# What's new for clinical guidelines for *H. pylori* infection in children?

**CDDW 2017, Banff**

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and
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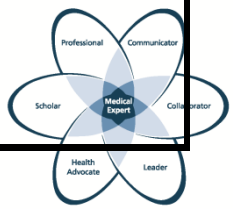
# CanMEDS Roles Covered

| | |
|---|---|
| X | **Medical Expert** (as *Medical Experts*, physicians integrate all of the CanMEDS Roles, applying medical knowledge, clinical skills, and professional values in their provision of high-quality and safe patient-centered care. *Medical Expert* is the central physician Role in the CanMEDS Framework and defines the physician's clinical scope of practice.) |
| X | **Communicator** (as Communicators, physicians form relationships with patients and their families that facilitate the gathering and sharing of essential information for effective health care.) |
| | **Collaborator** (as *Collaborators*, physicians work effectively with other health care professionals to provide safe, high-quality, patient-centred care.) |
| | **Leader** (as *Leaders*, physicians engage with others to contribute to a vision of a high-quality health care system and take responsibility for the delivery of excellent patient care through their activities as clinicians, administrators, scholars, or teachers.) |
| | **Health Advocate** (as *Health Advocates*, physicians contribute their expertise and influence as they work with communities or patient populations to improve health. They work with those they serve to determine and understand needs, speak on behalf of others when required, and support the mobilization of resources to effect change.) |
| X | **Scholar** (as *Scholars*, physicians demonstrate a lifelong commitment to excellence in practice through continuous learning and by teaching others, evaluating evidence, and contributing to scholarship.) |
| | **Professional** (as *Professionals,* physicians are committed to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, physician-led regulation, and maintenance of personal health.) |



Name: Dr. Nicola Jones

# Financial Interest Disclosure

(over the past 24 months)

No relevant financial relationships with any commercial interests

# Case presentation

- 12 year old girl referred for second opinion from GP
- Mother thinks a blood test showed the child was infected with *H. pylori*
- Symptoms of epigastric pain with some night time wakening
- Physical exam and labs including Hb normal

# What is the next step?

A. Treat with triple therapy and encourage adherence
B. Perform a urea breath test and treat if positive
C. Perform an upper endoscopy and treat if *H. pylori* positive

# Who to test?

| | | |
|---|---|---|
| Peptic ulcer disease | Yes | Strong recommendation |
| Functional abdominal pain | No | Strong recommendation |
| Asymptomatic children | No | Strong recommendation |
| Family history of gastric CA | Yes | |
| MALT lymphoma | Yes | |

**Updated ESPGHAN/NASPGHAN 2016 recommendations**

# Who to test: extra-intestinal disease?

| | | |
|---|---|---|
| Iron deficiency anemia | No | Strong recommendation |
| Unexplained refractory iron deficiency anemia | Yes | Weak recommendation |
| Chronic ITP | Yes | Weak recommendation |
| Short stature | No | Strong recommendation |

**New ESPGHAN/NASPGHAN 2016 recommendations**

# How to test- initial diagnosis?

| **Invasive Diagnostic test** | Recommendation |
|---|---|
| GI endoscopy and biopsy | Yes |
| **Non-invasive tests** | Recommendation |
| Urea breath tests | No |
| Stool antigen tests | No |
| Serologic assays | No! |

**Table 2** Comparison of positive and negative predictive values of non-invasive *H. pylori* tests

| Method | Positive predictive value (%) | Negative predictive value (%) | Sensitivity (%) | Specificity (%) |
|---|---|---|---|---|
| **Invasive:** | | | | |
| Histopathology | | | 82 | 95–99 |
| Rapid urease test (RUT) | | | 83 | 99 |
| Culture | | | 85 | 100 |
| **Non invasive:** | | | | |
| Serum *H. pylori* IgG[9] | 72 | 90 | 86 | 80 |
| Serum cytotoxin associated gene product A IgG[9] | 71 | 89 | 83 | 80 |
| Salivary *H. pylori* IgG[9] | 82 | 79 | 66 | 91 |
| *H. pylori* faecal antigen[9] | 97 | 98 | 97 | 98 |
| Urea breath test[10] | 90–100 | 90–100 | 75–100 | 78–100 |

Crowley E, et al. Arch Dis Child Educ Pract Ed 2013;

E

# What is the next step?

A. Repeat treatment with triple therapy and encourage adherence

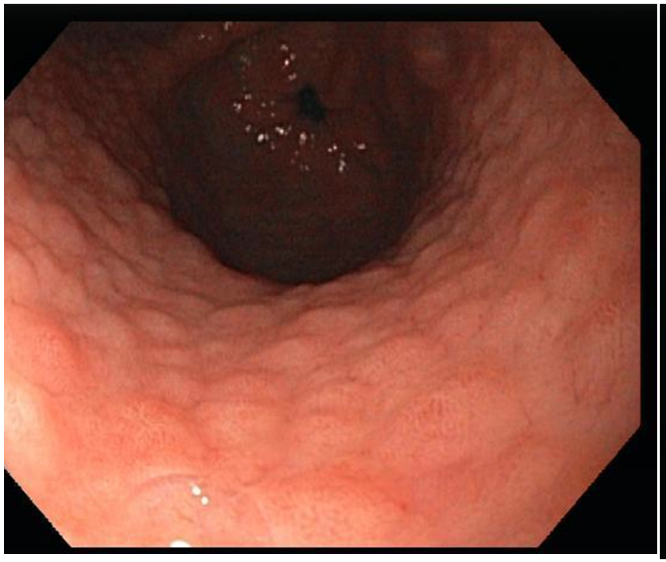
B. Perform a urea breath test and treat if positive

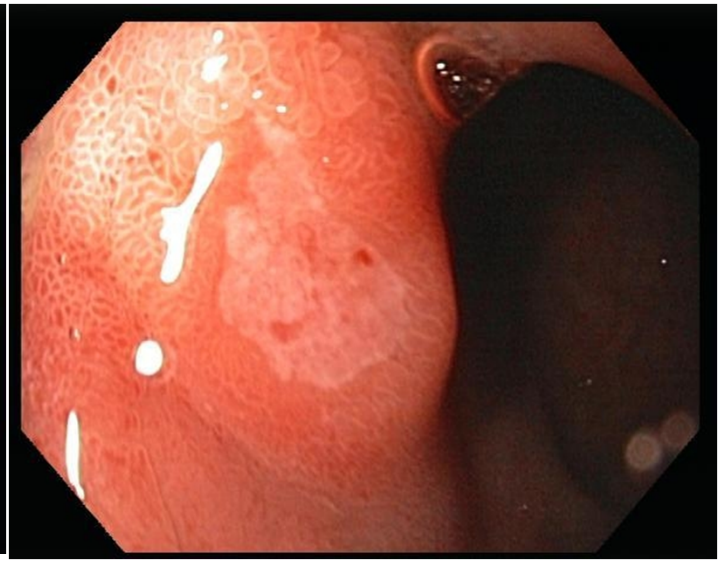
C. Perform an upper endoscopy and treat if *H. pylori* positive

# Case presentation

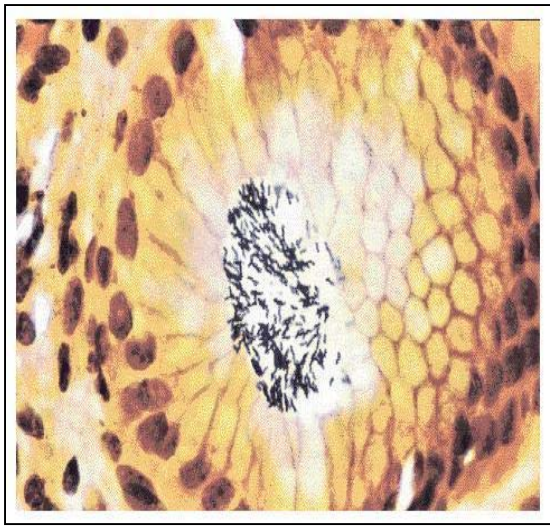
- upper endoscopy is performed

Upper endoscopy findings



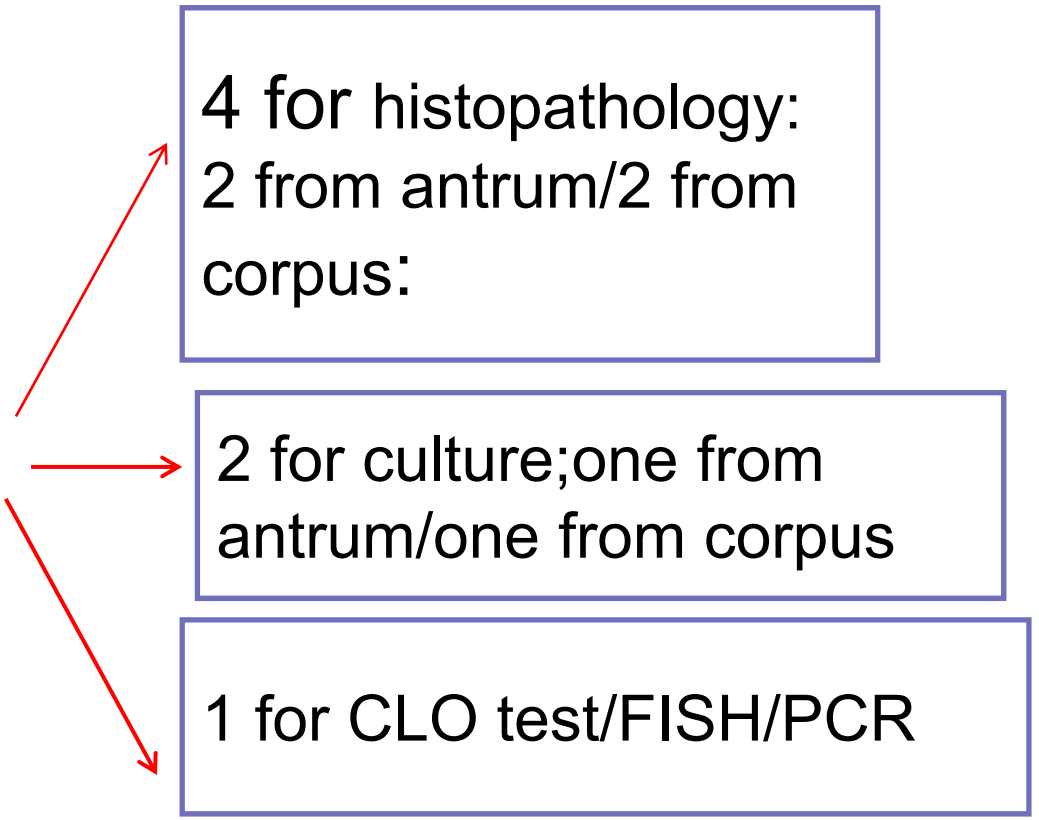


Pathologic findings



# How many biopsies are needed for accurate diagnosis of Hp?

- At least 6 biopsies :



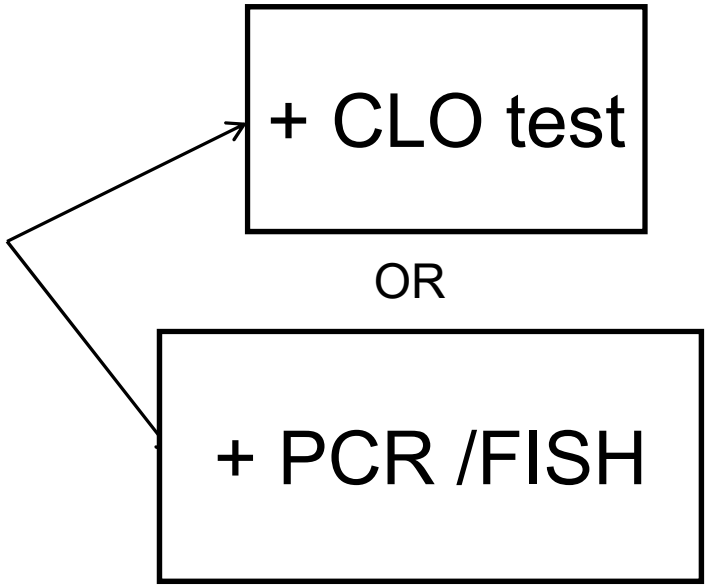

Dixon MF et al Am J Surg Pathol 1996
Seo J-H, et al. J K M S, 2014
Lee JY et Kim N. Annals of Translational Medicine, 2015

## What do we need for accurate diagnosis of Hp?

- + Hp culture

  or

- + Histopathology with



# Should *H. pylori* be eradicated?

A. Yes

B. No

Recommendation:

We recommend that testing for *H. pylori* be performed in children with gastric or duodenal PUD. If *H. pylori* infection is identified then treatment should be administered and eradication confirmed.

GRADE: strong recommendation.

Quality of evidence: high.

Agreement: 100%

**New ESPGHAN/NASPGHAN recommendations**

# Who to treat?

| | |
|---|---|
| Peptic ulcer disease | Yes |
| *H. pylori* without peptic ulcer disease | consider |
| Unexplained refractory iron deficiency anemia | Yes |
| Chronic ITP | Yes |
| Family history of gastric CA | Yes |

**New ESPGHAN/NASPGHAN 2016 recommendations**

# How to treat-1st line?

- Proton pump inhibitor
  amoxicillin
  metronidazole — 7-14d
- Proton pump inhibitor
  amoxicillin
  clarithromycin — 7-14d
- Bismuth salts
  amoxicillin
  metronidazole — 7-14d
- Sequential therapy — 10d

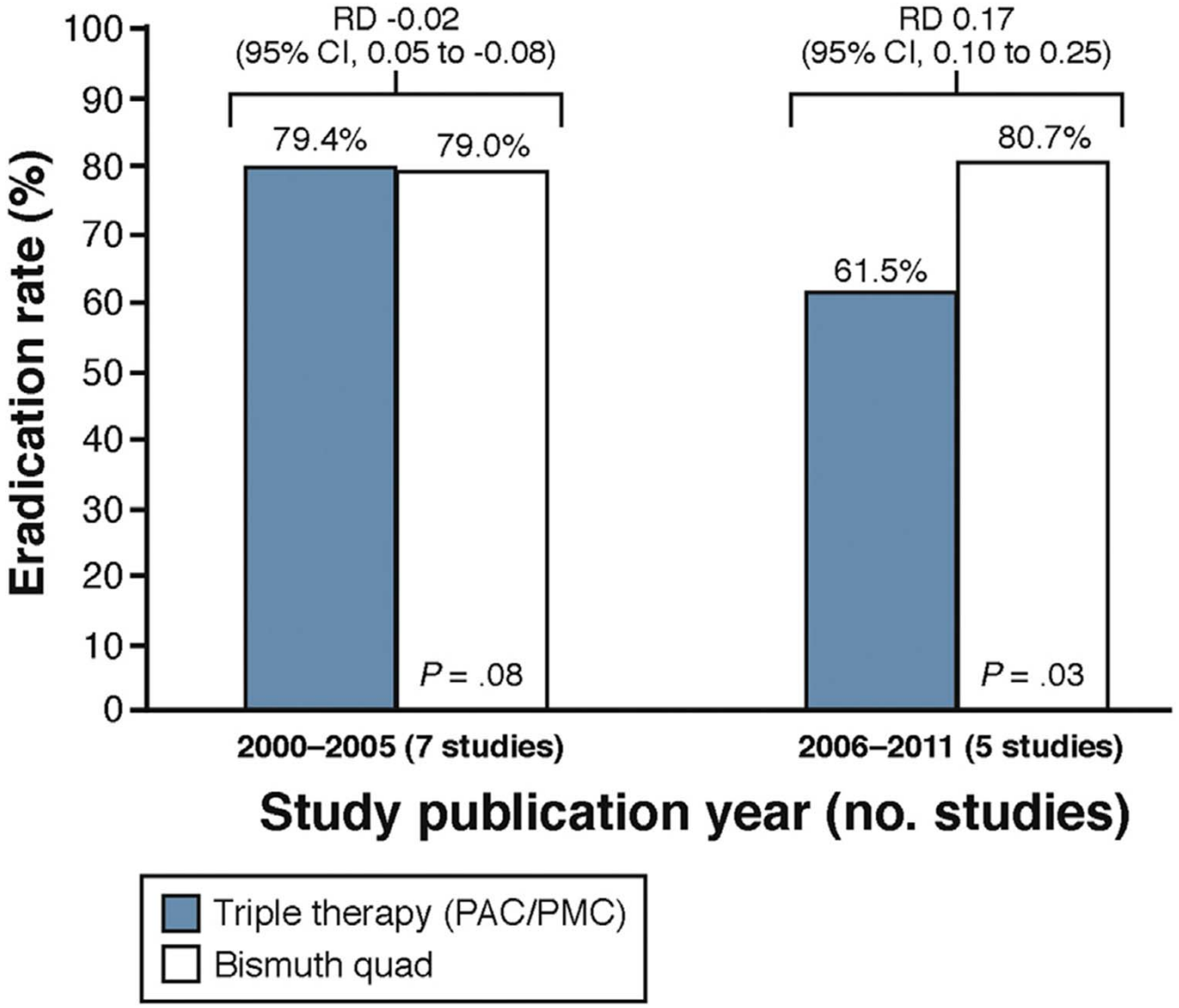


*Joint ESPGHAN/ NASPGHAN Consensus Guidelines : J Pediatr Gastroenterol Nutr. 2011

# What is the best choice of therapy?

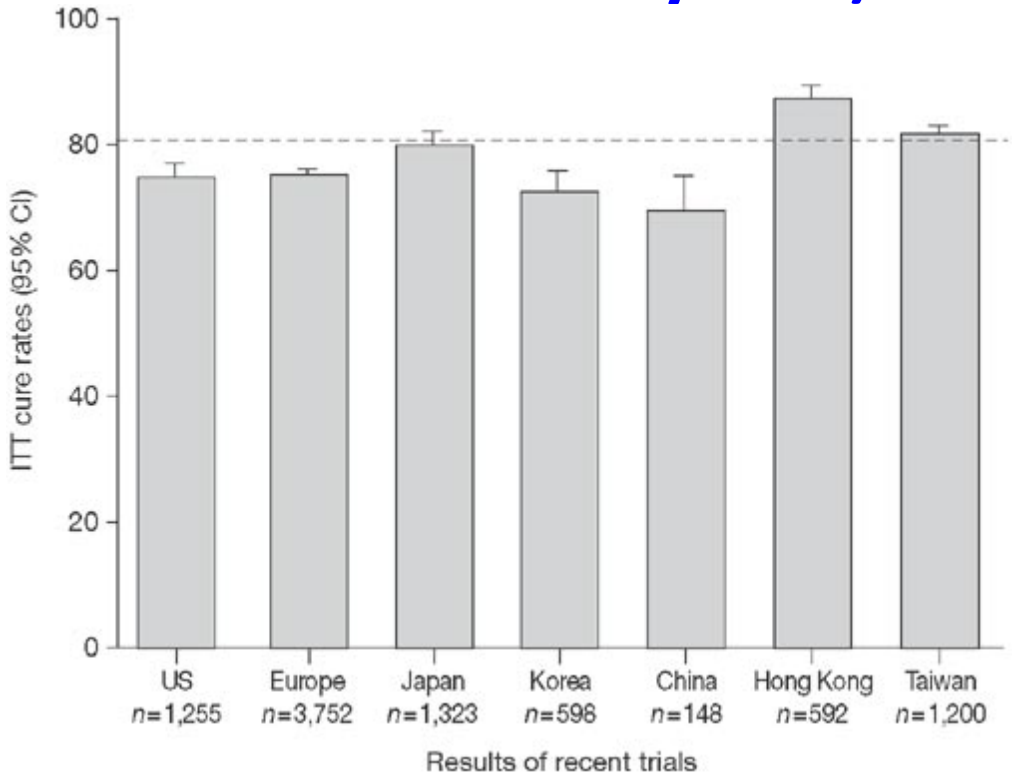
A. Triple therapy
B. Sequential therapy
C. Bismuth-based

# Changes in eradication rates over time




Fallone et al., Gastroenterology 2016;151: 51-69

# Worldwide cure rates for triple therapy (PPI plus amoxicillin and clarithromycin)




Graham DY and Shiotani A (2008)
*Nat Clin Pract Gastroenterol Hepatol* doi:10.1038/ncpgasthep1138

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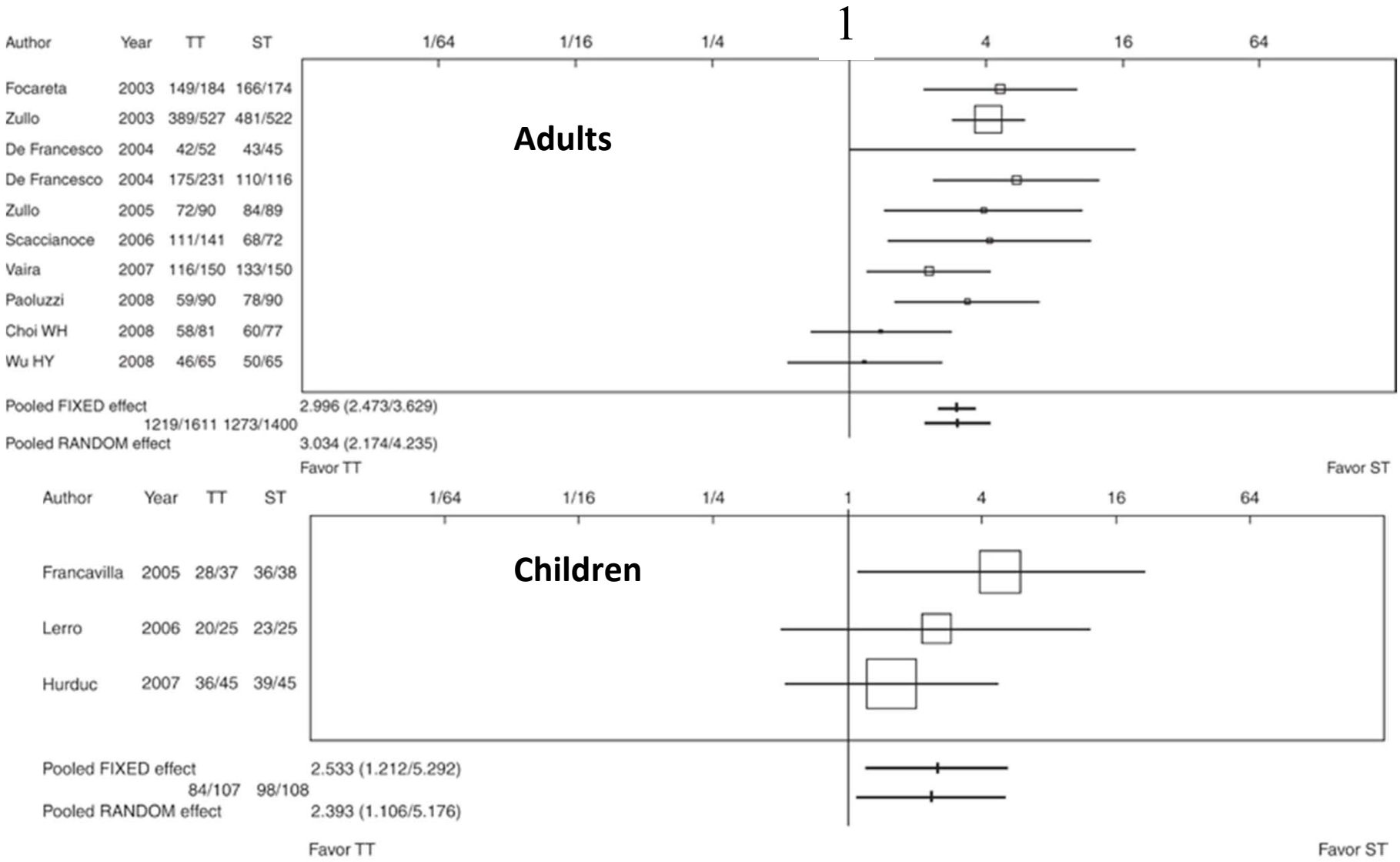
# Efficacy of sequential therapy




*Gatta et al. Am J Gastroenterol 2009: 104:3069-79*

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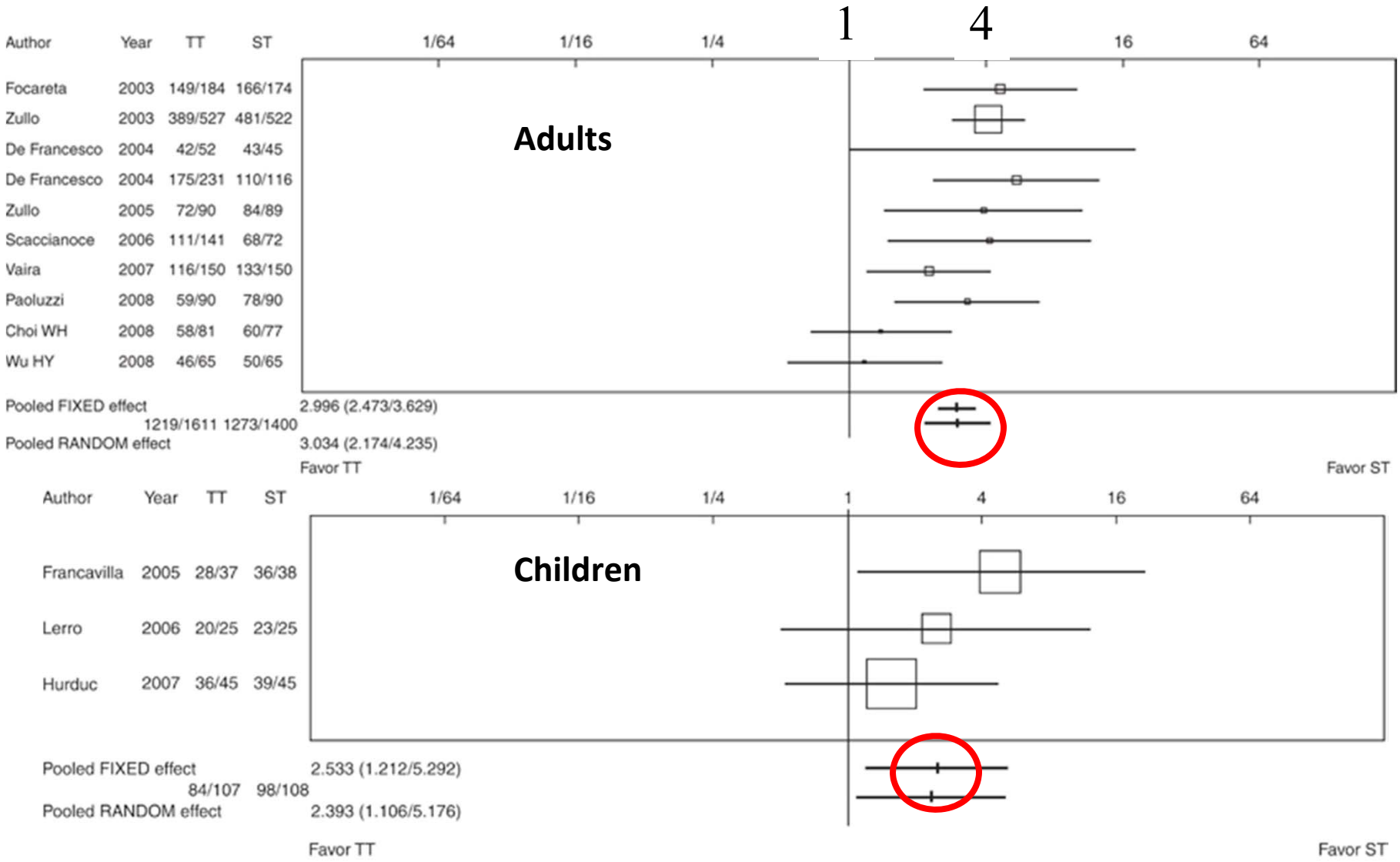


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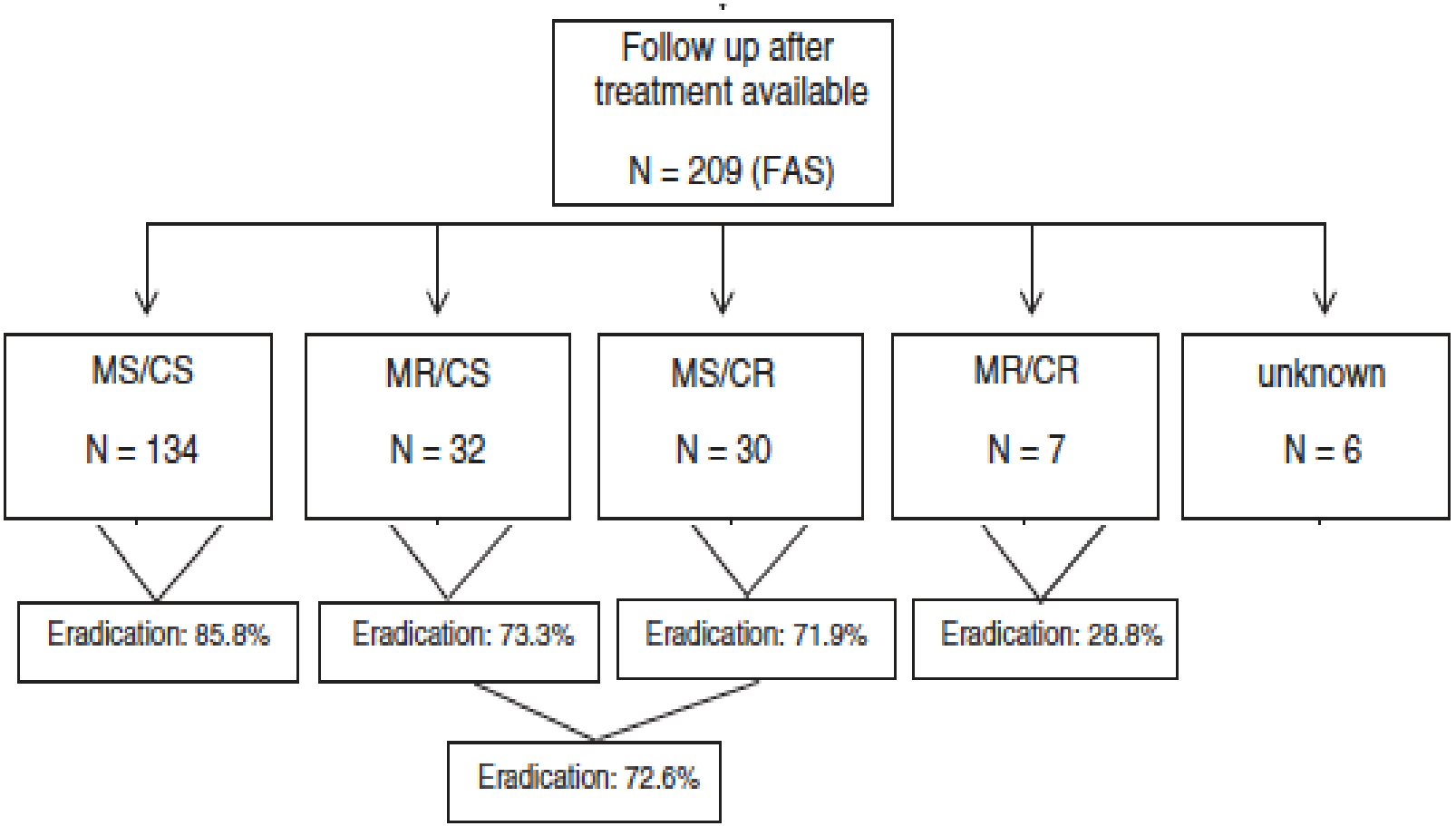
# Efficacy of sequential therapy in treatment- naïve children




*Schwarzer et al. Helicobacter 2016: 21:106-13*

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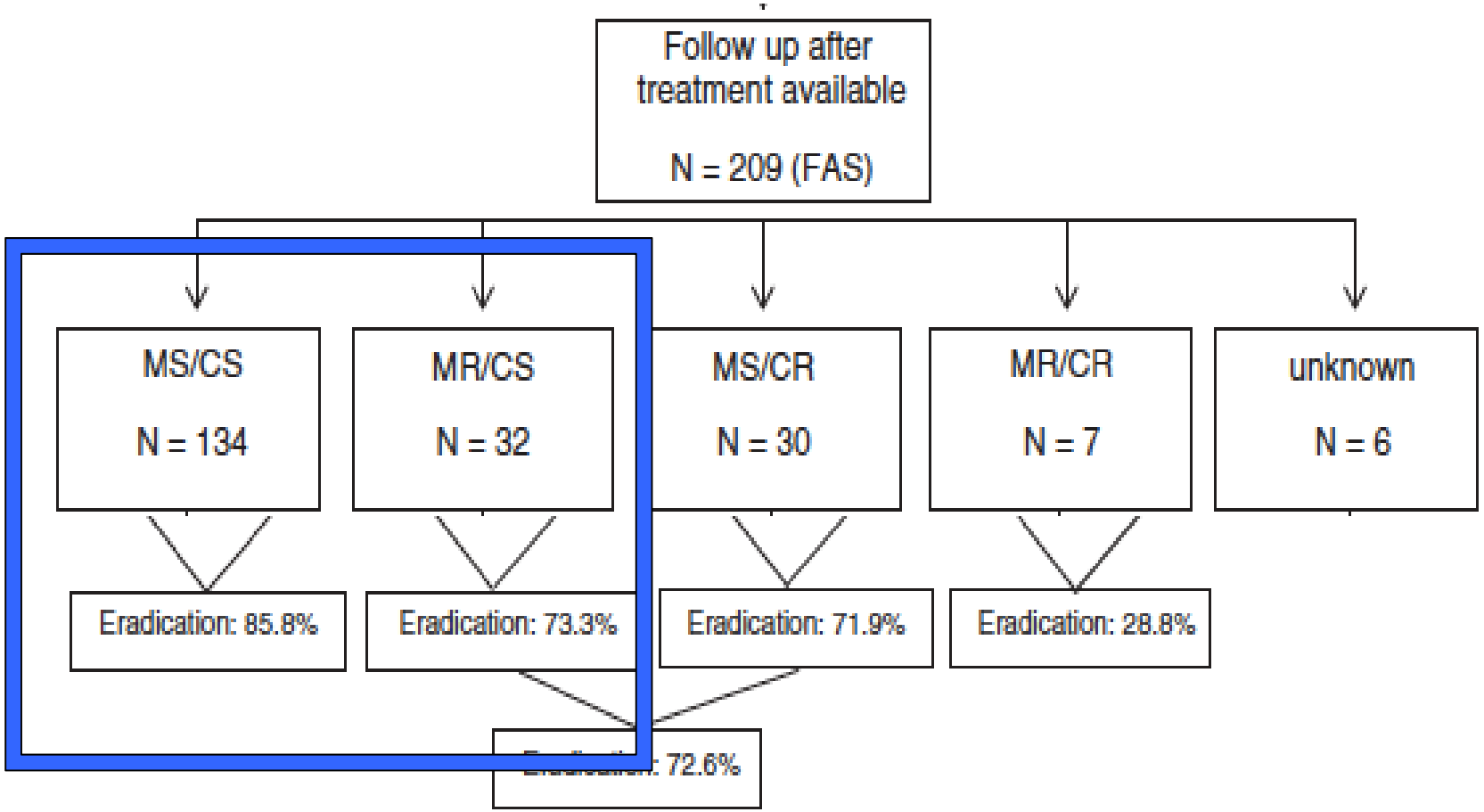


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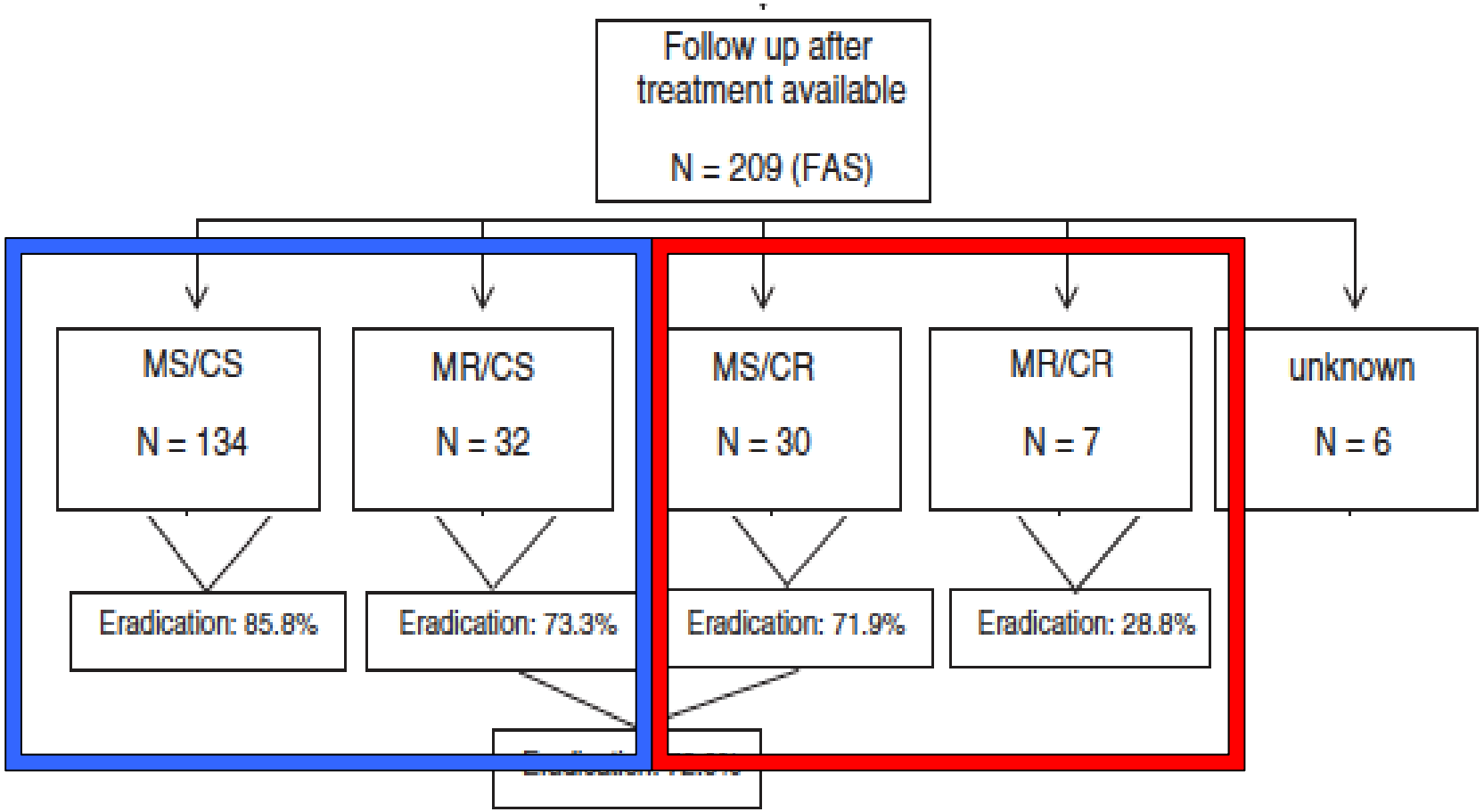


*Schwarzer et al. Helicobacter 2016: 21:106-13*

## Recommendation:

We recommend that the antimicrobial susceptibility be obtained for the infecting *H. pylori* strain(s), and, the anti-*H. pylori* treatment tailored accordingly.

Grade: Strong recommendation

Agreement: 86%

**New ESPGHAN/NASPGHAN 2016 recommendations**

## Recommendation:

We recommend that the physician explain to the family the importance of adherence to the anti-*H. pylori* therapy to enhance treatment success.

Grade: strong recommendation

Agreement: 86%

**New ESPGHAN/NASPGHAN 2016 recommendations**

# How to treat-first line?

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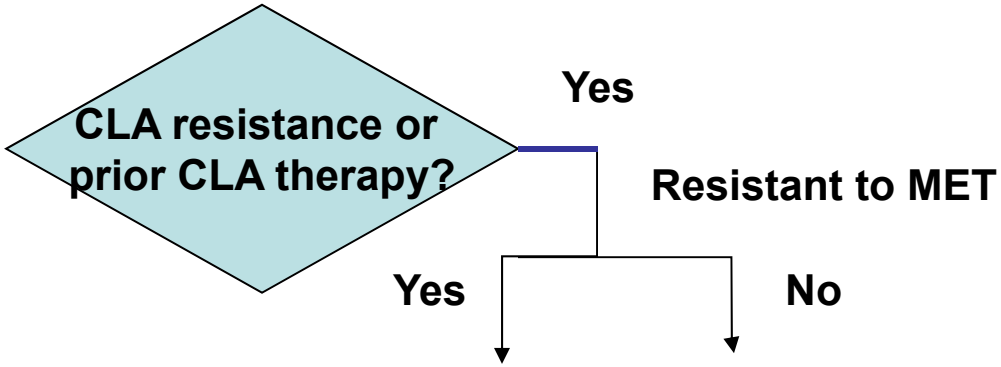

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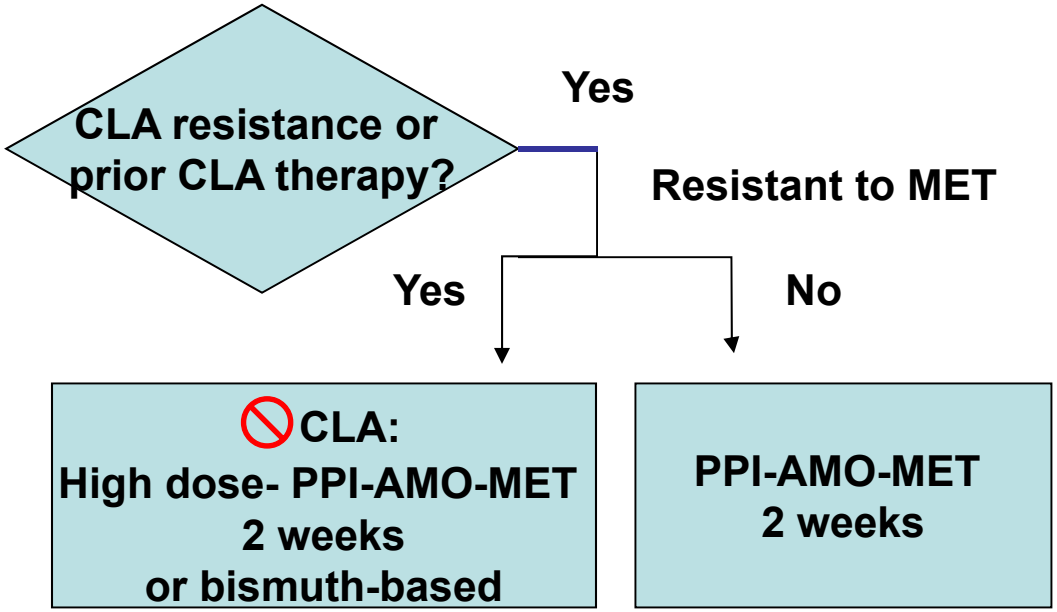

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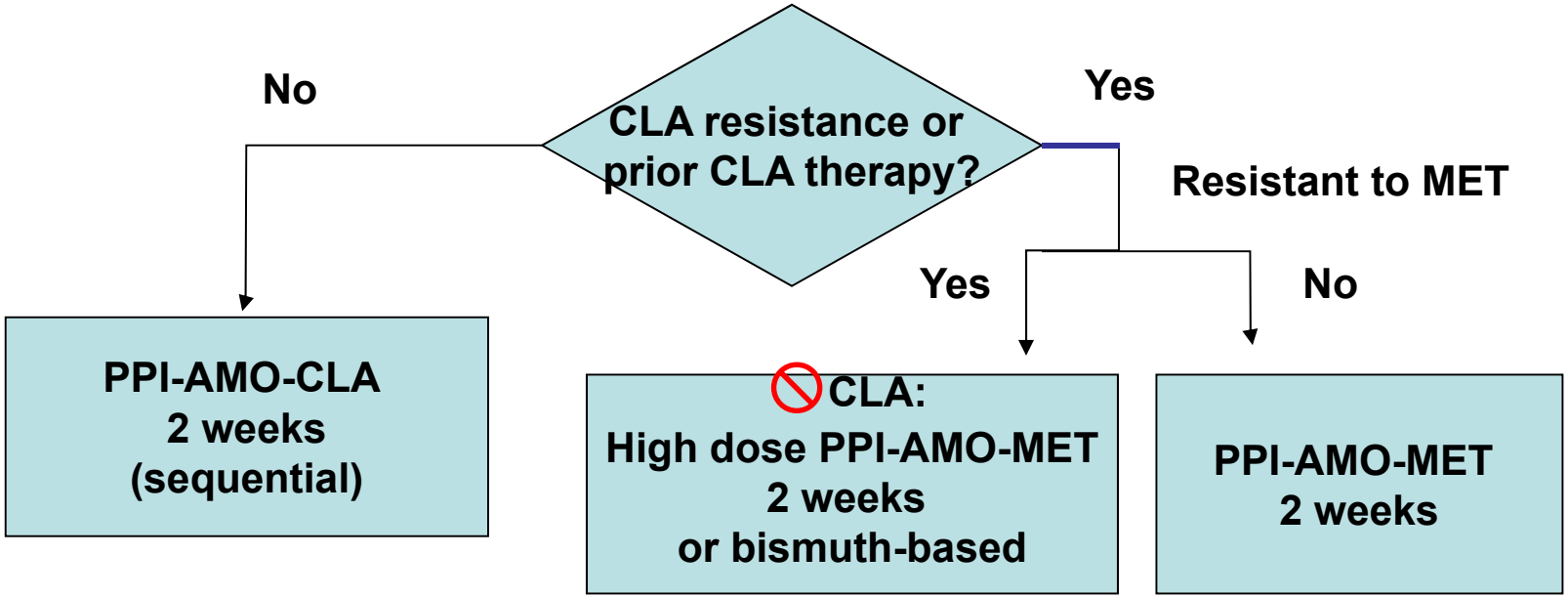

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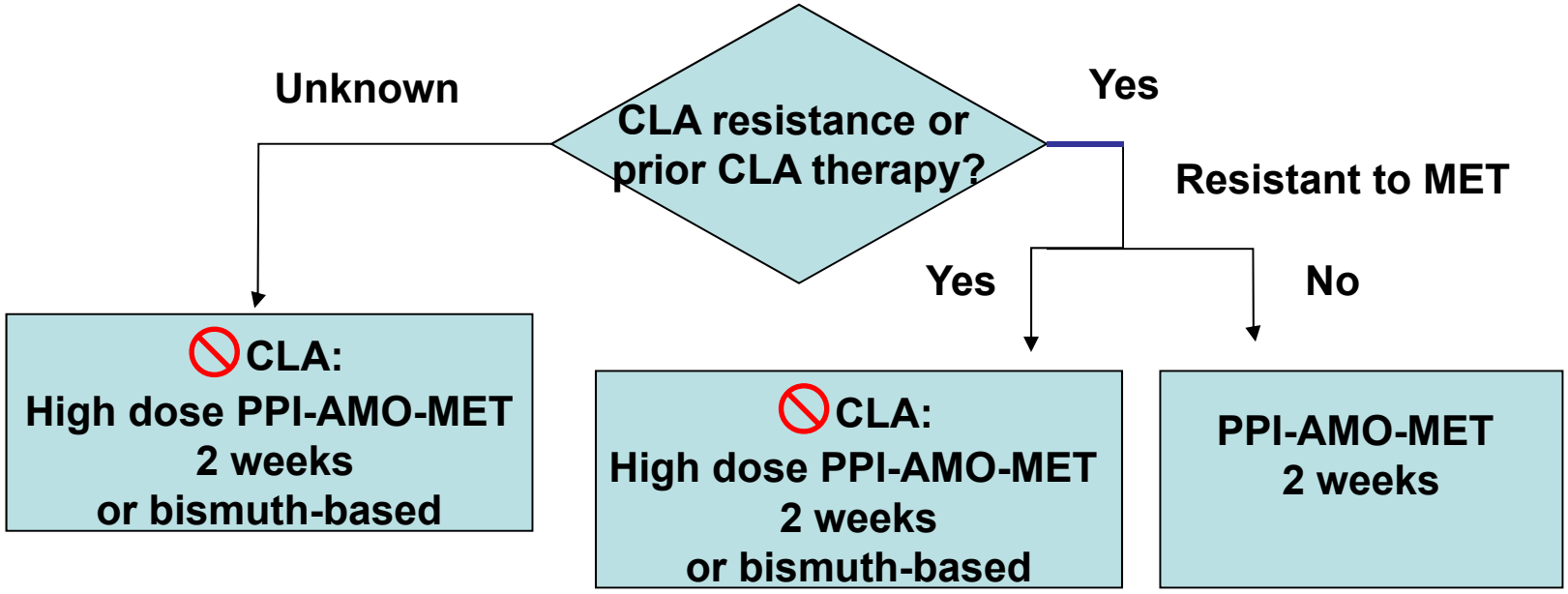


# First line therapy

| ***H. pylori*** **antimicrobial susceptibility** | **Suggested treatment** |
|---|---|
| Known | |
| Susceptible to CLA and to MET | PPI-AMO-CLA 14d |
| Resistant to CLA, susceptible to MET | PPI-AMO-MET 14d or bismuth-based |
| Resistant to MET, susceptible to CLA | PPI-AMO-CLA 14d or bismuth-based |
| Resistant to CLA and to MET | High dose PPI-AMO-MET 14d or bismuth-based |
| Unknown | |
| | High dose PPI-AMO-MET 14d or bismuth-based |

# Concomitant non bismuth therapy- recommended first line therapy in adults?

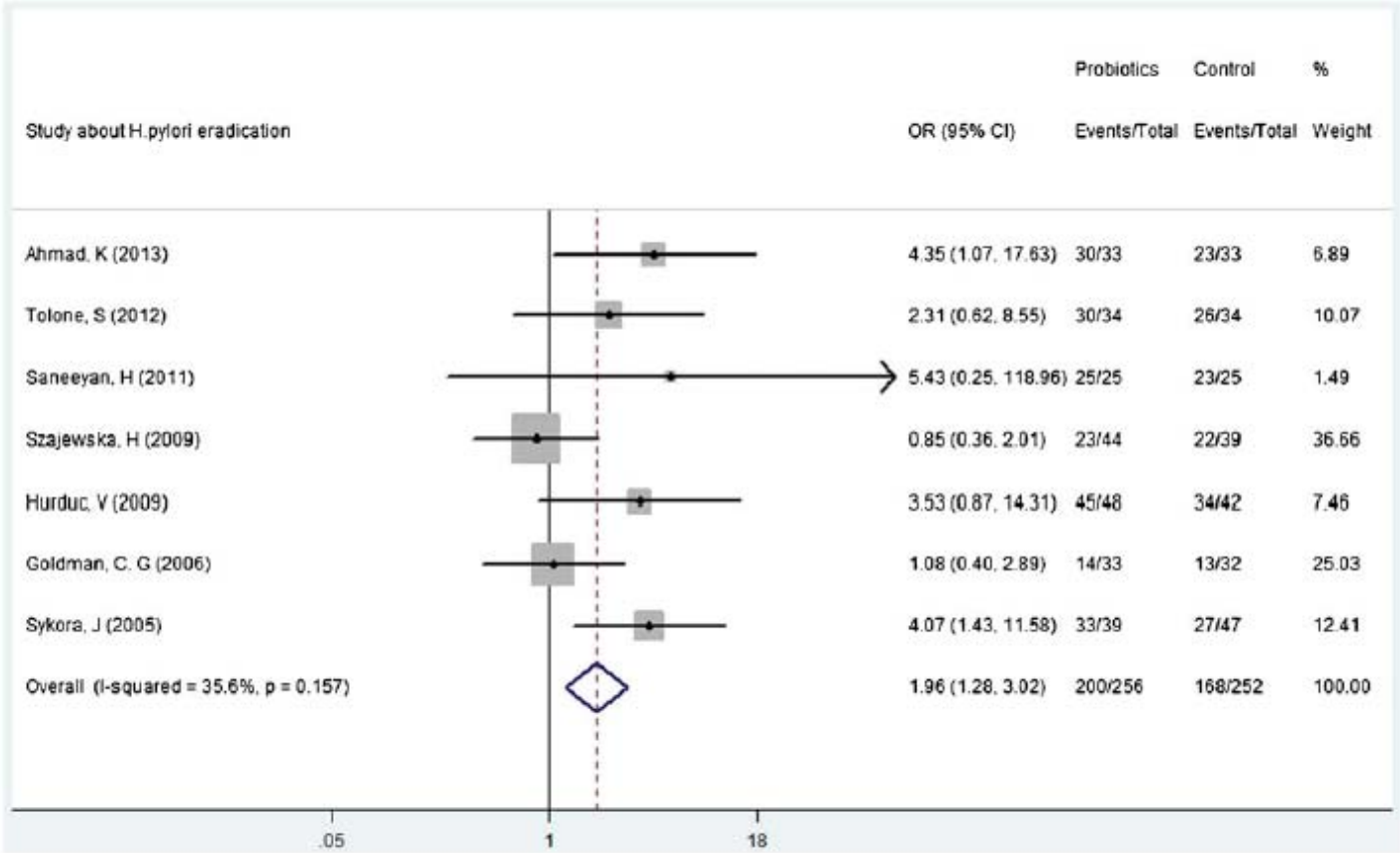
- omeprazole BID
- amoxicillin BID
- clarithromycin BID
- metronidazole BID

  14days

# Should probiotics be added?

A. Yes
B. No

# Effect of probiotics on eradication rates




*Li et al. Eur J Pediatr 2014; 173;153-61*

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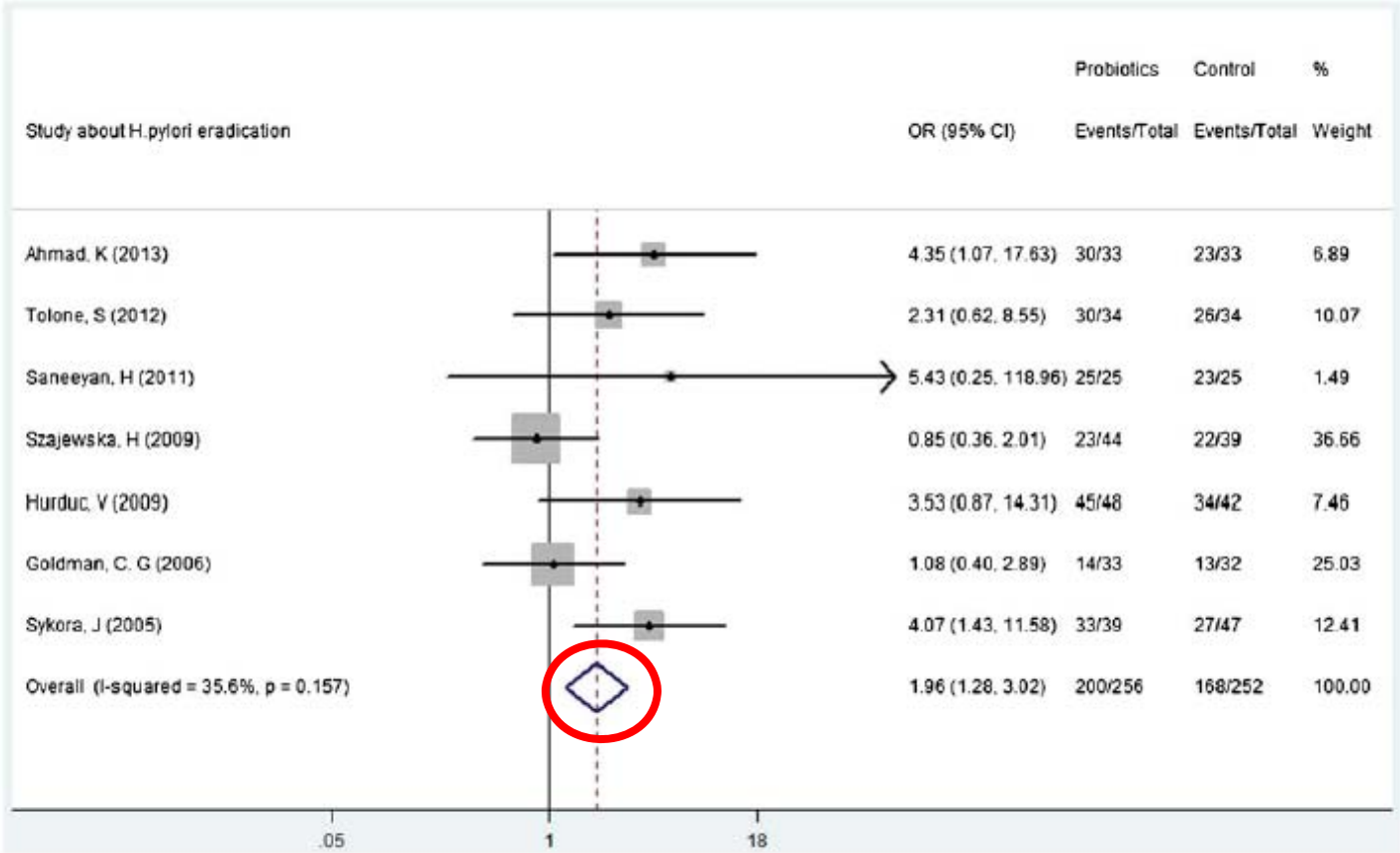
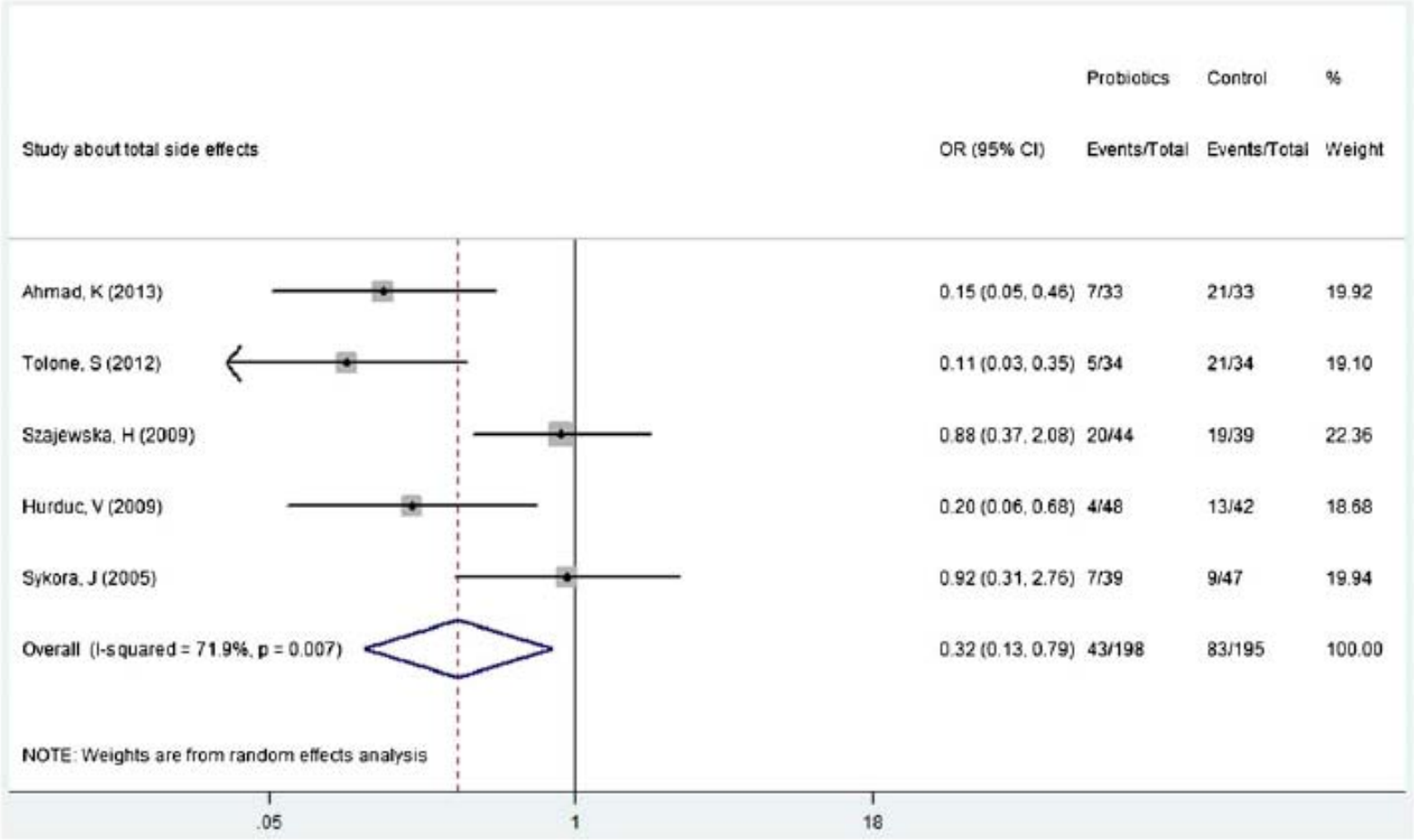



*Li et al. Eur J Pediatr 2014; 173;153-61*

# Effect of probiotics on adverse events

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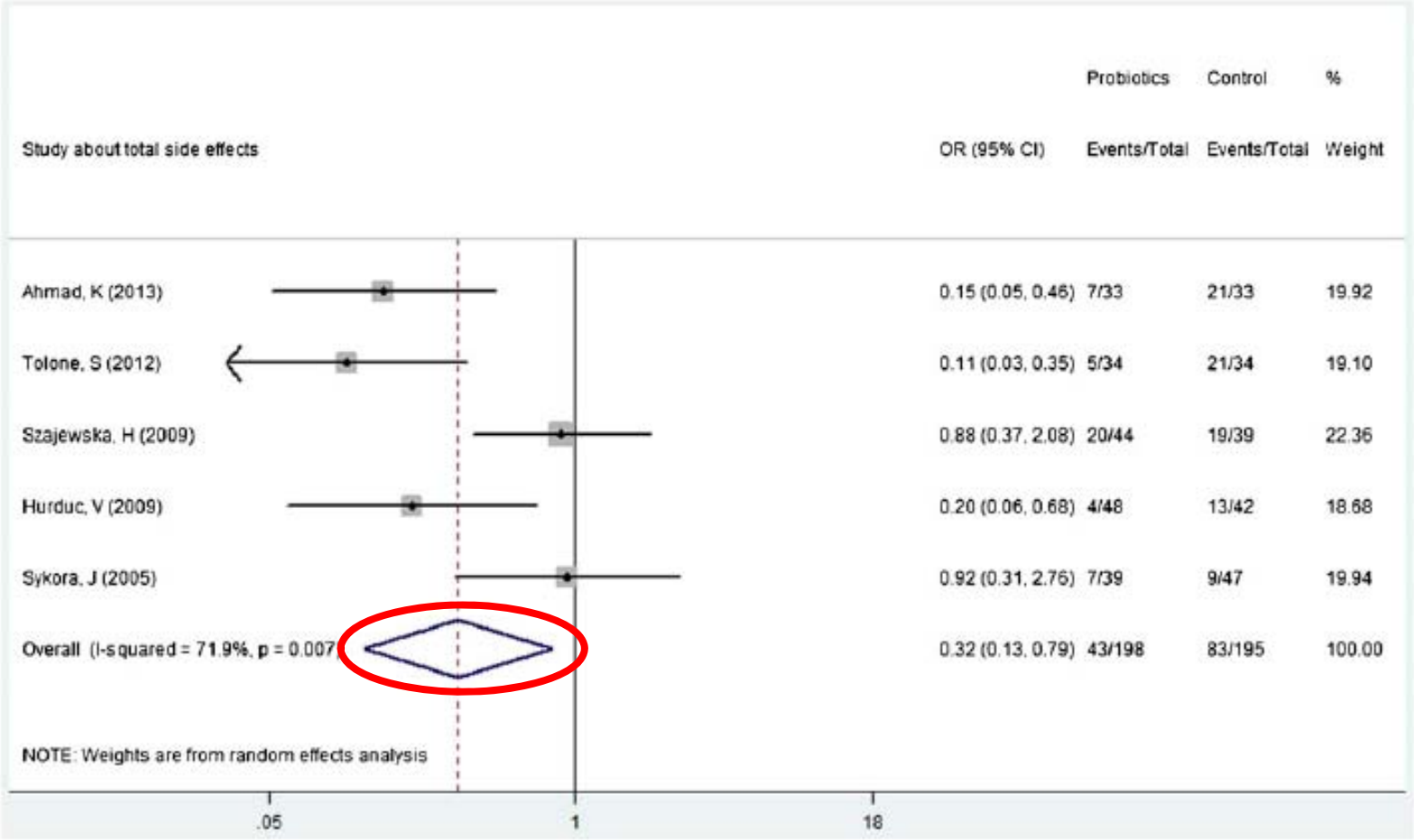


*Li et al. Eur J Pediatr 2014; 173;153-61*

Eur J Pediatr (2014) 173:975
DOI 10.1007/s00431-014-2340-4

CORRESPONDENCE

# Pooling data on different probiotics is not appropriate to assess the efficacy of probiotics

# Should probiotics be added?

We recommend against routinely adding probiotics to reduce adverse events and enhance compliance

# Case presentation- cont'd

- Receives eradication therapy
- Continues to have intermittent pain
- Should you confirm eradication?
  - Yes
  - No

# How to test ? –confirm eradication

| Non-invasive tests | Recommendation |
|---|---|
| Urea breath tests | Yes |
| Stool antigen tests | Yes |
| Serologic assays | No! |

***confirmation testing should be performed at least 4-8 weeks after stopping therapy**

# Case presentation- cont'd

- Urea breath testing shows the child is no longer *H. pylori* positive

# How to manage treatment failure?

- Modify therapy-add/change antibiotic, bismuth, change dose/ duration
- Culture and susceptibility testing to guide therapy

# Summary

- In children the goal of testing is to diagnose the cause of symptoms- NOT detect *H. pylori* infection
- Therapy should be guided by antibiotic resistance rates when available
- Choose the best initial therapy to avoid treatment failure

# Thanks for your attention!