台灣術後加速康復學會

中華民國大腸直腸外科醫學會

台灣大腸直腸醫學會

2025/11/02 三會專家會議

大腸直腸手術全期臨床照護共識

根據衛生福利部 113 年國人死因統計結果，大腸直腸癌持續位居主要癌症死因前三位，對國人健康造成重大威脅[1]。面對大腸直腸癌日益增加的盛行率與複雜性，提升手術照護品質、加速患者康復，是台灣醫療領域迫切的目標。Enhanced Recovery After Surgery（ERAS）是一種多模式、以實證為基礎的圍手術期照護策略，已在全球範圍內被證明能顯著降低手術併發症、縮短住院天數，並改善患者術後生活品質。為提升台灣臨床照護品質並與國際接軌，台灣術後加速康復學會積極邀集大腸直腸外科、麻醉、營養、物理治療等跨專業領域專家，參照國際 ERAS Society 最新指引[2]。同時，本共識亦充分考量亞洲族群特性與台灣臨床現況，制定了此「大腸直腸手術全期臨床照護共識」。

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台灣大腸直腸醫學會 Taiwan Society of Coloproctology

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[2] Gustafsson UO, Rockall TA, Wexner S, How KY, Emile S, Marchuk A, Fawcett WJ, Sioson M, Riedel B, Chahal R, Balfour A, Baldini G, de Groof EJ, Romagnoli S, Coca-Martinez M, Grass F, Brindle M, Hubner M. Guidelines for perioperative care in elective colorectal surgery: Enhanced Recovery After Surgery (ERAS) Society recommendations 2025. Surgery. 2025 Aug;184:109397. doi: 10.1016/j.surg.2025.109397. Epub 2025 Jun 29. PMID: 40783294.

住院前階段

建議一：住院前衛教與諮詢 Preadmission education and counselling（ERAS）

住院前衛教與諮詢是大腸直腸手術 ERAS 照護的關鍵元素。針對直腸癌患者的客製化資訊，能減輕焦慮並提高滿意度，尤其是在術後 6 個月[3]。由專人提供早期住院前 ERAS 手術療程教育，將住院時間從 9 天縮短至 6 天[4]。

建議二：住院前風險評估 Identification of high-risk patients

大腸直腸手術中存在數種經驗證的預測工具，可用於識別風險最高的患者。其中，American Society of Anesthesiologists Physical Status Classification System[5]（ASA-PS）與 American College of Surgeons National Surgical Quality Improvement Program Surgical Risk Calculator[6]（ACS-NSQIP）是具有最佳實證來預測手術預後的工具。這些已在全球被廣泛採用，顯示其臨床可行性與實用度。

建議三：多重共病症的管控 Management of comorbidities

在住院前應針對病人的慢性疾病與合併症，進行適當的評估與風險管控。

- 心血管疾病：優化藥物治療與血行動力學監測，可以降低缺血性心臟病和心力衰竭的不良預後風險[7]。
- 慢性肺阻塞、氣喘、間質性肺病、肺部感染：術前戒菸至少 4 週。若有肺部感染，則延遲非緊急手術[8]。
- 腎功能異常：避免 NSAIDs 與對腎臟造成損害的物質，並謹慎管理液體，以預防急性腎損傷[9]。

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[3] O'Connor G, Coates V, O'Neill S. Randomised controlled trial of a tailored information pack for patients undergoing surgery and treatment for rectal cancer. Eur J Oncol Nurs. 2014;18:183-191.

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[6] Cohen ME, et al. Development of an American College of surgeons National surgery quality improvement program: morbidity and mortality risk calculator for colorectal surgery. J Am Coll Surg. 2009;208: 1009-1016.

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[8] Chandler D, Mosieri C, Kallurkar A, et al. Perioperative strategies for the reduction of postoperative pulmonary complications. Best Pract Res Clin Anaesthesiol. 2020;34:153-166.

[9] Currie A, Malietzis G, Askari A, et al. Impact of chronic kidney disease on postoperative outcome following colorectal

- 慢性肝病：避免非必要的手術，管理液體狀態，處理凝血功能障礙，避免對肝臟造成損害的物質[10]。
- 糖尿病：住院前篩查 HbA1c 和血糖控制，可以降低併發症的發生[11]。

建議四：住院前戒酒 Alcohol cessation

建議高酒精攝取患者於手術前至少 4 週停止飲酒。雖然目前缺乏高品質證據支持其可顯著降低死亡率、併發症及住院天數，但仍建議進行酒精戒斷[2]。

建議五：住院前戒菸 Smoking cessation

吸菸者應於手術前至少 4 週停止吸菸，並接受行為介入及尼古丁替代治療，以降低手術相關死亡率與併發症[2]。

建議六：物理治療體能訓練 Prehabilitation

單獨進行物理治療體能訓練，或結合了營養、心理或其他多模式優化介入措施，能降低 50% 的併發症[12]，並在術後 4 週和 8 週時具備更好的步行能力[13]。

建議七：貧血處理與控制 Anemia treatment

建議住院前進行常規性貧血篩檢與矯正，可改善長期存活率並減少圍手術期輸血需求。對於貧血矯正，可考慮靜脈注射鐵劑及高劑量紅血球生成素（EPO），但其證據等級較低[2]。

建議八：住院前營養照護 Preoperative nutrition

營養不良增加術後併發症與提升死亡率，延遲康復時間與增加住院天數（Length of Stay，LOS）[14]。住院前營養篩檢是辨識與介入營養不良的關鍵[15]，經驗證的篩檢工具能確保及時

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cancer surgery. Colorectal Dis. 2014;16:879-885.

[10] Kaltenbach MG, Mahmud N. Assessing the risk of surgery in patients with cirrhosis. Hepatol Commun. 2023;7:1673.

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[15] Beukers K, et al. Associations between outcome variables of nutritional screeningmethods and systemic treatment tolerance in patients with colorectal cancer: a systematic review. J Geriatr Oncol. 2022;13:1092-1102.

營養照護[16]。其中，Malnutrition Universal Screening Tool（MUST）在檢測營養不良方面具有最高的特異性（89%）和敏感性（86%）[17]。歐洲臨床營養與代謝學會（ESPEN）推薦 Subjective Global Assessment（SGA）和 Nutritional Risk Score 2002（NRS-2002）等營養篩檢工具[18]。針對營養不良患者，應在手術前至少 7 至 10 天啟動營養補充，且理想情況下經腸道途徑。口服營養補充劑（Oral nutritional supplements，ONS）可以提供每天 500 大卡。目標為 ≥ 25 kcal/kg/d 的熱量與 1.2 - 1.5 g/kg/d 的蛋白質[19]。免疫營養可透過調節免疫反應，降低腫瘤手術中的感染併發症[20]。

[16] Muntean C, Blidari AR, Faur AM, Curca RO, Feier CVI. Evaluating the outcomes in patients with colorectal cancer using the malnutrition Universal screening tool: a systematic review. J Multidiscip Healthc. 2024;17:4277-4289.

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手術前階段

建議九：預防術後暈吐 Postoperative Nausea and Vomiting（PONV）prophylaxis

由於術後噁心嘔吐（PONV）影響超過 30%的病人，增加不適與延遲康復過程，因此它的預防與治療至關重要。增加 PONV 風險的因子包含：液體失衡、營養不良、使用長效型鴉片類藥物、使用麻醉氣體、長手術時間、腹腔鏡手術、下床活動力差、腸胃道恢復慢、發生傷口併發症等[21]。目前能減少 PONV 有高度實證的 5 種藥物為：Aprepitant、Ramosetron（截至 2025 年 10 月台灣尚未引進）、Granisetron、Dexamethasone、Ondansetron[22]。

建議十：術前用藥策略 Preanesthetic medication strategy

術前常規給予鎮定、抗焦慮用藥不但沒有臨床上的效益，反而可能導致暫時性的神經與運動功能影響[23]。然而，有高品質的證據顯示，常規於術前開始止痛計畫（例如口服止痛藥物）可以顯著減少鴉片類藥物的使用和術後噁心嘔吐（PONV）[24]。

建議十一：預防靜脈血栓栓塞 Thromboprophylaxis

建議大腸直腸外科病人採取多模式血栓栓塞預防策略，結合機械性與藥物性預防措施，以降低深部靜脈栓塞及肺栓塞之風險。

- 血栓栓塞風險評估
  - 美國大腸直腸外科醫學會（American Society of Colon and Rectal Surgeons, ASCRS）建議使用 Caprini Score 作為制定 VTE 預防措施的依據[25]。
  - Caprini Score 依據個別的風險因子給予不同權重的分數，例如年齡、癌症病史、既往 VTE、肥胖、活動受限以及手術相關因素等。
- 機械性預防（Mechanical prophylaxis）
  - 血栓栓塞風險患者（Caprini Score ≥ 5），建議於手術當天進入開刀房前穿戴漸進式壓力襪（graduated compression stockings），術後使用至病人完全恢復活動能力

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[24] Xuan C, Yan W, Wang D, et al. Efficacy of preemptive analgesia treatments for the management of postoperative pain: a network meta-analysis. Br J Anaesth. 2022;129:946e958.

[25] Patel SV, et al. The American Society of Colon and Rectal Surgeons Clinical Practice Guidelines for the Reduction of Venous Thromboembolic Disease in Colorectal Surgery. Dis Colon Rectum. 2023 Sep 1;66(9):1162-1173.

（每日離床時間超過 6 小時）[26]。

- 建議手術中使用間歇性氣壓裝置（intermittent pneumatic compression, IPC）[27]。若藥物性預防（pharmacologic thromboprophylaxis, P-TP）延遲啟動或有禁忌時，術後應持續使用 IPC。

- 藥物性預防（Pharmacologic prophylaxis）
  - 血栓栓塞風險患者（Caprini Score ≥ 5），建議使用低分子量肝素（low-molecular-weight heparin，LMWH）至術前 24 小時或非分餾肝素（unfractionated heparin，UFH）至術前 4 小時 [28]。
  - 建議高風險病人（Caprini Score ≥ 9）持續接受延長性藥物性血栓預防（extended P-TP），治療至術後 4 週 [29]。
  - 為提升出院後的治療依從性，考慮在術後皮下注射肝素治療 7 天後，轉為直接口服抗凝劑（direct-acting oral anticoagulants，DOACs）以繼續完成延長性預防 [30]。

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[26] Sachdeva A, Dalton M, Amaragiri SV, Lees T. Graduated compression stockings for prevention of deep vein thrombosis. Cochrane Database Syst Rev. 2014;11:CD001484.

[27] Kakkos S, Kirkilesis G, Caprini JA, et al. Combined intermittent pneumatic leg compression and pharmacological prophylaxis for prevention of venous thromboembolism. Cochrane Database Syst Rev. 2022;1:CD005258.

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[29] Knoll W, Fergusson N, Ivankovic V, et al. Extended thromboprophylaxis following major abdominal/pelvic cancer-related surgery: a systematic review and meta-analysis of the literature. Thromb Res. 2021;204:114e122.

[30] Becattini C, Pace U, Pirozzi F, et al. Rivaroxaban vs placebo for extended antithrombotic prophylaxis after laparoscopic surgery for colorectal cancer. Blood. 2022;140:900e908.

建議十二：機械性腸道準備 Mechanical bowel preparation（MBP）

大腸手術不建議常規使用機械性腸道準備。對於合併預定造口之直腸手術可予以考慮。若採用機械性腸道準備，建議合併口服抗生素[31]。

建議十三：口服碳水化合物與避免過度禁食 Carbohydrate loading and avoidance of prolonged preoperative fasting

術前兩小時口服液體與傳統的隔夜禁食相比，胃容積或胃酸也沒有差異，並未增加吸入性肺炎風險[32]。術前縮短禁食時間是安全可行，能減少飢餓感、口渴感、術後噁心嘔吐（PONV）和止吐藥的使用需求[33]。術前兩小時口服碳水化合物能增加胰島素敏感性與圍術期血糖控制（糖尿病控制不良患者除外）[34]。

建議十四：抗生素使用與局部消毒 Antibiotics and skin preparation

建議於手術下刀前 30 至 60 分鐘內給予靜脈注射抗生素，若手術時間超過 4 小時或出血量超過 1500 mL，應補充抗生素劑量。接受機械性腸道準備，建議合併口服抗生素[35]。

皮膚消毒應使用含酒精之氯己定（chlorhexidine-alcohol）製劑[36]。目前對於手術前抗菌沐浴或剃毛之效益，證據不足[37]。

建議十五：術前水分補充與輸液策略 Preoperative fluids

鼓勵病人在進入手術室前 2 小時，持續飲用清澈液體以維持水分充足狀態。術前應校正所有體液或電解質的失衡。

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[31] 92 Tan J, Ryan EJ, Davey MG, et al. Mechanical bowel preparation and antibiotics in elective colorectal surgery: network meta-analysis. BJS Open. 2023;7: zrad040.

[32] Itou K, Fukuyama T, Sasabuchi Y, et al. Safety and efficacy of oral rehydration therapy until 2 h before surgery: a multicenter randomized controlled trial. J Anesth. 2012;26:20e27.

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[37] Tanner J, Melen K. Preoperative hair removal to reduce surgical site infection. Cochrane Database Syst Rev. 2021;8:CD004122.

手術中階段

建議十六：標準化麻醉計畫 Standard anesthetic protocol

標準麻醉計畫的主要目的是減輕手術對身體的負擔並促進更快的康復。

- 與吸入性麻醉相比，全靜脈麻醉（Total Intravenous Anesthesia，TIVA）可減少老年患者術後的認知功能障礙，並提升認知表現[38]，可能與 Propofol 抗發炎作用有關。TIVA 也能降低術後噁心嘔吐（PONV）與甦醒期譫妄的發生率，並改善術後恢復[39]。
- 使用腦部麻醉深度監測（Processed EEG）精準調控麻醉深度，可減少術中低血壓、譫妄和認知功能障礙，尤其是在高風險患者（年紀 ≥ 60 歲、術前認知功能障礙、Frailty 衰弱、血管疾病患者）[40]。
- 採用抗腎上腺素能（anti-adrenergic）和抗炎（anti-inflammatory）策略來減少手術壓力（surgical stress），同時不延遲術後康復。
  - Dexamethasone 在 1 mg/kg 劑量，可減少發炎、併發症和 90 天死亡率[41]。
  - Lidocaine 可縮短住院天數 LOS、減少腸阻塞和譫妄[42]。
  - Dexmedetomidine 有助於減少發炎和譫妄，但可能引起心搏過緩和低血壓[43]。
- 術中持續使用神經肌肉監測 Train of Four（TOF），尤其在腹腔鏡和機器人手術維持深度神經肌肉阻斷（TOF=0）不僅能優化手術視野，還有助於減輕氣腹對病人心臟和腎功能的不良影響，同時能降低術後疼痛。於麻醉復甦時，使用神經肌肉阻斷完全逆轉劑（例如 Sugammadex[44]），並以客觀定量監測確保移除氣管內管時，其神經肌肉功能恢復達到 TOF ≥ 0.9 的安全標準[45]。

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[38] Lian F, Cao C, Deng F, Liu C, Zhou Z. Propofol alleviates postoperative cognitive dysfunction by inhibiting inflammation via up-regulating miR-223-3p in aged rats. Cytokine. 2022;150:155783.

[39] Kampman JM, Hermanides J, Hollmann MW, et al. Mortality and morbidity after total intravenous anaesthesia versus inhalational anaesthesia: a systematic review and meta-analysis. EClinicalMedicine. 2024;72:102636.

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[41] Cihoric M, Kehlet H, Lauritsen ML, et al. Preoperative high dose of dexamethasone in emergency laparotomy: randomized clinical trial. Br J Surg. 2024;111:znae130.

[42] Sun Y, Li T, Wang N, Yun Y, Gan TJ. Perioperative systemic lidocaine for postoperative analgesia and recovery after abdominal surgery: a metaanalysis of randomized controlled trials. Dis Colon Rectum. 2012;55:1183-1194.

[43] Aldecoa C, et al. Update of the European Society of Anaesthesiology and Intensive Care Medicine evidence-based and consensus based guideline on postoperative delirium in adult patients. Eur J Anaesthesiol. 2024;41:81-108.

[44] Bridion (Sugammadex) 自 2010 年日本上市統計至 2017 年，累積 1.1 億人次以上使用經驗；全球累積逾 11.5 億患者使用經驗

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建議十七：手術中恆溫 Normothermia

維持術中恆溫能減少感染、凝血功能障礙、輸血需求、顫抖、耗氧、心臟併發症，進而縮短住院天數（LOS）與降低醫療成本[46]。使用主動式體表保溫系統（上鋪式[47]或下鋪式[48]）能降低手術部位感染（SSI）發生率、輸血量，並提升病人滿意度。靜脈輸液加溫（IV fluid warming）[49]與在傳統開腹手術中，使用暖濕化二氧化碳灌注（humidified CO2 insufflation）[50]對病人也都有幫助。

建議十八：手術中輸液策略 Intraoperative fluids

圍術期體液過多或脫水都顯著增加不良預後，包括手術部位感染（SSI）、呼吸系統併發症和腎衰竭。輸液治療的目標應是維持手術當天維持略正向的輸液平衡，並避免體重過度增加（控制在 ≤ 2.5 kg）[51]。嚴格限制靜脈輸液的做法，可能會增加急性腎損傷（AKI）、洗腎和手術部位感染風險，並可能增加死亡率[52]。手術當天的過度給予（> 2700 mL）或過度限制（< 900 mL）的輸液量，也可能延長住院天數（LOS）。依進階血行動力學偵測儀（Advanced Hemodynamic Monitor）參數，適當使用強心劑、血管升壓劑。Goal Directed Fluid Therapy 目標導向輸液平衡在風險患者、高風險手術中，能降低死亡率、縮短住院天數並促進腸胃道恢復[53]，而目標參數可包含 pulmonary artery catheter、cardiac index、oxygen delivery 等）。

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建議十九：手術方式 Surgical approach

建議大腸直腸手術患者常規採用微創手術（Minimally Invasive Surgery，MIS），並與 ERAS 流程結合，可有效縮短住院天數[2]。

建議二十：避免常規腹部引流 Avoidance of routine abdominal drainage

大腸切除術後不建議常規置放腹腔引流管[54]。直腸切除術後之不置放引流管建議較弱，依據中至低品質證據。

手術後階段

建議二十一：避免術後常規留置鼻胃管 Avoidance of routine postoperative nasogastric tube（NG）

術中可視情況放置鼻胃管，但術後不建議常規留置[55]。

建議二十二：血糖管理與控制 Normoglycemia

術前 HbA1c 升高的非糖尿病患者，術後發生高血糖的風險增加，因此圍術期需要嚴密的血糖監測[56]。術後病房階段，應採取較為寬鬆的血糖控制目標（140 至 180 mg/dL），以降低低血糖及其潛在的有害後果[57]。

建議二十三：手術後輸液策略 Postoperative fluids

維持術後略正的體液平衡，體重增加限制在 2.5 kg 之內[58]。輸液應使用平衡的晶體溶液（balanced crystalloid solutions）進行維持性補充，並避免使用富含氯離子的溶液（例如 0.9% Normal Saline）來替代流失的體液。

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建議二十四：避免常規延遲留置導尿管 Avoidance of prolonged urinary drainage

術後及早移除導尿管有助於降低尿路感染風險並促進病人早期下床活動。研究顯示，留置超過 24 小時會增加泌尿道感染與住院時間。依據 ERAS 原則，微創大腸手術後應於 24 小時內移除導尿管（若無硬脊膜外止痛）[2]。微創直腸手術後若術後恢復順利且無併發症，可於 48 小時內移除導尿管[2]。

建議二十五：預防腸阻塞 Prevention of ileus

建議採取多模式策略以降低術後腸麻痺的發生率。措施包括：術後 24 小時內早期口服進食[59]、適當的疼痛控制（如硬脊膜外止痛[59]〔epidural analgesia〕、選擇性鴉片拮抗劑[60]〔Alvimopan 截至 2025 年 10 月台灣尚未引進〕及非類固醇消炎止痛藥[61]〔NSAIDs〕)、精準的液體管理，以及促進腸道功能恢復的輔助措施，例如使用益生菌[62]（probiotics）、咀嚼口香糖[63]、5-HT4 受體促進劑[64]（prucalopride）、刺激性或滲透性瀉劑[65]。低強度經皮耳迷走神經刺激[66]（Low-intensity transcutaneous auricular vagal stimulation，taVNS）與經皮電穴位刺激[67]（Transcutaneous electrical acupoint stimulation，TEAS）亦可作為輔助方法以促進腸蠕動。

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建議二十六：術後多模式止痛計畫 Postoperative multimodal analgesia

完整的止痛策略不但能提升舒適度、促進早日下床活動，也能降低深靜脈血栓、呼吸道疾病和慢性疼痛等併發症的風險。無論傳統剖腹或微創手術，皆應採用多模式止痛策略，包含 Acetaminophen、Selective NSAIDs[68]、Intrathecal morphine 與神經阻斷的搭配。微創手術應避免執行 Thoracic Epidural Analgesia（TEA）[69]，而更應優先選擇鞘內嗎啡（Morphine Spinals）、Transversus abdominis plane（TAP）、Erector spinae plane（ESP）nerve block、Rectus sheath block[70]，以避免延長住院天數（LOS）。替代方案包含傷口局部注射（wound infiltration）、腹腔內局部麻醉藥（intraperitoneal local anesthetics）或靜脈 Lidocaine 輸注 [71]。

建議二十七：術後營養照護 Postoperative nutritional care

對於腸胃道功能正常的病人，應首選經腸道飲食（口服或腸道管灌）。在 ERAS 整合性療程中，下消化道手術後早期恢復經口飲食是安全的。運用 I-FEED Score 等經驗證的消化道功能評估工具輔助進食決策 [72]，而不應將患者排氣（flatus）作為恢復進食、拔除鼻胃管或其他康復里程碑的先決條件 [73]。口服營養補充品（Oral Nutrition Supplements，ONS）有助於術後恢復 [74]。營養不良或術後第五天（POD 5）仍攝取未達到營養目標者（熱量 25 kcal/kg/d 與蛋白質 1.5 g/kg/d），應 24 小時內啟動專業營養介入 [75]。當腸胃道功能不全或

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無法使用時，則必須以腸道外營養（PPN 或 TPN）支持[76]。針對營養不良、虛弱和高齡患者，提供營養介入至術後第 7 天，可以降低併發症、死亡率和住院天數[77]。嚴重營養不良者在出院後應持續使用 ONS（每日至少 500 kcal）並進行體能活動，以預防肌肉流失和肌少症[78]。術後使用免疫營養能幫助降低感染率，尤其手術部位感染（SSIs）[79]。

建議二十八：早期下床 Early mobilization

建議患者於手術當日即開始活動，自術後第 1 天起每日應至少活動 3 小時直至出院，可促進術後恢復並縮短住院天數[80]。

臨床照護團隊

建議二十九：資料蒐集與統計 Audit

建議由專責個管師蒐集病人圍術期各項臨床參數，以利進行長期趨勢分析與統計，包含 ERAS 要素執行率（compliance）、術後住院天數（length of stay，LOS）、術後併發症（使用 Clavien-Dindo classification）、30 天內再住院率等。

建議三十：定期團隊會議 Regular team meeting

建議照護團隊定期（至少每季一次）召開團隊會議，檢視過去一期各項病人照護臨床指標與 ERAS 要素執行率，並對尚未執行之 ERAS 要素進行討論、建立臨床共識與制定導入計畫。

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