

Reference (include title, author, journal title, year of publication, volume and issue, pages)	Evidence level (I-VII)	Methods, key findings, outcomes or recommendations	Critical Appraisal of the Evidence (consider study design and scope, methodological strengths and weaknesses etc)
<p>Davies, E.C., Green, C.F., Mottram, D.R. &amp; Pirmohamed, M. (2008). The use of opioids and laxatives, and incidence of constipation, in patients requiring neck-of-femur (NOF) surgery: a pilot study. <i>Journal of Clinical Pharmacy and Therapeutics</i>, 33, 561-566</p>	<p>VI</p>	<ul style="list-style-type: none"> <li>• Aim of study was to determine the current nature of opioid and laxative prescribing in patients who required emergency surgery and the corresponding incidence and impact of constipation in these patients.</li> <li>• Study took place on an orthopaedic ward at the Royal Liverpool Hospital over an 8-week period in Spring 2007 on adults who fractured their NOF and required surgery. Study consisted of 46 patients with a median age of 81 years. 29 participants were female (63%) and 17 male (27%).</li> <li>• 43 patients (93%) received opioids pre and post operatively. Overall, 32 patients became constipated (69.6%) after surgery and experienced bloating, abdominal pain &amp; discomfort. 2 patients required an abdominal x-ray for investigation of pain.</li> <li>• Laxatives were prescribed in 33 (71%) patients, 20 (43%) received laxatives to prevent constipation but 12 (60%) subsequently developed constipation. Of those not prescribed prophylactically laxatives, 21 (80%) developed constipation.</li> <li>• Best prophylactic laxative used is a stimulant and softener. If no prophylactic laxative were used, a patient would require up to 5 laxative agents in order to open bowels.</li> <li>• Further research and work with larger patient groups is required to determine if laxatives truly prevent constipation in the post-operative population.</li> <li>• Length of hospital stay longer in those with constipation.</li> </ul>	<ul style="list-style-type: none"> <li>• Retrospective descriptive study</li> <li>• Study design appropriate however very small sample size</li> <li>• Limitation - adult based and not relevant in the paediatric population as the older participants may have underlying issues resulting in poor gut function.</li> <li>• Research Pharmacist reviewed prescription charts daily on orthopaedic ward to assess duration of patient stay</li> <li>• Simple definition of constipation ('failure of the bowel to open for three consecutive days') made the assessment of constipation less complex however may need further development to ensure all patients who complained of abdominal pain or discomfort is included in the figures.</li> <li>• Study raised interesting issues that need to be explored in future studies.</li> <li>• Trust approval was obtained for study, no ethics committee were involved</li> <li>• Statistical analysis was performed using STATSDIRECT version 2.6.2</li> </ul>

			<ul style="list-style-type: none"> <li>• Appropriate, reputable literature from British study.</li> </ul>
<p>O'Brien, S.H., Fan, L. &amp; Kelleher, K.J. (2010). Inpatient use of laxatives during opioid administration in children with Sickle Cell disease. <i>Paediatric Blood Cancer</i>, 54, 559-562</p>	<p>V</p>	<ul style="list-style-type: none"> <li>• Aim of the study was to utilize the Paediatric Health Information System (PHIS) database to describe the frequency of use and factors associated with the use of laxatives when narcotics are prescribed to hospitalized children and adolescents with Sickle Cell Disease (SCD).</li> <li>• Analysis of 29 Children's Hospitals with pharmacy data from all hospital discharges between 1/7/2007 and 30/6/2008 in which a patient with SCD was 0-18 years old, received a narcotic medication. Analysis included 6093 participants.</li> <li>• Only inpatient children and adolescents were analysed, not day cases.</li> <li>• 539 (10%) required surgeries and 78% of these children received narcotic analgesic combinations.</li> <li>• Laxatives were prescribed to 4044 (66%) patients and of the children who were post-operative, 150 (39%) received laxatives as a result of constipation.</li> <li>• One third of the participants not prescribed laxatives with the administration of narcotics.</li> <li>• The most common laxative prescribed was a stimulant and softener.</li> <li>• Older patients more likely to receive laxatives, as they are able to voice concern of abdominal discomfort.</li> <li>• Constipation prophylaxis is recommended with opioid use.</li> <li>• Increased attention needs to be paid to constipation prophylaxis, particularly in younger patients and surgical admissions.</li> </ul>	<ul style="list-style-type: none"> <li>• Retrospective systemic review of a descriptive and qualitative study</li> <li>• Large sample size that provides good statistical power to demonstrate both individual and hospital-level effects on medication use.</li> <li>• Study design appropriate as focuses on paediatric population.</li> <li>• PHIS is a powerful data source that provides multi-institutional, geographically diverse representation of a large number of subjects for rare diseases.</li> <li>• Not all participants were post-operative patients however were on a combination of laxatives to prevent constipation as a result of opioid use.</li> <li>• Would have better outcomes, as diet, fluid and immobility issues shouldn't be as a concern compared to a post-operative orthopaedic patient who has difficulty ambulating.</li> <li>• Limitation - only 'yes/no' responses on system for opioid and laxative use - does not go into further detail</li> <li>• Limitation - no information regarding dose or route of opioid</li> </ul>
<p>Linari, L.R., Schofield, L.C. &amp; Horrom, K.A. (2011). Implementing a bowel program. Is a bowel program an effective way of preventing constipation and ileus following elective hip and knee arthroplasty surgery? <i>Orthopaedic</i></p>	<p>VI</p>	<ul style="list-style-type: none"> <li>• Aim of the study was to lower the rates of post-operative constipation and ileus by establishing a bowel protocol for hip and knee arthroplasty patients.</li> </ul>	<ul style="list-style-type: none"> <li>• Retrospective interventional study</li> </ul>

<p>Nursing, 30 (5), 317-321</p>		<ul style="list-style-type: none"> <li>• Retrospective review of 1223 adult patients who underwent hip and knee surgeries over a 36-month period (2006-2008). Patients with colostomies were excluded.</li> <li>• Constipation in the post-operative population large issue as side effects of opioids, decreased mobility and change in diet and fluid intake.</li> <li>• Constipation should be treated prophylactically in the post-operative population – with the use of a stool softener and stimulant</li> <li>• Laxatives identified as appropriate for the management and prevention of constipation.</li> <li>• Laxatives should be titrated in order to get the patient to pass bowel motions every 48 hours.</li> <li>• Fluids and diet high in fibre should commence as soon as the patient is able to tolerate and bowel sounds are present</li> <li>• Mobilization should commence on Day 1 post-operatively.</li> <li>• Patients received a Bisacodyl Suppository on Day 1 post-operatively to reduce the risk of constipation and as per the bowel protocol.</li> <li>• Results = the rates of constipation per 1000 cases decreased from 120 in 2008 (using suppositories when required) to 37 in 2009 (using a suppository day 1 post op along with a stool softener and stimulant).</li> <li>• Data demonstrated a decrease in constipation with the use of a bowel regime in place with the consistent administration of a suppository on Day 1 post-operative and prophylactic use of oral laxatives once diet and fluids commenced.</li> <li>• Future recommendations include further research based on the findings from this particular study and including other types of surgical patients.</li> </ul>	<ul style="list-style-type: none"> <li>• Large sample size</li> <li>• Adult based study however the underlying principles of treating constipation early still applies to all patient groups regardless of age.</li> <li>• No demographic information was recorded which prevents the ability to make any correlation between sex and age of patient or if the procedure was unilateral or bilateral.</li> <li>• Bowel regime appropriate for study however not appropriate in younger population due to the trauma and distress it can cause.</li> <li>• Authors acknowledge that a stronger study design would be a randomized controlled trial were both regimes were being compared.</li> <li>• Other causes of constipation (ie. poor oral intake and decreased mobility) were not measured and may influence the results.</li> <li>• Concludes that daily surveillance of nutrition, hydration, activity and medication use are required to assist in determining risk of constipation.</li> </ul>
<p>Madsen, L., Magor, C. &amp; Parker, B.A. (2010). Comparison of two bowel treatments to prevent constipation in post-surgical orthopaedic patients. <i>International Journal of Orthopaedic and Trauma Nursing</i>, 14, 75-81</p>	<p>II</p>	<ul style="list-style-type: none"> <li>• Aim of this study was to compare the effectiveness of 'Movicol' with a standard bowel treatment in reducing constipation in the post-operative orthopaedic population.</li> <li>• 31 patients enrolled for the study (M=18, F=13) at a medium-stay Orthopaedic unit however only 28 (M=17, F=11) participated.</li> </ul>	<ul style="list-style-type: none"> <li>• Single-blind, parallel, randomised design.</li> <li>• Small sample size at only one institution.</li> </ul>

		<ul style="list-style-type: none"> <li>• Selected on basis of elective surgery at Calvary Wakefield Hospital in Adelaide.</li> <li>• Patients excluded if known tolerance or sensitivity to laxatives.</li> <li>• Asked to participate by their consultant either arriving or pre-admission to hospital.</li> <li>• Not possible to randomize patients based on selected characteristics therefore, randomized to a treatment group by research staff.</li> <li>• Treatment Group 1 (14 people) received 'Coloxyl and Senna' with 'Microlax' and Treatment Group 2 (14) received 'Movicol'.</li> <li>• Each bowel treatment commenced on Day 1 post-operation and continued until the patient had a bowel movement.</li> <li>• All patients received opioid analgesia.</li> <li>• One researcher was blind to both the randomization procedure and data collection and conducted the analysis.</li> <li>• Patients in Treatment Group 2 experienced a bowel motion earlier (post-op day 2-4) compared to those in Treatment Group 1 (3-6 days)</li> <li>• Authors acknowledge little research regarding best laxative treatment choice available.</li> <li>• Patients reported minor gastrointestinal upsets in Treatment Group 2 compared to Treatment Group 1 such as nausea and flatulence and did not impact on mobility or oral intake.</li> </ul>	<ul style="list-style-type: none"> <li>• Does not state how randomization occurred.</li> <li>• Self-reporting of symptoms (nausea, flatulence, abdominal discomfort etc.) may be linked to patient's awareness of the treatment administered.</li> <li>• Authors acknowledge that repeating the study and addressing the blinding issues may provide greater insight into this problem.</li> <li>• Appropriate study and use of participants however would benefit from a larger sample size.</li> <li>• Reputable journal used to publish study.</li> <li>• A study similar to this in the paediatric population would be very beneficial.</li> </ul>
<p>Pappagallo, M. (2001). Incidence, prevalence and management of opioid bowel dysfunction. <i>The American Journal of Surgery</i>, 182, 11S-18S</p>	<p>V</p>	<ul style="list-style-type: none"> <li>• Recent survey of patient groups with non-cancerous and cancerous pain who were taking opioids to relieve pain and assess if they had gastrointestinal issues as a result.</li> <li>• Survey consisted of questions relating to opioid therapy and changes in bowel habits</li> <li>• Survey compared with results from a national survey in the USA.</li> <li>• Survey conducted by random sample of telephone numbers throughout the USA and 1 adult per household was questioned.</li> <li>• Questions were similar to both groups and included questions regarding demographics, medical history, history of opioid use, bowel habits and treatments for these symptoms.</li> </ul>	<ul style="list-style-type: none"> <li>• Small sample size despite stating survey conducted throughout USA</li> <li>• Adult sample, not relevant to children</li> <li>• Sample does not include post-operative patients in hospital environments</li> <li>• Self-reporting answers to survey that can be inaccurate/incorrect responses.</li> <li>• Study reports patient satisfaction with use of stool softeners and stimulants, which other studies promote initially in the management and treatment of constipation.</li> </ul>

		<ul style="list-style-type: none"> <li>• Non- cancerous - 76 opioid treated patients were surveyed compared to 10018 adults. Predominantly female users treated for musculoskeletal and neurological pain. Median duration of opioid use was 24 months.</li> <li>• The percentage of opioid treated patients &lt;3 complete bowel movements per week was 5 times higher than the US survey.</li> <li>• Opioid treated patients preferred stool softeners and stimulant laxatives to enable bowel movements and should be commenced once opioids commence.</li> <li>• Patients who do not respond from oral laxatives will benefit from another type of laxative, 'movicol' or 'bisacodyl' enema.</li> </ul>	<ul style="list-style-type: none"> <li>• Study acknowledges importance of fluid and dietary requirements, encouraging mobilization and encouraging daily bowel motions at the same time.</li> </ul>
<p>Twycross, R., Sykes, N., Mihalyo, M. &amp; Wilcock, A. (2012). Therapeutic Reviews: Stimulant laxatives and opioid-induced constipation. <i>Journal of Pain and Symptom Management</i>, 43 (2), 306-313</p>	<p>V</p>	<ul style="list-style-type: none"> <li>• Therapeutic Reviews is an article which aims to provide independent information for health professionals about the treatment of stimulant laxatives in the use for patients who have developed opioid-induced constipation by discussing literature which has studied the use of laxatives for opioid-induced constipation.</li> <li>• Clinicians should develop a simple, logical and cost-effective approach regarding the use of laxatives.</li> <li>• Article states the management of constipation aims to restore the amount of water in the faeces. This includes - reducing bowel transit time (exercise &amp; stimulant laxatives), increasing faecal water (osmotic &amp; stimulant laxatives) and increasing the ability of the faeces to retain water (fibre, docusate &amp; osmotic laxatives).</li> <li>• In practice, a combination of faecal softener and stimulant is prescribed.</li> <li>• Authors state that dosages for opioid-induced constipation are generally higher than general constipation as a result of understanding the mechanism the opioid has on the gastrointestinal tract.</li> <li>• Regular bowel movements should occur without straining every 1-3days.</li> <li>• Authors include an example protocol which assists in the assessment of a patient with opioid-induced constipation. The protocol is a step by step process -       <ol style="list-style-type: none"> <li>1. Ask about the patient's past &amp; present bowel history</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Literature does not state if it is aimed at the Adult or Paediatric population</li> <li>• Discusses other literature consisting of RCT's but gives little supporting evidence of said RCT.</li> <li>• Good insight in to available laxative medications; dosages, costs and onset of actions.</li> <li>• Interestingly notes price differences of laxative medications between UK and USA as this could deter health professionals in administering certain products depending of price.</li> </ul>

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|  |  | <ol style="list-style-type: none"><li>2. Palpate for faecal masses</li><li>3. Keep a daily fluid balance record</li><li>4. Encourage oral diet &amp; fluids</li><li>5. Opioid administration should include laxative administration</li><li>6. Titrate dose accordingly (wean if bowels open, upgrade stimulants to suppositories to enable bowel actions).</li></ol> |  |
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