

OUTCOMES IN THE CARE OF PERITONEAL CARCINOMATOSIS IN THE CATALONIAN PUBLIC HEALTH CARE SYSTEM

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Do we need to think about organization of complex cancer surgery?

- Underlying reasons for inadequate quality of care:

- Growing complexity of science and technology in medicine
- Increase in chronic conditions

Redesigned delivery systems. Five elements required for best outcomes for chronic patients (Wagner 1996):

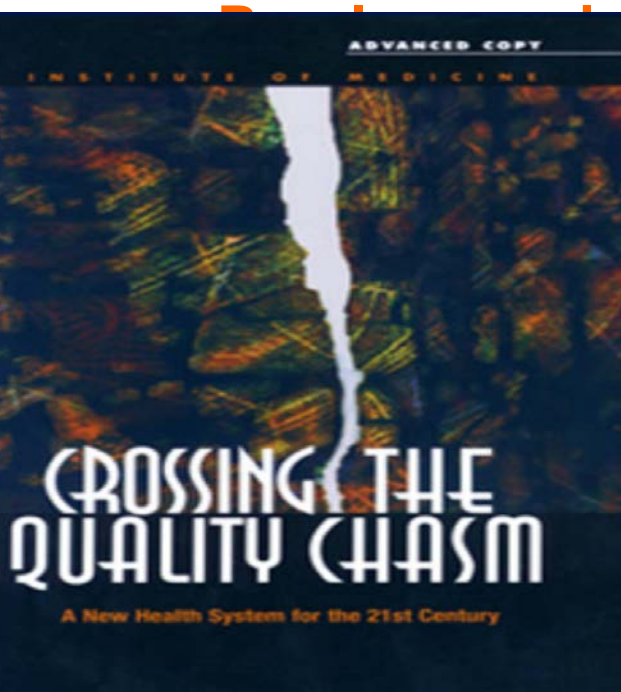
• Case-based planned care

• Standardization of practices to meet the needs of patients

• Special attention to patients' needs for information

• Access to necessary clinical expertise

• Robust information systems



Consensus on the benefits of specialization in cancer surgery

- Gastrectomy
- Pancreatectomy
- Hepatectomy
- Esophagectomy
- Pneumectomy

OPINION

The evolution of cancer surgery and future perspectives

Lynda Wyld, Riccardo A. Audisio and Graeme J. Poston

Specialization of cancer surgery

The complex nature of surgery and the heterogeneity of disease in cancer make cancer surgeries highly technically demanding and, therefore, outcomes are improved when surgery is undertaken by experienced teams of specialists at high-volume centres.⁷³

However, we are still discussing this issue...

- All studies are observational with risk of bias, and in some cases using administrative data
- Insufficient information available to permit a rational choice of a cut-off point: the threshold issue
- Imposing the volume standards as a proxy for quality could create new problems, such as the focus on one variable exclusively
- Usually short term outcome measures
- Heterogeneity of outcomes among high and low volume hospitals

Not only from a methodology but, also, from a policy perspective....

- Centralization might have adverse effects on the accessibility and continuity of care
- What about quality of care in the hospitals without these complex procedures: why don't try to improve the whole system of cancer care
- Waiting lists in the reference hospitals

Quantity and / or Quality?

Centralization

- Bring patients from LVH to High Volume Hospitals
- Specialized MDT at HVH
- Better capacity to manage complications
- Upper limit to volume centralization
- Evaluation of outcomes by hospital feasible
- Clinical Research

System wide quality improvement

- Expertise shared through networks
- Specialized MDT
- Specific pathways
- Real time peer reviewed treatment plans
- Regular evaluation of treatments and outcomes

Policy perspective on centralization of surgery: experience in Catalonia, Spain

- Implement centralization of specific surgical procedures: Policy driven
- Volume as criteria but not only: clinical audit with other parameters of quality
- Relevance of the local context: local data on process measures and outcomes
- Evaluation of outcomes feasible thanks to centralization
- Policy involvement with (some) professional support

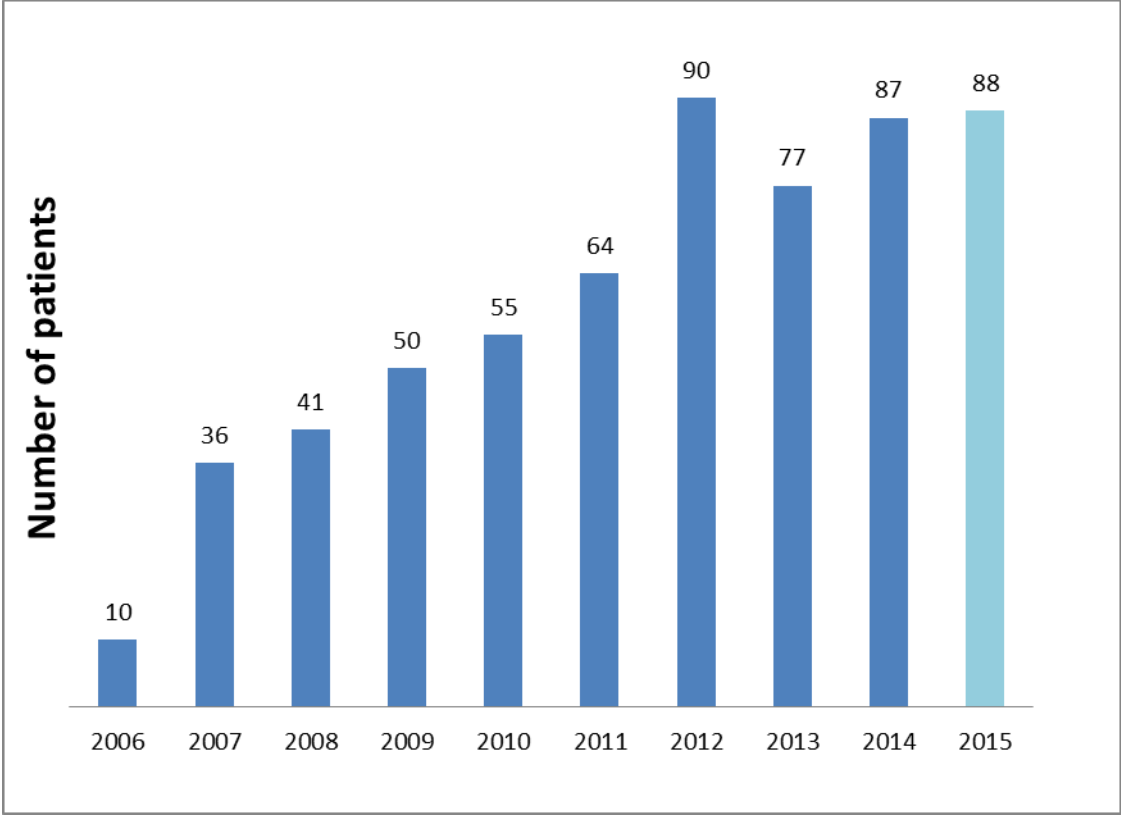
Reduction in 30 days mortality after centralization

	Núm. de cirurgies	Núm. de cirurgies/any**	Mortalitat bruta a 30 dies	p valor	Mortalitat bruta a 90 dies
Cirurgia de càncer d'esòfag					
2005-2011 ^a	493	70 ± 4,4; 68; (64 - 77)	11,2%	0,0007*	—
2012-2013 ^b	180	90 ± 1,0; 90; (89 - 91)	2,8%		5,6%
Cirurgia de càncer de pàncrees					
2005-2011 ^a	1206	172 ± 26,0; 181; (135 - 209)	6,6%	0,0119*	—
2012-2013 ^b	406	203 ± 4,0; 203; (199 - 207)	3,2%		4,7%
Cirurgia de metàstasis hepàtiques					
2005-2011 ^a	2161	309 ± 18,9; 310; (271 - 332)	3,0%	0,0190*	—
2012-2013 ^b	678	339 ± 14,0; 339; (325 - 353)	1,3%		2,1%
Cirurgia de càncer de recte					
2005-2007 ^b	1.831	916 ± 7,5; 916; (908 - 923)	3,9%	0,0001*	5,8%
2011-2012 ^b	1.939	975 ± 16,5; 975; (958 - 991)	1,8%		2,7%

Peritoneal carcinomatosis

- Surgical procedure centralized in one hospital
- Need to assess the quality of the procedure using similar approach than in the rest of surgical treatments
- Multidisciplinary team to discuss the indication of the surgery
- Specific reimbursement for these tertiary surgical procedures
- Clinical audit: All patients with PC who received treatment with Sugarbaker technique from 2006 to 2015. External auditors with specific training.

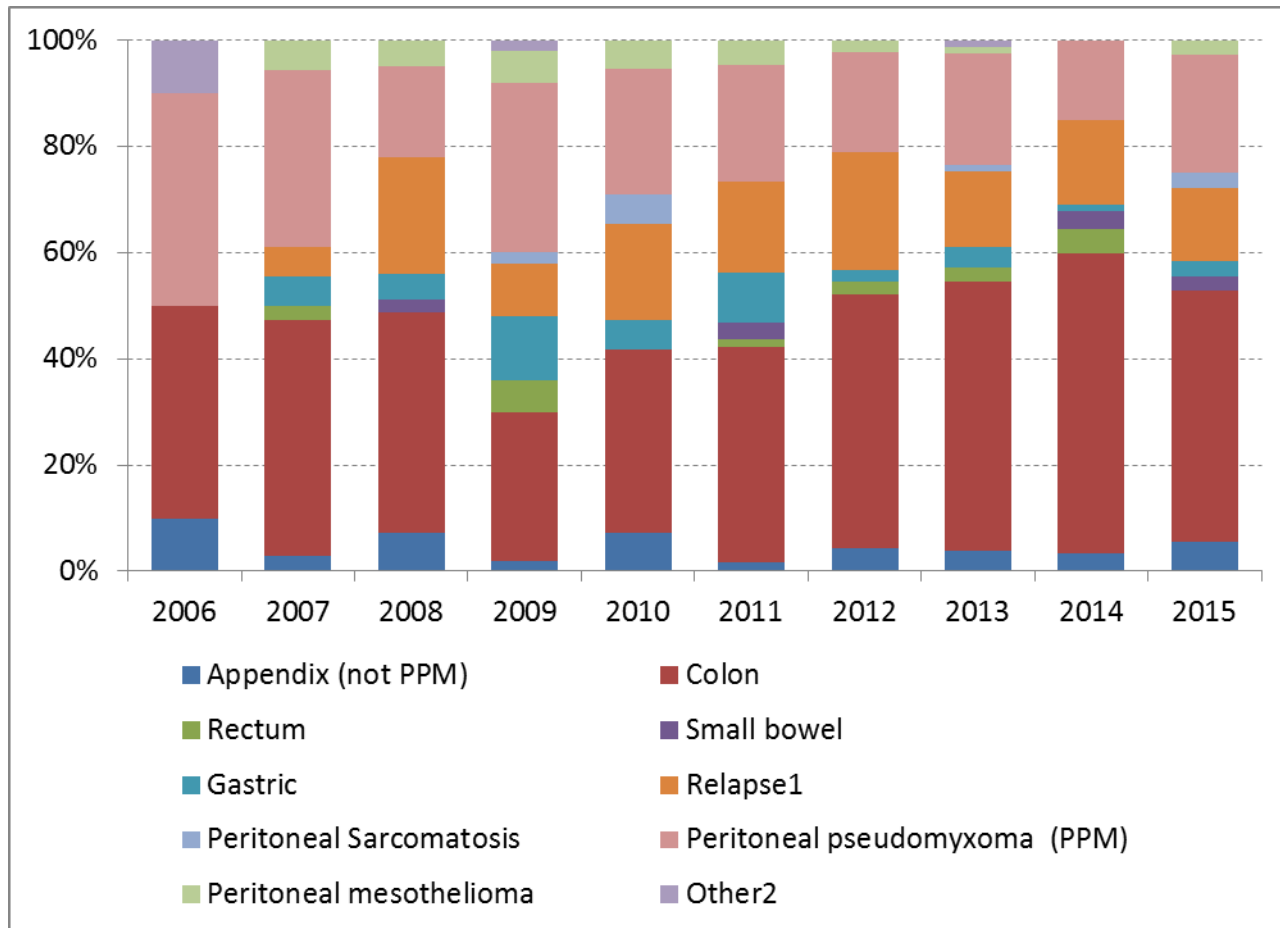
Evolution of the number of patients included (CRS-HIPEC)



Demographic and clinical characteristics of the patients

		n	%
Total of reviewed cases		546	100
Gender	M	195	35.7
	F	351	64.3
Age (years)	Mean \pm SD	56.8 \pm 11.3	
	Range	22-80	
Age (years)	\leq 50	169	31
	51 - 60	155	28.4
	61 - 70	179	32.8
	71 - 80	43	7.9
Type of CP	Synchronous	322	59.0
	Metachronous ¹	224	41.0
ASA	I	1	0.2
	II	496	90.8
	III	34	6.2
	IV	1	0.2
	Unknown	14	2.6
Previous surgery	Yes	498	91.2
Type of previous surgery	Primary tumor radical surgery	386	77.5
	Exploratory laparotomy/ laparoscopy	99	19.9
	Palliative surgery	13	2.6

Primary tumour in by year of treatment



Peritoneal Cancer Index and Completeness of Cytoreduction score by primary tumour site

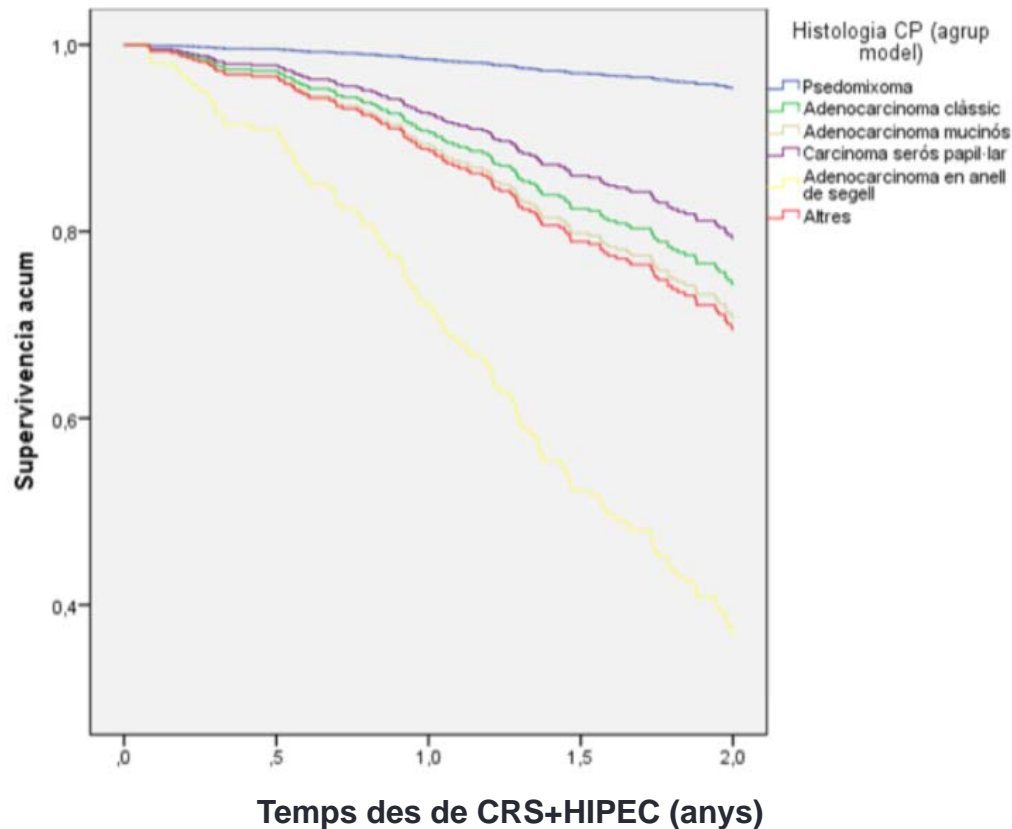
Table 3. Peritoneal Cancer Index (PCI) and Completeness of Cytoreduction Score (CCS) by primary tumor localization

Primary tumor localisation			PCI	CCS					
				0		1		2	
	n	%	Mean ± SD (Min-Max)	n	%	n	%	n	%
Colon ¹	244	44,7	7,6 ± 6,6 (0 - 29)	224	91,8	14	5,7	5	2,00
Peritoneal pseudomyxoma (PPM)	120	22,0	17,3 ± 11,1 (0 - 37)	99	82,5	11	9,2	10	8,33
Relapse of ovarian malignancy/ trompe / Peritoneal primary/ Endometrial	87	15,9	10,6 ± 8,2 (0 - 28)	84	96,6	3	3,4	0	0,00
Gastric	26	4,8	8,7 ± 9,0 (0 - 39)	23	88,5	2	7,7	1	3,85
Appendix (not PPM)	23	4,2	14,3 ± 8,8 (2 - 33)	20	87,0	3	13,0	0	0,00
Peritoneal mesothelioma	17	3,1	20,1 ± 8,1 (4 - 36)	11	64,7	4	23,5	2	11,76
Rectum	13	2,4	8,9 ± 8,3 (0 - 27)	12	92,3	0	0,0	1	7,69
Small bowel	7	1,3	9,4 ± 6,6 (1 - 22)	5	71,4	2	28,6	0	0,00
Peritoneal Sarcomatosis	6	1,1	8,7 ± 6,1 (2 - 16)	6	100,0	0	0,0	0	0,00
Other	3	0,5	11,3 ± 7,6 (3 - 18)	2	66,7	0	0,0	1	33,33
Total	546	100,0	11,0 ± 9,3 (0 - 39)	486	89,2	39	7,2	20	3,67
1. CCS missing n=1 (0,4%)									

Mortality rate at 1 and 3 months and 1 and 2 years of follow-up

Time of follow-up	Number of deaths	Person-years	Death rate x100pers-any	% of death / 546 patients
1 month	1	46	2,18	0,2%
3 months	10	133	7,50	1,8%
1 year	52	483	10,76	9,5%
2 years	117	828	14,12	21,4%

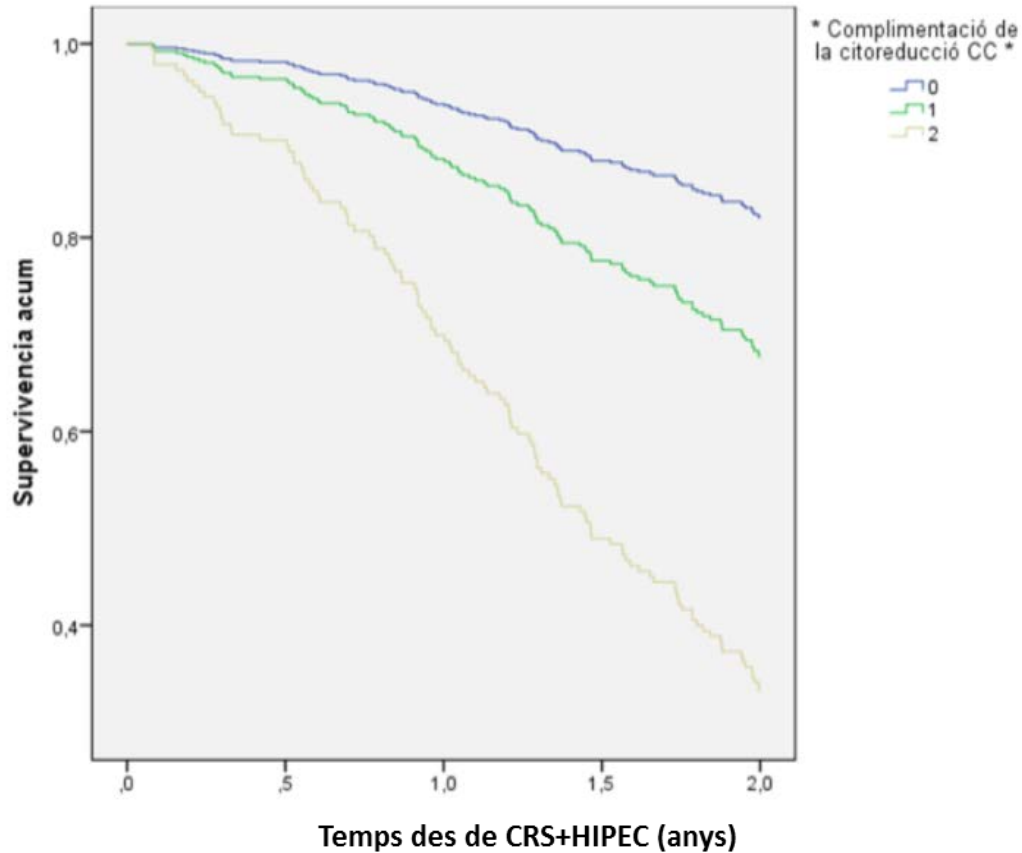
Survival by histology (Adjusted Cox Model)



Model de Cox ajustat per sexe, edat, tipus histològic, ASA, transfusió de sang, anastomosis intestinals i exèresi de met. hepàtiques.

A dos anys de seguiment HR Signet ring adenocarcinoma/ pseudomixoma = 20,77 , $p < 0,001$

SURVIVAL BY COMPLETENESS OF CYTOREDUCTION SCORE



Model de Cox ajustat per sexe, edat, tipus histològic, ASA, transfusió de sang, anastomosis intestinals, exèresi de met. hepàtiques.
A dos anys de seguiment $HR_{CC\ 2/CC\ 0} = 5,55$, $p < 0,01$;

Concluding comments

- Not every hospital should treat every cancer patient.
- However, criteria for applying this criteria should take into account the policy context.
- **Quantity matters but also quality**: Need to avoid the exclusive focus on metrics (quantity)
- Clinical audit with professional involvement, also in Peritoneal carcinomatosis (PC)
- After this evaluation and assessing the number of patients with potential indication for PC, there is a need to consider an increase in the number of hospitals accredited for this surgical procedure