal nerve
64622 Destruction by neurolytic agent; lumbar or sacral, single level
64623 Destruction by neurolytic agent; lumbar or sacral, each additional level
64626 Destruction by neurolytic agent; cervical or thoracic, single level
64627 Destruction by neurolytic agent; cervical or thoracic, each additional level
64630 Destruction by neurolytic agent; pudendal nerve
64640 Destruction by neurolytic agent; other peripheral nerve or branch
64680 Destruction by neurolytic agent; celiac plexus
64681 Destruction by neurolytic agent; superior hypogastric plexus
72265 Contrast x-ray, lower spine
72270 Contrast x-ray of spine
72275 Epidurography
72285 Diskography C/T Radiological supervision and interpretation
72295 Diskography lumbar radiological supervision and interpretation
73525 Radiological examination
73542 Radiological examination, Sacroiliac joint arthrography, radiological
76000 Fluoroscopic examination
76001 Fluoroscopic, physician time more than one hour
76003 Fluoroscopic guidance for needle placement
76005 Fluoroscopic guidance and localization of needle or catheter tip for spine or therapeutic injection procedure
76012 Radiologic supervision and interpretation, percutaneous vertebroplasty, per vertebral body; under fluoroscopic guidance
76013 Radiologic supervision and interpretation, percutaneous vertebroplasty, per vertebral body; under CT guidance
95990 Refilling and maintenance of implantable pump or reservoir for drug delivery, spinal (intrathecal, epidural) or brain (intraventricular)
95991 Refilling and maintenance of implantable pump or reservoir for drug delivery, spinal (intrathecal, epidural) or brain (intraventricular); administered by physician
0027T Endoscopic lysis of epidural adhesions
0062T Percutaneous intradiscal annuloplasty, any method, unilateral; or bilateral including fluoroscopic guidance; single level
0063T One or more additional levels (List separately in addition to 0062T for primary procedure)

Correct Coding

The National Correct Coding Council (NCCC) was created by the Healthcare Financing Administration, based on the Omnibus Budget Reconciliation Act. The NCCC initiated the National Correct Coding Committee to develop strategies to control improper coding, leading to inappropriate or increased payments in Part B claims (86, 87). Consequently, the National Correct Coding policy was established in 1996 and eventually implemented the Medicare Correct Coding initiative to identify and isolate inappropriate coding, unbundling, and other irregularities in coding. Several versions of the National Correct Coding policies have been released in the form of the National Correct Coding Manuals starting with versions 5.0 up to the most recent publication 10.3 in October 2004 (88).

Correct coding essentially means reporting a group of procedures with an appropriate comprehensive code. Thus, it is essential that the coding description accurately describes what actually transpires at each patient encounter. A multitude of codes reflect the wide spectrum of services provided by various medical providers. Indeed, many medical services can be rendered by different methods and combinations of various procedures. Hence, multiple codes describing similar services are frequently necessary to accurately reflect the particular service a physician performs. However, when multiple procedures are performed at the same session, the procedure and post-procedure work do not have to be repeated for each procedure, and, therefore, a comprehensive code describing the multiple services commonly performed together can be used (86-88).

Many activities, which are integral to a procedure are considered as generic activities and are assumed to be included as acceptable medical/surgical practice and, while they could be performed separately, they should not be considered as such when a code narrative is defined. Thus, all services integral to accomplishing a procedure will be considered to be included in that procedure and, therefore, will be considered a component and part of the comprehensive code.

Utilization of Interventional Techniques

Interventional techniques are performed by physicians in multiple specialties. However, the frequency with which these procedures are performed depends on the nature of the procedures performed. A great proportion of procedures such as trigger point injections or ligament injections are performed by rheumatologists, orthopedic surgeons, podiatrists, internists, and family practitioners; whereas intraarticular injections of various joints are performed by orthopedic surgeons, internists, and family practitioners; and the other majority of other

interventional procedures which include epidurals, facet joint blocks, neurolytic procedures, and other nerve blocks are often performed by pain physicians. Officially, pain medicine or interventional pain management as a recognized subspecialty by the American Board of Medical Specialties includes anesthesiology, physical medicine and rehabilitation, and neurology and psychiatry. Others considered as interventional pain physicians more frequently are neurosurgeons, and orthopedic surgeons. Separate designations for interventional pain management (-09) and pain management or pain medicine (-72) went into effect in 2003 and 2002. Thus, any specific data in these categories (-09 and –72) is mostly retrospective and preliminary at the present time.

For the purposes of this manuscript, official interventional pain physicians were considered to be anesthesiologists, physiatrists, neurologists, and psychiatrists along with all the physicians who had an interventional pain management or pain management designation. Extended interventional physicians included neurosurgeons and orthopedic surgeons, in addition to the official interventional pain physicians. Interventional radiologists who perform these procedures are not included in official or extended pain management, as they usually perform these procedures for diagnostic purposes rather than for management of chronic pain, except for vertebroplasty, which is a new procedure.

Interventional techniques are performed in multiple settings. Traditionally, the majority of interventional techniques were performed in the hospital outpatient departments (HOPDs). Evolution of interventional pain management as a distinct specialty, assisted other venues to offer these services, which include ambulatory surgical centers and physician offices. Thus, facility settings include HOPDs and ASCs, whereas non-facility settings include physician offices and all other settings. In 2000, CMS published a physician fee schedule, which included significantly higher payments for procedures performed in an office (also known as facility differential) to cover office overhead. This evaluation of frequency of interventional procedures identified the location as facility (HOPD or ASC) or non-facility.

Table 3 illustrates the differences in the performance of ligament and trigger point injections, intraarticular injections, facet joint interventions, epidurals, transforaminals, and intrathecal implantables by physicians in various specialties

Table 3. *Frequency of utilization of trigger point and ligament injections, intraarticular injections, interlaminar epidurals (excluding continuous epidurals), transforaminal epidurals, facet joint interventions and implantables by various specialties for 2003, in Medicare recipients*

Specialty	Trigger point & ligament injections	Intraarticular injections	Interlaminar epidurals	Transforaminal epidurals	Facet joint interventions	Implantable
Anesthesiology	85,148 (43%)	47,886 (34%)	616,601 (82%)	180,642 (69%)	369,024 (65%)	10,008 (100%)
Physical medicine rehabilitation	82,346 (6%)	85,722 (9%)	64,131(58%)	70,839 (65%)	71,278 (51%)	418 (100%)
Neurology	28,022 (4%)	6,272 (4%)	14,926 (35%)	16,453 (15%)	30,687 (17%)	110 (100%)
Psychiatry	1,145 (2%)	826 (8%)	1,240 (86%)	1,999 (87%)	814 (51%)	0
Interventional Pain Management	4,043 (27%)	3,920 (28%)	22,318 (61%)	17,219 (52%)	37,882 (60%)	1,084 (100%)
Pain management	25,494 (24%)	15,965 (18%)	105,831 (67%)	54,422 (64%)	114,290 (58%)	3,441 (100%)
Neurosurgery	6,388 (2%)	952 (12%)	10,885 (70%)	3,809 (40%)	12,129 (62%)	6,088 (100%)
Orthopedic surgery	215,543 (2%)	2,362,432 (3%)	37,746 (39%)	15,100 (62%)	29,177 (51%)	1,518 (100%)
Interventional radiology	16 (63%)	1,038 (93%)	2,353 (87%)	682 (96%)	1,082 (83%)	0
Rheumatology	113,480 (2%)	632,951 (4%)	2,759 (16%)	1,360 (9%)	20,666 (1%)	0
Osteopathic manipulative therapy	3,920 (0%)	3,945 (2%)	978 (44%)	274 (19%)	4,433 (9%)	3 (100%)
CRNA	373 (91%)	40 (95%)	15,044 (95%)	415 (85%)	529 (95%)	239 (100%)
Diagnostic radiology	315 (31%)	21,404 (74%)	32,543 (62%)	15,23 (66%)	15,700 (72%)	15 (100%)
Emergency medicine	5,335 (16%)	21,837 (55%)	3,375 (86%)	1,452 (98%)	2,829 (75%)	95 (100%)
Family practice	132,719 (2%)	416,433 (4%)	5,724 (57%)	3,959 (43%)	11,237 (8%)	23 (100%)
General Practice	27,502 (1%)	75,462 (3%)	3,271 (59%)	2,871 (37%)	11,547 (20%)	111 (100%)
Internal medicine	91,504 (2%)	430,590 (4%)	5,245 (14%)	3,966 (34%)	14,782 (16%)	121 (100%)
General surgery	7,355 (7%)	19,796 (4%)	1,203 (61%)	1,111 (75%)	1,627 (63%)	794 (100%)
Nurse Practitioner	14,721 (3%)	20,057 (6%)	273 (72%)	497 (93%)	1,068 (51%)	47 (100%)
Others	348,289 (2%)	406,143 (3%)	2,195 (48%)	1,884 (54%)	4,390 (30%)	594 (100%)
Total	**1,193,658 (6%)**	**4,573,671 (5%)**	**948,641 (74%)**	**394,188 (63%)**	**755,171 (55%)**	**24,709 (100%)**

Source: Utilization data By Specialty from CMS (ref. 89)
( ) shows percentage of procedures utilized in facility settings (HOPD or ASC)
Trigger point & ligament injections – 20550, 20551, 20552, 20553; Intraarticular injections - 20600, 20605, 20610; Interlaminar epidurals – 62310, 62311
Transforaminal – 64479, 64480, 64483, 64484; Facet joint interventions - 64470/2, 64475/6, 64622/3, 64226/7; Implantable pumps & Stimulators - 62360/1, 62362, 63650/5, 63660, 63685/8

Table 4. *Summary of frequency of utilizations of various categories of interventional procedures (excluding continuous epidurals, implantables, disc procedures, intraarticular injections, trigger point and ligament injections) in Medicare population from 1998-2003*

	1998	1999	2000	2001	2002	2003
Epidural, spinal neurolysis, and adhesiolysis procedures	802,735 (76%)	803,078 (74%)	860,787 (79%)	1,013,552 (78%)	1,199,324 (74%)	1,370,862 (71%)
Facet joint interventions and SI joint blocks	274,130 (73%)	304,564 (72%)	424,796 (67%)	543,509 (62%)	708,186 (58%)	884,035 (53%)
Other types of nerve blocks	329,552 (33%)	313,415 (33%)	324,320 (35%)	343,277 (35%)	457,219 (30%)	490,337 (28%)
Total	**1,406,417 (65%)**	**1,421,057 (64%)**	**1,609,903 (67%)**	**1,900,338 (66%)**	**2,364,729 (61%)**	**2,745,234 (58%)**

Source: Utilization data by Specialty from CMS (ref. 89)
( ) shows percentage of procedures utilized in facility settings (HOPD and ASC)

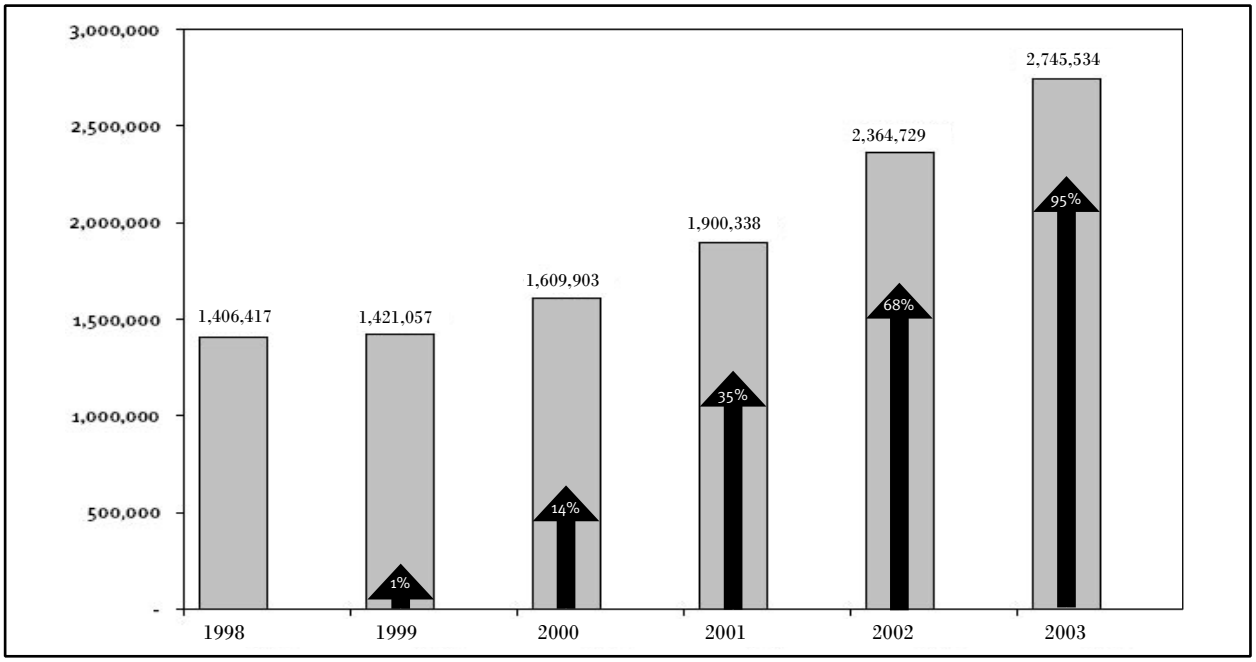

Fig. 3. *Increasing utilization of epidural, spinal neurolysis, and adhesiolysis procedures; facet joint interventions and SI joint blocks; and other types of nerve blocks ((excluding continuous epidurals, implantables, disc procedures, intraarticular injections, trigger point and ligament injections) from 1998 to 2003 (ref. 89)*

(89). As illustrated, of a total of 1,193,658 trigger point and ligament injections, the majority were performed by primary care specialties, podiatrists, orthopedic surgeons, rheumatologists, followed by anesthesiologists and physiatrists. Official pain management physicians performed approximately 19% (226,198 of 1,193,658) of all the procedures in this category. Orthopedic surgeons performed 18% of all the ligament and trigger point injections. In contrast, the majority of intraarticular injections (52% or 2,362,432) were performed by orthopedic surgeons. Pain physicians performed only a small proportion (3%) of intraarticular injections. In 2003, 948,641 interlaminar epidural injections, excluding continuous infusions, were performed in the Medicare population. In addition, 394,188 transfo-raminal epidurals were also performed, with a combined total of 1,342,829 epidural injections in 2003 for chronic pain management. Pain physicians performed the majority of epidurals, facet joint interventions and implantables.

Table 4 illustrates the frequency of utilization of multiple interventional techniques excluding implantables, disc procedures, continuous epidurals, intraarticular injections, trigger point and ligament injections from 1998 to 2003. These numbers also illustrate increasing proportion of non-facility procedures, from 35% in 1998 to 42% in 2003 (89). Fig. 3 illustrates the growth of these procedures with a 95% increase in utilization from 1998 to 2003. The presentation in Figs. 4 and 5 shows a trend with approximately 50% of the procedures being performed by non-interventional physicians in an office setting. These illustrations show that in the category of other nerve blocks, the procedures performed by official pain physicians declined to 50% in 2003 while the proportion by extended pain management declined to 52% in 2003 in Medicare recipients.

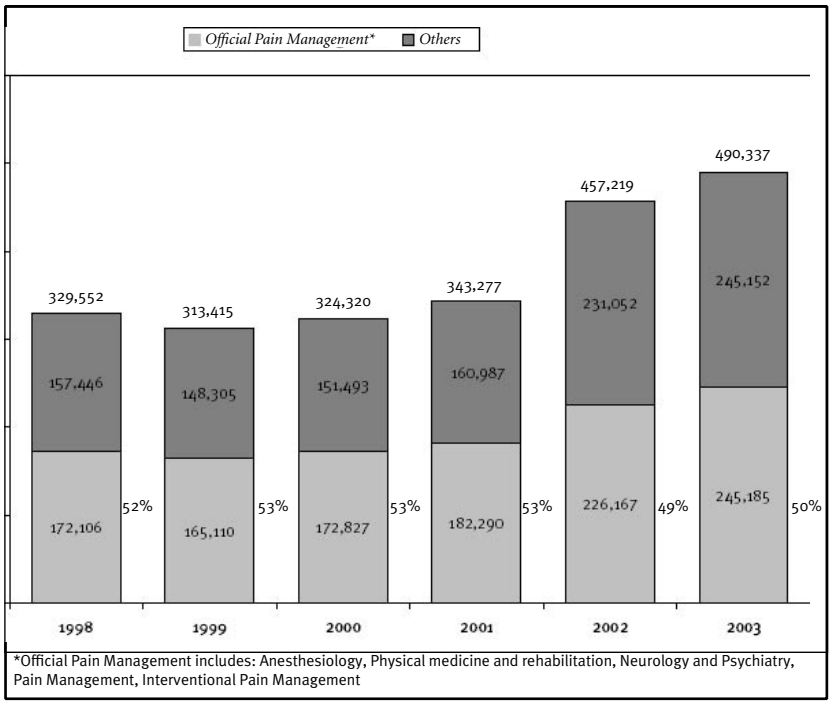

Fig. 4. *Comparison of frequency of utilization of various nerve blocks excluding epidurals, disc injections, and facet joint blocks in Medicare recipients from 1998-2003 (ref. 89)*

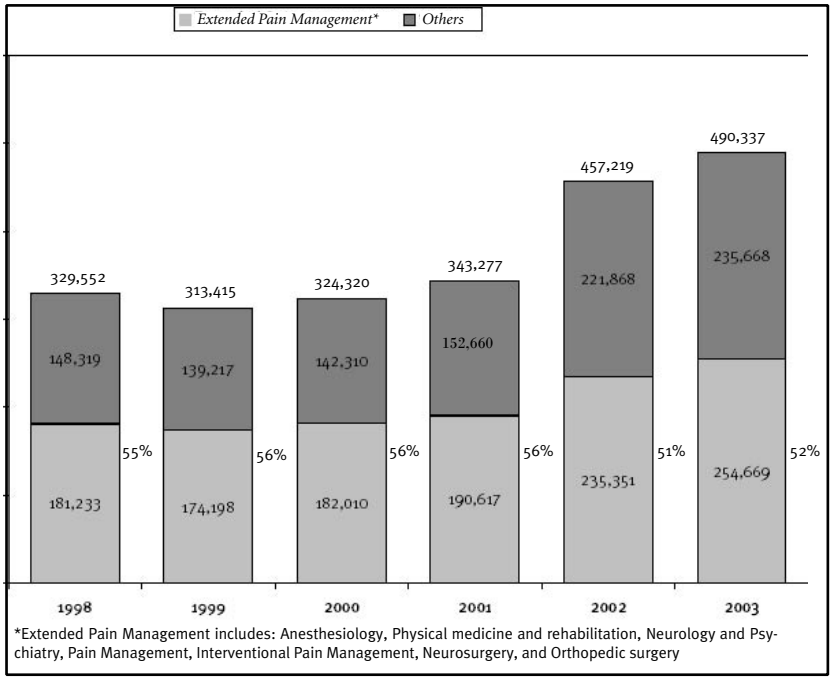

Fig. 5. *Comparison of frequency of utilization of various nerve blocks excluding epidurals, disc injections, and facet joint blocks in Medicare recipients from 1998-2003 (ref. 89)*

Table 5 illustrates the number of facet joint interventions and sacroiliac joint injections in Medicare recipients in 2003, by various specialties (89). Table 6 illustrates statistics for these procedures from 1998 to 2003 with increasing frequency (89). Fig. 6 shows an overall increase of 222% from 1998 to 2003. Fig. 7 shows official pain management specialties and others performing the procedures with increasing frequency. The number of facet joint interventions and sacroiliac joint blocks performed by other physicians have increased from 64,858 in 1998 to 147,127 in 2003 in Medicare recipients (Fig. 7). The proportion of procedures performed in facility settings also has decreased from 73% in 1998 to 53% in 2003.

The next category of interventional techniques for discussion includes the the most commonly performed procedures, including interlaminar epidurals, transforaminal epidurals, spinal neurolysis, and adhesiolysis procedures. In this analysis, we have excluded continuous epidurals, either in the cervical spine or in the lumbar spine, as these are most commonly performed for postoperative anesthetic purposes, rather than chronic pain management. Table 3 illustrates the frequency of utilization by various specialties of the epidural procedures for 2003 (89). In contrast, Table 7 illustrates overall increase of utilization of these procedures from 1998 to 2003 (89). As shown in Table 7, epidural interventions have increased by 71% from 1998 to 2003 in Medicare recipients to approximately 1.4 million from 802,735. Inappropriate coding may be identified for transforaminal epidurals, specifically cervical transforaminal epidurals, as the majority are performed outside facility settings. Fig. 8 illustrates distribution of procedures among pain physicians and others. The majority of interlaminar and transforaminal epidurals (87%) were performed by pain physicians. Even then, 13% of epidurals were performed by other physicians. In addition, 26% of interlaminar epidurals and 57% of transforaminal epidurals are performed in office settings. Performance of transforaminals by primary care physicians, nurse practitioners, nurse anesthetists, physician assistants, rheumatologists, etc., specifically in an office setting, may indicate performing these procedures without fluoroscopic guidance, which is considered as inappropriate.

The majority of implantables, 61% of 24,709 in Medicare population in 2003, were performed by pain physicians, 25% by neurosurgeons, 6% by orthopedic surgeons, and 8% by all other specialists. As shown in Table 3, there is significant variability among the specialists performing

Table 5. *Frequency of utilization of Facet joint interventions and sacroiliac joint blocks by various specialties for 2003, in Medicare recipients*

	Sacroiliac Joint Injection	Cervical Facet Joint Blocks	Thoracic Facet Joint Blocks	Lumbar Facet Joint Blocks		Lumbar Facet Neurolysis		Cervical/Thoracic Facet Neurolysis		
Specialty	**27096**	**64470**	**64472**	**64475**	**64476**	**64622**	**64623**	**64626**	**64627**	**Total**
Anesthesiology	71,969 (48%)	17,798 (57%)	37,122 (55%)	77,363 (66%)	155,037 (62%)	19,830 (76%)	48,749 (73%)	3,934 (75%)	9,191 (71%)	**440,993 (62%)**
Neurology	4,248 (12%)	4,121 (10%)	4,319 (13%)	8,606 (16%)	10,902 (18%)	838 (27%)	1,402 (41%)	188 (23%)	311 (39%)	**34,935 (17%)**
Physical medicine rehabilitation	14,990 (35%)	5,054 (35%)	6,242 (49%)	21,310 (46%)	28,212 (51%)	2,840 (71%)	6,032 (72%)	533 (75%)	1,055 (76%)	**86,268 (49%)**
Psychiatry	161 (43%)	80 (66%)	49 (90%)	275 (55%)	282 (54%)	52 (6%)	71 (14%)	3 (100%)	2 (100%)	**975 (50%)**
Pain management	16,236 (41%)	6,074 (57%)	11,612 (56%)	23,817 (57%)	46,572 (54%)	6,427 (69%)	15,842 (65%)	1,229 (71%)	2,717 (70%)	**130,526 (56%)**
Interventional Pain Management	5,329 (36%)	3,077 (65%)	4,877 (64%)	7,375 (56%)	13,797 (56%)	2,018 (63%)	4,983 (66%)	541 (57%)	1,214 (65%)	**43,211 (57%)**
CRNA	69 (100%)	32 (81%)	16 (88%)	188 (90%)	181 (100%)	39 (100%)	50 (100%)	11 (100%)	12 (100%)	**598 (95%)**
Diagnostic radiology	2,796 (67%)	1,031 (71%)	689 (66%)	7,741 (74%)	5,523 (72%)	235 (54%)	367 (57%)	43 (47%)	71 (46%)	**18,496 (71%)**
Emergency medicine	323 (70%)	317 (36%)	436 (56%)	568 (69%)	952 (86%)	148 (96%)	318 (100%)	30 (97%)	60 (93%)	**3,152 (74%)**
Family practice	1,963 (9%)	1,285 (4%)	1,081 (4%)	4,041 (8%)	3,459 (10%)	502 (6%)	751 (6%)	55 (22%)	63 (13%)	**13,200 (8%)**
General Practice	589 (31%)	1,027 (9%)	589 (32%)	5,122 (9%)	3,987 (22%)	331 (86%)	424 (77%)	25 (64%)	42 (60%)	**12,136 (20%)**
General surgery	221 (75%)	86 (28%)	86 (56%)	465 (42%)	469 (56%)	206 (90%)	281 (96%)	9 (67%)	25 (100%)	**1,848 (64%)**
Internal medicine	2229 (7%)	1,695 (9%)	1,190 (21%)	5,962 (9%)	3,728 (23%)	709 (21%)	1,380 (25%)	43 (51%)	75 (47%)	**17,011 (15%)**
Interventional radiology	224 (91%)	110 (78%)	47 (81%)	503 (85%)	397 (87%)	8 (50%)	9 (0%)	3 (0%)	5 (0%)	**1,306 (85%)**
Neurosurgery	1,454 (33%)	952 (49%)	1,303 (63%)	3,220 (57%)	4,701 (71%)	467 (58%)	1,105 (58%)	115 (36%)	266 (27%)	**13,583 (59%)**
Nurse Practitioner	177 (66%)	60 (45%)	118 (42%)	507 (40%)	300 (71%)	25 (60%)	46 (59%)	4 (100%)	8 (100%)	**1,245 (53%)**
Orthopedic surgery	4,250 (34%)	1,607 (30%)	1,160 (48%)	12,088 (40%)	12,695 (59%)	477 (81%)	968 (90%)	72 (74%)	110 (83%)	**33,427 (49%)**
Osteopathic manipulative therapy	161 (14%)	210 (10%)	613 (6%)	790 (9%)	2,665 (5%)	33 (91%)	69 (96%)	14 (86%)	39 (90%)	**4,594 (9%)**
Rheumatology	595 (4%)	4,899 (0%)	3,190 (0%)	8,087 (1%)	4,467 (1%)	11 (18%)	10 (20%)	1 (100%)	1 (100%)	**21,261 (1%)**
Others	880 (31%)	443 (17%)	750 (42%)	1,235 (19%)	1,476 (22%)	119 (62%)	309 (86%)	24 (50%)	34 (62%)	**5,270 (30%)**
Total	**128,864 (42%)**	**49,958 (40%)**	**75,489 (49%)**	**189,263 (51%)**	**299,802 (55%)**	**35,315 (70%)**	**83,166 (69%)**	**6,877 (70%)**	**15,301 (69%)**	**884,035 (53%)**

Source: Utilization data By Specialty from CMS (ref. 89)
() shows percentage of procedures utilized in facility settings (HOPD and ASC)

implantables. Further, Table 8 illustrates the growth of implantables, since 1998. The growth ranged from 3% between 1998 and 1999, 8% from 1999 to 2000, 23% from 2000 to 2001, 13% from 2001 to 2002, and 30% from 2002 to 2003, with an overall growth of 100% from 1998 to 2003 in the Medicare population.

Table 9 illustrates the distribution of discography procedures among various specialties in the year 2003. Fig. 9 in contrast, shows the frequency of discography procedures from 1998 to 2003, with an increase of 120% (89). As illustrated, the majority of these procedures are per-

Table 6. *Comparison of frequency of utilization of Facet joint interventions and sacroiliac joint blocks in Medicare recipients from 1998-2003*

CPT	Code Description	1998	1999	2000	2001	2002	2003
27096	**Sacroiliac joint blocks**	2,374 (86%)	2,281 (81%)	49,554 (59%)	85,664 (51%)	101,749 (48%)	128,864 (42%)
64470	**C/T facet joint block – single**	6,286 (65%)	6,438 (65%)	24,751 (48%)	34,500 (43%)	41,935 (44%)	49,958 (40%)
64472	**C/T facet joint block – additional**	349 (90%)	574 (82%)	33,573 (62%)	47,684 (55%)	61,981 (53%)	75,489 (49%)
64475	**L/S facet joint block – single**	84,854 (64%)	87,395 (65%)	101,539 (61%)	121,234 (59%)	155,620 (55%)	189,263 (51%)
64476	**L/S facet joint block add.**	145,267 (75%)	163,170 (73%)	153,252 (71%)	175,854 (67%)	240,243 (61%)	299,802 (55%)
64622	**L/S facet neurolysis – single**	10,371 (84%)	13,079 (80%)	15,117 (84%)	18,792 (79%)	25,744 (77%)	35,315 (70%)
64623	**L/S facet neurolysis – additional**	24,255 (88%)	31,018 (85%)	38,206 (88%)	47,632 (81%)	63,522 (76%)	83,166 (69%)
64626	**C/T facet neurolysis – single**	25 (100%)	35 (100%)	2,750 (83%)	3,815 (77%)	5,190 (76%)	6,877 (70%)
64627	**C/T facet neurolysis – additional**	349 (90%)	574 (82%)	6,054 (87%)	8,334 (77%)	12,202 (73%)	15,301 (69%)
Total		**274,130 (73%)**	**304,564 (72%)**	**424,796 (67%)**	**543,509 (62%)**	**708,186 (58%)**	**884,035 (53%)**

Source: Utilization data By Specialty from CMS (ref. 89)
( ) shows percentage of procedures utilized in facility settings (HOPD and ASC)

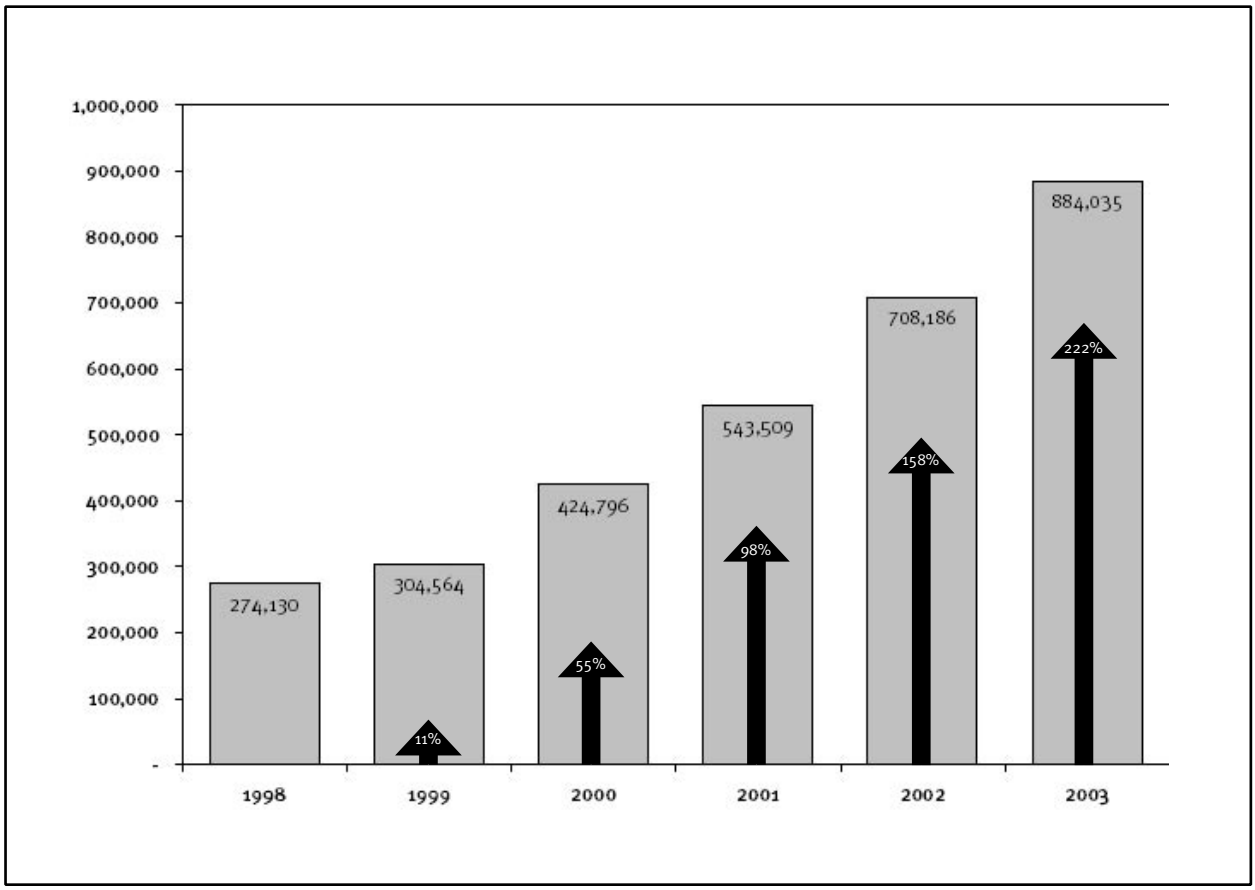

Fig. 6. *Increasing utilization of facet joint interventions and sacroiliac joint blocks from 1998 to 2003 (ref. 89)*

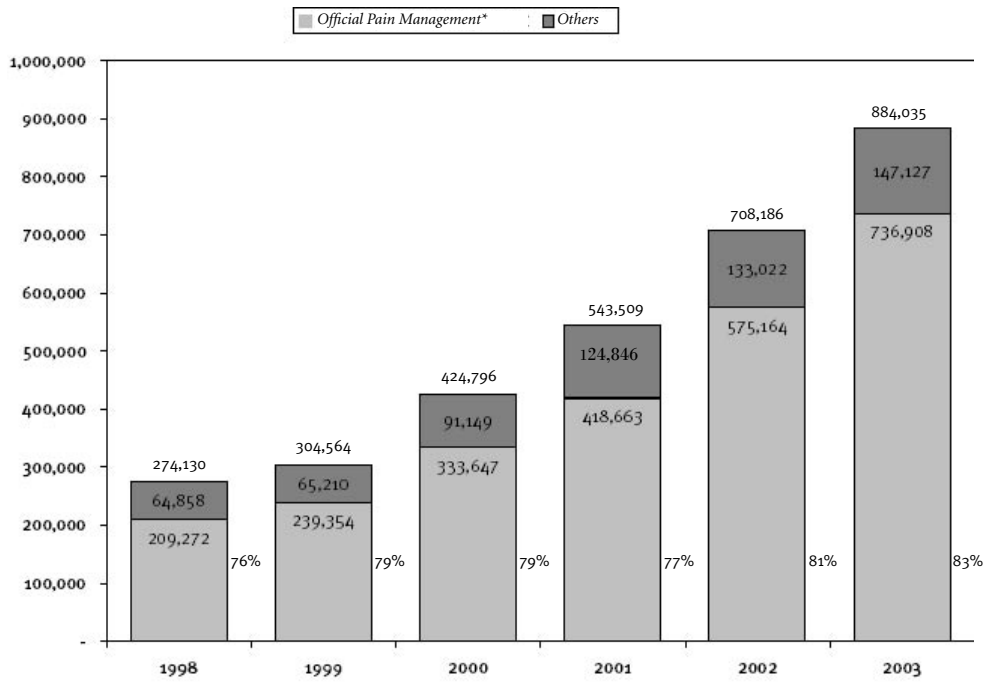

Fig. 7. *Comparison of frequency of utilization of Facet joint interventions and sacroiliac joint blocks in Medicare recipients from 1998-2003 (ref. 89)*

Table 7. *Comparison of frequency of utilization of various types epidural, spinal neurolysis, and adhesiolysis procedures in Medicare recipients from 1998-2003*

HCPCS	Description	1998	1999	2000	2001	2002	2003
62263	**Epidural lysis of adhesions – 2 or 3 days**	1,001 (88%)	1,558 (80%)	8,778 (91%)	10,463 (88%)	14,430 (83%)	7,183 (83%)
62264	**Epidural lysis of adhesions – 1day**	-	-	-	-	724 (84%)	9,733 (79%)
62280	**Subarachnoid neurolysis**	226 (91%)	233 (68%)	197 (89%)	242 (89%)	225 (100%)	233 (78%)
62281	**Cervical epidural neurolysis**	1,719 (80%)	1,569 (72%)	1,199 (83%)	1,320 (73%)	1,305 (68%)	1,233 (59%)
62282	**Lumbar epidural neurolysis**	9,543 (58%)	10,883 (51%)	11,139 (48%)	11,990 (55%)	10,392 (58%)	9,651 (49%)
62310	**Cervical/Thoracic epidural**	64,563 (86%)	69,381 (81%)	75,741 (83%)	84,385 (80%)	99,117 (76%)	109,783 (73%)
62311	**Lumbar/Sacral epidural**	608,453 (85%)	619,543 (80%)	618,362 (83%)	702,713 (81%)	786,919 (77%)	838,858 (74%)
64479	**C/T Transforaminal epidural – single**	3,292 (34%)	3,213 (32%)	13,454 (52%)	14,732 (52%)	18,583 (50%)	21,882 (48%)
64480	**C/T Transforaminal epidural–each additional**	17,066 (22%)	12,931 (26%)	9,434 (60%)	8,537 (47%)	10,835 (39%)	15,769 (34%)
64483	**L/S Transforaminal – single**	45,385 (34%)	44,751 (32%)	85,006 (66%)	125,534 (72%)	177,679 (70%)	242,491 (67%)
64484	**L/S Transforaminal – each additional**	51,487 (23%)	39,016 (26%)	37,477 (63%)	53,133 (69%)	7,9115 (64%)	114,046 (62%)
Total		**802,735 (76%)**	**803,078 (74%)**	**860,787 (79%)**	**1,013,552 (78%)**	**1,199,324 (74%)**	**1,370,862 (71%)**

Source: Utilization data By Specialty from CMS (ref. 89)
( ) shows percentage of procedures utilized in facility settings (HOPD and ASC)

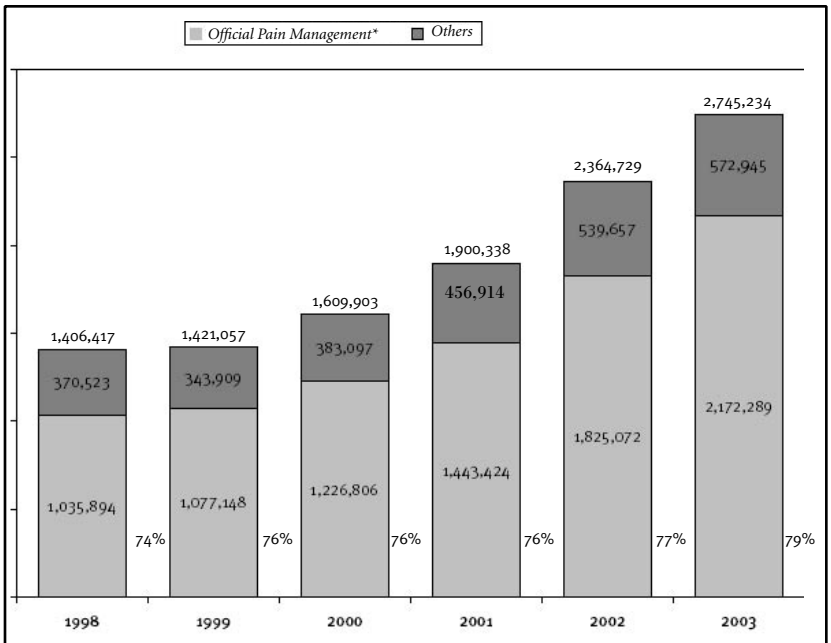

Fig. 8. *Comparison of frequency of utilization of various epidural, spinal, and adhesiolysis, facet joint interventions and sacroiliac joint blocks, other types of nerve blocks (not included discography, implantable pumps and Stimulators) in Medicare recipients from 1998-2003 (ref. 89)*

formed by official pain management physicians followed by diagnostic radiologists with some being performed by a number of physicians from other specialties.

Table 10 summarizes a multitude of peripheral nerve blocks and sympathetic blocks in Medicare recipients from 1998 to 2003 (89). This illustration excludes all types of epidurals, disc injections, implantables, intraarticular injections, trigger point injections, and facet joint interventions As shown in Figs. 4 and 5, most of these procedures were performed in an office setting. Figure 4 illustrates the comparative utilization of various types of nerve blocks, excluding all types of epidurals, disc injections, implantables, intraarticular joint injections, trigger point injections, and facet joint and sacroiliac joint interventions, with significant increases from 1998 through 2003. Figure 5 illustrates data for extended pain management physicians. The trend shows an increase by other physicians performing 148,319 procedures in 1998 in this category to 235,668 in 2003. Finally, Figure 10 illustrates a declining proportion of procedures, from 2000 to 2003 performed in facility settings (89).

Discussion

There is no doubt that the specialty of interventional pain management is facing growing pains. Increased utilization without appropriate documentation of medical necessity may lead to fraud and abuse investigations. It is also important for physicians to follow local medical review policies or local coverage decisions for all the procedures and stay within the limits of these recommendations, not only with regards to frequency, but for medical necessity purposes. Increased funding from Medicare Part B is limited to inflation and increased member enrollment. Consequently, increased utiliza-

Table 8. *Comparison of frequency of utilization of implantable pumps and Stimulators in Medicare recipients from 1998-2003*

	1998	1999	2000	2001	2002	2003
62360 - Implantation or replacement of device; subcutaneous reservoir	944	1,113	602	743	618	738
62361 - Implantation or replacement of device; non-programmable pump	108	367	373	298	213	184
62362 - Implantation or replacement of device; programmable pump	3,414	3,739	4,625	5,241	5,557	5,486
63650 - Percutaneous implantation of neurostimulator electrode	3,397	3,008	3,443	4,746	5,715	8,549
63655 - Laminectomy for implantation of neurostimulator electrodes	465	440	531	758	922	1,482
63660 - Revision or removal of spinal neurostimulator	1,244	1,317	1,414	1,815	2,032	2,753
63685 - Insertion or replacement of spinal neurostimulator	1,628	1,577	1,450	1,716	2,088	3,308
63688 - Revision or removal of implanted spinal neurostimulator	1,176	1,133	1,297	1,523	1,803	2,209
	12,376	12,694	13,735	16,840	18,948	24,709
Percent of growth from previous year	-	**3%**	**8%**	**23%**	**13%**	**30%**

Source: Utilization data By Specialty from CMS (ref. 89)

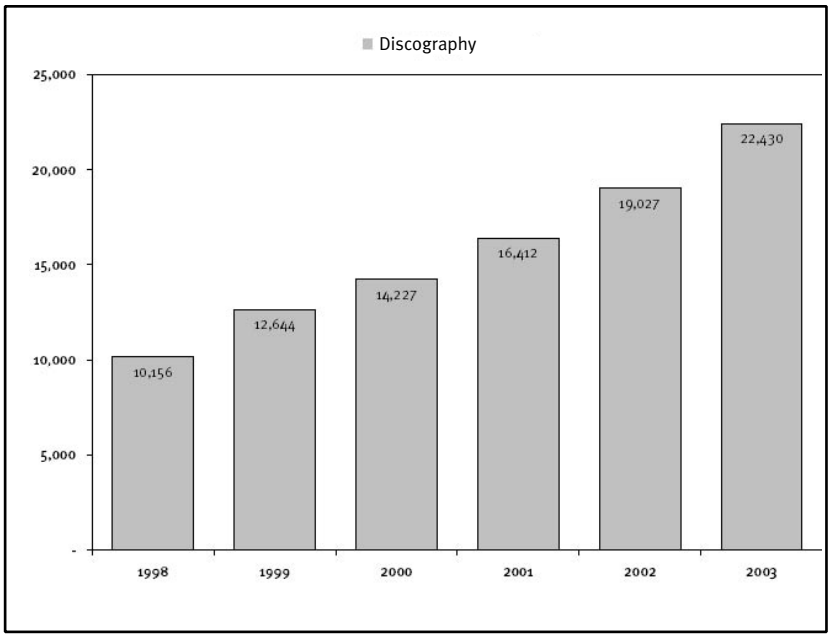

Fig. 9. *Comparison of frequency of utilization of discography in Medicare recipients from 1998-2003*

Source: Utilization data By Specialty from CMS (ref. 89)
() shows percentage of procedures utilized in facility settings (HOPD and ASC)

Table 9. *Comparison of frequency of utilization of Discography in Medicare recipients in year 2003*

Specialty	Lumbar Discography (62290)	Cervical Discography (62291)	Lub./Cer. Discography (62290, 62991)
Anesthesiology	7,169 (70%)	698 (84%)	7,867 (71%)
Neurology	201 (70%)	44 (100%)	245 (75%)
Physical medicine rehabilitation	1,717 (83%)	100 (90%)	1,817 (83%)
Psychiatry	23 (61%)	0	23 (61%)
Pain management	2,099 (80%)	235 (88%)	2,334 (80%)
Interventional Pain Management	692 (53%)	113 (67%)	805 (55%)
Diagnostic radiology	4,033 (82%)	467 (73%)	4,500 (81%)
Emergency medicine	41 (100%)	13 (77%)	54 (94%)
Family practice	183 (26%)	17 (12%)	200 (25%)
General Practice	37 (92%)	0	37 (92%)
General surgery	28 (100%)	0	28 (100%)
Internal medicine	49 (24%)	0	49 (24%)
Interventional radiology	453 (93%)	24 (42%)	477 (90%)
Neurosurgery	712 (82%)	119 (61%)	831 (79%)
Nurse Practitioner	3 (100%)	0	3 (100%)
Orthopedic surgery	2,777 (99%)	217 (99%)	2,994 (99%)
Osteopathic manipulative therapy	23 (74%)	0	23 (74%)
Others	135 (67%)	8 (13%)	143 (64%)
Total	**20,375 (78%)**	**2,055 (81%)**	**22,430 (79%)**

Source: Utilization data By Specialty from CMS (ref. 89)
() shows percentage of procedures utilized in facility settings (HOPD and ASC)

tion will reduce the fee for procedures, as the total amounts dispensable are limited (budget neutral or zero sum game).

Limitations of the discussions here are that statistics are only available on Medicare recipients. While substantial variations may exist with certain procedures, it is presumed that overall utilization of these procedures may be 3 to 5 times the total Medicare volume. It is conceivable that 12 to 15 million interventional procedures were performed in the United States last year. Thus, the statistics could become frightening for all involved in the care of patients.

To avoid any misconceptions regarding abuse in interventional pain management, with diagnostic and therapeutic interventional procedures, it is not sufficient to state that these are good procedures. Procedures should be performed in a disciplined manner meeting medical necessity criteria with appropriate, defensible and justifiable practice, using established algorithms and guidelines.

An algorithm indicates to practitioners how investigations might best be applied in a responsible and efficient manner. Further, an algorithm may serve to define poor or inappropriate practices. Algorithms and guidelines may be applied to precision diagnosis, therapeutic interventions and continued management. Algorithms promote efficiency by directing practitioners to the action that is more likely to be productive, but also help practitioners to reduce futile and nonproductive activities. Further, if the algorithmic approach is based on evidence-based medicine, it provides enormous value for patients, points out a thorough and deep understanding of the evidence, and assists the practitioner in making valid judgments about the best course of action. In fact, it is advisable to evaluate evidence-based medicine and clinical guidelines, which can result in superior, or even different patient management strategies.

It has been demonstrated that for acute low back pain, use of evidence-based medical care and usual care resulted in marginally better performance compared to usual care, in the short-term (90). However, in the long-term, evidence-based care achieved clinically and statistically significant gains, with fewer patients requiring continuing care and remaining in pain. In contrast, others (91) in evaluating the impact of guidelines on ordering of magnetic resonance imaging

Table 10. *Comparison of frequency of utilization of various types of nerve blocks excluding all types of epidurals, disc injections, implantables, intraarticular injections, trigger point injections and facet joint blocks in Medicare recipients for 1998-2003*

HCPCS		1998	1999	2000	2001	2002	2003
64400	**Trigeminal N.B.**	9,363 (36%)	7,402 (26%)	7,173 (28%)	6,749 (37%)	7,341 (36%)	8,199 (36%)
64402	**Facial N.B.**	2,523 (55%)	2,040 (51%)	2,001 (54%)	1,801 (52%)	2,007 (48%)	1,631 (44%)
64405	**Greater occipital N.B.**	25,305 (37%)	24,826 (33%)	25,424 (33%)	29,913 (32%)	34,695 (27%)	39,341 (26%)
64408	**Vagus N.B.**	258 (00%)	348 (04%)	478 (03%)	248 (0%)	727 (1%)	551 (5%)
64410	**Phrenic N.B.**	35 (100%)	67 (81%)	26 (100%)	30 (100%)	27 (100%)	56 (70%)
64412	**Spinal accessory N.B.**	1,170 (28%)	1,436 (14%)	1,261 (14%)	1,482 (14%)	1,418 (18%)	1,386 (8%)
64413	**Cervical plexus block**	10,014 (21%)	6,963 (32%)	5,738 (36%)	5,677 (38%)	5,762 (29%)	5,967 (36%)
64415	**Brachial plexus block**	9,037 (69%)	15,061 (79%)	18,771 (89%)	23,662 (92%)	29,533 (94%)	36,999 (94%)
64417	**Axillary N.B.**	1,750 (66%)	1,834 (73%)	2,002 (84%)	2,225 (90%)	2676 (94%)	3203 (91%)
64418	**Suprascapular N.B.**	9,961 (24%)	9,705 (21%)	10,657 (21%)	12,365 (16%)	10,837 (18%)	13,382 (17%)
64420	**Intercostal N.B single**	7,936 (43%)	7,138 (39%)	8,058 (45%)	7,839 (40%)	6,209 (36%)	5,463 (39%)
64421	**Intercostal N. Blocks**	19,485 (66%)	18,311 (59%)	16,645 (66%)	16,509 (66%)	16,644 (59%)	17,661 (54%)
64425	**Ilio-Inguinal N.B.**	5,557 (55%)	5,555 (52%)	5,550 (55%)	6,212 (47%)	7,022 (43%)	5,122 (44%)
64430	**Pudendal N.B.**	757 (38%)	532 (32%)	750 (33%)	2,185 (23%)	5,445 (15%)	5,519 (16%)
64435	**Paracervical N.B.**	1,926 (15%)	1,437 (06%)	1,809 (14%)	1,850 (21%)	1,971 ((21%)	753 (23%)
64445	**Sciatic N.B.**	22,513 (14%)	19,488 (16%)	19,883 (17%)	22,195 (16%)	26,238 (19%)	27,779 (23%)
64450	**Peripheral N.B.**	127,904 (17%)	122,147 (17%)	124,154 (19%)	119,234 (22%)	159,530 (21%)	159,139 (16%)
64505	**Sphenopalatine ganglion block**	6,532 (08%)	5,894 (06%)	5,606 (08%)	4,862 (7%)	4,885 (9%)	4,757 (8%)
64510	**Stellate ganglion block**	12,968 (81%)	11,626 (82%)	9,950 (80%)	9,473 (81%)	10,233 (77%)	9,589 (73%)
64520	**L/T sympathetic block**	14,637 (68%)	12,903 (63%)	12,254 (73%)	12,522 (69%)	16,099 (58%)	12,135 (69%)
64530	**Celiac plexus block**	1,538 (88%)	1,329 (90%)	1,348 (92%)	1,334 (89%)	1,366 (88%)	1,608 (86%)
64600	**Trigeminal neurolysis**	735 (58%)	772 (51%)	577 (58%)	655 (47%)	701 (52%)	647 (43%)
64605	**Trigeminal neurolysis**	209 (67%)	191 (60%)	164 (46%)	54 (100%)	38 (100%)	82 (66%)
64610	**Trigeminal neurolysis**	561 (100%)	698 (100%)	597 (100%)	509 (100%)	615 (100%)	546 94%)
64613	**Chemodenervation C spinal muscle**	16,606 (18%)	11,988 (25%)	14,136 (25%)	18,957 (24%)	25,190 (20)	29,960 (18%)
64620	**Intercostal neurolysis#**	1,752 (86%)	1,755 (85%)	2,141 (87%)	1,862 (85%)	2,003 (78%)	2,213 (72%)
64630	**Pudendal nerve neurolysis**	16 (100%)	16 (100%)	30 (100%)	97 (11%)	340 (19%)	293 (9%)
64640	**Peripheral neurolysis**	17,375 (46%)	20,933 (31%)	25,910 (28%)	31,529 (22%)	76,280 (13%)	94,648 (9%)
64680	**Celiac plexus neurolysis**	1,129 (94%)	1,020 (90%)	1,227 (88%)	1,247 (77%)	1,387 (54%)	1,708 (47%)
	Total	**329,552 (33%)**	**313,415 (33%)**	**324,320 (35%)**	**343,277 (35%)**	**457,219 (30%)**	**490,337 (28%)**

Source: Utilization data By Specialty from CMS (ref. 89)
( ) shows percentage of procedures utilized in facility settings (HOPD and ASC)

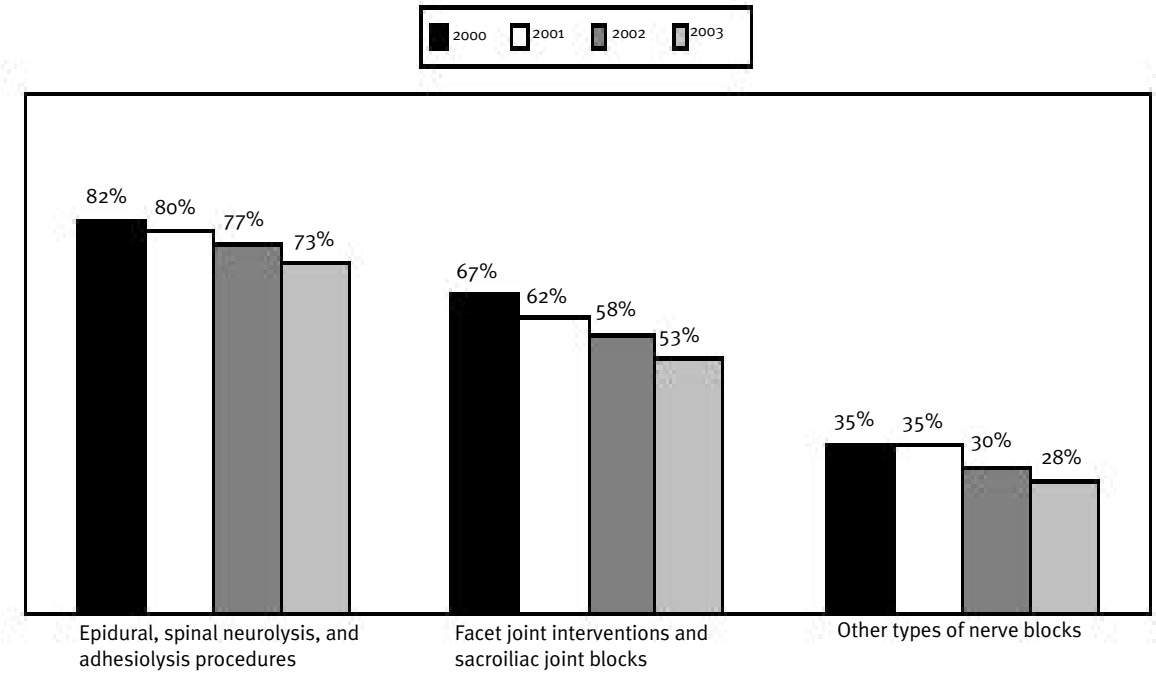

Fig. 10. *Declining proportion of facility procedures from 2000-2003 (ref. 89)*

studies by primary care providers for low back pain concluded that orders for magnetic resonance imaging (MRI) did not decrease based on guidelines. Yet, others (92-94) indicated that implementation of selective ordering criteria proposed by national authorities (95), resulted in increased utilization of lumbar spine radiographs. With reference to interventional techniques, in a study of 300 patients, the results showed that there was significant improvement in patient outcomes with a decrease in the number of visits per year, average expenditure per visit and per year following 2001 published guidelines for interventional techniques (96,97).

Conclusion

In 2005 and beyond, interventionalists will face an array of evolving issues, including CPT coding, correct coding issues, and utilization patterns. It is of paramount importance for interventionalists to be aware of the changes in coding patterns, and diligently follow billing and coding regulations, and correct coding initiatives. Appropriate documentation of medical necessity is required for each and every procedure. It is essential to establish and follow an algorithmic approach in interventional pain management practice. In conjunction with the algorithmic approach, the application of clinical guidelines may provide quality care and reduce the likelihood of investigations.

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