

When Primary Care and Acute Care Overlap: Medical Literature Update

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Disclosure

I have no financial interests or relationships
to disclose.



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Today's Objectives

- **Review recent medical literature that I've found to be useful**
 - **These articles overlap between Primary and Acute Care**
 - **Remember to be proud of the professions we've chosen**
-

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Today's Objectives: Buckle Up!

- **De-labeling "Allergic to Penicillin"**
 - **Timolol for acute migraine headache**
 - **Sudden sensorineural hearing loss**
 - **Corneal abrasion pain management**
-

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Today's Objectives: Buckle Up!

- **Smart watch anxiety**
 - **CT's and the risk of life-time cancer**
 - **Minor head injury in the elderly**
 - **Virtual first impressions**
-

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The Dreaded *“My mother told me I’m allergic to penicillin”*




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This Issue Views 11,574 | Citations 3 | Altmetric 448

Original Investigation

July 17, 2023

Efficacy of a Clinical Decision Rule to Enable Direct Oral Challenge in Patients With Low-Risk Penicillin Allergy

The PALACE Randomized Clinical Trial

Ana Maria Copaesu, MD^{1,2,3,4}; Sara Vogrin, MBIostat⁵; Fiona James, BBIomedSci¹; et al

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De-labeling Penicillin Allergy

- ☐ Patients whose charts indicate they are allergic to penicillin rarely are
- ☐ **>95%** of individuals believed to be allergic tolerate subsequent PCN exposure
- ☐ De-labeling PCN allergy is important in antibiotic stewardship

Copaescu AM: JAMA Internal Medicine 2023

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De-labeling Penicillin Allergy

- ❑ **The traditional approach to de-labeling:**
 - ❑ **Perform a pin-prick test with PCN**
 - ❑ **If the results are negative, directly challenge the patient with oral PCN**
- ❑ **This testing is rarely performed by non-Allergist clinicians**
- ❑ **Therefore, PCN allergy tends to remain on patients' charts**

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De-labeling Penicillin Allergy

- ❑ **The recently developed **PEN-FAST** score identifies people with “diagnosed” PCN allergy who are at very low risk of subsequent reaction on direct challenge.**
- ❑ **A score of 0 suggests a <1% risk and**
- ❑ **A score of 1-2 suggests a <5% risk of an IgE-mediated reaction**

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Penicillin Allergy Decision Rule (PEN-FAST)

☆

Identifies low-risk penicillin allergies.

INSTRUCTIONS
Apply this calculator to patients who have reported a penicillin allergy.

When to Use ▾

Five years or less since reaction	No 0	Yes +2
Anaphylaxis or angioedema OR Severe cutaneous adverse reaction	No 0	Yes +2
Treatment required for reaction	No 0	Yes +1

0 points
PEN-FAST Score

<1 %
Very low risk of positive penicillin allergy test

Copy Results 📄

Next Steps >>>

>> Next Steps

📄 Evidence

👤 Creator Insights

PEN-FAST

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Penicillin Allergy Decision Rule (PEN-FAST)

☆

Identifies low-risk penicillin allergies.

INSTRUCTIONS
Apply this calculator to patients who have reported a penicillin allergy.

When to Use ▲

Do you use the Penicillin Allergy Decision Rule (PEN-FAST) and want to contribute your expertise? [Join](#) our contributor team!

Five years or less since reaction	No 0	Yes +2
Anaphylaxis or angioedema OR Severe cutaneous adverse reaction	No 0	Yes +2
Treatment required for reaction	No 0	Yes +1

1 points
PEN-FAST Score

5 %
Low risk of positive penicillin allergy test

Copy Results 📄

Next Steps >>>

PEN-FAST

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Penicillin Allergy Decision Rule (PEN-FAST)

☆
Identifies low-risk penicillin allergies.

INSTRUCTIONS
Apply this calculator to patients who have reported a penicillin allergy.

When to Use ▾

Five years or less since reaction	No 0	Yes +2
Anaphylaxis or angioedema OR Severe cutaneous adverse reaction	No 0	Yes +2
Treatment required for reaction	No 0	Yes +1

2 points
PEN-FAST Score

5 %
Low risk of positive penicillin allergy test

[Copy Results](#) [Next Steps >>>](#)

[>> Next Steps](#) [Evidence](#) [Creator Insights](#)

PEN-FAST

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Penicillin Allergy Decision Rule (PEN-FAST)

☆
Identifies low-risk penicillin allergies.

INSTRUCTIONS
Apply this calculator to patients who have reported a penicillin allergy.

When to Use ▾

Five years or less since reaction	No 0	Yes +2
Anaphylaxis or angioedema OR Severe cutaneous adverse reaction	No 0	Yes +2
Treatment required for reaction	No 0	Yes +1

3 points
PEN-FAST Score

20 %
Moderate risk of positive penicillin allergy test

[Copy Results](#) [Next Steps >>>](#)

[>> Next Steps](#) [Evidence](#) [Creator Insights](#)

PEN-FAST

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Penicillin Allergy Decision Rule (PEN-FAST)

☆

Identifies low-risk penicillin allergies.

INSTRUCTIONS

Apply this calculator to patients who have reported a penicillin allergy.

When to Use ▾

Five years or less since reaction

No 0

Yes +2

Anaphylaxis or angioedema
OR
Severe cutaneous adverse reaction

No 0

Yes +2

Treatment required for reaction

No 0

Yes +1

5 points

PEN-FAST Score

50 %

High risk of positive penicillin allergy test

Copy Results 📄

Next Steps >>>

>> Next Steps

📄 Evidence

👤 Creator Insights

PEN-FAST

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Delabeling Penicillin Allergy

- ❑ **Study:**
- ❑ **Out-patients attending an allergy clinic whose medical records indicated a PCN allergy**
- ❑ **PEN-FAST scores <3**
 - ❑ **#190: pin prick + oral PCN challenge if indicated**
 - ❑ **#187: oral challenge only**
- ❑ **1-hour observation period**

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Delabeling Penicillin Allergy

❑ Results:

❑ Pin prick + oral PCN challenge group:

- ❑ **1 allergic reaction** during the observation period (0.5%)

❑ Oral challenge only group:

- ❑ **1 allergic reaction** during the observation period (0.5%)

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Take to Work Points

-
- ❑ This study demonstrates that patients with **low-risk PEN-FAST** scores are very unlikely to develop immediate or delayed IgE-mediated allergic reactions after direct challenge with oral PCN

- ❑ **PEN-FAST** eliminates high-risk patients with clearly documented severe IgE-mediated anaphylaxis from enrollment
-

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Take to Work Points

- ❑ **The reaction rate of approximately 0.5% at one hour is an acceptable risk for most clinicians**
- ❑ **The strength of these findings, the straight-forward risk calculation, the ease of administering an oral PCN challenge, and the 1-hour observation time make this approach feasible**

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Take to Work Points

- ❑ **The requirements to implement this type of program into a clinic appear to be modest**
 - **Shared decision making with the patient**
 - **An easily monitored and accessible observation location**
 - ❑ **E.g., a visible chair in the waiting room**
 - **Basic allergic reaction interventions**
 - ❑ **E.g., an Epi-Pen**



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A New Player for Acute Migraine Headache Relief



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JAMA Ophthalmology

[View Article ▶](#)

[JAMA Ophthalmol.](#) 2020 Nov; 138(11): 1160–1166.

PMCID: PMC7530820

Published online 2020 Oct 1. doi: [10.1001/jamaophthalmol.2020.3676](https://doi.org/10.1001/jamaophthalmol.2020.3676)

PMID: [33001159](https://pubmed.ncbi.nlm.nih.gov/33001159/)

Short-term Efficacy and Safety of Topical β -Blockers (Timolol Maleate Ophthalmic Solution, 0.5%) in Acute Migraine

A Randomized Crossover Trial

[Abraham Kurian](#), MS, DO,¹ [Iodine Reghunadhan](#), DNB,¹ [Pratibha Thilak](#), MBBS, DNB,² [Indulekha Soman](#), MBBS, DNB,¹ and [Unnikrishnan Nair](#), MS¹

▶ [Author information](#) ▶ [Article notes](#) ▶ [Copyright and License information](#) [Disclaimer](#)

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Topical Timolol for Acute Migraine Headache Exacerbations

- ☐ **Oral beta-blocker therapy is helpful to prevent MH**
- ☐ **Oral beta-blockers are not effective in the management of an acute MH exacerbation**

Copaescu AM: JAMA Internal Medicine 2023

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Topical Timolol for Acute Migraine Headache Exacerbations

- ☐ **These investigators hypothesized that topical beta-blocker instillation into the eyes at the very early onset of MH exacerbation might be effective in mitigating MH progression**
- ☐ **Absorption of the instilled agent would be immediately delivered to the CNS**

Copaescu AM: JAMA Internal Medicine 2023

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Topical Timolol for Headache

□ Study:

- This was a masked placebo-controlled crossover trial
- 3 months using agent 1, placebo saline or Timolol
- 1 month washout
- 3 month using agent 2

Kurian A: JAMA Ophthalmology 2020

25

Topical Timolol for Headache

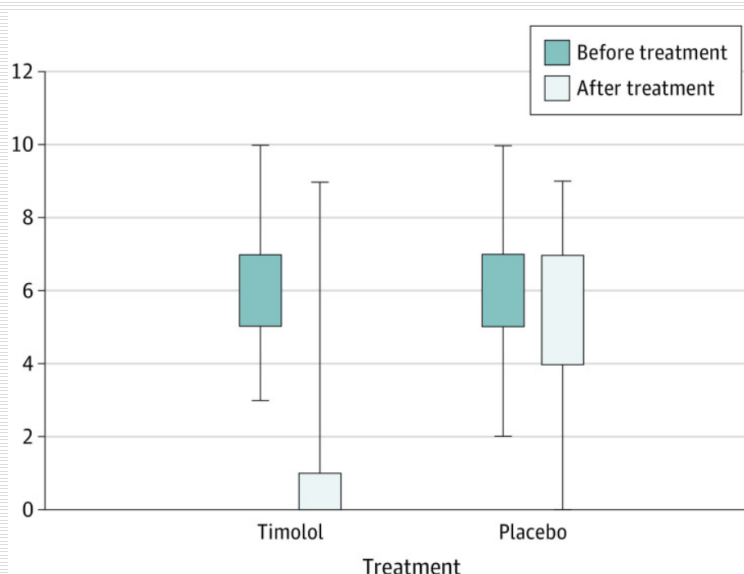
□ Study:

- #50 patients with acute migraine HA exacerbations (#284 timolol vs. #271 placebo)
- Intervention: 1 drop of 0.5% timolol ophthalmic solution vs. placebo saline drop in both eyes at earliest headache onset
- Pain Scores at 20 minutes

Kurian A: JAMA Ophthalmology 2020

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Topical Timolol for Headache



**10-Point Pain Score
Reduction by
4 points or Zero at
20 minutes:**

**82% Timolol
14% Placebo**

No adverse Effects

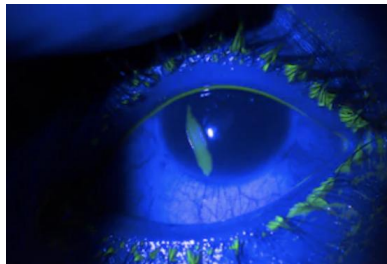
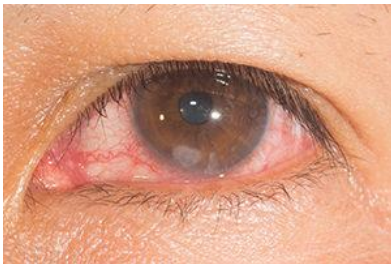
27

Take to Work Points

- ☐ **Consider providing timolol to your patients who experience acute exacerbations of their migraine headache syndrome**
- ☐ **It's cheap, effective, immediately available and provides rapid relief**
- ☐ **I offer this to all of the MH patients I encounter**

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Pain Management for Corneal Abrasions



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JOURNAL ARTICLE REVIEW

Topical Pain Control for Corneal Abrasions: A Systematic Review and Meta-Analysis

Caberry W Yu, Abirami Kirubakaran, Matthew Yau, Dawn Armstrong, Davin E Johnson

Academic Emergency Medicine 2021 January 28



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Corneal Abrasion Pain

- ☐ **Corneal abrasions can be significantly painful**
- ☐ **We typically instill topical anesthetics for this condition**
- ☐ **Is there a better, safe and relatively cheap option?**

Caberry W Yu: Academic Emergency Medicine 2021

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Corneal Abrasion Pain

- ☐ **Methods:**
 - **Systemic Review and Meta-analysis**
 - **33 Studies**
 - **4,167 Study Subjects**

Caberry W Yu: Academic Emergency Medicine 2021

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Corneal Abrasion Pain

☐ **Methods:**

- ☐ **Topical Anesthetics**
- ☐ **Topical NSAIDs**
- ☐ **Topical Cycloplegics**
- ☐ **Topical Steroids**
- ☐ **Pressure Packing**

Caberry W Yu: Academic Emergency Medicine 2021

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Corneal Abrasion Pain

☐ **Results:**

- ☐ **Only topical NSAIDs demonstrated evidence of significantly reduced pain at 24 and 48 hours**
- ☐ **Also associated with a 53% lower requirement for oral analgesics**

Caberry W Yu: Academic Emergency Medicine 2021

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Take to Work Points

- **We now have an effective, safe and economical option to treat the pain of uncomplicated corneal abrasions**



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Sudden Hearing Loss in Adults



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HOME ARTICLES INFO FOR SUBMIT ABOUT CLASSIFIEDS



Research Article | Clinical Review

Sudden Sensorineural Hearing Loss: A Diagnostic and Therapeutic Emergency

Andrew D. P. Prince and Emily Z. Stucken

The Journal of the American Board of Family Medicine January 2021, 34 (1) 216-223; DOI: <https://doi.org/10.3122/jabfm.2021.01.200199>

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Sudden Sensorineural Hearing Loss

- ❑ **SSHL is a **medical emergency****
- ❑ **Sudden (within 72 hours) unilateral loss of hearing in an adult without an obvious cause**
 - **E.g., no evidence of air conduction blockage such as middle ear fluid, cerumen impaction, foreign body in the external auditory canal or TM perforation**

Prince ADP: J American Board of Family Medicine 2021

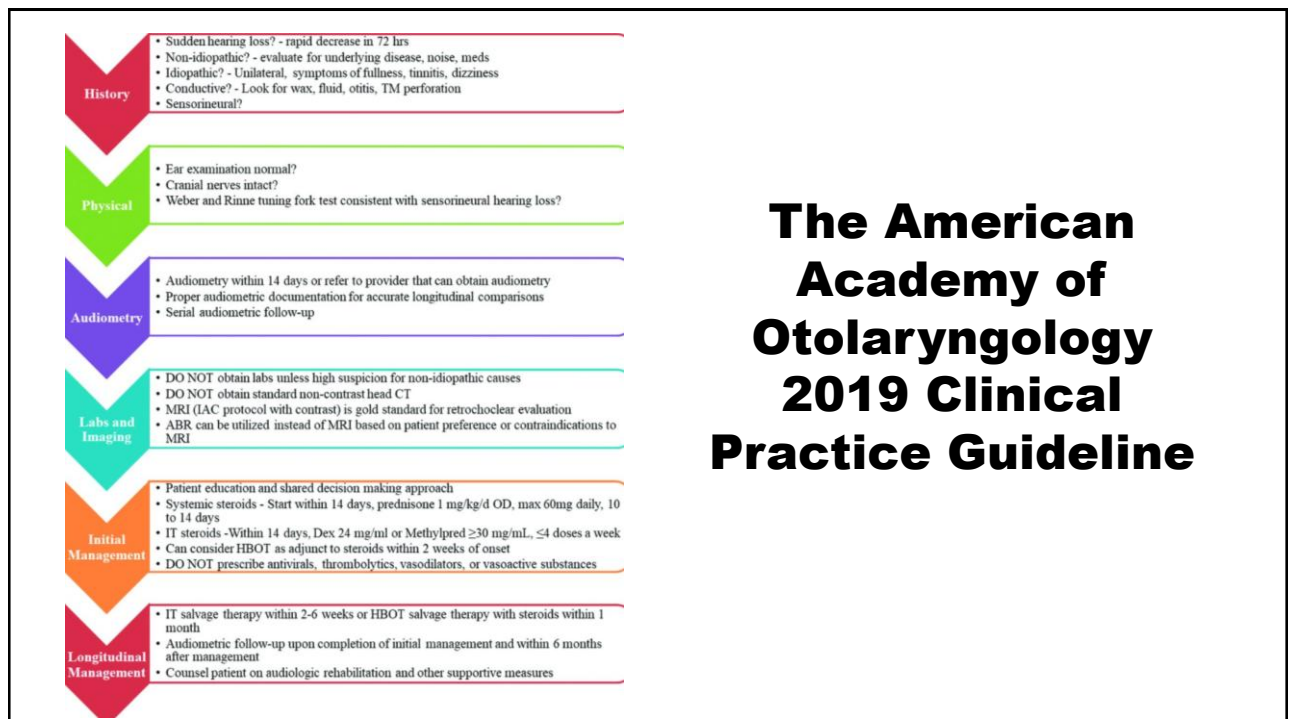
38

Sudden Sensorineural Hearing Loss

- ❑ **SSHL is idiopathic in 90% of patients**
- ❑ **It is relatively rare, with approximately 66,000 cases reported annually in the USA**
- ❑ **Immediate treatment is required to prevent permanent hearing loss**

Prince ADP: J American Board of Family Medicine 2021

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History

- Sudden hearing loss? - rapid decrease in 72 hrs
- Non-idiopathic? - evaluate for underlying disease, noise, meds
- Idiopathic? - Unilateral, symptoms of fullness, tinnitus, dizziness
- Conductive? - Look for wax, fluid, otitis, TM perforation
- Sensorineural?

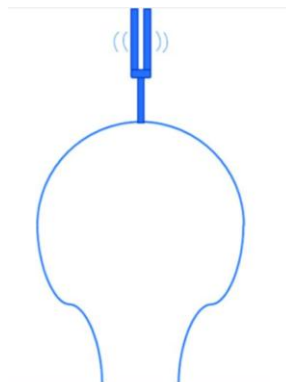
Physical

- Ear examination normal?
- Cranial nerves intact?
- Weber and Rinne tuning fork test consistent with sensorineural hearing loss?



**Let's Be Honest.
How Many of You Can
Find One of These in your
Exam Room?
And If You Can, Do You
Remember How to Use It?**

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Weber

Method

1. Vibrate the tuning fork (512Hz)
2. Place vibrating tuning fork at midline of forehead or on maxillary teeth
3. Ask where the sound is heard

Results

- Midline loudest = symmetric hearing
- Affected ear loudest = conductive
- Unaffected ear loudest = sensorineural

**Let Me Throw You
a Life Ring**



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The HUM TEST



- ☐ **Instruct the patient to hum quietly to herself**
- ☐ **If she hears her hum louder in the affected ear, there is likely conduction hearing loss in that ear**
- ☐ **If she hears her hum louder in the unaffected ear, there is likely SSSL in the affected ear**

Ahmed O: American Otol Rinol Laryngol 2018

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The HUM TEST

- ☐ **Performs as well as the tuning fork**
- ☐ **High pitched humming:**
 - **Sensitivity 90%, specificity 100%**
- ☐ **Low pitched humming:**
 - **Sensitivity 93%, specificity 100%**



Ahmed O: American Otol Rinol Laryngol 2018

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Sudden Sensorineural Hearing Loss

☐ **MANAGEMENT:**

- ☐ **Immediate initiation of prednisone 60-mg daily for 10 to 14 days**
- ☐ **Consultation with ENT to arrange timely follow-up and audiometry**

Prince ADP: J American Board of Family Medicine 2021

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Take to Work Points

- ☐ **Always consider the possibility of SSHL in adult patients presenting with unexplained unilateral hearing loss and tinnitus**
- ☐ **Perform a careful ear exam including tuning fork evaluation and/or hum testing**
- ☐ **If concerned, have a low threshold for initiating high dose prednisone and arranging timely ENT referral**

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Smart Watch Anxiety



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**JAHA**

Journal of the American Heart Association

> J Am Heart Assoc. 2024 Aug 6;13(15):e033750. doi: 10.1161/JAHA.123.033750. Epub 2024 Jul 16.

Wearable Devices, Health Care Use, and Psychological Well-Being in Patients With Atrial Fibrillation

Lindsey Rosman ¹, Rachel Lampert ², Songcheng Zhuo ³, Quefeng Li ³, Niraj Varma ⁴,
Matthew Burg ^{2 5}, Allison E Gaffey ^{2 5}, Tiffany Armbruster ¹, Anil Gehi ¹

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Smart Watch Anxiety

- ❑ **Millions of American residents have atrial fibrillation, with more being diagnosed every year**
- ❑ **The symptoms associated with AF can include sensing sudden onset of palpitations**
- ❑ **Understandably, these symptoms may cause patient concern**

Rosman L: Journal of the American Heart Association 2024

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Smart Watch Anxiety

- ❑ **Smart watch technology has advanced rapidly**
- ❑ **It is now possible for AF patients to immediately check their cardiac rhythm when they sense palpitations**
- ❑ **These researchers explored the emotional impact of these devices**

Rosman L: Journal of the American Heart Association 2024

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Smart Watch Anxiety

❑ Methods:

❑ Retrospective study

❑ AF patients

❑ #83 with a wearable smart watch

❑ #89 without a wearable watch

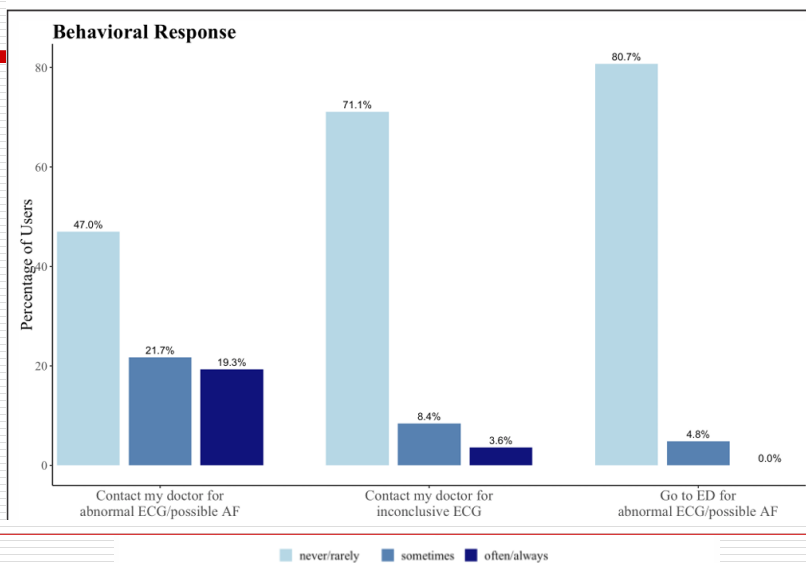
❑ 9-month study period

❑ All completed a psychological well-being survey

Rosman L: Journal of the American Heart Association 2024

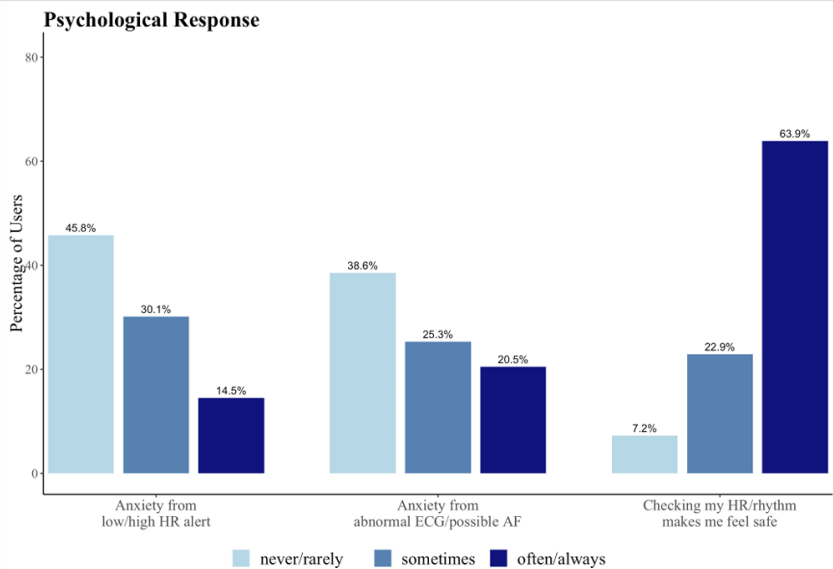
51

Smart Watch Anxiety



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Smart Watch Anxiety



53

Smart Watch Anxiety

Further Results:

Wearables:

- 45% checked their rhythms daily
- Were significantly more likely to send messages to their providers
- Were significantly more likely to receive healthcare interventions (e.g. ECG, echocardiogram, continuous monitoring)
- Were 4.5 times more likely to have ablation

Rosman L: Journal of the American Heart Association 2024

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Take to Work Points

- ☐ **Wearable watch technology, in my opinion, has been a major advance for patients with paroxysmal or persistent AF**
- ☐ **However, this study along with other recent studies indicate that for a significant minority of these patients there are emotional adverse effects**

Rosman L: Journal of the American Heart Association 2024

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Take to Work Points

- ☐ **I encounter these worried patients in my own Emergency Medicine practice**
- ☐ **I have no doubt that most of you do as well**
- ☐ **We all must be sensitive to these patients' concerns, be compassionate, and provide appropriate education that will allow them to cope in a more emotionally helpful way to their condition**

Rosman L: Journal of the American Heart Association 2024

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CT's Make Uncertainty More Tolerable, But at a Cost



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JAMA Internal Medicine

Research

JAMA Internal Medicine | [Original Investigation](#)

Projected Lifetime Cancer Risks From Current Computed Tomography Imaging

Rebecca Smith-Bindman, MD; Philip W. Chu, MS; Hana Azman Firdaus, MPH; Carly Stewart, MHA; Matthew Malekheadayat, BS; Susan Alber, PhD; Wesley E. Bolch, PhD; Malini Mahendra, MD; Amy Berrington de González, DPhil; Diana L. Miglioretti, PhD

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CT Cancer Risk

- ☐ **Ok, I admit it. CTs are absolutely amazing!**
- ☐ **I'm so old, I was a Chief Resident when CT-imaging was first rolled out**
- ☐ **For the very first time I was able to view the intricacies of the internal body without an autopsy**

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CT Cancer Risk

- ☐ **CTs were so amazing that I scanned without thinking or concern**
 - ☐ **Child with minor head injury, SCAN**
 - ☐ **Adult with minor abdominal discomfort, SCAN**
 - ☐ **Young woman with nonspecific pelvic discomfort, SCAN**
- ☐ **But over time the carcinogenic risks of CT imaging were reported.....thank goodness!**

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CT Cancer Risk

- ☐ **My CT ordering almost immediately and substantially decreased**
- ☐ **I began to use my gestalt and validated Clinical Decision Tools to risk-stratify my patients**
- ☐ **And I'm SO Glad I have continued this practice**
 - **And my patients and their families have benefitted**

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CT Cancer Risk

- ☐ **Approximately 93 million CT exams are performed on 62 million patients annually in the US**
- ☐ **Radiation from CT is a known carcinogen**
- ☐ **This study attempts to quantify the actual life-time cancer risk from CT imaging**

Smith-Bindman R: JAMA Internal Medicine 2025

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CT Cancer Risk

☐ Study:

☐ A complex analysis using multiple agencies:

- University of California San Francisco International CT Dose Registry
- National Cancer Institute
- National Research Council's Biologic Effects of Imaging Radiation

Smith-Bindman R: JAMA Internal Medicine 2025

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CT Cancer Risk

☐ Study:

- ☐ Life-long risk of developing cancer resulting from CT radiation was estimated for year 2023
- ☐ Radiation exposure determined by age, gender and CT study category (e.g. abdominal/pelvic, chest, etc.)

Smith-Bindman R: JAMA Internal Medicine 2025

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CT Cancer Risk

□ Results:

□ **61,510,00 patients undergoing 93,000,000 CTs during the 1-year study period**

■ **4% scans in children**

■ **96% scans in adults**

■ **53% female**

■ **47% male**

Smith-Bindman R: JAMA Internal Medicine 2025

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CT Cancer Risk

□ Results:

□ **Approximately 103,000 life-long cancers were predicted to result from CT radiation exposure during 2023**

□ **Risks highest in children and adolescents**

□ **But most occurred in adults (greater usage)**

Smith-Bindman R: JAMA Internal Medicine 2025

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CT Cancer Risk

☐ Results:

☐ Most common cancers:

- Lung: #22,400
- Colon: #8,700
- Leukemia: #7,900
- Bladder: #7,100

Smith-Bindman R: JAMA Internal Medicine 2025

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CT Cancer Risk

☐ Results:

☐ Breast cancer second most common in females

☐ Highest risk CT category:

- Abdominal/Pelvis
- Chest

Smith-Bindman R: JAMA Internal Medicine 2025

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CT Cancer Risk

☐ The Authors' conclusion:

“If this trend continues, CT imaging could eventually account for 5% of all new cancer diagnoses annually.”

Smith-Bindman R: JAMA Internal Medicine 2025

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Take to Work Points

- ☐ This is a complex study which uses sophisticated modeling rather than actual patient data.
- ☐ One can quibble with their analysis as well as their stated overall impact on patient care.
- ☐ But.....

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Take to Work Points

- ☐ **CT imaging is an incredible tool to help clarify diagnostic uncertainty in meaningful and actionable ways.**
- ☐ **I order CTs on my patients every clinical shift that I work.**
- ☐ **But, I only do so when my clinical gestalt, in combination with a validated Clinical Decision Tool, ensure me that this is in the best interest of my patient.**

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Take to Work Points

- ☐ **Gestalt (experience) is a very powerful tool that continues improving over time.**
- ☐ **Here are a couple of CDTs that can be used in higher risk patients:**
 - **3-year-old child with closed head injury:**
 - ☐ **PECARN Pediatric Head Injury/Trauma Algorithm**
 - **35-year-old woman with PE:**
 - ☐ **PERC Rule for Pulmonary Embolism**

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Take to Work Points

- ☐ **If I can safely avoid exposing a single patient, especially a young patient, to CT radiation, I will continue to make this a priority in my critical thinking.**
- ☐ **And one final suggestion for you to consider.**

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Take to Work Points

- ☐ **When you are unable to safely accommodate or categorize a patient as low risk who may require CT imaging and very appropriately refer them to someone like me at your local Acute Care Clinic or Emergency Department.....**
- ☐ **Perhaps setting expectations with something like *“You require further evaluation which I’m unable to provide”* vs. *“You need to go to the ED for a CT”*.**

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Is There Really Such Thing as a Minor Head Injury in the Elderly?



75

OK, OK!

**I just cautioned you to decrease CT imaging,
and now I'm going to caution
for more CT imaging?**

Are you kidding me?!

Bare with me.



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> [Ann Emerg Med.](#) 2024 May;83(5):457-466. doi: 10.1016/j.annemergmed.2024.01.003.
Epub 2024 Feb 10.

Blunt Head Injury in the Elderly: Analysis of the NEXUS II Injury Cohort

William R Mower¹, Thomas E Akie², Naseem Morizadeh³, Malkeet Gupta⁴, Gregory W Hendey⁵,
Jake L Wilson⁵, Lorenzo Pierre Leonid Duvergne⁵, Phillip Ma⁵, Pravin Krishna⁶,
Robert M Rodriguez⁷

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Head Injury in the Elderly

- ❑ **The US population over the age of 65 is growing 5 times faster than the general population**
- ❑ **The aging of the Baby Boomer generation will only accelerate this growth**

Mower WR: Annals of Emergency Medicine 2024

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Head Injury in the Elderly

- **Traumatic brain injuries (TBI) are prevalent in injured elderly patients**
 - E.g. **senescent and fragile bridging veins**
- **About 50% of patients admitted with TBI are elderly**
- **This study sheds light on the types of injuries that risk TBI in this population**

Mower WR: Annals of Emergency Medicine 2024

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Head Injury in the Elderly

- **Study:**
- **NEXUS II Head CT secondary analysis**
 - #3,659 patients aged \geq 65 years (“Older”)
 - #11,770 patients aged < 65 years (“Younger”)
- **Main objective measures:**
 - Mechanisms of injury
 - Clinical presentations
 - Outcomes

Mower WR: Annals of Emergency Medicine 2024

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Head Injury in the Elderly

- ☐ **Results:**
- ☐ **Older patient gender demographic:**
 - **52% female**
 - **48% male**
- ☐ **Significant injuries sustained:**
 - **Older patients: 9%**
 - **Younger patients: 5%**

Mower WR: Annals of Emergency Medicine 2024

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Head Injury in the Elderly

- ☐ **Results:**
- ☐ **Older injured patients:**
 - **No high-risk criteria beyond age in 15%**
 - **Subdural hematomas and SAH most common**
 - **Ground level falls most frequent mechanism**
 - ☐ **70% overall**
 - ☐ **56% of significant injuries**
 - ☐ **46% of deaths**

Mower WR: Annals of Emergency Medicine 2024

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Head Injury in the Elderly

- ☐ **Results:**
- ☐ **Older injured patients:**
 - **Mortality rates were most highly associated with:**
 - ☐ **Falls from ladders: 12%**
 - ☐ **Automobile vs. pedestrian impacts: 11%**
 - **Following neurosurgical intervention:**
 - ☐ **42% in-hospital mortality**
 - ☐ **42% extended care facility**
 - ☐ **16% returned home**

Mower WR: Annals of Emergency Medicine 2024

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Take to Work Points

- ☐ **Older blunt head injury patients are at high risk for sustaining serious intracranial complications**
- ☐ **This occurs even with seemingly low-risk mechanisms such as ground level falls**

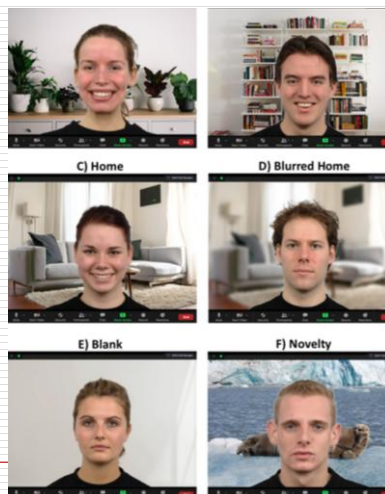
84

Take to Work Points

- ❑ **Clinical evaluation alone is often unreliable and fails to identify patients with significant injuries**
- ❑ **Have a low threshold for neuroimaging older patients who present with what appears to be a minor blunt head injury**

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Virtual First Impressions: Lessons for Clinicians



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Virtual First Impressions

- ☐ **First impressions are formed instantly and are developed at an early age**
- ☐ **Social judgements such as trustworthiness, competence, likability, aggressiveness and attractiveness are forged in milliseconds**
- ☐ **We've all finetuned this preconscious skill**

Cook A: PLOS one 2023

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Virtual First Impressions

- ☐ **The COVID pandemic forced many interpersonal interactions to be conducted online**
- ☐ **This has led to the rapid development of telemedicine and telepsychiatry**
- ☐ **There are lessons to be learned about how best to optimize these virtual patient visits**

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Virtual First Impressions Study Basics

- ☐ **Volunteer recruitment on various online social media sites**
- ☐ **#167 participants, average age 35 years**
 - ☐ **#115 female**
 - ☐ **#50 male**
 - ☐ **#2 nonbinary**

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Virtual First Impressions

☐ Three Independent Variables

☐ **Zoom Background** independent variable

- ☐ Home
- ☐ Home blurred
- ☐ Plants
- ☐ Bookcase
- ☐ Blank
- ☐ Novelty

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Virtual First Impressions

☐ Three Independent Variables

☐ **Gender** independent variable

- ☐ Female
- ☐ Male

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Virtual First Impressions

- ☐ **Three Independent Variables**
- ☐ **Facial Expressions** independent variable
 - ☐ **Happy**
 - ☐ **Neutral**

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Virtual First Impressions

- ☐ **#72 images using different combinations of the three independent variable projected over 10 minutes**
- ☐ **Each image immediately judged on trustworthiness and competence**
 - ☐ **7-point Likert scale**
 - ☐ **Very Untrustworthy to Very Trustworthy**
 - ☐ **Very Incompetent to Very Competent**

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Virtual First Impressions

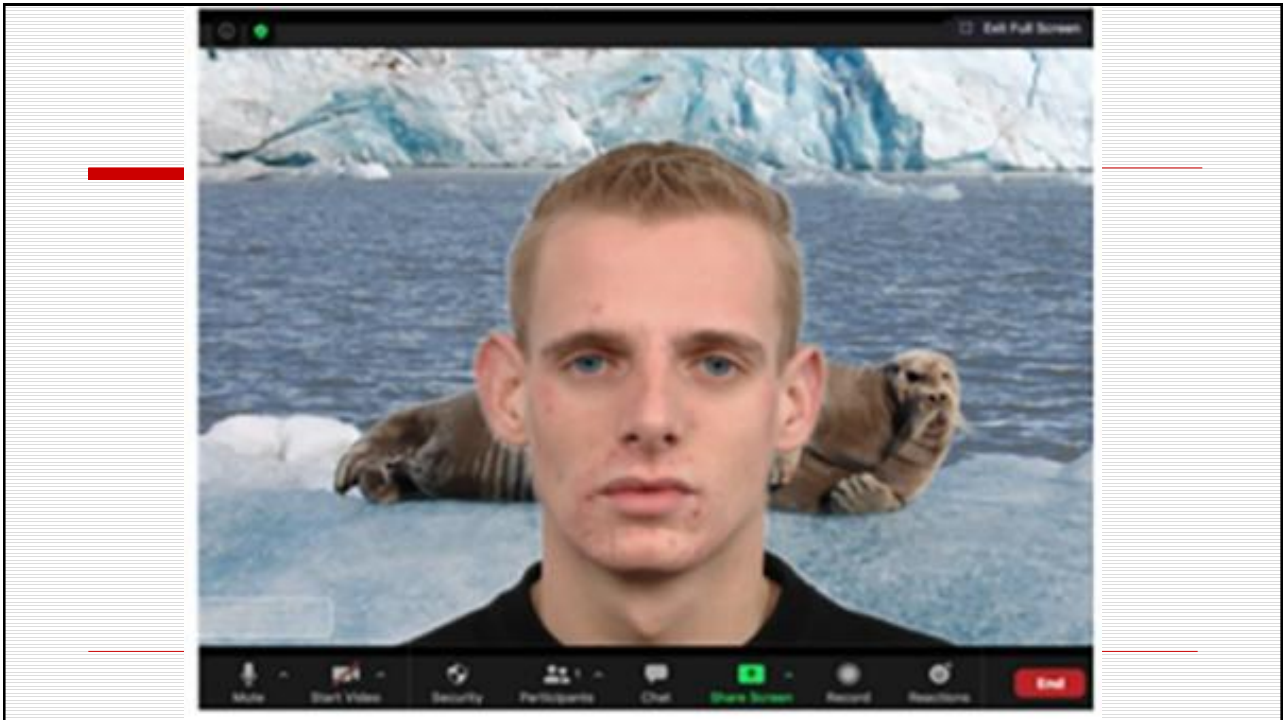
- ☐ **OK....**
- ☐ **Here are only six of the images study subjects viewed**
- ☐ **Your turn to immediately judge each on trustworthiness and competence**

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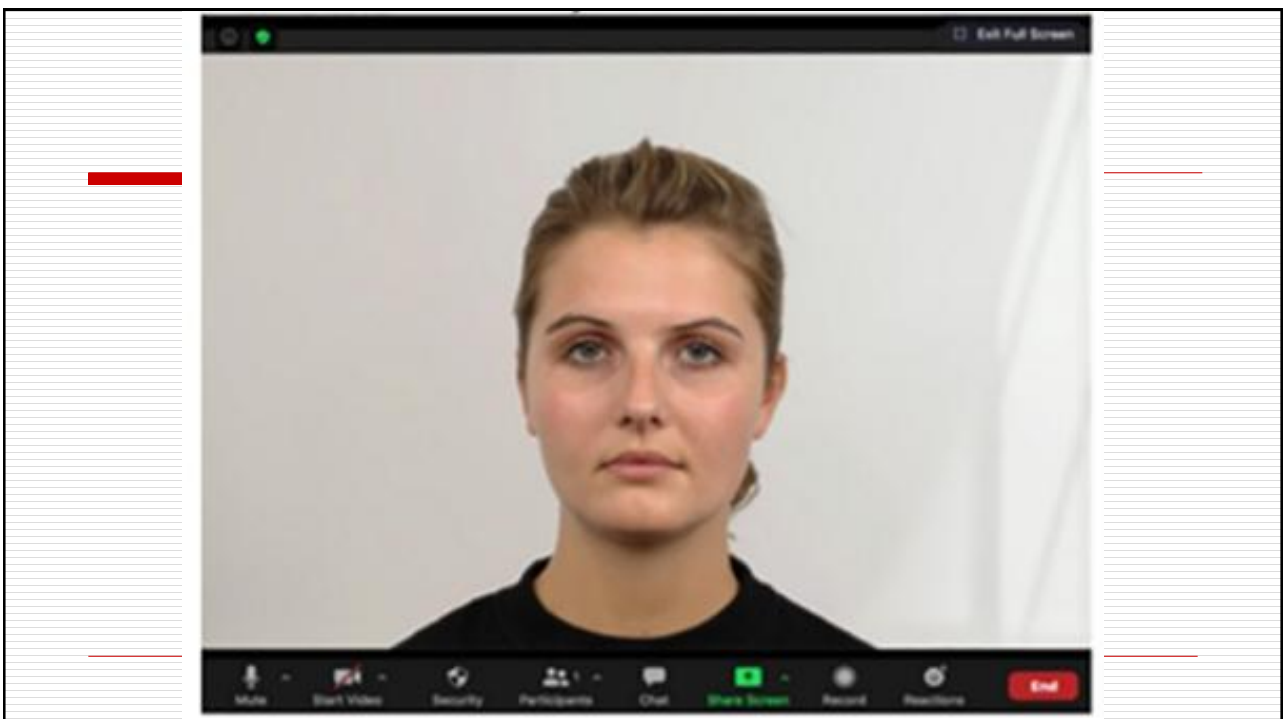
97



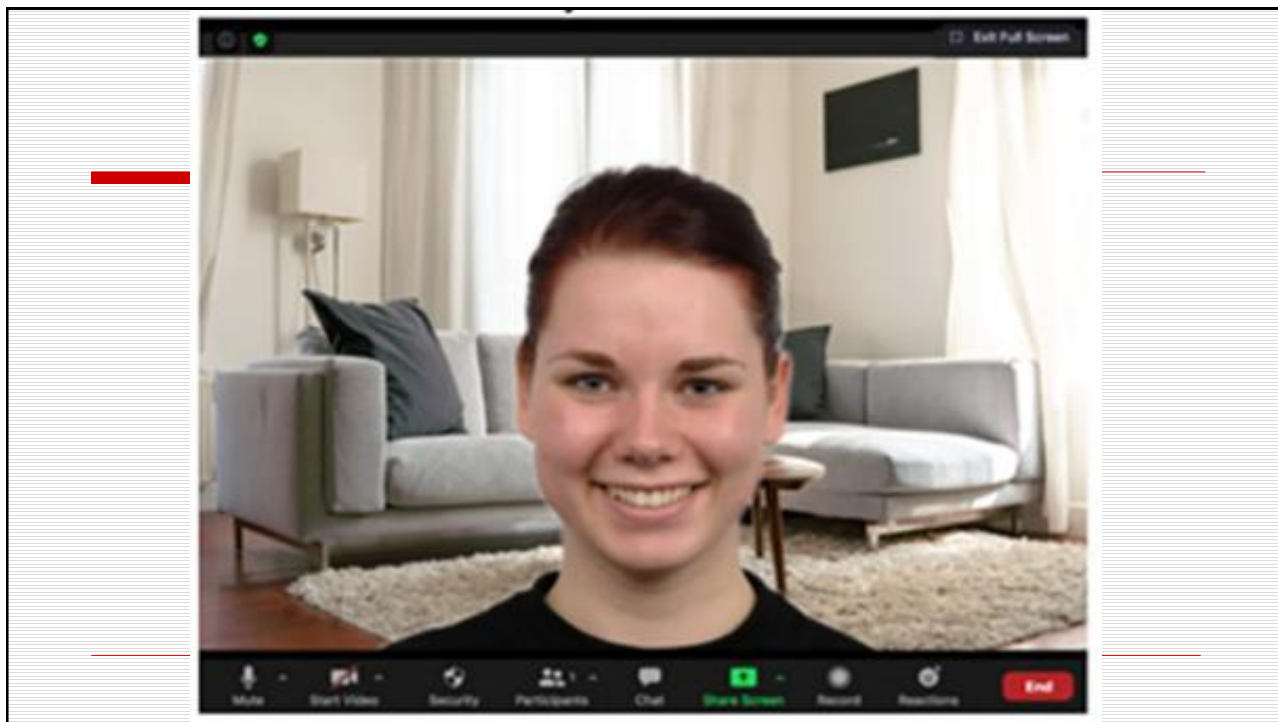
98



99

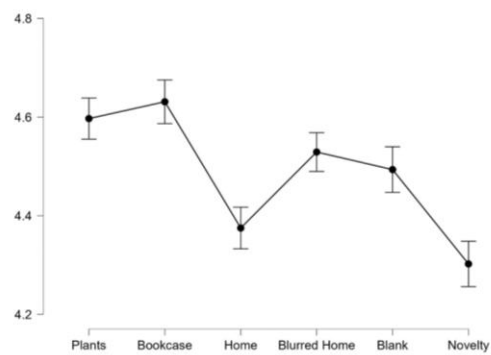


100

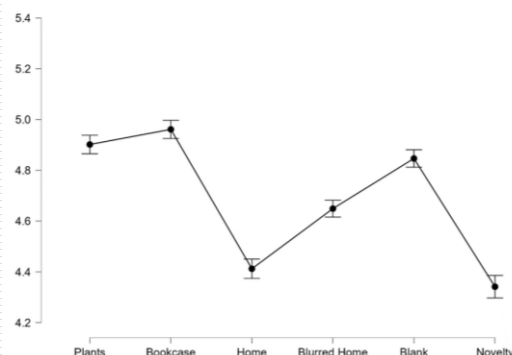


101

Virtual First Impressions: Backgrounds



TRUSTWORTHINESS

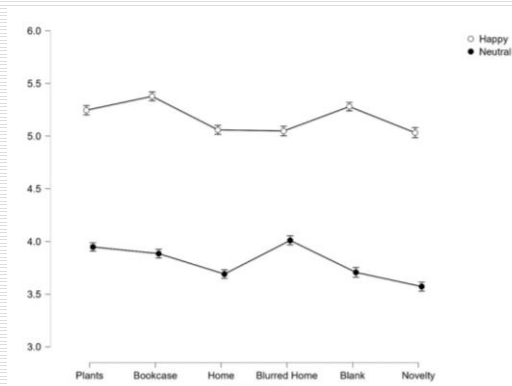


COMPETENCE

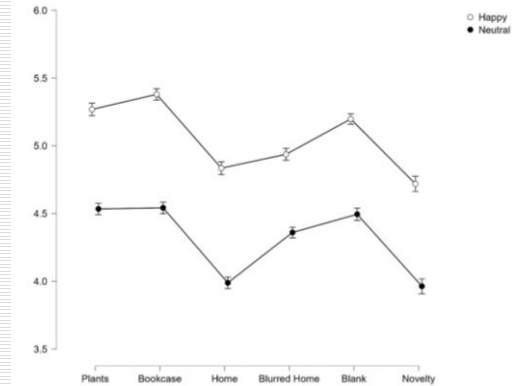
102

Virtual First Impressions

Facial Expressions



TRUSTWORTHINESS

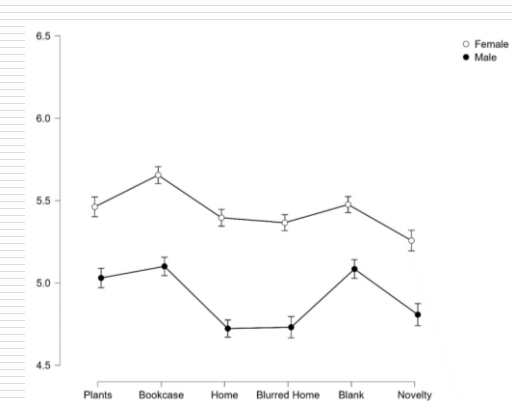


COMPETENCE

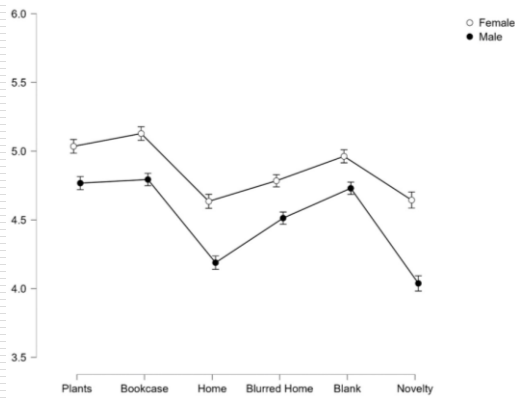
103

Virtual First Impressions

Gender



TRUSTWORTHINESS



COMPETENCE

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Take to Work Points

- ☐ **Telehealth is now a reality**
- ☐ **This interesting study reminds us that during our virtual interactions with our patients, backgrounds and facial gestures matter**
- ☐ **The background winners: Bookcase, Plants, Neutral**
- ☐ **The background losers: Novelty, Home Decor**

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Take to Work Points

- ☐ **The facial winner: Happy (Pleasant)**
- ☐ **The facial loser: Neutral**
- ☐ **This study also reminds us that, whether in-person or virtually, our trustworthiness and competence are judged within the first several seconds of our interaction**

106

What Percentage of Patients Who Report That They Are Allergic to Penicillin Tolerate Subsequent Penicillin Exposure Without Adversity?

- A. 25%
- B. 50%
- C. 75%
- D. 95%



107

What Percentage of Patients 65+ Years Old Who Fall from a Ground-level Height and Have No Red Flags on Exam Will Have a Significant Intracranial Injury?

- A. 3%
- B. 5%
- C. 7%
- D. 9%



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