



# Diverticulitis

Arend Merrie



*"Clarity and certainty are essentials to surgeons in training, at least until they discover that clarity is not enough and certainty does not exist"*

*The Life of Hugh Owen Thomas 1956.*  
Mr David Le Vay MS, FRCS



# Diverticulitis dogma

- Risk of developing >10%
- Nuts & seeds increase risk
- Treat with antibiotics
- Operate if free perforation
- Elective resection after two acute episodes
- Colonoscopy to exclude colon cancer

# Overview

- Review evidence for dogma
- Review evidence for acute management
  - Antibiotics
  - Surgery
    - Lavage
    - Resection
  - High risk groups

# Incidence

- Prevalence of diverticulosis
  - Increase with age
  - 5% 30-39yrs
  - 60% over 80yrs
- Risk of developing diverticulitis 1-4%
- 85% diverticulitis mild
- Incidence of perforation 3.5-4/100000/yr

# Diet

- Health Professionals Follow Up study
  - 47,228 men
  - Inverse relationship between nut and popcorn consumption and development of diverticulitis

# Diagnosis & assessment of severity

- Pain, tenderness, fever & raised CRP
- < 50 mild
- >150 higher likelihood of severe disease
- who needs CT ?

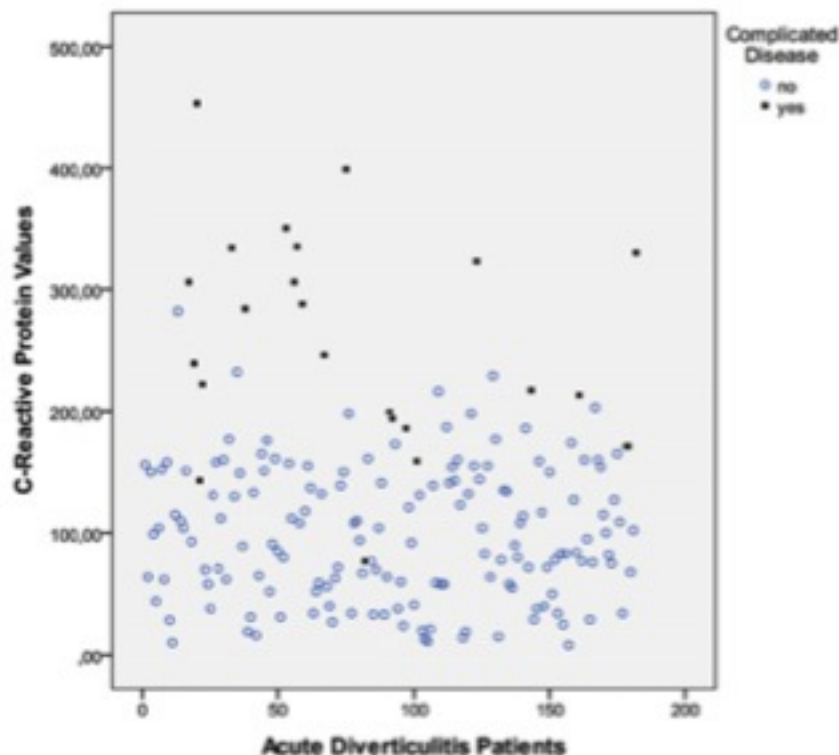


FIG. 2. Flowchart of C-reactive protein values (expressed in mg/L) in patients with clinically mild and severe (complicated) disease.

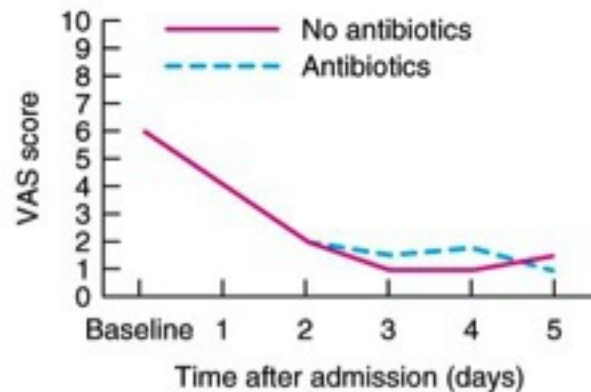
# Mild/uncomplicated diverticulitis

- CRP <150
- No abscess or fistula

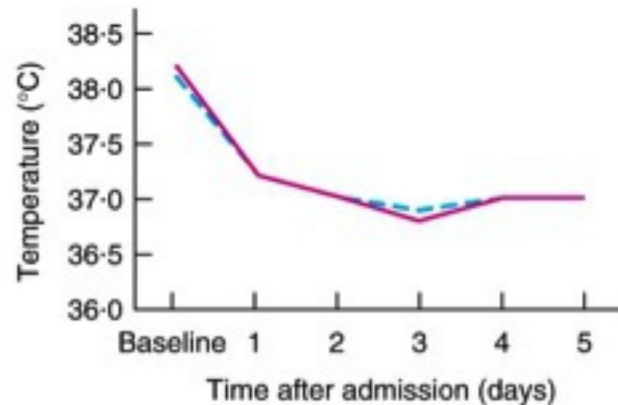


# Do all patients need antibiotics?

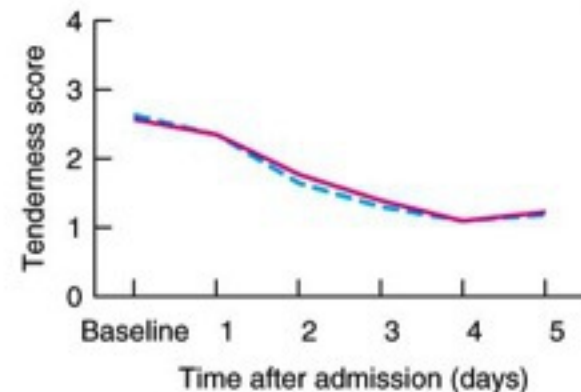
- AVOD trail - Sweden



**a** Abdominal pain



**b** Temperature



**c** Abdominal tenderness

- Diabolo trial - Netherlands
  - conservative vs liberal
  - ongoing

# Do all patients need to be in hospital?

- DIVER trial - Spain
  - All treated with antibiotics
    - 1<sup>st</sup> dose in ED
  - No difference on outcome or QoL
  - Treatment cost 3 x lower in outpatient group

# Treatment of complicated diverticulitis

- CRP >150
- Abscess
- Perforation
- Hinchey staging
  - Stage 1: Mesocolic / pericolic abscess
  - Stage 2: Pelvic abscess
  - Stage 3: Generalized peritonitis
  - Stage 4: Faecal peritonitis

# Treatment of abscess

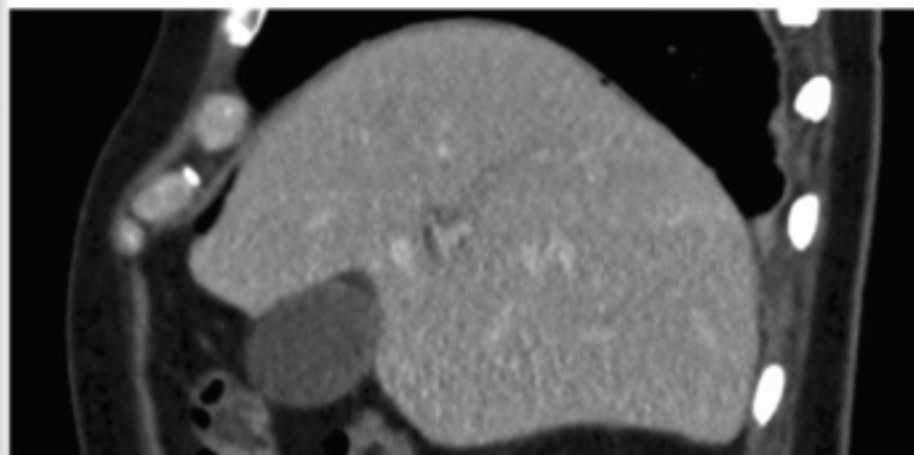
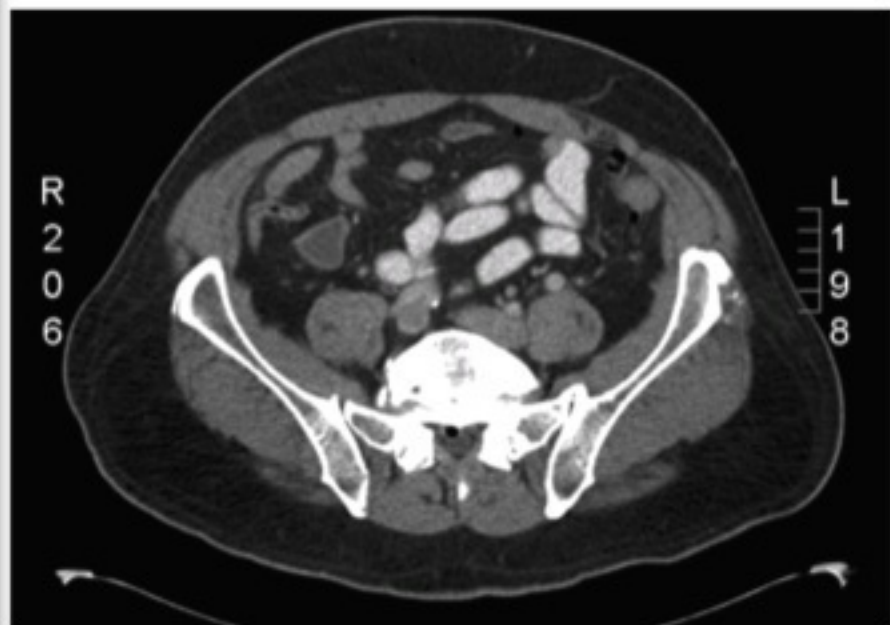
- Occur in 15-20% patients
- Percutaneous drainage effective in the majority

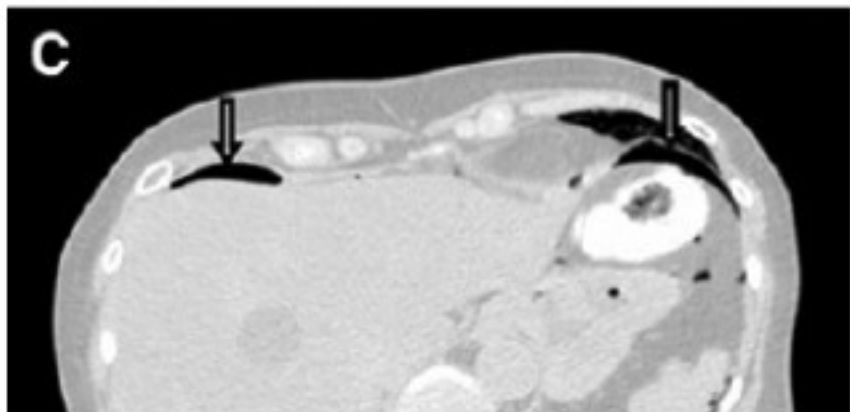
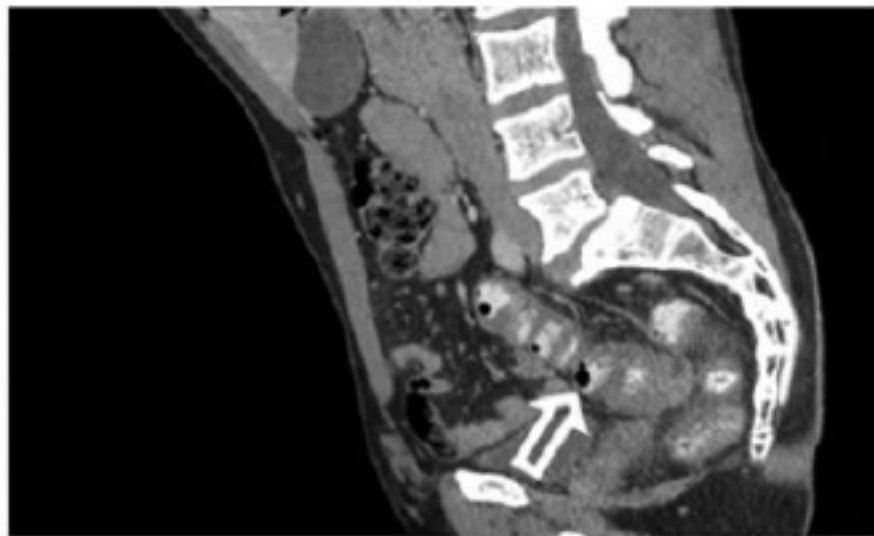
# Treatment of perforation

- What constitutes perforation?



Not one entity





# Treatment of perforation

- Laparotomy & lavage historical
  - 40% of op management for diverticular disease  
RACS prospective audit 1967
- Resection and end colostomy popularised in the 70's
  - Hartman procedure



# Laparoscopic Management of Generalized Peritonitis Due to Perforated Colonic Diverticula

Gerald C. O'Sullivan, MCh, FRCSI, Dermot Murphy, MB, FRCSI,  
Michael G. O'Brien, MB, FRCSI, Adrian Ireland, MB, FRCSI, *Cork, Ireland*

---

# Adieu to Henri Hartmann?

**E. Myers and D. C. Winter**

Department of Surgery, Saint Vincent's University Hospital, Dublin, Elm Park, Dublin, Ireland

Received 2 March 2009; accepted 3 March 2009; Accepted Article online 16 April 2009

---

Acute Comp  
Laparosc

doi:10.1111/j.1463-1318.2011

perforated sigmoid

Systematic review

doi:10.1111/j.1463-1318.2009.

Review Laparoscopic peritoneal lavage for perforated colonic  
diverticulitis: a systematic review

L B. R. Toorenvliet\*, H. Swank†, J. W. Schoones‡, J. F. Hamming\* and W. A. Bemelman†  
S. Afshar\* and M. A. Kuipers\*  
...D.Sc.

# Lavage series

- Heterogeneous group
  - 75% extent of peritonism recorded
  - 70% perforation by presence of free air
  - 24% abscess only (Hinchey I/II)
- LOS at best 9 days
- 51% patients elective resection

# Lavage studies

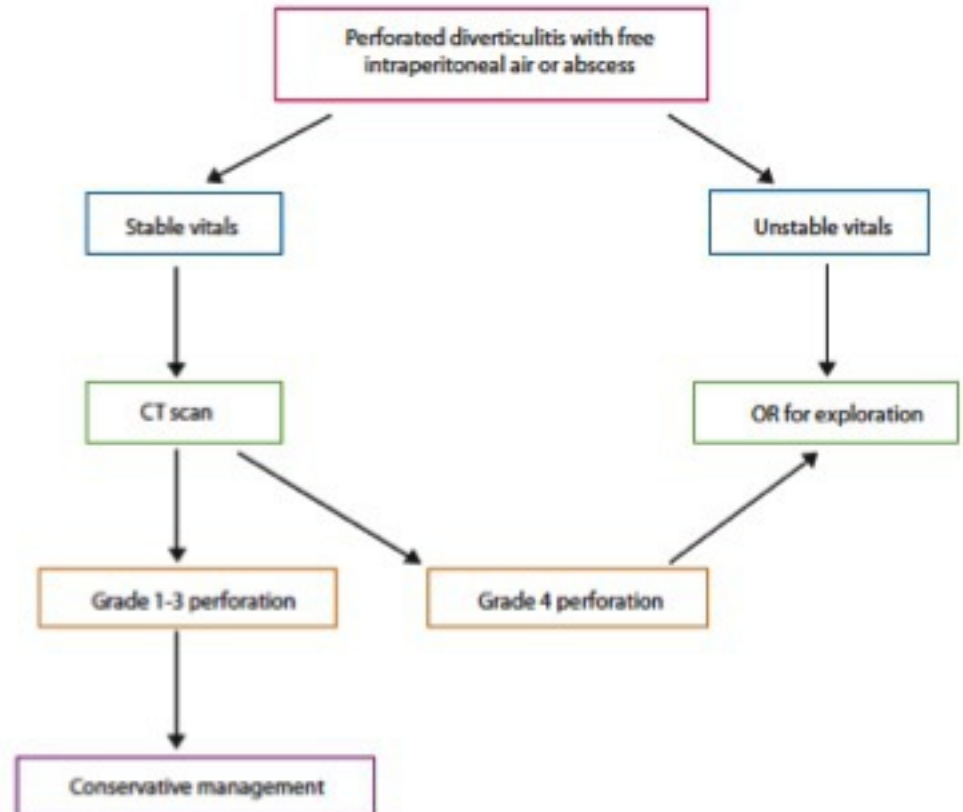
- Ladies trial - Netherlands
  - LOLA – lap lavage or resection for purulent peritonitis
  - DIVA – Hartmann's or primary resection and anastomosis for faeculent
- Trial closed due to high rate of reintervention in LOLA arm

Non-operative management?

# Non-op management

**TABLE 1.** Perforated diverticulitis CT grading system

Grade	Definition
1	Localized free air (pericolonic) without abscess
2	Small (<2 cm) collections of distant free air OR small (<4 cm) abscess
3	Large (> 2 cm) collections of distant free air OR large (>4 cm) abscess
4	Free air with nonoculated free fluid in the peritoneal cavity (feculent peritonitis)



# Non-op treatment for complicated

- Dharmarajan DCR 2009
  - 91 % successful
  - 27 pts with free air – 2 emergent op
- Costi Surg Endosc 2012
  - 39 pts with free air
  - 92% successful non-op management
  - Morbidity 40%
- Sallinen DCR 2014
  - 180 pts with free air, 132 non op managed
  - Pericolic air 99% success
  - Distant intraperitoneal air 62% success
  - Distant retroperitoneal 43% success

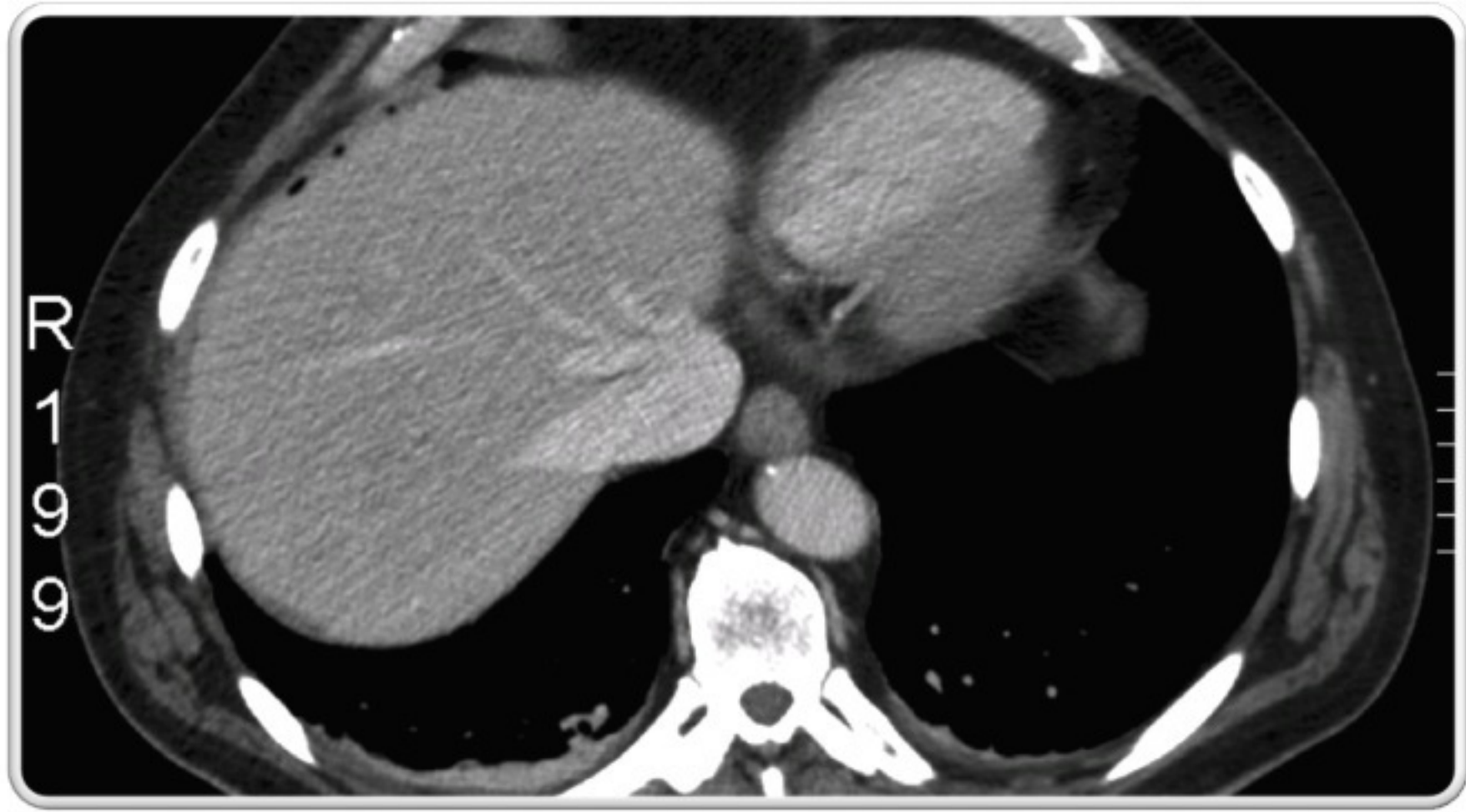


# Lavage vs non-op

	Lavage	Non-op
IV Abs	All	All
LOS	9	8
Emergency resection	5 %	5 %
Urgent resection	5 %	5 %













# Faecal peritonitis/the unstable patient

- Multicentre RCT for Hinchey III and IV
- Hartmanns vs Primary resection
  - Study stopped at interim analysis
    - Significant differences
    - Low accrual rate
  - Mortality & morbidity NSD
  - Less serious complications
  - Shorter LOS
  - Lower in hosp cost

# Need for elective surgery

- Risk of relapse 2% pa
- Relapsed cases
  - less likely to require operation
  - Lower mortality



# High risk groups

- Immunocompromised
  - Higher rate of op mortality

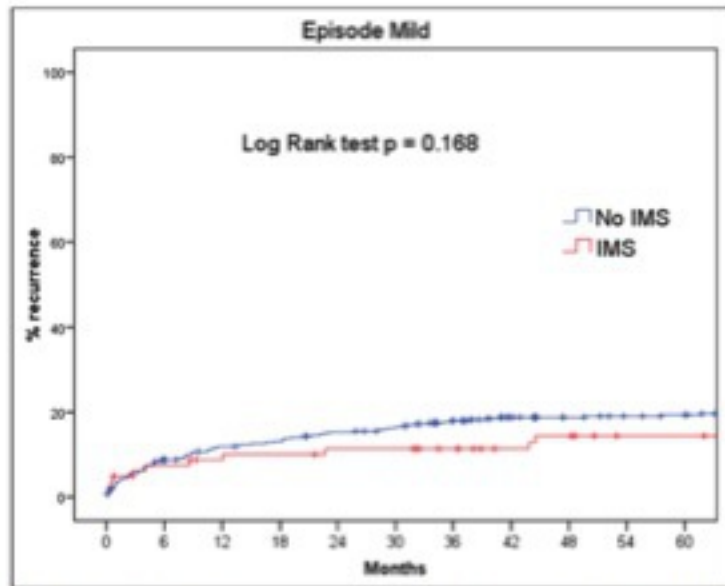


Figure 2 Analysis of cumulative recurrence in patients with mild diverticulitis.

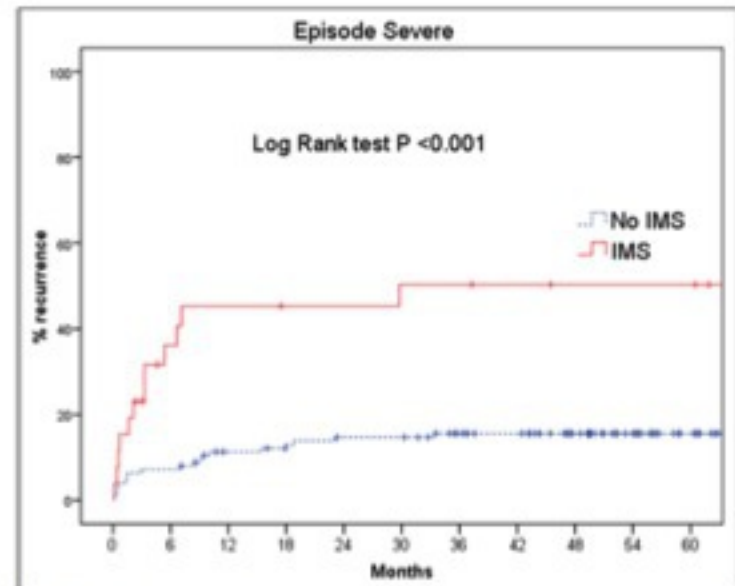


Figure 3 Analysis of cumulative recurrence in patients with severe diverticulitis.

# Need for colonoscopy?

- Systematic review & meta-analysis
  - Cancer risk :
    - Uncomplicated 0.7%
    - Complicated 10.8%

# Diverticulitis Dogma

- Risk of developing 10-25% **X**
- Nuts & Seeds increase risk **X**
- Treat with antibiotics **X**
- Operate if free perforation **X**
- Elective resection after two acute episodes **X**
- Colonoscopy to exclude colon cancer **X**

# Summary

- Contemporary acute management
  - No antibiotics for mild disease
  - Outpatient management possible
  - Percutaneous drainage for abscess
  - Non-op management for perforated disease
  - Resection and primary anastomosis for Hinchey IV
  - No different treatment for high risk groups

*He who works with his hands is a labourer*

*He who works with his hands and his head is a craftsman*

*He who works with his hands and his head and his heart is an artist*

*St Francis of Assisi (c1182-1226)*

