



NON OPERATIVE MANAGEMENT OF EARLY ACUTE APPENDICITIS

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INTRODUCTION

- Annual incidence of 250,000 patients in the US
- 8% lifetime risk, vast majority get an appendectomy
- Number of meta-analyses have explored the use of antibiotics as sole treatment in uncomplicated appendicitis

Does the appendix have a function?

- Safehouse for commensal bacteria - Bolinger J Theor Biol 2007
- Source of mesenchymal cells - DiCoppa JSR 2006
- Role in immune function that alters cardiovascular risk - Jansky Eur Heart J 2011

THE IMPORTANCE OF SHARED DECISION MAKING

- What surgeons value as important may not be the same as what patients value
- We care about SSI, LOS, Readmissions, cost
- Patients care about disability, pain, QOL, satisfaction
- Increasing trend to ask - what matters to you as the patient?
- Studies in Europe over the past two decades have shown that some patients with Early Uncomplicated appendicitis can be treated successfully with antibiotics

Nonoperative Management of Appendicitis in Adults: A Systematic Review and Meta-Analysis of Randomized Controlled Trials



John M Findlay, BMedSci, BMBS (hons), MRCS, Jihène el Kafsi, MBBS, FRCS, Clare Hammer, MBChB, MRCS, Jeffrey Gilmour, MPhil, FRCS, Richard S Gillies, MD, FRCS, Nicholas D Maynard, MS, FRCS

- * Meta-analysis of 6 RCTs
- * 1724 patients – 837 (Abx), 887 (Surg)

SUMMARY OF RESULTS

- Antibiotics successfully treated uncomplicated appendicitis in 91% at initial presentation
- Risk of recurrence was 29% at 1 year
 - For those who failed antibiotic therapy, complicated appendicitis was more likely (RR 6.21)
 - 0.6% found incidental tumours in surgical arm
- LOS similar - forcing patients to stay for antibiotics
 - Complications higher in surgical group
 - Less pain in the antibiotic group
 - Fewer days away from work in the antibiotic group

Antibiotics Alone



- Never had Surgery
- Surgery - No complications
- Surgery with complications

Surgery



- Surgery with complications
- Surgery - No complications

Antibiotics alone:
25-30%
failure/recurrence
lower complication rate
lower disability days
lower cost

Surgery:
No recurrence
higher complication rate
more disability days
more cost

MULTIPLE EVIDENCE GAPS

- Studies varied in their interventions, inclusion, exclusion and diagnostic criteria
- Maximum was 1 year followup
- Variation in surgical approach
- 71% of surgical arm were open procedures

Blurred lines on definitions:

- Complicated vs uncomplicated
- Failure vs recurrence
- Choice of optimal antibiotics
- Duration of antibiotics
- Difficult to compare the two groups - non-inferiority could not be established - still an open question

From: Antibiotic Therapy vs Appendectomy for Treatment of Uncomplicated Acute Appendicitis: The APPAC Randomized Clinical Trial

JAMA. 2015;313(23):2340-2348. doi:10.1001/jama.2015.6154

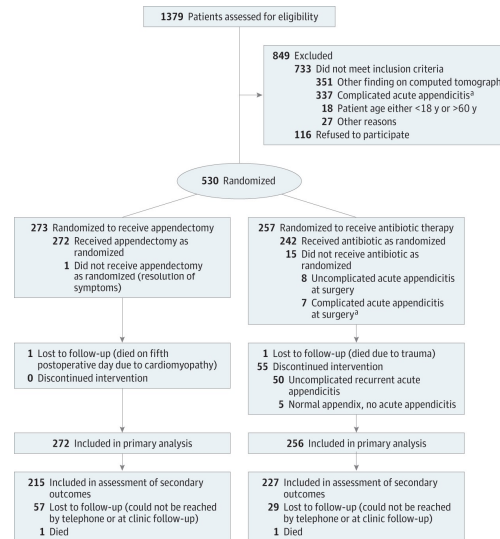
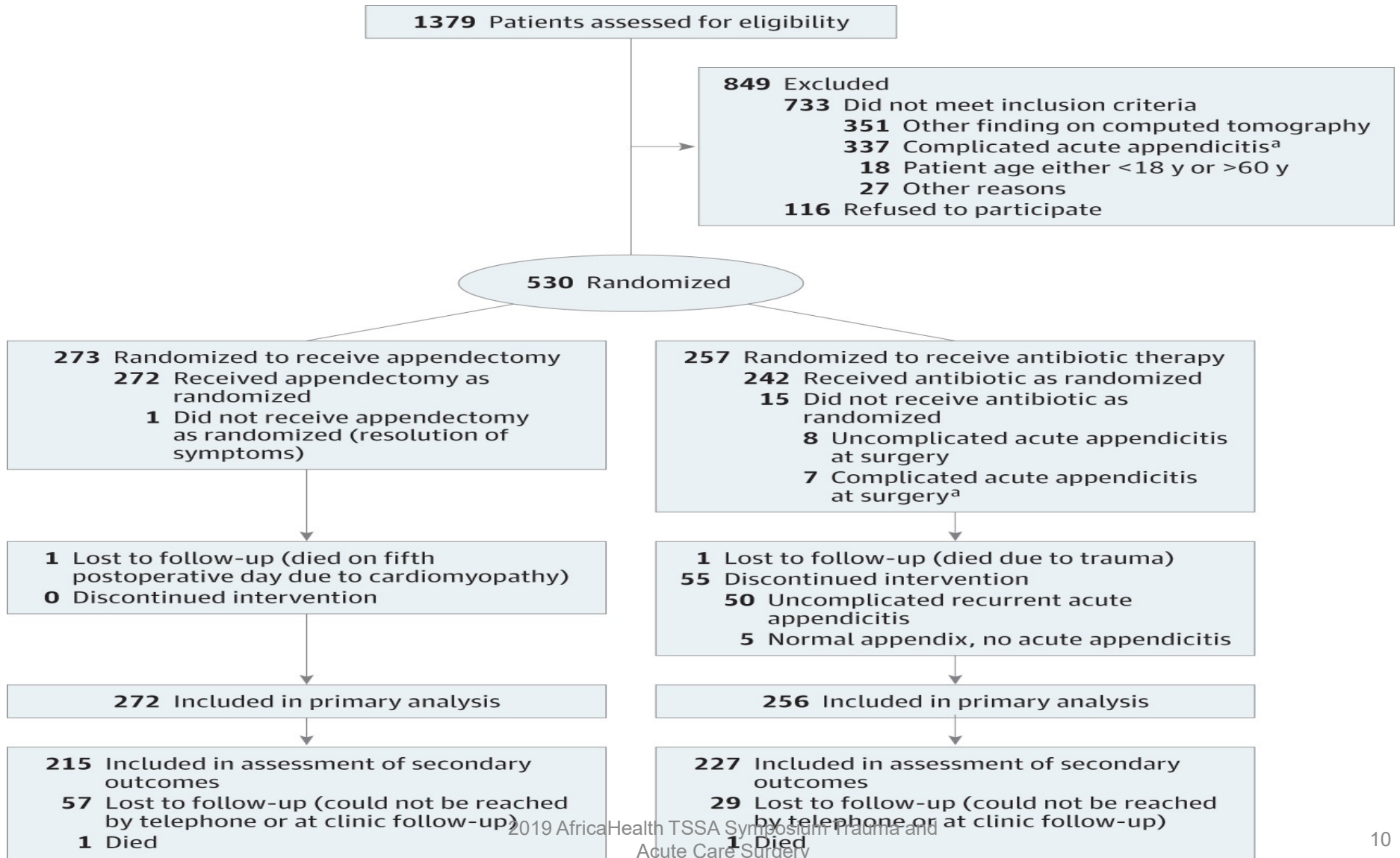


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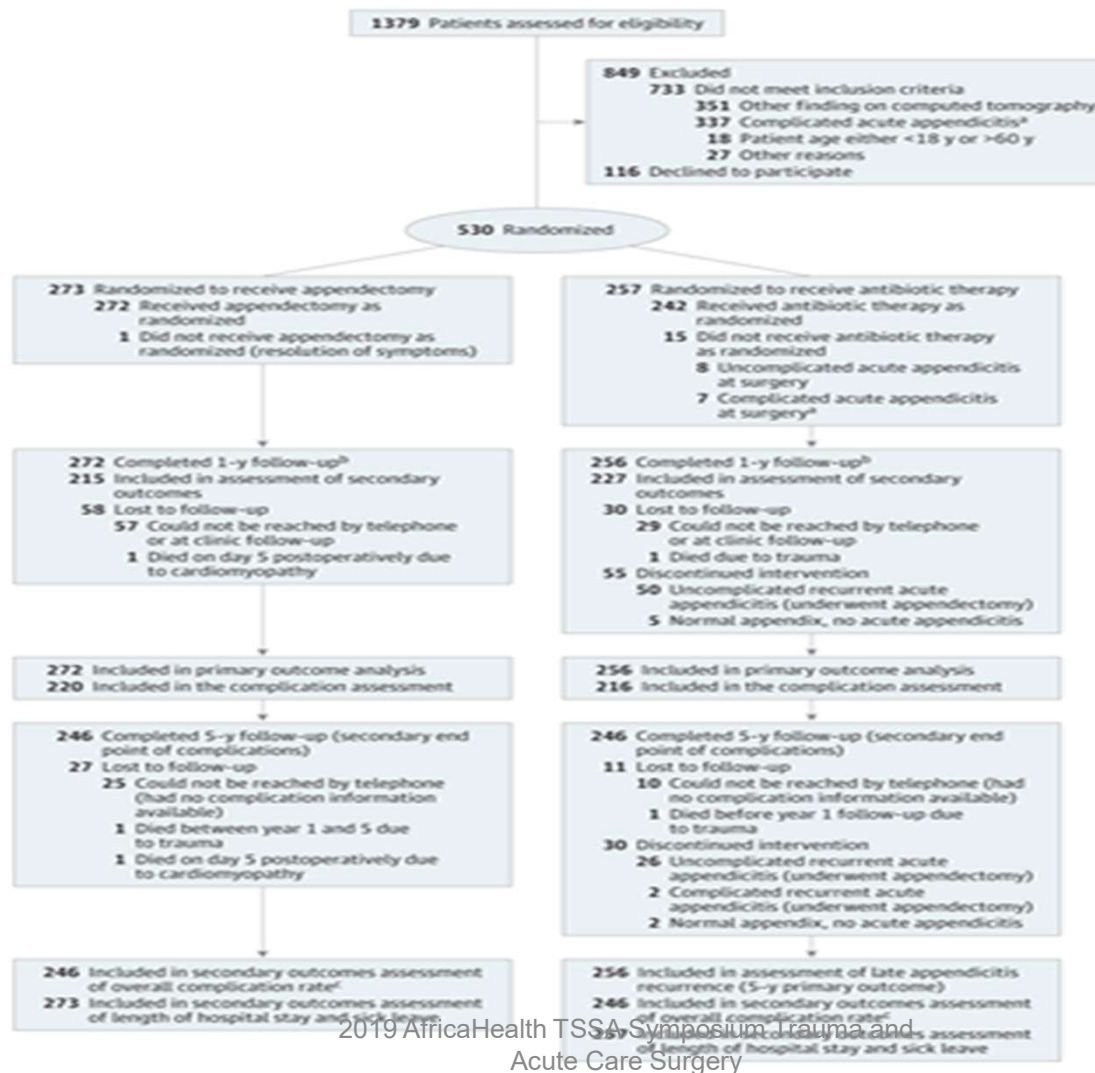
Path of Patients in the Appendicitis Acuta (APPAC) Trial^aIncludes appendicolith, perforation, abscess, or suspicion of tumor.



Five-Year Follow-up of Antibiotic Therapy for Uncomplicated Acute Appendicitis in the APPAC Randomized Clinical Trial;

Salminen P, Tuolminen R et al; JAMA. 2018;320(12):1259-1265.

- In this 5-year observational follow-up of 257 patients initially treated with antibiotics for uncomplicated acute appendicitis, the cumulative incidence of recurrent appendicitis at 1, 2, 3, 4, and 5 years was 27.3% at 1 year, 34.0% at 2, 35.2% at 3, 37.1% at 4, and 39.1% at 5 years.
- Long-term follow up of patients with uncomplicated acute appendicitis suggests that initial treatment with antibiotics rather than surgery may be a feasible alternative.



American College of Surgeons Debate 2017

- “Treatment of uncomplicated appendicitis is ready for shared decision making based on current clinical evidence and patients’ preferences for the two treatments” - Peter Minneci, MD
- “I would say its unethical to do shared decision making when the evidence base for this field is so untested” - Dr. David Flum

Feasibility of nonoperative management strategy for uncomplicated acute appendicitis in children

Minnecci P, Deans K

- 102 patients, 37 chose antibiotics
- IV Pip/Taz (min 24h) + PO Amox/Clav (total 10d)
- 35/37 initial success, 34 at 30 days, 28 at 21 months
- Non-op group - fewer disability days, earlier return to school, decreased cost
- Still currently enrolling

Comparison of Outcomes of antibiotic Drugs and Appendectomy (CODA) trial: a protocol for the pragmatic randomised study of appendicitis treatment; Davidson GH, FlumDR, BMJ open, 2017; 7 (11)

- 2015-2021 STUDY
- Are antibiotics as effective as appendectomy for
- appendicitis?
- Which patients are most likely to have a successful
- outcome with antibiotics first?
- What about in the Elderly and with comorbidities?

CODA Trial so far...

- All patients with uncomplicated appendicitis approached
- 1552 accepted and randomized
- 500 declined but allowed to be followed (parallel observational cohort)
- 250 antibiotics
- 250 appendectomy
- 19 centers in the US involved
- Included patients with appendicoliths
- Excluded 12% (207) - abscesses/phlegmons
- Pregnant/immunocompromised 9% (129)

CLINICAL OUTCOMES

- Rate of appendectomy in the antibiotic group
- Complications and extent of operation
- Complications associated with antibiotics
- Antibiotic days beyond initial treatment
- 2-4 years

Besides addressing variations in the previous studies, the authors also focus on:

- Quality of life questionnaires
- Return to usual function, work productivity index, GI symptoms questions and decision regret over 2 years

DOUBTS AND CONSIDERATIONS

- Is there more than one reasonable treatment option for uncomplicated appendicitis?
- Surgery vs antibiotics alone – must have an informed discussion
- Does one option have a clear advantage?
- Do the risks and benefits of each option affect patients differently?
- Surgery: Invasive, potential disability/complications
- Antibiotics: Failure and recurrence, and potentially missing a tumour
- Recurrence and eventual surgical intervention
- Lingering symptoms
- Anxiety and uncertainty impacting QOL
- Return to work/school
- Long term antibiotics

CONCLUSIONS

- PROMISING NEW THINKING, AWAITING **CODA** TRIAL FINDINGS
- MAY BE ALTERNATIVE TO IMMEDIATE EVACUATION IN WELL RESOURCES BUT ISOLATED ENVIRONMENTS
- NO AGREEMENT ON ANTIBIOTICS AND DURATION

- WATCH THIS SPACE