# Penn Pathways for Melanoma



### Christopher J. Miller, MD

Director of Penn Dermatology Oncology Center

Associate Professor of Dermatology



## I have no conflicts of interest or relevant ties with industry.



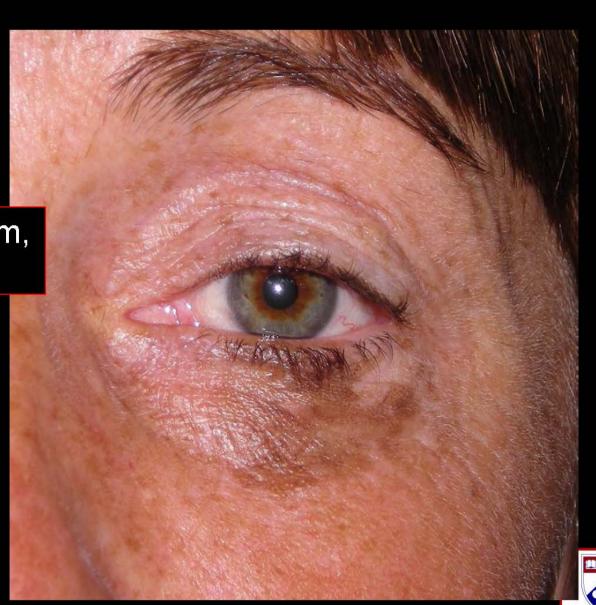
### What surgical margin do you excise?

Melanoma, 0.30 mm, no ulceration



### What surgical margin do you excise?

Melanoma, 0.30 mm, no ulceration



#### OCCASIONAL NOTES

#### DISCREPANCY BETWEEN MEDICAL DECISIONS FOR INDIVIDUAL PATIENTS AND FOR GROUPS

of comparable patients. In all other respects, the two versions contained the same information. For example, the individual version of one scenario was as follows.

The literature provides little information on the use of the telephone as an instrument of medical care. For example, H.B. is a young woman well known to ber family physician and free from

"physicians give more weight to the personal concerns of patients when considering them as individuals and more weight to the general criteria of effectiveness when considering them as a group."

Case-by-case decisions often neglect general principles



## Compliance with NCCN guidelines is poor across the United States

Compliance with guidelines in the surgical management of cutaneous melanoma across the USA
Nabil Wasif<sup>a</sup>, Richard J. Gray<sup>a</sup>, Sanjay P. Bagaria<sup>b</sup> and Barbara A. Pockaj<sup>a</sup>

- NCI's Surveillance, Epidemiology, and End-Results (SEER) tumor registry (data from nonaccredited community hospitals and doctor offices)
- 60,194 patients treated for invasive melanoma
- 66.2% of T1 melanomas had surgical pathology margin <1 cm</li>
- 53% rate of SLNB in eligible patients
- Risk factors for noncompliance: head and neck location, older age



Melanomas Research 2013;23:276-282

DOI: 10.1245/s10434-008-0021-0

#### Adverse Outcomes Associated with Noncompliance with Melanoma Treatment Guidelines

Jennifer Erickson Foster, MD, 1,2,3 Josè M. Velasco, MD, 1,2,3 and Tina J. Hieken, MD, 1,2,3

<sup>1</sup>Department of Surgery, Rush North Shore Medical Center, 9669 North Kenton, Suite 204, Skokie, IL 60076, USA

<sup>2</sup>Rush University Medical Center, Chicago, IL, USA

<sup>3</sup>Rush Medical College, Chicago, IL, USA

Complication rates after NCCN compliant versus non-compliant surgery				
	Non-compliance with NCCN	Compliance with NCCN		
Excision margins	30% (24/79)	10% (22/210)	P < 0.0001	
SLNB	33% (18/54)	13% (32/245)	P = 0.006	



### **PennPathways**

Supported by the Penn Medicine Center for Evidence-based Practice. For information, contact Nikhil Mull or Emilia Flores.

The mission of the Penn Medicine Center for **Evidence-based Practice** is to support patient care, safety, and value through evidence-based practice.

Clinical Pathways translate evidence into practice



## Multidisciplinary leadership team -> weekly tumor board





## Comprehensive melanoma programs improve adherence to guidelines

Quality improvement in melanoma care: Multidisciplinary quality program development and comparison of care before and after implementation

Barrett A. Kielhorn <sup>a, b</sup>, Jensen B. Jantz <sup>a</sup>, Mark S. Kosten <sup>a</sup>, Stephen S. Phillips <sup>c</sup>, Sarat C. Khandavalli <sup>a, d</sup>, Laurence E. McCahill <sup>a, \*</sup>

The American Journal of Surgery 2018



a Metro Health - University of Michigan Health System, Wyoming, MI, USA

<sup>&</sup>lt;sup>b</sup> Michigan State University College of Osteopathic Medicine, Department of Osteopathic Surgical Specialties, USA

<sup>&</sup>lt;sup>c</sup> Emory University School of Medicine, USA

d Pathology Associates of Grand Rapids, Grand Rapids, MI, USA

## Improved compliance with NCCN guidelines at multidisciplinary melanoma program

Suboptimal Compliance With National Comprehensive Cancer Network Melanoma Guidelines

Who Is at Risk?

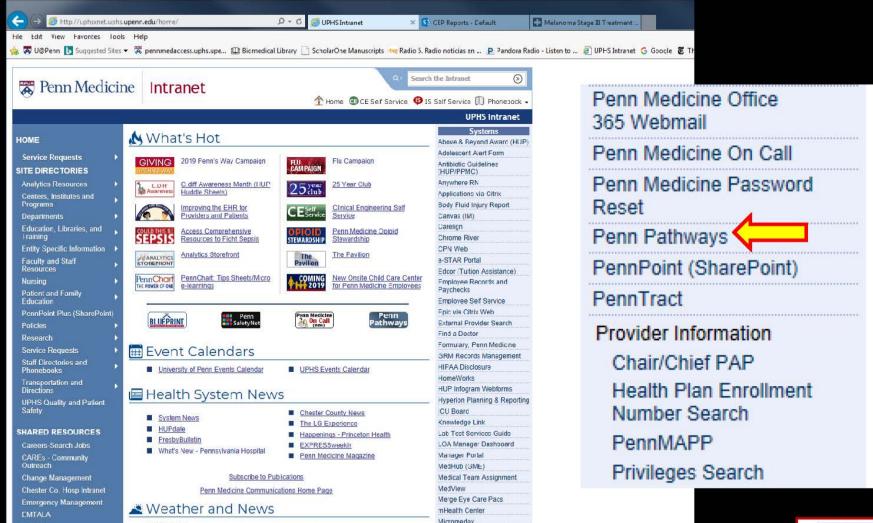
Andrew M. Blakely, MD,\*† Danielle S. Comissiong, BS,†
Michael P. Vezeridis, MD, FACS,\*† and Thomas J. Miner, MD, FACS\*†

- Compliance with surgical margin recommendations:
   96.8%
  - Risks for noncompliance: head & neck location, tumor thicker than 2 mm
- Compliance with SLNB: 93.2%
  - Risks for noncompliance: head & neck location, age ≥80, tumor thickness >4 mm, mitotic rate ≥1



Am J Clin Oncol 2018;41:754-759

## Where do I find Penn Pathways? http://uphsxnet.uphs.upenn.edu/home/



MSDS/SDS Access

myPennMedicine

N95 Fit Test

Oasis (GME)
One Source

■ 6abc.com

CNN.com

First Call

HR & You

HIFAA Privacy

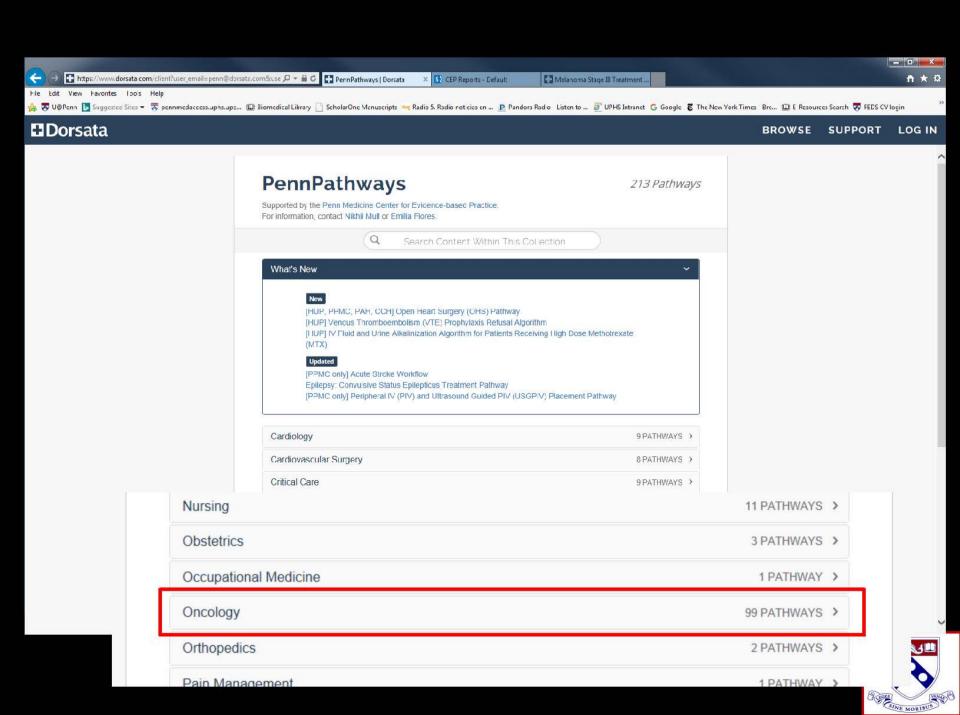
■ CBS Philly.com

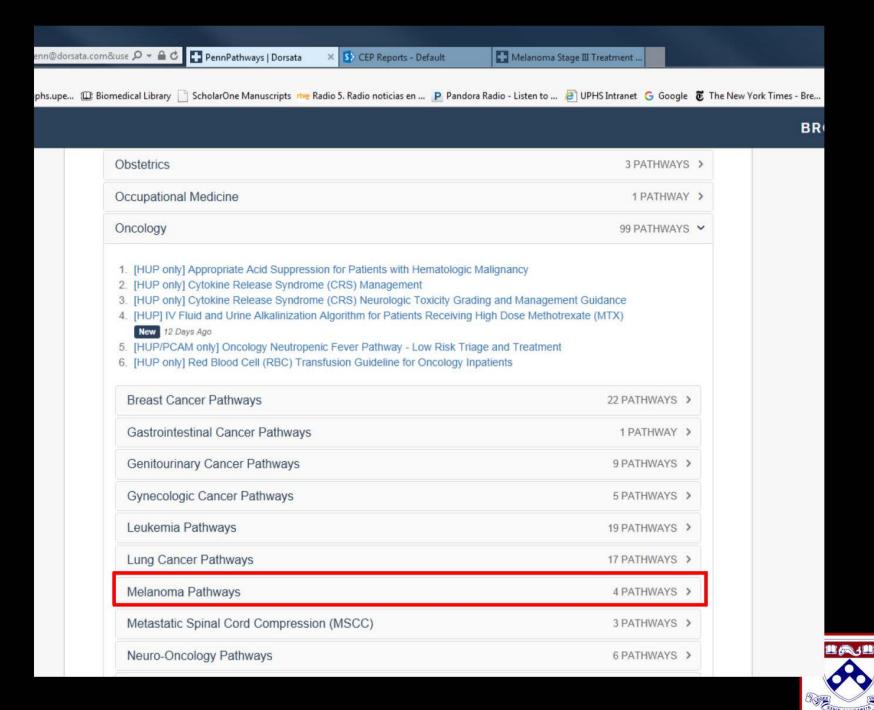
Myfoxphilly.com

■ NBC Philadelphia.com

Philly com

■ Weather.com





### 4 Melanoma Pathways



- Guidelines for excision and SLNB (Stage I and II)
- Guidelines to manage positive lymph notes (Stage III)
- Guidelines for follow-up
- Guidelines for molecular testing



## Themes of Penn Pathway for Melanoma

- AJCC Staging system is common language
- Reflect data from published consensus guidelines
- Triage patients to ideal provider
- Added safeguards when guidelines uncertain



## Theme 1: AJCC TNM Melanoma Staging is Common Language

### AJCC Melanoma of the Skin Staging E

Edition

#### **Definitions**

#### Primary Tumor (T)

TX Primary tumor cannot be assessed (for example, curettaged or severely regressed melanoma)

T0 No evidence of primary tumor

Tis Melanoma in situ

T1 Melanomas 1.0 mm or less in thickness

T2 Melanomas 1.1 - 2.0 mm

T3 Melanomas 2.1 - 4.0 mm

T4 Melanomas more than 4.0 mm

NOTE: a and b subcategories of T are assigned based on ulceration and thickness as shown belowt:

T CLASSIFICATION	THICKNESS (mm)	a: Breslow < 0.8 mm w/o ulceration b: Breslow 0.8-1.0 mm w/o ulceration or ≤ 1.0 mm w/ ulceration.		
T1	≤1.0			
T2	1.1-2.0	a: w/o ulceration b: w/ ulceration		
Т3	2.1-4.0	a: w/o ulceration b: w/ ulceration		
T4	>4.0	a: w/o ulceration b: w/ ulceration		

#### Regional Lymph Nodes (N)

Patients in whom the regional nodes cannot be assessed (for example previously removed for another reason)

No regional metastases detected

Regional metastases based on the number of metastatic nodes, number of palpable metastatic nodes on clinical exam, and presence or absence of MSI<sup>2</sup>

NOTE: N1-3 and a-c subcategories assigned as shown below

#### Distant Metastasis (M)

MO No detectable evidence of distant metastases

M1a Metastases to skin, sub cutaneous, or distant lymph nodes

M1b Metastases to lung

M1c Metastases to all other visceral sites

M1d Metastases to brain

NOTE: Serum LDH is incorporated into the M category as shown below:

M CLASSIFICATION	SITE	Serum LDH	
M1a-d	Skin/subcutaneous/nodule (a), lung (b) other visceral (c), brain (d)	Not assessed	
M1a-d(0)	Skin/subcutaneous/nodule (a), lung (b) other visceral (c), brain (d)	Normal	
M1a-d(1)	Skin/subcutaneous/nodule (a), lung (b) other visceral (c), brain (d)	Elevated	

Clinical Staging <sup>3</sup>		Pathologic Staging <sup>4</sup>					
Stage 0	Tis	N0	MO	0	Tis	NO	MO
Stage IA	T1a	NO NO	MO	IA	T1a	NO	MO
Stage IB	T1b				T1b	-	
	T2a	*		IB	T2a	-	44
Stage IIA	T2b	N0	MO	IIA	T2b	MO	MO
	T3a		**		T2a	*	
Stage IIB	T3b			IIB	T3b		
	T4a				T4a		//
Stage IIC	T4b			IIC	T4b	2	
Stage III	Any T	≥N1	MO	IIIA	T1-2a	N1a	MO



#### Melanoma Staging: Evidence-Based Changes in the American Joint Committee on Cancer Eighth Edition Cancer Staging Manual

Jeffrey E. Gershenwald, MD 1; Richard A. Scolyer, MD2,3†; Kenneth R. Hess, PhD4†; Vernon K. Sondak, MD5; Georgina V. Long, MBBS, PhD6; Merrick I. Ross, MD7; Alexander J. Lazar, MD, PhD8; Mark B. Faries, MD9; John M. Kirkwood, MD10; Grant A. McArthur, MD, BS, PhD11; Lauren E. Haydu, PhD12; Alexander M. M. Eggermont, MD, PhD13; Keith T. Flaherty, MD14; Charles M. Balch, MD15; John F. Thompson, MD16; for members of the American Joint Committee on Cancer Melanoma Expert Panel and the International Melanoma Database and Discovery Platform

## 8<sup>th</sup> edition AJCC Staging Effective Jan 1, 2018

- Based on outcomes of >46,000 patients with stages
   I, II, and III melanoma diagnosed since 1998
- Common language for prognosis, treatment planning, and selection for clinical trials



## Theme 2: Penn Pathways reflect data from published consensus guidelines



NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®)

#### Melanoma

Version 3.2016

**NCCN.org** 

NCCN Guidelines for Patients® available at www.nccn.org/patients

Continue

Version 3.2016, 07/07/16 © National Comprehensive Cancer Network, Inc. 2016, All rights reserved. The NCCN Guidelines\* and this illustration may not be reproduced in any form without the express written permission of NCC



### American Academy of Dermatology

#### **ARTICLE IN PRESS**

#### FROM THE ACADEMY

## Guidelines of care for the management of primary cutaneous melanoma

Work Group: Susan M. Swetter, MD (Chair), a,b Hensin Tsao, MD, PhD (Co-Chair), c,d Christopher K. Bichakjian, MD, e,f Clara Curiel-Lewandrowski, MD, bavid E. Elder, MBChB, i,j Jeffrey E. Gershenwald, MD, k,l Valerie Guild, MS, MBA, Jane M. Grant-Kels, MD, n,o,p Allan C. Halpern, MD, Timothy M. Johnson, MD, e,f Arthur J. Sober, MD, John A. Thompson, MD, s,s Oliver J. Wisco, DO, Samantha Wyatt, MD, Shasa Hu, MD, and Toyin Lamina, PhD Stanford and Pale Alto, California, Poston, Massachusette: Ann. Arbor, Michigan; Tucson, Arizona,

Stanford and Palo Alto, California; Boston, Massachusetts; Ann Arbor, Michigan; Tucson, Arizona; Philadelphia, Pennsylvania; Houston and Plano, Texas; Farmington, Connecticut; New York, New York; Seattle, Washington; Portland, Oregon; Decatur, Alabama; Miami, Florida; and Rosemont, Illinois

J Am Acad Dermatology 2018



### Society of Surgical Oncology

Ann Surg Oncol (2018) 25:356–377 https://doi.org/10.1245/s10434-017-6267-7 Annals of



OFFICIAL JOURNAL OF THE SOCIETY OF SURGICAL ONCOLOGY



ORIGINAL ARTICLE - MELANOMAS

Sentinel Lymph Node Biopsy and Management of Regional Lymph Nodes in Melanoma: American Society of Clinical Oncology and Society of Surgical Oncology Clinical Practice Guideline Update

Sandra L. Wong, MD<sup>1</sup>, Mark B. Faries, MD<sup>2</sup>, Erin B. Kennedy, MHSc<sup>4</sup>, Sanjiv S. Agarwala, MD<sup>5</sup>, Timothy J. Akhurst, MD<sup>7</sup>, Charlotte Ariyan, MD<sup>8</sup>, Charles M. Balch, MD<sup>9</sup>, Barry S. Berman, MD, MS<sup>10</sup>, Alistair Cochran, MD<sup>3</sup>, Keith A. Delman, MD<sup>12</sup>, Mark Gorman<sup>13</sup>, John M. Kirkwood, MD<sup>6</sup>, Marc D. Moncrieff, MD, PhD, FRCS(Plast.)<sup>14</sup>, Jonathan S. Zager, MD<sup>11</sup>, and Gary H. Lyman, MD<sup>15</sup>

THE MORING

### College of American Pathologists



### Protocol for the Examination of Specimens From Patients With Melanoma of the Skin

Version: Melanoma 4.0.1.0 Protocol Posting Date: June 2017

Includes pTNM requirements from the 8th Edition, AJCC Staging Manual

For accreditation purposes, this protocol should be used for the following procedures AND tumor types:

Procedure	Description	
Excision		
Tumor Type	Description	
Invasive melanoma	Limited to melanoma of cutaneous surfaces only	

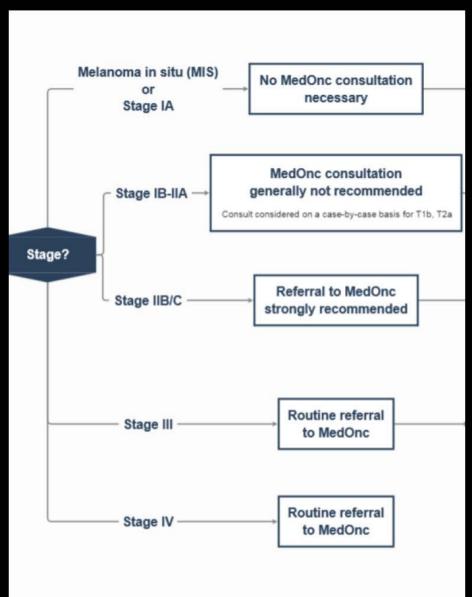
### Alignment with guidelines

- Synoptic pathology reports
- largins for wide local excision
- ndications for SLNB
- Discuss and consider
  - T1b (0.8-1.0 mm or <0.8 mm with ulceration)
  - T1a (<0.8 mm) with high risk features (transected deep margin, lymphovasc invasion, mitoses, Clark level IV/V)
- Discuss and offer: T2a-T4 (any tumor >1 mm)
- maging:
- Stage IA-IIA: only for suspicious signs or symptoms
- Stage IIB-IV: consider every 3-12 months to screen for recurrence and metastasis
  - CT chest/abdomen/pelvis with IV contrast most common study

## Theme 3: Triage patients to ideal providers



### When to refer to medical oncology



≥Stage IIB -T3b: 2-4 mm with ulcera T4a/b: >4 mm



### Which providers perform SLNB?

#### Guidelines for scheduling sentinel lymph node biopsy (SLNB)

- Preoperative consultations should be scheduled with the surgeon expected to perform the SLNB
  - O Surgical Oncology (if drainage expected to axillary, inguinal, or neck nodes), or
  - Head and Neck surgery (if drainage expected to parotid or neck nodes)



### When to consider Mohs surgery

Mohs surgery or other method of exhaustive microscopic margin assessment can be considered before reconstruction for the following indications:

- · Location on head, neck, hands, feet, genitalia
- · Previous treatment with positive margins or local recurrence
- Narrower than recommended surgical margins are planned for anatomic or functional considerations



# Theme 4: Added safeguards for optimal patient outcomes

Reflect institutional data from Penn



"... all clinical decisions about individual patient management must be tempered by the clinician's judgment and other factors, such as local resources and expertise, as well as individual patient's needs, wishes, and expectations."



## All pathology reviewed by Penn dermatopathologist or pathologist

#### Pathology review

Diagnostic pathology must be reviewed by a Penn dermatopathologist or pathologist prior to definitive surgical treatment.

Extenuating circumstances preventing pathology review should be rare exceptions.



#### Pathology Review of Cases Presenting to a Multidisciplinary Pigmented Lesion Clinic

Karen S. McGinnis, MD; Stuart R. Lessin, MD; David E. Elder, MB, ChB; DuPont Guerry IV, MD; Lynn Schuchter, MD; Michael Ming, MD; Rosalie Elenitsas, MD

11% (559/5136) of melanoma diagnoses are changed after expert review at Penn





# Mohs surgery with immunostains for specialty site or recurrent melanomas

DERMATOLOGIC SURGERY

**JAAD 2015** 

Low recurrence rates for in situ and invasive melanomas using Mohs micrographic surgery with melanoma antigen recognized by T cells 1 (MART-1) immunostaining: Tissue processing methodology to optimize pathologic staging and margin assessment

Jeremy Robert Etzkorn, MD, <sup>a</sup> Joseph F. Sobanko, MD, <sup>a</sup> Rosalie Elenitsas, MD, <sup>a</sup> Jason G. Newman, MD, <sup>a</sup> Hayley Goldbach, BS, <sup>b</sup> Thuzar M. Shin, MD, <sup>a</sup> and Christopher J. Miller, MD <sup>a</sup> *Philadelphia, Pennsylvania* 

- Local recurrence rate: 0.34% (2/597)
  - Versus 10% with conventional WLE



Correlation Between Appropriate Use Criteria and the Frequency of Subclinical Spread or Reconstruction With a Flap or Graft for Melanomas Treated With Mohs Surgery With Melanoma Antigen Recognized by T Cells 1 Immunostaining

JEREMY R. ETZKORN, MD,\* JOSEPH F. SOBANKO, MD,\* THUZAR M. SHIN, MD, PHD,\* ROSALIE ELENITSAS, MD,\* EMILY Y. CHU, MD, PHD,\* JOEL M. GELFAND, MD, MSCE,\* DAVID J. MARGOLIS, MD, PHD,\* JASON G. NEWMAN, MD,† HAYLEY GOLDBACH, MD,‡ AND CHRISTOPHER J. MILLER, MD\*

Etzkorn JR, Miller et al. Dermatol Surg 2016;42:471-476

## Clinical factors associated with subclinical spread of in situ melanoma

Thuzar M. Shin, MD, PhD, Jeremy R. Etzkorn, MD, Joseph F. Sobanko, MD, David J. Margolis, MD, PhD, Joel M. Gelfand, MD, MSCE, Emily Y. Chu, MD, PhD, Rosalie Elenitsas, MD,

Waqas R. Shaikh, MD, MPH, and Christopher J. Miller, MD Philadelphia, Pennsylvania

Shin TM, Miller CJ et al. JAAD 2017

#### Clinical and pathologic factors associated with subclinical spread of invasive melanoma

Thuzar M. Shin, MD, PhD, Waqas R. Shaikh, MD, MPH, Jeremy R. Etzkorn, MD, Joseph F. Sobanko, MD, David J. Margolis, MD, PhD, Joel M. Gelfand, MD, MSCE, Emily Y. Chu, MD, PhD, Rosalie Elenitsas, MD, and Christopher J. Miller, MD

Philadelphia, Pennsylvania

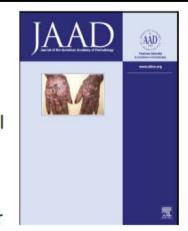
Shin TM, Miller CJ et al. JAAD 2017

#### Accepted Manuscript

**JAAD 2018** 

The "Rule of 10s" versus the "Rule of 2s": High complication rates after conventional excision with postoperative margin assessment of specialty site versus trunk and proximal extremity melanomas

Alexandra K. Rzepecki, BS, Charles D. Hwang, BS, Jeremy R. Etzkorn, MD, Thuzar M. Shin, MD PhD, Joseph F. Sobanko, MD, Nicole M. Howe, MD, Christopher J. Miller, MD





10%

Upstaging

Positive excision margins

Local recurrence

Complex reconstruction



## Expert consultation when indications for SLNB are uncertain

T1a 0.5 - 1.0 mm with high risk features

Discuss and consider Sentinel Lymph Node Biopsy (SLNB) of Primary Melanoma

T1b <0.76 mm with mitoses or ulceration

Discuss and consider Sentinel Lymph Node Biopsy (SLNB) of Primary Melanoma



## Predictors of Regional Nodal Disease in Patients With Thin Melanomas Ann Surg Onc 2006

Giorgos C. Karakousis, MD,<sup>1</sup> Phyllis A. Gimotty, PhD,<sup>2,6</sup> Jeffrey D. Botbyl, MS,<sup>2</sup> Susan B. Kesmodel, MD,<sup>1</sup> David E. Elder, MB, ChB,<sup>3,6</sup> Rosalie Elenitsas, MD,<sup>4,6</sup> Michael E. Ming, MD, MSCE,<sup>4,6</sup> DuPont Guerry, MD,<sup>5,6</sup> Douglas L. Fraker, MD,<sup>1,6</sup> Brian J. Czerniecki, MD, PhD,<sup>1</sup> and Francis R. Spitz, MD<sup>1,6</sup>

## Clark Level Risk Stratifies Patients with Mitogenic Thin Melanomas for Sentinel Lymph Node Biopsy Ann Surg Onc 2014

Edmund K. Bartlett, MD<sup>1</sup>, Phyllis A. Gimotty, PhD<sup>2</sup>, Andrew J. Sinnamon, MD<sup>1</sup>, Heather Wachtel, MD<sup>1</sup>, Robert E. Roses, MD<sup>1</sup>, Lynn Schuchter, MD<sup>3</sup>, Xiaowei Xu, MD, PhD<sup>4</sup>, David E. Elder, MD<sup>4</sup>, Michael Ming, MD<sup>5</sup>, Rosalie Elenitsas, MD<sup>5</sup>, DuPont Guerry, MD<sup>3</sup>, Rachel R. Kelz, MD<sup>1</sup>, Brian J. Czerniecki, MD<sup>1</sup>, Douglas L. Fraker, MD<sup>1</sup>, and Giorgos C. Karakousis, MD<sup>1</sup>

## Association Between Patient Age and Lymph Node Positivity in Thin Melanoma JAMA Derm 2017

Andrew J. Sinnamon, MD; Madalyn G. Neuwirth, MD; Pratyusha Yalamanchi, BA; Phyllis Gimotty, PhD; David E. Elder, MBChB; Xiaowei Xu, MD, PhD; Rachel R. Kelz, MD, MSCE; Robert E. Roses, MD; Emily Y. Chu, MD, PhD; Michael E. Ming, MD; Douglas L. Fraker, MD; Giorgos C. Karakousis, MD



## Evidence-based algorithms versus human judgment



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