

# CRS – Ovaryectomy in principle?

## What to take into considerations?

Masterclass – Management of Peritoneal Surface Malignancy  
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Klinik Altona

[ch.koehler@asklepios.com](mailto:ch.koehler@asklepios.com)  
[christhardt.koehler@uk-koeln.de](mailto:christhardt.koehler@uk-koeln.de)

SOCIETY OF SURGICAL ONCOLOGY



No conflicts of interest

# Preliminary remarks

# Krukenberg Tumor 1896

Aus dem pathologischen Institut in Marburg.

## Ueber das Fibrosarcoma ovarii mucocellulare (carcinomatodes).

Von

Dr. Friedrich Krukenberg.

(Mit 3 Abbildungen auf Tafel V u. VI und 2 Abbildungen im Text.)

Die Veranlassung zu der vorliegenden Arbeit gab ein Fall von doppelseitiger maligner, grösstentheils solider Eierstocksgeschwulst bei einer jugendlichen Patientin, welche im Winter 1893/94 nach mehrwöchentlicher Behandlung in der hiesigen medicinischen Klinik starb. Der Fall bot sowohl in klinischer, als ganz besonders in pathologisch-anatomischer Beziehung so viel Interesse, dass eine genaue Untersuchung und Veröffentlichung gerechtfertigt erschien. Da die Kenntniss der soliden malignen Eierstocksgeschwülste noch in vieler Beziehung mangelhaft ist, so bot sich hier eine erwünschte Gelegenheit, eine Anzahl ähnlicher Tumoren der Sammlung des hiesigen pathologischen Instituts einer genauen Untersuchung zu unterwerfen, deren Resultat weiter unten im Zusammenhang mitgetheilt werden soll.

### Fall I.

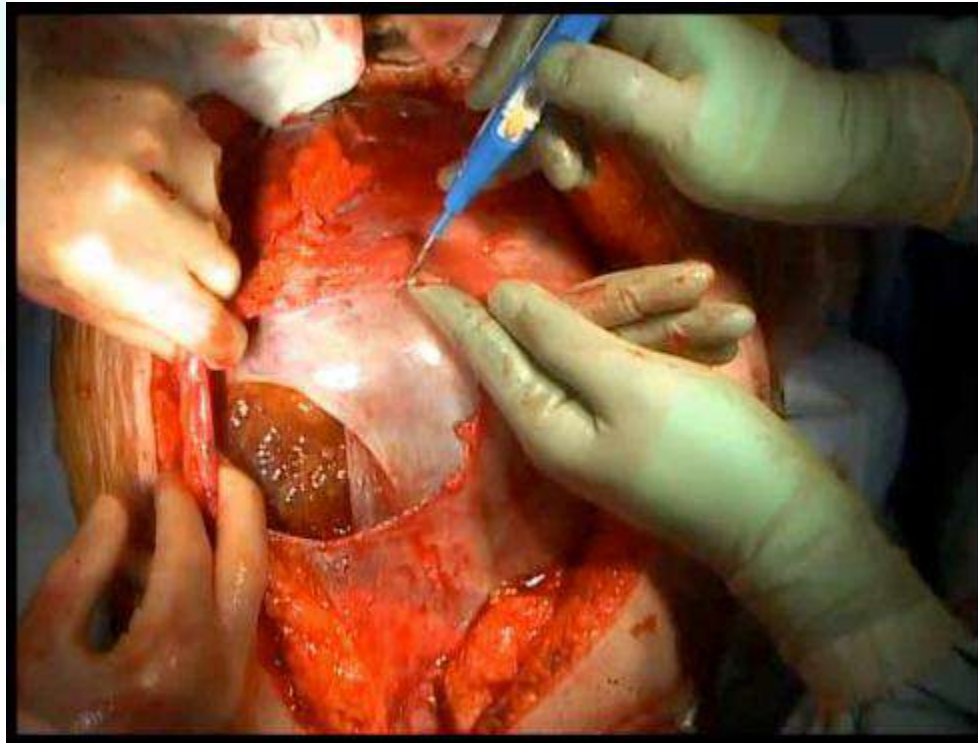
Für die Ueberlassung der Krankengeschichte bin ich Herrn Geheimrath Mannkopf zu besonderem Danke verpflichtet.

Marie M., 26 Jahre alt, Dienstmädchen aus Künzell, Kreis Fulda, Opara. Aufnahme am 12. 1. 1894.

Eltern und Geschwister der Patientin sind gesund. Sie selbst hat, abgesehen von einem Scharlach, schwere Erkrankungen nicht durchgemacht. Menses traten im 18. Jahre ein und waren immer regelmässig. Letzte Periode vor 8 Tagen. Die jetzige Krankheit begann

Krukenberg F. Ueber das fibrosarcoma ovarii mucocellulare  
(carcinomatodes). *Archiv Gynäkologie*. 1896;50:287–321

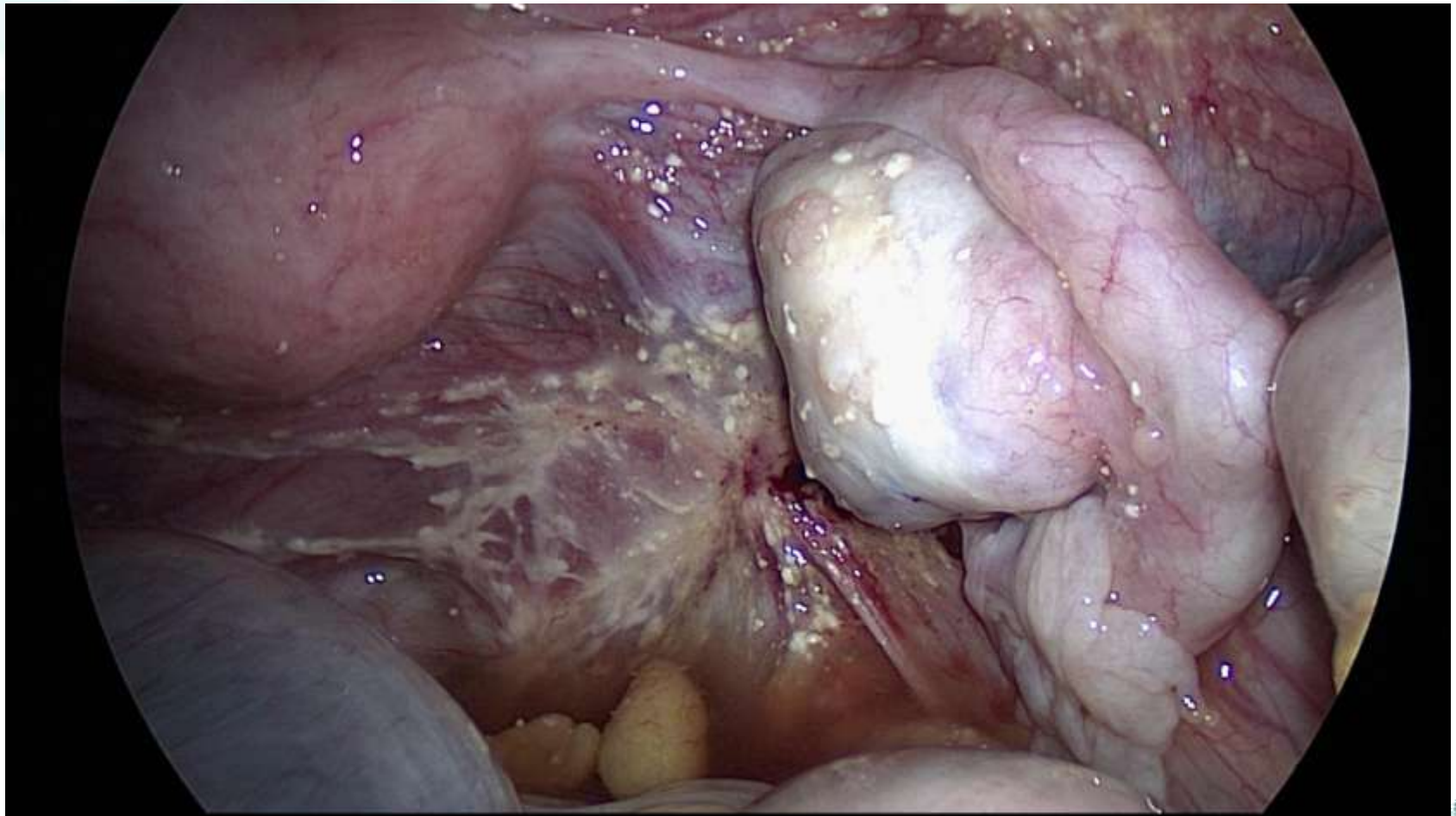
# Krukenberg Tumor 1896



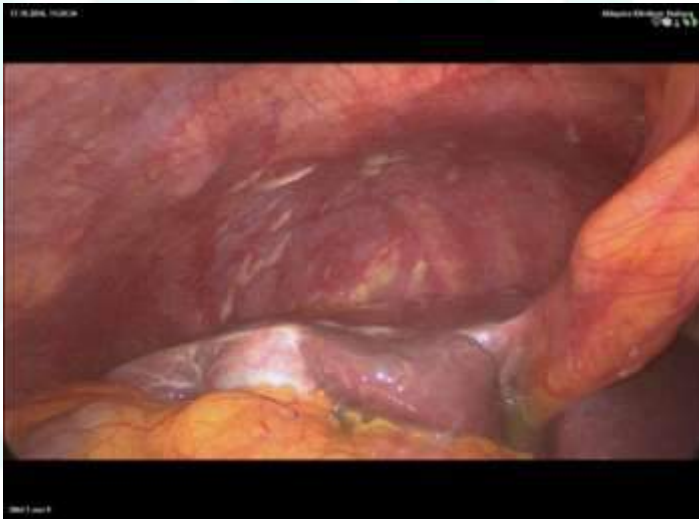
Krukenberg F. Ueber das fibrosarcoma ovarii mucocellulare (carcinomatodes). *Archiv Gynäkologie*. 1896;50:287–321



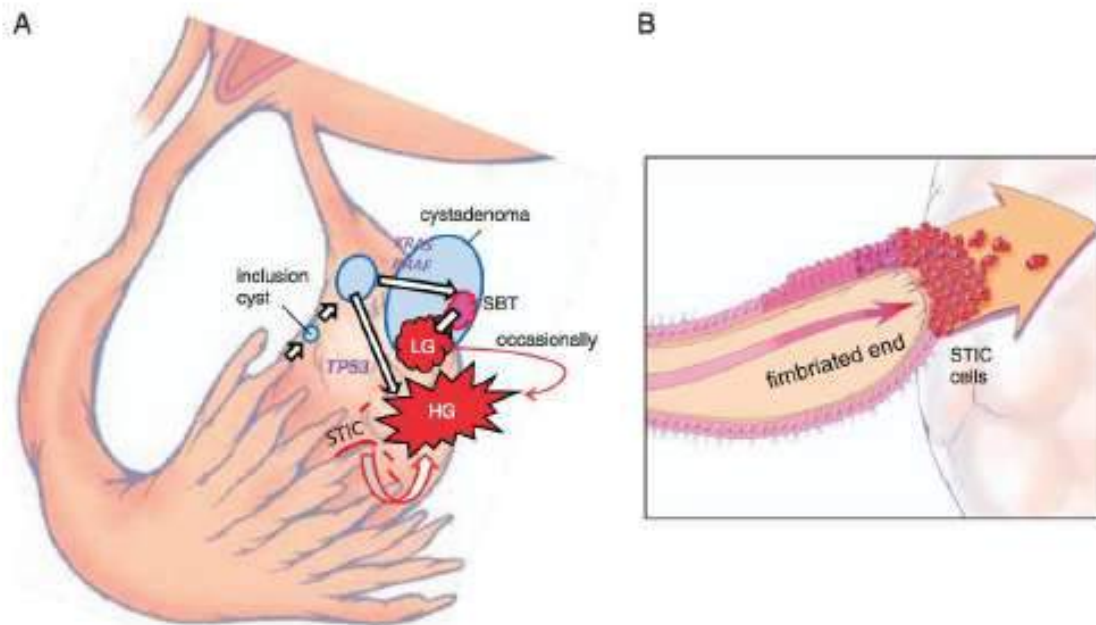
# Ovarian carcinoma – pelvic situs



# Ovarian tumor – well differentiated mesothelioma



# Fallopian tube (STIC) – origin of high grade serous ovarian cancer?



Kurman and Shih, 2010:  
The Origin and Pathogenesis of Epithelial Ovarian Cancer – A Proposed Unifying Theory  
American Journal of Surgical Pathology 34 (3), 433-443



# Ovarian preservation – a relevant issue?

# Age of disease detection

- Ovarian protection in women >40 years questionable
- Nulliparous women?
- Strong wish to get pregnant first time/again?
- Ovarian preservation only for hormonal function?

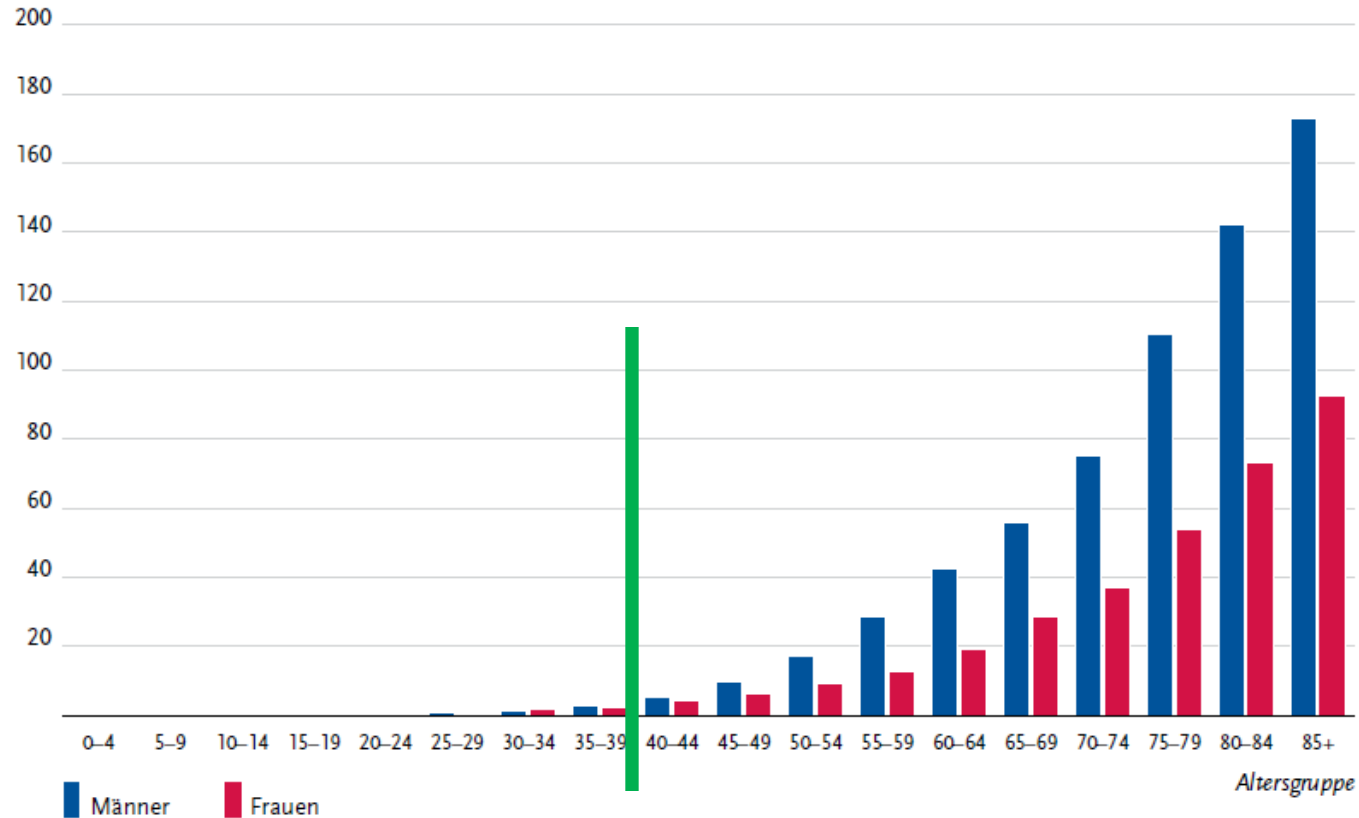
What are age specific rates of diseases?

# Germany – Gastric Cancer

Abbildung 3.4.2

Altersspezifische Erkrankungsrate nach Geschlecht, ICD-10 C16, Deutschland 2011–2012

je 100.000



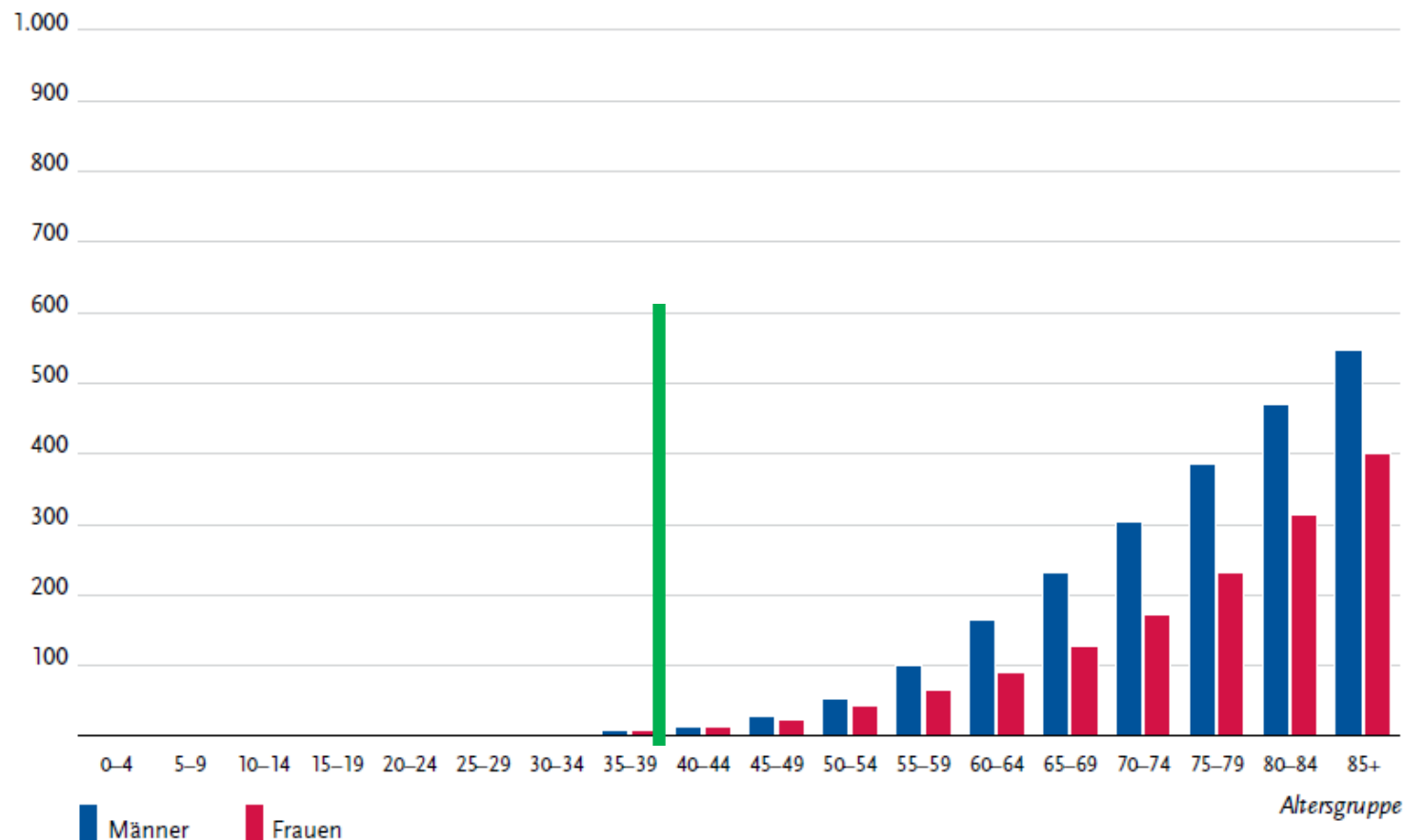
*Krebs in Deutschland, Robert-Koch-Institut*

# Germany – Colon Cancer

Abbildung 3.5.2

Altersspezifische Erkrankungsrate nach Geschlecht, ICD-10 C18–C21, Deutschland 2011–2012

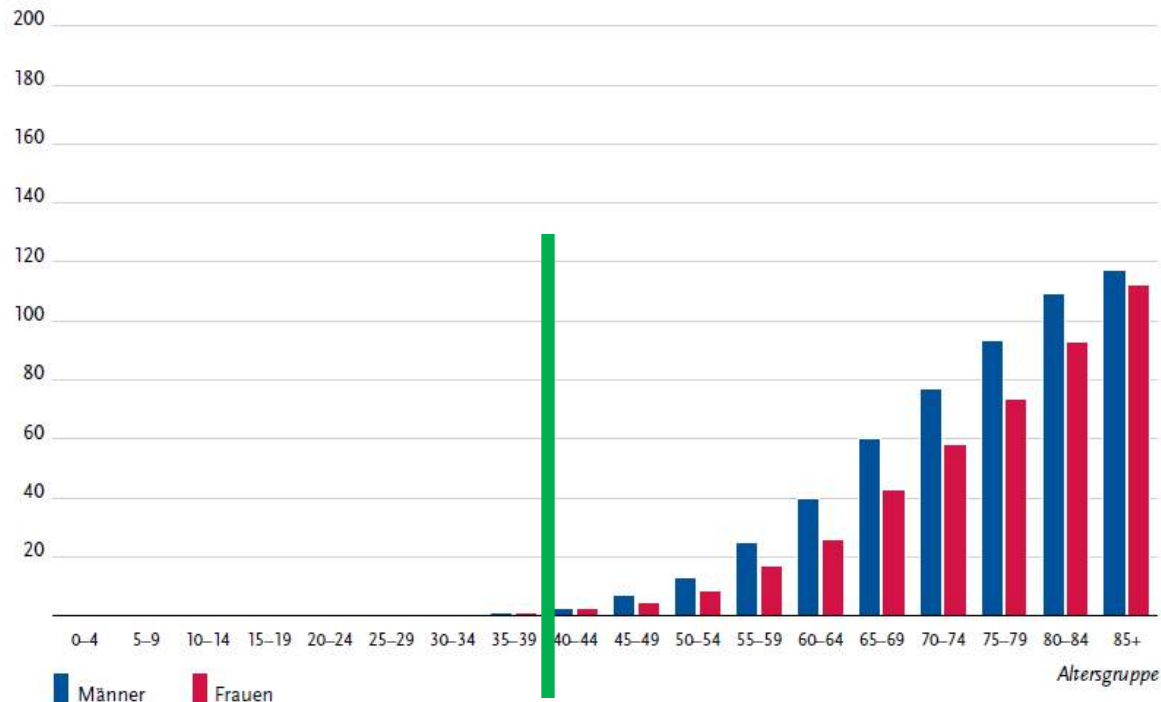
je 100.000





# Germany – Pancreas Cancer

Abbildung 3.8.2  
Altersspezifische Erkrankungsrate nach Geschlecht, ICD-10 C25, Deutschland 2011–2012  
je 100.000

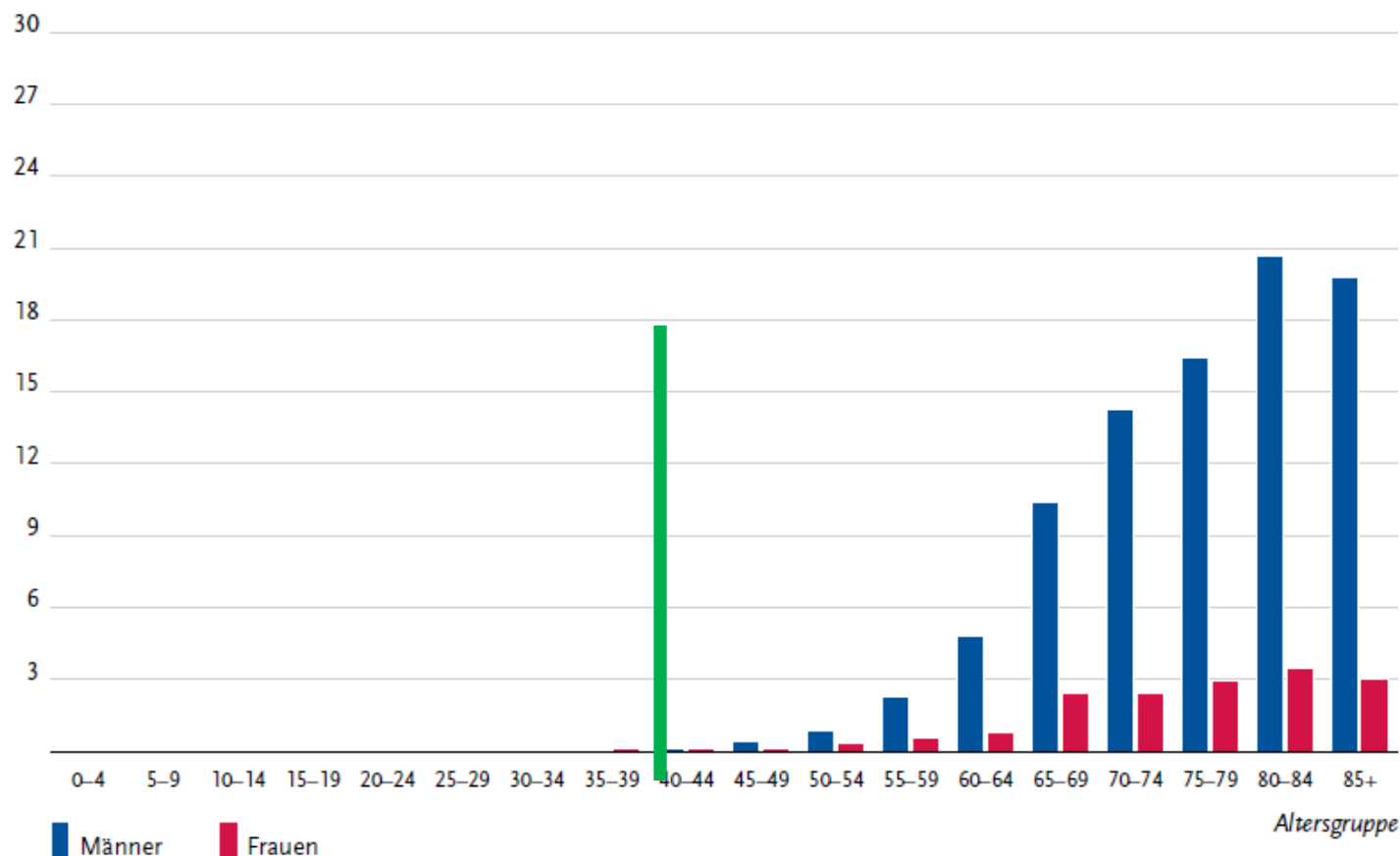


# Germany – Mesothelioma

Abbildung 3.12.2

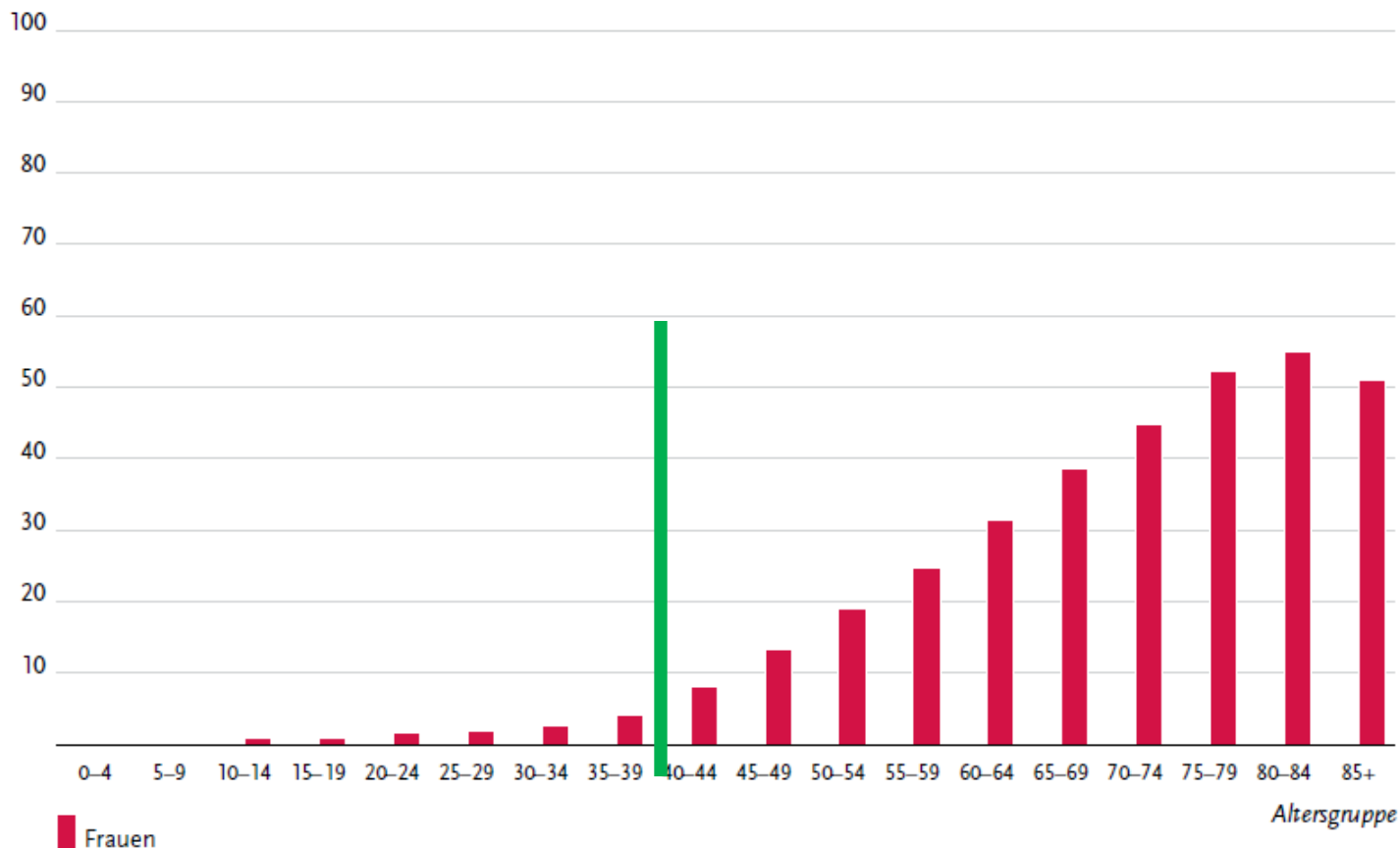
Altersspezifische Erkrankungsraten nach Geschlecht, ICD-10 C45, Deutschland 2011–2012

je 100.000



# Germany – Ovarian Cancer

Abbildung 3.18.2  
Altersspezifische Erkrankungsrate, ICD-10 C56, Deutschland 2011–2012  
je 100.000



# Case report

- Tan WJ et al., Int J of Surgery case reports 2013; 4:305-307  
14-year old women with peritoneal carcinomatosis of sigmoid colon – CRS + HIPEC and ovarian preservation with subcutaneous transposition – normal menstruation.

Individual decision, experimental approach!



# Ovarian preservation – oncologic safe?

# Ovarian metastases

- Parenchymal involvement
- Transcoelomic spread
- Peritoneal spread – means advanced lower GI tumors
  - + Pseudomyxoma peritonei (PMP)
  - + Colorectal peritoneal metastases (CPM)
- Rapid Progression
- Resistant to systemic chemo
- Morbidity due to removal (?)

# Ovarian metastases + CRS + HIPEC

- No intraparenchymal penetration of HIPEC
- Target organ of metastases
- Therefore better routine removal!?

Questions:

How often is ovarian spread?

Survival rate in correlation to ovarian metastases?

# Rates of metastatic involvement

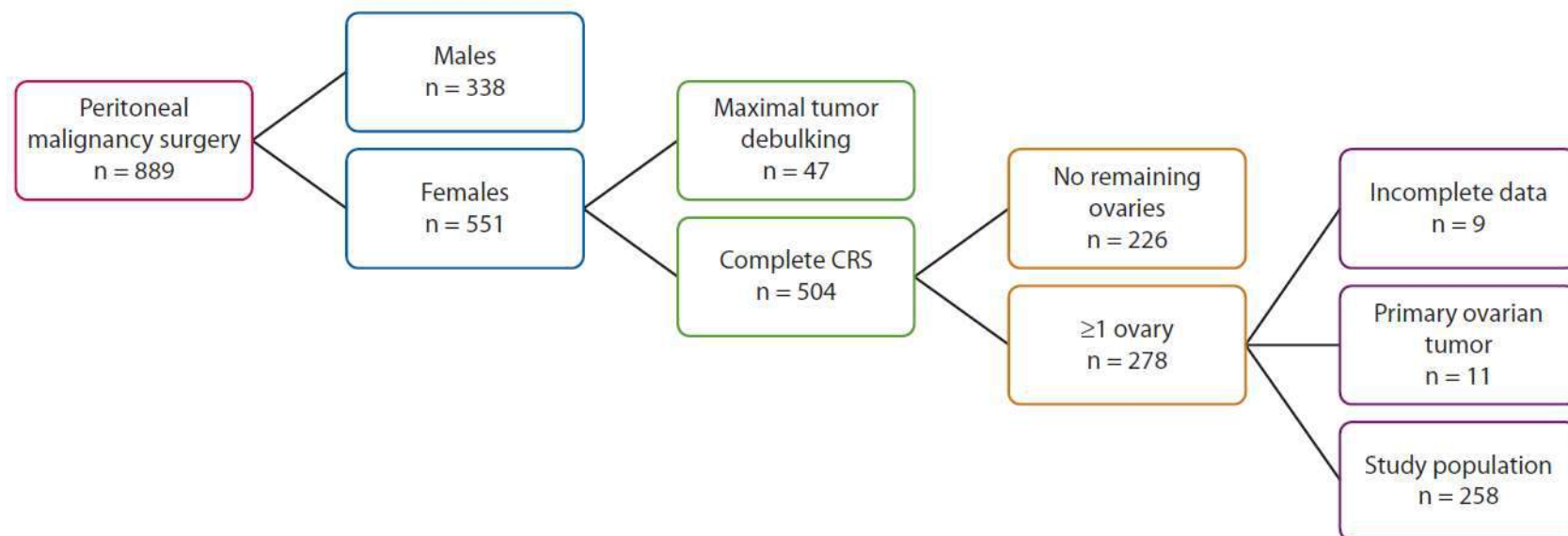
- Evers et al, BJS 2011:
  - 52% incidence of ovarian metastasis
  - Risk of occult mts:  $\geq 40\%$
- Eveno et al, Ann Surg Oncol 2013:
  - 60% ovarian mts.

*Eveno C et al. Ovarian Metastasis Is Associated with Retroperitoneal Lymph Node Relapses in Women Treated for Colorectal Peritoneal Carcinomatosis. Ann Surg Oncol (2013) 20:491–496*

*Evers DJ et al. Indication for oophorectomy during cytoreduction for intraperitoneal metastatic spread of colorectal or appendiceal origin. British Journal of Surgery 2011; 98: 287–292*

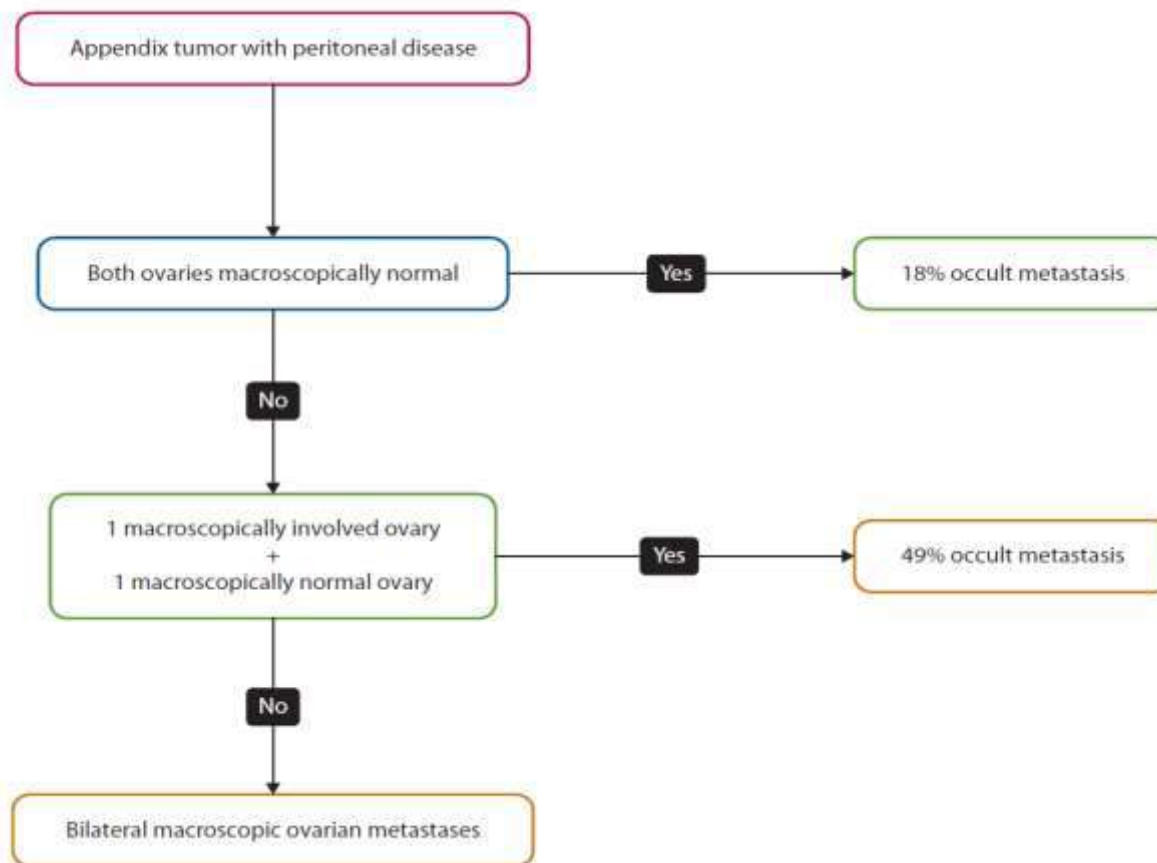


# Rates of metastatic involvement



*Mehta AM et al. Risk of Ovarian Involvement in Advanced Colorectal or Appendiceal Tumors Involving the Peritoneum. Dis Colon Rectum 2017; 60: 691–696*

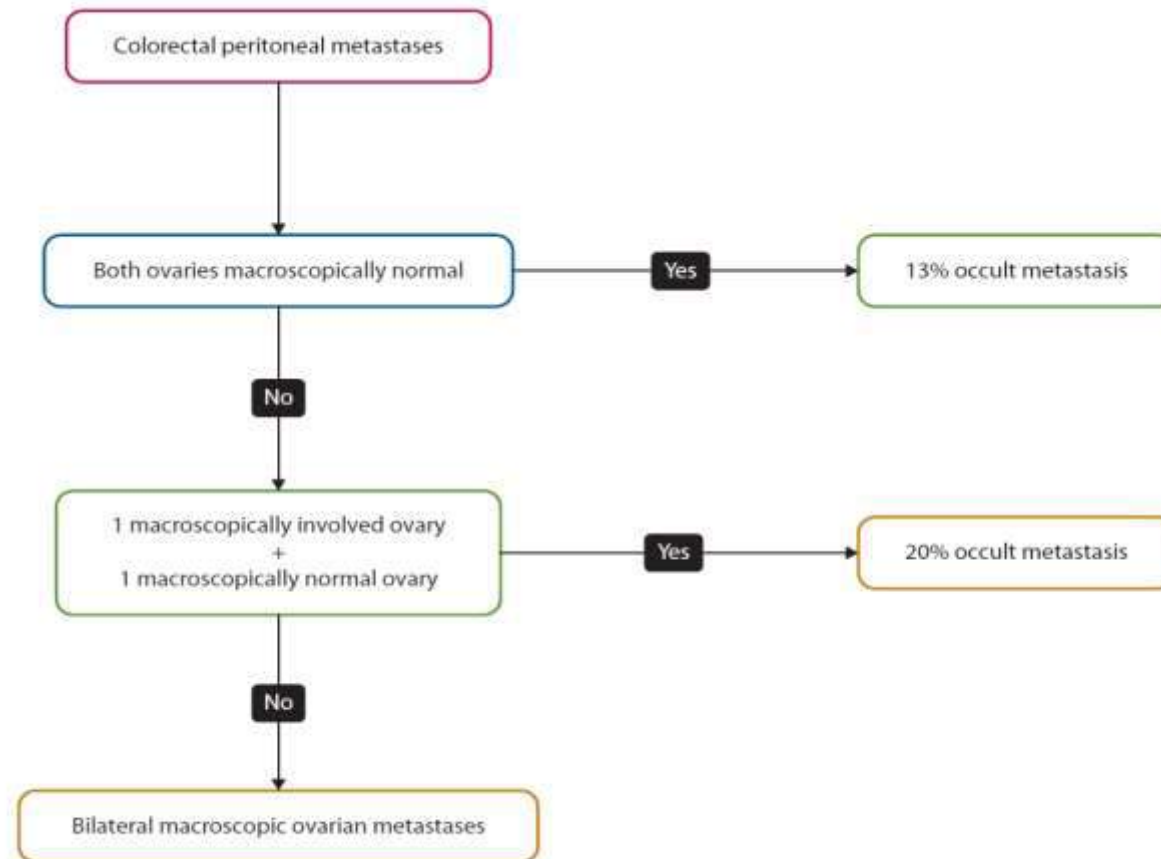
# Rate of ovarian mts – appendical tu



i. Rates of occult ovarian metastasis in 215 patients with appendiceal tumors.

Mehta AM et al. Risk of Ovarian Involvement in Advanced Colorectal or Appendiceal Tumors Involving the Peritoneum. *Dis Colon Rectum* 2017; 60: 691–696

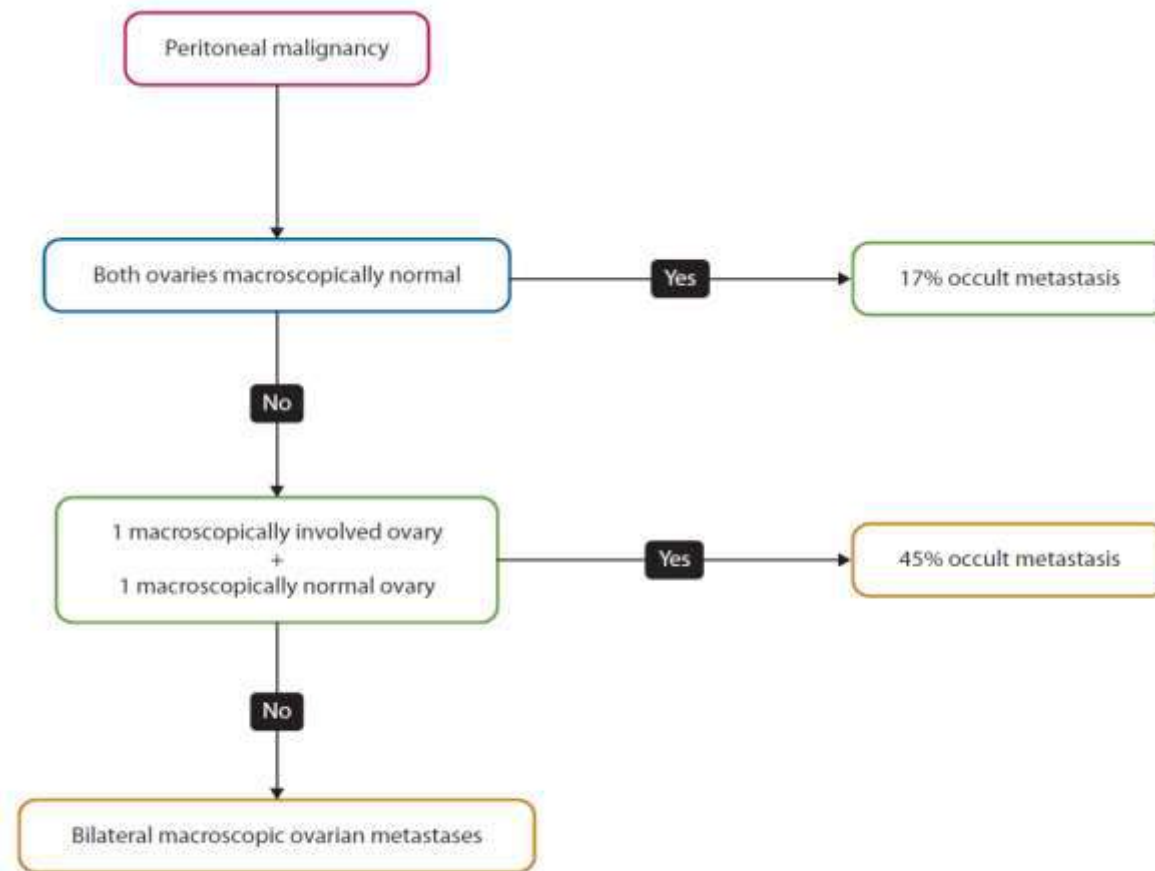
# Rate of ovarian mts – colorectal tu



ates of occult ovarian metastasis in 43 patients with colorectal peritoneal metastases.

*Mehta AM et al. Risk of Ovarian Involvement in Advanced Colorectal or Appendiceal Tumors Involving the Peritoneum. Dis Colon Rectum 2017; 60: 691–696*

# Rate of ovarian mts – peritoneal tu



es of occult ovarian metastasis in 258 patients with peritoneal malignancy.

Mehta AM et al. Risk of Ovarian Involvement in Advanced Colorectal or Appendiceal Tumors Involving the Peritoneum. *Dis Colon Rectum* 2017; 60: 691–696



# Gastric cancer

	Female	
Age	N	Relative survival
All ages	78.038	33%
<45	5.480	42%
45-54	8.539	40%
55-64	12.609	38%
65-74	17.731	36%
75+	33.775	25%

*Five-Year Relative Survival\*, Cancer, by Race, Sex, and Age Group — National Program of Cancer Registries, 2001-2013*

# Colon and Rectum Cancer

	Female	
Age	N	Relative survival
All ages	643.679	64%
<45	31.720	70%
45-54	75.982	72%
55-64	111.897	69%
65-74	149.461	67%
75+	276.584	58%

*Five-Year Relative Survival\*, Cancer, by Race, Sex, and Age Group — National Program of Cancer Registries, 2001-2013*

# Pancreatic Cancer

	Female	
<u>Age</u>	<u>N</u>	<u>Relative survival</u>
All ages	171.817	9%
<45	4.271	36%
45-54	13.601	16%
55-64	30.940	11%
65-74	44.801	8%
75+	78.227	5%

*Five-Year Relative Survival\*, Cancer, by Race, Sex, and Age Group — National Program of Cancer Registries, 2001-2013*

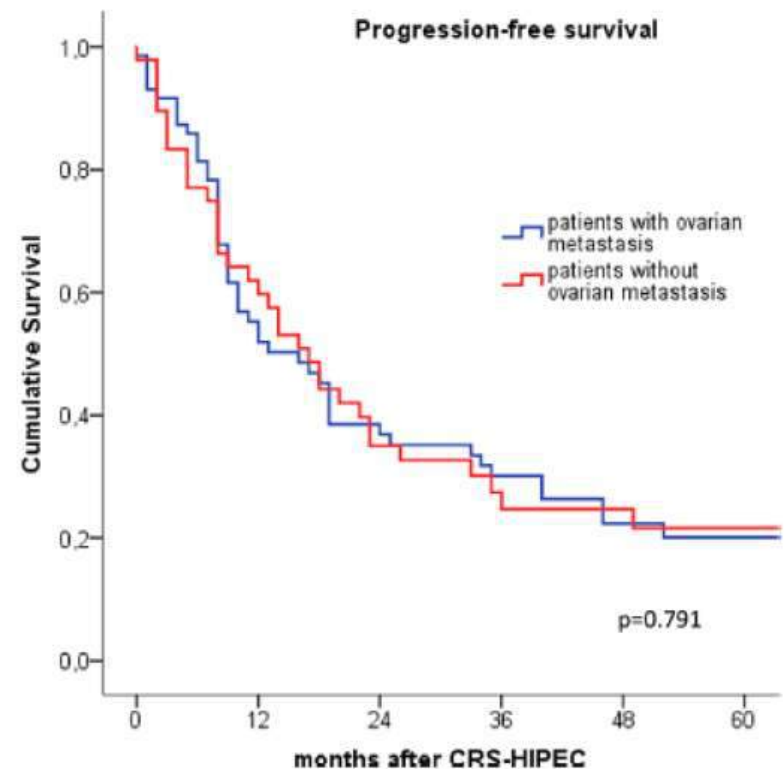
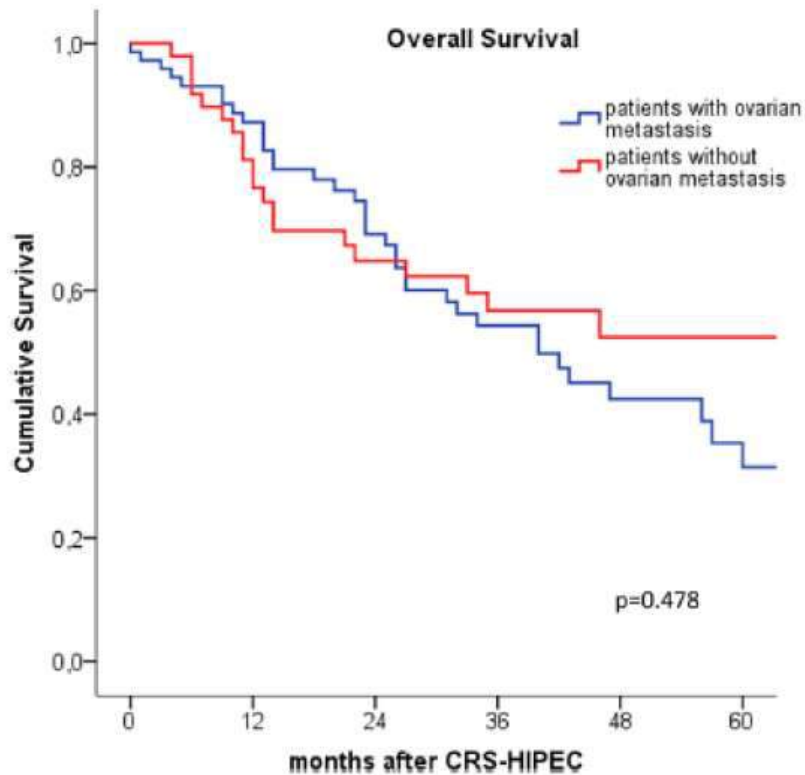
# Ovarian Cancer

	Female	
<u>Age</u>	<u>N</u>	<u>Relative survival</u>
All ages	15.575	39%
<45	2.755	72%
45-54	3.360	46%
55-64	4.107	36%
65-74	3.759	26%
75+	3.596	18%

*Five-Year Relative Survival\*, Cancer, by Race, Sex, and Age Group — National Program of Cancer Registries, 2001-2013*

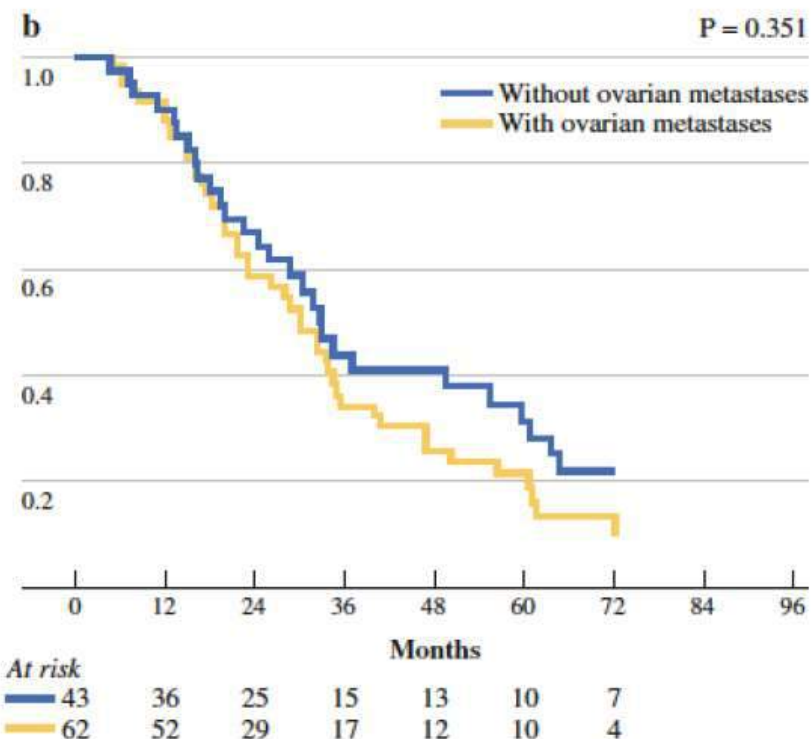
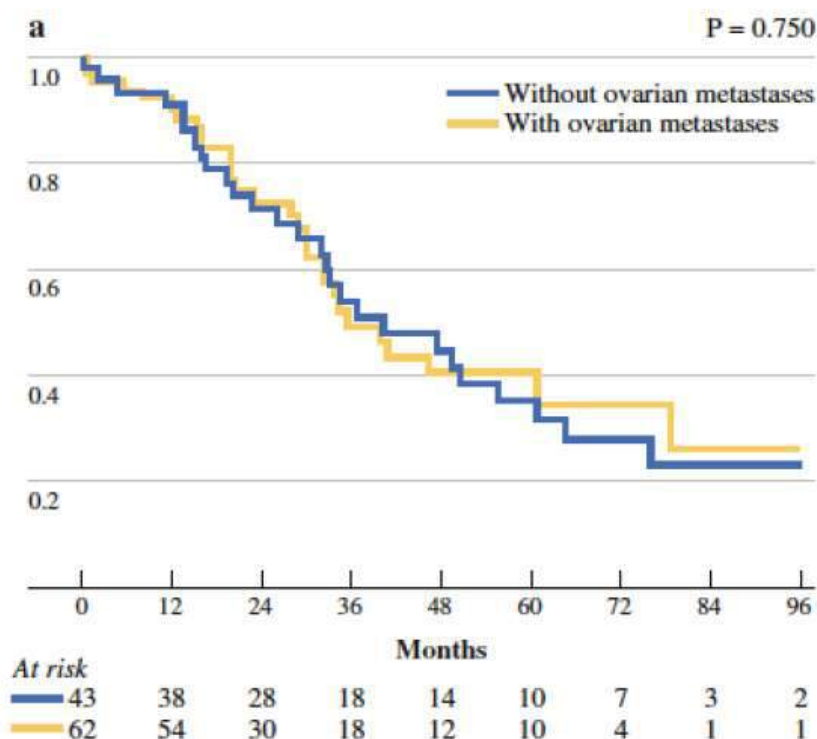
# Treatment of ovarian metastases of colorectal and appendiceal carcinoma in the era of CRS and HIPEC

## ■ Kuijpers et al. *EJSO* 2014



# Ovarian Metastasis Is Associated with Retroperitoneal Lymph Node Relapses in Women Treated for Colorectal Peritoneal Carcinomatosis

- Eveno et al. *Ann Surg Oncol* 2013



# Alternatives

# Alternatives – Fertility Centres

- Hormonal function loss – many options for sufficient hormonal replacement therapy (HRT)
- Strong wish for pregnancy:
  - Preservation of macroscopical uneffected ovarian tissue
  - Cryconservation of ovarian tissue (<50 successful pregnancies worldwide)
  - Ovarian stimulation and IVF – embryotransfer following CRS and HIPEC (Uterus with perimetrium has to be preserved!)
  - Ovarian stimulation and IVF – embryotransfer following CRS and HIPEC to surrogate mother

**(many ethical, legal, medical, financial aspects!!!!)**



# Conclusion

# Conclusion

- 1) Patients with peritoneal spread of colorectal or primary peritoneal malignancy do have considerable risk of ovarian metastases.
- 2) Ovarian preservation is associated with risk of incomplete resection
- 3) Survival after CRS and HIPEC not affected by ovarian involvement.
- 4) Ovarian preservation should be considered only in young patients after extensive counselling about risk and benefits as experimental approach (FERTIPROTECT – centres in Europe).

**Thank you for the invitation and your  
kind attention!**

