



# Convention complex surgery pancreas & oesophagus

Steering Committee 23/04/2025



Sharon Janssens  
Jérôme Xicluna  
Leen Boesmans  
Lien van Walle  
Geert Silversmit  
Liesbet Van Eycken

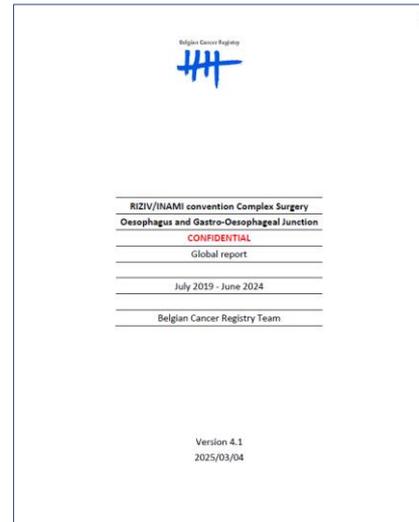
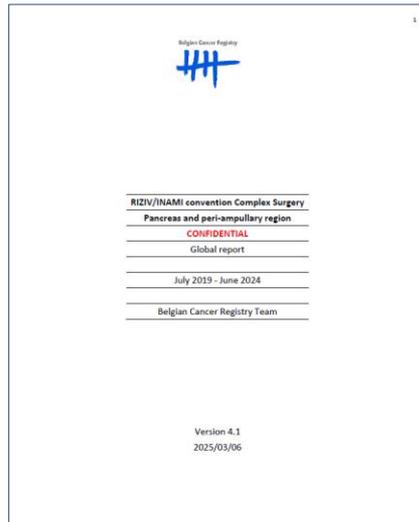
# Agenda

- **Introduction: 5<sup>th</sup> global Convention report (2019-2024)**
- Complex surgery of the (peri-) pancreas and peri-ampullary region
- Complex surgery of the oesophagus
- Comparison postop mortality pre-Convention (T0; 2015-18) & Convention (2019-22)
- Next steps



# Introduction

- Results of 5 years (1/07/2019 - 30/06/2024)
- Only patients with a Belgian health insurance are included (no foreign patients)



# Agenda

- Introduction: 5<sup>th</sup> global Convention report (2019-2024)
- **Complex surgery of the (peri-) pancreas and peri-ampullary region**
- Complex surgery of the oesophagus
- Comparison postop mortality pre-Convention (T0; 2015-18) & Convention (2019-22)
- Next steps



## Volumes – Belgium (N of MC discussions and surgeries)

Patient group	Year 5									
	Year 1		Year 2		Year 3		Year 4		Year 5	
	N	%	N	%	N	%	N	%	N	%
<b>Patients discussed on a MC expert</b>	<b>1,939</b>	<b>–</b>	<b>2,214</b>	<b>–</b>	<b>2,376</b>	<b>–</b>	<b>2,404</b>	<b>–</b>	<b>2,626</b>	<b>–</b>
<b>Patients with surgery</b>	<b>787</b>	<b>40.6<sup>a</sup></b>	<b>928</b>	<b>41.9<sup>a</sup></b>	<b>920</b>	<b>38.7<sup>a</sup></b>	<b>919</b>	<b>38.2<sup>a</sup></b>	<b>1,011</b>	<b>38.5<sup>a</sup></b>
<b>Pathology type</b>										
Malignant tumour	598	76.0 <sup>b</sup>	721	77.7 <sup>b</sup>	739	80.3 <sup>b</sup>	716	77.9 <sup>b</sup>	799	79.0 <sup>b</sup>
Benign tumour	126	16.0 <sup>b</sup>	135	14.5 <sup>b</sup>	112	12.2 <sup>b</sup>	118	12.8 <sup>b</sup>	112	11.1 <sup>b</sup>
Non-tumoural	63	8.0 <sup>b</sup>	72	7.8 <sup>b</sup>	69	7.5 <sup>b</sup>	85	9.2 <sup>b</sup>	100	9.9 <sup>b</sup>
<b>Type of surgery</b>										
242830-242841: Pancreaticoduodenectomy	563	71.5 <sup>b</sup>	601	64.8 <sup>b</sup>	597	64.9 <sup>b</sup>	597	65.0 <sup>b</sup>	620	61.3 <sup>b</sup>
Pancreaticoduodenectomy	512	90.9 <sup>c</sup>	548	91.2 <sup>c</sup>	548	91.8 <sup>c</sup>	533	89.3 <sup>c</sup>	550	88.7 <sup>c</sup>
Total Pancreatectomy	51	9.1 <sup>c</sup>	53	8.8 <sup>c</sup>	49	8.2 <sup>c</sup>	64	10.7 <sup>c</sup>	70	11.3 <sup>c</sup>
242852-242863: Hemipancreatectomy left with jejunal anastomosis of the resection plane of the pancreas, or almost total pancreatectomy (95 pct)	63	8.0 <sup>b</sup>	104	11.2 <sup>b</sup>	88	9.6 <sup>b</sup>	122	13.3 <sup>b</sup>	90	8.9 <sup>b</sup>
242874-242885: Hemipancreatectomy left	150	19.1 <sup>b</sup>	208	22.4 <sup>b</sup>	217	23.6 <sup>b</sup>	191	20.8 <sup>b</sup>	285	28.2 <sup>b</sup>
242896-242900: Enucleation of a pancreatic tumour	11	1.4 <sup>b</sup>	15	1.6 <sup>b</sup>	18	2.0 <sup>b</sup>	9	1.0 <sup>b</sup>	16	1.6 <sup>b</sup>
<b>Patients without surgery</b>	<b>1,152</b>	<b>59.4<sup>a</sup></b>	<b>1,286</b>	<b>58.1<sup>a</sup></b>	<b>1,456</b>	<b>61.3<sup>a</sup></b>	<b>1,485</b>	<b>61.8<sup>a</sup></b>	<b>1,615</b>	<b>61.5<sup>a</sup></b>

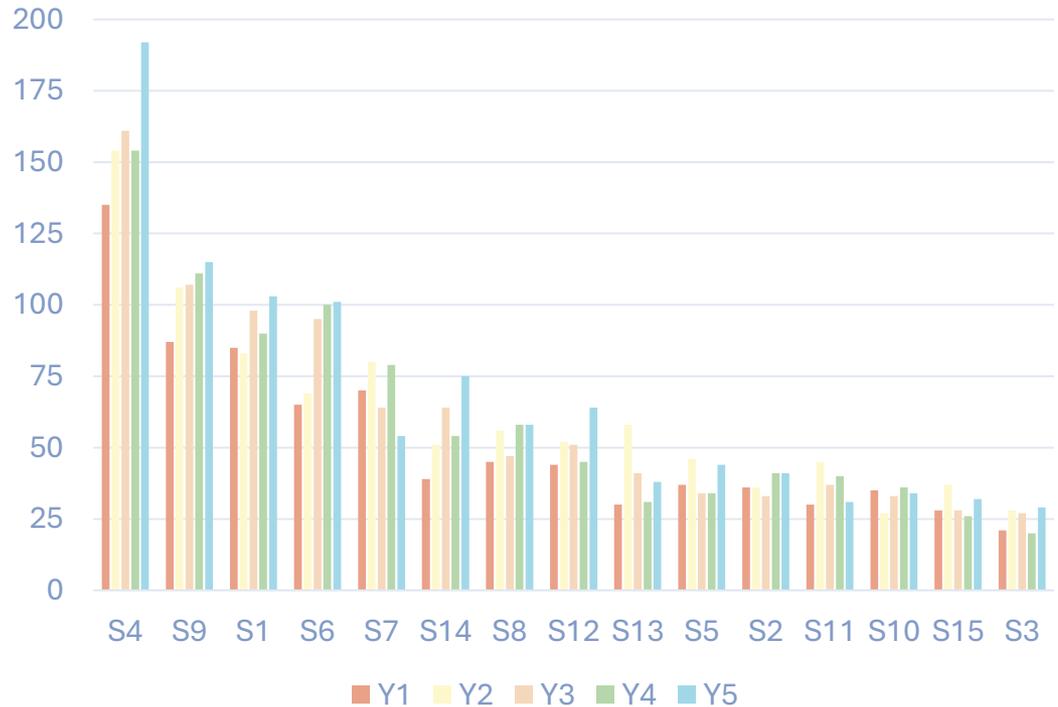
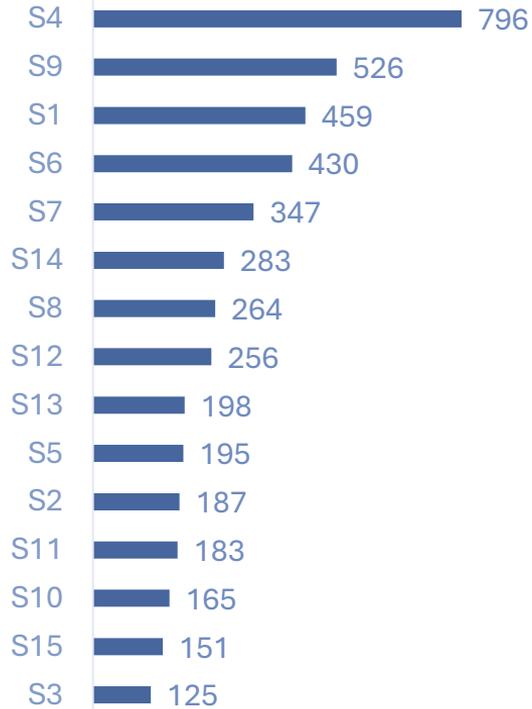
<sup>a</sup> % relative to the number of patients with MC expert

<sup>b</sup> % relative to the number of patients with/without surgery

<sup>c</sup> % relative to the number of patients with 242830-242841 Pancreaticoduodenectomy as type of surgery

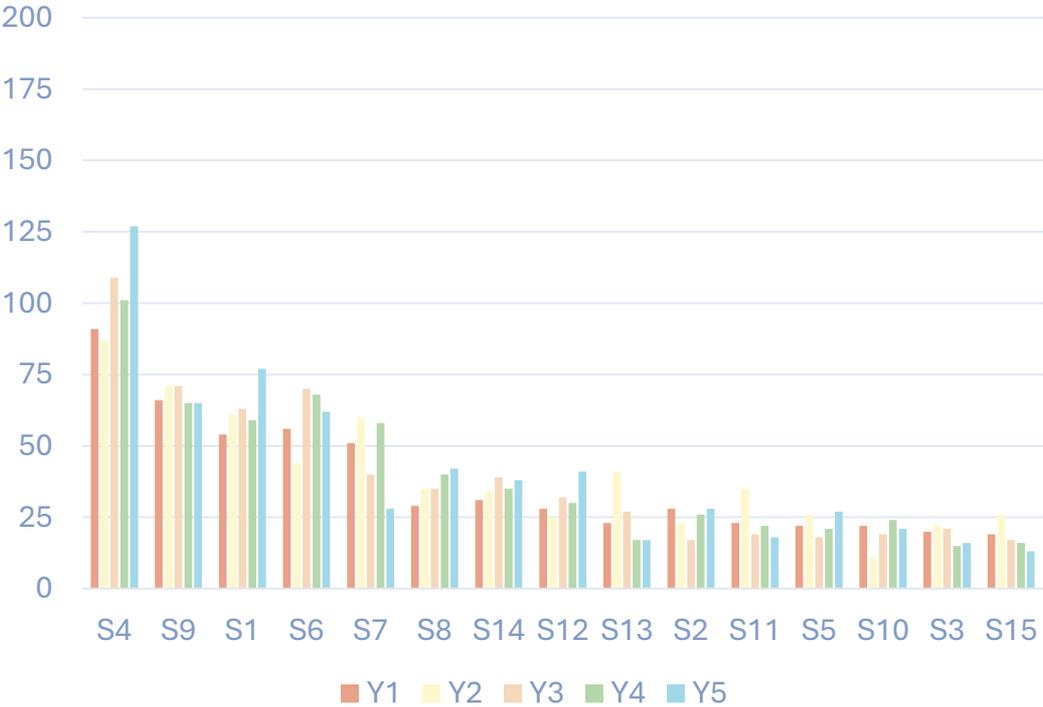
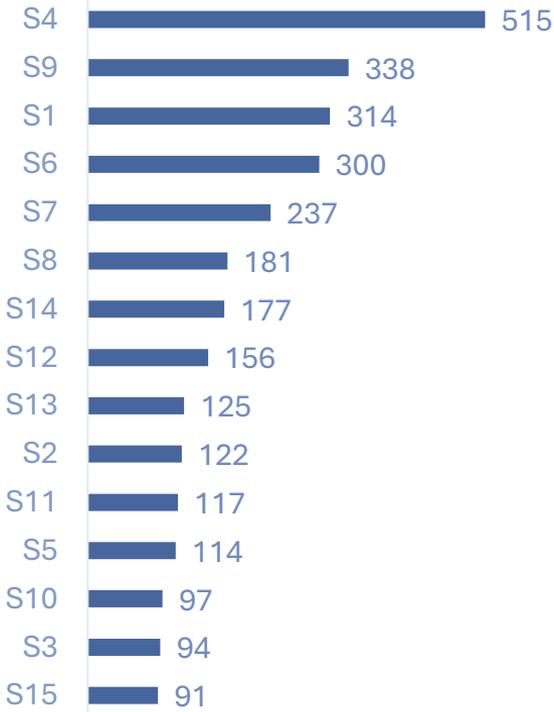
# Volumes – Belgium (N of surgeries – All 5 years)

All years



# Volumes – Belgium (N of pancreaticoduodenectomy – All 5 years)

All years

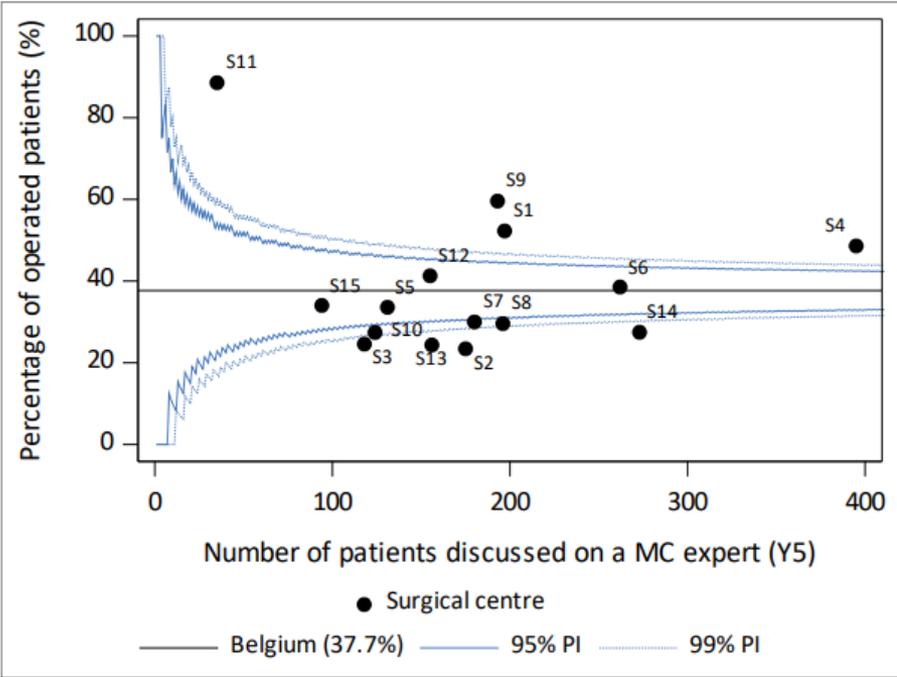


## Volumes – Belgium (casemix description)

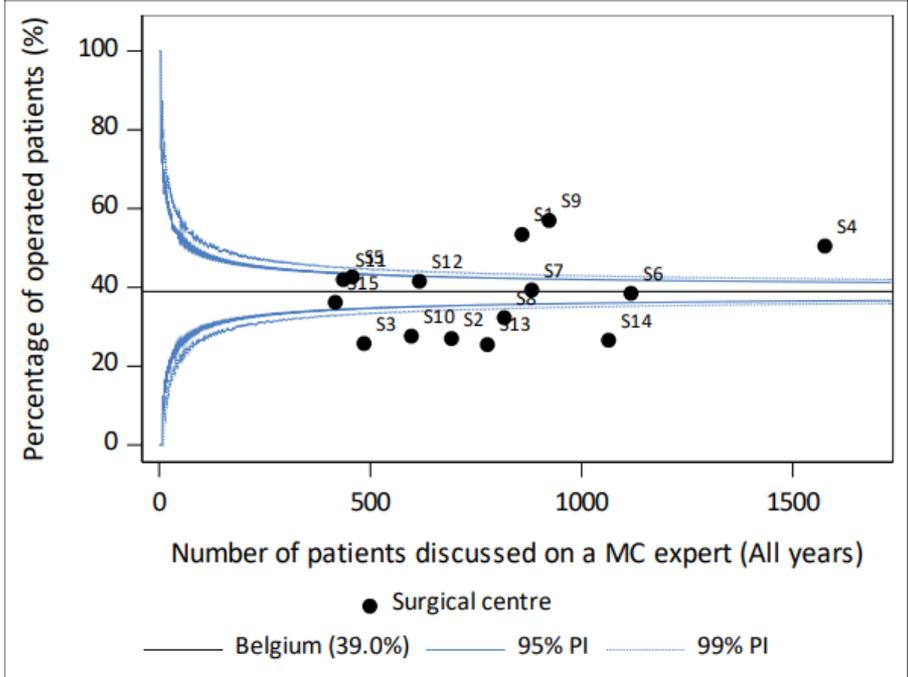
	Belgium								Year 5	
	Year 1		Year 2		Year 3		Year 4		Year 5	
	N	%	N	%	N	%	N	%	N	%
<i>Patients with surgery</i>	787		928		920		919		1,011	
<i>Morphology</i>										
Adenocarcinoma	477	60.6	554	59.7	552	60.0	545	59.3	579	57.2
Neuroendocrine tumour	67	8.5	114	12.3	123	13.4	102	11.1	129	12.7
Benign tumour	126	16.0	135	14.5	112	12.2	118	12.8	112	11.1
Other or unspecified	117	14.9	125	13.5	133	14.5	154	16.8	191	19.1
<i>Type of surgery</i>										
Minimally invasive surgery (MIS) – Laparoscopic	207	26.3	270	29.1	293	31.8	234	25.5	233	23.0
Minimally invasive surgery (MIS) - Hybrid	1	0.1	3	0.3	2	0.2	1	0.1	0	0.0
Minimally invasive surgery (MIS) - Robotic	21	2.7	78	8.4	91	9.9	128	13.9	217	21.4
Open	532	67.6	530	57.1	483	52.5	511	55.6	518	51.6
Conversion from MIS to open surgery	26	3.3	47	5.1	51	5.5	45	4.9	45	4.4

# % of patients discussed on a MC that were operated

Year 5



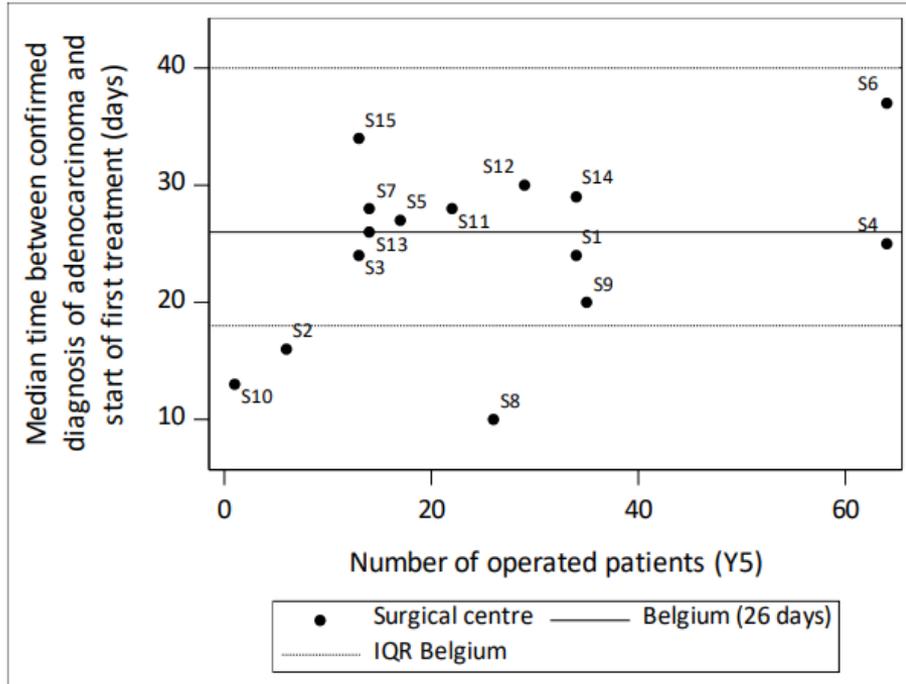
All years



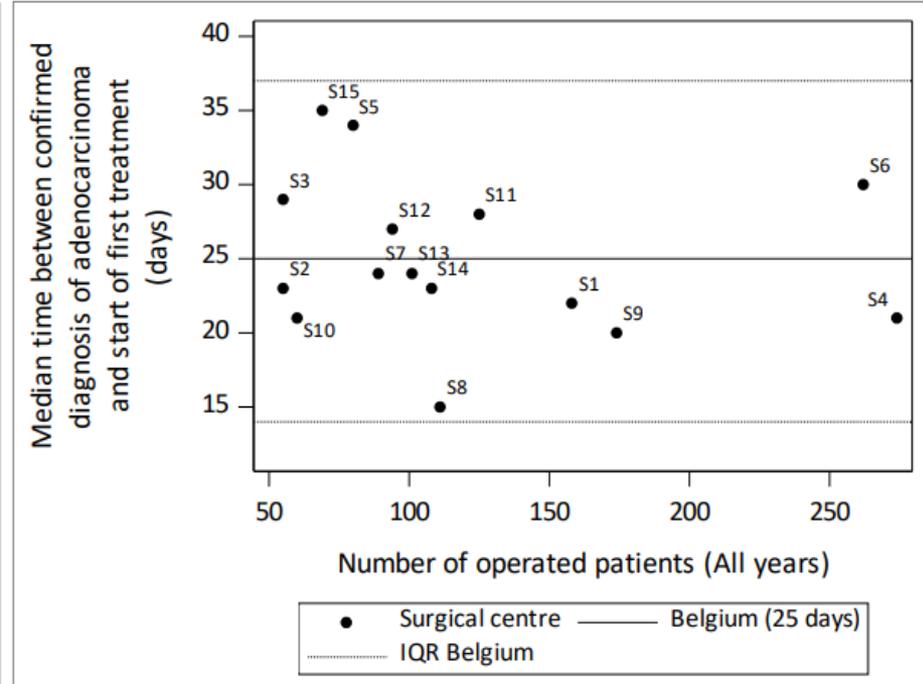
Belgium: 2022 Cancer Registry Database: 2681 (peri-)pancreatic tumours (C17, C24.0-C24.1, C25, incidence year 2022)  
Project: 1427 of these (peri-)pancreatic tumours were discussed on MC = 53,2 %

## TTT: Median time between confirmed diagnosis of adenocarcinoma and start of first treatment (days)

Year 5

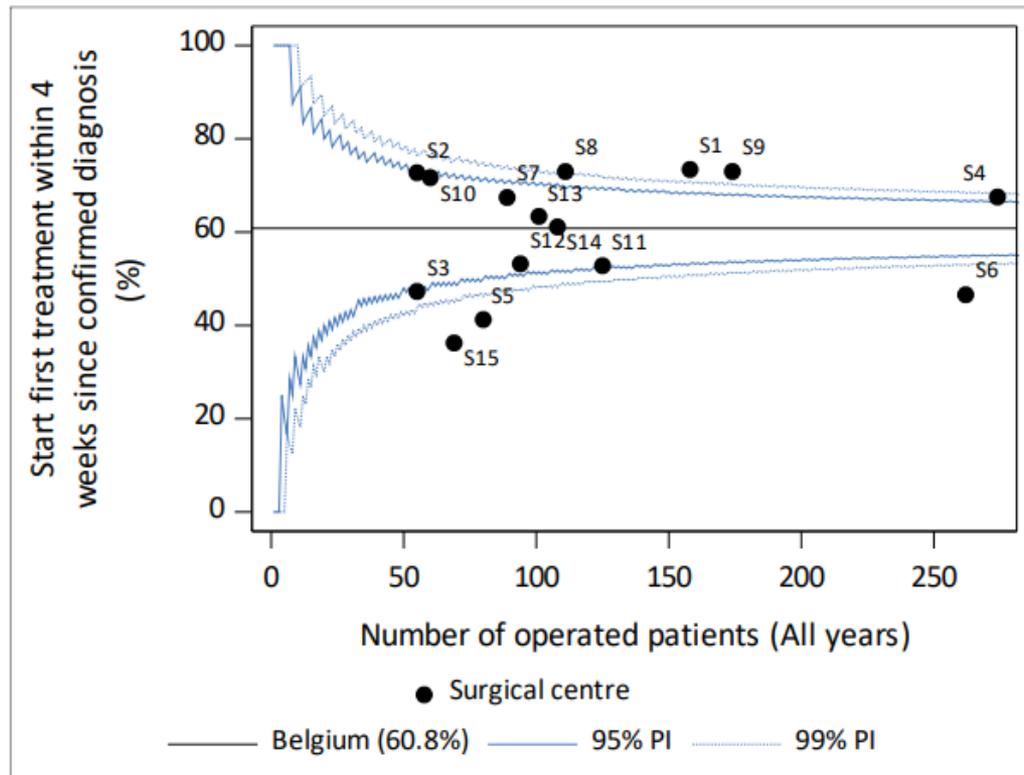


All years



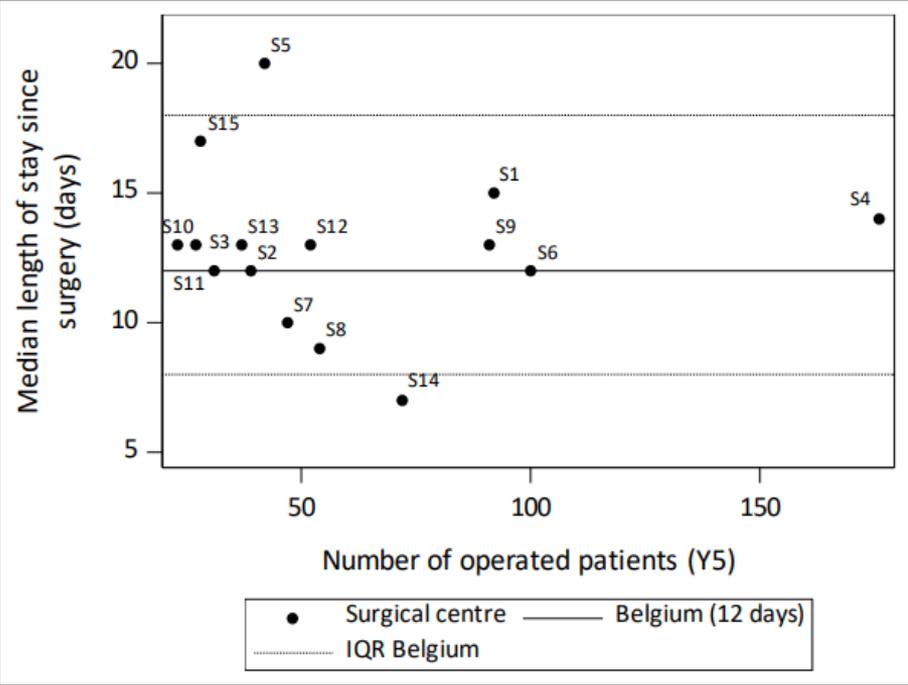
**Belgium: Median = 25 days (± 3,5 week)**  
**75% = 37 days (± 5 weeks)**  
**90% = 55 days (± 8 weeks)**

## TTT: Proportion of operated patients with confirmed adenocarcinoma for whom first treatment started within 4 weeks since confirmed diagnosis.

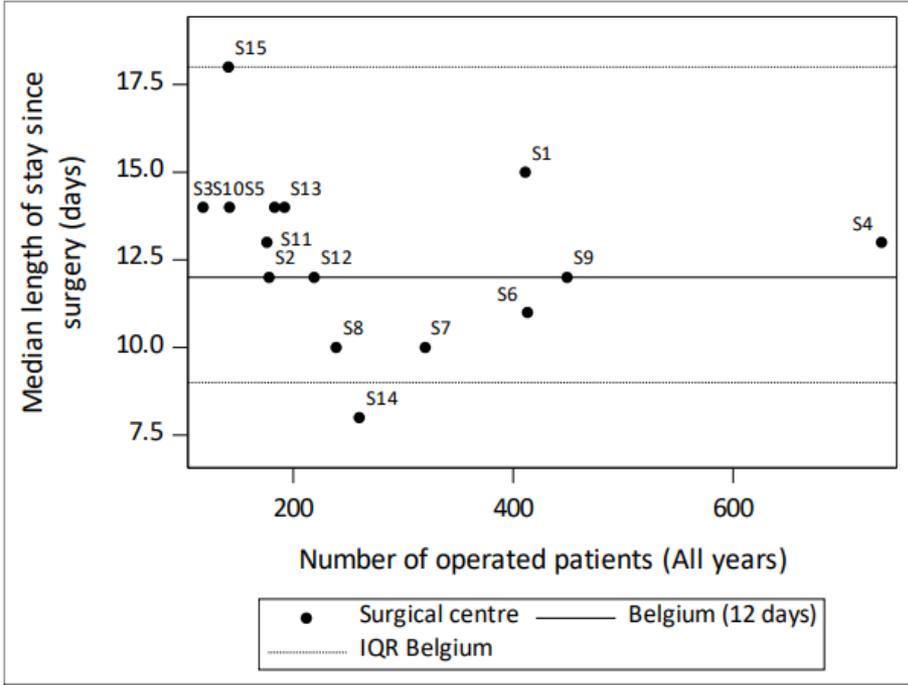


# Median length of stay for all operated patients (malignant + benign tumours)

Year 5

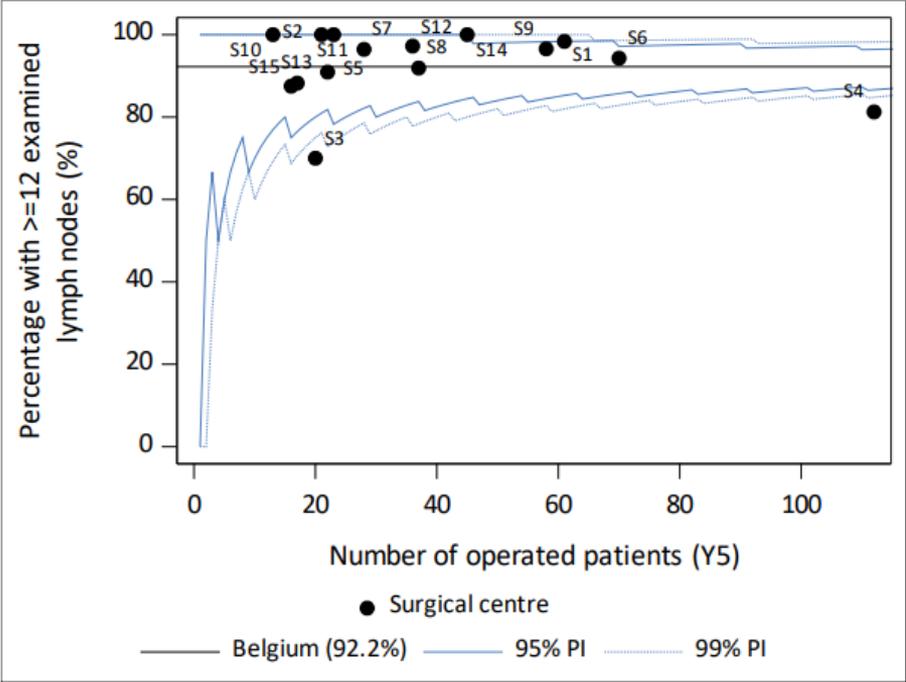


All years

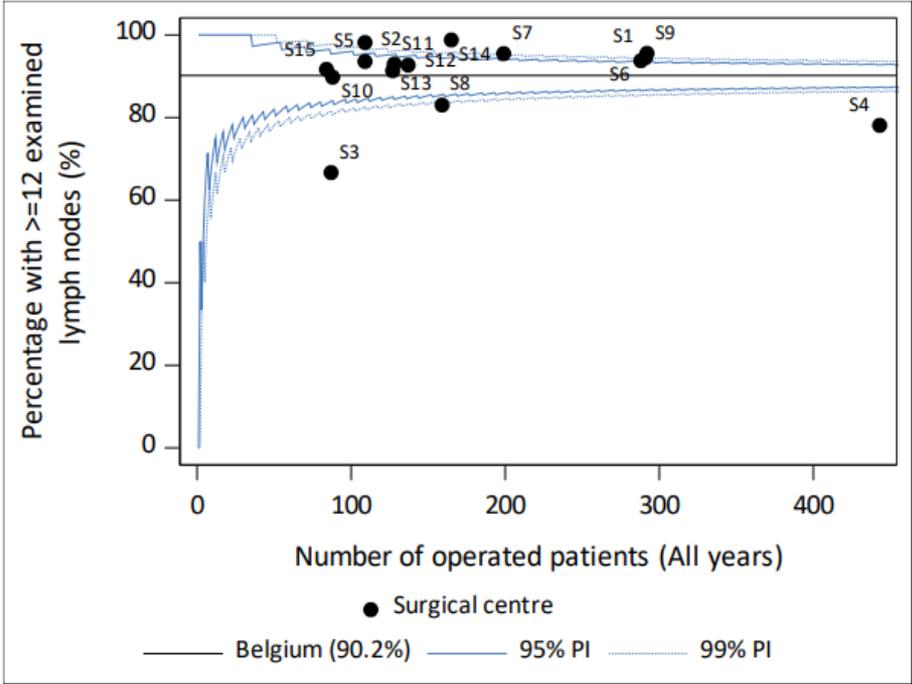


# Proportion of operated patients with adenocarcinoma for whom $\geq 12$ lymph nodes were examined

Year 5



All years



# Unadjusted 90-day postoperative mortality (malignant + benigne tumours)

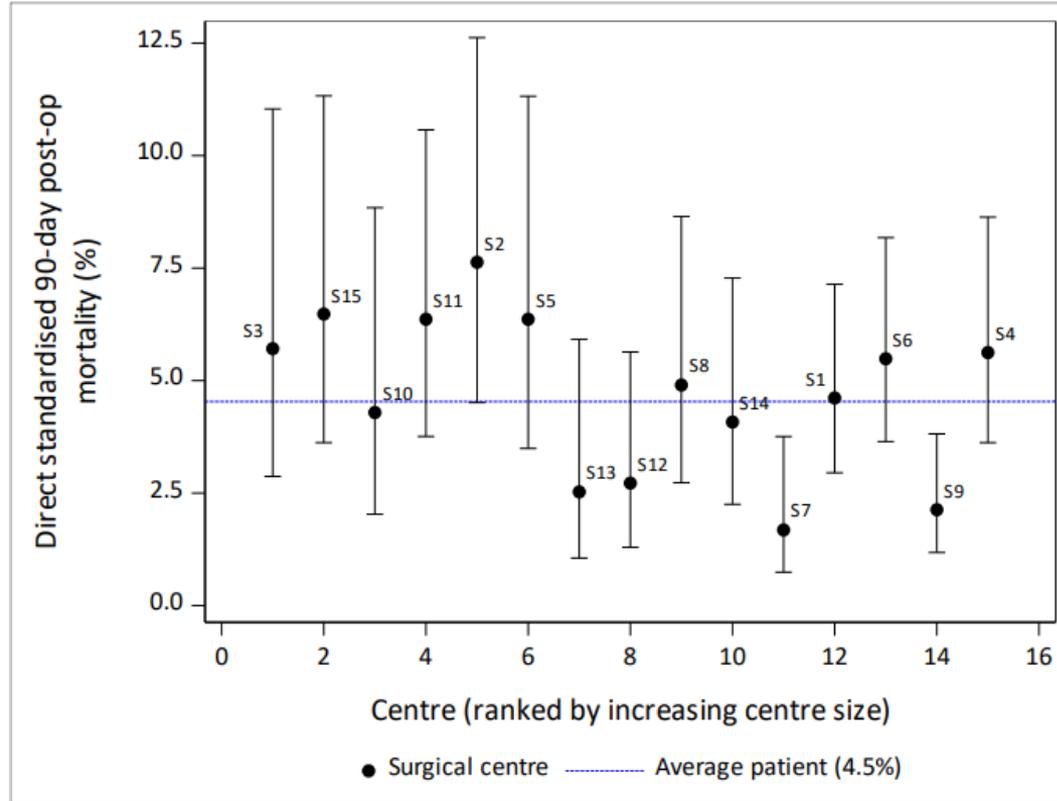
	Belgium			
	N	N of deaths	%	95% CI
<i>Operated patients with a malignant/benign tumour</i>	4,176	184	4.4	[3.8, 5.1]
<i>Convention year</i>				
Year 1	724	33	4.6	[3.2, 6.3]
Year 2	856	47	5.5	[4.1, 7.2]
Year 3	851	45	5.3	[3.9, 7.0]
Year 4	834	28	3.4	[2.2, 4.8]
Year 5	911	31	3.4	[2.3, 4.8]

# Adjusted 90-day postoperative mortality (malignant + benign tumours)

**Adjusted for:**

- \* age at diagnosis
- \* sex
- \* ASA score
- \* Charlson Comorbidity Index
- \* type of surgery
- \* vascular resection/reconstruction
- \* tumour type

as proposed by the BPCG



## Unadjusted 1-year and 3-year observed survival after surgery for adenocarcinoma

Belgium					
Characteristic	N	1-year		3-year	
		%	95% CI	%	95% CI
<b>Operated patients with adenocarcinoma</b>	<b>2,706</b>	<b>77.5</b>	<b>[75.8, 79.1]</b>	<b>45.1</b>	<b>[42.8, 47.4]</b>
<b>Convention year</b>					
Year 1	476	73.3	[69.1, 77.0]	45.7	[41.2, 50.1]
Year 2	554	78.4	[74.8, 81.6]	45.5	[41.3, 49.6]
Year 3	552	76.1	[72.3, 79.4]	41.7	[37.2, 46.1]
Year 4	545	78.8	[75.1, 82.0]	NA <sup>***</sup>	NA <sup>***</sup>
Year 5	579	80.3	[75.8, 84.0]	NA <sup>***</sup>	NA <sup>***</sup>

<sup>\*\*\*</sup> 3-year follow-up after surgery is not reached.

## Unadjusted 1-year and 3-year relative survival after surgery for adenocarcinoma

Characteristic	N	Belgium			
		1-year		3-year	
		%	95% CI	%	95% CI
<b>Operated patients with adenocarcinoma</b>	<b>2,706</b>	<b>79.6</b>	<b>[77.9, 81.1]</b>	<b>48.3</b>	<b>[45.9, 50.7]</b>
<b>Convention year</b>					
Year 1	476	75.4	[71.1, 79.1]	48.9	[44.1, 53.7]
Year 2	554	80.2	[76.5, 83.5]	48.8	[44.3, 53.2]
Year 3	552	77.9	[74.0, 81.3]	44.7	[40.1, 49.3]
Year 4	545	80.7	[77.0, 84.0]	NA <sup>**</sup>	NA <sup>**</sup>
Year 5	579	83.7	[79.8, 87.0]	NA <sup>**</sup>	NA <sup>**</sup>
<b>Type of surgery</b>					
Minimally invasive surgery (MIS) – Laparoscopic	595	84.8	[81.4, 87.6]	53.3	[48.1, 58.3]
Minimally invasive surgery (MIS) - Hybrid	2	NA <sup>**</sup>	-	NA <sup>**</sup>	-
Minimally invasive surgery (MIS) - Robotic	241	80.3	[74.0, 85.3]	46.7	[36.8, 56.1]
Open	1,739	78.2	[76.1, 80.2]	48.1	[45.1, 51.1]
Conversion from MIS to open surgery	129	72.0	[62.9, 79.4]	30.9	[21.4, 41.1]

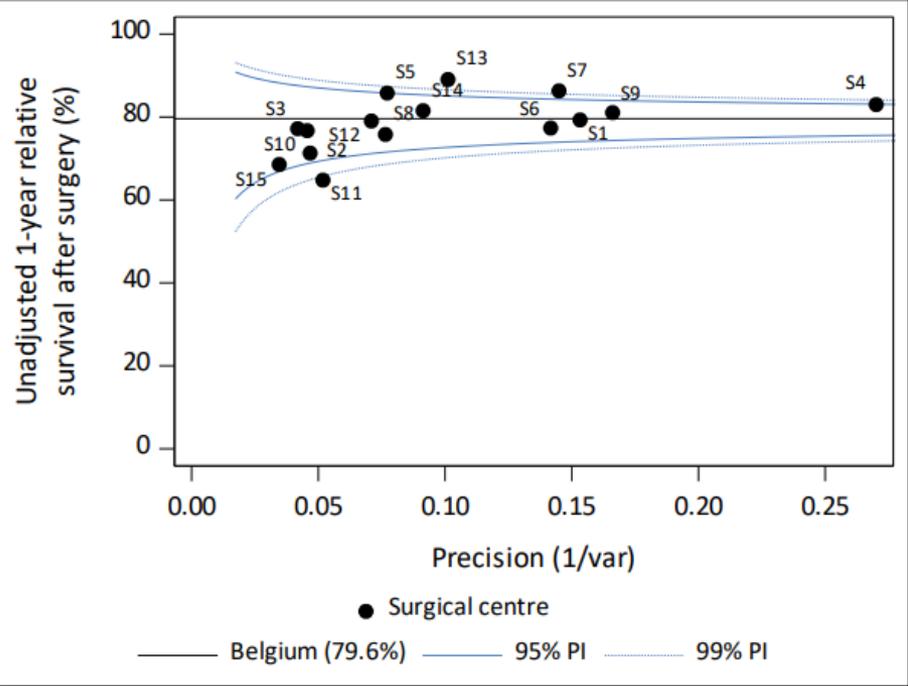
<sup>\*\*</sup> too small numbers

<sup>\*\*</sup> 3-year follow-up after surgery is not reached

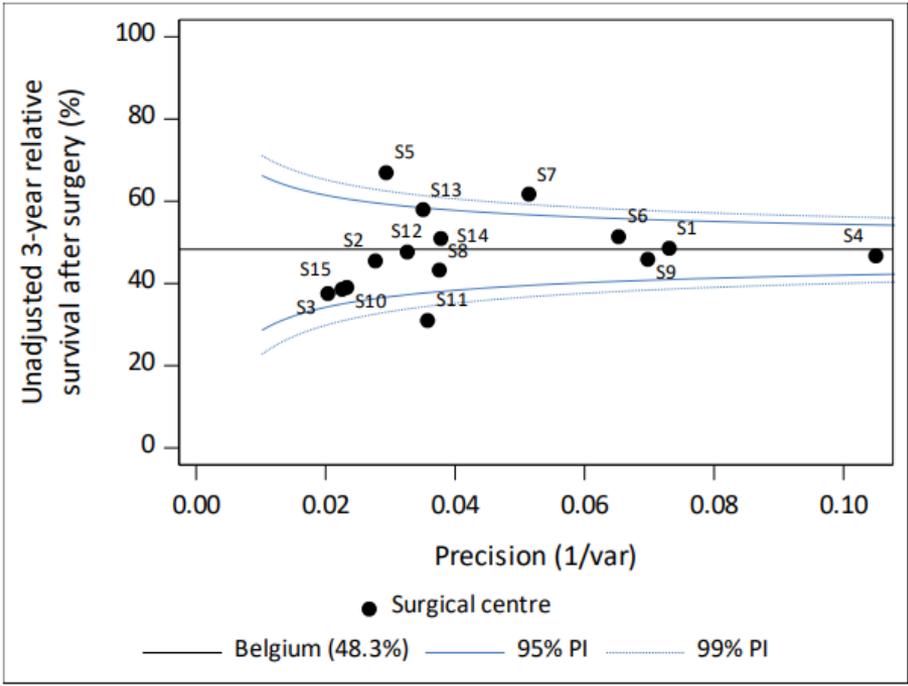


# Unadjusted 1-year and 3-year relative survival after surgery for adenocarcinoma

1-year



3-year



# Agenda

- Introduction: 5<sup>th</sup> global Convention report (2019-2024)
- Complex surgery of the (peri-) pancreas and peri-ampullary region
- **Complex surgery of the oesophagus**
- Comparison postop mortality pre-Convention (T0; 2015-18) & Convention (2019-22)
- Next steps



## Volumes – Belgium (N of MC discussions and surgeries)

Belgium										
Patient group	Year 1		Year 2		Year 3		Year 4		Year 5	
	N	%	N	%	N	%	N	%	N	%
<b>Patients discussed on a MC expert</b>	<b>1,038</b>	<b>–</b>	<b>965</b>	<b>–</b>	<b>1,009</b>	<b>–</b>	<b>934</b>	<b>–</b>	<b>1,012</b>	<b>–</b>
<b>Patients with surgery</b>	<b>448</b>	<b>43.2<sup>a</sup></b>	<b>437</b>	<b>45.3<sup>a</sup></b>	<b>453</b>	<b>44.9<sup>a</sup></b>	<b>409</b>	<b>43.8<sup>a</sup></b>	<b>401</b>	<b>39.6<sup>a</sup></b>
Malignant tumour	418	93.3 <sup>b</sup>	404	92.4 <sup>b</sup>	420	92.7 <sup>b</sup>	387	94.6 <sup>b</sup>	371	92.5 <sup>b</sup>
Standard surgery	395	94.5 <sup>c</sup>	380	94.1 <sup>c</sup>	408	97.1 <sup>c</sup>	369	95.3 <sup>c</sup>	356	96.0 <sup>c</sup>
Non-standard surgery	23	5.5 <sup>c</sup>	24	5.9 <sup>c</sup>	12	2.9 <sup>c</sup>	18	4.7 <sup>c</sup>	15	4.0 <sup>c</sup>
Non-malignant pathology	30	6.7 <sup>b</sup>	33	7.6 <sup>b</sup>	33	7.3 <sup>b</sup>	22	5.4 <sup>b</sup>	30	7.5 <sup>b</sup>
<b>Patients without surgery</b>	<b>590</b>	<b>56.8<sup>a</sup></b>	<b>528</b>	<b>54.7<sup>a</sup></b>	<b>556</b>	<b>55.1<sup>a</sup></b>	<b>525</b>	<b>56.2<sup>a</sup></b>	<b>611</b>	<b>60.4<sup>a</sup></b>
Malignant tumour	561	95.1 <sup>b</sup>	512	97.0 <sup>b</sup>	538	96.8 <sup>b</sup>	503	95.8 <sup>b</sup>	587	96.1 <sup>b</sup>
Non-malignant pathology	29	4.9 <sup>b</sup>	16	3.0 <sup>b</sup>	18	3.2 <sup>b</sup>	22	4.2 <sup>b</sup>	24	3.9 <sup>b</sup>

**Non-standard surgery = emergency, palliative, recurrence, total laryngectomy**

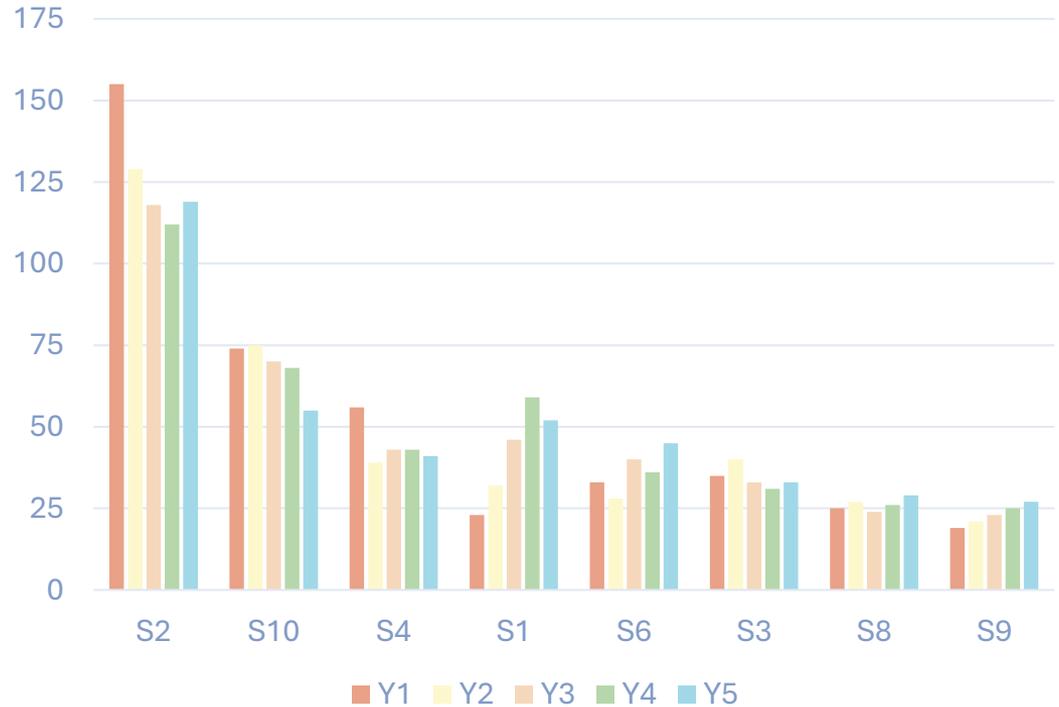
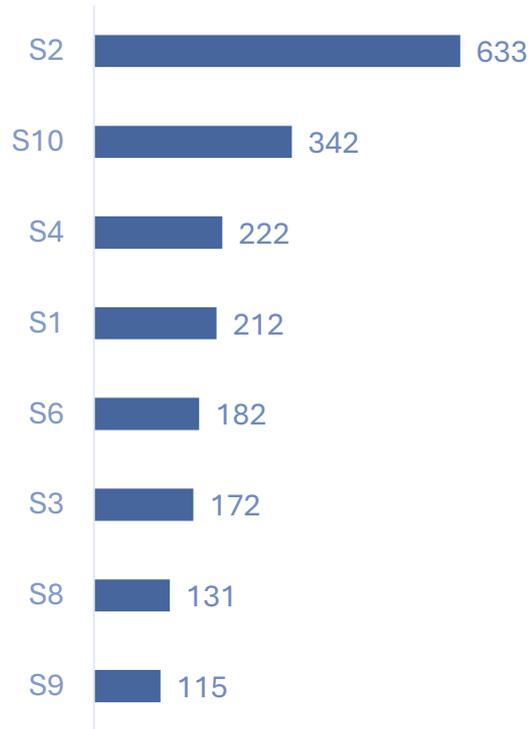
<sup>a</sup> % relative to the number of patients with MC expert

<sup>b</sup> % relative to the number of patients with/without surgery

<sup>c</sup> % relative to the number of malignant tumours

## Volumes – Belgium (N of surgeries – All 5 years)

All years



## Volumes – Belgium (casemix description)

	Belgium (N=1,908)									
	Year 1		Year 2		Year 3		Year 4		Year 5	
	N	%	N	%	N	%	N	%	N	%
<i>Patients with standard surgery</i>	395		380		408		369		356	
<i>Clinical stage</i>										
0	4	1.1	1	0.3	3	0.8	4	1.1	4	1.2
I	46	12.1	35	9.7	34	8.8	30	8.6	24	7.1
II	63	16.6	68	18.9	75	19.3	76	21.7	71	21.0
III	185	48.8	189	52.5	192	49.5	186	53.1	183	54.1
IV	78	20.6	64	17.8	83	21.4	53	15.1	55	16.3
IVA <sup>#</sup>	62	79.5	52	82.5	71	86.6	43	81.1	38	71.7
IVB <sup>#</sup>	16	20.5	11	17.5	11	13.4	10	18.9	15	28.3
X	3	0.8	3	0.8	1	0.3	1	0.3	1	0.3
TNM not applicable or relapse	16	–	20	–	20	–	19	–	18	–

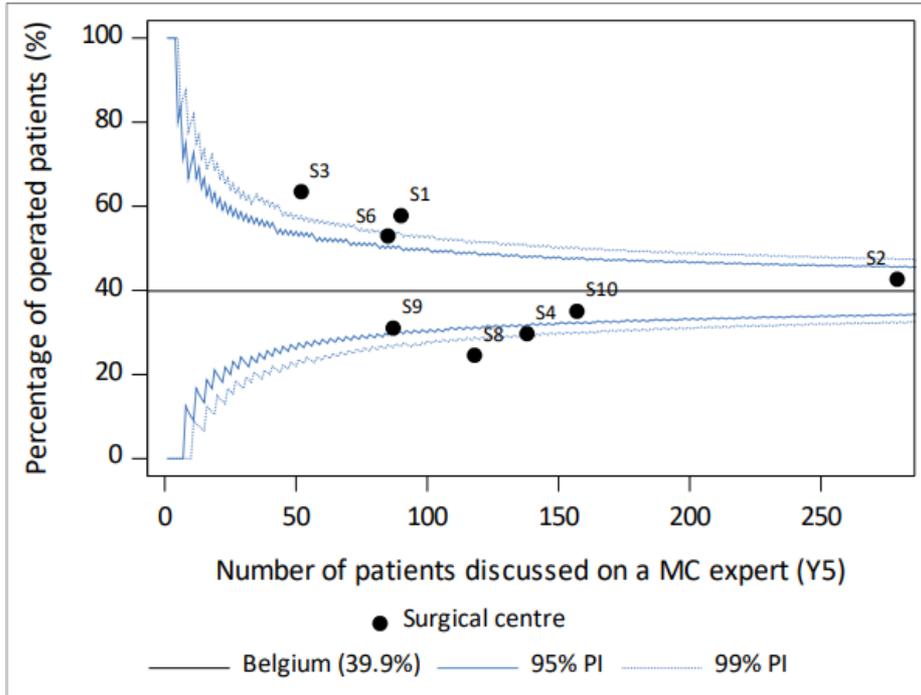
## Volumes – Belgium (casemix description)

Year 5

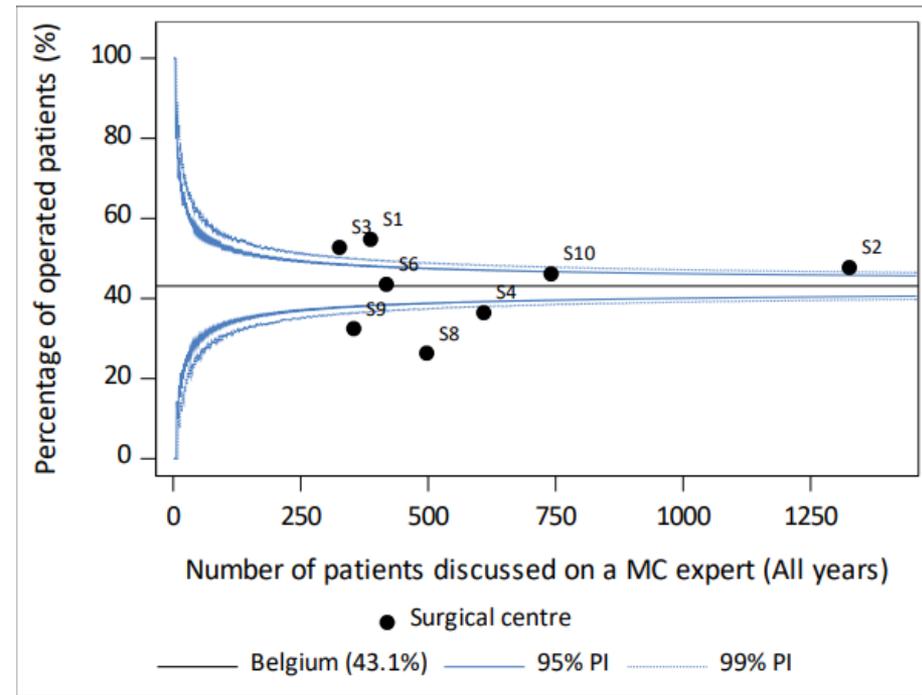
	Belgium (N=1,908)									
	Year 1		Year 2		Year 3		Year 4		Year 5	
	N	%	N	%	N	%	N	%	N	%
<i>Patients with standard surgery</i>	395		380		408		369		356	
<i>Neoadjuvant treatment</i>										
Chemotherapy	93	23.5	114	30.0	107	26.2	100	27.1	107	30.1
Targeted therapy/biologicals	1	0.3	6	1.6	4	1.0	3	0.8	7	2.0
Radiotherapy	0	0.0	1	0.3	0	0.0	0	0.0	0	0.0
Chemoradiotherapy	212	53.7	180	47.4	211	51.7	189	51.2	185	52.0
No chemo, radiation or targeted treatment	90	22.8	85	22.4	90	22.1	79	21.4	64	18.0
<i>Type of surgery</i>										
Minimally invasive surgery (MIS)	226	57.2	246	64.7	274	67.2	262	71.0	254	71.3
Open	162	41.0	124	32.6	130	31.9	103	27.9	97	27.2
Conversion from MIS to open surgery	7	1.8	10	2.6	4	1.0	4	1.1	5	1.4

## % of patients discussed on a MC that were operated

Year 5



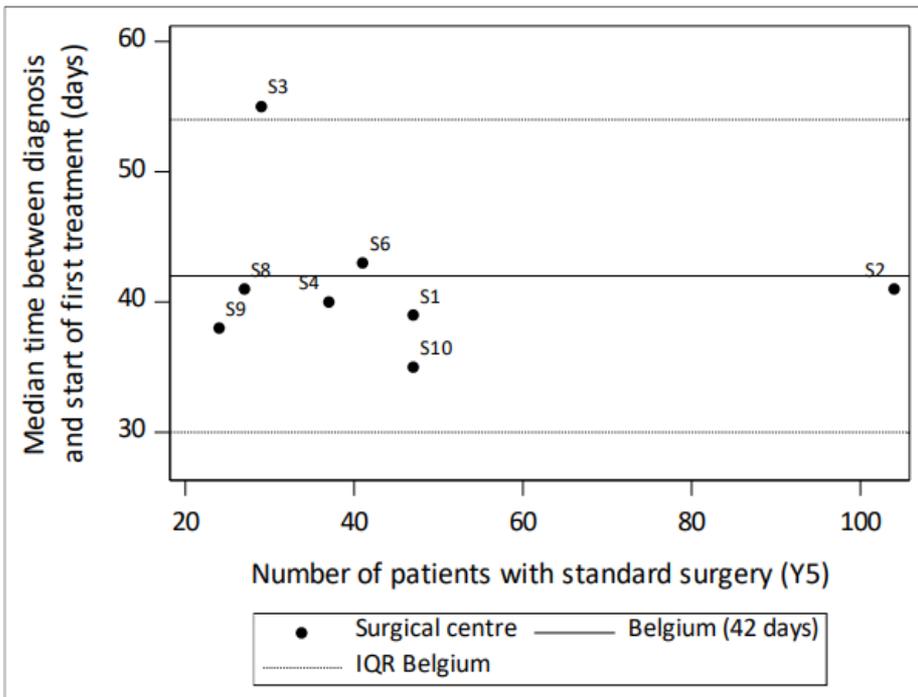
All years



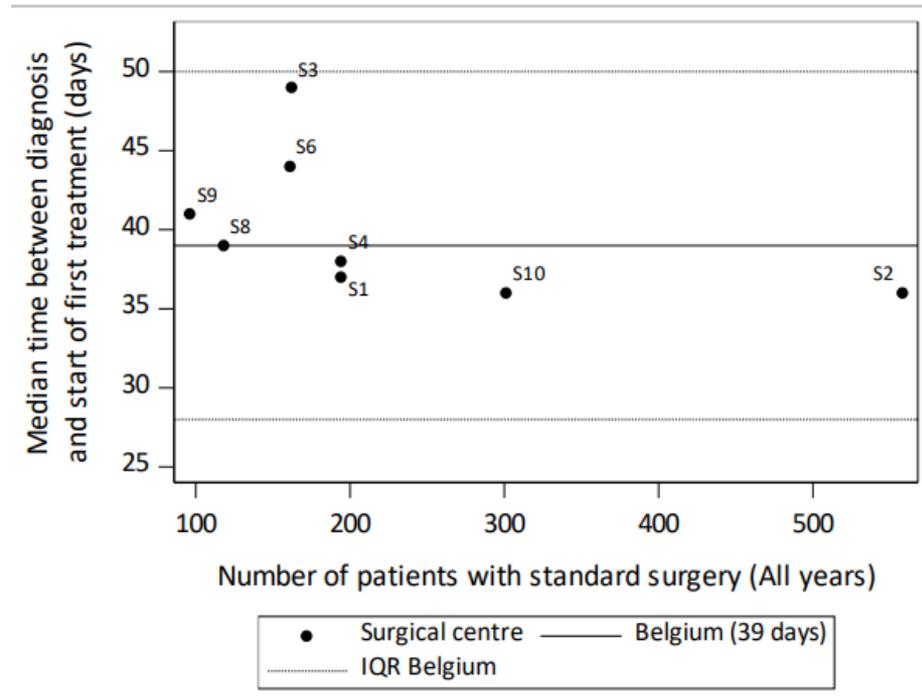
Belgium: 2022 Cancer Registry Database: 1588 oesophageal tumours registered (C15-C16, incidence year 2022)  
 Project: 872 of these oesophageal tumours were discussed on MC = 54,9 %

# TTT: Median time between (anatomopathological) diagnosis and start of first treatment (only for standard surgery; days)

Year 5

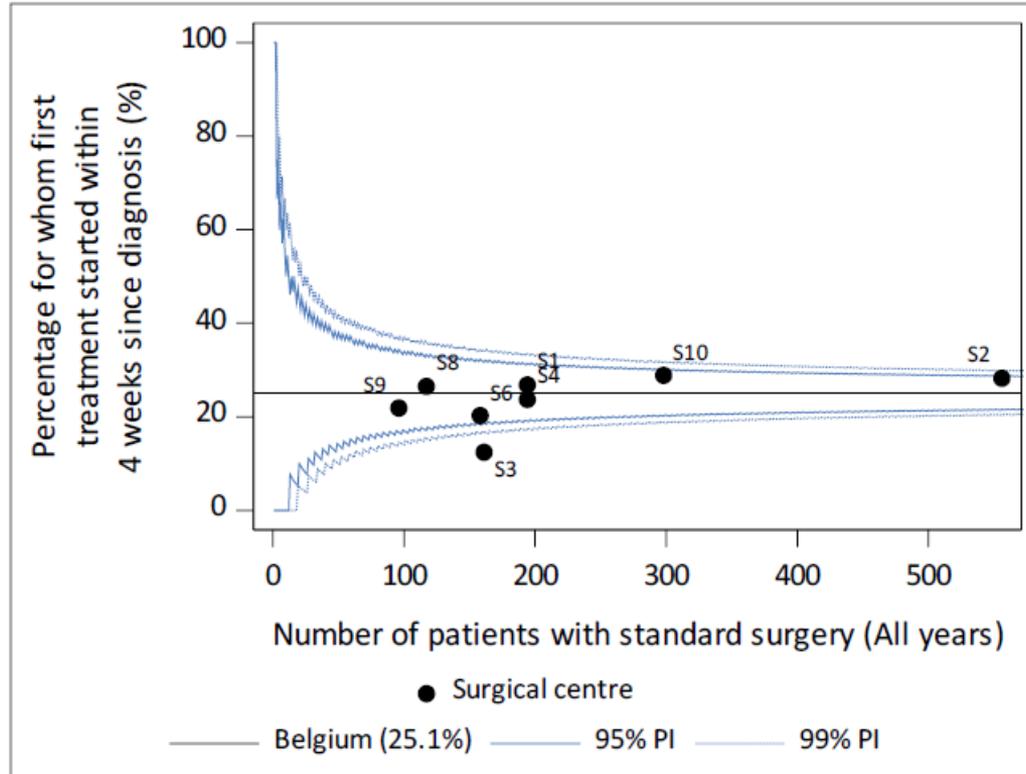


All years



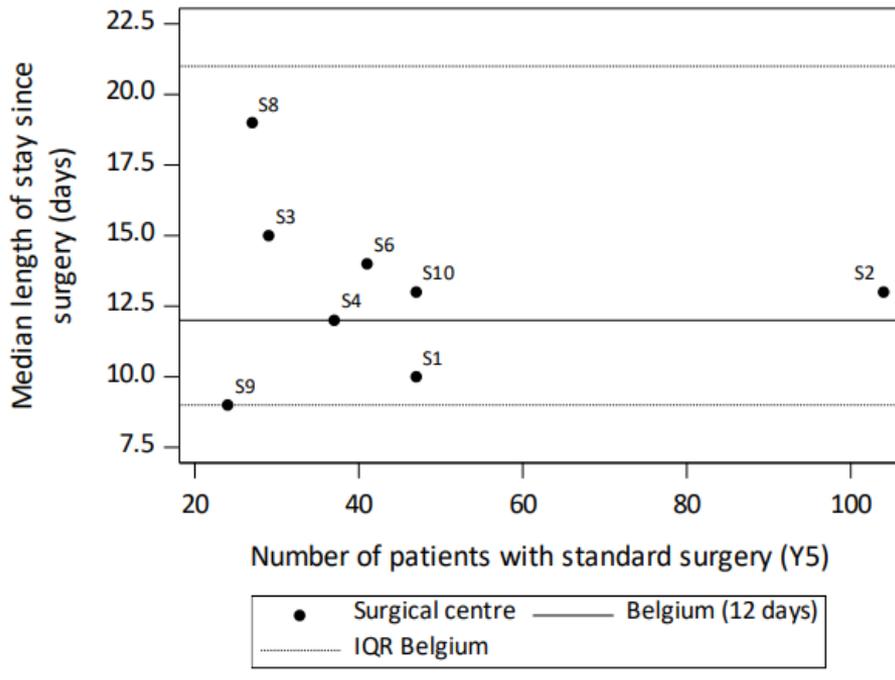
Belgium: 25% = 28 days (4 weeks)  
 Median = 39 days (± 5,5 weeks)  
 75% = 50 days (± 7 weeks)  
 90% = 68 days (± 9,5 weeks)

**TTT: Proportion of operated patients for whom first treatment started within 4 weeks since (anatomopathological) diagnosis (only for standard surgery)**

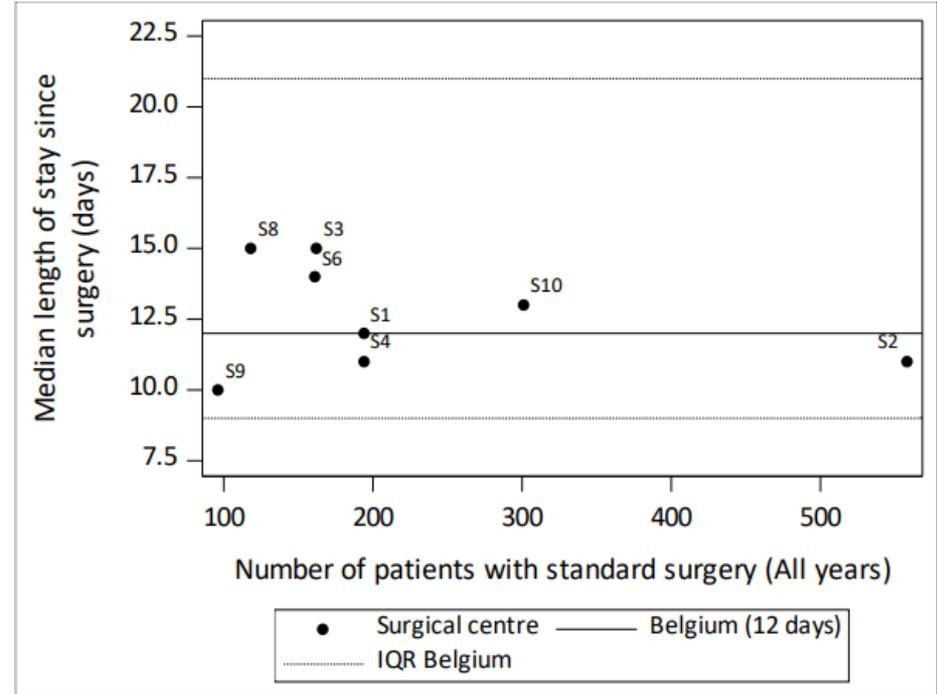


# Median length of stay for operated patients (only for standard surgery)

Year 5

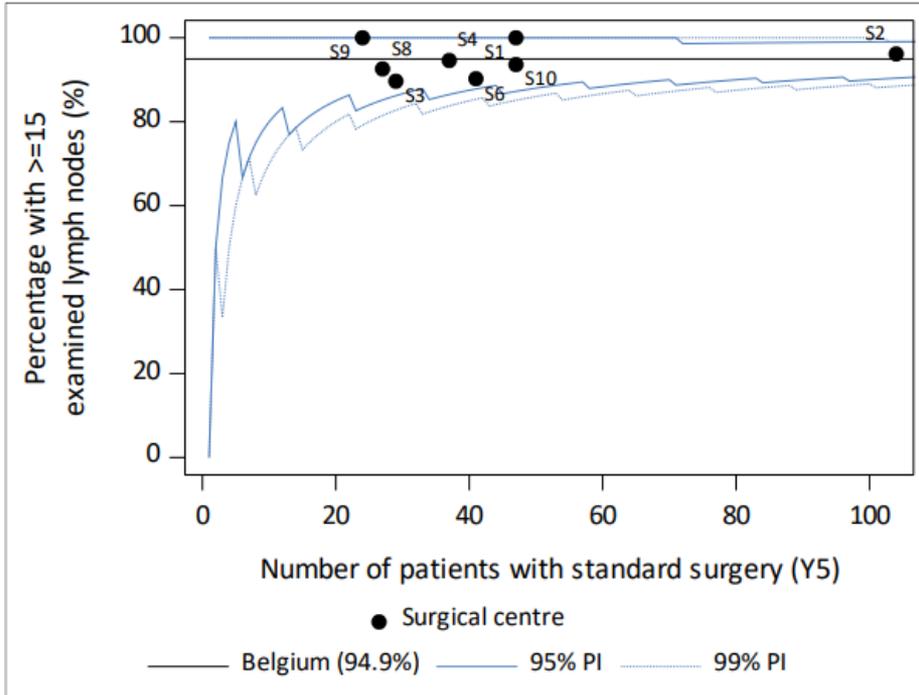


All years

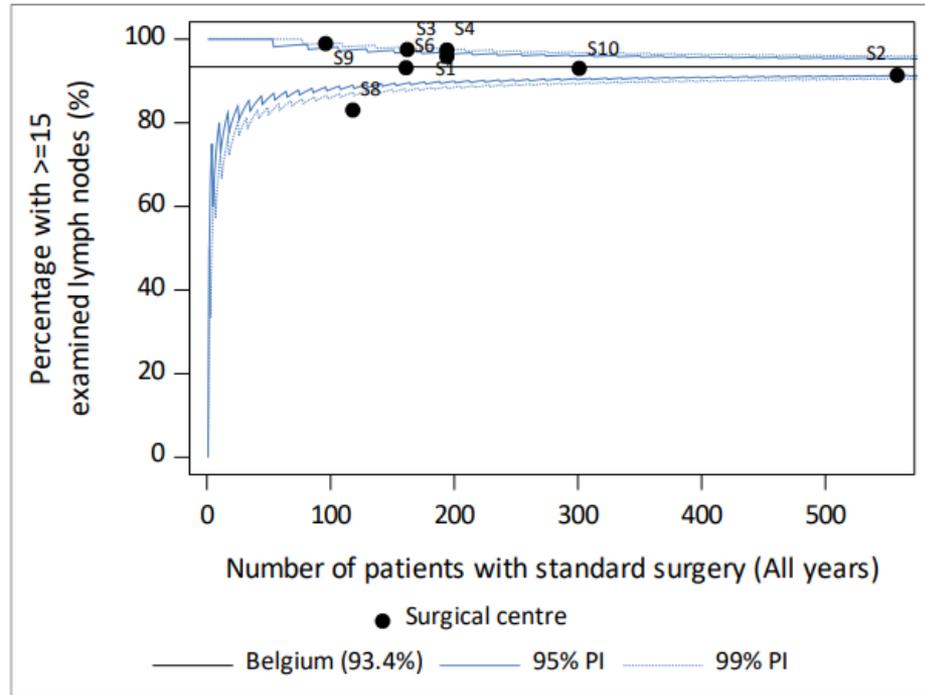


## Proportion of operated patients for whom $\geq 15$ lymph nodes were examined (only for standard surgery)

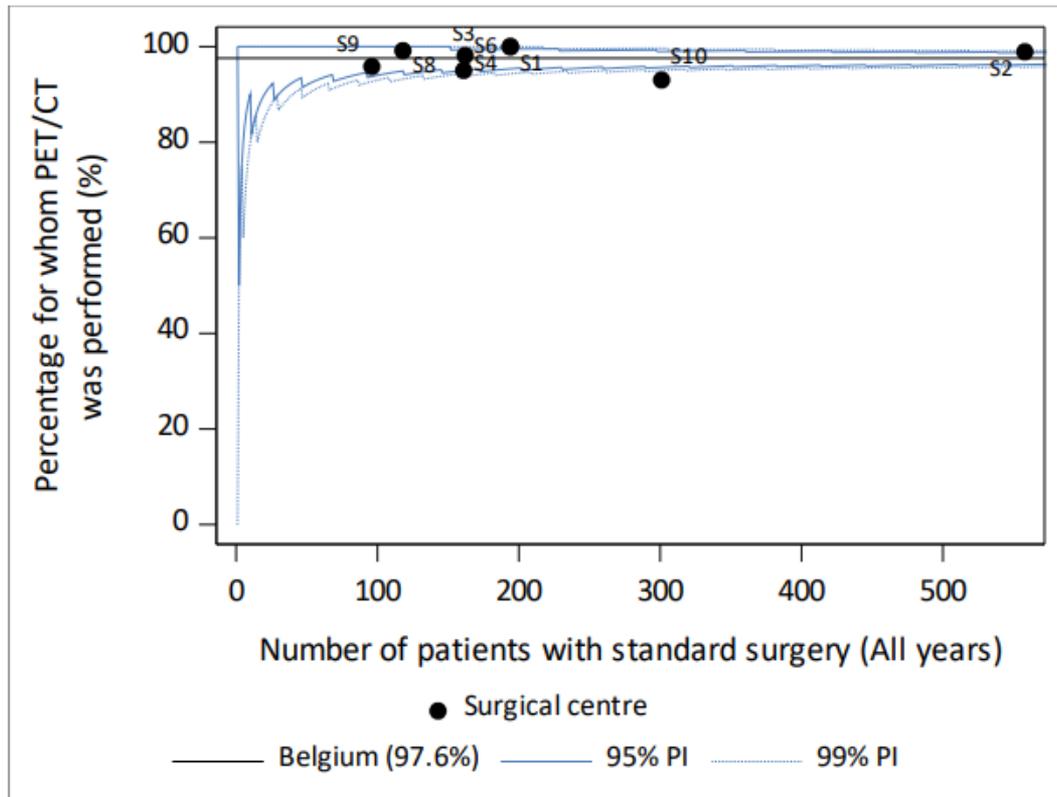
Year 5



All years

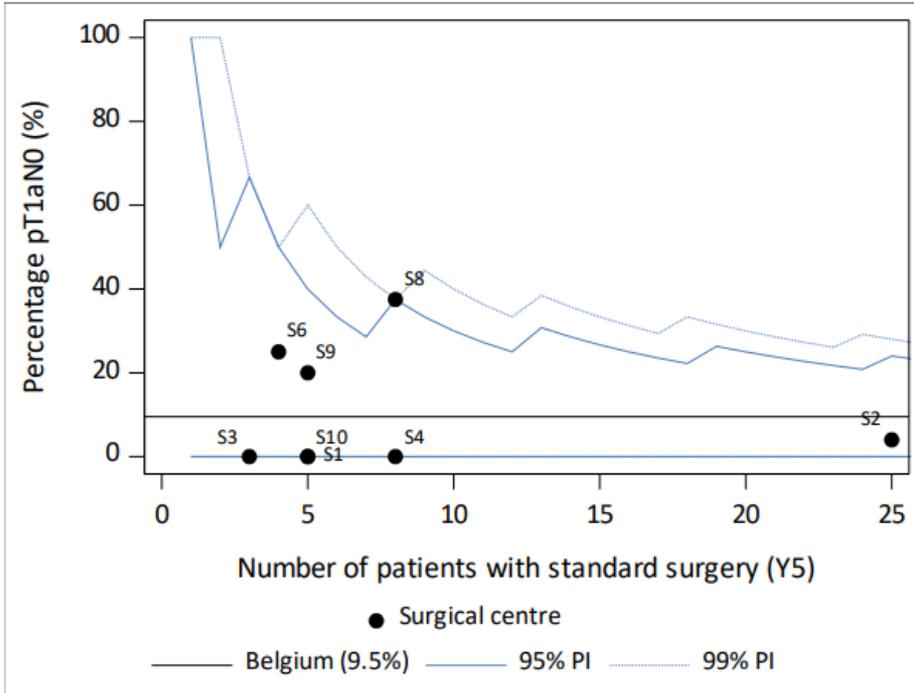


# Proportion of operated patients for whom a PET/CT was performed (only for standard surgery)

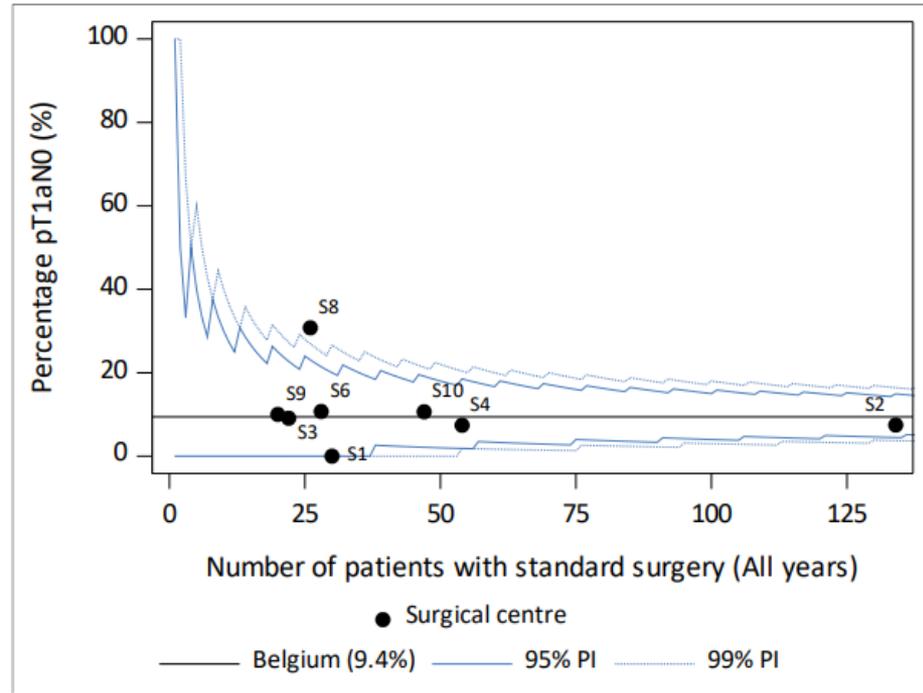


# Proportion of operated patients without neoadjuvant treatment that were pT1aN0 (only for standard surgery)

Year 5



All years



## Unadjusted 90-day postoperative mortality

	Belgium			
	N	N of deaths	%	95% CI
<b><i>Patients with surgery</i></b>	<b>2,000</b>	<b>117</b>	<b>5.9</b>	<b>[4.9, 7.0]</b>
<b><i>Convention year</i></b>				
Year 1	418	27	6.5	[4.3, 9.3]
Year 2	404	44	10.9	[8.0, 14.3]
Year 3	420	17	4.0	[2.4, 6.4]
Year 4	387	14	3.6	[2.0, 6.0]
Year 5	371	15	4.0	[2.3, 6.6]
<b><i>Mode of surgery</i></b>				
Standard surgery	1,908	101	5.3	[4.3, 6.4]
Non-standard surgery	92	16	17.4	[10.3, 26.7]

## Unadjusted 90-day postoperative mortality (standard surgery only)

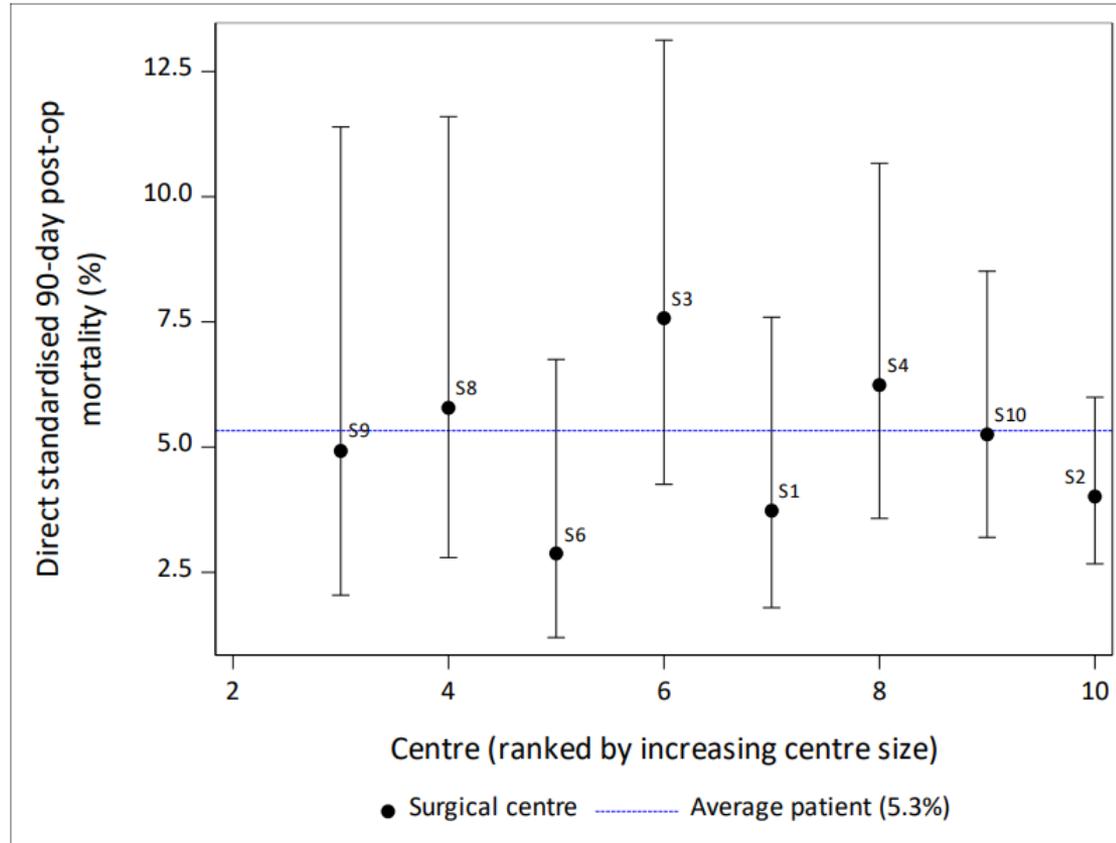
	Belgium			
	N	N of deaths	%	95% CI
<i>Patients with standard surgery</i>	<b>1,908</b>	<b>101</b>	<b>5.3</b>	<b>[4.3, 6.4]</b>
<b>Convention year</b>				
Year 1	395	23	5.8	[3.7, 8.6]
Year 2	380	37	9.7	[6.9, 13.2]
Year 3	408	17	4.2	[2.4, 6.6]
Year 4	369	12	3.3	[1.7, 5.6]
Year 5	356	12	3.4	[1.8, 5.8]
<b>Type of surgery</b>				
Minimally invasive surgery (MIS)	1,262	67	5.3	[4.1, 6.7]
Open	616	30	4.9	[3.3, 6.9]
Conversion from MIS to open surgery	30	4	13.3	[3.8, 30.7]

# Adjusted 90-day postoperative mortality (standard surgery only)

**Adjusted for:**

- \* surgery intention
- \* primary tumour location
- \* Charlson Comorbidity Index
- \* clinical stage

as proposed by ABES



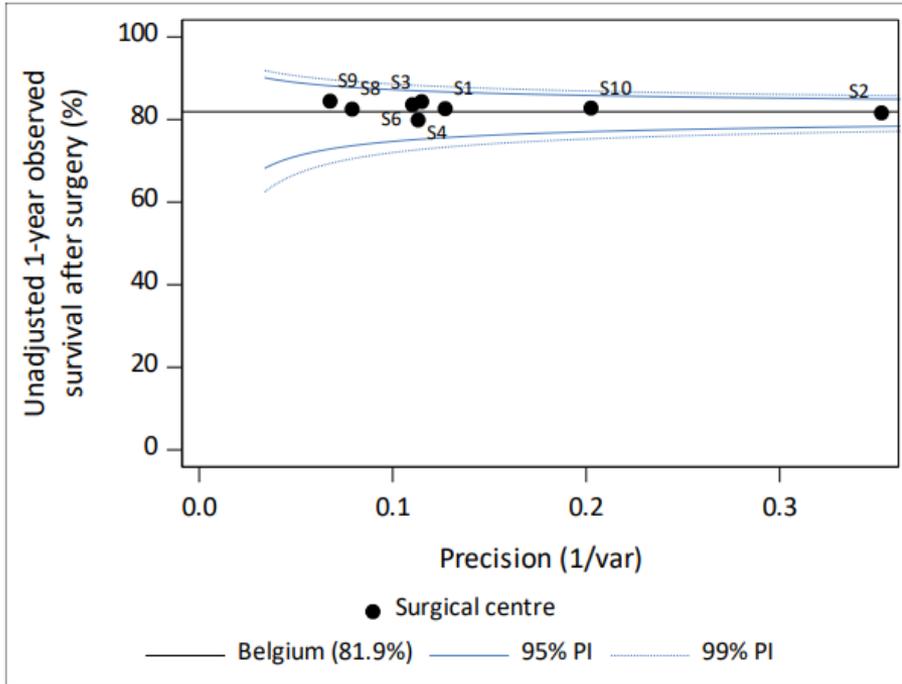
## Unadjusted 1-year and 3-year observed survival after surgery (standard surgery only)

	Belgium				
	1-year			3-year	
	N	%	95% CI	%	95% CI
<b><i>Patients with standard surgery</i></b>	<b>1908</b>	<b>81.9</b>	<b>[80.1, 83.6]</b>	<b>58.4</b>	<b>[55.8, 61.0]</b>
<b><i>Convention year</i></b>					
Year 1	395	82.0	[77.8, 85.4]	56.8	[51.7, 61.5]
Year 2	380	76.5	[71.9, 80.5]	57.0	[51.8, 61.8]
Year 3	408	83.0	[79.0, 86.4]	61.4	[56.3, 66.1]
Year 4	369	83.7	[79.5, 87.1]	NA**	NA**
Year 5	356	86.0	[81.2, 89.6]	NA**	NA**

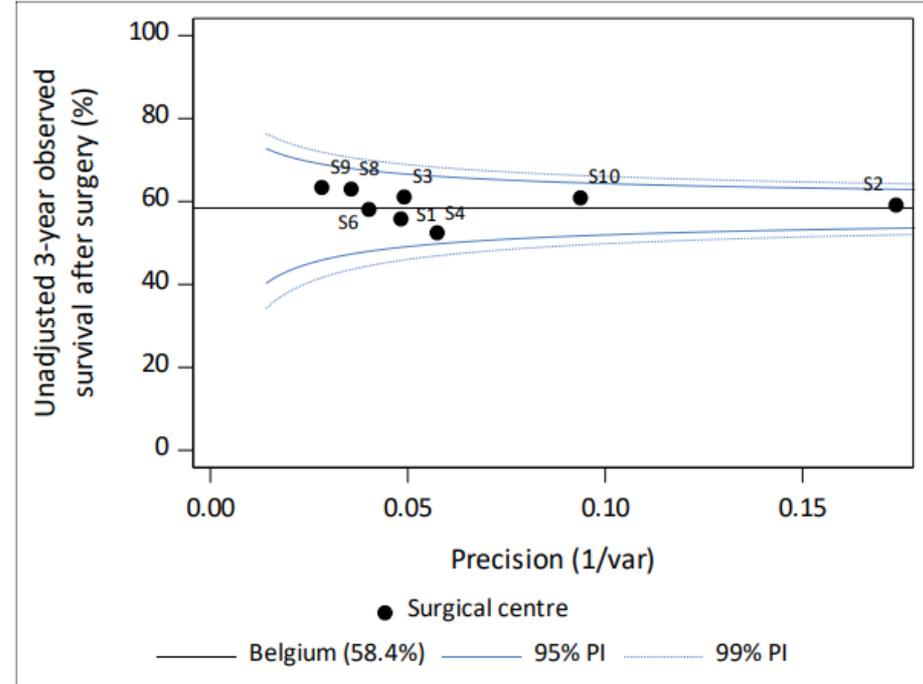
\*\* 3-year follow-up after surgery is not reached.

# Unadjusted 1-year and 3-year observed survival after surgery (standard surgery only)

1-year



3-year



# Agenda

- Introduction: 5<sup>th</sup> global Convention report (2019-2024)
- Complex surgery of the (peri-) pancreas and peri-ampullary region
- Complex surgery of the oesophagus
- **Comparison postop mortality pre-Convention (T0; 2015-18) & Convention (2019-22)**
- Next steps



# Patient cohort: patients with primary malignant tumours

Comparison should be performed on an as equal patient cohort as possible and based on the same data source.

- Cancer Registry Database incidence up to end 2022
- Identify patient records from period pre-Convention (T0; 2015-2018) and convention (2019-2022) within Cancer Registry Database
- Primary malignant tumours

## Attention, what do we compare?

Patients who underwent surgery for primary malignant tumours:

- T0: population-based
- Convention: limited to patients registered within convention, potentially **not** population-based

# Patient cohort: patients with primary malignant tumours

Comparison should be performed on as equal patient cohort as possible and based on the same data source.

## T0

- BCR + IMA data
- Surgery in 2015-2018

## Convention

- Convention registrations
- July 2019 - Dec 2022  
→ so 3.5 year, not the full 5 year!

**Cancer Registry Database  
(2015-2022)**

**Analysis dataset**

## (peri-) Pancreas and peri-ampullary region

- T0: 2,254 patients
- Convention: 2,324 patients

	30 day postop mortality (%)	90 day postop mortality (%)
T0	4.3 [3.5, 5.2]	7.3 [6.3, 8.5]
Convention	2.4 [1.8, 3.1]	5.4 [4.5, 6.4]
Adjusted OR, Convention versus T0	0.60 [0.42, 0.84] p=0.0033	0.74 [0.58, 0.95] p=0.0174
Adjusted postop mortality Convention versus T0	2.6 [1.9, 3.6]	5.5 [4.4, 7.0]

Adjusted for: sex, age at diagnosis, surgery type (Pancreaticoduodenectomy/Other), WHO Performance Score.

# Oesophagus

- T0: 1,581 patients
- Convention: 1,440 patients

	30 day postop mortality (%)	90 day postop mortality (%)
T0	4.2 [3.3, 5.4]	9.6 [8.1, 11.1]
Convention	2.4 [1.6, 3.3]	6.5 [5.2, 7.9]
Adjusted OR, Convention versus T0	0.59 [0.38, 0.91] p=0.0172	0.67 [0.50, 0.89] p=0.0052
Adjusted postop mortality Convention versus T0	2.5 [1.6, 3.8]	6.6 [5.0, 8.6]

Adjusted for: sex, age at diagnosis, cT, cN, cM, WHO Performance Score, localisation (“C15.2,C15.5,C16.0” / “C15.8,C15.9”).

# What is the conclusion?

- Note that there is no causal interpretation, we did not write in terms of “centralisation effect”:
  - It is not a randomised setting
  - Patients operated outside the Convention are not considered, not a fully fair comparison with the T0 period.
- **Postop mortality among patients with an incidence date during the first 3.5 years of the Convention is lower compared to the pre-convention period 2015-2018.**

# Agenda

- Introduction: 5<sup>th</sup> global Convention report (2019-2024)
- Complex surgery of the (peri-) pancreas and peri-ampullary region
- Complex surgery of the oesophagus
- Comparison postop mortality pre-Convention (T0; 2015-18) & Convention (2019-22)
- **Next steps**



# Next steps

- Adjusted survival analyses
- Standardised and structured reporting of
  - Complications after complex surgery
  - Pathology (biopsy, resection and lymphadenectomy) E.g. resection marges
  - Medical imaging
  - Together with the scientific organisations BPCG/ABES
  - PROMs/PREMs
  - Together with Belgian Board of Oncology (clinical guideline update working groups)
- Update indicators, target values and if necessary, registration dataset E.g. recurrence