

# Surveillance of Pancreatic Cancer Patients Following Surgical Resection

Jaime Benarroch-Gampel, M.D., M.S.  
CERCIT Scholar

CERCIT Workshops  
March 16, 2012

# INTRODUCTION

- Pancreatic cancer is the 4<sup>th</sup> leading cause of cancer deaths in the United States
- Approximately 30% of patients present with locoregional disease, only 15-30% of whom actually undergo surgical resection
- Overall median survival ranges from 12-25 months after curative-intent resection

# INTRODUCTION

- 80% of patients who undergo surgical resection experience recurrence of disease within 2 years
- Recurrence can be local (~30%), distant (~75%), or both
- Median survival is 7 months after local recurrence and 3 months with metastatic disease

# INTRODUCTION

- Goals of surveillance after curative treatment for any cancer:
  - Detect any local or distant disease at a time when interventions can prolong survival
  - Patient and physician reassurance
  - Introduction of palliative treatments
  - Early referral to hospice
- Little evidence that early identification of pancreatic cancer recurrence improves survival
- Studies include routine physical exam, abdominal CT, MRI, ultrasound, PET scan, and CA 19-9

# INTRODUCTION

- Surveillance recommendations
  - National Comprehensive Cancer Network (NCCN): history and physical exam every 3-6 months for the first 2 years, then annually
  - The NCCN Expert Panel discussed use of CT scans and CA 19-9 every 3-6 months, although consensus is lacking
- Purpose of this study
  - Describe current population-based surveillance patterns
    - SEER-Medicare data
    - Study outcome was use of abdominal CT scans and physician visits

# METHODS

- Surveillance, Epidemiology, and End Results (SEER)-Medicare linked database
- Cohort selection
  - Age 66 years or older with first diagnosis of pancreatic adenocarcinoma between 1992-2005
  - Medicare Part A and B with no HMO
  - Local or regional disease (SEER historic staging)
- Status post curative surgical resection
  - N = 2,393 patients who met inclusion criteria

# METHODS

- Surveillance Testing
  - Surveillance period began 90 days after surgical resection
  - Patients followed for 2 years or until the end of follow-up in claims data
  - Surveillance periods were months 4-9, 10-15, 16-21, and 22-27 months after surgical resection
  - Patient were censored upon death, evidence of possible recurrence, or entry into hospice
- Use of abdominal CT Scans
- Outpatient physician visits (PCP, medical oncologist, radiation oncologist, gastroenterologist, or surgeon) were identified
  - Categorized in 4 exclusive categories

# METHODS

**TABLE 1** Reasons for censoring from cohort of patients by surveillance period

Reason for censoring	Surveillance period from date of surgery:									
	1–3 months		4–9 months		10–15 months		16–21 months		22–27 months	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Followed to end of period	2045	85.5	1214	59.4	741	61.0	558	75.3	452	81.0
Death	280	11.7	193	9.4	87	7.2	39	5.3	32	5.7
Recurrent disease	0	0	344	16.8	254	20.9	87	11.7	38	6.8
Enrolled in hospice	68	2.8	294	14.4	132	10.9	57	7.7	36	6.5
Total at start of period	2393		2045		1214		741		558	



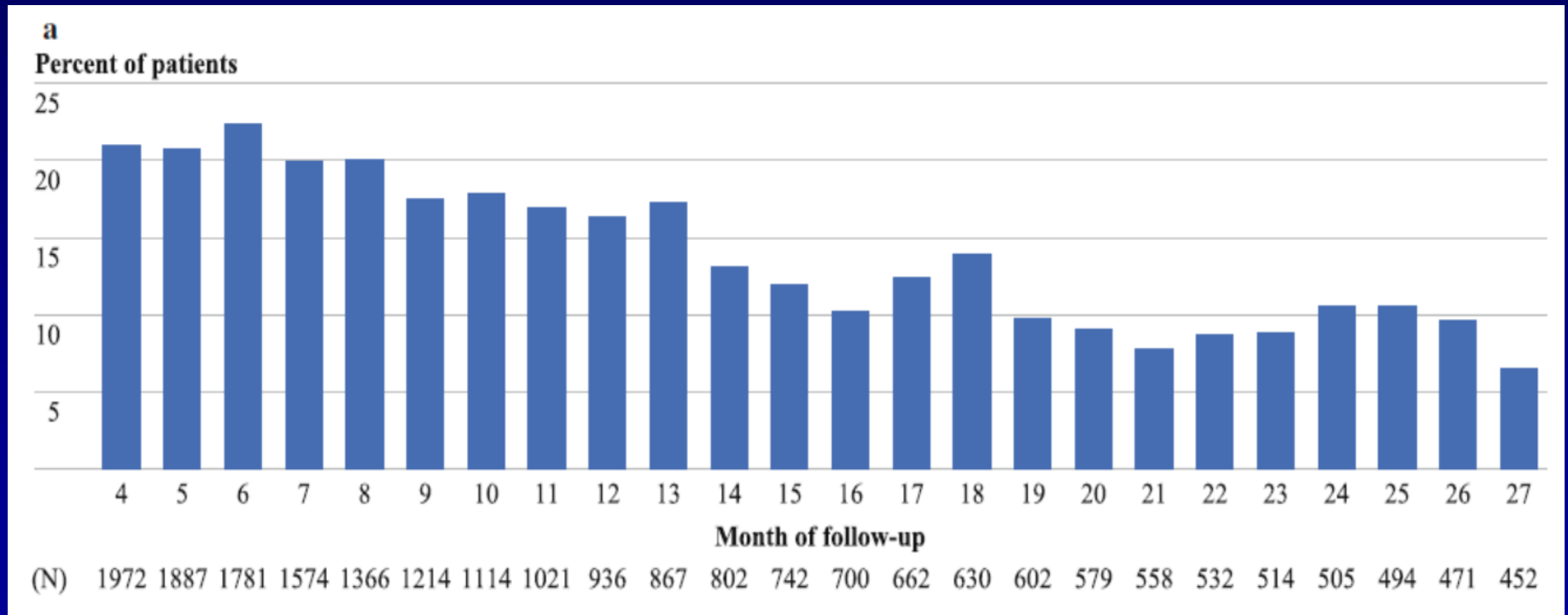
# METHODS

- Median time to any censoring was 9.2 months
- By then end of the study period:
  - 30.4% were cumulatively censored for recurrence
  - 26.4% were cumulatively censored for death
  - 24.4% were cumulatively censored for hospice
- At the end of the study period:
  - 81.2% of patients were censored
  - 70% of patients had died
- Median survival for the cohort was 14.6 months

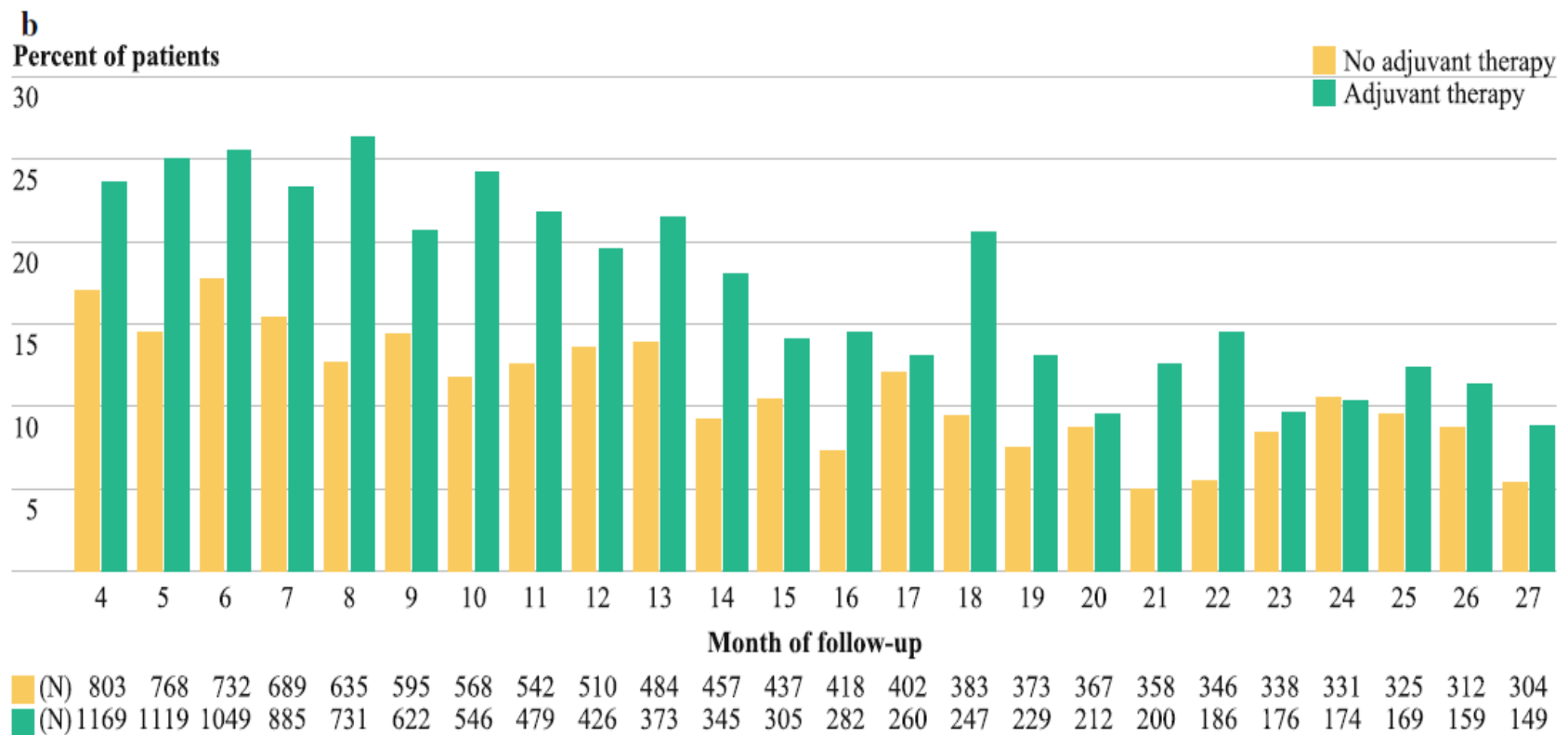
# RESULTS: SOCIODEMOGRAPHIC AND CLINICAL CHARACTERISTICS OF PATIENTS

	% (N=2,045)
<b>Age (mean ± SD)</b>	73.6±5.2
<b>Female</b>	54.9%
<b>White</b>	84.1%
<b>Married</b>	62.6%
<b>Year of diagnosis</b>	
1992-1999	30.9%
2000-2005	69.1%
<b>Location of tumor</b>	
Head	74.6%
Body/tail	14.4%
<b>Node positive</b>	51.2%
<b>Charlson comorbidity</b>	
0	63.2%
≥1	36.8%
<b>Adjuvant therapy</b>	58.5%

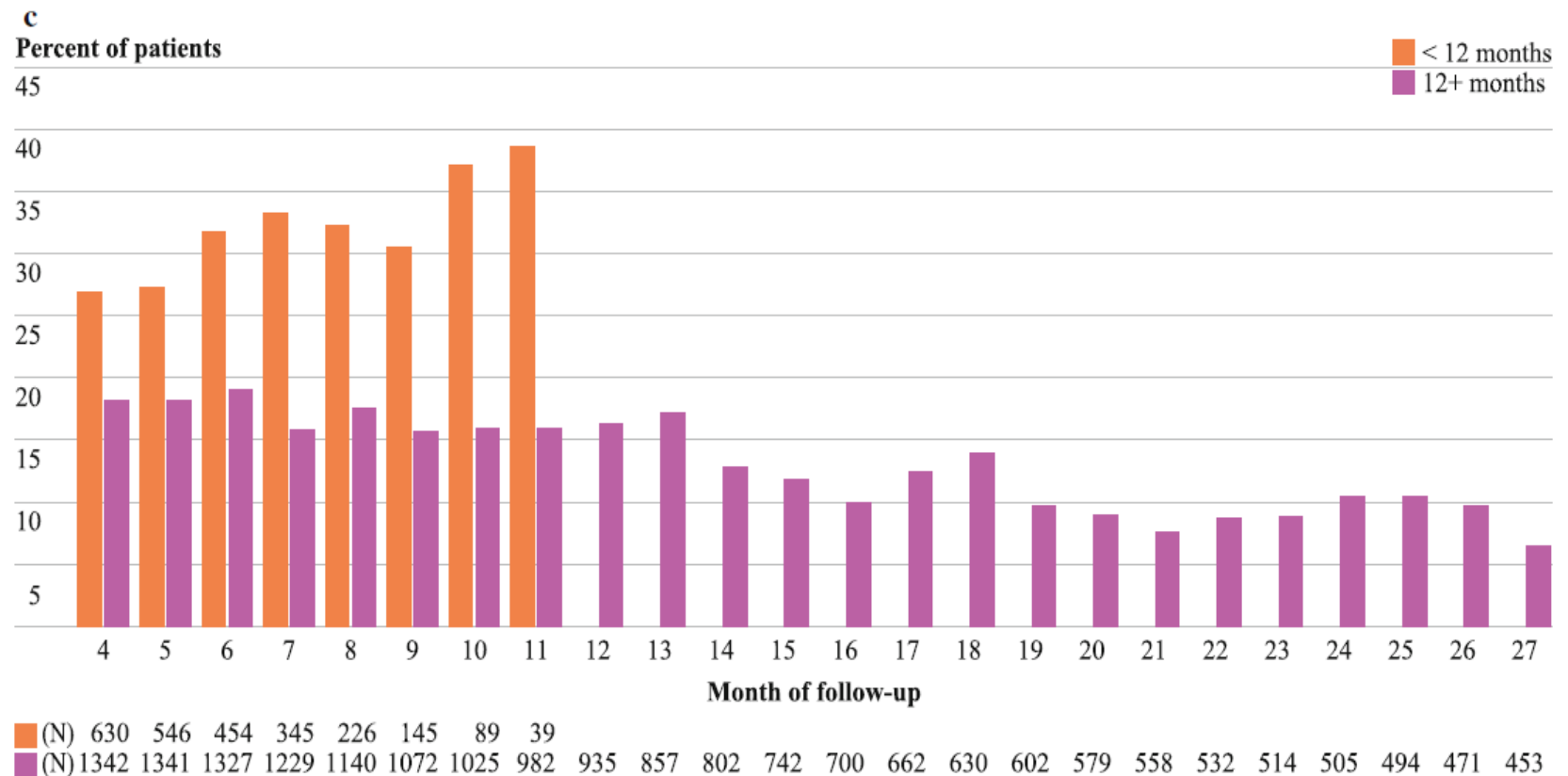
# PERCENT OF PATIENTS UNDERGOING CT SCANNING FOR EACH MONTH OF FOLLOW-UP



# PERCENT OF PATIENTS UNDERGOING CT SCANNING FOR EACH MONTH OF FOLLOW-UP BY RECEIPT OF ADJUVANT THERAPY



# PERCENT OF PATIENTS UNDERGOING CT SCANNING FOR EACH MONTH OF FOLLOW-UP BY DURATION OF SURVIVAL



# CT UTILIZATION BY SURVEILLANCE PERIOD

	<b>4-9 months</b>	<b>10-15 months</b>	<b>16-21 months</b>	<b>22-27 months</b>
	N = 1214	N = 741	N = 558	N = 452
<b>No CT scans</b>	31.55	42.51	56.81	61.73
<b>Any CT scan</b>	68.45	57.49	43.19	38.27
<b>1 CT</b>	38.39	39.68	32.26	31.64
<b>2 CT scans</b>	21.66	13.09	8.24	5.31
<b>3 CT scans</b>	5.27	3.51	1.61	1.11
<b>≥4 CT scans</b>	3.13	1.12	1.08	0.22
<b>Mean (SD)*</b>	1.63 (0.89)	1.42 (0.74)	1.34 (0.69)	1.22 (0.55)

\*In those with at least 1 CT scan

# RESULTS: CT UTILIZATION BY PATIENT CHARACTERISTICS AND PHYSICIAN VISITS

- CT utilization was higher in:
  - Younger patients
  - White patients
  - Higher income patients
  - Patients with node positive disease
  - Patients who underwent adjuvant therapy
  - Patients diagnosed in 2000-2005
  - Patients who visited cancer specialists

# PHYSICIAN VISITS BY SURVEILLANCE PERIOD

Physician specialty	Surveillance period from:											
	4–9 mo			10–15 mo			16–21 mo			22–27 mo		
	Physician visits		CT	Physician visits		CT	Physician visits		CT	Physician visits		CT
	%	Mean ± SD	%	%	Mean ± SD	%	%	Mean ± SD	%	%	Mean ± SD	%
PCP only	17.2	4.56 ± 4.01	51.7	22.3	3.65 ± 2.73	34.6	28.0	3.22 ± 2.21	30.1	31.0	3.29 ± 2.29	30.0
Oncology only	23.4	7.10 ± 7.46	72.2	18.5	3.36 ± 3.47	68.6	16.1	2.45 ± 2.66	56.7	15.0	2.40 ± 2.34	64.7
Medical	8.7			6.8			6.5			6.0		
Radiation	0.6			0.9			0.4			0.2		
Surgical	5.6			5.8			6.5			6.0		
Multiple	8.6			5.0			2.9			2.9		
PCP and oncology	52.0	10.43 ± 7.55	76.6	47.8	6.19 ± 4.53	69.8	36.4	5.50 ± 3.45	61.6	29.4	5.44 ± 2.62	58.7
PCP and medical	14.2			17.0			14.3			11.7		
PCP and radiation	1.2			1.5			0.7			0.4		
PCP and surgical	16.2			17.1			11.5			11.5		
PCP and multiple	20.3			12.1			9.9			5.7		
Neither PCP nor oncology	7.4		38.9	11.5		32.9	19.5		16.5	24.6		8.1
Gastrointestinal physician only	1.1	1.92 ± 0.95		1.1	2.37 ± 1.19		1.4	2.12 ± 1.55		1.3	3.67 ± 2.25	
No physician	6.3			10.4			18.1			23.2		



# LIMITATIONS

- Did not distinguish surveillance from diagnostic imaging
  - Accuracy of indications for CT scans uncertain in data
- Did not examine CA 19-9 utilization
  - Medicare coverage initiated in 2003
- SEER does not contain data on cancer recurrence
  - Chemotherapy/radiation and hospice as markers
- Restricted to Medicare beneficiaries older than 65

# SUMMARY

- Surveillance patterns reflect lack of established guidelines for patients with pancreatic cancer
- In all patients, CT scans decreased over the surveillance period
- Wide range of CT use in long term survivors
  - 42% received no CT scans in 2<sup>nd</sup> year while 27% received multiple scan
- Transition of care from cancer specialist to PCP
  - ‘PCP only’ increased to 31% by months 22-27
  - Percent of patients with no physician visits quadrupled

# SUMMARY

- The results of our study are in contrast to studies regarding surveillance in patients with breast and colon cancer, which show temporal patterns at regular intervals
- Little evidence that early detection of recurrence improves long-term survival
- More research is needed to determine potential benefits and harms of post-treatment surveillance in these patients
- Standardization of surveillance for pancreatic cancer patients could improve care and limit unnecessary imaging

# AKNOWLEDGEMENT

Kristin M. Sheffield

Yu-li Lin

Kristen T. Crowell

Clarisse Djukom

James S. Goodwin

Taylor S. Riall

**THANK YOU!**