National Emergency Laparotomy Audit (NELA) In A District General Hospital, Northern Ireland

Abstract

Aim: We measured our patient outcomes regarding 30-day mortality rate and morbidity post emergency laparotomies performed in Daisyhill Hospital, Newry and compared it to NELA. This is to identify the reasons in our DGH for the better or worse outcome performance in order to improve patient care.

Methods: This audit is carried out over a 2 years duration from August 2015 to August 2017. Data were collected from theatre log, surgeons log, secretarial operation notes log and Northern Ireland Electronic Care Record. Inclusion and exclusion criteria of patients were met as set out by NELA.

Results: Total number of patients included in the audit is 112. Out of 112, 53 patients are female and 59 are male. Median age is 65.5 year-old with a range from 19 to 87 years old. 30-day mortality rate is 7.1% (n=8) which is 1.5 times lower than national 30-day mortality rate. 90-day mortality rate is 0.9% (n=1).

Conclusion: Our unit is performing well compared to NELA patient outcomes in terms of 30-day mortality rate post emergency laparotomy. We would recommend detailed data collection including time of day of operation, ASA grading and p-possum score.

Introduction

NELA measures and reports patient outcomes for the quality of care received by patients undergoing emergency laparotomy and compares these against standards of care such as those detailed in recent NCEPOD reports and Department of Health, Royal College of Surgeon England's "Higher Risk General Surgical Patient (2011)"[1,2,3]. NELA is a national clinical audit commissioned by Health Quality Improvement Partnership (HQIP) and Patient Outcomes Programme (NCAPOP)[1]. Our hospital is a district general hospital with limited resources where we have no intensive care unit facility and lacking of healthcare staffs. However, we do have a significant number of emergency laparotomy performed over the years while meeting the standards of care set out by Department of Health. There is unlikely to be one 'best way' of organizing delivery of care. Each hospital will need to organise services according to the needs and pressures faced where different issues will exist in each hospital. In order to find our own solution, NELA audit is carried out to provide tools and data to empower our local team to develop the most effective solution in our environment.

Aims

We compare against NELA standards of care in order to better define what interventions are effective in emergency laparotomy care. Our audit also reports patients' outcomes regarding mortality and morbidity post emergency laparotomies performed in Daisyhill Hospital, a district general hospital aimed at improving delivery of care to this high-risk group of patients.

Audit Standards

At present, hospitals are considered to have provided good quality care (rated Green) if a standard has been met for more than 80% of patients. In this audit, 9 key standards set out by NCEPOD and Department of Health are subjected to RAG-rating including (i) CT scan reported before surgery, (ii) risk of death documented preoperatively, (iii) arrival in theatre within a timescale appropriate to urgency, (iv) preoperative review by a consultant surgeon and a consultant anaesthetist when P-POSSUM risk of death ≥5%, (v) consultant surgeon and consultant anaesthetist both present in theatre when P-POSSUM risk of death ≥5%, (vi) consultant surgeon present in theatre when P-POSSUM risk of death ≥5%, (vii) consultant anaesthetist present in theatre when P-POSSUM risk of death ≥5%, (viii) admission directly to critical care after surgery when P-POSSUM risk of death >10%, and (ix) assessment by a care for the older person specialist for patients aged 70 years and over[2].

Methods

A retrospective data collection was performed involving patients undergoing emergency laparotomy over the past two years from August 2015 to August 2017. Data was collected from theatre log, surgeon log, secretarial operation notes log and Northern Ireland Electronic Care Record. Our data inclusion and exclusion criteria were guided by NELA's criteria. In this audit, data was collected on patient demographics, surgeon volume, morbidity, 30-day mortality and length of hospital stay.

Inclusion criteria as per NELA[1]:

- "Age ≥ 18
- Expedited, urgent or emergency (NCEPOD definitions) abdominal procedure on GI tract
- Open, laparoscopic or laparoscopic-assisted stomach, small or large bowel, or rectum for conditions such as perforation, ischaemia, abdominal abscess, bleeding or obstruction
- Washout/evacuation of intra-peritoneal abscess (unless due to appendicitis or cholecystitis – excluded)
- Washout/evacuation of intra-peritoneal haematoma
- Bowel resection/repair due to incarcerated incisional, umbilical, inguinal and femoral hernias (but not hernia repair without bowel resection/repair). E.g. Large incisional hernia repair with bowel resection
- Bowel resection/repair due to obstructing/incarcerated incisional hernias provided the presentation and findings were acute. This will include large incisional hernia repair with division of adhesions.
- Laparotomy/laparoscopy with inoperable pathology (e.g. peritoneal/hepatic metastases) where the intention was to perform a definitive procedure. This does not include purely diagnostic procedures.
- Laparoscopic/Open Adhesiolysis
- Return to theatre for repair of substantial dehiscence of major abdominal wound (i.e. "burst abdomen")
- Any reoperation/return to theatre for complications of elective general/upper GI surgery meeting the criteria above is included. Returns to theatre for complications following non-GI surgery are now excluded (see exclusion criteria below)."

Exclusion criteria as per NELA[1:]

- "Patients under 18
- Elective laparotomy / laparoscopy
- Diagnostic laparotomy/laparoscopy where no subsequent procedure is performed
- Appendicectomy +/- drainage of localised collection unless the procedure is incidental to a non-elective procedure on the GI tract
- Cholecystectomy +/- drainage of localised collection unless the procedure is incidental to a non-elective procedure on the GI tract
  (All surgery involving the appendix or gallbladder, including any surgery relating to complications such as abscess or bile leak is excluded.
- Non-elective hernia repair without bowel resection or division of adhesions
- Minor abdominal wound dehiscence unless this causes bowel complications requiring resection
- Non-elective formation of a colostomy or ileostomy as either a trephine or a laparoscopic procedure (NB: if a midline laparotomy is performed, with the primary procedure being formation of a stoma then this should be included)
- Vascular surgery, including abdominal aortic aneurysm repair
- Caesarean section or obstetric laparotomies
- Gynaecological laparotomy
- Ruptured ectopic pregnancy, or pelvic abscesses due to pelvic inflammatory disease
- Laparotomy/laparoscopy for pathology caused by blunt or penetrating trauma
- All surgery relating to organ transplantation (including returns to theatre for any reason following transplant surgery)
- Surgery relating to sclerosing peritonitis
- Surgery for removal of dialysis catheters
- Laparotomy/laparoscopy for oesophageal pathology
- Laparotomy/laparoscopy for pathology of the spleen, renal tract, kidneys, liver, gall bladder and biliary tree, pancreas or urinary tract
- Returns to theatre for complications (eg bowel injury, haematoma, collection) following non-GI surgery are now excluded."

Results

Total number of emergency laparotomy performed in our unit over the last two years which meet the NELA criteria is 112 patients. Out of 112 patients, 53 of them are female and 59 are male. The mean age of the patients is 59.9 years old and median age is 62 year-old (age ranging from 19 to 87 years old). Percentage of patients above 70 years old is 36.6% (i.e. 41/112). Average length of hospital stay is 14.5 days (ranging from 1 to 77 days). Our hospital unadjusted 30-day mortality rate is 7.1% (i.e. 8 mortality out of 112 patients resulting within 95% standard deviation of the national data) which is 1.5 times lower than the national 30-day mortality rate of 10.6%. Our 90-day mortality rate is 0.9% (i.e. 1/112). The individual consultant caseloads of emergency laparotomy over the two years audit are (a) 19, (b) 35, (c) 15, (d) 14, (e) 13, (f) 7, (g) 6, (h) 4, and (i) 1.

Figure 1: Pie chart depicting percentage of individual consultant caseloads

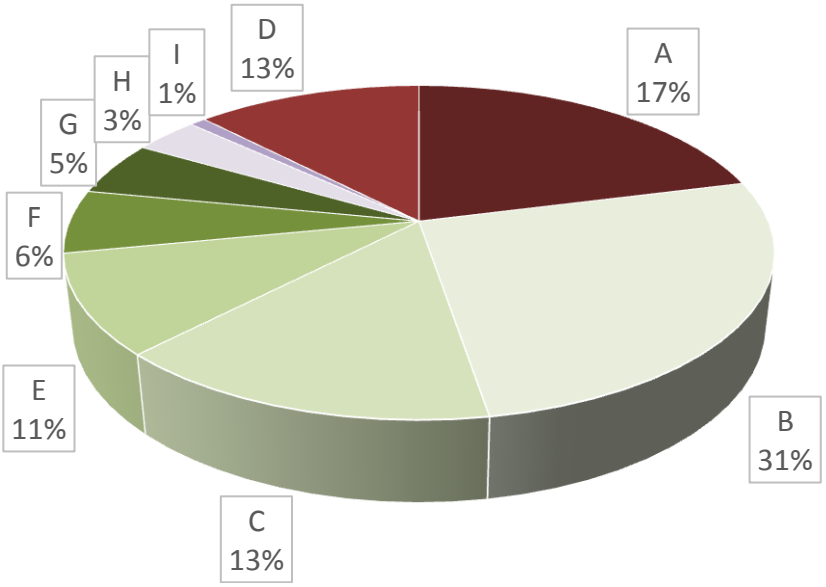


Figure 2: Bar graph showing 30-day post-operative morbidities.

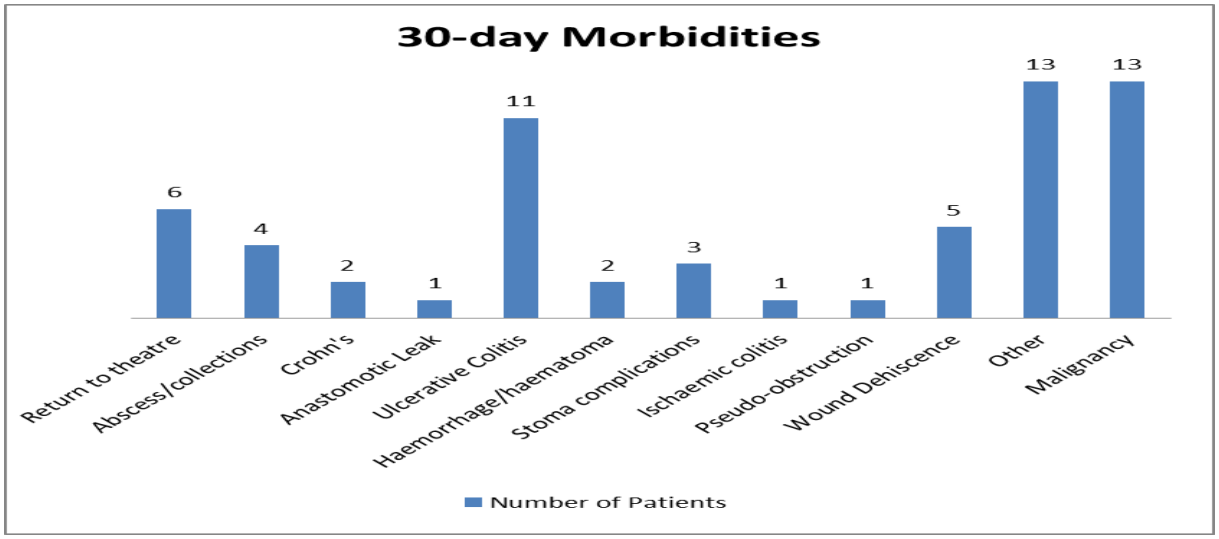
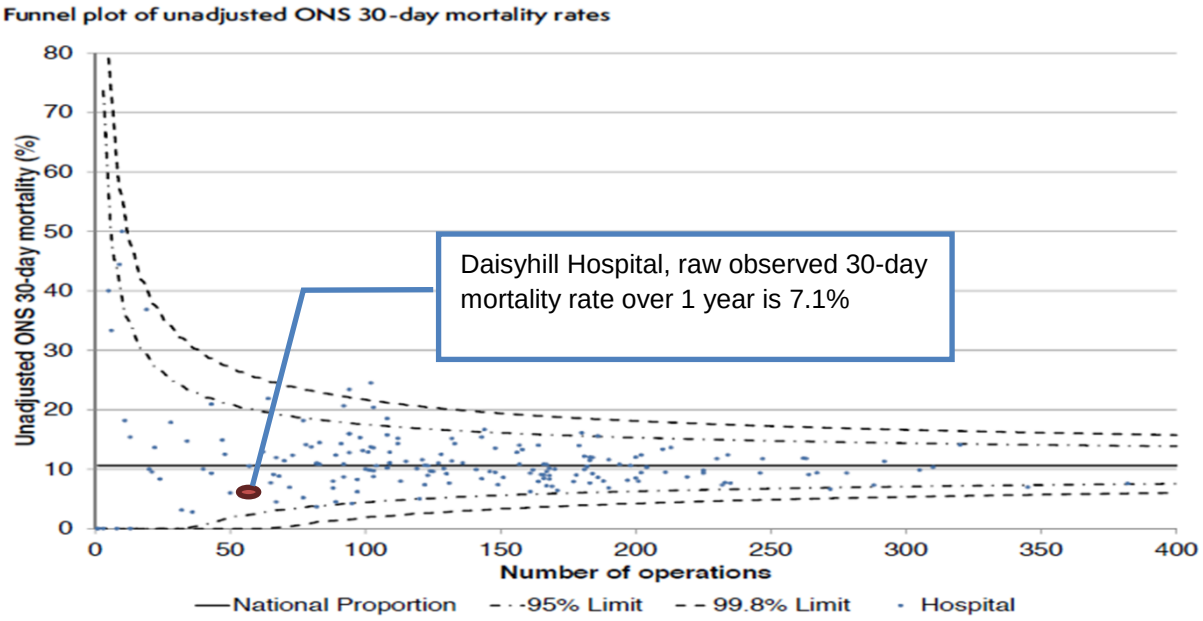


Figure 3: Funnel plot comparing our hospital unadjusted 30-day mortality rate to national data[1].



Discussion

Results are good reflection of the unit's performance level against the national standards despite Daisyhill Hospital being a district general hospital with no intensive care unit on site. We reduced biasness of underreporting morbidities and mortality via data collection undertaken by five clinicians not related to the operations that were carried out. In order to reduce probability of missing data, we collected operative information from theatre log and surgeon's logbook.

We recognised that our sample size is small which may then affect significance of our results. This is due to limited data collection as a consequence of time constrain. Hence, we would recommend calculation of adjusted 30-day mortality rate and include other data detailed in NELA. These are inclusive of the time to theatre, time of the day for operation, p-possum score, ASA grading, anaesthetic time, consultant anaesthetist and surgeon presence in theatre which could be gathered prospectively from theatre management system and patient medical notes from medical records.

Conclusions

Advancing age is associated with worse outcomes after emergency laparotomy. Physical presence of consultant surgeon and anaesthetist in the theatre is vital. In order to improve post-operative recovery and shorter hospital stay for our high risk surgical group patients as recommended by NELA standards, we transfer our patients to local high dependency unit or intensive care unit in another hospital for initial care post surgery. Our patients had more minor complications but the survival is significantly better in our department compared to the national 30-day mortality rate.

Recommendations

We would recommend introduction of an Urgent Bookable list (i.e. NCEPOD for urgent or expedited cases) in order to improve efficacy in organising services according to the needs and pressures faced in district general hospital.

References

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