



Chirurgische behandeling colorectaal carcinoom



UMC Utrecht

Helma van Grevenstein, chirurg, UMCU

Masterclass Enterologie Oncogie 27 September 2024, Amersfoort

Introductie

Incidentie
Bevolkingsonderzoek darmkanker
Etiologie
Symptomen
Diagnostiek
Chirurgische behandeling
(Peritoneaal metastasen)
Complicatie management
Studies



Incidentie

12.000 patiënten per jaar in Nederland

Vijfde meest voorkomende vorm van kanker in NL

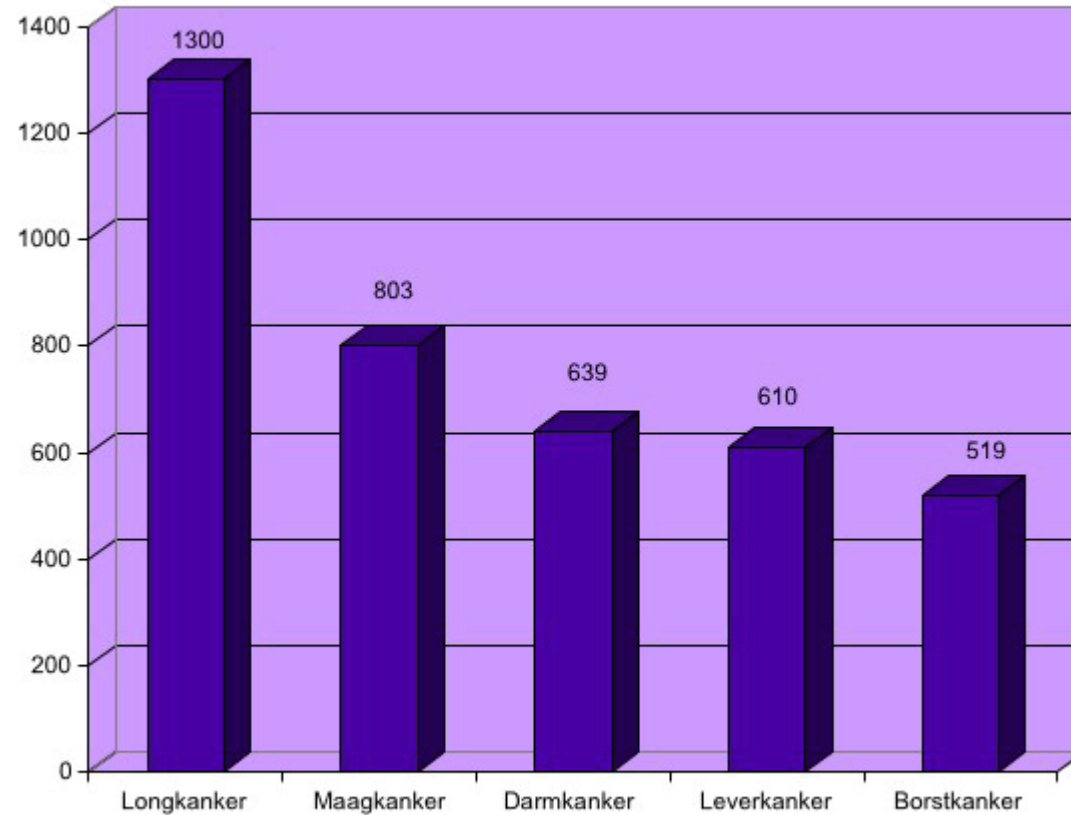
Jaarlijks overlijden 4500 mensen aan darmkanker

Incidentie neemt toe bij stijgen van leeftijd

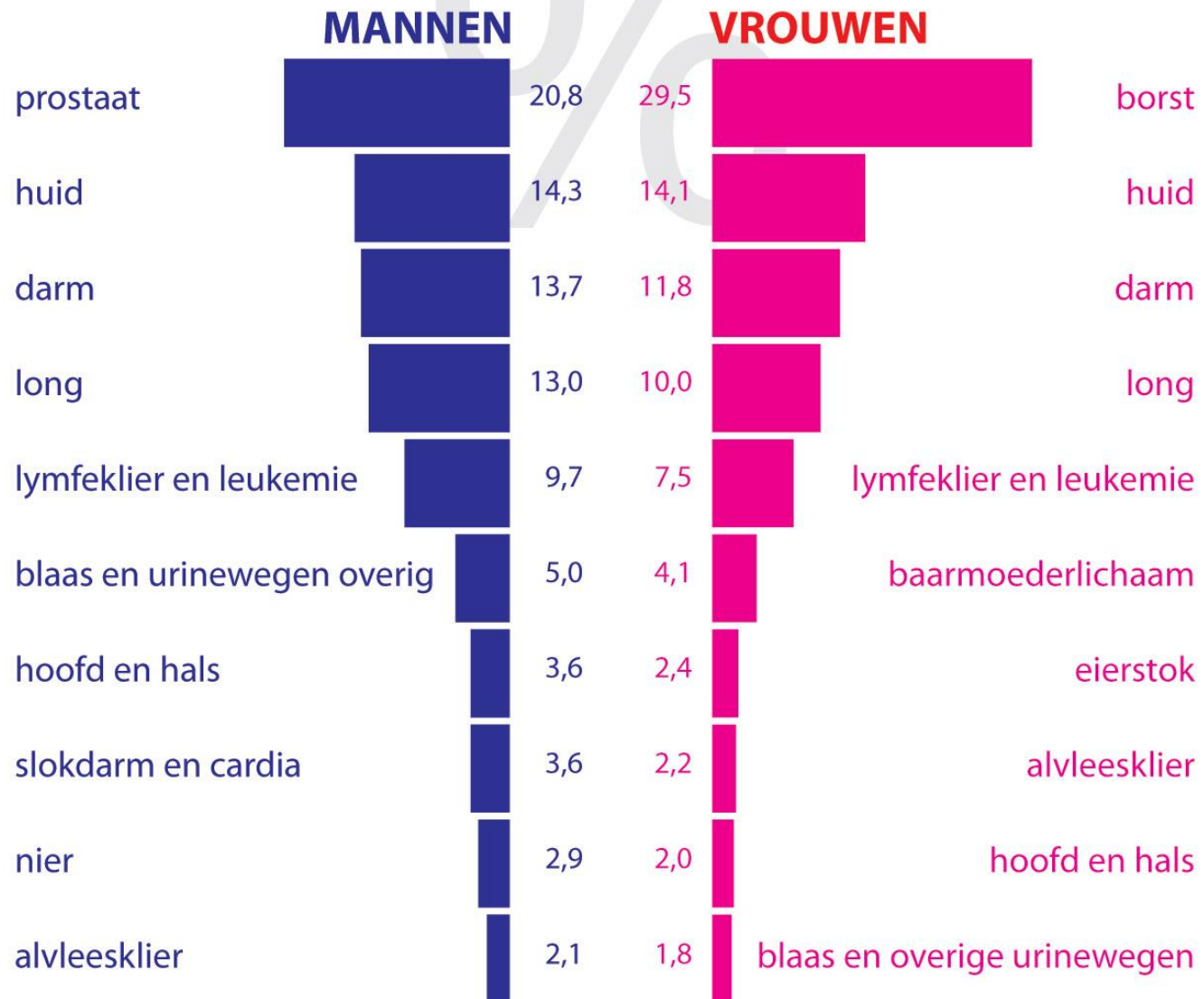
5,6%-6,3% kans om darmkanker te krijgen

Incidentie

Top 5 kankersoorten wereldwijd



Aantal sterfgevallen per kankersoort per jaar x 1.000. Bron: WHO, 2009



Kanker in cijfers

in Nederland



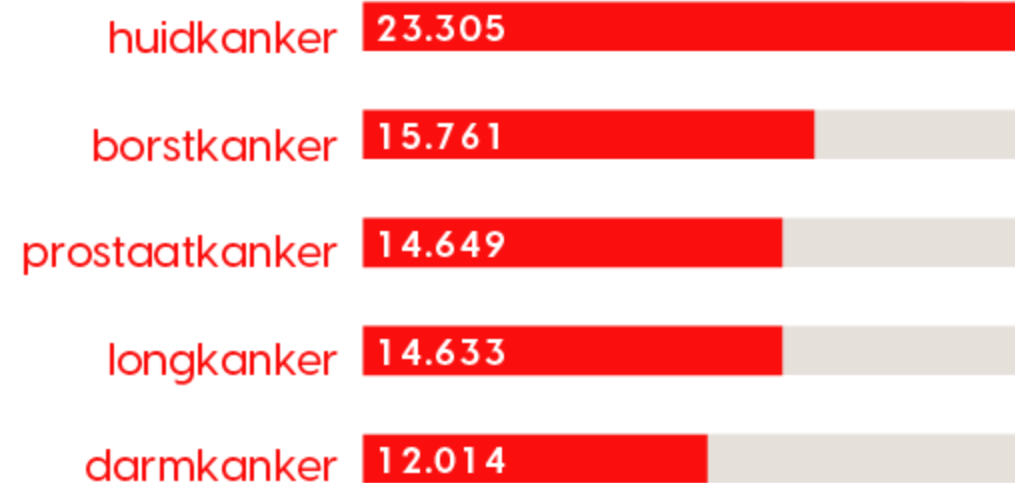
1 op de 3 mensen
krijgt ooit kanker

5-jaarsoverlevingskans



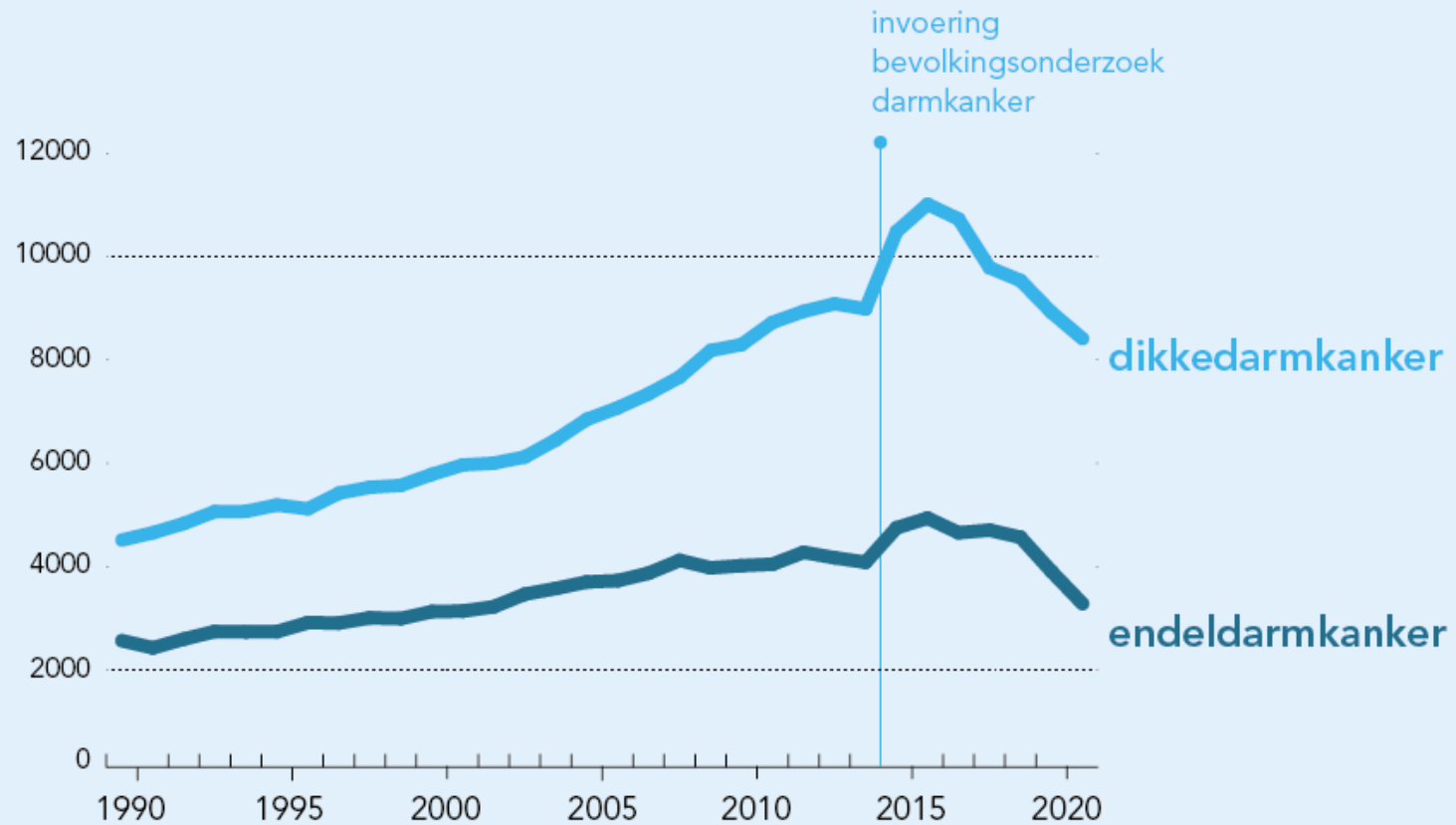
5 meest voorkomende soorten kanker

diagnoses in 2022



Bron: Nederlandse Kankerregistratie ©IKNL

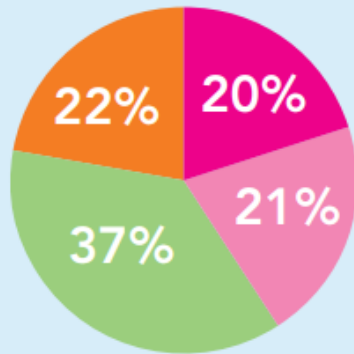
Incidentie



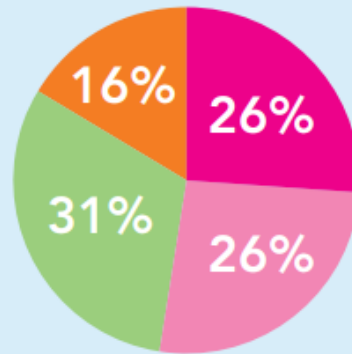
Leeftijdsverdeling

Darmkanker is een ziekte die voornamelijk ouderen treft;
37% van alle patiënten met darmkanker is **75 jaar of ouder**

dikkedarmkanker



endeldarmkanker



<60 jaar

60 - 69 jaar

70 - 79 jaar

80+ jaar

Etiologie

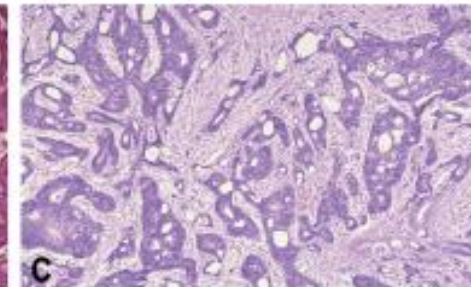
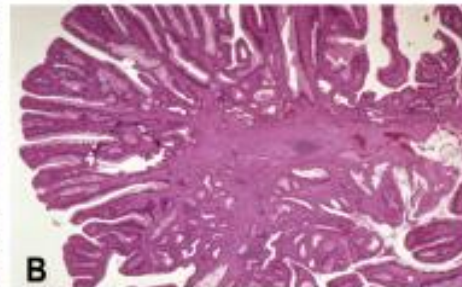
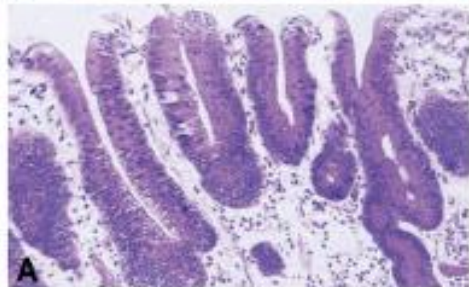
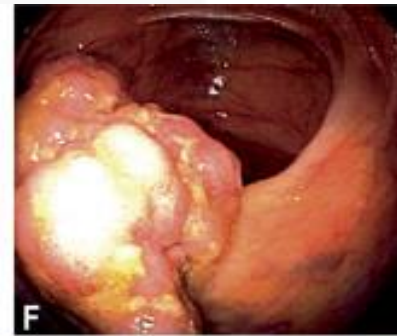
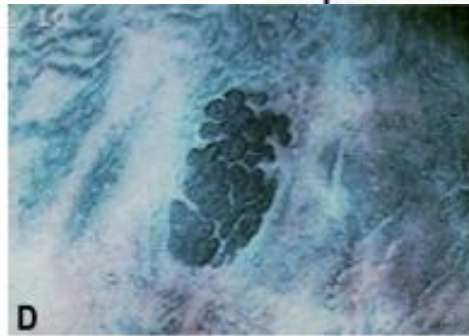
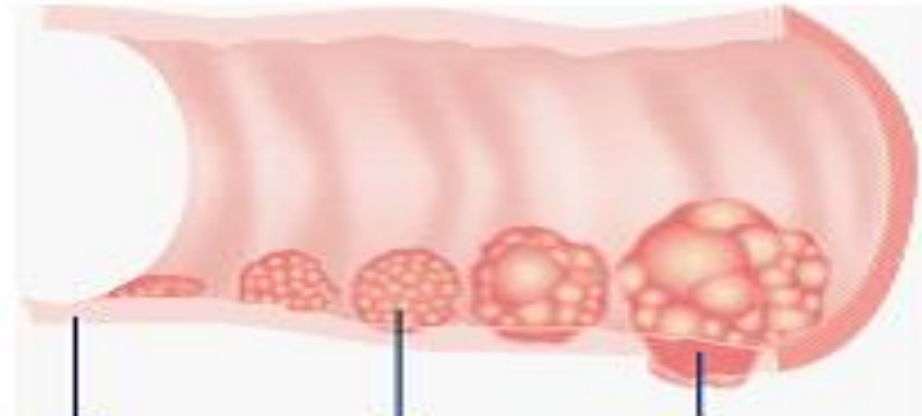
Darmslijmvlies wordt in 3-4 dagen vervangen
Poliepen ontstaan door verstoring van dit herstelproces
In principe een goedaardig ouderdomseffect

Bevolking >50 jaar heeft 25% poliepen
Kleine poliepen geven geen klachten

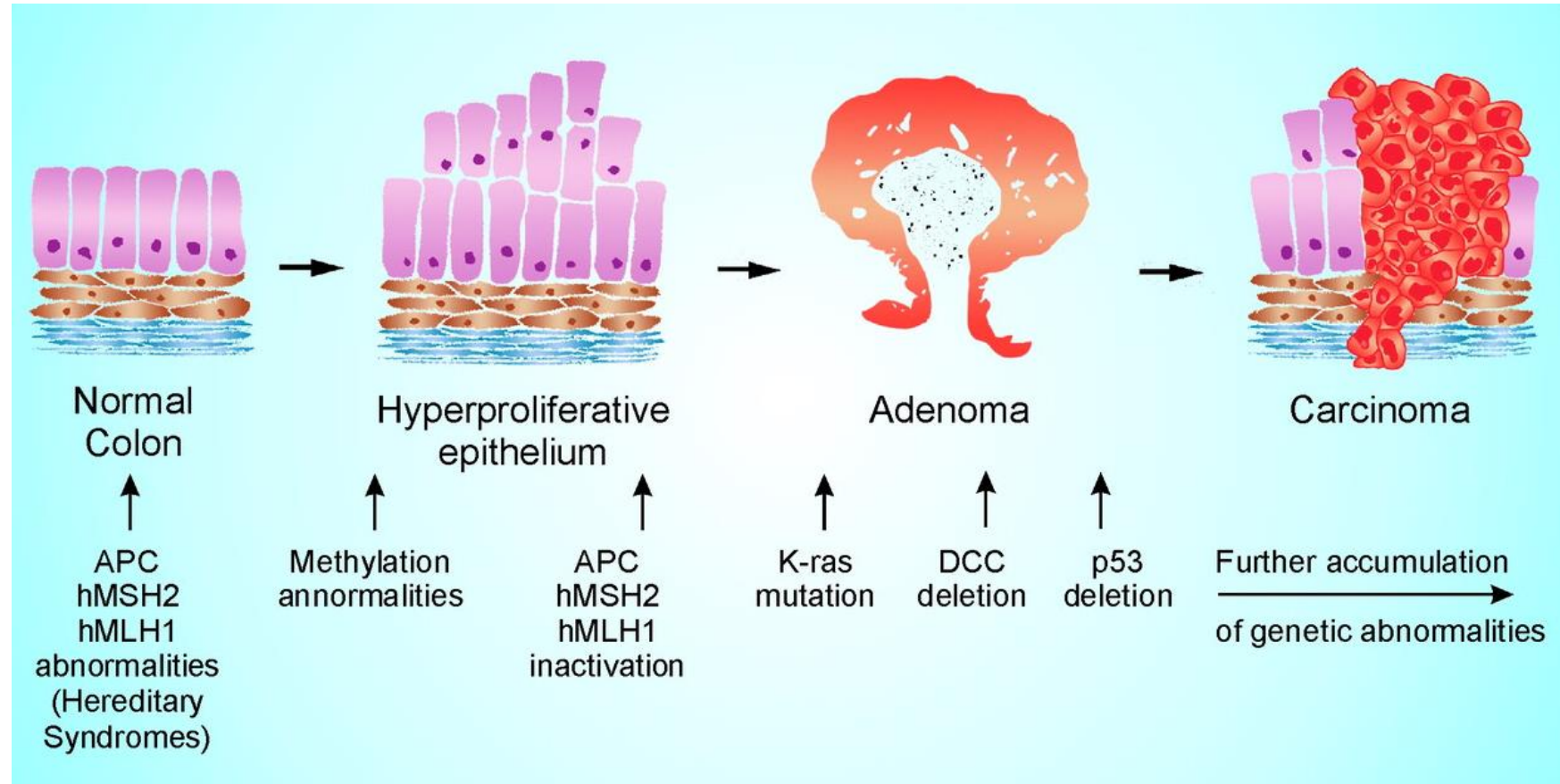
Kanker ontstaat uit een adenoom
Niet elke adenoom wordt kanker

Grote adenomen hebben meer kans om kwaadaardig te worden

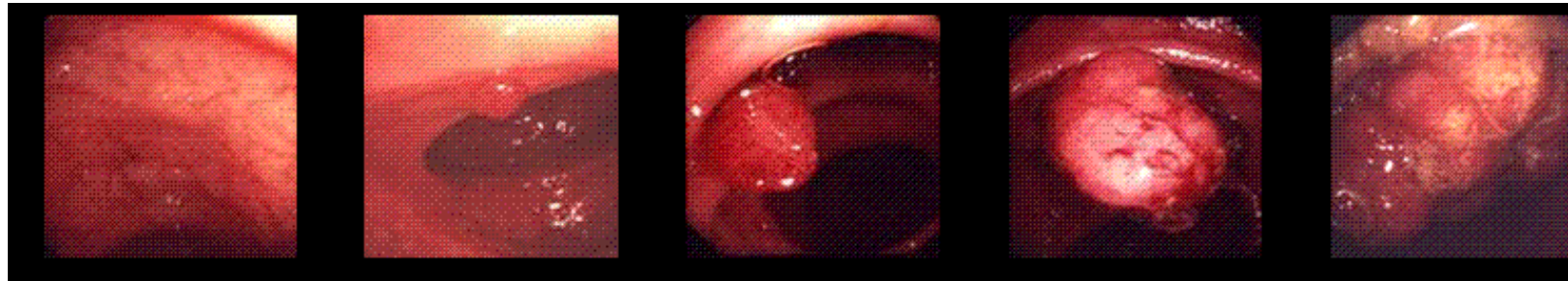
Adenoom naar Carcinoom



Adenoom naar Carcinoom



Adenoom naar Carcinoom



Hyperproliferatie

Vroeg
adenoom

Intermed.
adenoom

Laat
adenoom

Carcinoom



Etiologie

Sporadisch (voeding, roken)

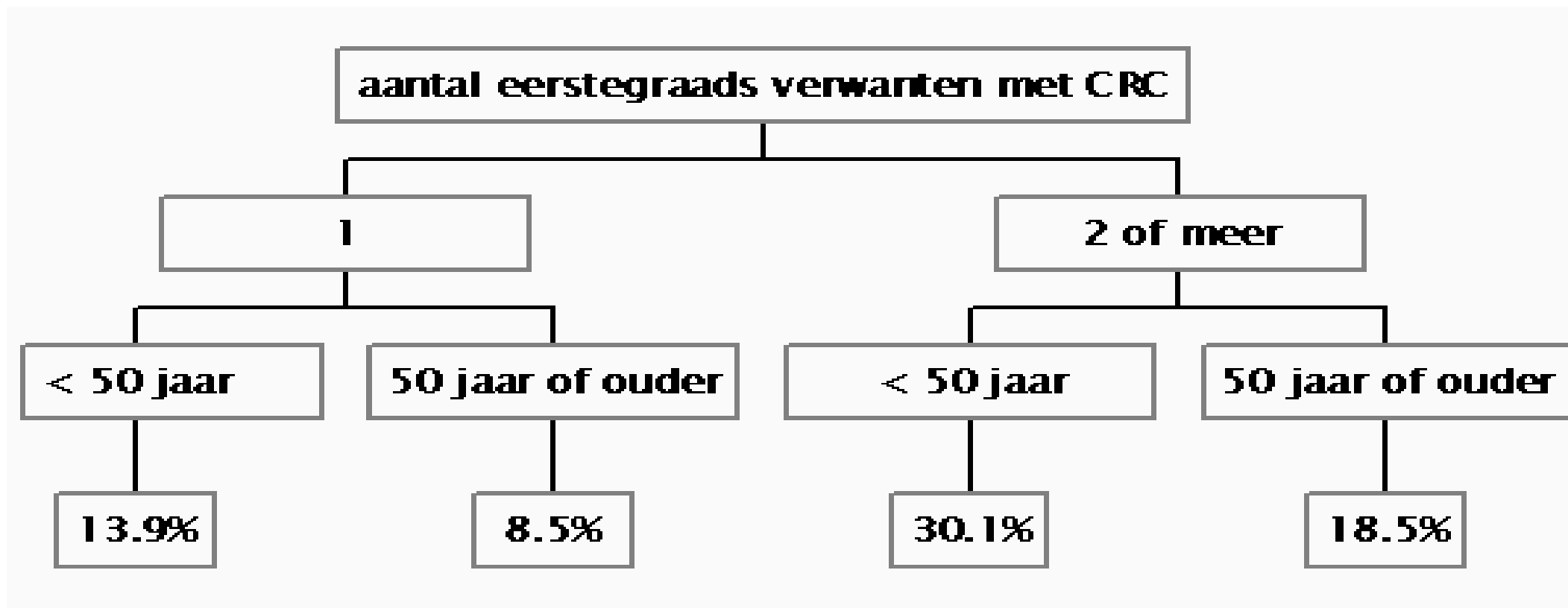
Erfelijk

- FAP (APC-gen mutatie)
- AFAP (APC-gen mutatie)
- MAP (MUTYH-gen mutatie)
- HNPCC (MMR-gen mutatie)

Familiair CRC



Familiair CRC



Risicofactoren colon carcinoom

- Ziekte van Crohn of colitis ulcerosa
- Leef en eetgewoonten
(obesitas, roken, alcohol, rood vlees)
- Oudere leeftijd

- Aanwezigheid van poliepen
- Eerdere behandeling darmkanker
- Eerste graad familielid



Symptomen

- Beginstadium geeft meestal geen klachten
- Veranderd ontlastingpatroon
- Bloed en/of slijm
- Loze aandrang
- Bloedarmoede
- Ileus
- Gewichtsverlies
- Aanhoudende buikpijn, krampen, zwelling

Colon Cancer
Signs and Symptoms

PACE HOSPITALS
State-of-the-art Liver and Pancreas Transplant Centre

Bowel habits changes

Maroon colored or black stool

Rectal bleeding

Abdominal discomfort

Bowel doesn't empty completely

Abdomen fullness feeling

Fatigue

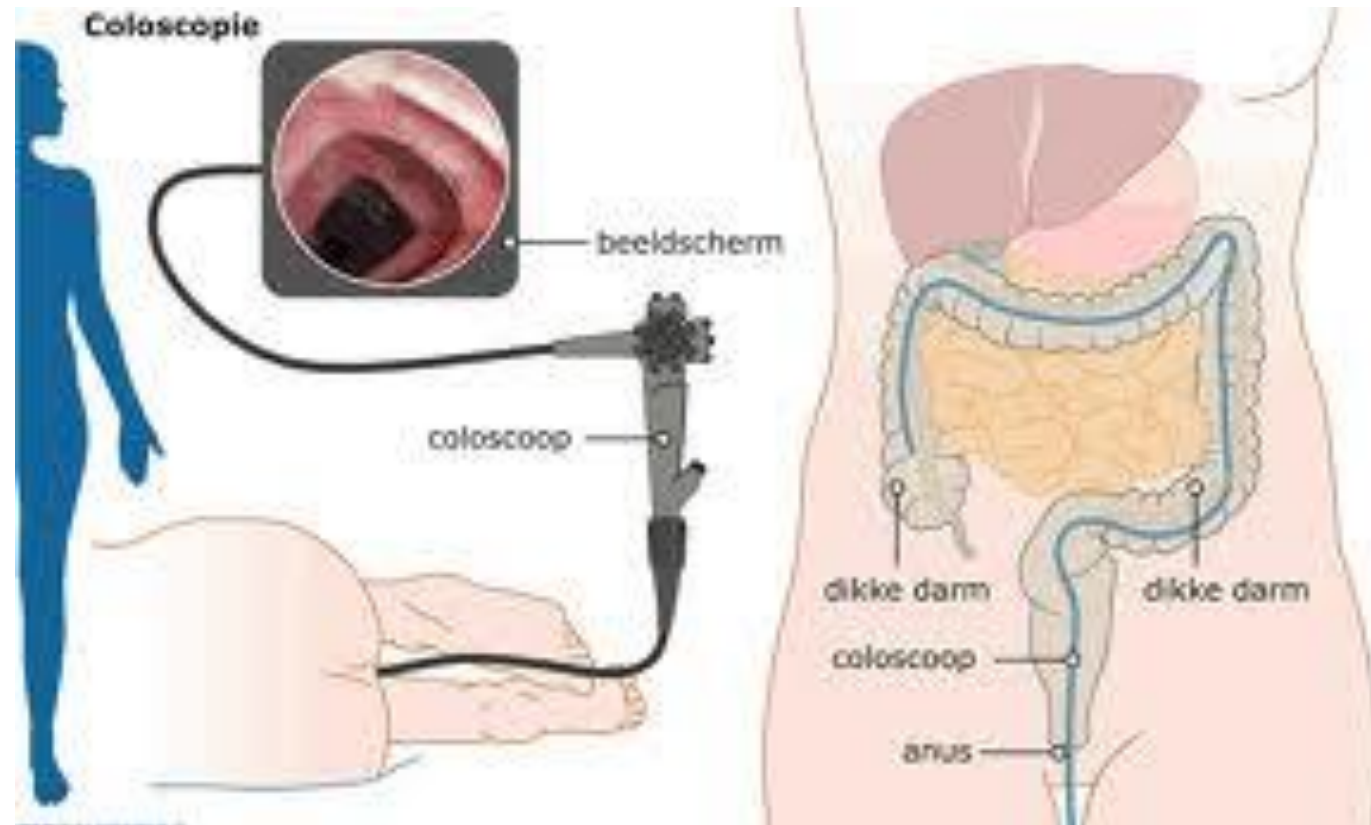
Weight loss

Hyderabad, Telangana, India | 040 4848 6868 | pacehospital.com | @pacehospitals | YouTube | Facebook | LinkedIn | Instagram | X

Diagnostiek

Colonoscopie

- Bipten voor PA onderzoek
- Spot



coloscopie



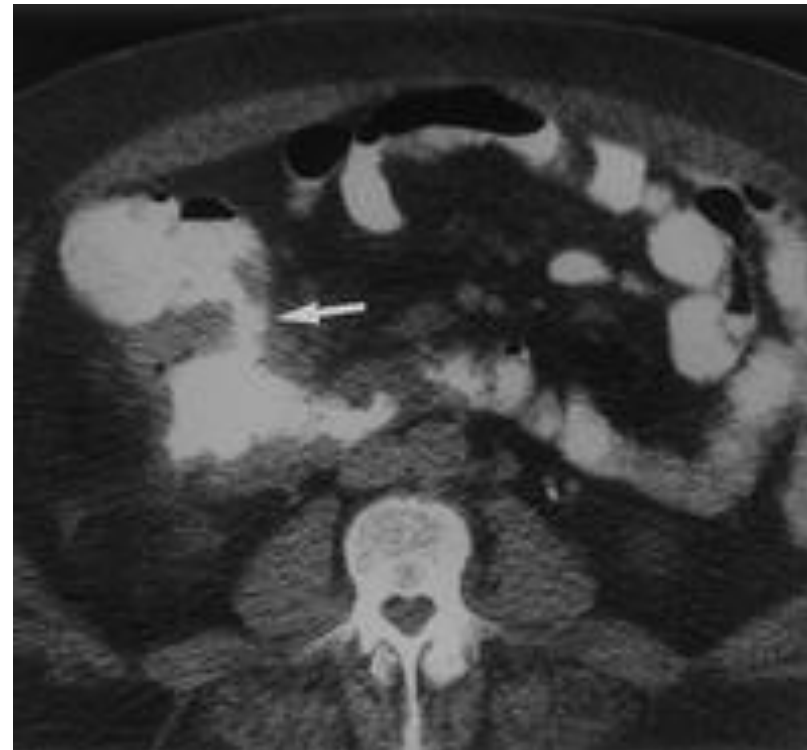
Diagnostiek

CT abdomen

- positie en grootte
- Levermetastasen
- Peritoneaal metastasen

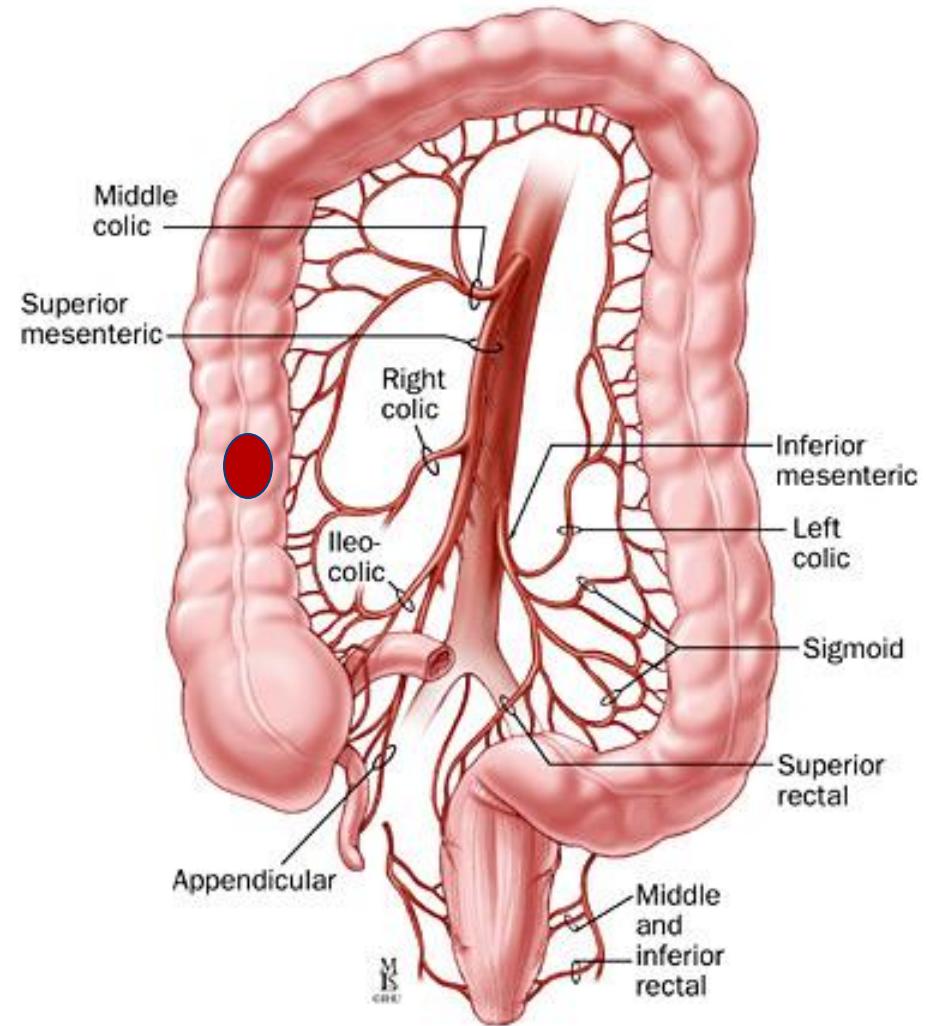
CT thorax

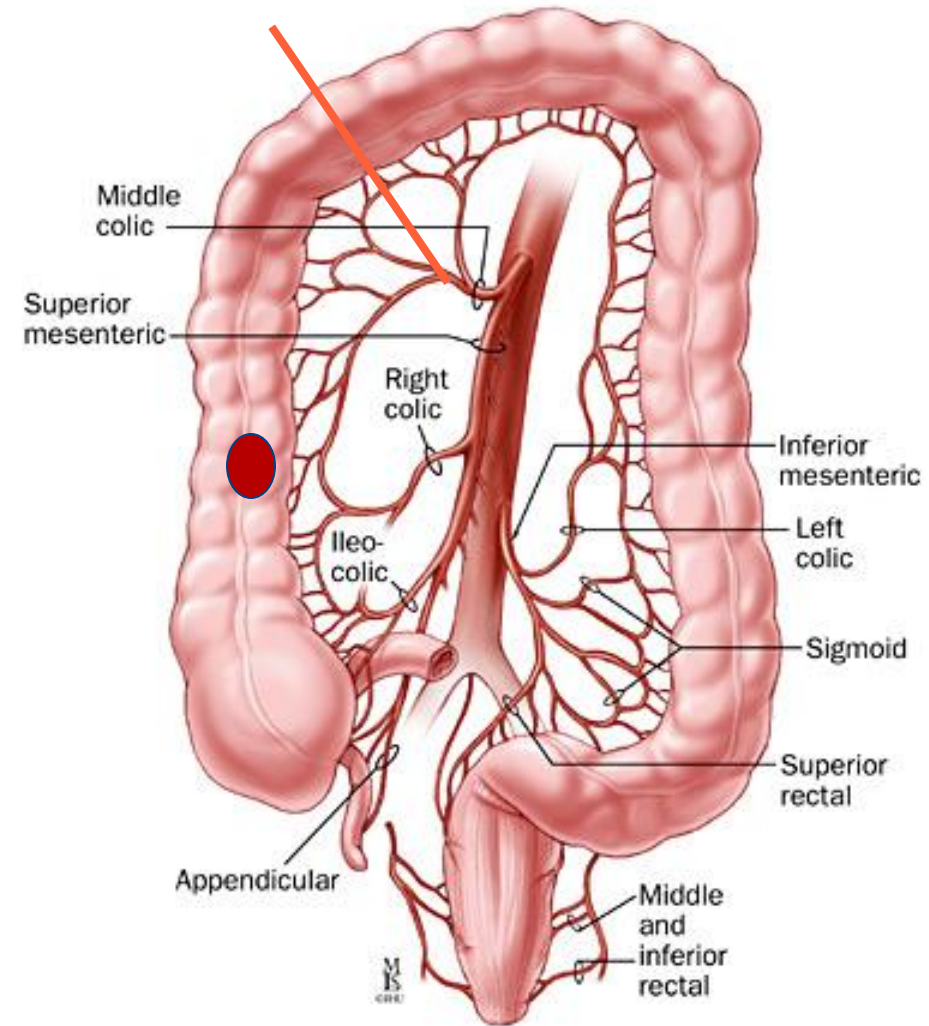
- Pulmonale metastasen

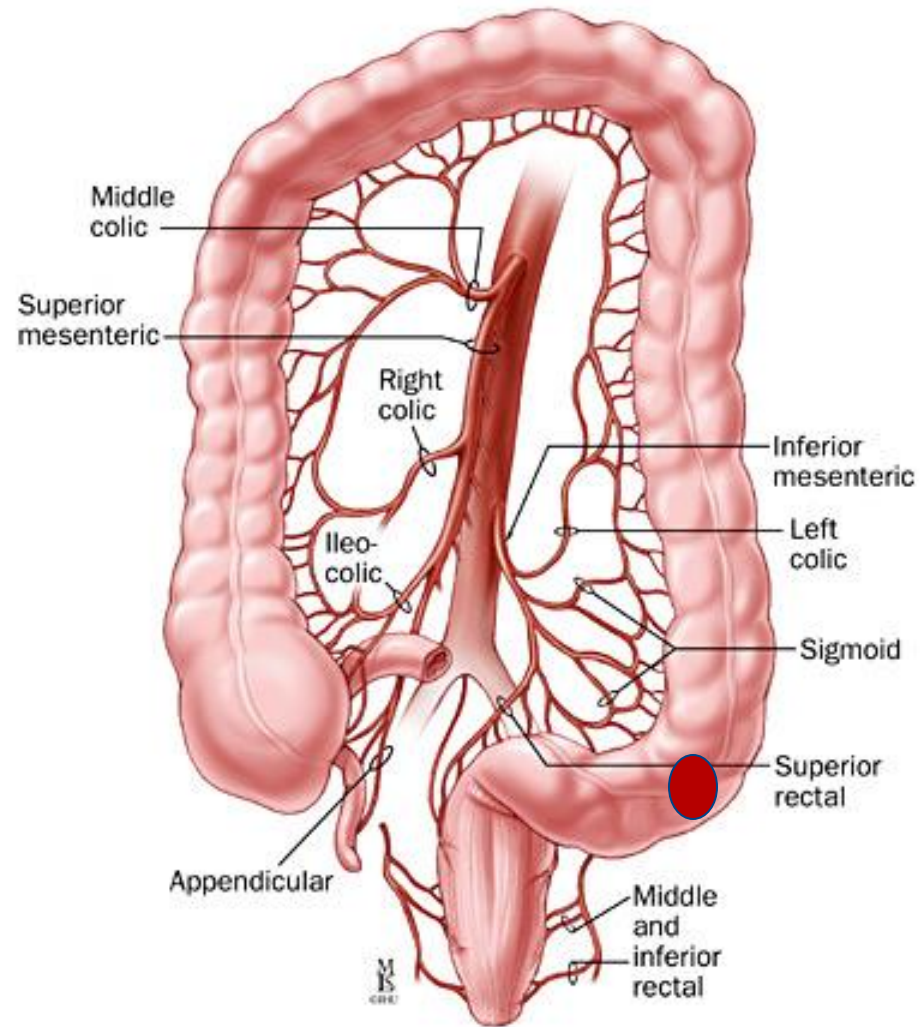


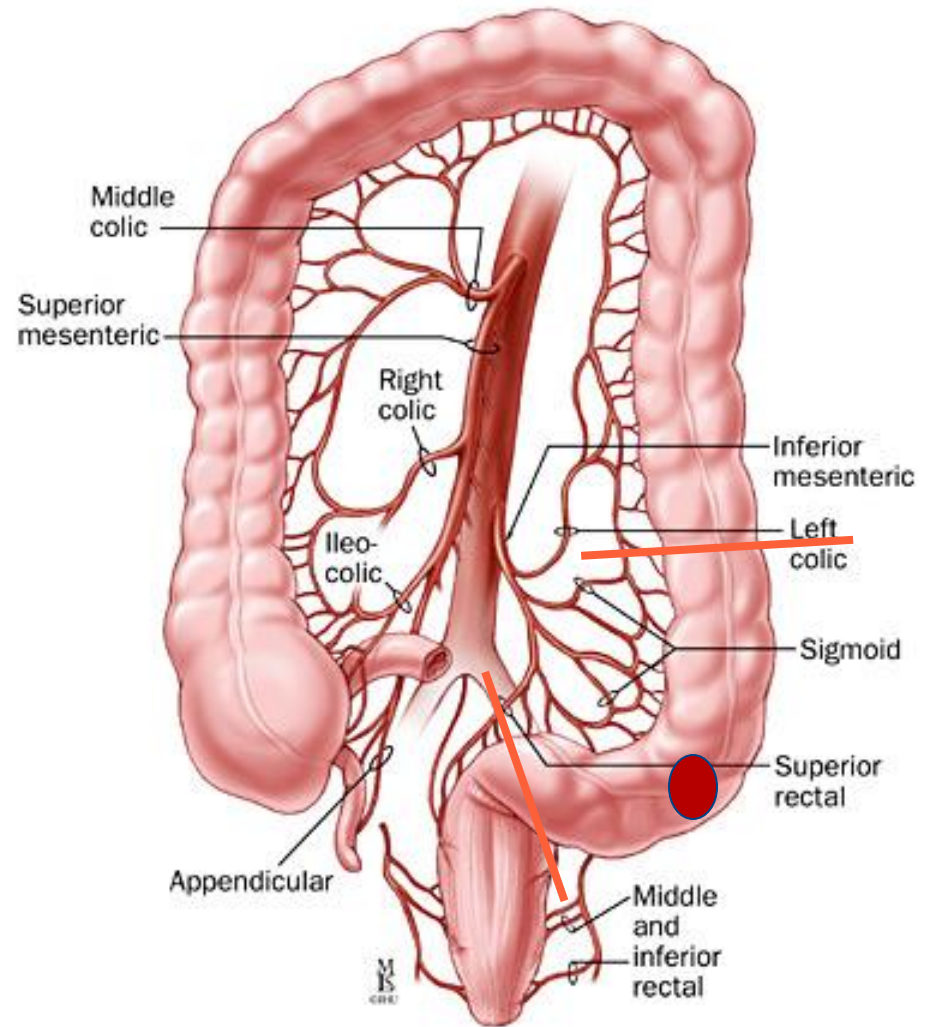
Chirurgie

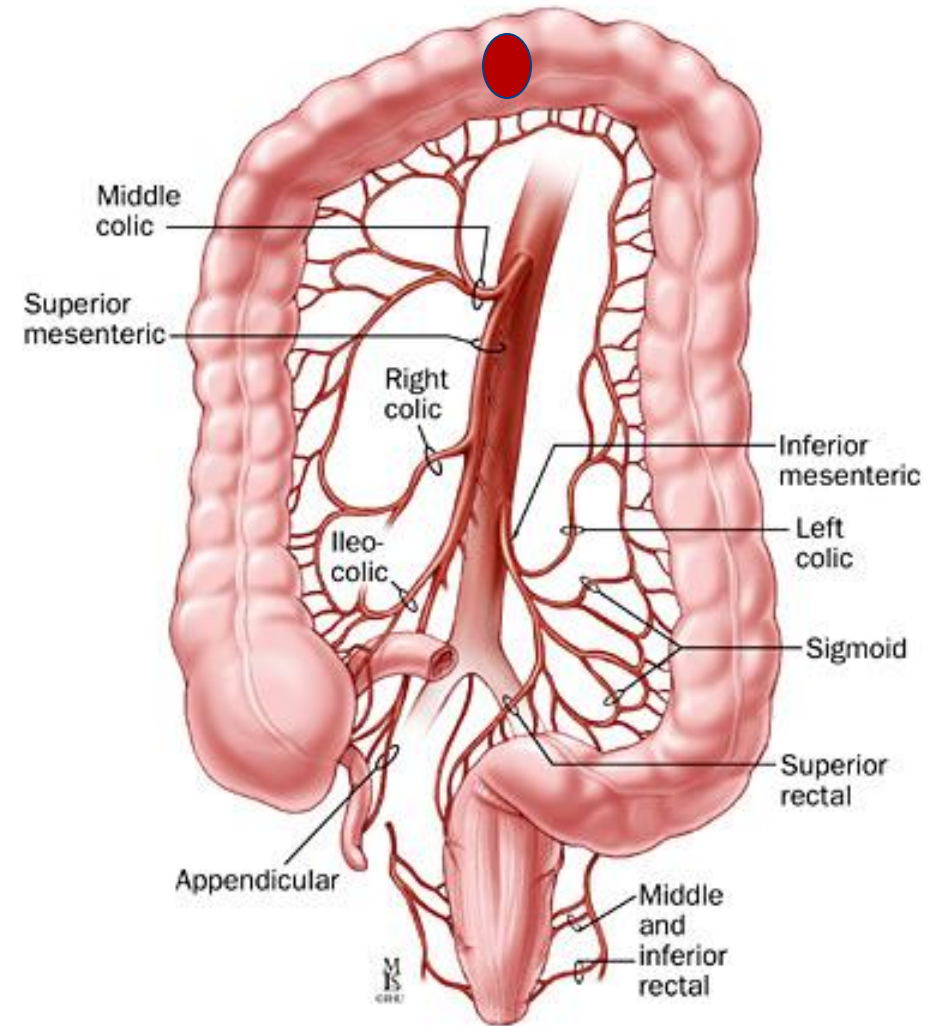


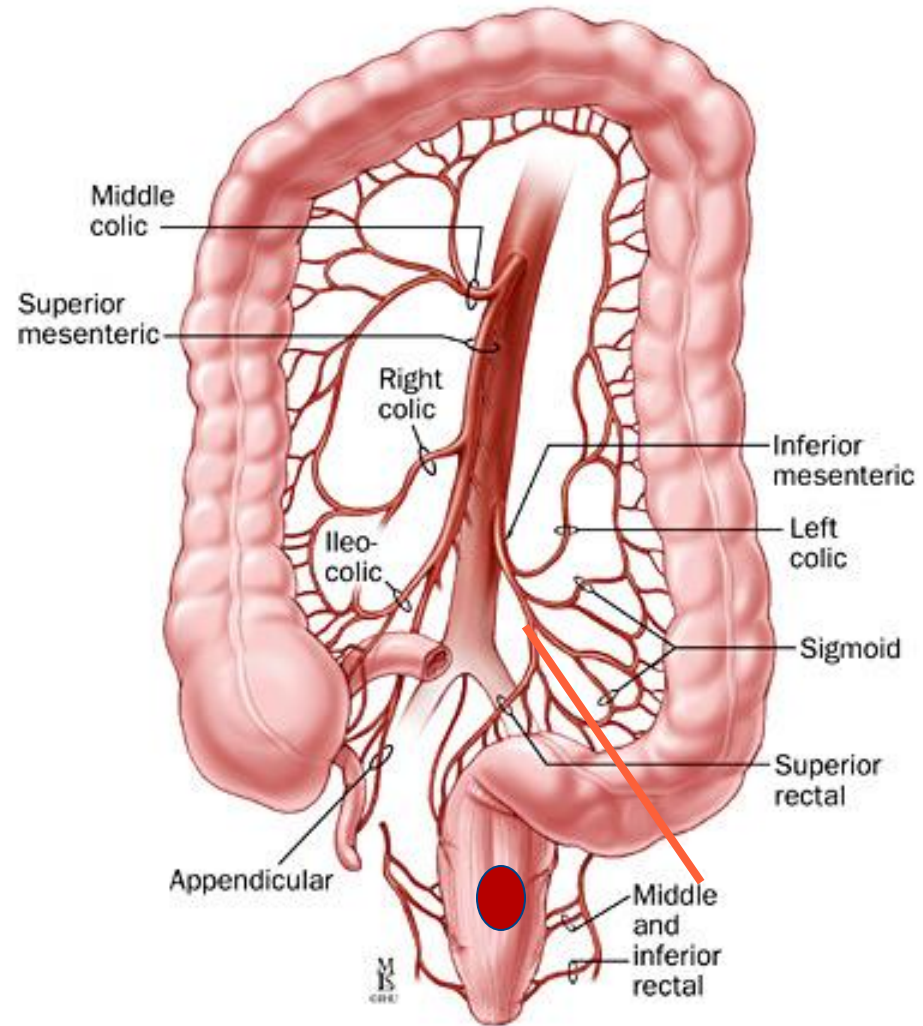












Rectumcarcinoom

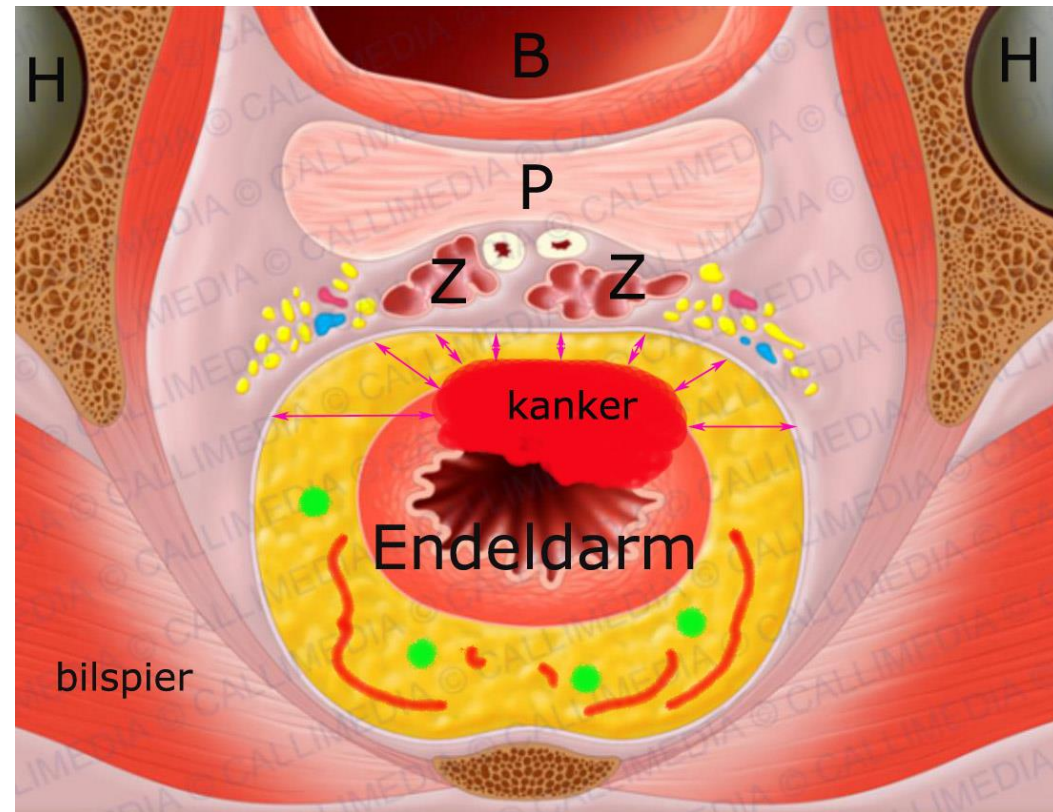
Afhankelijk van stadium een voorbehandeling

Radiotherapie

Chemoradiotherapie

Resectie

Wait en See

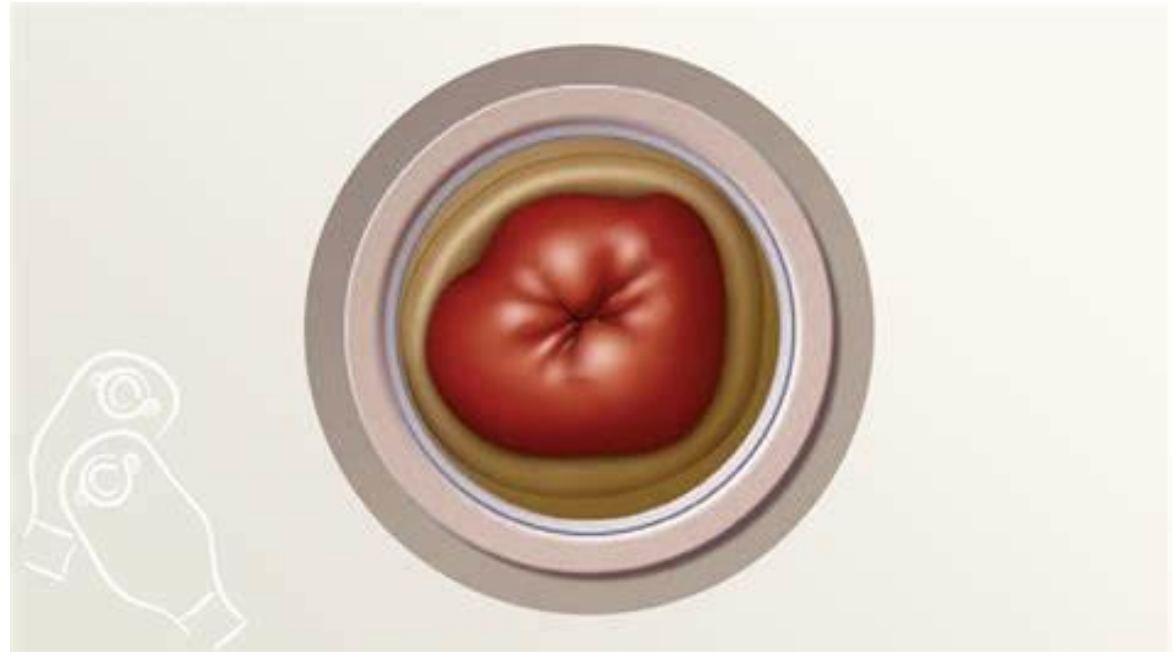


Stoma

Welke patienten krijgen een stoma?

Welk soort stoma's?

Verpleegkundige interventies



Wie krijgt een stoma?

Patienten die voorbehandeld zijn (rectumcarcinoom)

Hoog risico patienten

Slechte sphincter

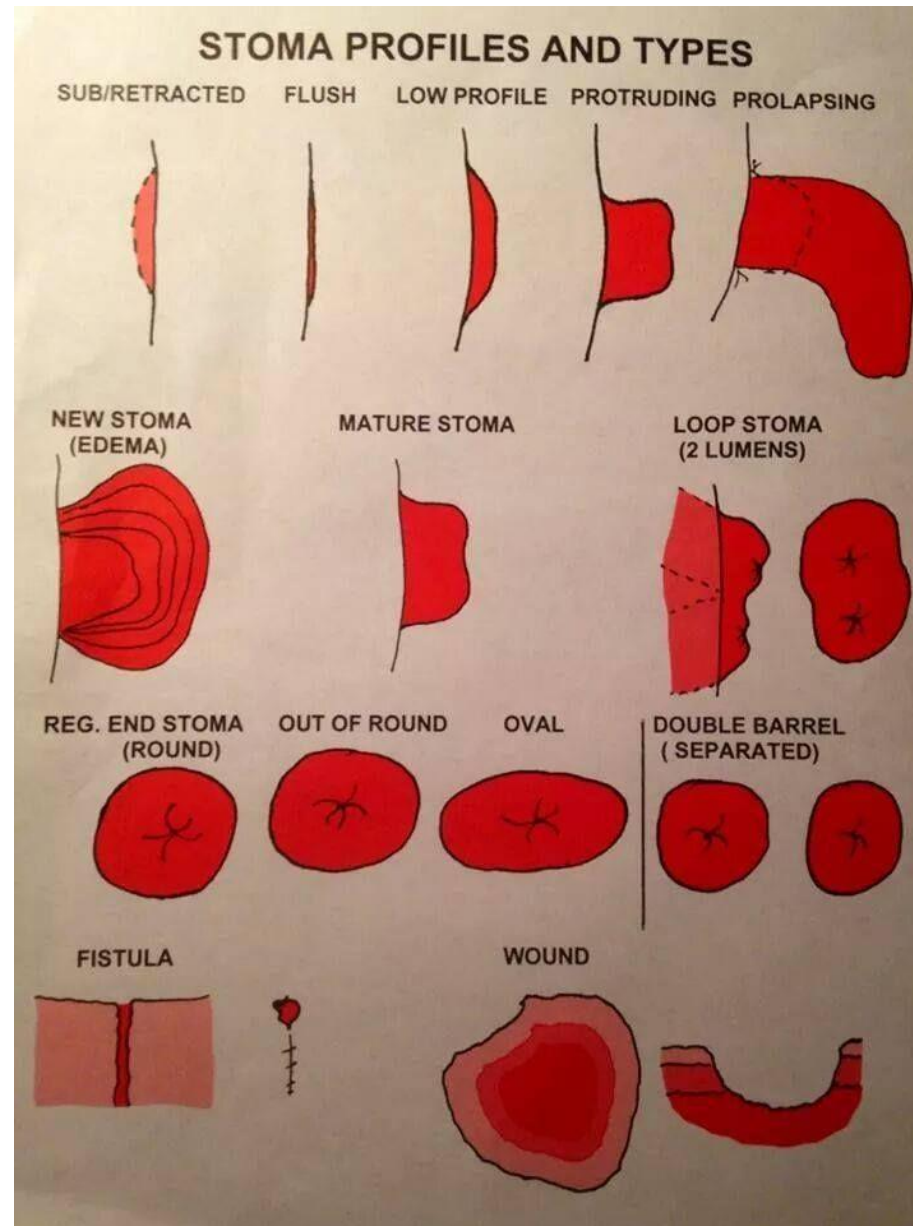
Spoedpatienten



Welk soort stoma

Ileostoma
Colostoma

Eindstandig
Dubbelloops



Verpleegkundige interventies

Lekkage voorkomen

Patient helpen om met stoma te leren omgaan

High output stoma

Klysma via stoma











Photo courtesy of Coleoplast

Open of Laparoscopisch of Robot

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

A Comparison of Laparoscopically Assisted and Open Colectomy for Colon Cancer

The Clinical Outcomes Randomized Trial of Laparoscopic-Assisted Resection of Colorectal Carcinoma: 3-Year Results of the UK MRC CLASICC Trial Group

David G. Jayne, Pierre J. Guillou, Helen Thorpe, Philip Quirke, Joanne Copeland, Adrian M.H. Smith, Richard M. Heath, and Julia M. Brown

Laparoscopy-assisted colectomy versus open colectomy for treatment of non-metastatic colon cancer: a randomised trial

Antonio M Lacy, Juan C Garcia-Valdecasas, Salvadora Delgado, Antoni Castells, Pilar Taurá, Josep M Piqué, Josep Visa

Survival after laparoscopic surgery versus open surgery for colon cancer: long-term outcome of a randomised clinical trial

The Colon Cancer Laparoscopic or Open Resection Study G

The Long-term Results of a Randomized Clinical Trial of Laparoscopy-assisted Versus Open Surgery for

PhD,* Antoni Castells, MD, PhD,†
MD,† Ainitze Ibarzabal, MD, PhD,*
PhD†

Laparoscopic surgery versus open surgery for colon cancer: short-term outcomes of a randomised trial

The Colon cancer Laparoscopic or Open Resection Study Group*

Open of Laparoscopisch of Robot

Overall survival
Recurrence

Opnameduur
Pijn
Cosmetiek



Complicaties

Bloeding
Infectie
Absces

Naadlekkage

Mortaliteit



Voorkomen
 Genezen

Complicatie management

Risico factoren

- Steroiden
- HVZ
- DM
- Obesitas
- Leeftijd
- Roken
- Type resectie



Laparoscopic reintervention for anastomotic leakage after primary laparoscopic colorectal surgery. Wind et al. BJS dec 2007

Identifying important predictors for anastomotic leak after colon and rectal resection: prospective study on 616 patients. Trencheva et al. Ann of Surg Jan 2013 (m/f)

Complications of colorectal anastomoses: leaks, strictures, and bleeding. Davis et al. Surg Clin North Am. Feb 2013

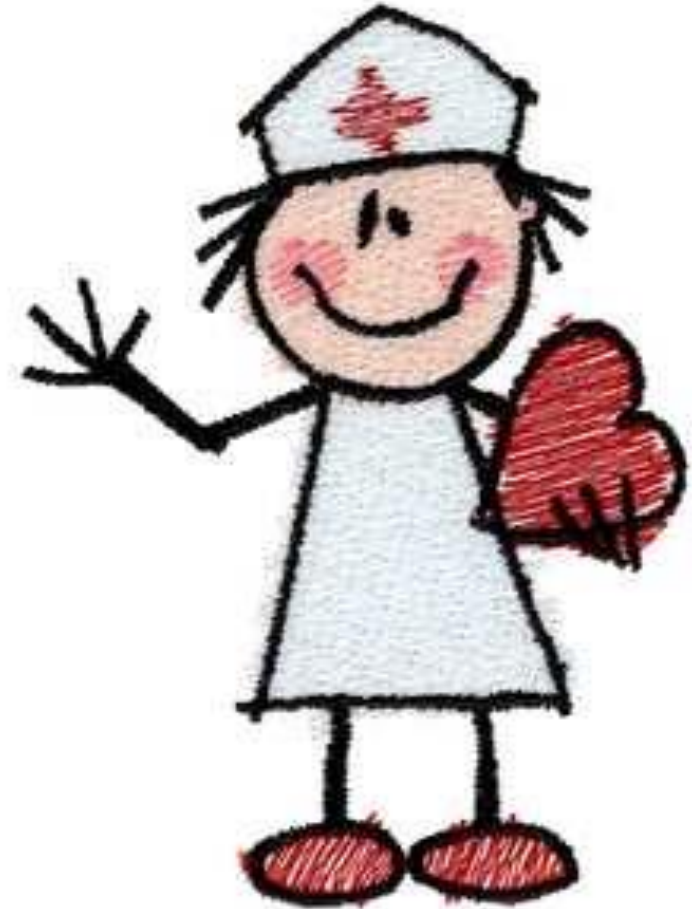
Rol oncologie verpleegkundige

Pre-operatieve informatie

Op afdeling begeleiding

Na ontslag contactpersoon

Erg belangrijk een vast contactpersoon!



Studies

DCCG website

AZUR I/II

LANOREC

STARTREC

MEDOCC

TESAR

PELVEX

INTERACT





**“ My daddy is a oncologist and he treats cancer.”
“My mummy is a surgeon and she cures it”**



HIPEC bij colorectale metastasen

Incidentie

Etiologie

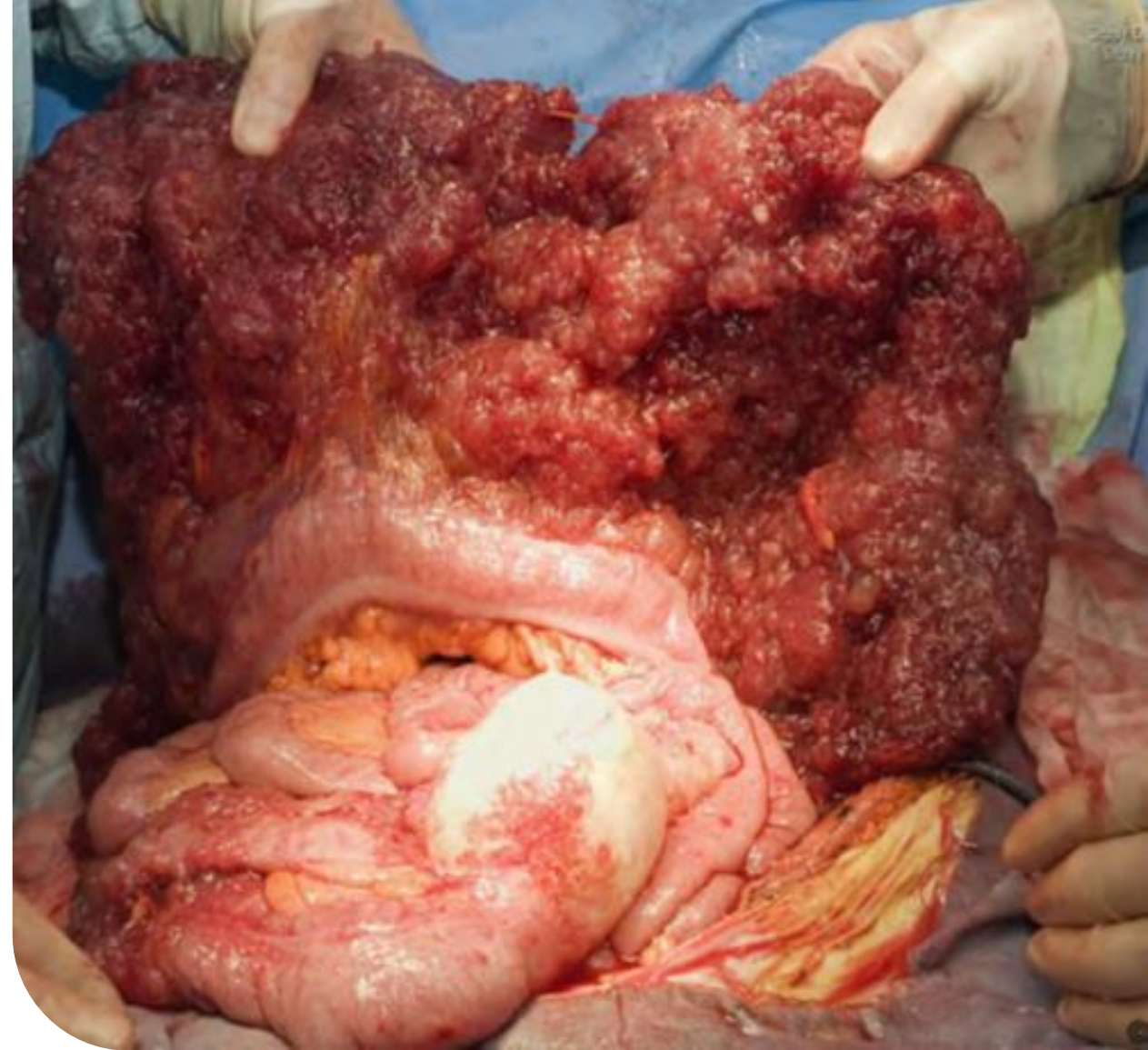
Techniek

Evidence

Selectie

PMP

Uitbreiding van indicaties

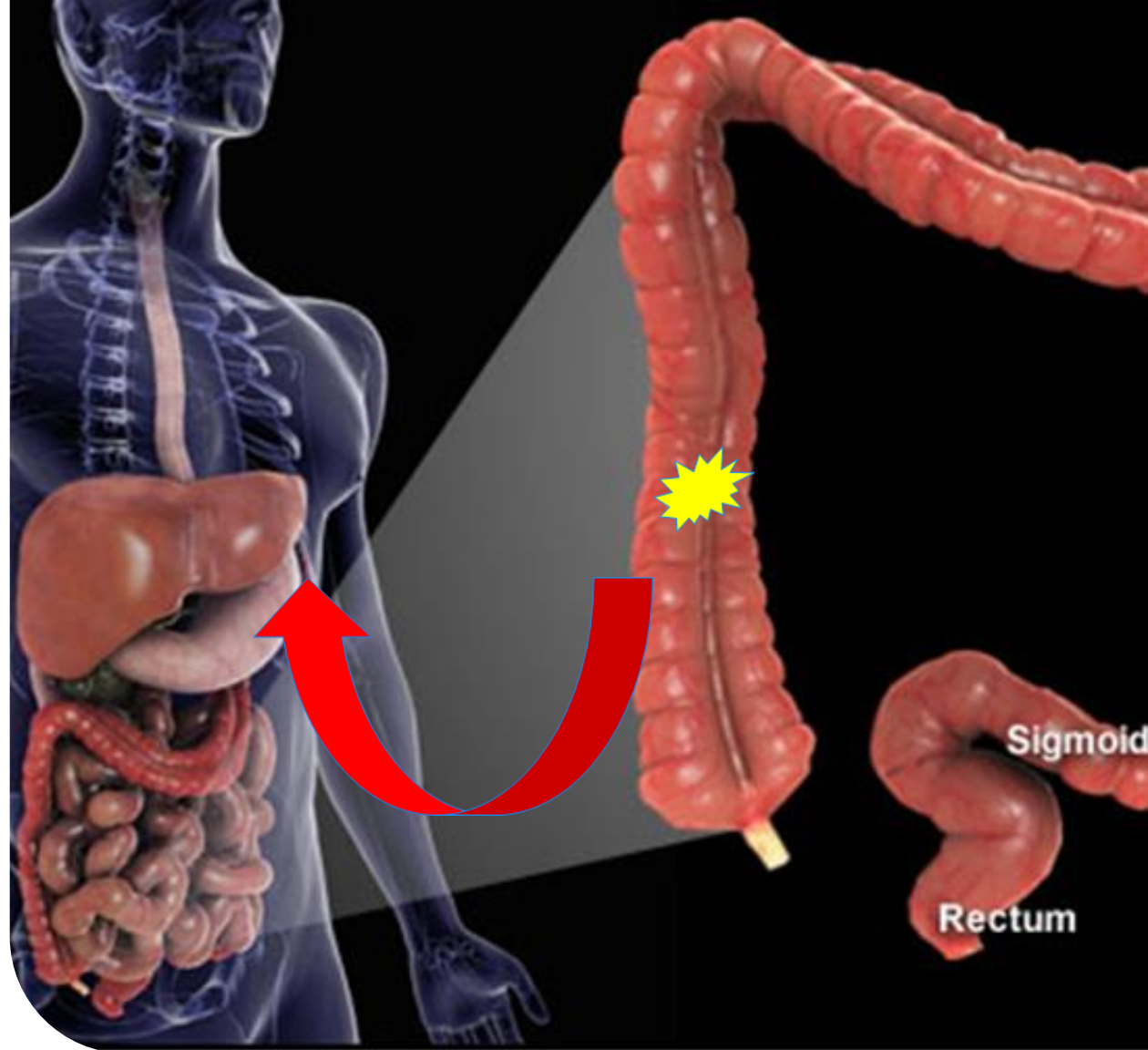


Incidentie

CRC 12.000 ptn/jaar

Mortaliteit rond 40%

Veroorzaakt door metastasen
1. lever



Incidentie

2 peritoneaal metastasen (peritonitis carcinomatosa)

Lemmens et al. *IJC 2011*: 5% Synchrone PC in CRC

Segelman et al. *BJS 2012*: 5% Metachrone PC in CRC

10 % CRC met PC



Etiologie

Seed & Soil hypothesis

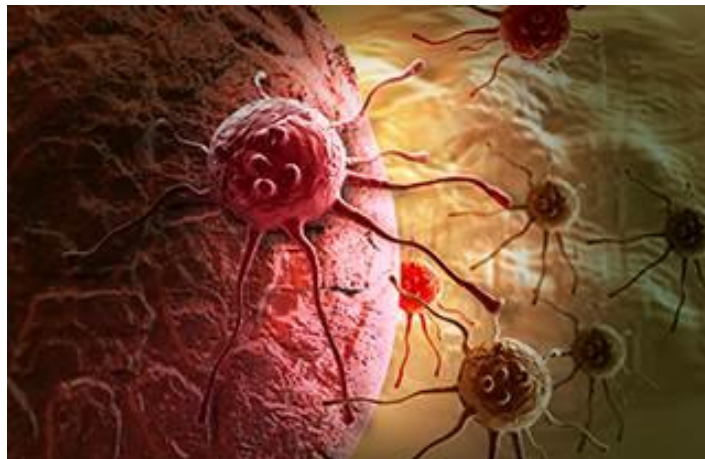
Synchroon

Metachroon

Specifieke eigenschappen van tumorcel en peritoneum
(Koppe et al. JSO 2014)

Voorkeurslocaties: diafragma, darmoppervlak, omentum, bekken

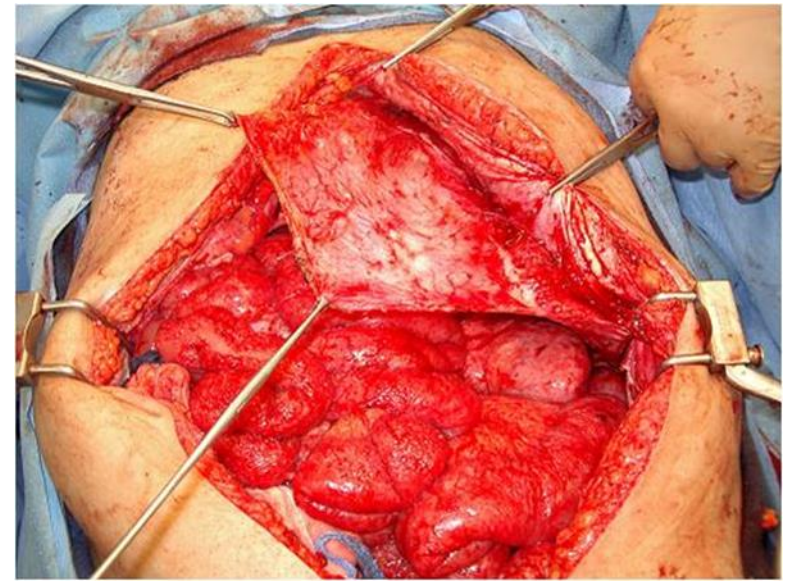
Gevolg van peritoneal fluid circulatie, zwaartekracht



Concept HIPEC

Peritonitis carcinomatosa is niet een systemische maar regionale ziekte.

Dit vraagt om een intensieve regionale combinatie therapie.



Cytoreductieve Chirurgie

gevolgd door

Hyperthermische IntraPeritoneale Chemotherapie

Cytoreductieve Chirurgie

gevolgd door

Hyperthermische IntraPeritoneale Chemotherapie



90 min

Cytoreductieve Chirurgie

gevolgd door

Hyperthermische IntraPeritoneale Chemotherapie



41 - 42 °C



Techniek

Cytoreductieve chirurgie

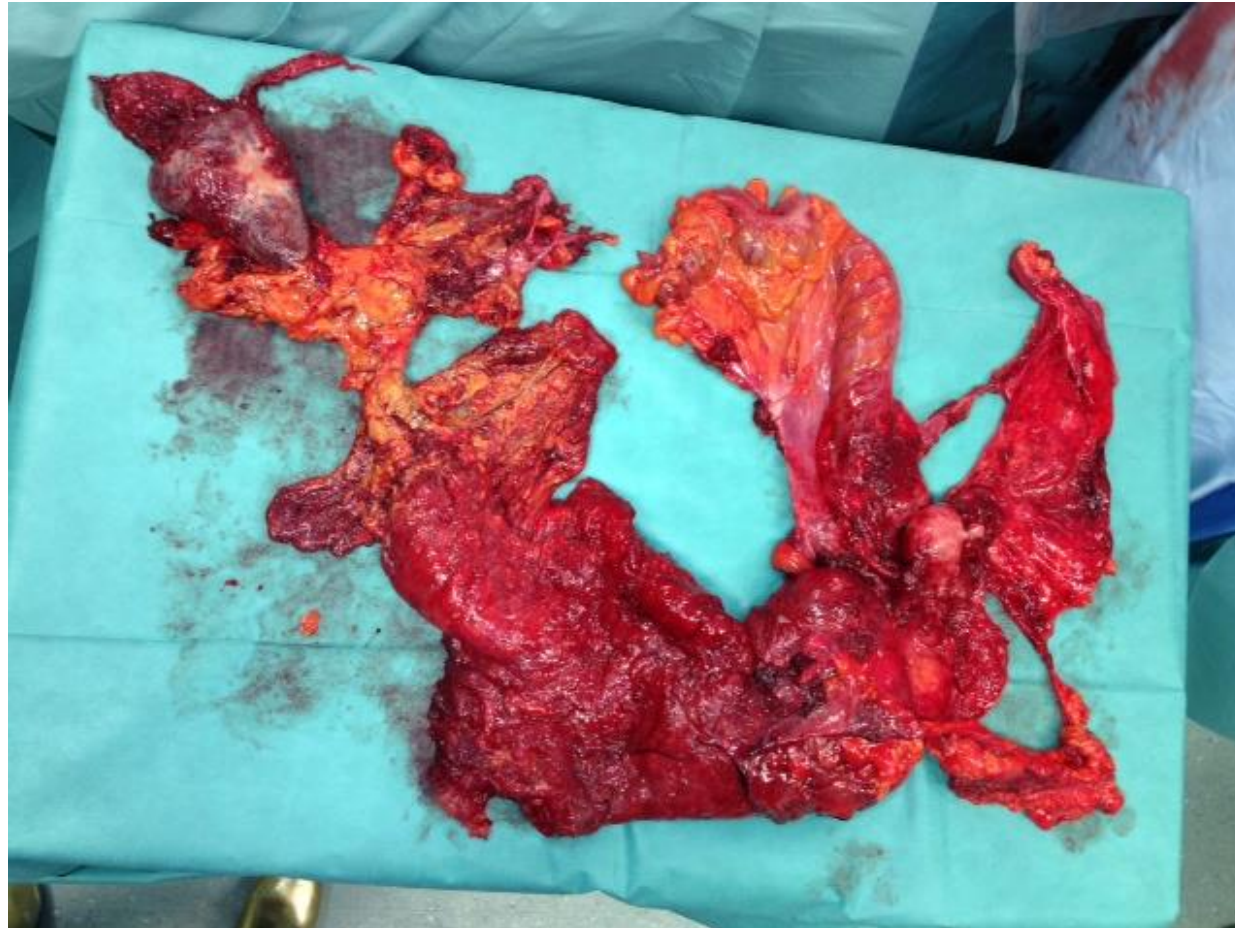
Resectie van alle aangedane organen en peritoneum



Techniek

Cytoreductieve chirurgie

Resectie van alle aangedane organen en peritoneum



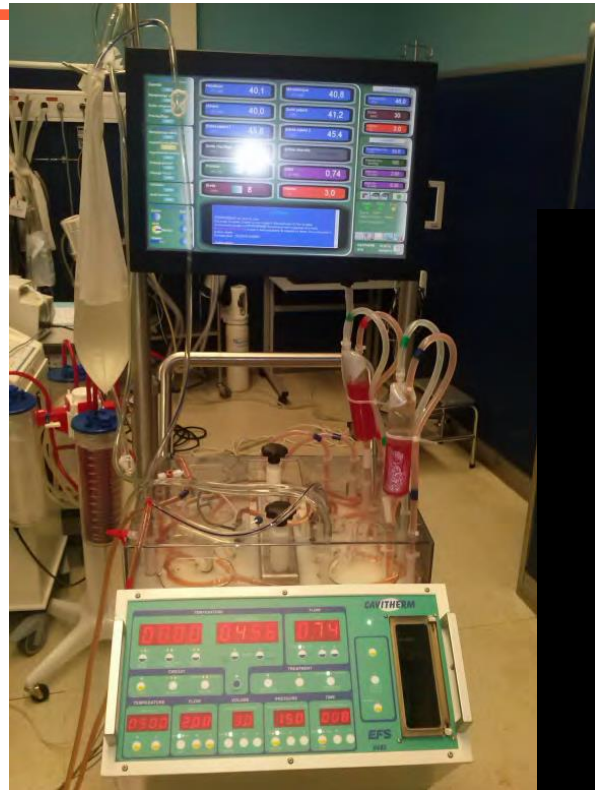
HIPEC

Waarom 42 graden Celsius

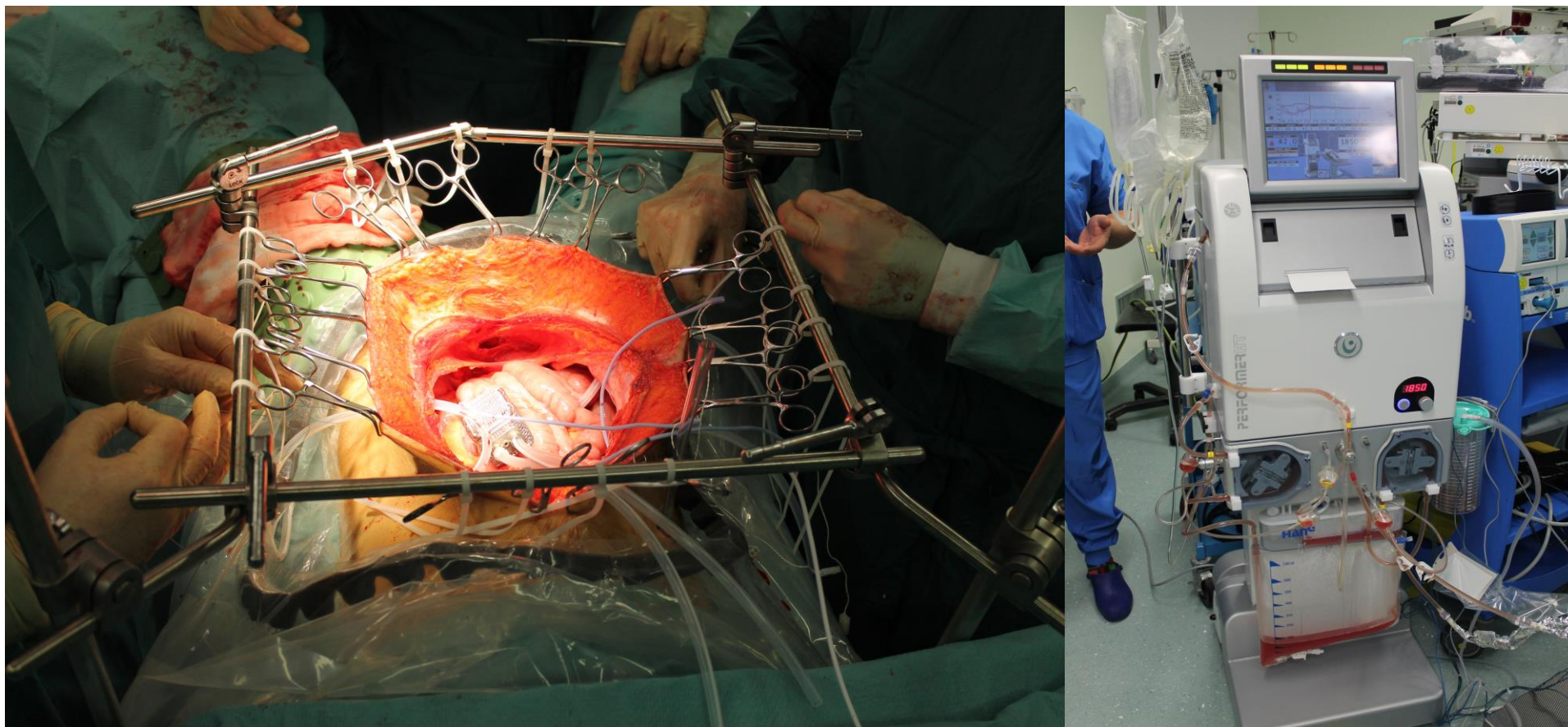
- Hitte is toxischer voor tumorweefsel
- Verbeterde penetratie chemo
- Chemo is cyto-toxischer door hitte



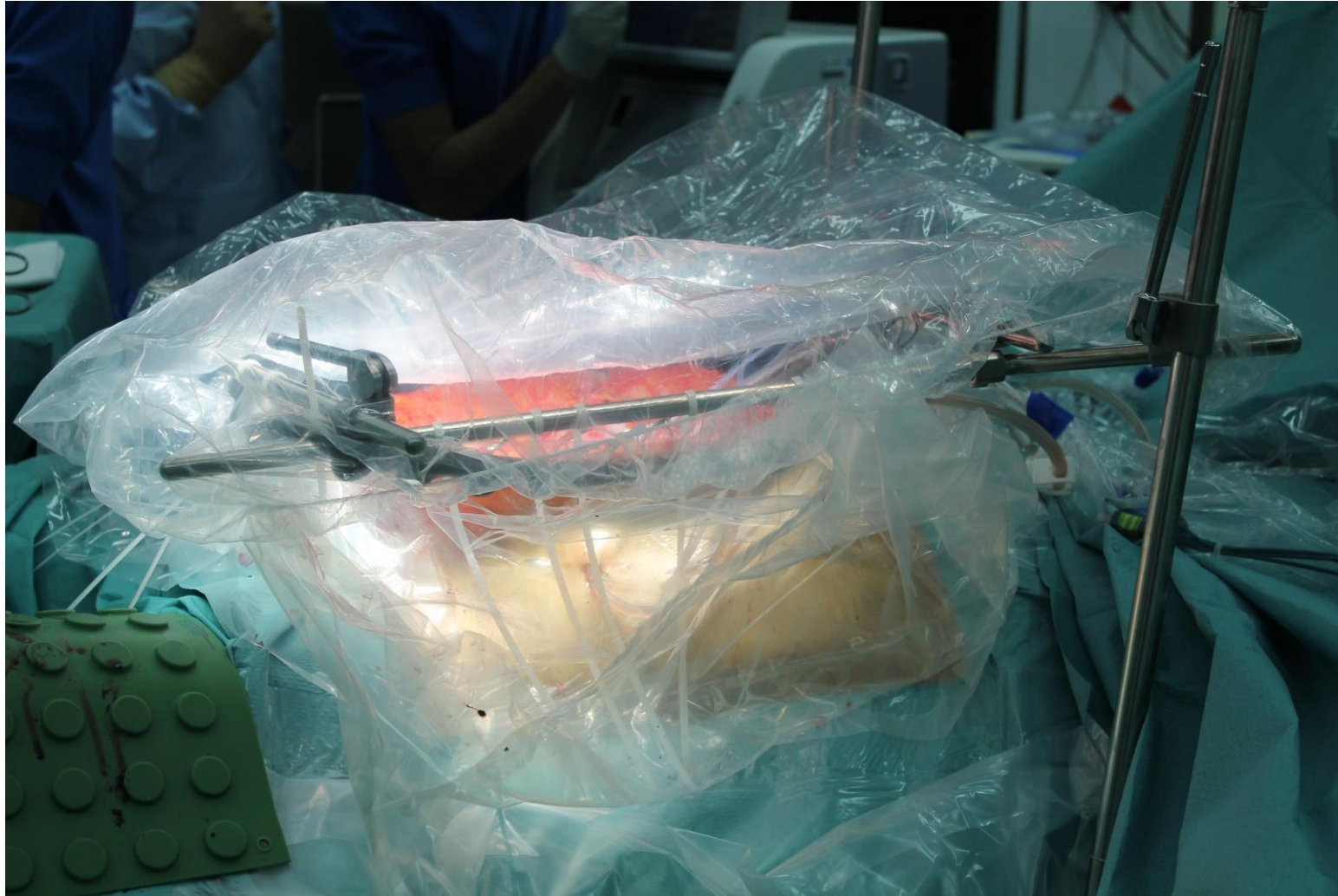
HIPEC



HIPEC



HIPEC



Evidence

PC CRC en chemotherapie

Geen chemotherapie survival 3-6 mnd

0% 5-yr survival in de groep met alleen chemotherapie

Chua et al. Ann Surg 2011

Franko et al. Cancer 2010

Lemmens et al. IJC 2011

Median survival 8-23 mnd



Randomized Trial of Cytoreduction and Hyperthermic Intraperitoneal Chemotherapy Versus Systemic Chemotherapy and Palliative Surgery in Patients With Peritoneal Carcinomatosis of Colorectal Cancer

By Vic J. Verwaal, Serge van Ruth, Eelco de Bree, Gooike W. van Slooten, Harm van Tinteren, Henk Boot, and Frans A.N. Zoetmulder

Purpose: To confirm the findings from uncontrolled studies that aggressive cytoreduction in combination with hyperthermic intraperitoneal chemotherapy (HIPEC) is superior to standard treatment in patients with peritoneal carcinomatosis of colorectal cancer origin.

Patients and Methods: Between February 1998 and August 2001, 105 patients were randomly assigned to receive either standard treatment consisting of systemic chemotherapy (fluorouracil-leucovorin) with or without palliative surgery, or experimental therapy consisting of aggressive cytoreduction with HIPEC, followed by the same systemic chemotherapy regime. The primary end point was survival.

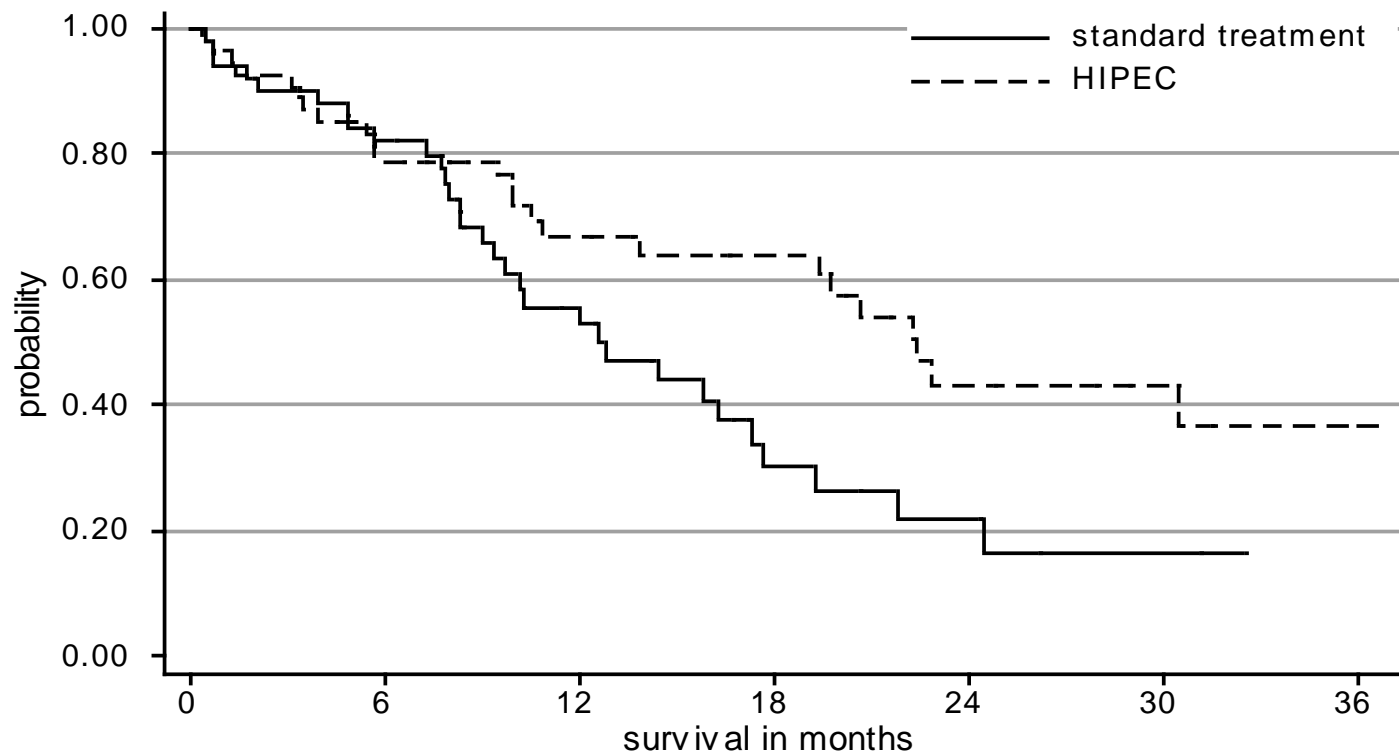
Results: After a median follow-up period of 21.6 months, the median survival was 12.6 months in the standard therapy arm and 22.3 months in the experimental therapy arm (log-rank test, $P = .032$). The treatment-related mortality in the aggressive therapy group was 8%. Most

complications from HIPEC were related to bowel leakage. Subgroup analysis of the HIPEC group showed that patients with 0 to 5 of the 7 regions of the abdominal cavity involved by tumor at the time of the cytoreduction had a significantly better survival than patients with 6 or 7 affected regions (log-rank test, $P < .0001$). If the cytoreduction was macroscopically complete (R-1), the median survival was also significantly better than in patients with limited (R-2a), or extensive residual disease (R-2b; log-rank test, $P < .0001$).

Conclusion: Cytoreduction followed by HIPEC improves survival in patients with peritoneal carcinomatosis of colorectal origin. However, patients with involvement of six or more regions of the abdominal cavity, or grossly incomplete cytoreduction, had still a grave prognosis.

J Clin Oncol 21:3737-3743. © 2003 by American Society of Clinical Oncology.

Evidence



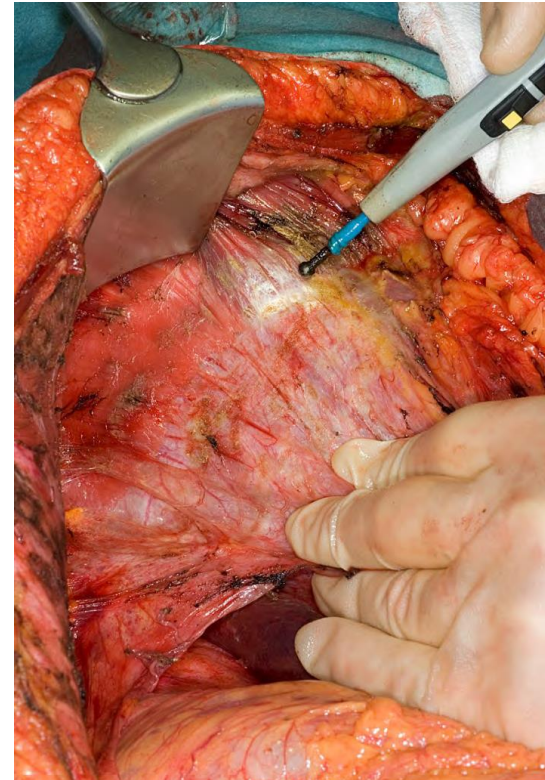
Median survival 12,6 vs 22,3 mnd in de HIPEC groep

Verwaal et al. JClinOnc 2003

Randomized Trial of Cytoreduction and Hyperthermic Intraperitoneal Chemotherapy Versus Systemic Chemotherapy and Palliative Surgery in Patients With Peritoneal Carcinomatosis of Colorectal Cancer

By Vic J. Verwaal, Serge van Ruth, Eelco de Bree, Gooike W. van Slooten, Harm van Tinteren, Henk Boot, and Frans A.N. Zoetmulder

Operatietijd: 485 minuten
Bloedverlies: 4 liter
Opname: 29 dagen
Morbiditeit: 55%
Mortaliteit: 8%



Cytoreduction and HIPEC in The Netherlands: Nationwide Long-term Outcome Following the Dutch Protocol

Anke M. J. Kuijpers, MD¹, Boj Mirek, MD¹, Arend G. J. Aalbers, MD¹, Simon W. Nienhuijs, MD, PhD², Ignace H. J. T. de Hingh, MD, PhD², Martinus J. Wiezer, MD, PhD³, Bert van Ramshorst, MD, PhD³, Robert J. van Ginkel, MD, PhD⁴, Klaas Havenga, MD, PhD⁴, Andreas J. Bremers, MD, PhD⁵, Johannes H. W. de Wilt, MD, PhD⁵, Elisabeth A. te Velde, MD, PhD⁶, and Vic J. Verwaal, MD, PhD¹

TABLE 3 Survival

	PC of CRC <i>n</i> = 660	PMP <i>n</i> = 300
PFS		
Median (95 % CI)	15 (13–17)	53 (40–66)
OS		
Median (95 % CI)	33 (28–38)	130 (98–162)
3-year	46 %	77 %
5-year	31 %	65 %

PFS progression-free survival in months, *OS* overall survival in months, *CI* confidence interval

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Evidence

Ann Surg Oncol (2013) 20:4224–4230
DOI 10.1245/s10434-013-3145-9

Annals of
SURGICAL ONCOLOGY
OFFICIAL JOURNAL OF THE SOCIETY OF SURGICAL ONCOLOGY

ORIGINAL ARTICLE – GASTROINTESTINAL ONCOLOGY

Cytoreduction and HIPEC in The Netherlands: Nationwide Long-term Outcome Following the Dutch Protocol

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PFS progression-free survival in months, *OS* overall survival in months, *CI* confidence interval

Bloedverlies: 1 liter
Mortaliteit: <2%
Opname: 16 dagen

Patiënten selectie

CT scan

Diagnostische laparoscopie

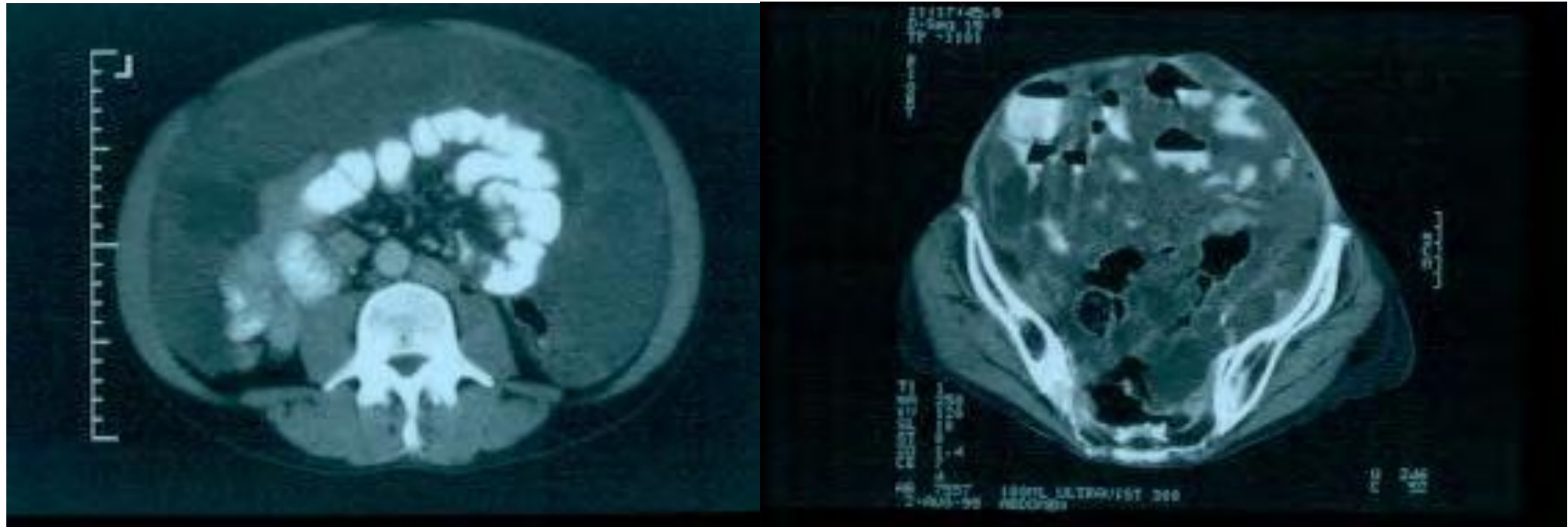
Type tumor: slecht gedifferentieerd, cave zegelringcel

Peritoneal Cancer Index

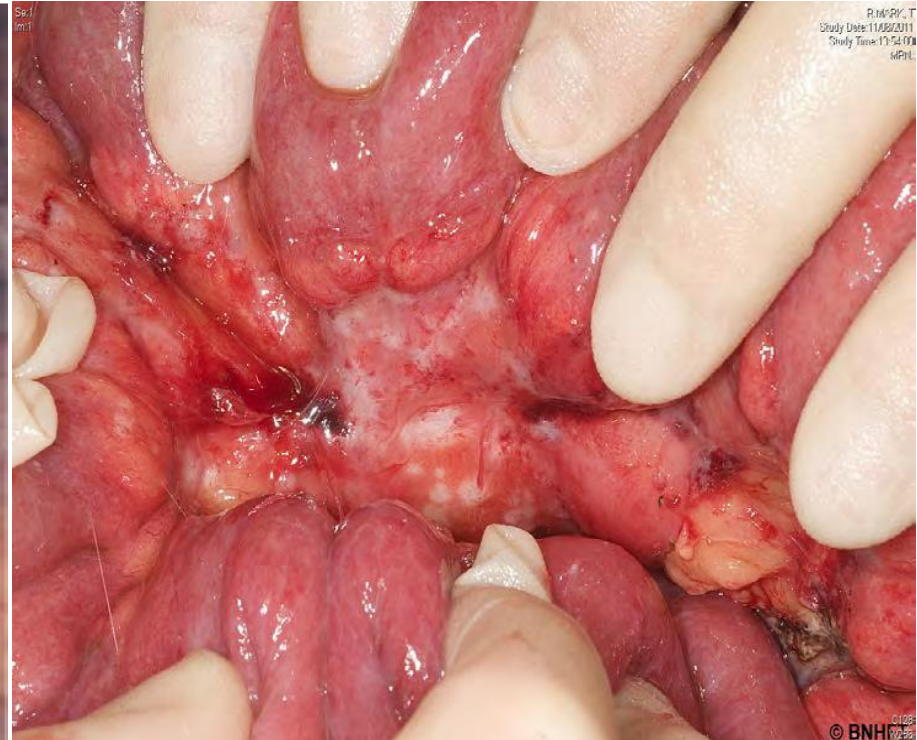
Conditie van patiënt

Motivatie van patiënt

CT scan



Laparoscopie vs laparotomie



Patiënten Selectie

Significant reduction in “open and close”

Laparotomy for peritoneal colorectal Metastases

No benefit in Pseudomyxoma

BJS 2013

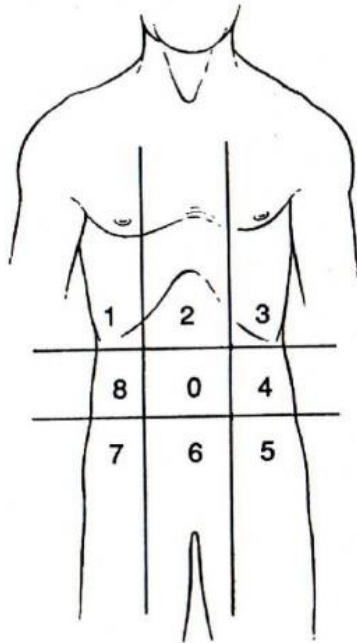
Original article

Value of laparoscopy before cytoreductive surgery and hyperthermic intraperitoneal chemotherapy for peritoneal carcinomatosis

L. H. Iversen, P. C. Rasmussen and S. Laurberg

Patiënten Selectie

Peritoneal Cancer Index



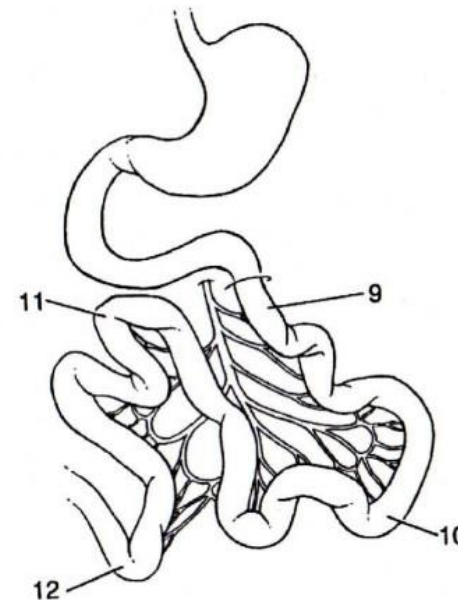
Regions

- 0 Central
- 1 Right Upper
- 2 Epigastrium
- 3 Left Upper
- 4 Left Flank
- 5 Left Lower
- 6 Pelvis
- 7 Right Lower
- 8 Right Flank
- 9 Upper Jejunum
- 10 Lower Jejunum
- 11 Upper Ileum
- 12 Lower Ileum

Lesion Size

Lesion Size Score

- LS 0 No tumor seen
- LS 1 Tumor up to 0.5 cm
- LS 2 Tumor up to 5.0 cm
- LS 3 Tumor > 5.0 cm
or confluence



PCI

0-39

Patiënten Selectie

Ann Surg Oncol
DOI 10.1245/s10434-015-4387-5

Annals of
SURGICAL ONCOLOGY
OFFICIAL JOURNAL OF THE SOCIETY OF SURGICAL ONCOLOGY

ORIGINAL ARTICLE - GASTROINTESTINAL ONCOLOGY

Extent of Colorectal Peritoneal Carcinomatosis: Attempt to Define a Threshold Above Which HIPEC Does Not Offer Survival Benefit: A Comparative Study

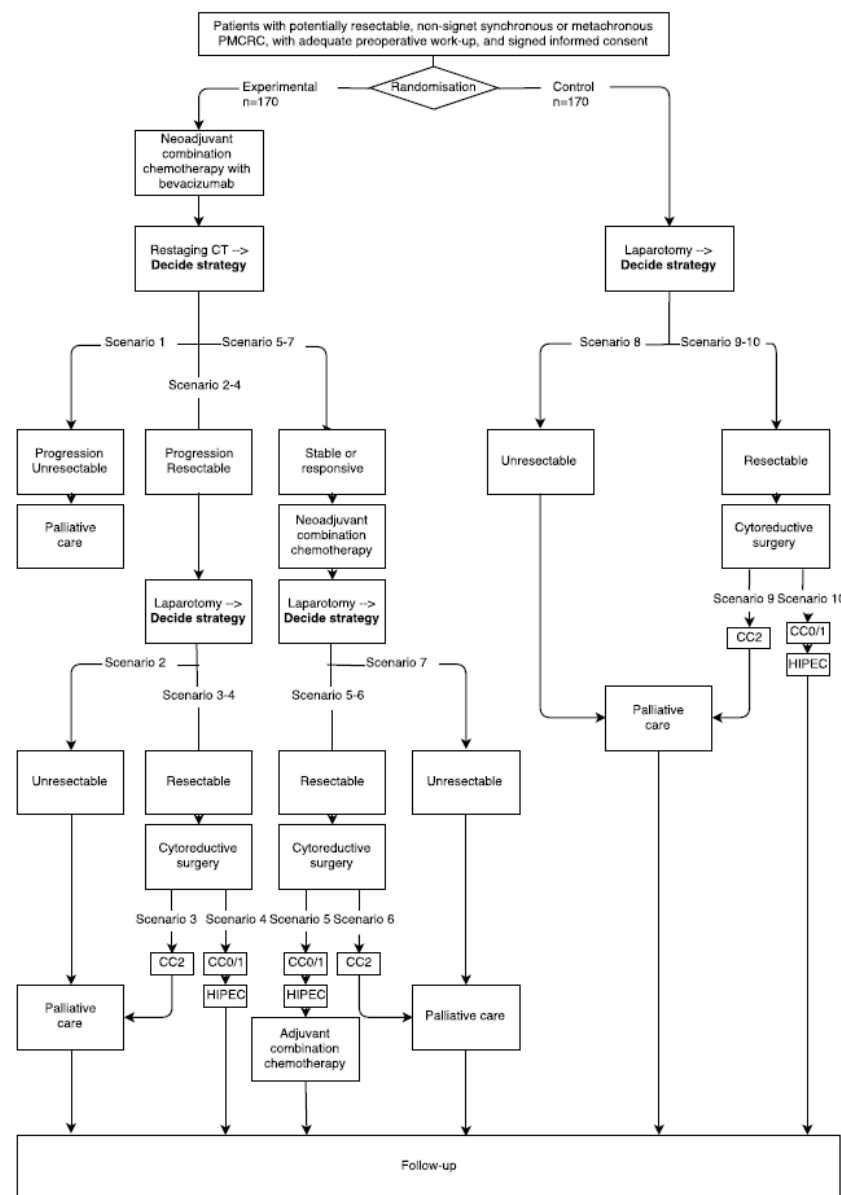
2 groepen
Wanneer F
3yr Survival

Diane Goéré, MD, PhD¹, Amine Souadka, MD¹, Matthieu Faron, MD^{1,2}, Alexis S. Cloutier, MD¹, Benjamin Viana, MD¹, Charles Honoré, MD¹, Frédéric Dumont, MD¹, and Dominique Elias, MD, PhD¹

52% curative vs 7% palliative

Conclusie geen CRS en HIPEC wanneer PCI > 17

Rol van chemotherapie CAIRO 6 studie



Uitbreiding van indicaties

Lever

Beperkte resectie bij
geselecteerde patienten
Geen evidence

Resultaten Catharina Ziekenhuis
HIPEC and liver-resection is feasible
Survival: 36 months in selected cases



Uitbreiding van indicaties

De oudere patiënt

Outcomes of Cytoreductive Surgery (CRS) with Hyperthermic Intraperitoneal Chemotherapy (HIPEC) in Patients Older Than 70 Years; Survival Benefit at Considerable Morbidity and Mortality
Konstantinos I. Votanopoulos et al. Ann Surg Onc 2013

Conclusions—HIPEC in the elderly is associated with a **steep learning curve and considerable morbidity and mortality**. However, age alone is not a contraindication for the procedure.
Institutional experience and stringent patient selection are key factors for prolonged survival.

