



Peritoneal malignancies of Gastric origin

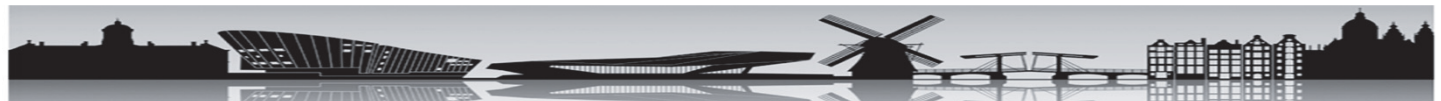
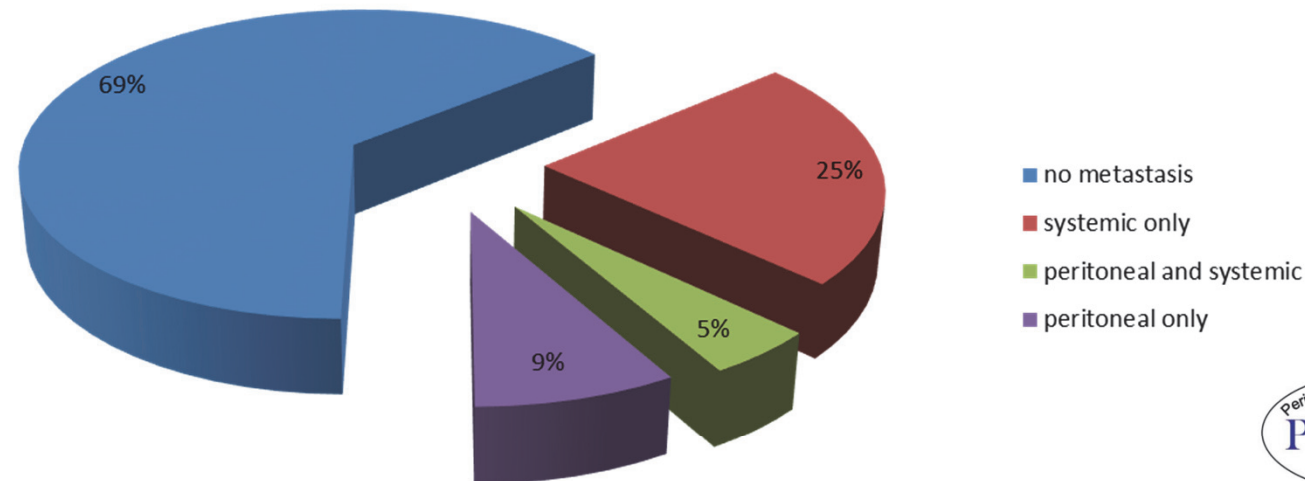
Vic J Verwaal MD PhD

University hospital Utrecht

v.j.verwaal@UMCUtrecht.nl

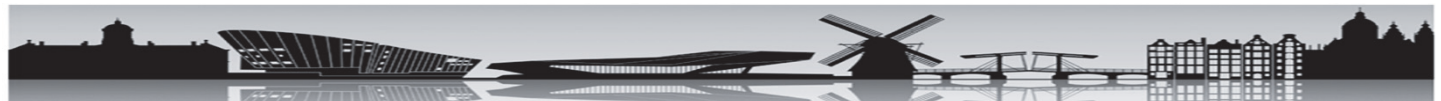
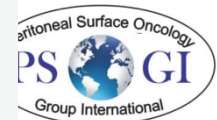
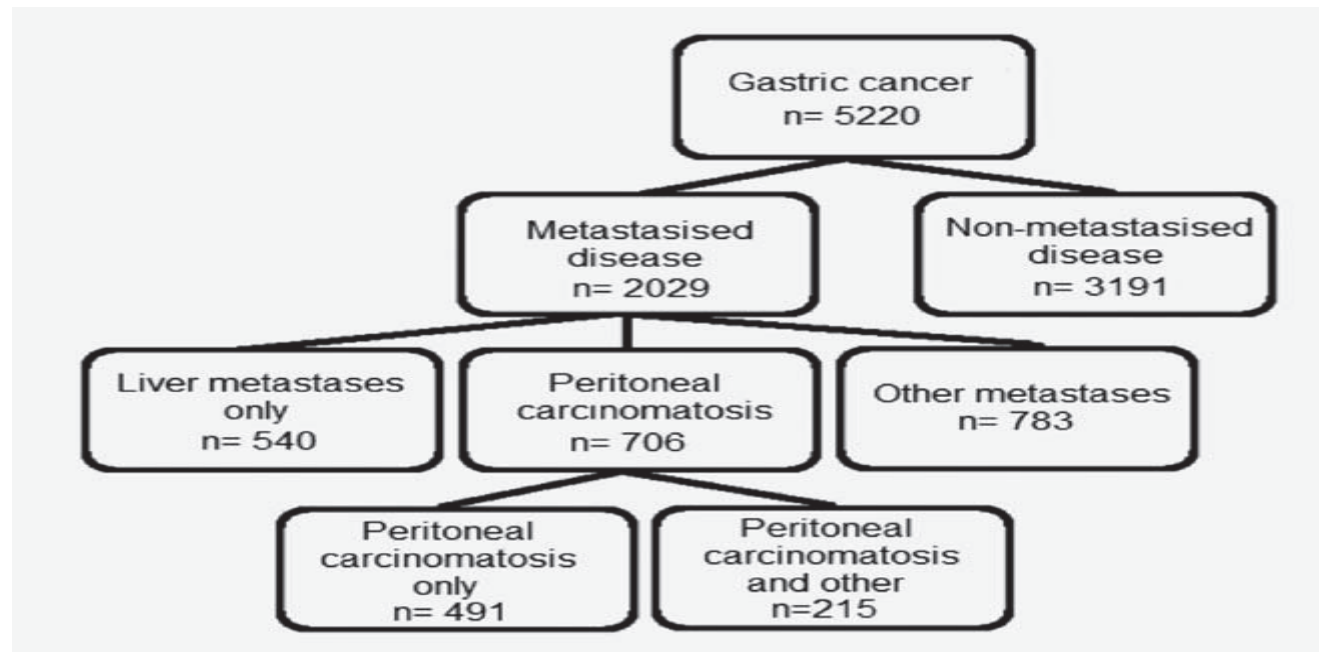


Distribution of metastasis of gastric cancer





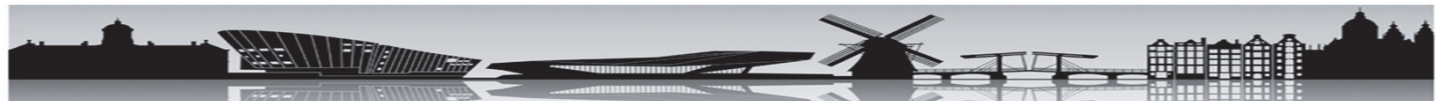
Population based study of 5220 patients





Incidence

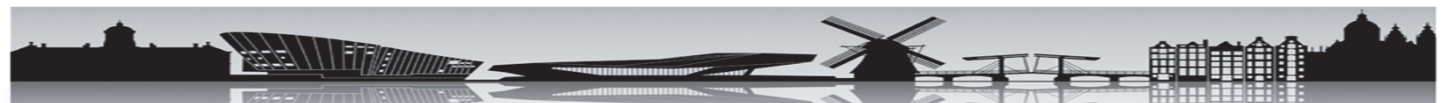
- Metastatic disease at diagnosis of gastric cancer **39 %**
- Peritoneal speading **14%**
- Peritoneal spreading only site **9%**





Risk factors

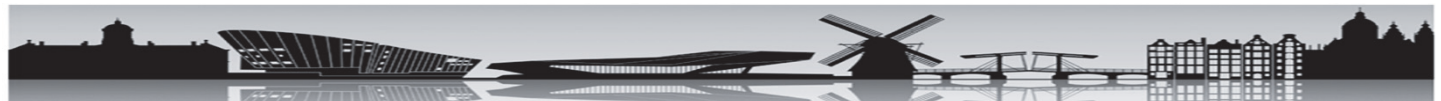
Age			
<60	1.0	1.0	1.0
60–69	0.7 (0.5–0.9)	0.7 (0.5–1.0)	0.7 (0.5–1.0)
70–79	0.5 (0.4–0.6)	0.7 (0.6–1.0)	0.3 (0.2–0.4)
≥80	0.3 (0.2–0.3)	0.4 (0.3–0.5)	0.2 (0.1–0.3)
Gender			
Male	1.0	1.0	1.0
Female	1.2 (1.0–1.5)	1.1 (0.9–1.3)	1.6 (1.2–2.2)
Period of diagnosis			
1995–1998	1.0	1.0	1.0
1999–2002	0.7 (0.6–1.0)	0.7 (0.5–1.0)	0.9 (0.6–1.4)
2003–2006	0.7 (0.6–1.0)	0.7 (0.6–1.0)	0.8 (0.5–1.2)
2007–2011	1.0 (0.8–1.2)	0.9 (0.7–1.1)	1.2 (0.8–1.8)
T stage of primary tumor			
T1,2	1.0	1.0	1.0
T3	2.4 (1.7–3.3)	2.3 (1.6–3.3)	2.2 (1.1–4.4)
T4	2.9 (2.1–4.0)	2.9 (2.0–4.2)	2.3 (1.2–4.4)
TX	2.2 (1.6–3.0)	1.8 (1.2–2.5)	3.1 (1.7–5.7)
N stage of primary tumor			
N0	1.0	1.0	1.0
N+	4.0 (2.2–7.3)	3.5 (1.9–6.4)	8.4 (1.1–63.9)
Nx	9.3 (5.1–16.9)	6.7 (3.6–12.6)	26.9 (3.6–199.0)
Differentiation grade of primary tumor			
Well/moderately	1.0	1.0	1.0
Poorly/undifferentiated	1.2 (0.9–1.5)	1.2 (0.9–1.5)	1.1 (0.7–1.7)
Unknown	1.2 (0.9–1.5)	1.1 (0.8–1.5)	1.3 (0.8–2.1)
Tumor morphology			
Adenocarcinoma (non-signet/linitis)	1.0	1.0	1.0
Signet ring cell	1.7 (1.4–2.2)	1.8 (1.4–2.4)	1.2 (0.8–1.8)
Linitis plastica	2.0 (1.5–2.8)	2.5 (1.8–3.6)	1.0 (0.6–1.7)
Tumor localization			
Non-cardia	1.0	1.0	1.0
Cardia	0.4 (0.3–0.5)	0.4 (0.3–0.6)	0.5 (0.3–0.8)
Overlapping lesions/ NOS	1.3 (1.0–1.6)	1.0 (0.8–1.3)	1.7 (1.2–2.4)





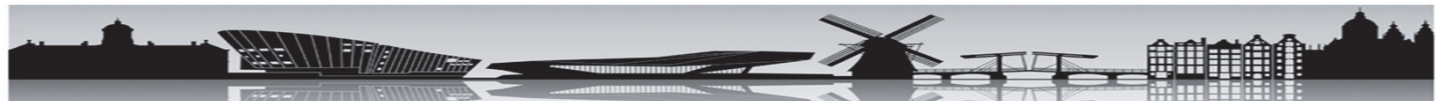
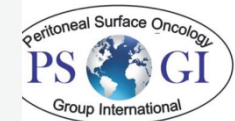
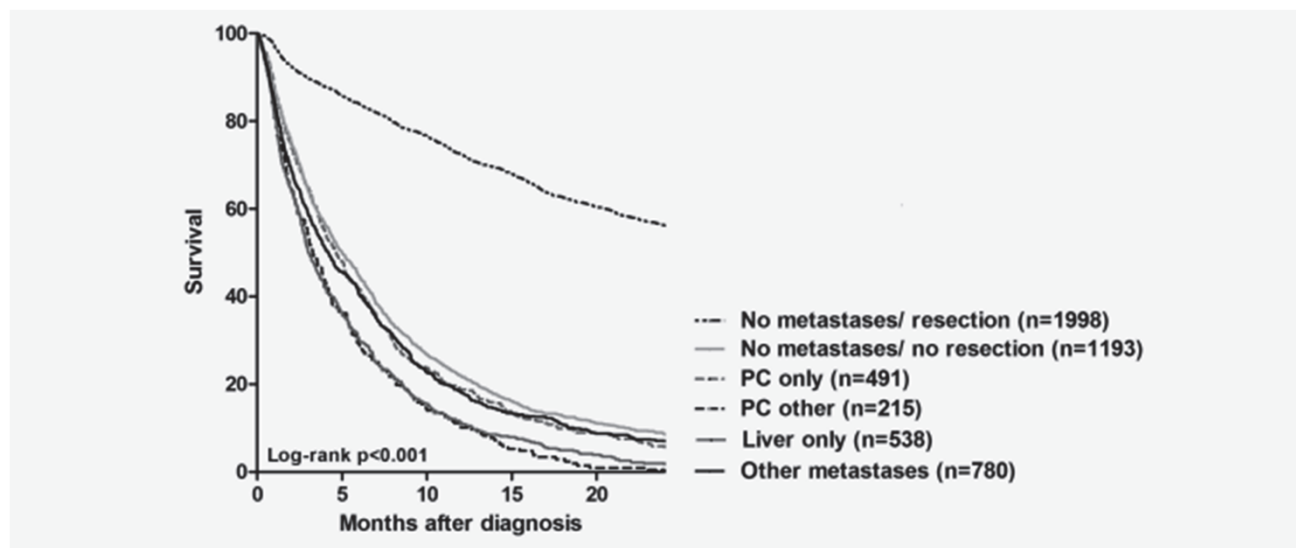
Risk factors for peritoneal disease

- T3 OR 2.4 (1.7 – 3.3)
- T4 OR 2.9 (2.1 – 4.0)
- N+ OR 4.0 (2.2 – 7.3)





Survival of 5220 patients without CRS and HIPEC





Survival of PC in gastric cancer

Table 4. Median survival of patients with gastric cancer according to metastatic pattern and type of treatment

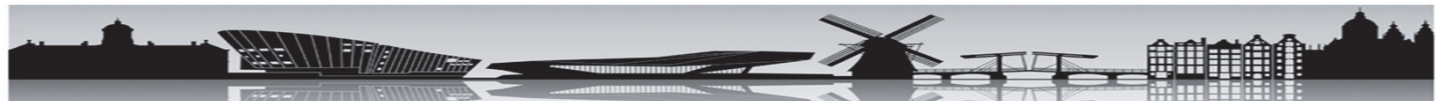
		PC only (n = 491)			PC and other metastases (n = 215)		
		N	MS	95% CI	N	MS	95% CI
1. ^a n < 10.							
Surgical exploration	Yes	33	3.7	3.0–5.2	7	<u>a</u>	
	No	458	4.6	4.3–5.3	208		
Resection of primary tumor	Yes	114	9.9	7.7–11.9	24	5.3	3.3–9.3
	No	377	3.7	3.4–4.4	191	3.0	2.3–3.8
Metastectomy	Yes	0	<u>a</u>		15	4.5	2.4–7.3
	No	491			200	3.2	2.5–3.9
Chemotherapy	Yes	113	8.0	6.8–9.3	54	7.0	4.5–8.9
	No	378	3.7	3.3–4.4	161	2.6	1.9–3.2
Radiotherapy	Yes	27	7.8	4.7–8.4	9	<u>a</u>	
	No	467	4.4	3.8–5.1	209		





Factors related to survival of PC only

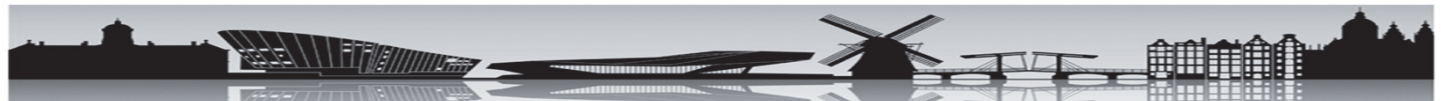
- Resection prim tumor 9.9 vs 3.7 m
- Chemotherapy 8.0 vs 3.7 m
- Radio therapy 7.8 vs 4.4 m





Multi modality

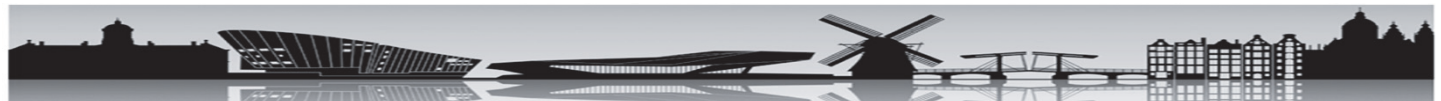
- Resection of prim. tumor
- Systemic chemotherapy
- Radio therapy
- HIPEC





Meta-analysis

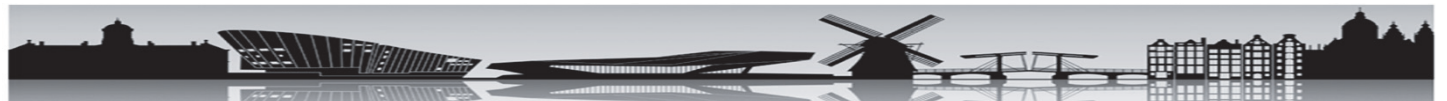
- Overall survival gain at 1, 2, 3 years
- No difference at 5 year
- IPC reduces rates of local and distal recurrence
- Increase of morbidity with IPC





Three strategies on established PC

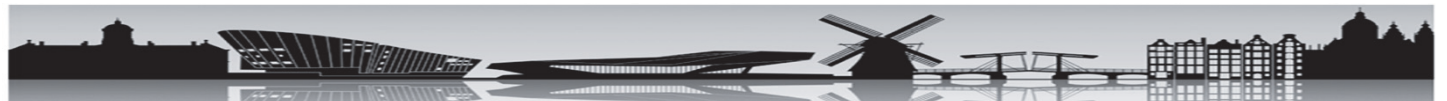
- HIPEC
- EPIC
- infusion





EPIC

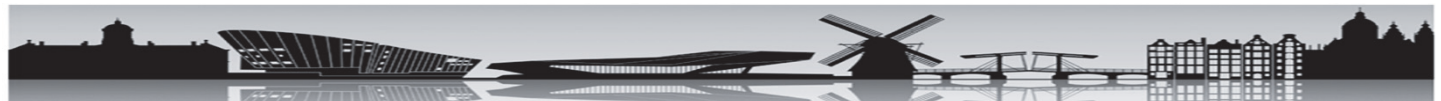
- Early post operative
- Chemotherapy circulation
- Using a port





Sautner et al

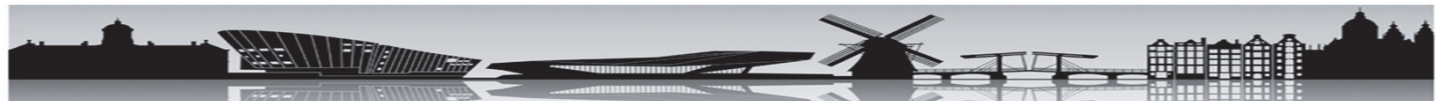
- T3 T4
- Intra operative randomization
- Random: **EPIC** with cisplatin vs none
- No systemic treatment
- No benefit





CRS HIPEC

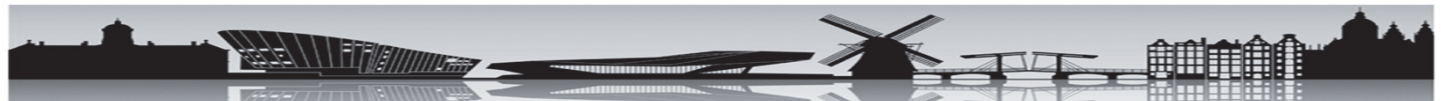
- Per operative
- Intra abdominal
- Heated chemotherapy
- Circulation





Yang et al

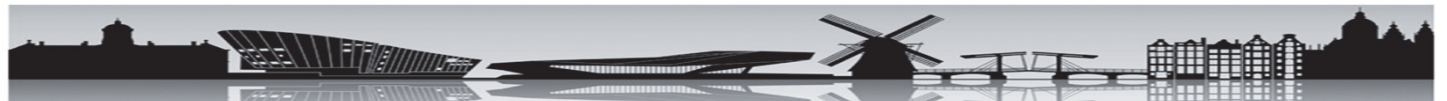
- Stage IV
- Pre operative randomization
- Random: **CRS + HIPEC** Cisplatin MMC vs CRS
- No systemic treatment
- 11.0 vs 6.5





Infusion

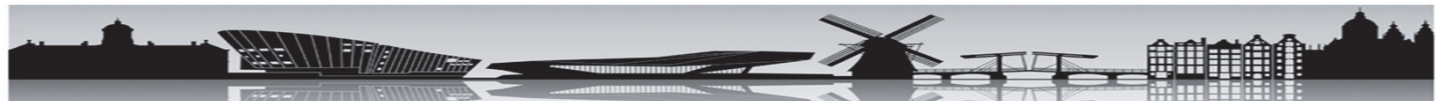
- At the end of the operation
- Leaving chemotherapy





Takahashi et al

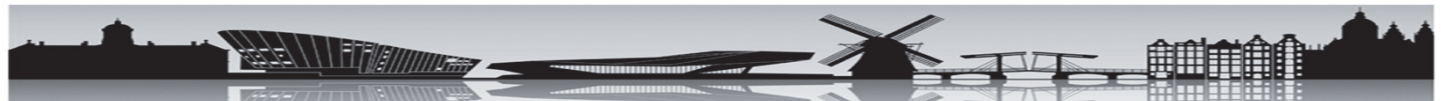
- T4
- Random infusion MMC CH vs none
- No other treatment
- 42% vs 28% (2y) 38% vs 20% (3y)





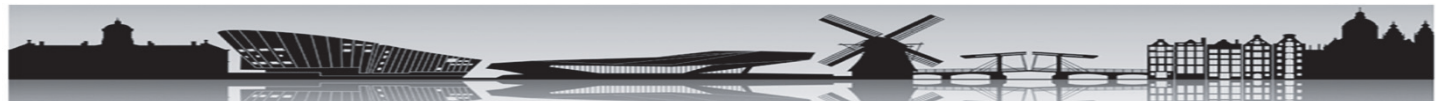
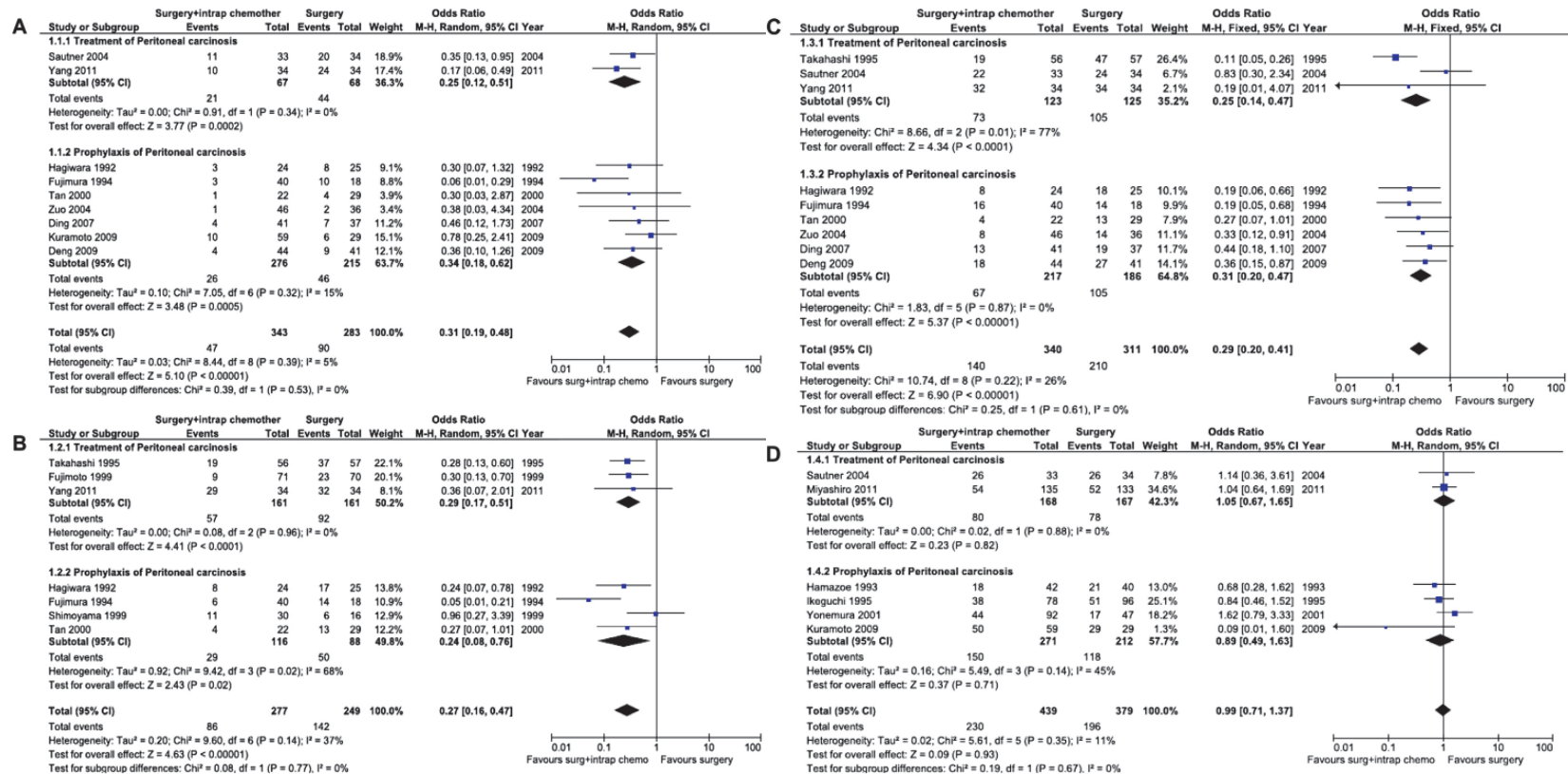
Yunemura NIPS

- Preoperative
- Perfusion
- Using a port
- Purpose down staging PC





Summarize





Open studies

- France
- German
- Dutch
- ...

