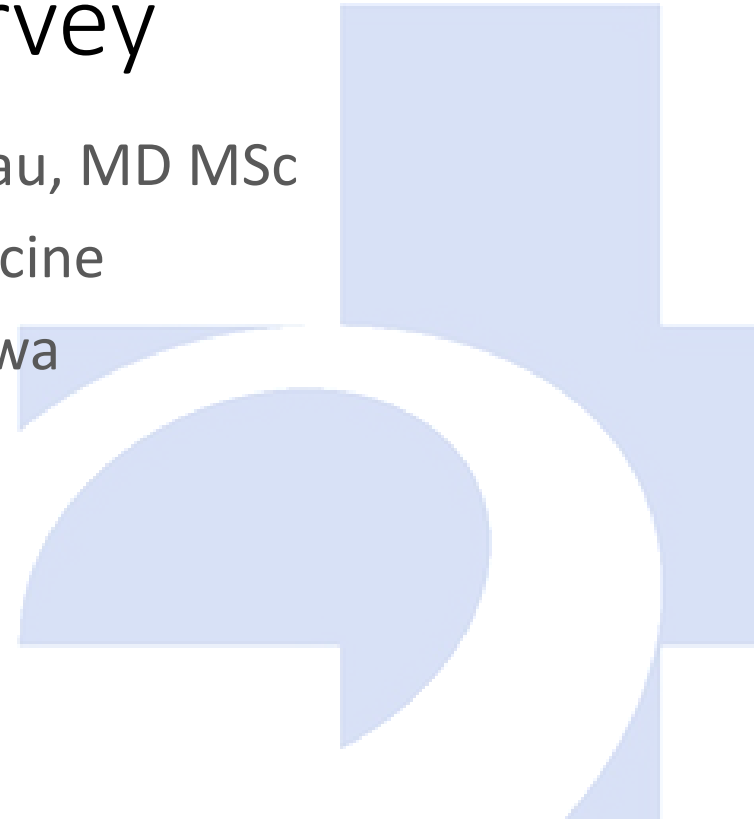


V/Q Scans in Canada

Results of Survey

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CANM 2015
Montréal, Québec



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- Lionel S. Zuckier, The Ottawa Hospital
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 - Pierre-Yves Salaün, Brest, France
 - CANM, Hélène Samson, Jean-Luc Urbain
-
- No disclosure

Objectives

1. Describe the Ottawa experience with V/Q scans
2. Describe the current practices in Canada with V/Q scans
3. Contrast the wide range of practices across Canada

THE OTTAWA EXPERIENCE



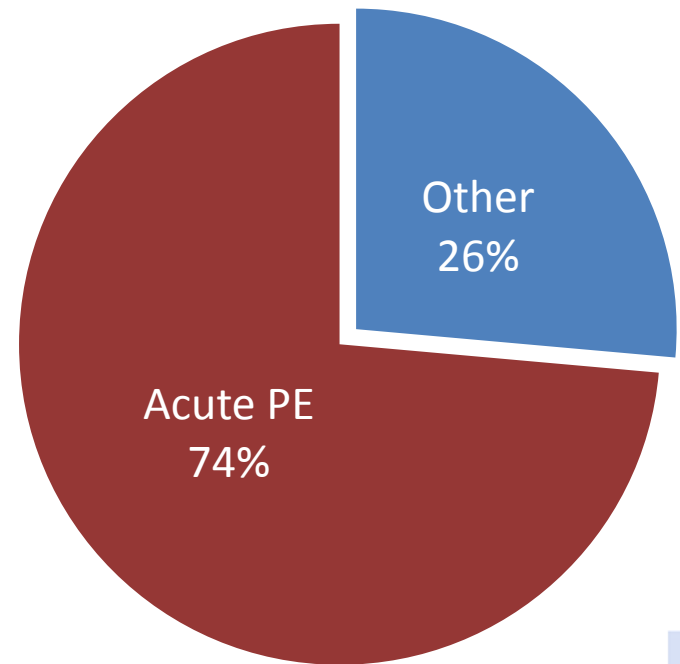
The Ottawa Experience

- We wanted to better understand the yield of pulmonary scintigraphy at TOH, the referral patterns, rate of positive and negative studies, patient outcome and need for additional tests when performing lung scintigraphy
- Retrospective chart review
- Patients who underwent a V/Q scan at TOH between April 2008 and March 2009

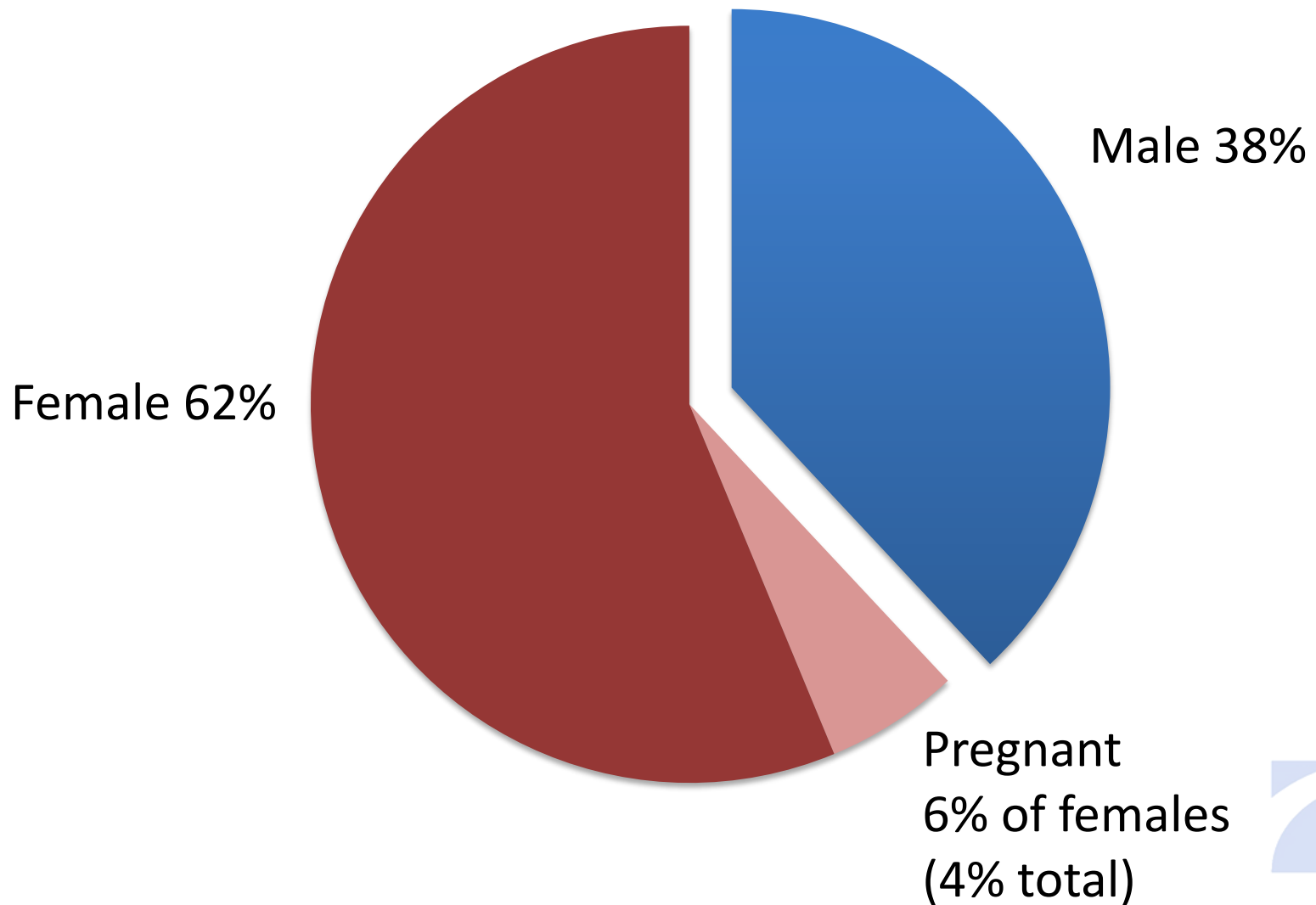


The Ottawa Experience

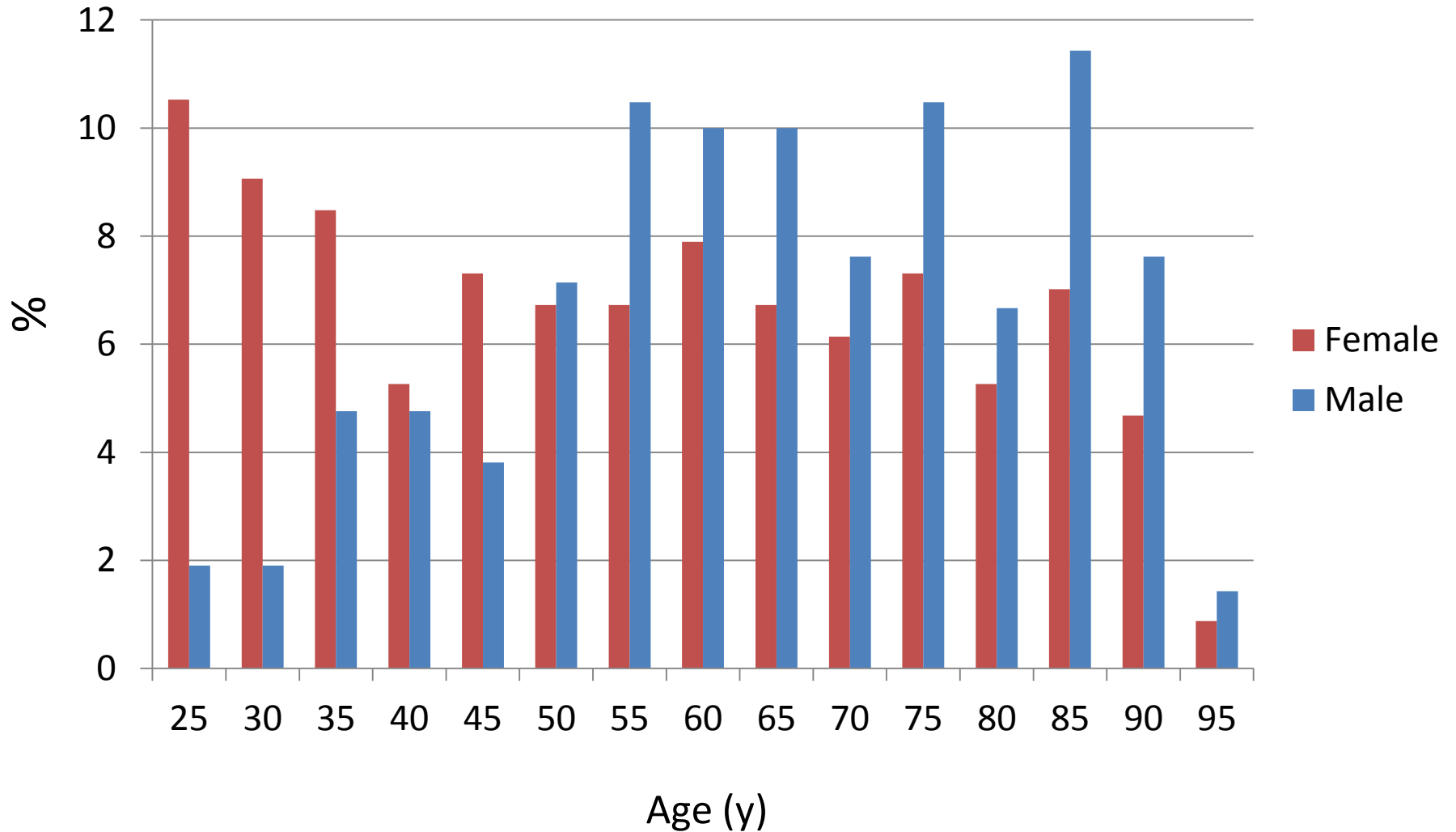
- 761 V/Q scans in 1 year
- Average 2.1 V/Q per days across 2 campuses
- 560 (74%) V/Q for acute pulmonary embolism



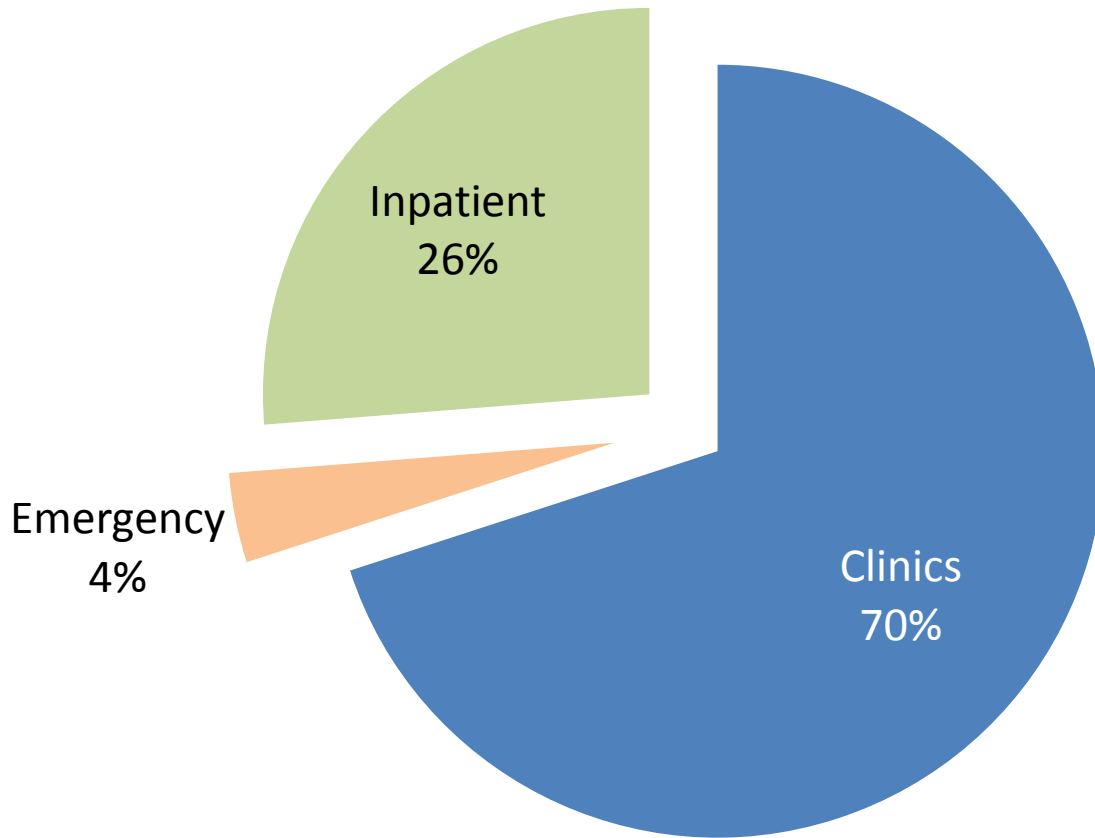
Gender of Patients



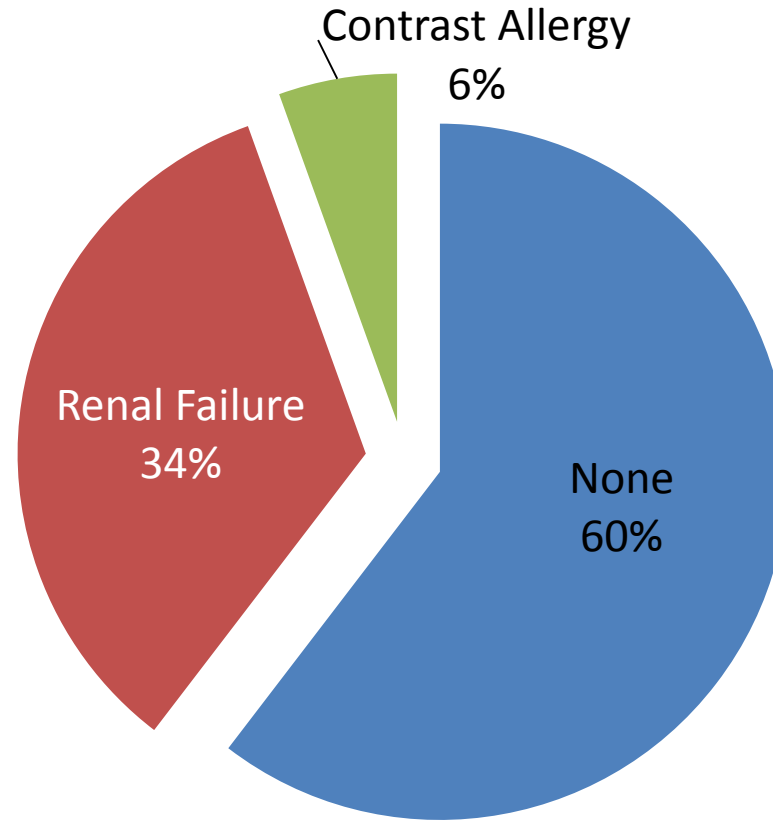
Age of Patients



Who refers?



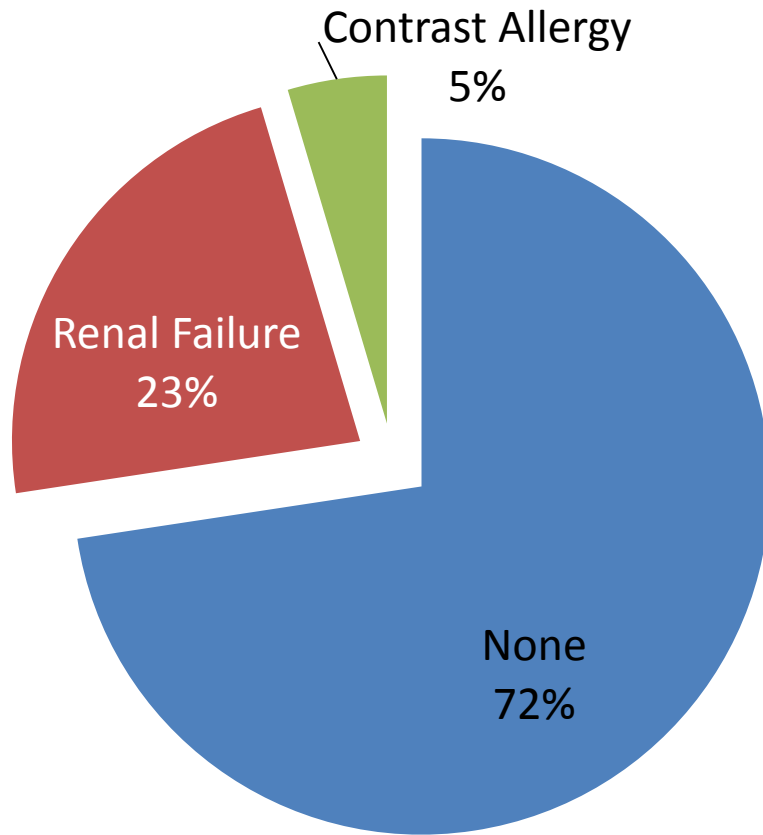
Contraindication to Contrast



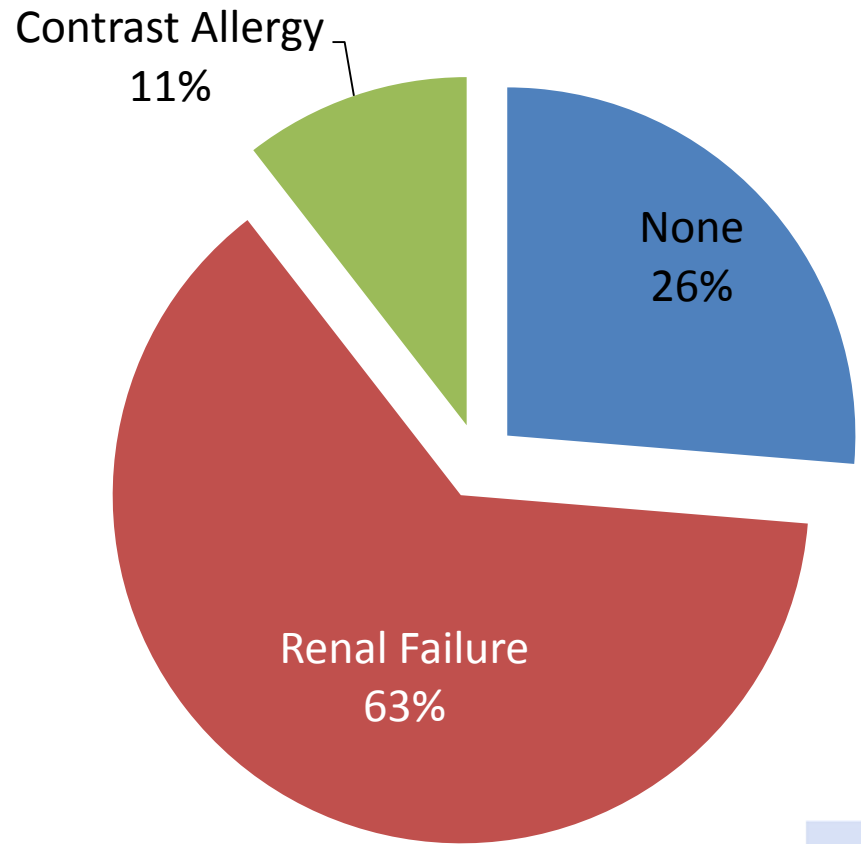
All Patients



Contraindication to Contrast



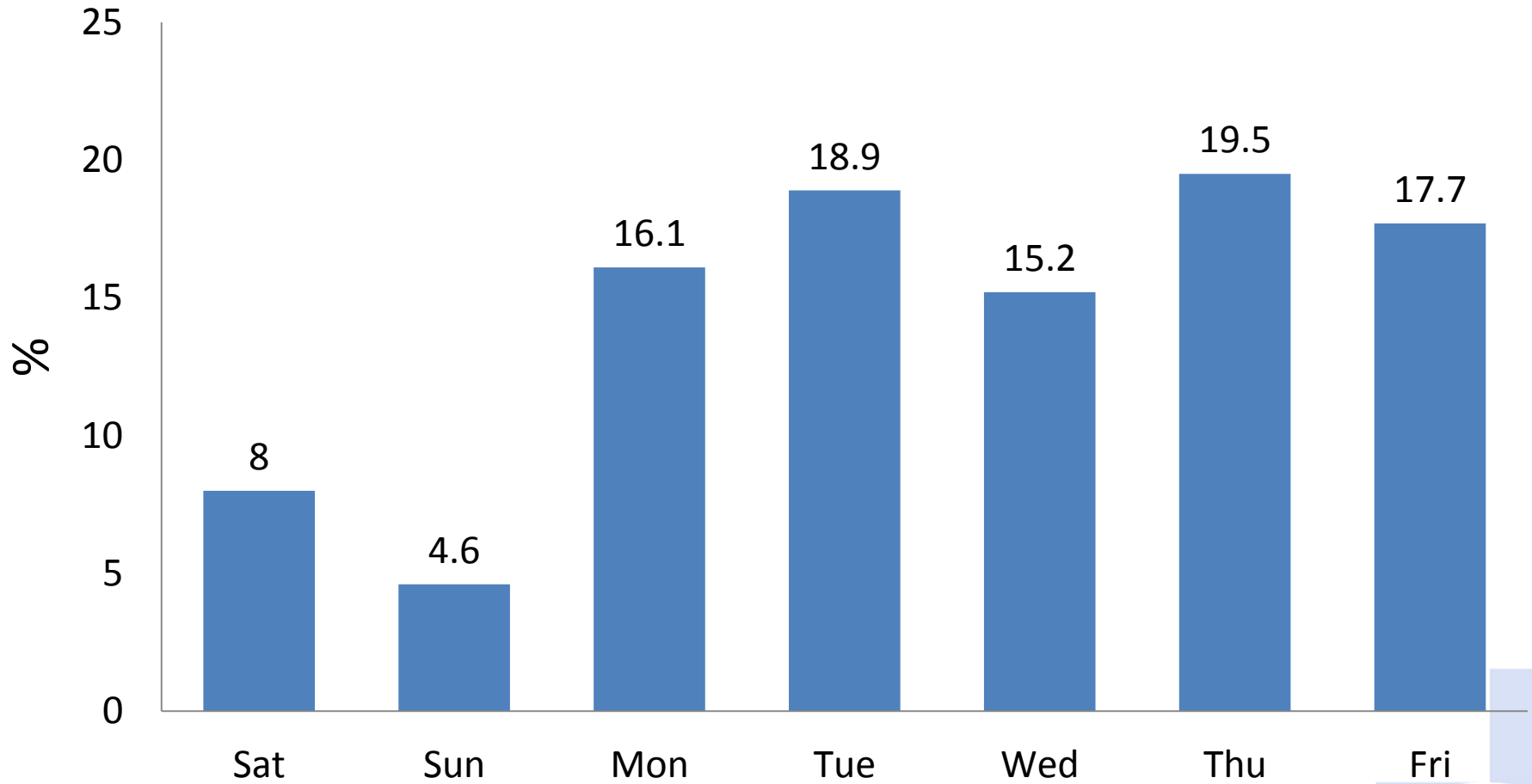
Patients from Clinics



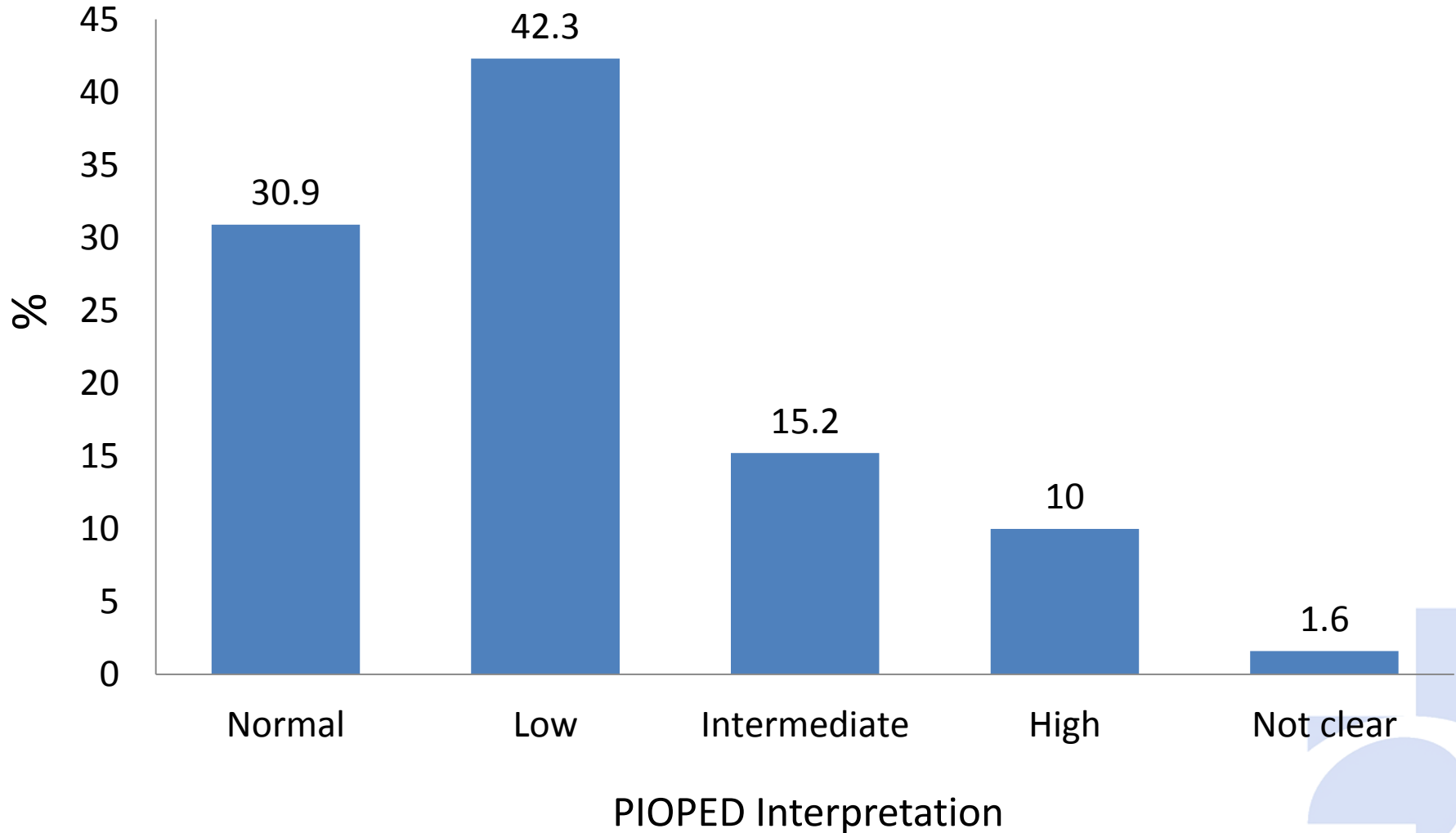
Patients from Emergency



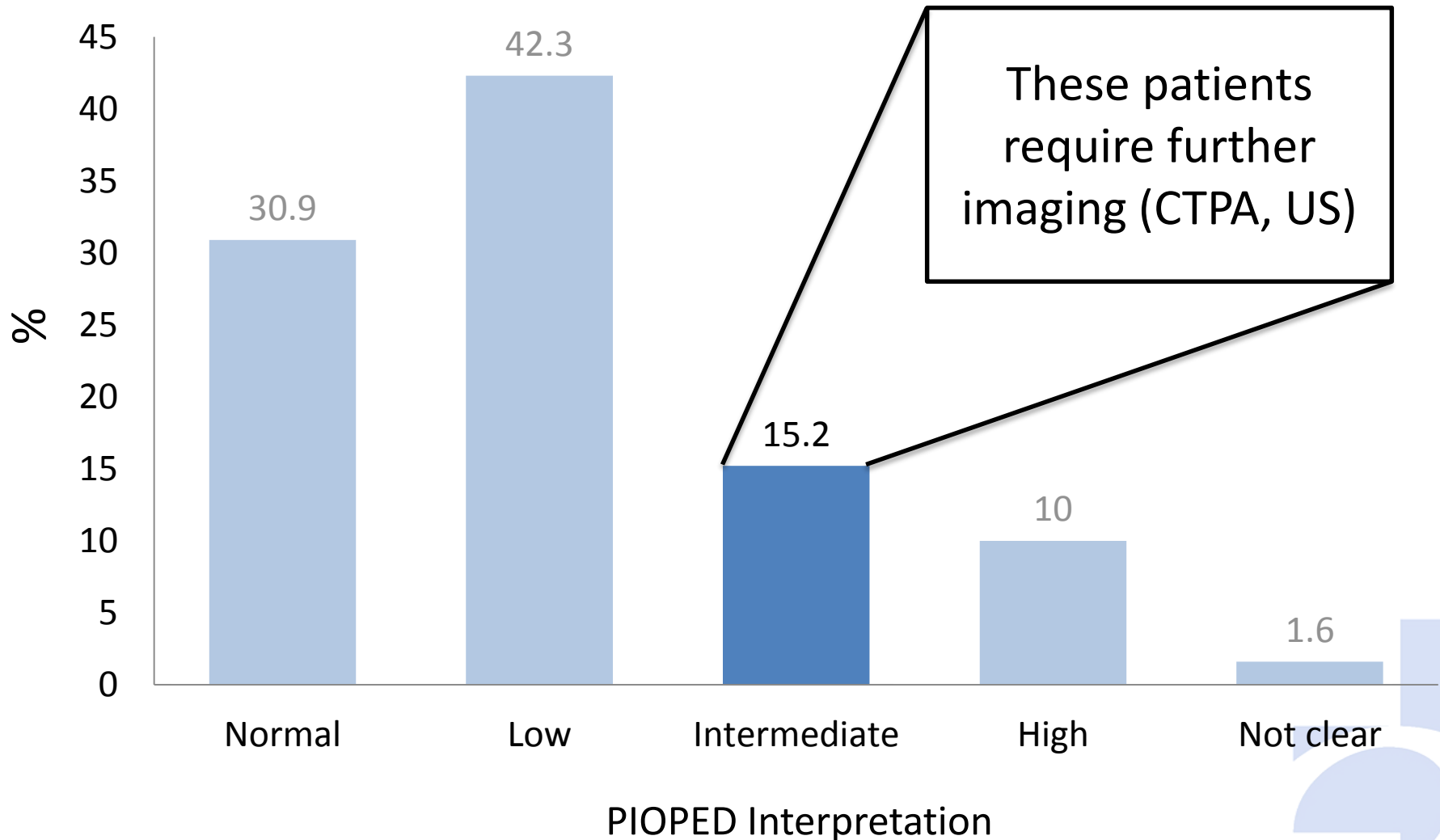
Days of the week (%)



Interpretation



Interpretation



The Ottawa Experience

- For 384 (68.6%) patients, the following information was available:
 - Clinical probability (Wells' score)
 - Additional imaging (CTPA, leg US)
 - Anticoagulation treatment within 3 months
 - Thrombosis consultation within 3 months

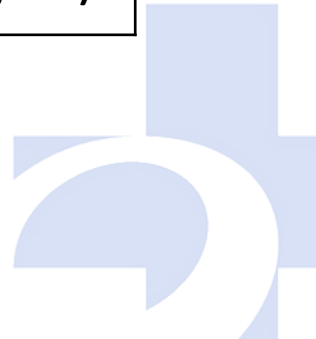
The Ottawa Experience

- For 384 (68.6%) patients, the following information was available:
 - Clinical probability (Wells' score)
 - Additional imaging (CTPA, leg US)
 - **Anticoagulation treatment within 3 months**
 - **Thrombosis consultation within 3 months**
- Were used as gold standard for the diagnosis of PE

Using anticoagulation therapy within 3 months after the V/Q scan as the gold standard for acute PE

		Clinical Probability			
		High	Intermediate	Low	All Probability
V/Q Interpretation	High	92% (11/12)	75% (24/32)	43% (6/14)	71% (41/58)
	Intermediate	100% (2/2)	55% (12/22)	13% (4/31)	32% (18/55)
	Low	25% (2/8)	13% (5/38)*	3% (3/99)	7% (10/145)
	Normal	0% (0/0)	11% (3/27)*	1% (1/76)	4% (4/103)
	Total	68% (15/22)	37% (44/119)	6% (14/220)	20% (73/361)

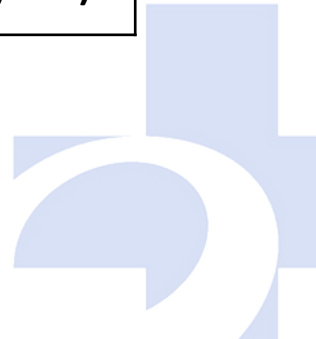
* Excluding patients already treated for other reasons (DVT, prior PE)



Using anticoagulation therapy within 3 months after the V/Q scan as the gold standard for acute PE

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* Excluding patients already treated for other reasons (DVT, prior PE)



The Ottawa Experience

- One of the goal of using SPECT is to reduce the number of indeterminate results
- Clinicians are hesitant to move toward SPECT due to lack of good prospective data
 - Does SPECT over diagnose small subsegmental PE?
 - What is the clinical significance of a small mismatched perfusion defect?
- Are other Canadian centers performing SPECT?
- How are SPECT VQ interpreted in other centers?





CURRENT PRACTICES IN CANADA

National Survey

- National survey to answers some of these questions
- Part of an international survey
 - France
 - Australia
 - Canada



National Survey - Methods

- Research Ethic Board (REB) approval was obtained
- Physicians were contacted by email - 2 emails were sent through CANM mailing list
- 158 centers in Canada according to our list
- Survey included 10 questions

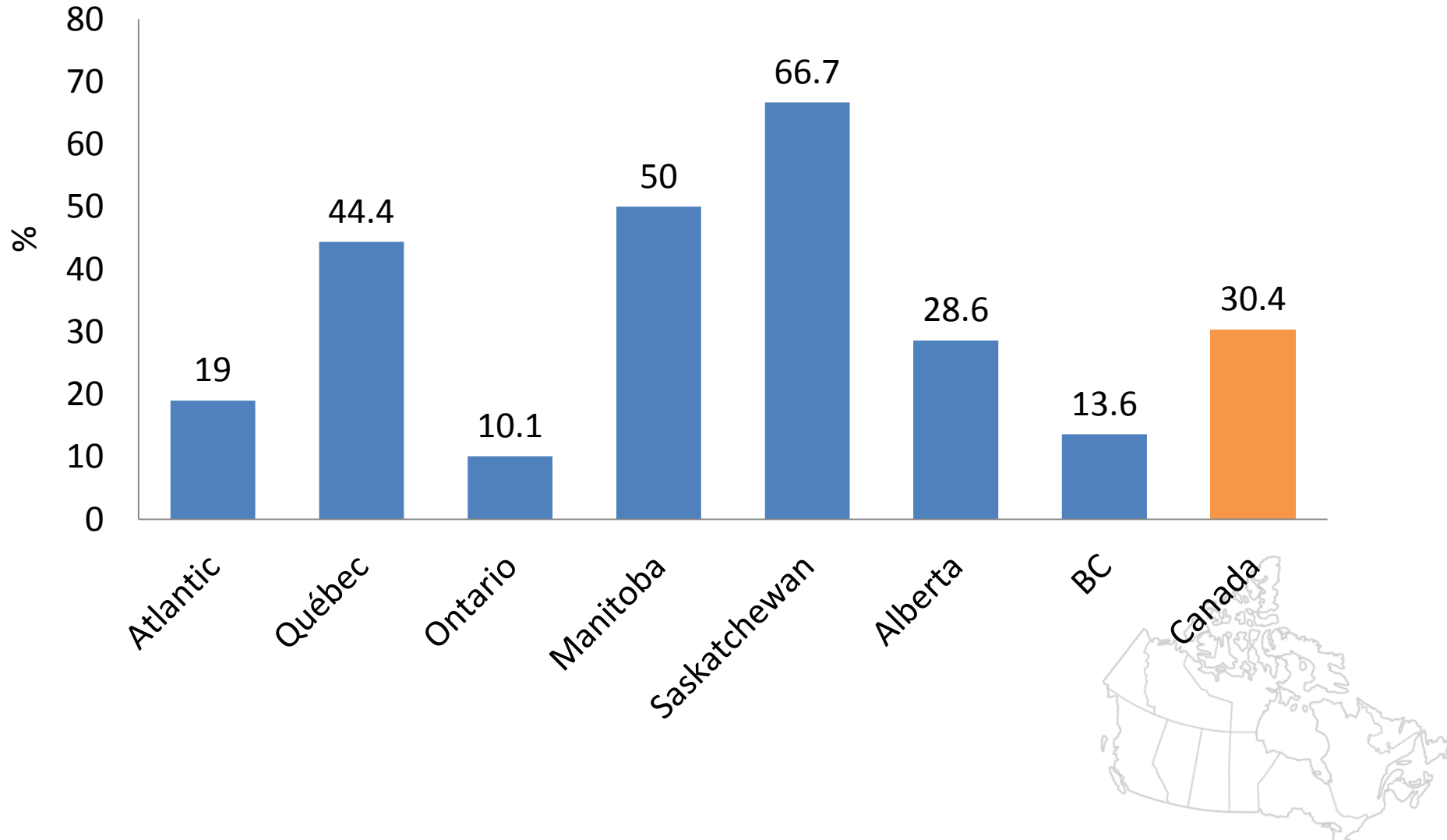


National Survey

- A total of 75 responses
 - From 48 different centers
 - 27 excluded due to duplicate
- Of the 48 unique responses
 - 36 responses after the 1st email
 - 12 responses after the 2nd email
- Response rate of 30.4%



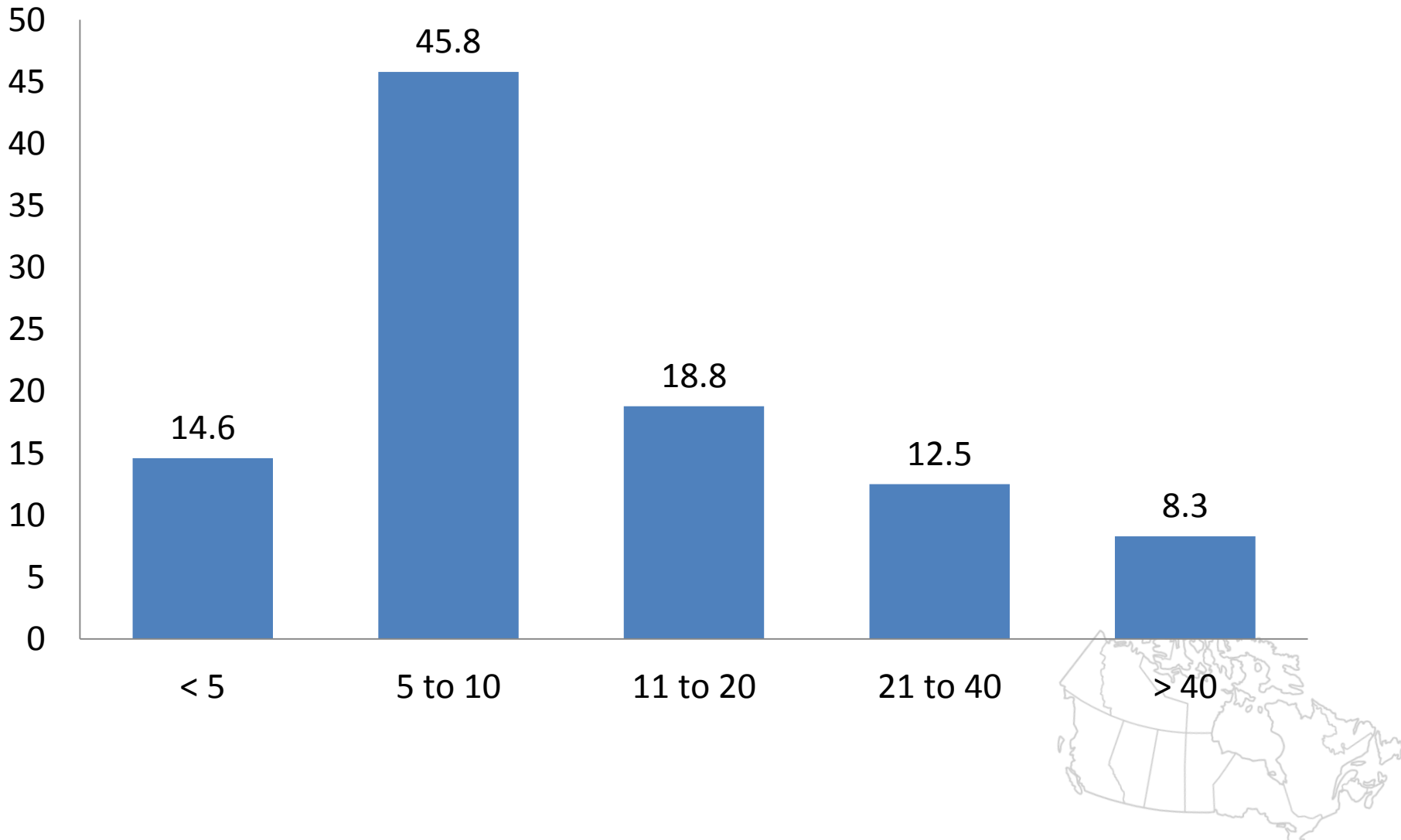
Response Rates (%)



**Approximately how many cases of
ventilation/perfusion (V/Q)
scintigraphy are performed per
week at your campus?**



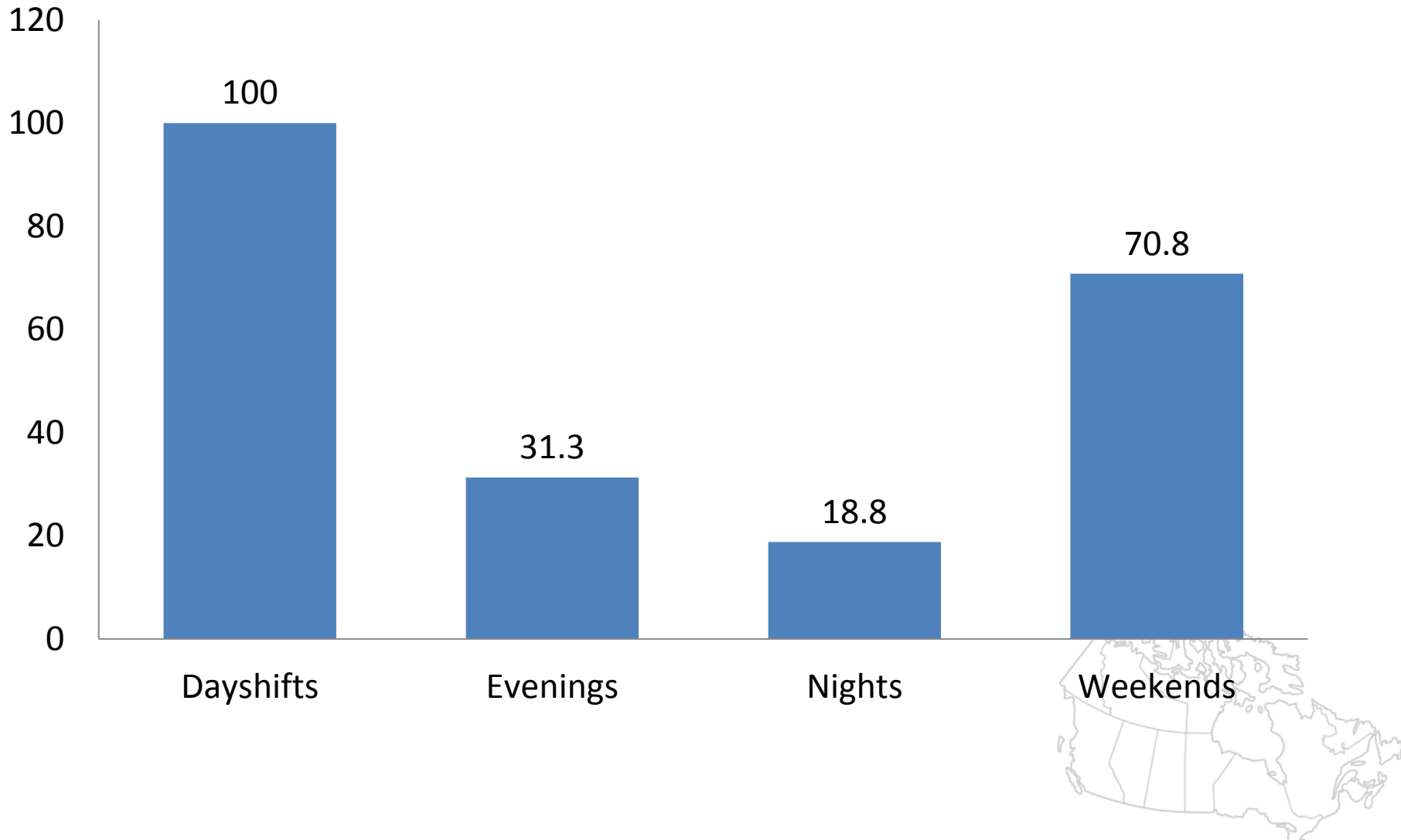
Number of scans per week



**What is the availability of
ventilation/perfusion scintigraphy
at your center?**



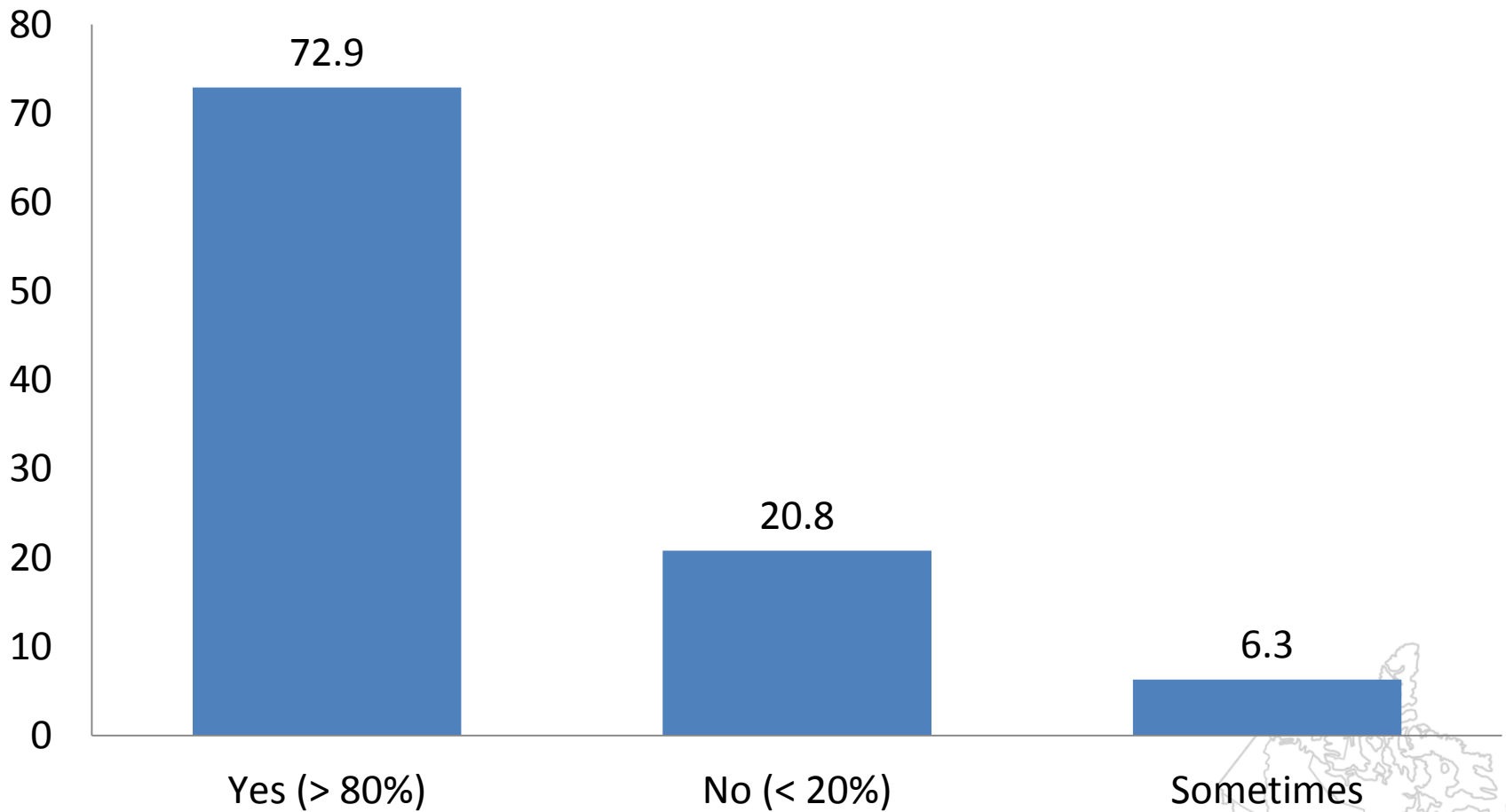
Availability of V/Q scans



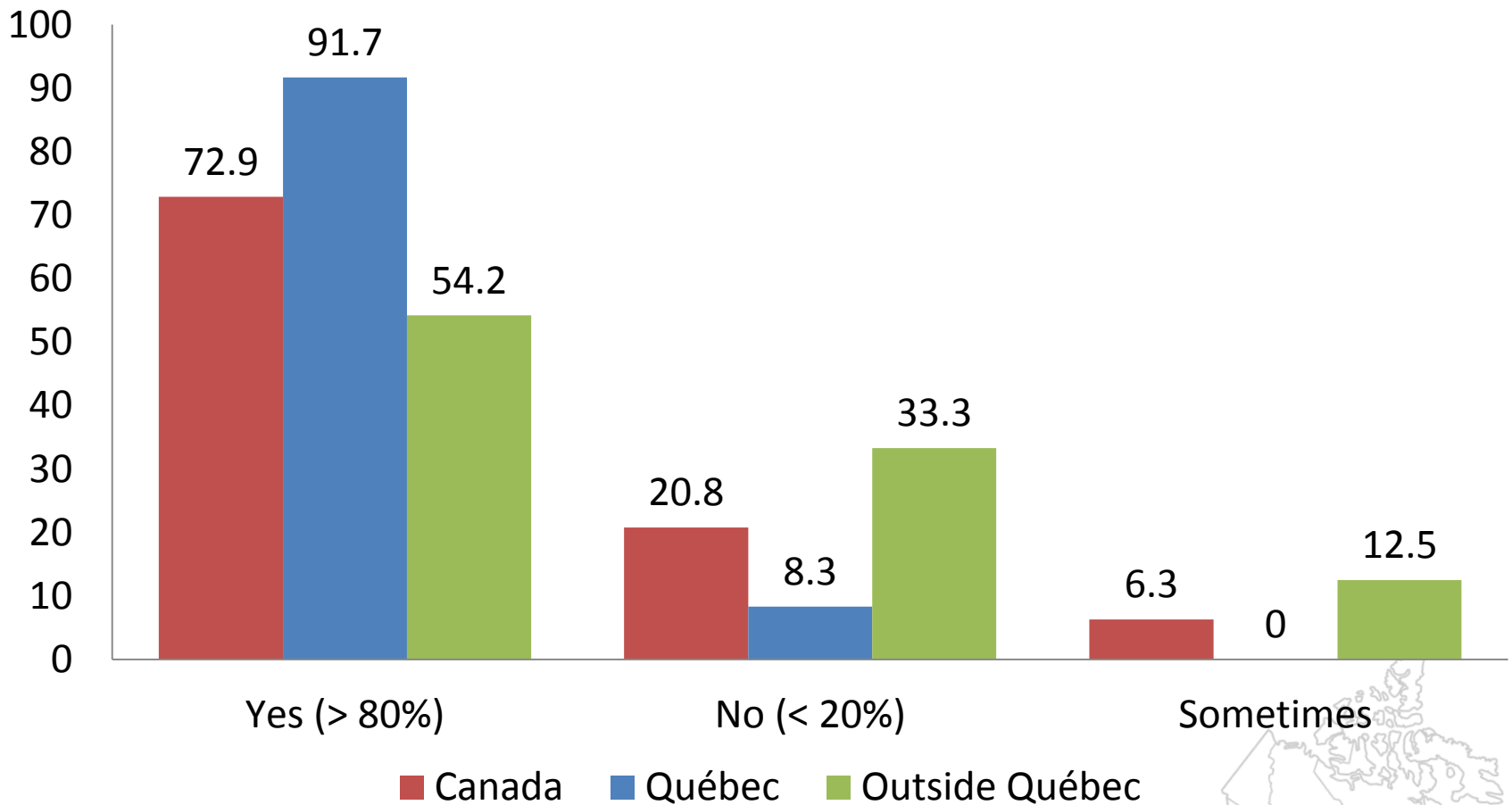
**Do you routinely use
ventilation/perfusion SPECT
(rather than planar scintigraphy)
at your campus for suspicion of
acute pulmonary embolism?**



Do you routinely use ventilation/perfusion SPECT



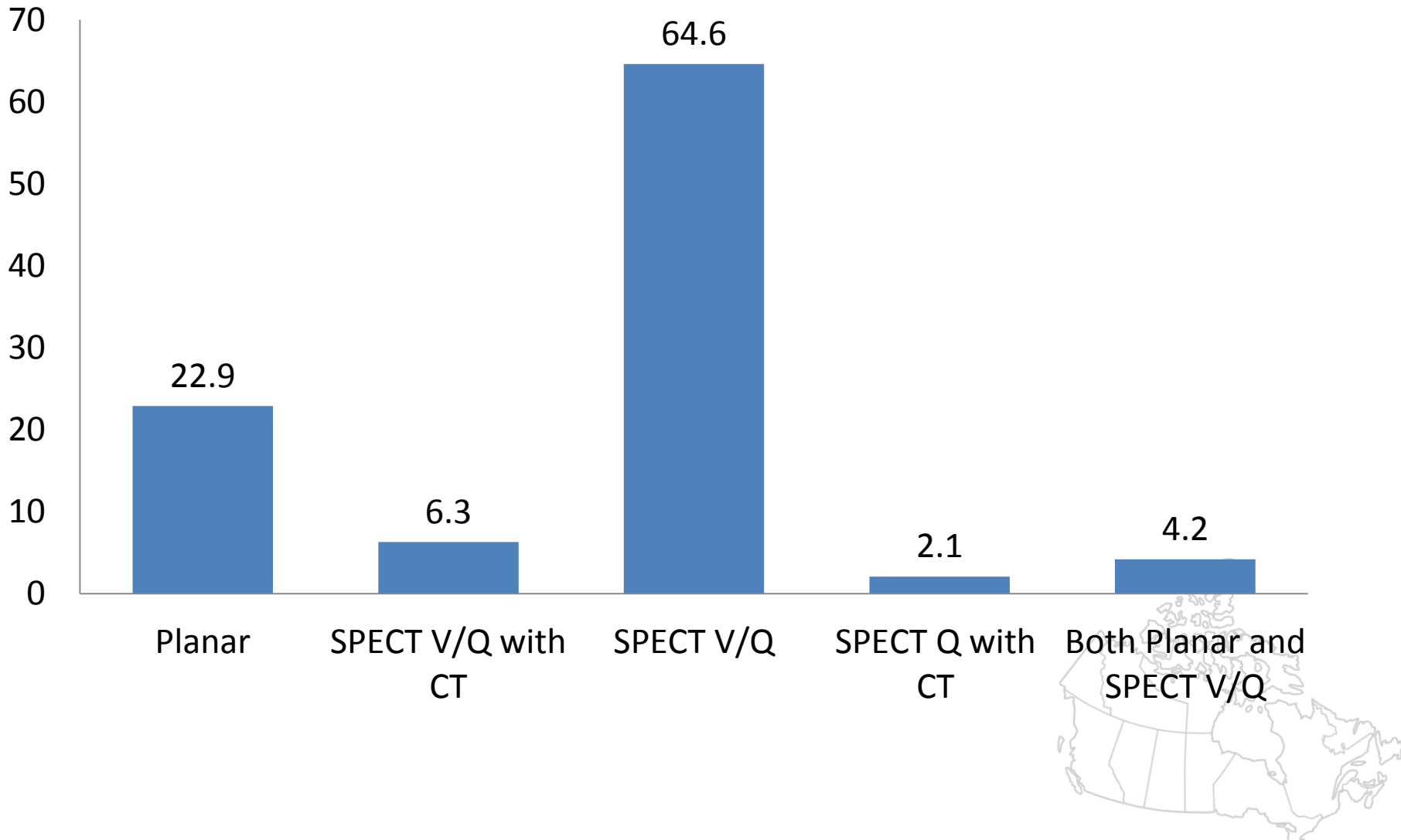
Do you routinely use ventilation/perfusion SPECT



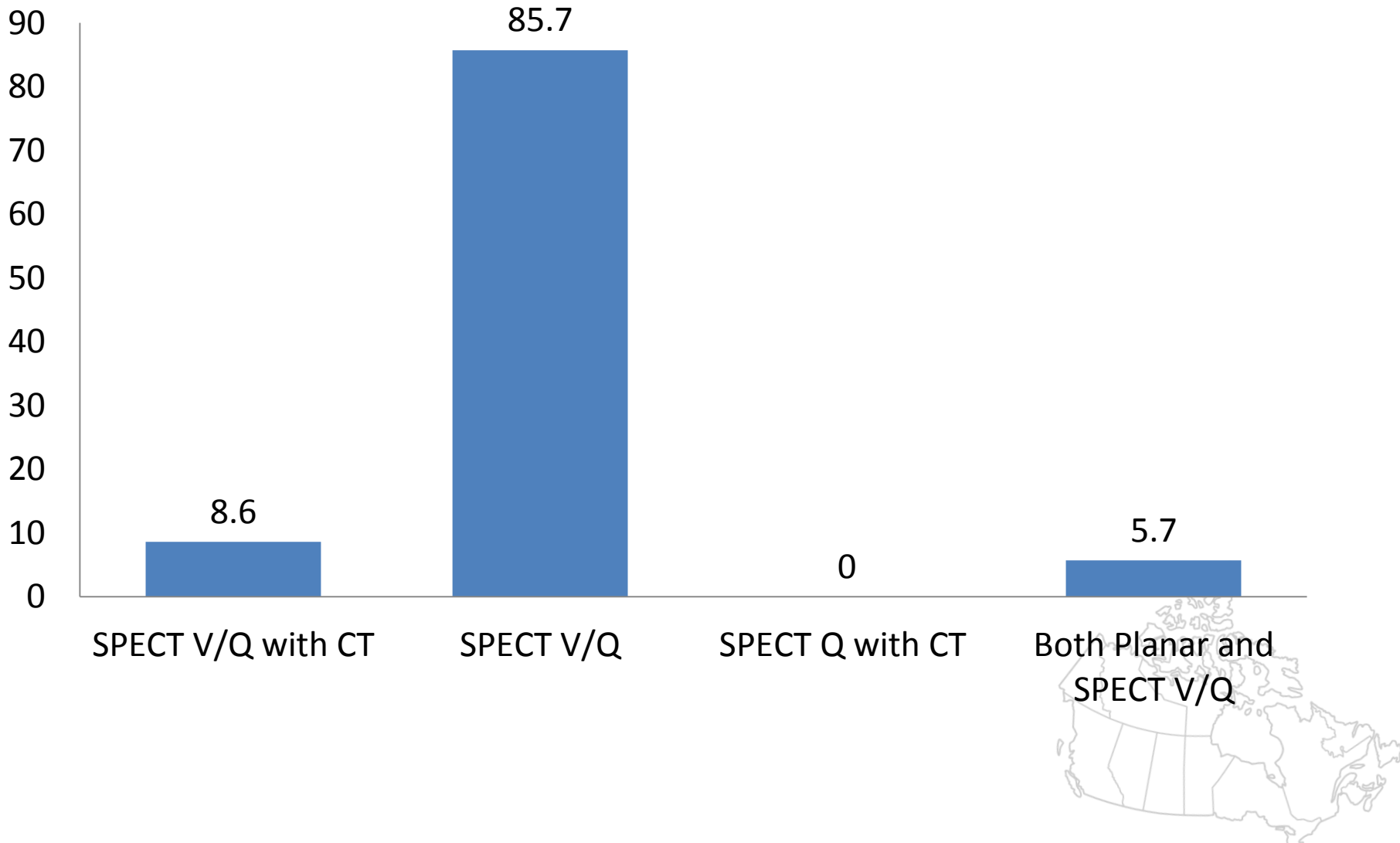
What is your routine exam for suspicion of acute pulmonary embolism?



Routine exam for all centers



Routine exam for centers performing routine SPECT



**What ventilation/perfusion SPECT
diagnostic criteria do you use for
suspicion of acute pulmonary
embolism?**



SPECT Interpretation Criteria

EANM Criteria

No PE is reported if there is (are):

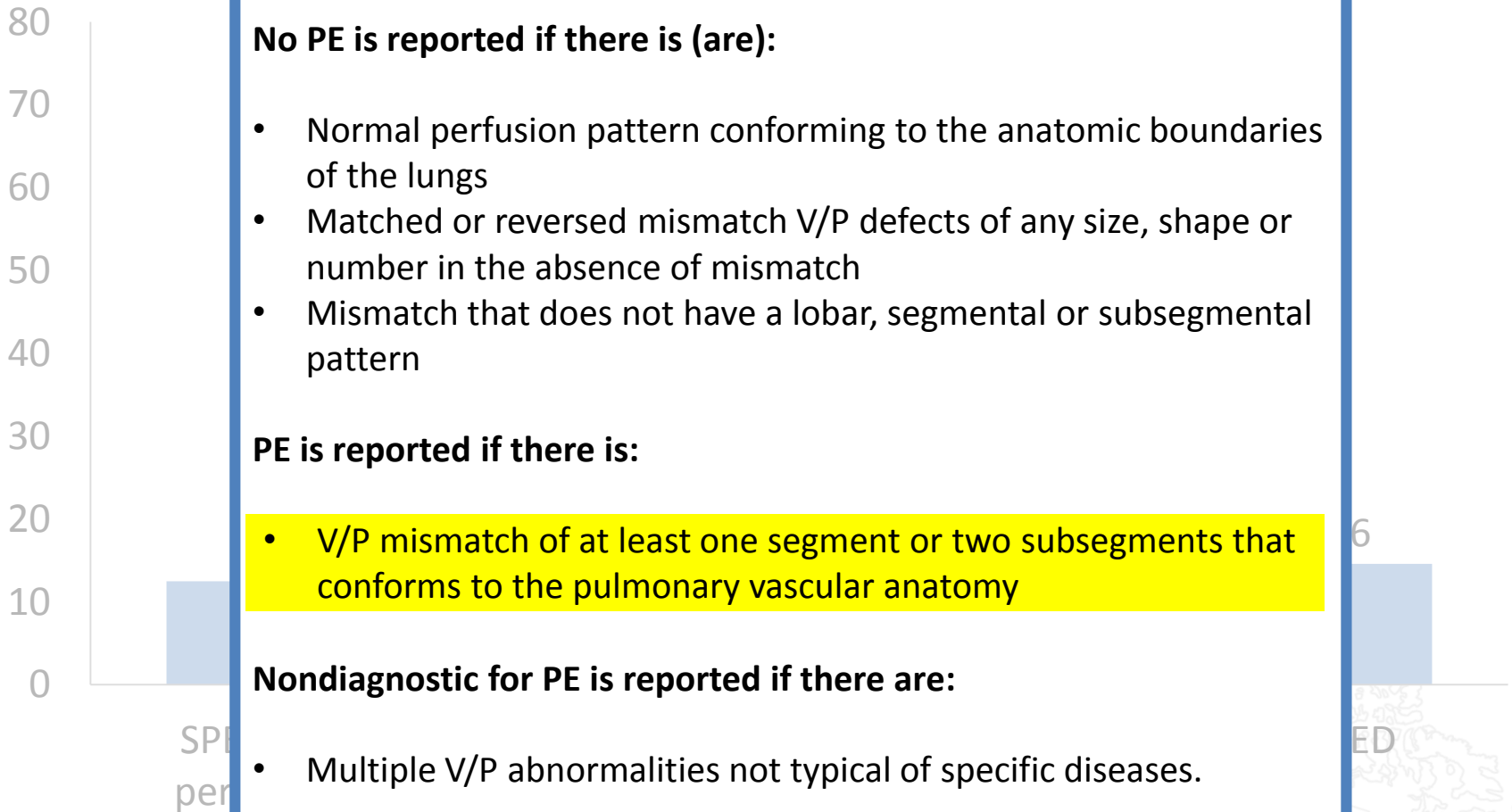
- Normal perfusion pattern conforming to the anatomic boundaries of the lungs
- Matched or reversed mismatch V/P defects of any size, shape or number in the absence of mismatch
- Mismatch that does not have a lobar, segmental or subsegmental pattern

PE is reported if there is:

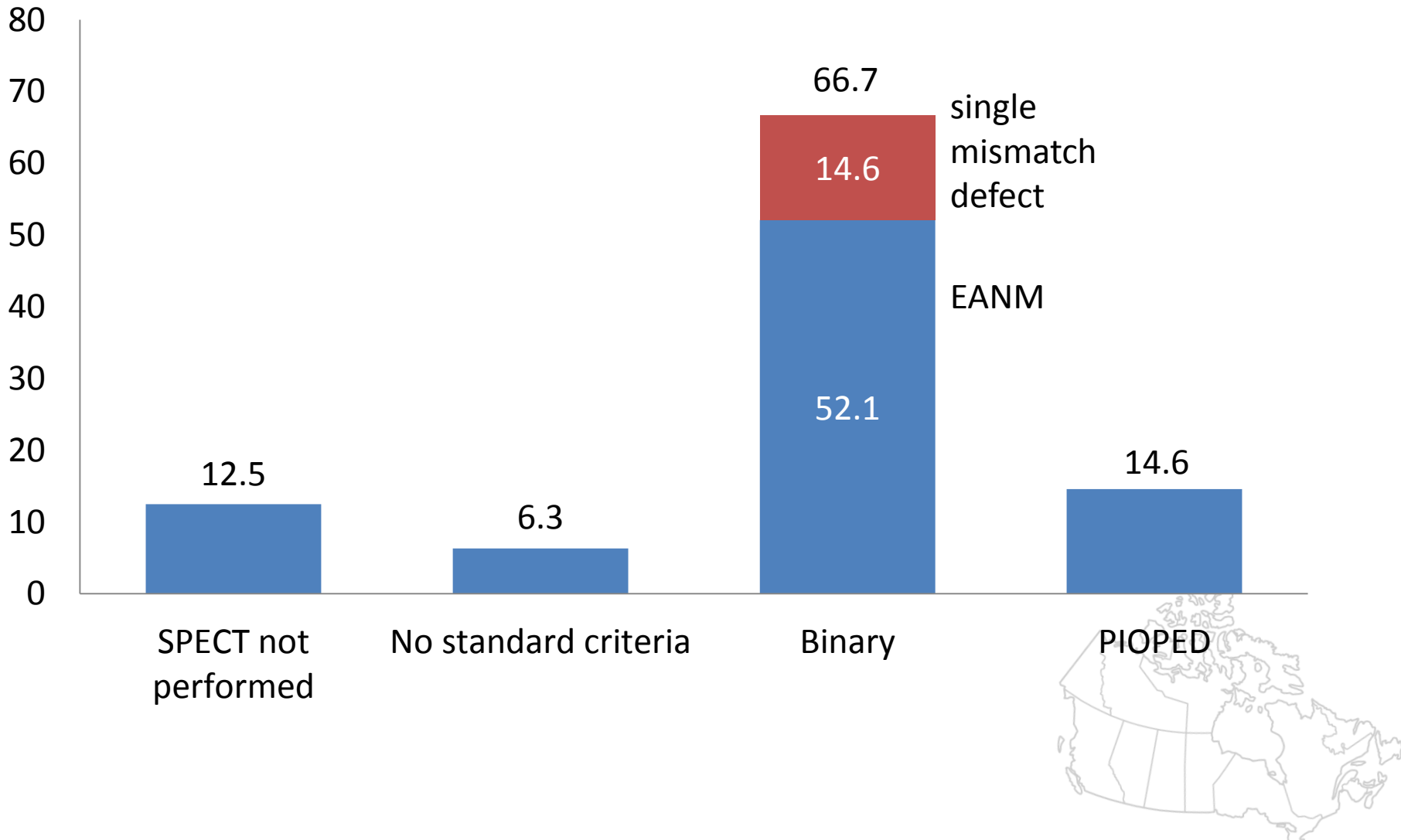
- V/P mismatch of at least one segment or two subsegments that conforms to the pulmonary vascular anatomy

Nondiagnostic for PE is reported if there are:

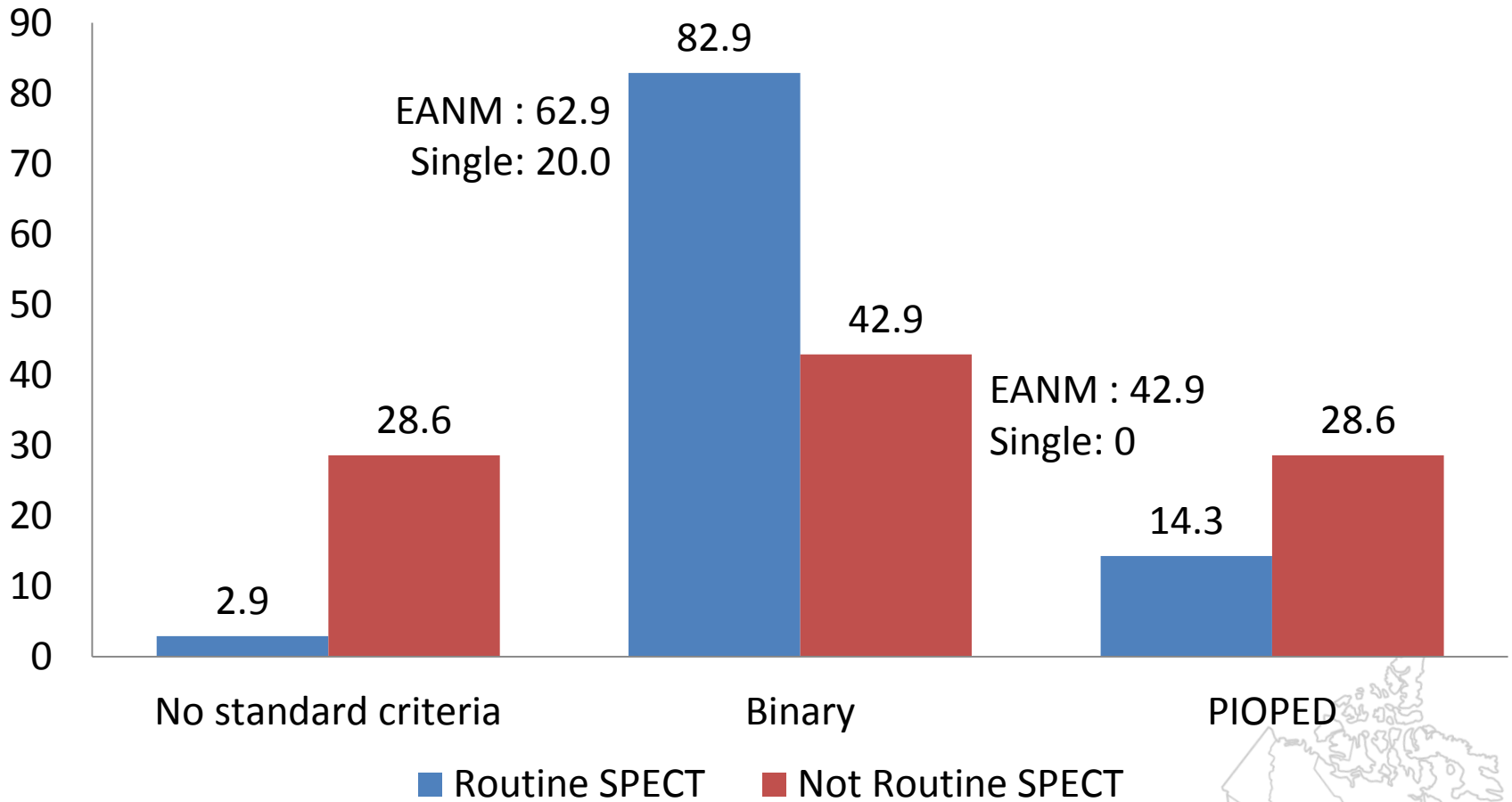
- Multiple V/P abnormalities not typical of specific diseases.



SPECT Interpretation Criteria



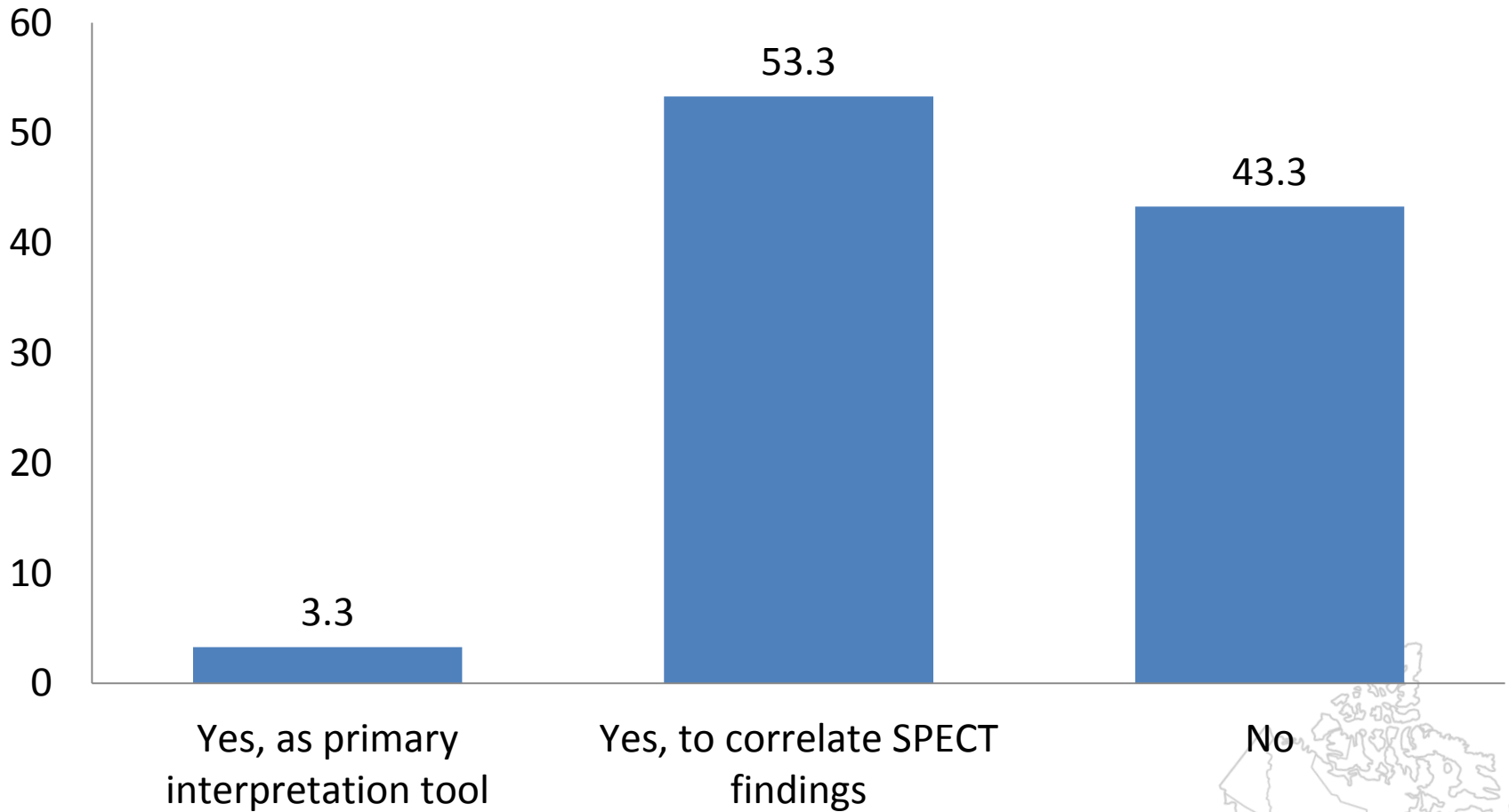
SPECT Interpretation Criteria



Do you use pseudoplanar images generated from SPECT data (not actually acquired, but generated from SPECT data)?



Use of Pseudoplanar Images*

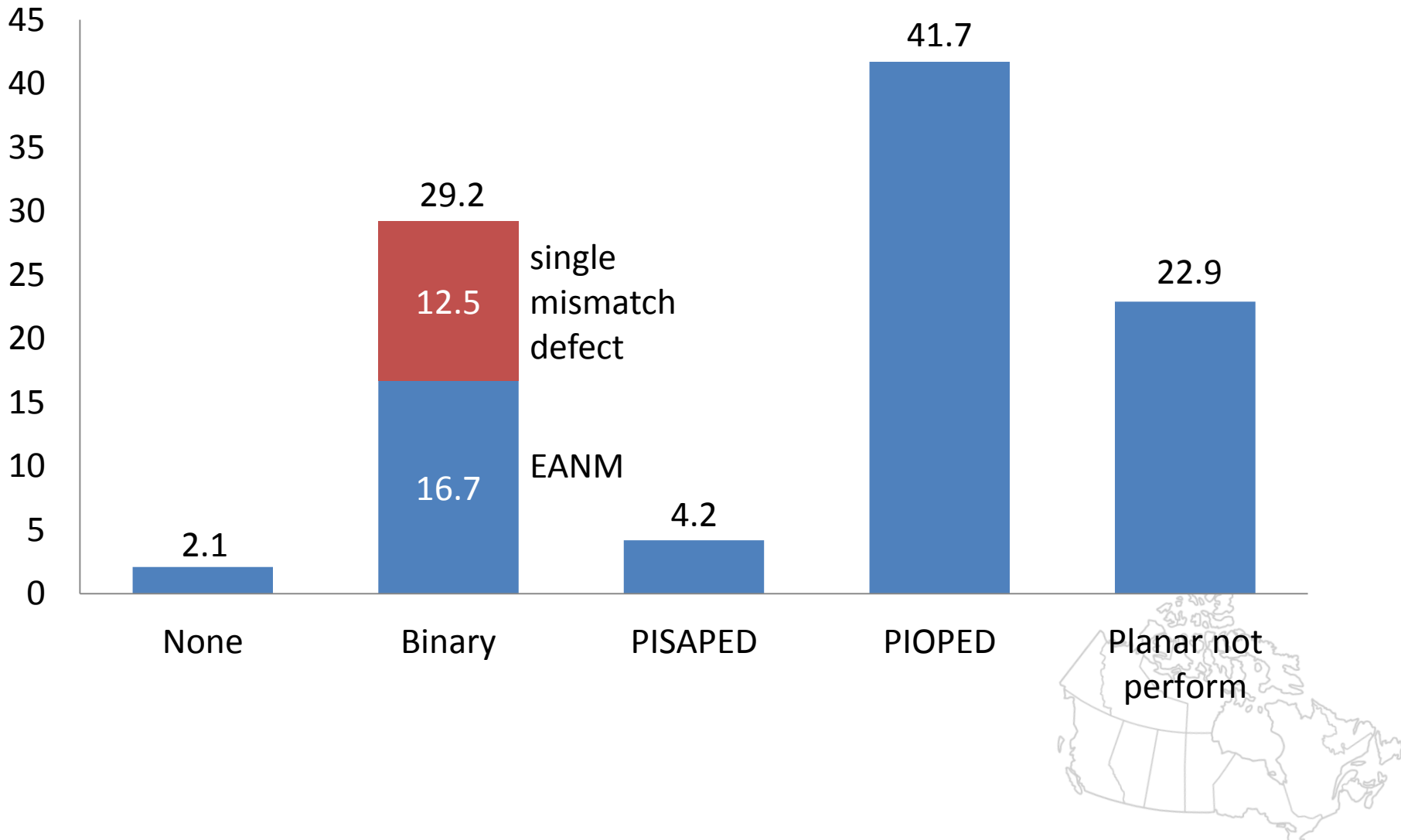


*For those who perform SPECT

**What ventilation/perfusion
PLANAR scintigraphy diagnostic
criteria do you use for suspicion of
acute pulmonary embolism?**



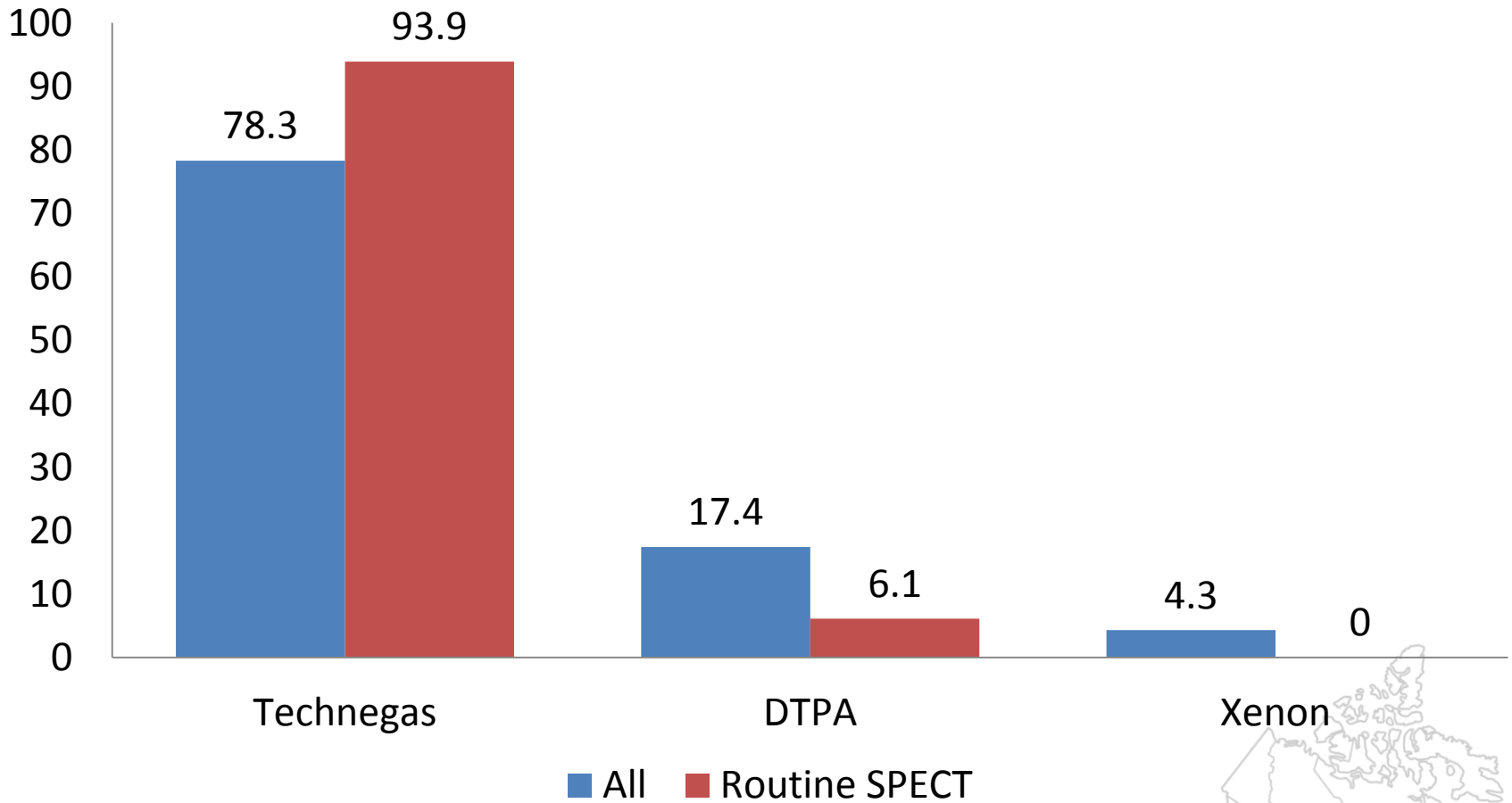
Planar Criteria



Which radiotracer do you usually use for ventilation imaging?



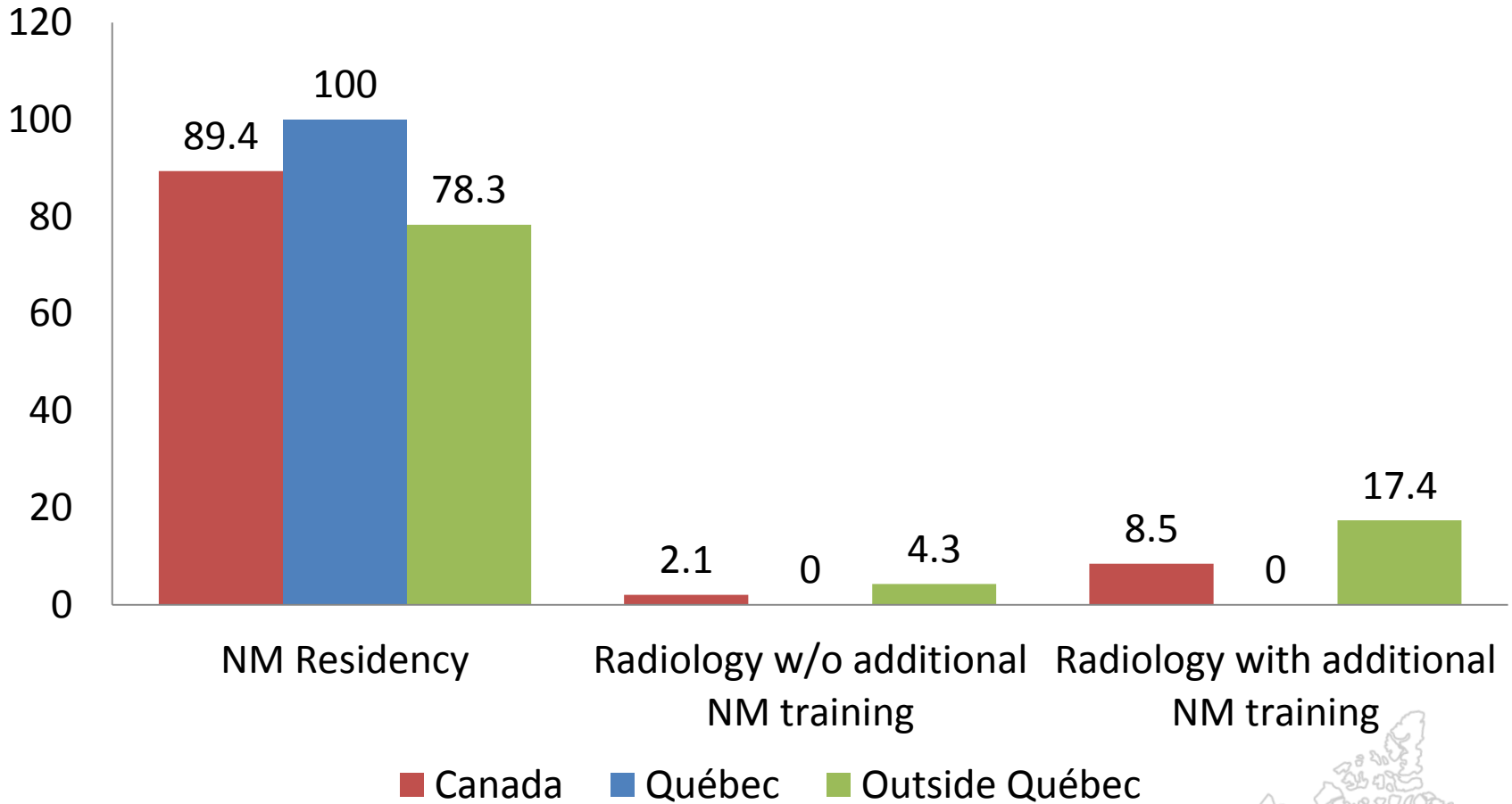
Ventilation Tracer



**At your center, what is the
training of the attendings
reading ventilation/perfusion
scintigraphy?**



Training





CONCLUSION

Objectives

1. Describe the Ottawa experience with V/Q scans
2. Describe the current practices in Canada with V/Q scans
3. Contrast the wide range of practices across Canada

Ottawa experience with V/Q scans

- Most V/Q scans are ordered by physicians from the Thrombosis Clinic
- Reflects different patient care
- ED physicians are ordering V/Q scans when there is a contra-indication to contrast

Ottawa experience with V/Q scans

- 1/3 of patients with intermediate probability of PE on planar V/Q will receive anti-coagulation therapy within 3 months
- SPECT is not performed because our clinicians feel that there is a lack of good prospective data and overall good performance of planar V/Q scintigraphy

Objectives

1. Describe the Ottawa experience with V/Q scans
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Current practices in Canada

- NM physicians contacted by email
- Short 10 questions survey
- Response rate of 30.4%

Current practices in Canada

- ~3/4 of Canadian centers are routinely using SPECT
 - 92% in Québec
 - 54% outside Québec
- Of those centers, the vast majority (86%) are using SPECT ventilation-perfusion imaging alone, without additional planar acquisition or SPECT-CT

Objectives

1. Describe the Ottawa experience with V/Q scans
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Current practices in Canada

- Wide range of reporting criteria for V/Q planar imaging
- Centers routinely performing V/Q SPECT are using binary interpretation
- Centers not routinely performing V/Q SPECT are using different criteria
 - Binary interpretation: ~40%
 - PIOPED: ~30%
 - No standardized criteria: ~30%

Current practices in Canada

- There is a lack of standardization in the reporting of V/Q SPECT in Canada
- This emphasizes the need to work towards establishment of standardized interpretation guidelines in Canada

Merci!

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