

<u>ID</u>	<u>authors</u>	<u>reference</u>	<u>type</u>	<u>efficacy</u>	<u>safety</u>	<u>summary sheet</u>	<u>summary score</u>	<u>comments</u>	<u>SysRev Used (guides only)</u>	<u>RCT Used (guides only)</u>	<u>CE Used (guides only)</u>	<u>Guide Used (guides only)</u>
50	Boswell MV, Trescot AM, Datta S, Schultz DM, Hansen HC, Abdi S, Sehgal N. et al	<u>Pain Physician. 2007 Jan;10(1):7-111</u>	Guide	x	x	IDD_G1	14/23		5,118	62,97,119,120	71,121	66[114]
84g	Faculty of Pain Medicine, Australian and New Zealand College of Anaesthetists	<u>Guidelines For Longterm Intrathecal Infusions (PM6)</u>	Guide	x	x	IDD_G2a	9/23		67,118			
83g	Institute for Clinical Systems Improvement (ICSI)	<u>Assessment and management of chronic pain.</u>	Guide	x		IDD_G3	20/23			(117)		
82g	Netherlands Society of Rehabilitation Specialists & Netherlands Society of Anaesthesiologists	<u>Complex Regional Pain Syndrome type 1 Guidelines</u>	Guide	x	x	IDD_G4	18/23			119		
86g	Official Disability Guidelines	<u>Treatment in Workers' Compensation 2006</u>	Guide	x		IDD_G5	10/23			(117)		50b[50], 122f[114]
88g	Sanders SH, Harden RN, Vicente PJ	<u>Evidence-based clinical practice guideline for interdisciplinary rehabilitation of chronic non-malignant pain syndrome patients</u>	Guide	x		IDD_G6	10/23					
90g	British Pain Society (in consultation with the Society of British Neurological Surgeons)	<u>Intrathecal drug delivery for the management of pain and spasticity in adults: recommendations for best clinical practice</u>	Guide	x	x	IDD_G7	11/23		126	97,113,120	121	66[114]
114	Caraway, D; Dupen, S; Eisenach, J; Erdek, M; Grigsby, E; Kim, P; Levy, R; McDowell, G; Mekhail, N; Panchal, S; Prager, J; Rauck, R; Saulino, M; Sitzman, T; Staats, P; Stanton-Hicks, M	<u>Neuromodulation 2007 10(4) 300-328</u>	Guide	x		IDD_G8	11/23		67	61, 113, 120		66[114], 122[114]
5	Turner JA, Sears JM, Loeser JD Bennett G, Seranni M, Burchiel K, Buchser E, Classen A, Deer T, Du Pen S, Ferrante FM, Hassenbusch SJ, Lou L, Maceaert J, Penn R,	<u>Clin J Pain 2007 Feb 23(2) 180-95</u>	SysRev	x	x	IDD_SR1	9/22					
67	Portenoy RK, Rauck R, Willis KD, Yaksh T	<u>J Pain Symptom Manage 2000 Aug 20(2) S12-36</u>	SysRev	x		IDD_SR2	2/22					
91	Ruan X	<u>Pain Physician 2007 Mar 10(2) 357-66</u>	Sysrev		x	IDD_SR3	1/22					
118	Walker SM, Goudas LC, Cousins MJ, Carr DB	<u>Anesth Analg 2002; 95:674-715</u>	SysRev	x		IDD_SR4	5/22					
126	Williams JE, Louw G, Towleron G	<u>Health Technology Assessment 2000; Vol. 4: No. 32</u>	SysRev	x		IDD_SR5	11/22					
61	GB, Casati A	<u>Eur J Anaesthesiol 2006 Jul 23(7) 605-10</u>	RCT		x	IDD_RCT1	10/12	results based on single does of IT morphine study of spinal cord injury patients				
62	Rutkowski SB, Cousins MJ Smith TJ, Staats PS, Deer T, Stearns LJ, Rauck RL, Boortz-Marx RL, Buchser E, Català E, Bryce DA,	<u>Anesth Analg 2000 Dec 91(6) 1493-8</u>	RCT	x	x	IDD_RCT2	12/12	study of refractory cancer pain				
97	Coyne PJ, Pool GE Rauck RL, Wallace MS, Leong MS, Mincehart M, Webster LR, Charapata SG, Abraham JE,	<u>J Clin Oncol 2002 Oct 1 20(19) 4040-9</u>	RCT	x		IDD_RCT3	10/12	study of chronic non-cancer pain				
113	Buffington DE, Ellis D, Kartzinel R Staats PS, Yearwood T, Charapata SG, Presley RW, Wallace MS, Byas-Smith M, Fisher R, Bryce DA, Mangieri EA, Luther RR, Mayo M, McGuire D,	<u>J Pain Symptom Manage 2006 May 31(5) 393-406</u>	RCT	x	x	IDD_RCT4	11/12	study of cancer or AIDS pain				
120	Ellis D	<u>JAMA 2004; 291:63-70</u>	RCT	x	x	IDD_RCT5	10/12					
117	Deer T, Chapple I, Classen A, et al de Lissovoy G, Brown RE, Halpern M,	<u>Pain Med 2004 5 6-13.</u>	Registry	x	x		N/A					
71	Hassenbusch SJ, Ross E	<u>CLIN THER 1997 19(1) 96-112</u>	CE	x			N/A					
121	Mueller-Schwefe G, Hassenbusch SJ, Reig E	<u>Neuromodulation 1999; 2:77-84</u>	CE	x			N/A					
only abstract is available												
80	Lynch SS, Cheng CM, Yee JL	<u>Ann Pharmacother 2006 Jul-Aug 40(7-8) 1293-300</u>	SysRev	x	x		N/A					
14	Smith TJ, Swainey C, Coyne PJ	<u>Curr Pain Headache Rep 2005 Aug 9(4) 243-8</u>	CCT	x			N/A					

<u>reference</u>	<u>type</u>	<u>sources</u>	<u>comments</u>	<u>results</u>	<u>complications</u>	<u>study design issues</u>	<u>author's conclusions</u>
<u>Pain Physician. 2007 Jan;10(1):7-111</u>	Guide				The complications include post-dural puncture headache, infection, nausea, urinary retention, pruritus, catheter and pump failure, pedal edema, hormonal changes, granuloma formation, and decreased libido.	Retrospective reports dominate the literature on intrathecal pain management (1294-1298). Among the retrospective evaluations, the reports provided significant improvement at short-term and long-term follow-up.	The evidence for implantable intrathecal infusion systems is strong for short-term improvement in pain of malignancy or neuropathic pain. The evidence is moderate for long-term management of chronic pain.
<u>Guidelines For Longterm Intrathecal Infusions (PM6)</u>	Guide				Intrathecal drug administration can result in significant undesirable side effects, and has the possibility of morbidity and mortality.		A range of non-opioid spinal analgesic agents are utilised for long-term therapy, some of which are supported by low levels of evidence and for which safety has not been fully established. There is level II evidence for efficacy in treating neuropathic pain with intrathecal clonidine; neuropathic pain following spinal cord injury with morphine and clonidine combined; neuropathic pain with ziconotide. Intrathecal administration of opioids and local anaesthetics and / or clonidine could be considered as an alternative agent in patients with poorly controlled neuropathic pain ... following spinal cord injury. Many of these combinations are
<u>Assessment and management of chronic pain.</u>	Guide					Supporting evidence is of class: B (cohort study)	Intrathecal Medication Delivery Systems can provide an excellent therapeutic effect for nonmalignant and cancer pain. However, it should be reserved only for patients who have failed other conservative approaches for the treatment of pain, and should be used cautiously. The best candidates are patients who respond well to oral opioids but who cannot tolerate the side effects (e.g., sedation, nausea, constipation).
<u>Complex Regional Pain Syndrome type 1 Guidelines</u>	Guide				The main side-effects of the screening process and continuous administration of ITB are post-puncture headache, diminished consciousness and urine retention.	There is insufficient evidence that intrathecal baclofen (ITB) is effective in treating dystonia in CRPS-I patients. [Level 3 (of 4) evidence based on two non-comparative trials.]	Intrathecal baclofen has no place in the treatment of patients with CRPS-I. Intrathecal baclofen can only be considered for patients with CRPS-I if dystonia is a major problem and conventional therapy has proven ineffective. This treatment must be administered in the context of a trial.

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<u>Treatment in Workers' Compensation 2006</u>	Guide						Recommended only as an end-stage treatment alternative for selected patients. This treatment should only be used relatively late in the treatment continuum, when there is little hope for effective management of chronic intractable pain from other therapies. The specific criteria in these cases include the failure of at least 6 months of other conservative treatment modalities, intractable pain secondary to a disease state with objective documentation of pathology, further surgical intervention is not indicated, psychological evaluation unequivocally states that the pain is not psychological in origin, and a temporary trial has been successful prior to permanent implantation as defined by a 50-70% reduction in pain.
<u>Evidence-based clinical practice guideline for interdisciplinary rehabilitation of chronic non-malignant pain syndrome patients</u>	Guide						Given the continued absence of quality research, however, the current guidelines do not recommend using implantable infusion pumps or spinal cord stimulators with chronic non-malignant pain syndrome patients.
<u>Intrathecal drug delivery for the management of pain and spasticity in adults: recommendations for best clinical practice</u>	Guide			There have been a variety of economic studies of intrathecal pumps ranging from cost modeling to cost utility analyses. It appears that this therapy is more cost effective than systemic medication beyond 11-22 months for non-cancer pain.	Minor complications are common. In a population of cancer patients, catheter, procedure, device-related and illness-associated adverse incidents occurred at a rate of 0.45 events per patient year. Neurological deficits can occur from the procedure and from inflammatory mass development at catheter tip. There are reports of neurotoxicity and permanent neurological damage following intrathecal infusions of local anaesthetics. Possible infections include meningitis, epidural abscess, pump pocket infection or pump reservoir infection. Cerebrospinal fluid leaks, hygromas and post dural puncture headaches have all been reported. Device-related complications include catheter kinking, disconnection, dislodgement or pump failure, program error and overfill or incorrect refill.		Intrathecal drug delivery can be an effective method of pain control. Patient selection is important, particularly when used for CNMP. It must be carried out by a multi-professional team with a comprehensive understanding of the physical, psychological and rehabilitation aspects of the patient's condition.

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<u>Neuromodulation 2007 10(4) 300-328</u>	Guide					First-line medications are supported by extensive clinical experience and published preclinical and clinical data and are typically used as starting IT therapies. Morphine and ziconotide are the only medications approved by the FDA for IT therapy. Medications listed below Line 1 are supported by a smaller amount of published preclinical evidence, fewer published clinical studies, less clinical anecdotal experience, or a combination thereof.	The first-line agents are morphine, hydromorphone, and ziconotide. Second line agents include 1) the combination of morphine or hydromorphone and bupivacaine or clonidine; 2) the combination of morphine or hydromorphone and ziconotide; or 3) fentanyl alone. Third-line approaches are: 1) clonidine alone; 2) a combination of morphine/hydromorphone/ fentanyl/ bupivacaine plus clonidine and ziconotide.
<u>Clin J Pain 2007 Feb 23(2) 180-95</u>	SysRev	6 on effectiveness and complications, and 4 others on complications only.		All 6 articles reviewed for effectiveness reported improvement in pain and functioning on average among patients who received a permanent IDDS. Two articles reported the proportion of patients with Z50% improvement in pain at 6 months (38%, 56%) and 2 at longer follow-ups (30%, 44%). Intrathecal morphine-equivalent doses increased over time.	The most commonly reported permanent IDDS drug side effects were nausea/vomiting (mean rate weighted by sample size=33%), urinary retention (24%), and pruritus (26%). Catheter problems were also reported commonly. Rare but serious complications included intrathecal catheter tip granulomas.	None of the studies were randomized trials, or of ziconotide	The studies reviewed found improvement in pain and functioning on average among patients with chronic noncancer pain who received permanent IDDS. However, their methodologic limitations preclude conclusions concerning the effectiveness of this technology long-term and as compared with other treatments.
<u>J Pain Symptom Manage 2000 Aug 20(2) S12-36</u>	SysRev					Clinical efficacy in large-scale randomized controlled trials utilizing intrathecal delivery of most compounds has not been demonstrated, and variations between study designs make useful comparisons of existing studies difficult. Generally, the scientific quality of the published studies is variable, with results obtained from limited numbers of prospective controlled studies (many with inadequate patient group size), uncontrolled clinical studies, case reports, retrospective studies, and anecdotes.	Intrathecal morphine appears to be safe at clinical concentrations, and has favorable efficacy data. Limited information on the other opioid classes also appears favorable, although published literature supporting this is very limited. Based on the currently available literature, both clinical efficacy and toxicology for bupivacaine and clonidine appear favorable. The efficacy of combinations of different drug classes such as opioids/local anesthetics, opioids/ clonidine, and opioids/local anesthetics/ clonidine appears favorable, but is based largely on case studies and retrospective analysis. No information is available on the long-term compatibility of these combinations.

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<u>Pain Physician 2007 Mar 10(2) 357-66</u>	Sysrev				Most side effects of intrathecal morphine therapy are dose dependent and mediated by opioid receptors. Common ones include nausea, vomiting, pruritus, urinary retention, constipation, sexual dysfunction, and edema. Less common ones include respiratory depression, and hyperalgesia. Catheter tip inflammatory mass formation is a less common complication that may not be mediated by opioid receptors. Treatment usually involves the utilization of opioid receptor antagonist, such as naloxone.		Patients considering intrathecal opioid pump therapy should be informed and advised about the possible side effects associated with longterm intrathecal morphine administration prior to placement of a permanent morphine infusion pump.
<u>Anesth Analg 2002; 95:674-715</u>	SysRev	Retrieved randomized controlled trials that included an experimental group treated with a drug combination and control groups that were each given one component of that combination; or trials in which a second drug, by itself not able to produce analgesia, was added to a known analgesic drug.		* The addition of a relatively rapid onset opioid to morphine improves early analgesia. * The addition of ketamine to an opioid-based PCEA regimen reduces overall opioid requirements, but without clear clinical benefit in terms of a reduction in associated adverse effects. * There are limited data from controlled studies to support a clinical benefit of the addition of midazolam to spinal combination therapy.		Because of the small number of studies in each group and their heterogeneous design, particularly for the management of chronic pain, a mathematical meta-analysis could not be performed.	
<u>Health Technology Assessment 2000; Vol. 4: No. 32</u>	SysRev	A total of 114 studies, containing information on over 2000 patients. Data were extracted from case reports and case series-type information.	No randomised controlled studies or comparator studies were found.	53 studies presented data on the effectiveness of pump systems. Sixteen of these reported visual analogue scores before and after pump usage. Average scores declined from 7.6/10 to 3/10 over a variable period of up to 2 years. All other measures of effectiveness, including various quality of life indicators, invariably reported positive effects.			Such data as are available indicate a generally positive effect of the therapy, with sideeffects and complications occurring in about a quarter of the recipients, but it is difficult to draw definite conclusions because the quality of the data is so poor.

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<u>Eur J Anaesthesiol 2006 Jul 23(7) 605-10</u>	RCT	Opioid-naive patients suffering from non-cancerous chronic back-pain. Patients with gastroenteric, urinary or respiratory tract disease, allergy to opioid drugs, sensory deficit, or use of drugs with a central effect or any effect on the urinary and gastrointestinal functions were excluded.		Clinically significant pain relief was observed in all patients receiving intrathecal morphine but only six patients (25%) of the control group ($P = 0.0005$). The incidence of pruritus was lower in patients of Groups III (6%) and IV (3%) than in Groups I (12%) and II (20%) ($P = 0.002$).	The incidence of nausea and vomiting was higher at 2- and 4-h observation times, and decreased 24 h after intrathecal injection. Nausea was more frequent in Groups I (56%) and II (50%) than in Groups III (33%) and IV (24%) ($P = 0.0005$). Vomiting was higher in patients receiving morphine than in control group, but without differences among the four doses. No urinary retention was observed in the control group, while 2 h after intrathecal injection urinary retention was observed in 20–40% of cases, and decreased to less than 10% 24 h after spinal injection without differences among the four doses.	N = 144. Randomly allocated to receive one of four doses of intrathecal morphine: 0.015 mg (Group I), 0.03 mg (Group II), 0.06 mg (Group III) and 0.25 mg (Group IV). And a placebo group receiving paraspinal administration of normal saline (2 mL). A blinded observer recorded the occurrence of pruritus, nausea, vomiting, urinary retention and respiratory depression (respiratory rate < 6bpm) at 2, 4 and 24 h after injection.	The onset and incidence of minor opioid-related side-effects after intrathecal morphine administration do not depend on its dose, occurring with even very small doses of morphine. Accordingly, they can be considered as a patient-dependent effect of the drug.
<u>Anesth Analg 2000 Dec 91(6) 1493-8</u>	RCT	Patients who had neuropathic pain after SCI and who were unresponsive to other treatment. Patients were not considered for the study <4 wk after their injury and until they had undergone a trial of other drugs used for the treatment of neuropathic pain after SCI. Patients who had SCI at or above C-4 were excluded from the study because of the risk of respiratory arrest. Other exclusion criteria included preexisting hypertension, angina, congestive cardiac failure, active urinary tract infection, and age >80 yr.		Intrathecal morphine resulted in a mean reduction in pain to 80% of the baseline pain before drug administration. Intrathecal administration of clonidine resulted in a mean reduction in pain levels to 83% of the baseline pain. These reductions in pain levels were not significantly different from the relief obtained after saline administration. Intrathecal administration of the mixture of morphine and clonidine resulted in a mean reduction in pain levels to 63% of the baseline pain. There was a significant difference in the relief obtained with the mixture of morphine and clonidine compared with placebo ($P = 0.0084$).	The most common side effects after morphine administration in those with SCI were pruritus, oxygen desaturation, sedation, nausea, and hypotension (>15% decrease in blood pressure). The most common side effects after clonidine administration were hypotension, nausea, sedation, oxygen desaturation, and dry mouth. Of those who received saline, 13% experienced sedation and 13% had oxygen desaturation. The most common side effects after the administration of the mixture were hypotension, oxygen desaturation, pruritus, dry mouth, and sedation. Using the mixture did not result in a marked reduction in the incidence of side effects.	N = 15. A double-blinded, randomized, controlled trial of intrathecal morphine or clonidine, alone or combined, in the treatment of neuropathic pain after spinal cord injury	The combination of morphine and clonidine produced significantly more pain relief than placebo 4 h after administration; either morphine or clonidine alone did not produce as much pain relief.
<u>J Clin Oncol 2002 Oct 1 20(19) 4040-9</u>	RCT	All patients had a documented average pain VAS > 5 at two measurements within a week of randomization, despite 200 mg/d of oral morphine or the equivalent. All patients had advanced cancer, pain expected to continue throughout life, age > 18 years, an expected life span > 3 months, and were suitable for the IDDS (no mechanical barriers, obstruction of CSF flow, or active infection).		Sixty of 71 IDDS patients (84.5%) achieved clinical success compared with 51 of 72 CMM patients (70.8%, $P = .05$). IDDS patients more often achieved >20% reduction in both pain VAS and toxicity (57.7% [41 of 71] v 37.5% [27 of 72], $P = .02$). The mean CMM VAS score fell from 7.81 to 4.76 (39% reduction); for the IDDS group, the scores fell from 7.57 to 3.67 (52% reduction, $P = .055$). The mean CMM toxicity scores fell from 6.36 to 5.27 (17% reduction); for the IDDS group, the toxicity scores fell from 7.22 to 3.59 (50% reduction, $P = .004$). The IDDS group had significant reductions in fatigue and depressed level of consciousness ($P < .05$).		N = 202. A RCT of CMM versus IDDS plus CMM.	IDDSs improved clinical success in pain control, reduced pain, and significantly relieved common drug toxicities in patients with refractory cancer pain.

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<u>J Pain Symptom Manage 2006 May 31(5) 393-406</u>	RCT	Patients were required to have severe chronic pain that was inadequately controlled by systemic and/or IT analgesics, a Visual Analogue Scale of Pain Intensity (VASPI) score >50 mm, and pain of any etiology that warranted the use of IT therapy. Exclusion criteria included pregnancy or lactation, investigational drug or device use within 30 days prior to screening, known sensitivity to ziconotide, and contraindications to IT therapy		Intention to treat analysis: VASPI scores improved from baseline to Week 3 by a mean of 14.7% in the ziconotide-treated group and 7.2% in the placebo group (P = 0.036).	Significant adverse events reported in the ziconotide group were dizziness, confusion, ataxia, abnormal gait, and memory impairment. Discontinuation rates for AEs and serious AEs were comparable for both groups.	N=220. A double-blind, placebo-controlled, two arm, randomized study consisted of an initial screening visit, a three-week weaning period from all IT drugs, a one-week stabilization period, and a three-week double-blind treatment period. Patients randomized to ziconotide (n = 112) or placebo (n = 108).	Slow titration of ziconotide, a nonopioid analgesic, to a low maximum dose resulted in significant improvement in pain and was better tolerated than in two previous controlled trials that used a faster titration to a higher mean dose.
<u>JAMA 2004; 291:63-70</u>	RCT	To be eligible, patients with cancer or AIDS needed to have a mean VASPI score of 50 mm or greater during the 3 days before enrollment, despite a regimen of systemic or intrathecal analgesics. Exclusion criteria included pregnancy, sepsis or inadequately treated infection, investigational drug use, or palliative surgical procedure(s) within the preceding 30 days; dementia; untreated affective disorders; nonpatent spinal canal; severe asthma, cardiac failure, or bradyarrhythmias; and neurocardiogenic syncope.		Mean VASPI scores improved 53.1% (95% CI, 44.0%-62.2%) in the ziconotide group and 18.1% (95% CI, 4.8%-31.4%) in the placebo group (P .001), with no loss of efficacy of ziconotide in the maintenance phase. Pain relief was moderate to complete in 52.9% of patients in the ziconotide group compared with 17.5% in the placebo group (P .001). Five patients receiving ziconotide achieved complete pain relief, and 50.0% of patients receiving ziconotide responded to therapy compared with 17.5% of those receiving placebo (P=.001).	Nine types of adverse events (fever, hypotension, nausea, vomiting, confusion, dizziness, somnolence, abnormal gait, and urinary retention) occurred with significantly greater frequency in the ziconotide group compared with the placebo group, but starting at the lower dosage, using smaller dose increments, and increasing the interval between dose titrations tended to reduce this frequency.	N=111. A double-blind, placebo-controlled, randomized study consisted of an initial screening, a five day titration period, and a five day maintenance period. Non-responders after the titration were allowed to cross over. Patients randomized to ziconotide (n = 71) or placebo (n = 40).	Intrathecal ziconotide provided clinically and statistically significant analgesia in patients with pain from cancer or AIDS.
<u>Pain Med 2004 5 6-13.</u>	Registry	Patients who were enrolled for IDDS trialing had chronic low back pain, with or without leg pain, but with greater back pain than leg pain.		The trialing success rate was 93% (154 patients). In all, 136 patients (82%) were implanted. In the implant group, numeric pain ratings dropped by more than 47% for back pain and more than 31% for leg pain at the 12-month follow-up. More than 65% of implanted patients reduced their Oswestry scores by at least one level at their 12-month follow-ups compared with baseline. At 12-month follow-ups, 80% of implanted patients were satisfied with their therapy and 87% said they would undergo the procedure again.	Adverse events were reported in 23 patients receiving an IDDS implant. Of these, 21 required some surgery to correct the problem. Adverse events included: Infection (2.2%), dislodgment/migration (1.5%), and cerebrospinal fluid leak (0.7%). The most common adverse event over 12 months was reaction to medication, which occurred in 5.1% of patients. Other, rarely reported events included catheter kinking in 1.5% and catheter fracture in 0.7% of patients.	Thirty-six physicians enrolled 166 patients to be trialed for drug-delivery systems. Each participating center followed its standard clinical practice for patient selection, trialing methods, criteria for definition of a successful trial, implant methods, and postimplant therapy management. The registry protocol provided guidance regarding registry data requirements and ensured that standardized forms were used among all participating centers to solicit registry data at baseline, trialing, implant (or decision not to implant), and at 6- and 12-month follow-ups. Data were collected at all time points, regardless of implant status.	Current clinical practices related to trialing of drug-delivery systems resulted in the majority of patients successfully trialed. At 12-month follow-ups, implanted patients experienced reductions in numeric back and leg pain ratings, improved Oswestry scores, and high satisfaction with the therapy.

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CLIN THER 1997 19(1) 96-112	CE	A decision analytic study was conducted using computer simulation to project the outcomes in a simulated cohort of patients whose treatment for back surgery had failed. The objective of this study was to estimate the direct cost of intrathecal morphine therapy (IMT) delivered via an implantable pump relative to alternative therapy (medical management) over a 60-month course of treatment.		When both costs and adverse event rates were set at base case values, the expected cost (discounted at 5%) of IMT over 60 months was \$82,893 (\$1382 per month). With costs and adverse event rates at the best case values, the expected 60-month total cost was \$53,468 (\$891 per month), and when all the values were set at the worst case, the projected total cost rose to \$125,102 (\$2085 per month). By comparison, the cumulative 60-month total cost for medical management was \$85,186.		In general, the results of the simulation were robust to changes in the underlying assumptions. The model was most sensitive to changes in the cost of the pump/ catheter implant, ongoing monthly expenses for therapy, and pump replacement. A 100% change in the cost for each of these components of therapy translated into roughly a 20% change in the total 60- month cost of therapy.	
Neuromodulation 1999; 2:77-84	CE	A nonsystematic review of a variety of cost studies in both cancer and noncancer pain treatment.		Reports the results of 1) the decision analysis by de Lissovoy et al (ID #71) and 2) a cost analysis based on input costs for equipotent oral and IT analgesia			Decision Analysis: "For the base case and the best case, the cumulative cost with an implanted, programmable pump is less than the cost of medical management after 22 months and 11 months, respectively." Cost Analysis: "...intrathecal drug delivery becomes more cost effective than oral therapy"
<i>only abstracts available</i>							
Ann Pharmacother 2006 Jul-Aug 40(7-8) 1293-300	SysRev	Patients enrolled in clinical trials were intolerant of or refractory to other treatment modalities.		In double-blind, placebo-controlled studies, ziconotide significantly improved patient perception of pain from baseline to the end of the study periods, which ranged from 11 to 21 days.	Key ziconotide-related adverse events are neuropsychiatric, including depression, cognitive impairment, and hallucinations; depressed levels of consciousness; and elevation of creatine kinase levels. Ziconotide is also associated with a risk of meningitis due to possible contamination of the microinfusion	There have been no studies that directly compared ziconotide with other intrathecal or systemic analgesics.	Ziconotide is a therapeutic option for treatment of severe chronic pain in patients who have exhausted all other agents, including intrathecal morphine, and for whom the potential benefit outweighs the risks of serious neuropsychiatric adverse effects and of having an implanted device.
Curr Pain Headache Rep 2005 Aug 9(4) 243-8	CCT			Pain scores were reduced by 52% versus 39%, drug toxicity scores were reduced by 50% versus 17%. Even the most refractory pain patients--those failed by a month of comprehensive medical management by experts--when subsequently provided with IDDS, had a 27% reduction in pain scores and			IDDS should be considered as the best treatment for this population

<u>reference</u>	<u>trial period</u>	<u>trial success</u>									
<p><u>Treatment in Workers' Compensation 2006</u></p>	<p>The specific criteria include ... a temporary trial has been successful prior to permanent implantation.</p>	<p>Defined by a 50-70% reduction in pain</p>									
<p><u>Evidence-based clinical practice guideline for interdisciplinary rehabilitation of chronic non-malignant pain syndrome patients</u></p>											
<p><u>Intrathecal drug delivery for the management of pain and spasticity in adults: recommendations for best clinical practice</u></p>	<p>A trial of intrathecal therapy should always be performed. This can be by means of bolus or infusion but the former give limited information. There is no ideal screening method.</p>										

<i>reference</i>	<i>trial period</i>	<i>trial success</i>									
<p><u>Neuromodulation 2007 10(4) 300-328</u></p>	<p>The panelists felt that trial procedure should be left up to the physician performing them. The panelists felt that until there are data that suggest that trials are unnecessary, trials should be performed before placing IT delivery agents through an IDDS. Trials can be performed with monotherapy or with polyanalgesia.</p>										
<p><u>Clin J Pain 2007 Feb 23(2) 180-95</u></p>											
<p><u>J Pain Symptom Manage 2000 Aug 20(2) S12-36</u></p>											

<i>reference</i>	<i>trial period</i>	<i>trial success</i>									
<p><u>Pain Physician 2007 Mar 10(2):357-66</u></p>											
<p><u>Anesth Analg 2002; 95:674-715</u></p>											
<p><u>Health Technology Assessment 2000; Vol. 4: No. 32</u></p>	<p>In those studies reporting a trial, 23 used a single injection and 7 an infusion for more than 24 hours - of those 6 lasted for more than 48 hours</p>	<p>Those studies reporting a criteria for judging success used 50% relief of pain.</p>									

<u>reference</u>	<u>trial period</u>	<u>trial success</u>									
<p><u>J Pain Symptom Manage 2006</u> <u>May 31(5) 393-406</u></p>											
<p><u>JAMA 2004; 291:63-70</u></p>											
<p><u>Pain Med 2004 5 6-13.</u></p>	<p>Trialing methodologies were: Continuous epidural infusion (53%), continuous intrathecal infusion (25%), single intrathecal bolus injection (14%), and multiple intrathecal bolus injections (8%). The majority of patients (81.1%) were trialed with morphine only. The mean duration of the trial was 3.5 ± 5.4 days.</p>										

