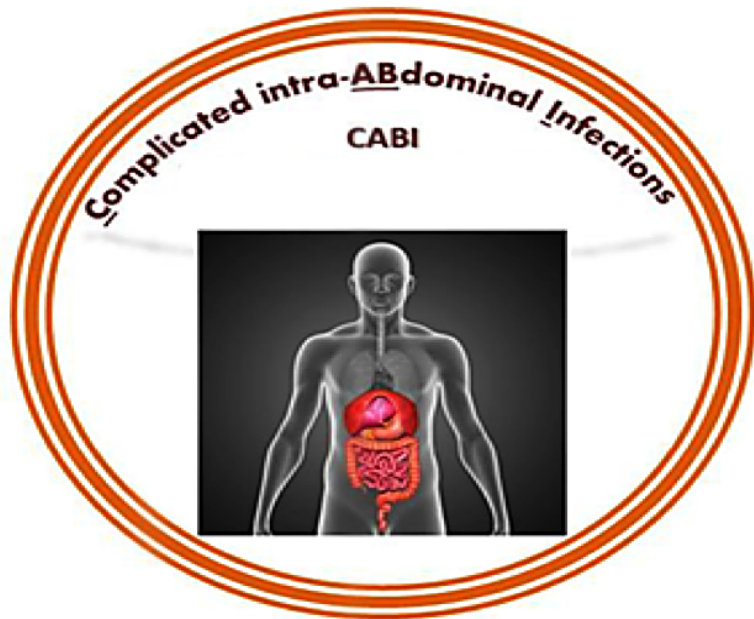


CABI: A multicentre study of the management and outcomes of complicated intra-abdominal infection



CABI Collaborative

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Introduction

A complicated intra-abdominal infection (CABI) is defined as a '*Intra-abdominal infection which has extended beyond the hollow viscus of origin into the peritoneal space and is associated with either ABSCESS formation or PERITONITIS*'¹

1. Solomkin JS, et al. Diagnosis and management of complicated intra-abdominal infection in adults and children: guidelines by the Surgical Infection Society and the Infectious Diseases Society of America. Clin Inf Diseases 2010.



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Objectives

- To describe the demographic and clinical characteristics of patients with CABIs
- To describe practice variation in the management of CABI
- To obtain outcome rates in patients with CABI
- To associate management strategies with outcomes



Methods

- Multicentre service evaluation
- Data collected from Aug 2016 – May 2017
- All patients >18 years diagnosed with a CABI eligible to be included
- Medical case note review carried out by surgical and/or infection trainees
- Follow-up duration 90 days post CABI diagnosis

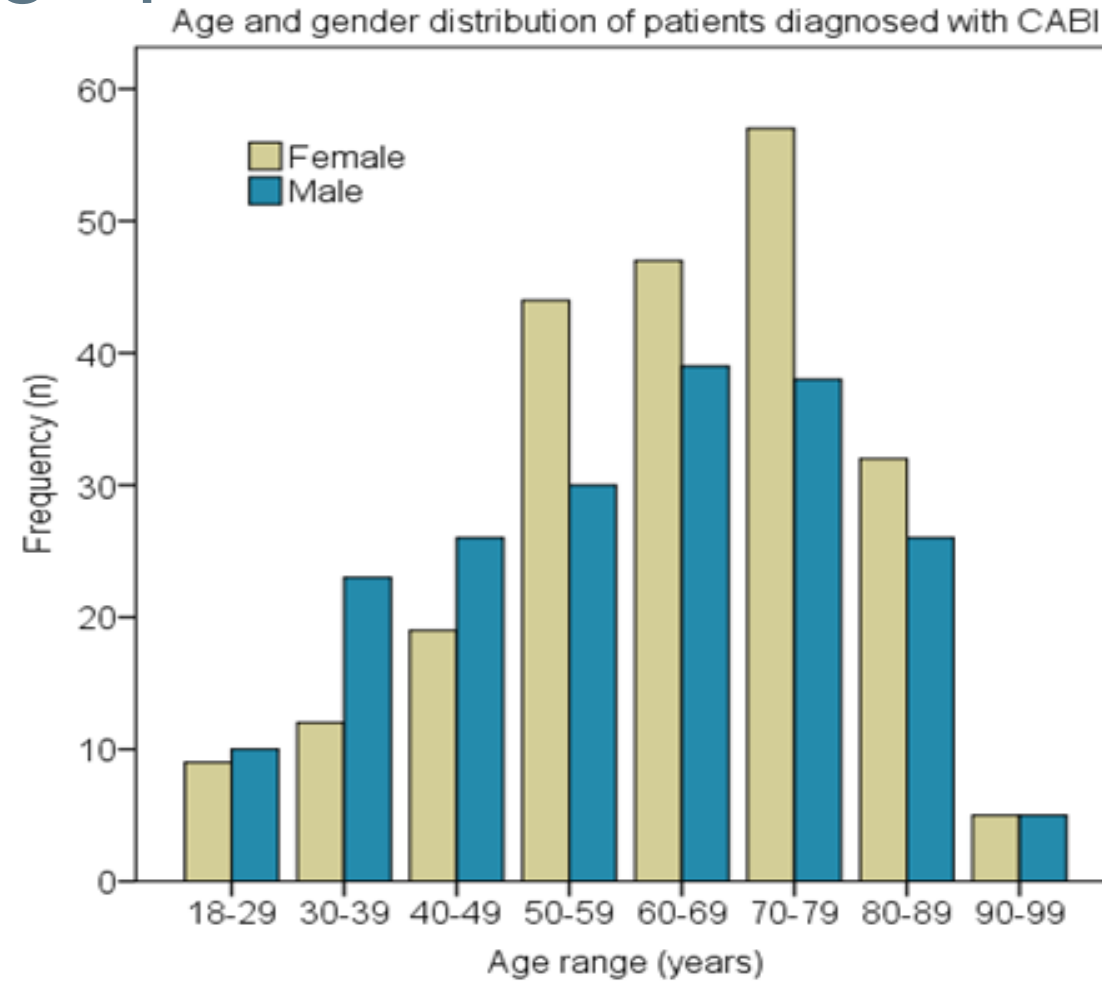


Results: overview

- 31 centres from England and Scotland submitted data
- Data collected on 463 patients
- 41 patients excluded from data analysis
- Patients with missing/incomplete data on some variables were included

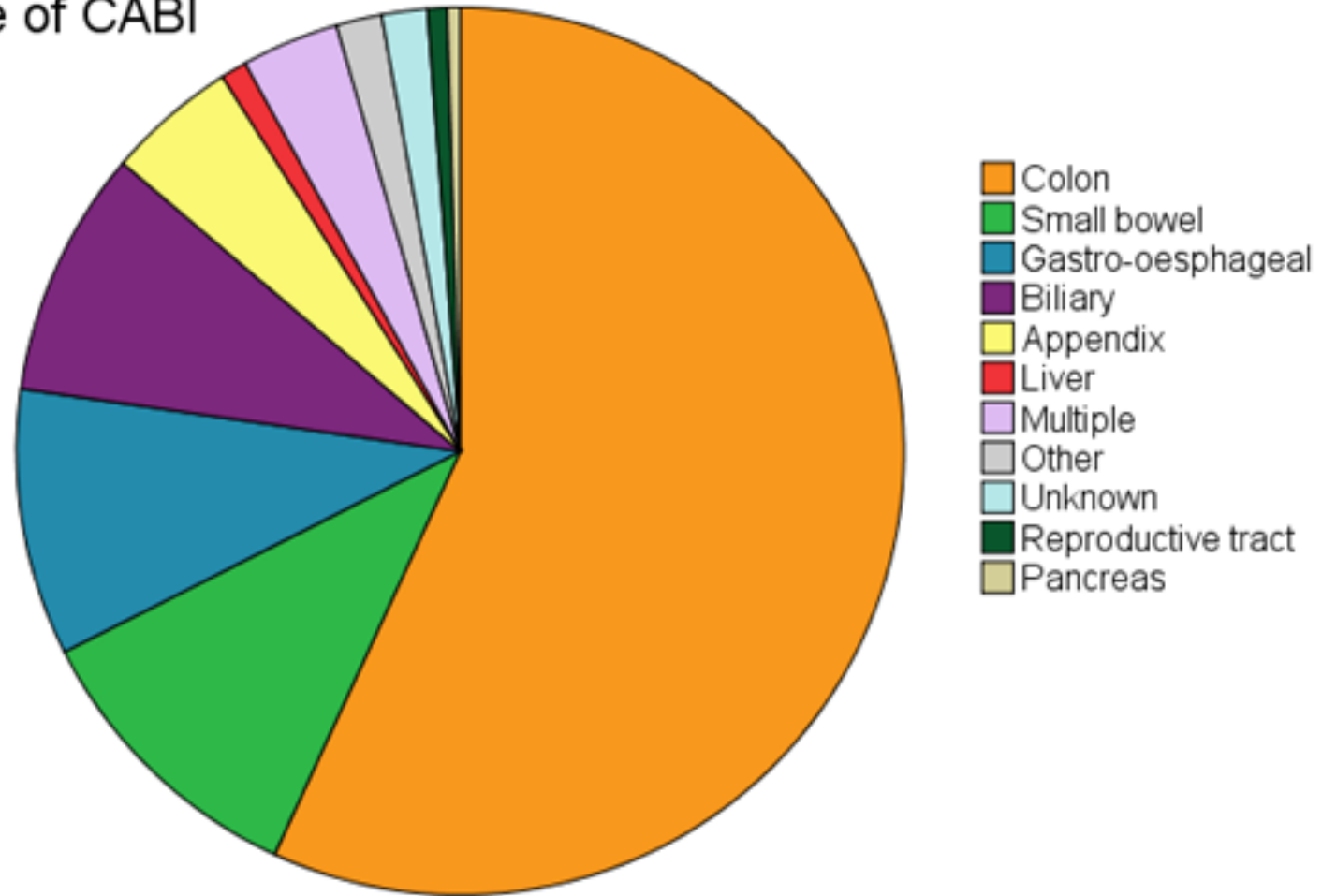


Results: demographics

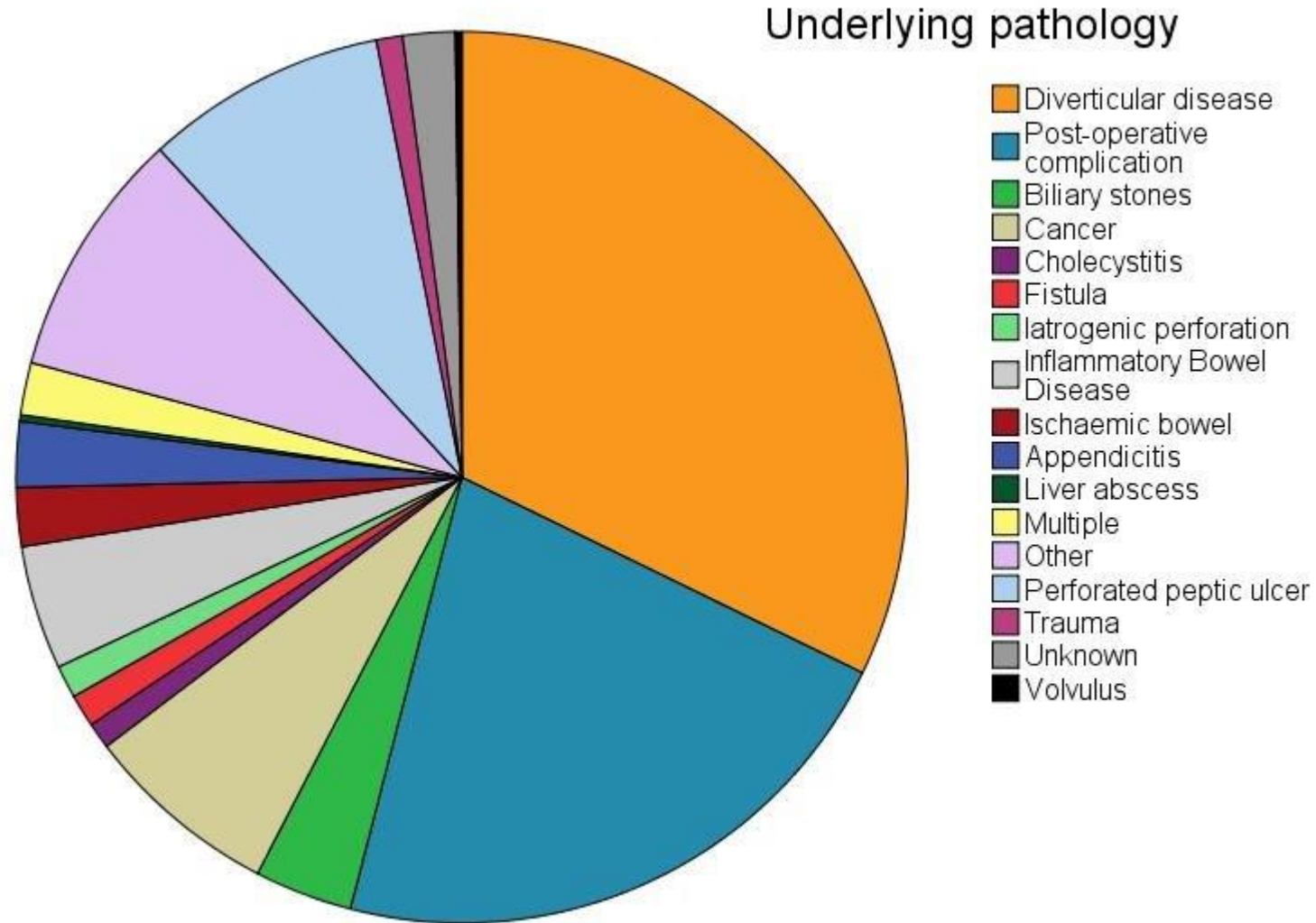


Results:

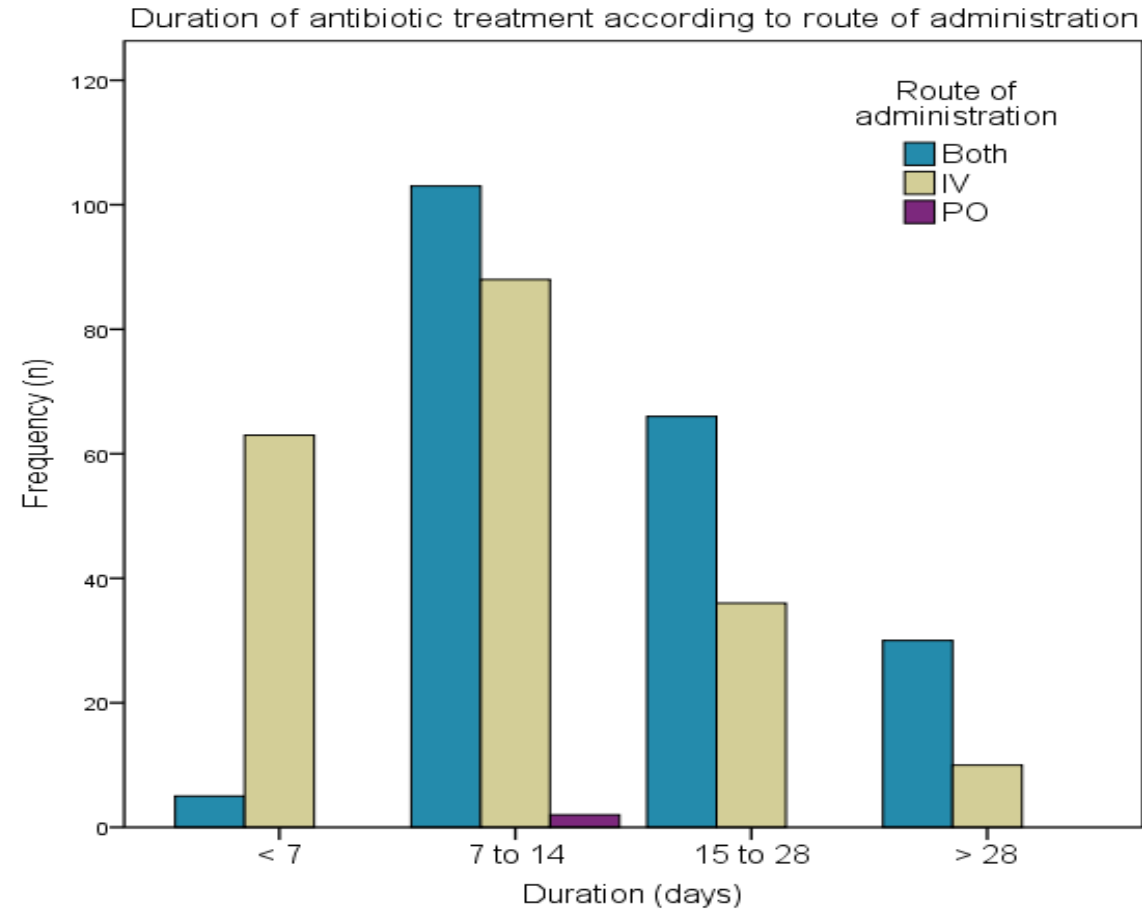
Site of CABI



Results:



Results: antibiotic treatment



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Results: antibiotic treatment

| Primary IV antibiotic regime | Number (% , n = 404) | |
|--|----------------------|--------|
| Piperacillin-tazobactam | | |
| (+/- aminoglycoside) | 131 | (32.2) |
| Plus metronidazole | 18 | (4.5) |
| Co-amoxiclav (+/- metronidazole, | 102 | (25.3) |
| Aminoglycoside and metronidazole (+/- beta-lactam) | 44 | (10.9) |
| Other | 33 | (8.2) |
| Carbapenem | 27 | (6.7) |
| Cefuroxime and metronidazole | 20 | (5.0) |
| Quinolone and metronidazole (+/- beta lactam +/- glycopeptide) | 14 | (3.5) |
| 3rd generation cephalosporin and metronidazole | 8 | (2.0) |
| None | 3 | (0.7) |
| Glycopeptide, beta-lactam and metronidazole | 1 | (0.2) |
| Glycopeptide, Aminoglycoside and metronidazole | 1 | (0.2) |
| Tigecycline | 2 | (0.5) |



Results: antibiotic treatment

| Primary oral regime | Number | (%, n = 206) |
|---|---------------|---------------------|
| Co-amoxiclav | 121 | (58.7) |
| Plus metronidazole | 11 | (5.3) |
| Amoxicillin plus metronidazole | 5 | (2.4) |
| Oral cephalosporin and metronidazole | 4 | (1.9) |
| Quinolone and metronidazole (+/- beta lactam) | 19 | (9.2) |
| Doxycycline and metronidazole | 10 | (4.9) |
| Other | 36 | (17.5) |



Results: source control procedures

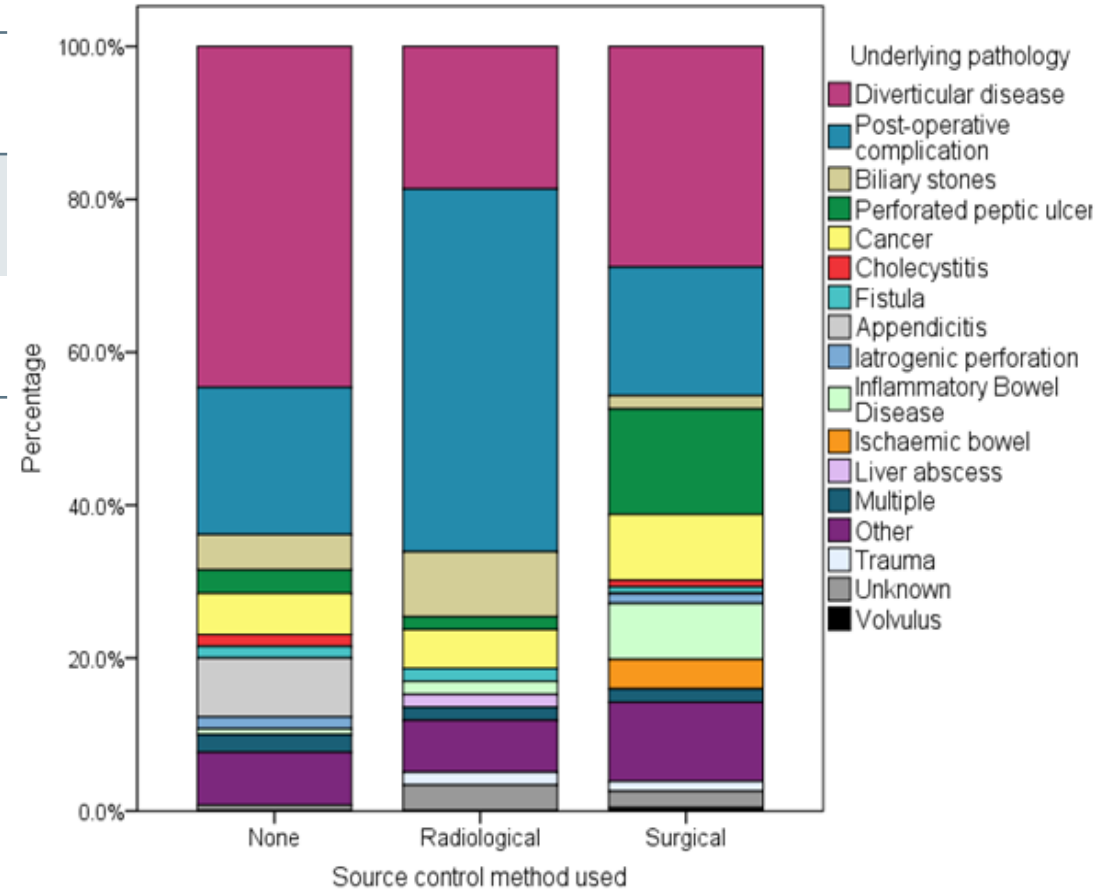
- Radiological 59/421 (14 %)
 - CT guided (n 27)
 - US guided (n 32)
- Surgical procedure 232/421 (55%)
 - Resection & anastomosis or closure (n 37)
 - Surgical drainage only (n 26)
 - Resection & proximal diversion (n 102)
 - Closure of perforation with or w/out washout or drain (n 43)
 - Drainage & diversion (n 24)
- No source control procedure 130/421 (31 %)



Results: source control procedures

| Characteristic | No source control | | Radiological drainage | | Surgical procedure | |
|-------------------------------------|-------------------|--------|-----------------------|--------|--------------------|--------|
| Collection > 9cm (%, n = 41) | 4 | (9.8) | 17 | (41.5) | 20 | (48.8) |
| Multiple collections (%, n = 62) | 25 | (40.3) | 9 | (14.5) | 28 | (45.2) |

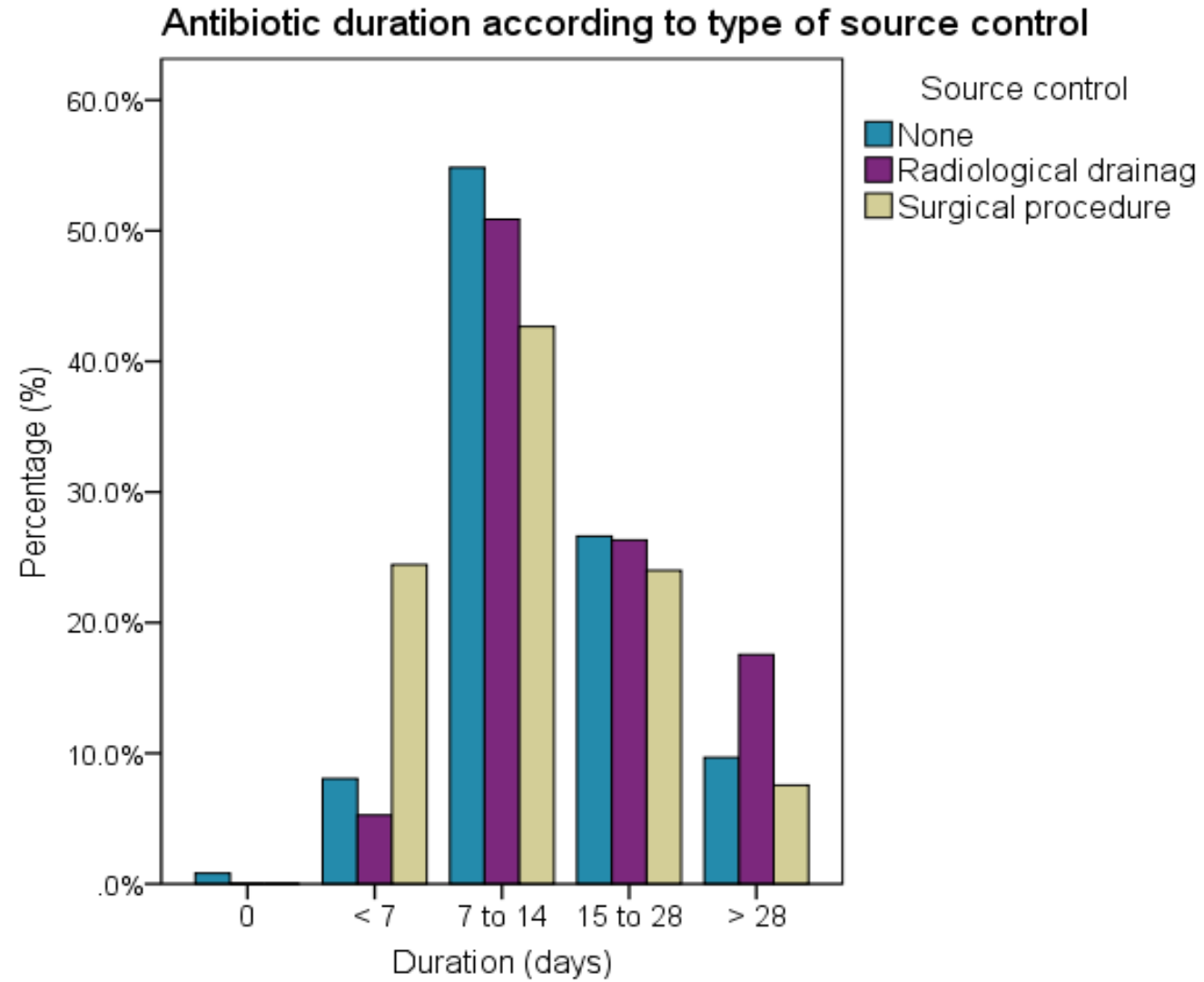
Distribution of underlying pathology according to type of source control performed



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Results



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Results: microbiological characteristics

276/422 patients had cultures sent at time of CABI diagnosis

| Organism | Number | (%, n 276) |
|--|---------------|-------------------|
| Enterococcus | 48 | (17.4) |
| VRE | 8 | (2.9) |
| Coliform | 111 | (40.2) |
| Co-amoxiclav resistant coliform | 40 | (14.5) |
| Piperacillin-tazobactem resistant coliform | 23 | (8.3) |
| AmpC/ ESBL | 21 | (7.6) |
| Ciprofloxacin resistant coliform | 9 | (3.3) |
| Anaerobes | 54 | (19.6) |
| Yeasts | 26 | (9.4) |



Results: overview of outcomes

- Relapse at 90 days – 72/417 (17.3%)
- Death (all cause) at 90 days – 52/422 (12.3%)
- Number of days hospitalisation within 90 days (n 406)
 - Mean 23 days
 - Min 1d – Max 90d



Results: relapse of CABI

- Mean time till relapse (from date of diagnosis) = 24.97 days
- 50% of patients with a CABI relapse had a further source control procedure compared to 9%
- Mean number of days hospitalisation 35 days in patients who relapsed compared to 20 days
- Mortality 11.1%



Results: relapse of CABI

| Characteristics | Relapse of CABI | | No relapse of CABI | |
|--|-----------------|------------|--------------------|-------------|
| | no. of patients | (%,n = 72) | no. of patients | (%,n = 345) |
| Male sex | 39 | (54.2) | 156 | (45.2) |
| Underlying pathology | | | | |
| Diverticular disease | 22 | (30.6) | 112 | (32.5) |
| Post-operative complication | 22 | (30.6) | 69 | (20.0) |
| Inflammatory bowel disease | 7 | (9.7) | 12 | (3.5) |
| Site of CABI | | | | |
| Colon | 42 | (58.6) | 196 | (56.8) |
| Non-colonic | 30 | (41.7) | 149 | (43.2) |
| Duration of antibiotic duration (days) | | | | |
| < 7 | 2 | (3) | 65 | (19.3) |
| 7 – 14 | 28 | (42.4) | 165 | (49) |
| 15-28 | 29 | (45.9) | 73 | (21.7) |
| > 28 | 7 | (10.6) | 33 | (9.8) |



Results: relapse of CABI

| Variable | Relapse of CABI % | | Variable |
|----------------------|-------------------|---------------|----------------------|
| Collection ≤ 9 cm | 18 (33/186) | 42 (17/41) | Collection > 9 cm |
| Single collection | 16.7 (31/186) | 33.9 (21/62) | Multiple collections |
| No perforated viscus | 19.7 (28/142) | 15.3 (36/236) | Perforated viscus |
| No anastomotic leak | 15.7 (53/337) | 28.6 (12/42) | Anastomotic leak |



Results: relapse of CABI

- Relapse rate 17.4% for patients who had a source control procedure and 17.1% for those who did not have any source control

| Source control | Relapse in 90 days | |
|----------------|--------------------|----|
| | number | % |
| Surgical | 31/228 | 14 |
| Radiological | 19/59 | 32 |
| None | 22/130 | 17 |



Discussion

- Duration of antibiotic treatment longer than recommended^{1,2}
- Almost all patients were treated with IV antibiotics
- Relapse and Mortality higher compared to previous studies^{2,3}
 - Relapse of CABI in patients who underwent source control: 17% vs 13.8-15.6%
- Relapse of CABI associated with longer stays in hospital and repeat procedures

1. Solomkin JS et al. CID 2010

2. Sawyer RG et al. Trial of Short-Course Antimicrobial Therapy for Intraabdominal Infection. NEJM 2015.

3. Sartelli M, et al. Complicated intra-abdominal infections worldwide: the definitive data of the CIAOW Study. *World Journal of Emergency Surgery* : WJES. 2014



Discussion

- 32% of patients who had radiological drainage had a CABI relapse compared to 14% of patients who had a surgical procedure.
- Difficult to make any meaningful comparisons between the groups
- Is radiological drainage sufficient?



Conclusion

- Analysis ongoing
- Variation in practice across the UK
- Antibiotics treatment durations longer than recommended
- Further studies required to determine optimal treatment strategies



CABI collaborative

Barts Health NHS Trust: Jessica Barrett, Caoimhe Nic Fhogartaigh, **Calderdale & Huddersfield NHS Trust:** Martin Michel, Anu Rajgopal, Arin Saha, **Cambridge University Hospitals NHS Trust:** John Bennett, Aggelos Laliotis, Alexander Walker, **Chesterfield Royal Hospital NHS Foundation Trust:** Harjeet Singh Narula, Helen Perera, **Derby Teaching Hospitals NHS Foundation Trust:** Catherine Boereboom, Abigail Harlock, Jon Lund, Jenny Wright, **East and North Hertfordshire NHS Trust:** Sonal Halai, Geraint Lloyd, **East Cheshire NHS Trust:** Christopher J Smart, Kamran Malik, **East Kent Hospitals University NHS Foundation trust:** Pradeep Basnyat, Prashant Naik, Kaushiki Singh, **East Sussex Healthcare NHS Trust:** Petya Deleva, Michail Klimovskij, Andrew Sandison, **Glasgow Royal Infirmary:** Mairi Macleod, Kam Khalsa, **Guy's and St Thomas' NHS Foundation Trust:** Barnaby Flower, Anna Goodman, **Heart of England NHS Trust:** John Canny, David McArthur, **Lancashire Teaching Hospitals NHS Foundation Trust:** Peter Mitchell, Alison Muir, Leila White, **Leeds Teaching Hospitals NHS Trust:** Dermot Burke, Agnes Burns, Mithun Kailavasan, Andrew Kirby, Anne Melhuish, Agamemnon Pericleous, **Lincolnshire NHS Trust:** Wadah Ali, Ugohinyerem Ihuoma, Ogouchi Ofor, Athula Tennakoon, **Luton & Dunstable University Hospital NHS Trust:** Md Tanveer Adil, Jayesh Sagar, **Maidstone & Tunbridge Wells NHS Trust:** Yasser Abdulaal, Mohamed Hashem, Katherine-Helen Hurndall, Muhammad Rafaih Iqbal, **NHS Forth Valley:** Euan MacDonald, Iain Roy, **NHS Lothian:** Elzbieta Czarniak, Elen Vink, **NHS Tayside:** Ila Aggarwal, Sahar Eldirdiri, Anna Jarchow-MacDonald, **Nottingham University Hospitals NHS Trust:**, Katie Prescott, Susan Snape, **Peterborough and Stamford Hospitals NHS Foundation Trust:** Robert Dennis, Ishtiyah Bukhari, **Plymouth Hospitals NHS Trust:** Rosemary Fok, Thomas Hanna, Thomasin Heggie, Tom Pavelle, David Stell, Robert Tilley, **Oxford University Hospitals NHS Foundation Trust:** Susanne Hodgson, Claire Scarborough, Matt Scarborough, **Royal Devon & Exeter Hospital:** Cressida Auckland, Aiden Plant, **Sandwell and West Birmingham NHS Trust:** Koza Agha, Penny Holtam, Andrew Torrance, **Sheffield Teaching Hospitals NHS Trust:** Emma Boldock, Fred Lee, Helena Parsons, **University Hospitals Coventry & Warwickshire NHS Trust:** Aisyah Johari, Steven Mark Jones, Nurfarah Sabtu, **University Hospital of North Tees:** Kate Carney, Mohamed Tabaqchali, **Whittington Health NHS Trust:** Micheal Kelsey, Benjamin Lindsey, **Worcestershire Acute Hospitals NHS Trust:** Furqan Amjad, Mary Ashcroft, Gareth Hughes.



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