reference	participants' characteristics	intervention group/ control group	outcomes	critical appraisal/ conclusion
Grosen et al. 2014 Perioperative gabapentin for the prevention of persistent pain after thoracotomy: A randomized controlled trial. Eur J Cardiothorac Surg. 2014;46(1):76-85.	**inclusion criteria** - age 18–80 yrs - pulmonary malignancy scheduled for anterior thoracotomy **exclusion criteria** -inability to fill in detailed health- and pain-related questionnaires - psychiatric disease - serum creatinine concentrations ≥120 µmol/L - allergy to gabapentin, morphine, bupivacaine and/or ibuprofen - average pain during the last week ≥4 NRS 0–10 - standardised treatment with opioids - anticonvulsants **demographic data**: group P / group G sex (m/f): 29/23 / 23/29 age (yrs): 62 [56–69] / 67 [58–72] height (cm): 173±9 / 172±10 weight (kg): 74±15 / 78±18 BMI (kg/m^2): 25±4 / 26±5 **patient flow and follow up:** total patient number included: 104 randomised in: group G: 30 group P: 37 excluded: 37 analysed: 67 follow-up: postop days 1-5, 3 months, 6 months	**intervention prior to anaesthesia** - group G (gabapentin): received an initial PO of 1200 mg gabapentin 2 h before surgery, followed by POD1: 300 mg x2 POD2: 300 mg x3 POD3–5: 300 mg x4 equivalent to a total dose of 6300 mg. - group P (placebo): same regimen using placebo - TEA, started before surgery and for 72 h: - bolus bupivacaine 0.5%, continuous infusion of 0.25% + morphine 50 µg/mL, 10 mL/h **mode of anaesthesia** - fentanyl **supplemental analgesia** - PO acetaminophen 2 g and diazepam 2.5–5 mg, 2 h before surgery **postoperative analgesia** - TEA, started before surgery and for 72 h: - bolus bupivacaine 0.5%, continuous infusion of 0.25% + morphine 50 µg/mL, 10 mL/h - intermittent epidural bolus if needed (2–4 mL bolus; lo 15–20 min) - acetaminophen (4 g/d) - ibuprofen (800 mg/day) **rescue analgesia** - IV morphine titration	**postoperative pain: n (%)** group P / group G / p Pain at 3 months: n=37 / n=39 Any pain: 22 (59%) / 23 (59%) / 0.96 NRS ≥4: 5 (23%) / 5 (23%) / 1.00 Pain at 6 months: n=37 / n=30 Any pain: 18 (49%) / 14 (47%) / 0.87 NRS ≥ 4: 3(17%) / 5 (36%) / 0.22 - Brief Pain Inventory (BPI) [NRS 0–10)] - there were no differences between the treatment groups in terms of intensity, interference and quality of persistent post-thoracotomy pain **supplementary analgesia (mg) mean±SD** - epidural morphine consumption - group P: 14.1±8.4 - group G: 10.0±6.4 - difference: 4.1 mg (95% CI 1.0–6.1 mg) - p=0.01 **total dosage of morphine in 24 h** - no difference between treatment groups in postop morphine consumption **adverse effects/events** - no clinically meaningful differences between the treatment groups were observed in the frequencies of predefined analgesia-related adverse effects over the 5-day treatment period - gabapentin had no effect on postop lung and exercise capacities	**methodological shortcomings** -no details on implementation of randomisation **level of evidence: 1** **authors' conclusion** "We found no evidence for the superiority of gabapentin over placebo for the treatment of acute pain following thoracotomy or for the prevention of persistent post-thoracotomy pain"
Kinney et al. 2012 Preoperative gabapentin for acute post-thoracotomy analgesia: a randomized, double-blinded, active placebo-controlled study. Pain Pract. 2012;12(3):175-83.	**inclusion criteria** - age 45–75 years **exclusion criteria** - planned chest wall resection - cardiovascular surgery - gastroesophageal surgery - current enrolment in another post-thoracotomy analgesic research protocol - pre-existing pain syndromes - daily opioid therapy >20 mg oral morphine equivalents - current gabapentin or pregabalin therapy - allergy to any study medication - coagulation or infectious issues that would preclude epidural catheter placement - severe psychological disorders or - inability to understand the study protocol - prisoners or other institutionalised individuals - severe hepatic, renal or cardiovascular disorders. **demographic data:** GABA / C age (yrs), BMI ...: 64.4±7.4 / 28.1±4.8 / 64.3±6.8 / 28.4±4.3 sex (m/f): 32/5 / 30/33 ASA physical status (n, %) 1: 0 (0%) / 0 (0%) 2: 24 (42%) / 22 (35%) 3: 33 (58%) / 41 (65%) 4: 0 (0%) / 0 (0%) **patient flow and follow up:** total patient number included: 146 randomised in: group GABA: 57	**intervention prior to anaesthesia:** - group GABA: 600 mg PO gabapentin 2 h preop - group C: active placebo (diphenhydramine 12.5 mg) same protocol - TEA, started before incision: - infusion of 0.075% bupivacaine + 10 µg/mL hydromorphone delivered at 6 mL/h **type of surgery (n, %)** GABA / C Lobectomy: 32 (56%) / 37 (59%) Bilobectomy: 4 (7%) / 2 (3%) Wedge resection: 8 (14%) / 16 (25%) Segmentectomy: 4 (7%) / 3 (5%) Pneumonectomy: 2 (4%) / 3 (5%) Other: 7 (12%) / 2 (3%) **mode of anaesthesia** - GA was based on inhaled agents after IV induction at the attending anaesthesiologist's discretion **supplemental analgesia** if required: - IV ketorolac 15 mg was given once **postoperative analgesia** - during the first 48 h postop, PO acetaminophen 650 mg/6 h or IV ketorolac 15 mg /6 h - if NRS >4 in PACU: IV fentanyl 25 µg, every 2 min, max 200 µg in PACU - IV PCA fentanyl for rescue 10 µg/10 min/max 200 µg by 4 h	**postoperative pain [NRS]: mean±SD** Postoperative pain scores over the first 48 h were low and did not differ significantly between treatment groups at rest C / GABA / p POD1: 2.9±1.8 / 3.1±1.9 / 0.53 POD2: 2.5±1.8 / 2.5±1.8 / 0.92 on coughing C / GABA / p POD1: 5.0±2.6 / 5.2±2.9 / 0.74 POD2: 5.1±2.5 / 5.0±2.2 / 0.78 - analgesic use did not differ between groups at anytime point after surgery up to POD3 - the frequency of patients experiencing pain at 3 months post-thoracotomy did not differ significantly between groups (%) C / GABA / p 66 / 70 / 0.72 **adverse effects/ events:** There was no significant difference in nausea, vomiting, or use of antiemetics on POD1 or POD2 between groups.	**methodological shortcomings** - method used to allocate random sequence not reported - allocation concealment not reported not reported - dates defining period of recruitment and follow up not reported **level of evidence: 1** **authors' conclusion** "A single preoperative oral dose of gabapentin (600 mg) did not reduce pain scores or opioid consumption following elective thoracotomy, and did not confer any analgesic benefit in the setting of effective multimodal analgesia that included thoracic epidural infusion."

reference	participants' characteristics	intervention group/ control group	outcomes	critical appraisal/ conclusion
	group C: 63 excluded: 24 analysed: 120 follow-up: VAS scores at 3 months PO			
Huot et al. 2008. Gabapentin does not reduce post-thoracotomy shoulder pain: a randomized, double-blind placebo –controlled study Can J Anaesth 2008;55:337-43	**inclusion criteria** - age 18–80 yrs - ASA physical status II–III **exclusion criteria** - an allergy to local anaesthetics, gabapentin, and/or hydromorphone - unable to have an epidural catheter - previous ipsilateral thoracotomy surgery - preoperative shoulder pain, or any other chronic pain syndrome -the use of other analgesics in the immediate preoperative period - a history of drug or alcohol abuse - unable to understand a numerical rating scale (NRS) for pain **demographic data:** group G group P Patients (n) 23 28 sex (m/f) 11/12 17/11 age (yr) 60.1±13.6 60.0±8.7 weight (kg) 71.2±15.9 70.1±13.8 height (cm) 168.7±8.2 167.9±9.3 **patient flow and follow up:** total patient number included: 60 randomised in: group G: 23 group P: 28 excluded: 9 analysed: 51 follow-up: 0, 2, 4, 8, 12, 16, 20, 24 h postop	**intervention prior to anaesthesia** - group G: 1200 mg PO gabapentin 2 h before surgery - group P: placebo, same protocol **mode of anaesthesia** TEA - fentanyl **surgical approach** Type of surgery group G group C Pneumonectomy 4 2 Lobectomy 13 17 Segmentectomy/ wedge/biopsy 6 6 Exploratory thoracotomy 0 3 **supplemental analgesia** - rescue analgesia: 1–2 mg sc hydromorphone every four to six h - if NRS>3 at incision site: bolus of 0.1 mL/kg of epidural solution + infusion rate increased in 2 mL/h increments, to max infusion rate of 16 mL/h - if still in pain, the epidural solution was changed to 0.125% bupivacaine (0.125%) + 2 µg/mL fentanyl at 10 mL/h **Intra/postoperative analgesia** - intraop TEA: bupivacaine 0.1% + fentanyl 2 µg/mL at a initial rate of 0.1 mL/kg/h. Adjustments were made between 4–16 mL/h + boluses of 0.1 mL/kg - postop TEA: infusion rate adjusted to maintain an NRS pain score ≤3 at the surgical site	**postoperative pain [NRS 0-10]: median [range]** NRS group P group G 0 h Rest 0 [0-10] 0 [0-6] Cough 0 [0-10] 0 [0-10] 4 h 0 [0-5] 0 [0-8] 8 h 0 [0-5] 0 [0-7] 12 h 0.5 [0-6] 0 [0-7] 16 h 0 [0-5] 0 [0-4] 20 h 0 [0-5] 0 [0-5] 24 h Rest 0 [0-2] 0.5 [0-8] Cough 1.5 [0-8] 3 [0-10] All NS **total dosage of hydromorphone mg/24 h: mean±SD** - group G: 2.36±2.5 - group P: 2.65±3.2 (p=0.36) **adverse effects/ events: n (%)** - no significant difference between groups in nausea, vomiting and pruritis - sedation at 4 h: group G (21/23 patients) group P (18/28 patients; p=0.025)	**methodological shortcomings** - participant flow through each stage was not reported **level of evidence:** 1 **authors' conclusion** **"**Pre-emptively administered gabapentin, 1200 mg, does not reduce the incidence, or the severity of post-thoracotomy shoulder pain in patients receiving thoracic epidural analgesia**"**