

# Endo Highlights 2018

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# **Endoskopie 2017-8**

**Künstliche Intelligenz – Diagnostik**

**Koloskopie, Polypektomie und Outcome**

**Endoskopische Anastomosen**

**Adipositas**

**Barrett**



# Künstliche Intelligenz

Colon

Polypendifferenzierung  
Polypenerkennung

CED-Muster

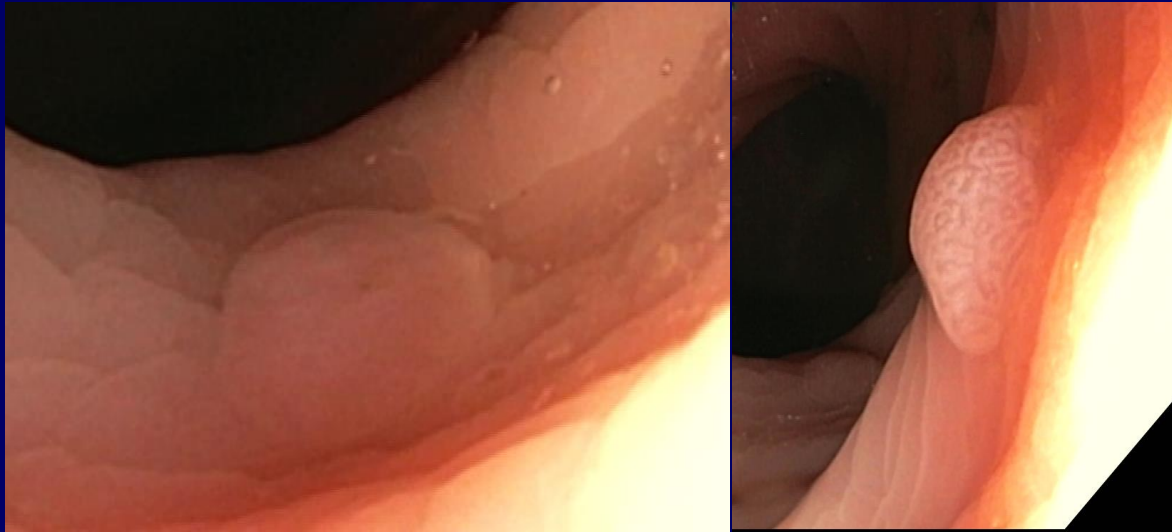
Oberer GIT

Tumorsuche  
Barrett-Überwachung  
Gastritis

etc. etc



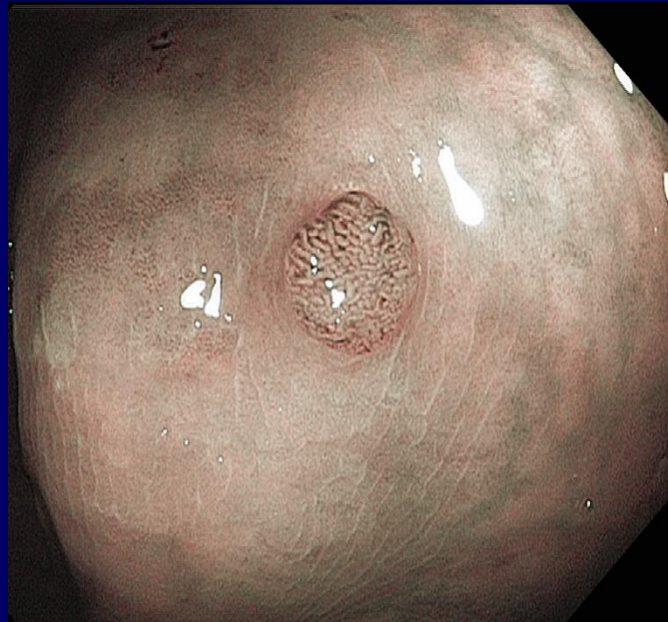
# Künstliche Intelligenz



Polypendifferenzierung



# Künstliche Intelligenz



Polypendifferenzierung



# Polypendifferenzierung



OPEN ACCESS

ORIGINAL ARTICLE

Real-time differentiation of adenomatous and hyperplastic diminutive colorectal polyps during analysis of unaltered videos of standard colonoscopy using a deep learning model

Michael F Byrne,<sup>1</sup> Nicolas Chapados,<sup>2,3</sup> Florian Soudan,<sup>2</sup> Clemens Oertel,<sup>2</sup> Milagros Linares Pérez,<sup>4</sup> Raymond Kelly,<sup>5</sup> Nadeem Iqbal,<sup>6</sup> Florent Chandelier,<sup>2</sup> Douglas K Rex<sup>7</sup>

Sens/Spez Adenome  
98% - 83%

*Gut 2017 online*

ACCEPTED MANUSCRIPT

**Accurate Classification of Diminutive Colorectal Polyps Using Computer-aided Analysis**

**Short Title:** Deep Neural Network for Narrow-Band Imaging

Peng-Jen Chen,<sup>1</sup> Meng-Chiung Lin,<sup>2,3</sup> Mei-Ju Lai,<sup>4</sup> Jung-Chun Lin,<sup>1</sup> Henry Horng-Shing Lu,<sup>5</sup>

Sens/Spez Adenome  
96% - 78%

*Gastro 2018*





# Künstliche Intelligenz

Große Datenbanken

Validierung !

Verschiedene Qualitätsstufen



# ADR und kein Ende



Original article

Thieme

## Effects of two instrument-generation changes on adenoma detection rate during screening colonoscopy: results from a prospective randomized comparative study

### Authors

Katharina Zimmermann-Fraedrich<sup>1</sup>, Stefan Groth<sup>1</sup>, Susanne Sehner<sup>2</sup>, Stefan Schubert<sup>3</sup>, Jens Aschenbeck<sup>3</sup>, Michael Mayr<sup>3</sup>, Alireza Aminalai<sup>3</sup>, Andreas Schröder<sup>3</sup>, Jens-Peter Bruhn<sup>4</sup>, Michael Bläker<sup>4</sup>, Thomas Rösch<sup>1</sup>, Guido Schachschal<sup>1</sup>

*Endoscopy 2018*

## ORIGINAL ARTICLE

## Impact of 2 generational improvements in colonoscopes on adenoma miss rates: results of a prospective randomized multicenter tandem study

Mathieu Pioche, MD,<sup>1</sup> Angélique Denis, PhD,<sup>2,3</sup> Hans-Dieter Allescher, MD,<sup>4</sup> Gianluca Andrisani, MD,<sup>5</sup> Guido Costamagna, MD,<sup>2</sup> Evelien Dekker, MD,<sup>6</sup> Paul Fockens, MD,<sup>6</sup> Christian Gerges, MD,<sup>7</sup> Stefan Groth, MD,<sup>8</sup> Jennis Kandler, MD,<sup>7</sup> Isabelle Lienhart, MD,<sup>1</sup> Horst Neuhaus, MD,<sup>7</sup> Lucio Petruzzello, MD,<sup>5</sup> Guido Schachschal, MD,<sup>8</sup> Kristien Tytgat, MD,<sup>6</sup> Jürgen Wallner, MD,<sup>4</sup> Vincens Weingart, MD,<sup>4</sup> Sandrine Touzet, MD,<sup>2,3</sup> Thierry Ponchon, MD,<sup>1</sup> Thomas Rösch, MD<sup>8</sup>

Lyon, France; Garmisch-Partenkirchen, Germany; Rome, Italy; Amsterdam, Netherlands; Dusseldorf, Hamburg, Germany

*GIE 2018*



# ADR und kein Ende

## Vergleichs-Studie in Praxen, Vorsorge

N=1221

|         |               |       |                       |
|---------|---------------|-------|-----------------------|
| ADR     | 32% vs 28%    | n.s.  | <i>Endoscopy 2018</i> |
| Adenome | 0.57 vs. 0.47 | sign. |                       |

## Tandem-Studie in Kliniken, Diagnostik

N=856

|     |               |       |                 |
|-----|---------------|-------|-----------------|
| ADR | 44% vs. 36.5% | sign. | <i>GIE 2018</i> |
| AMR | 17% vs. 30%   | sign. |                 |



# Vorsorge-Koloskopie

F-up nach Polypektomie 7.7 Jahre (Burgund)

N=5779

Karzinomrate ggü Normalbevölkerung 1.26

*Cottet et al. Gut 2012*



# Vorsorge-Koloskopie

F-up nach Polypektomie 7.7 Jahre (Norwegen)

N=40826

Karzinomrate ggü Normalbevölkerung 0.96

Advanced Adenomas 1.16

Non-Advanced Adenomas 0.75



# Vorsorge-Koloskopie

JAMA | Original Investigation

## Association of Colonoscopy Adenoma Findings With Long-term Colorectal Cancer Incidence

Benjamin Click, MD; Paul F. Pinsky, PhD; Tom Hickey, BS; Maryam Doroudi, PhD, MPH; Robert E. Schoen, MD, MPH

Sigmoidoskopie-Studie, pos. dann koloskopiert  
N=15935

Auftreten eines KRK



# Vorsorge-Koloskopie

## Auftreten von Darmkrebs

Pro 10.000 Personenjahre

|                     |      |
|---------------------|------|
| Keine Adenome       | 7.5  |
| Kleine Adenome      | 9.1  |
| Fortgeschr. Adenome | 20.0 |

Ca 80% mit Adenomen nachkoloskopiert



# Polypektomie/EMR

| Größere Studien    | n    | Rezidive |         |
|--------------------|------|----------|---------|
|                    |      | 1. Kolo  | 2. Kolo |
| • Australien       | 1000 | 16%      | 4%      |
| • Deutschland West | 243  | 32%      | 16%     |
| • Deutschland Nord | 341  | 42%      | 7%      |

*Moss et al, Gut 2014, Knabe et al. Am J Gastro 2014, Seidel et al Int J Colorectal Dis 2016*

# Polypektomie/EMR



## Accepted Manuscript

Thermal Ablation of Mucosal Defect Margins Reduces Adenoma Recurrence After Colonic Endoscopic Mucosal Resection

Amir Klein, MD, David J. Tate, MA MBBS MRCP, Vanoo Jayasekeran, MBBS FRACP, Luke Hourigan, MBBS FRACP, Rajvinder Singh, MBBS FRACP, Gregor Brown, MBBS FRACP, Farzan F. Bahin, MBBS FRACP, Nicholas Burgess, MBBS FRACP, Stephen J. Williams, MBBS FRACP, Eric Lee, MBBS FRACP, Naaz Sidhu, MBBS FRACP, Karen Byth, Michael J. Bourke, MBBS FRACP

PII: S0016-5085(18)35093-5  
DOI: [10.1053/j.gastro.2018.10.003](https://doi.org/10.1053/j.gastro.2018.10.003)  
Reference: YGAST 62173

To appear in: *Gastroenterology*  
Accepted Date: 3 October 2018



Randomisierte Studie Thermoablation der Ränder  
N=390, flache Adenome > 2 cm

Rezidivrate 5% vs 21%





# Polypektomie unter Clopidogrel

## **Risk of Post-polypectomy Bleeding With Uninterrupted Clopidogrel Therapy in an Industry-independent, Double-blind, Randomized Trial.**

Chan FKL, Kyaw MH, Hsiang JC, Suen BY, Kee KM, Tse YK, Ching JYL, Cheong PK, Ng D, Lam K, Lo A, Lee V, Ng SC.

Gastroenterology. 2018 Oct 25. pii: S0016-5085(18)35193-X. doi: 10.1053/j.gastro.2018.10.036. [Epub ahead of print]

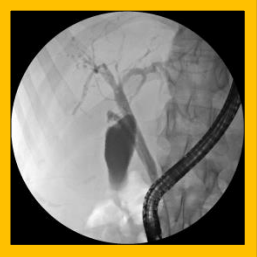
Randomisierte Studie 1 Woche Absetzen (Placebo)  
N=387 (n=216 Polypektomie)

Nachblutung 3.8% vs 3.6%

Thrombose 1.5% vs 2.0%



# Endoskopische Anastomosen



# Pankreascystendrainage

Endoscopy

ORIGINAL ARTICLE

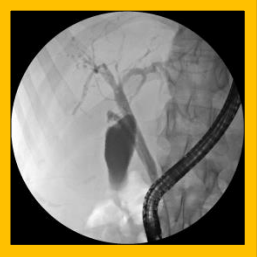
Non-superiority of lumen-apposing metal stents over plastic stents for drainage of walled-off necrosis in a randomised trial

Ji Young Bang, Udayakumar Navaneethan, Muhammad K Hasan, Bryce Sutton, Robert Hawes, Shyam Varadarajulu

RCT n=60 Plastik vs. Metallstents (LAMS)

Klinischer Effekt gleich

Komplikationen 7% vs 32%



# Pankreascystendrainage

## Accepted Manuscript

An Endoscopic Transluminal Approach, Compared to Minimally Invasive Surgery, Reduces Complications and Costs for Patients With Necrotizing Pancreatitis

Ji Young Bang, MD, MPH, Juan Pablo Arnoletti, MD, Bronte A. Holt, MBBS, FRACP, Bryce Sutton, PhD, Muhammad K. Hasan, MD, Udayakumar Navaneethan, MD, Nicholas Feranec, MD, C.Mel Wilcox, MD, Benjamin Tharian, MD, Robert H. Hawes, MD, Shyam Varadarajulu, MD



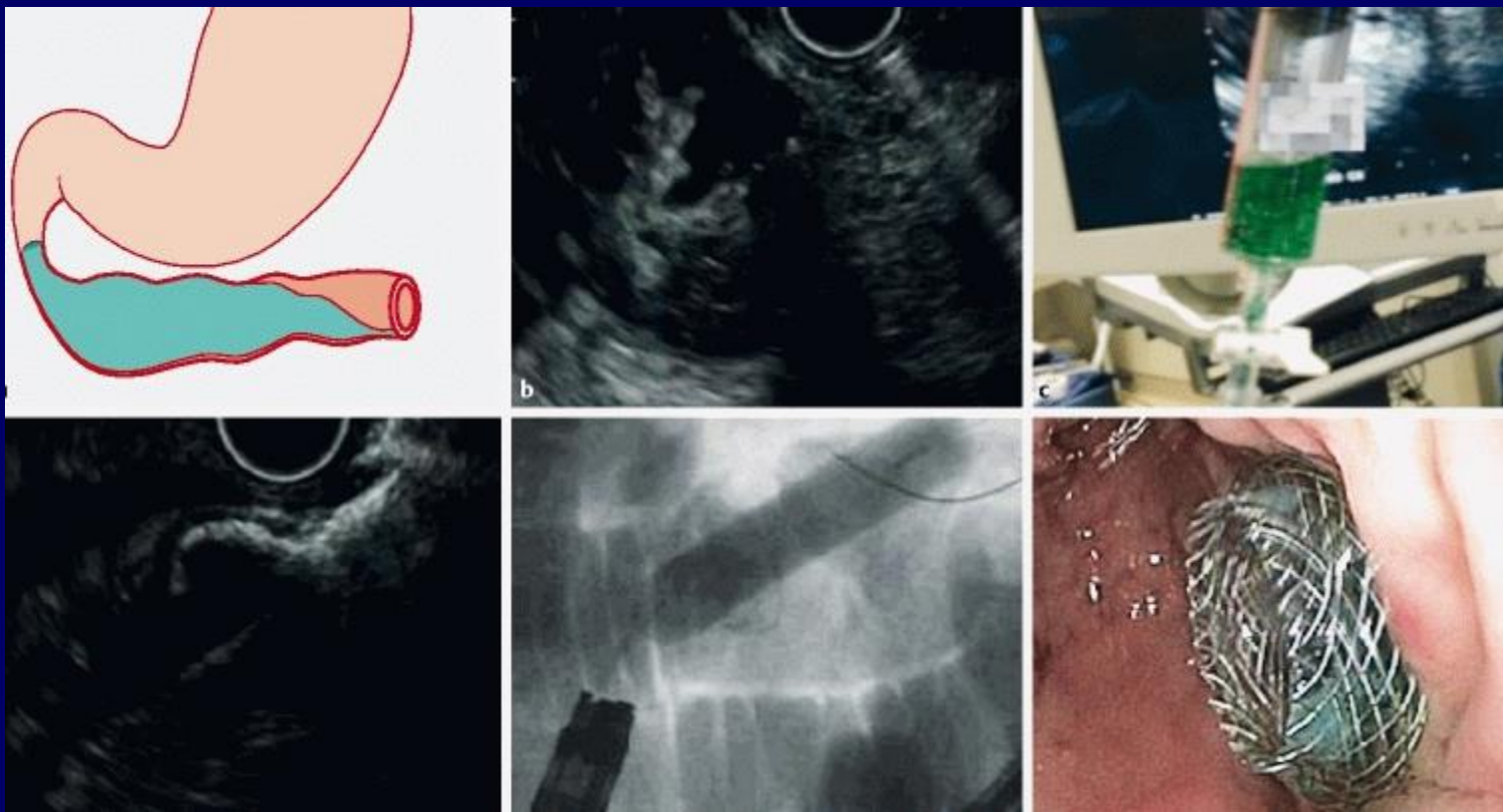
RCT n=66 Laparoskopie versus Endoskopie (step-up)

Komplikationen 41% vs 12%

QoL nach 3 Monaten fakto 2.10 (SF-36)



# Endoskopische Anastomosen





# Adipositas therapie

## Gastric restrictive operations

- Laparoscopic adjustable gastric banding
- Sleeve gastrectomy
- Vertical banded gastroplasty

## Malabsorptive operations

- Biliopancreatic diversion
- BPD with duodenal switch

## Malabsorptive/restrictive operations

- Roux-en-Y gastric bypass
- Mini-gastric bypass

## Gastric stimulation

- Gastric pacemaker
- Intragastric electrical stimulation

Endoskopische Gastroplastie

Endoskopischer Bypass

Endobarrier

Anastomosen

Duodenale Abrasion



# Adipositas therapie

Gastroenterology 2017;152:1791–1801

## Endoscopic Bariatric and Metabolic Therapies: New and Emerging Technologies



Shelby Sullivan<sup>1</sup>



Steven A. Edmundowicz<sup>1</sup>



Christopher C. Thompson<sup>2</sup>

<sup>1</sup>Division of Gastroenterology, University of Colorado School of Medicine, Aurora, Colorado; and <sup>2</sup>Division of Gastroenterology, Brigham and Women's Hospital, Boston, Massachusetts



Infektanfälligkeit  
Allergie  
Neurodermitis  
Übergewicht  
Osteoporose  
Diabetes  
Arthritis  
Arthrose  
Gicht



Schlaganfall, Thrombose  
Karies  
Parodontose  
Herzinfarkt  
Erkrankungen der Verdauungsorgane  
Bandscheibenschäden  
Arteriosklerose  
Rheumat. Erkrankungen  
Verstopfung  
Steinleiden

# Adipositas therapie

## Gastric Endoscopic Bariatric Therapies

**A**  
ReShape  
Integrated  
Dual Balloon  
System

**B**  
Orbera  
Intragastric  
Balloon  
System

**C**  
Obalon  
Balloon  
System

**D**  
Spatz  
Adjustable  
Balloon  
System

**E**  
Ellipse  
Balloon

**F**  
Transpyloric  
Shuttle

**G**  
Aspiration  
Therapy

**H**  
POSE  
Procedure

**I**  
Endoscopic  
Sleeve  
Gastroplasty  
(ESG)

## Small Bowel Endoscopic Bariatric Therapies

**A**  
EndoBarrier

**B**  
Revita DMR

**C**  
ValenTx  
Endoluminal  
Bypass

**D**  
Incisionless  
Anastomotic  
System





# Adipositas therapie

Studien zur OP

Schlauchmagen fast gleichwertig zu Bypass

z.B. RCT n=240, 5-Jahres F-up  
Gewichtsabnahme 49% vs 57%  
Diabetes-Besserung 37% vs. 45%

*Salminen et al., Peterli et al., Shubeck et al. JAMA 2018*



# Barrett-Ösophagus

Neoplastischer Barrett ab LGIN (Zweitmeinung)

Totaleradikation des Barrett

Kombination aus Resektion und Ablation



# Barrett-Ösophagus

## Accepted Manuscript

Radiofrequency ablation compared with argon plasma coagulation after endoscopic resection of high-grade dysplasia or T1 adenocarcinoma in Barrett's esophagus: a randomized pilot study (BRIDE)

Mohammad Farhad Peerally, Pradeep Bhandari, Krish Ragunath, Hugh Barr, Rehan Haidry, Laurence Lovat, Howard Smart, Rebecca Harrison, Clive Stokes, Karen Smith, Tom Morris, John S. de Caestecker

PII: S0016-5107(18)32898-0

DOI: [10.1016/j.gie.2018.07.031](https://doi.org/10.1016/j.gie.2018.07.031)

Reference: YMGE 11172

To appear in: *Gastrointestinal Endoscopy*





# Barrett-Ösophagus: RFA vs. APC

| N=76                  | RFA | APC |
|-----------------------|-----|-----|
| Eradikation Dysplasie | 79% | 84% |
| Eradikation Barrett   | 56% | 48% |
| Strikturen            | 8%  | 8%  |



# Barrett-Ösophagus: Neoplasie-Prävention

## Esomeprazole and aspirin in Barrett's oesophagus (AspECT): a randomised factorial trial

*Janusz A Z Jankowski, John de Caestecker, Sharon B Love, Gavin Reilly, Peter Watson, Scott Sanders, Yeng Ang, Danielle Morris, Pradeep Bhandari, Stephen Attwood, Krish Ragunath, Bashir Rameh, Grant Fullarton, Art Tucker, Ian Penman, Colin Rodgers, James Neale, Claire Brooks, Adelyn Wise, Stephen Jones, Nicholas Church, Michael Gibbons, David Johnston, Kishor Vaidya, Mark Anderson, Sherzad Balata, Gareth Davies, William Dickey, Andrew Goddard, Cathryn Edwards, Stephen Gore, Chris Haigh, Timothy Harding, Peter Isaacs, Lucina Jackson, Thomas Lee, Peik Loon Lim, Christopher Macdonald, Philip Mairs, James McLoughlin, David Monk, Andrew Murdock, Iain Murray, Sean Preston, Stirling Pugh, Howard Smart, Ashraf Soliman, John Todd, Graham Turner, Joy Worthington, Rebecca Harrison, Hugh Barr, Paul Moayyedi*

*Lancet 2018*



# Barrett-Ösophagus: Neoplasie-Prävention

AspECT Trial, n=2557

4 Gruppen Omeprazol 20 und 40 mg  
ASS 300 mg oder nicht

Follow-up 8.9 Jahre

Outcome: Gesamtüberleben (?)

*Jankowski et al. Lancet 2018*



# Barrett-Ösophagus: Neoplasie-Prävention

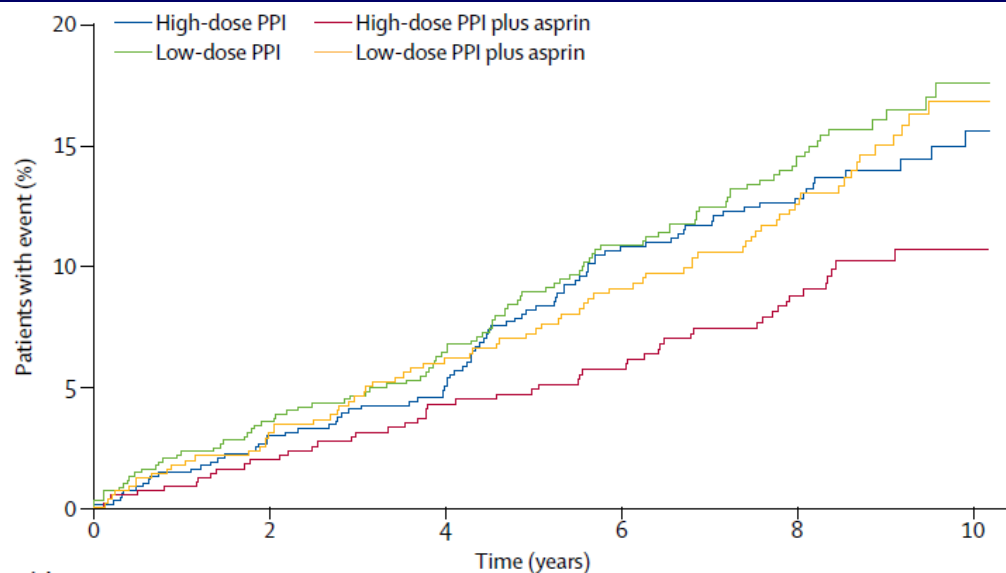
AspECT Trial, n=2557

4 Gruppen Omeprazol 20 und 40 mg  
ASS 300 mg oder nicht

Planänderung in der Mitte der Studie  
Halbe Fallzahl, längeres F-up



# Barrett-Ösophagus: Neoplasie-Prävention



## Number at risk

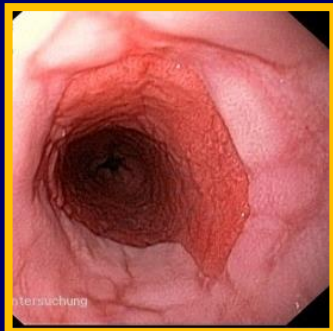
|                            |     |     |     |     |     |     |     |     |     |     |     |
|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| High-dose PPI              | 698 | 668 | 644 | 629 | 616 | 587 | 563 | 552 | 523 | 260 | 128 |
| High-dose PPI plus aspirin | 572 | 554 | 530 | 516 | 503 | 493 | 477 | 459 | 432 | 242 | 135 |
| Low-dose PPI               | 699 | 665 | 650 | 629 | 608 | 586 | 565 | 551 | 522 | 249 | 130 |
| Low-dose PPI plus aspirin  | 566 | 550 | 533 | 512 | 498 | 486 | 471 | 459 | 436 | 259 | 135 |

**Figure 2: Event-free survival**

Curves show survival until the composite endpoint events (high-grade dysplasia, oesophageal adenocarcinoma, all-cause mortality) in the (A) high-dose PPI and low-dose PPI groups, (B) the aspirin and no aspirin groups, and (C) all four treatment groups. PPI=proton-pump inhibitor.

*Jankowski et al. Lancet 2018*





# Barrett-Ösophagus: Neoplasie-Prävention

|                           | <u>PPI 40 mg.</u> | PPI 20 mg | p     | ASS     | <u>kein ASS</u> | p     |
|---------------------------|-------------------|-----------|-------|---------|-----------------|-------|
| Gesamt-Mortalität         | 79/1270           | 105/1265  | 0.039 | 73/1138 | 90/1142         | 0.16  |
| <u>Spezif. Mortalität</u> | 8/1270            | 12/1265   | 0.34  | 8/1138  | 8/1142          | 0.98  |
| <u>Adeno-Ca Barrett</u>   | 40/1270           | 41/1265   | 0.86  | 35/1138 | 35/1142         | 0.92  |
| HGIN Barrett              | 44/1270           | 59/1270   | 0.12  | 37/1138 | 55/1142         | 0.053 |
| LGIN <u>initial</u>       | 29/1270           | 42/1265   | ?     | 25/1138 | 46/1142         | ?     |



# Blutungsprophylaxe PPI



# Blutungsprophylaxe PPI

## *The* NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812

DECEMBER 6, 2018

VOL. 379 NO. 23

### Pantoprazole in Patients at Risk for Gastrointestinal Bleeding in the ICU

M. Krag, S. Marker, A. Perner, J. Wetterslev, M.P. Wise, J.C. Schefold, F. Keus, A.B. Guttormsen, S. Bendel, M. Borthwick, T. Lange, B.S. Rasmussen, M. Siegemund, H. Bundgaard, T. Elkmann, J.V. Jensen, R.D. Nielsen, L. Liboriussen, M.H. Bestle, J.M. Elkjær, D.F. Palmqvist, M. Bäcklund, J.H. Laake, P.M. Bådstøløkken, J. Grönlund, O. Breum, A. Walli, R. Winding, S. Iversen, I.-L. Jarnvig, J.O. White, B. Brand, M.B. Madsen, L. Quist, K.J. Thornberg, A. Møller, J. Wiis, A. Granholm, C.T. Anthon, T.S. Meyhoff, P.B. Hjortrup, S.R. Aagaard, J.B. Andreasen, C.A. Sørensen, P. Haure, J. Hauge, A. Hollinger, J. Scheuzger, D. Tuchscherer, T. Vuillimienet, J. Takala, S.M. Jakob, M.L. Vang, K.B. Pælestik, K.L.D. Andersen, I.C.C. van der Horst, W. Dieperink, J. Fjølner, C.K.W. Kjer, C. Sølling, C.G. Sølling, J. Karttunen, M.P.G. Morgan, B. Sjøbø, J. Engstrøm, B. Agerholm-Larsen, and M.H. Møller, for the SUP-ICU trial group\*



# Blutungsprophylaxe PPI

N=3298, Hochrisiko-Patienten auf Intensiv  
40 mg Panto vs Placebo

|                        |                 |
|------------------------|-----------------|
| Mortalität             | 31.1% vs. 30.4% |
| Komplikationen (komb.) | 21.9% vs 22.6%  |
| Blutungen              | 2.% vs 4.2%     |
| Pneumonie              | 16.2% vs 16.2%  |
| CD Infektion           | .12% vs 1.5%    |



# Barrett-Ösophagus: Neoplasie-Prävention

Empfehlung ?

40 mg PPI plus 300 mg ASS

Warum ?