VISUALIZE THIS!

Elevate Your Research with Better Posters

Geoffrey Talmon, M.D., M.Ed., FCAP, FASCP
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Whitney Staiger, MS
Creative Lead & Senior Operations Specialist for Academic Affairs, AAMC

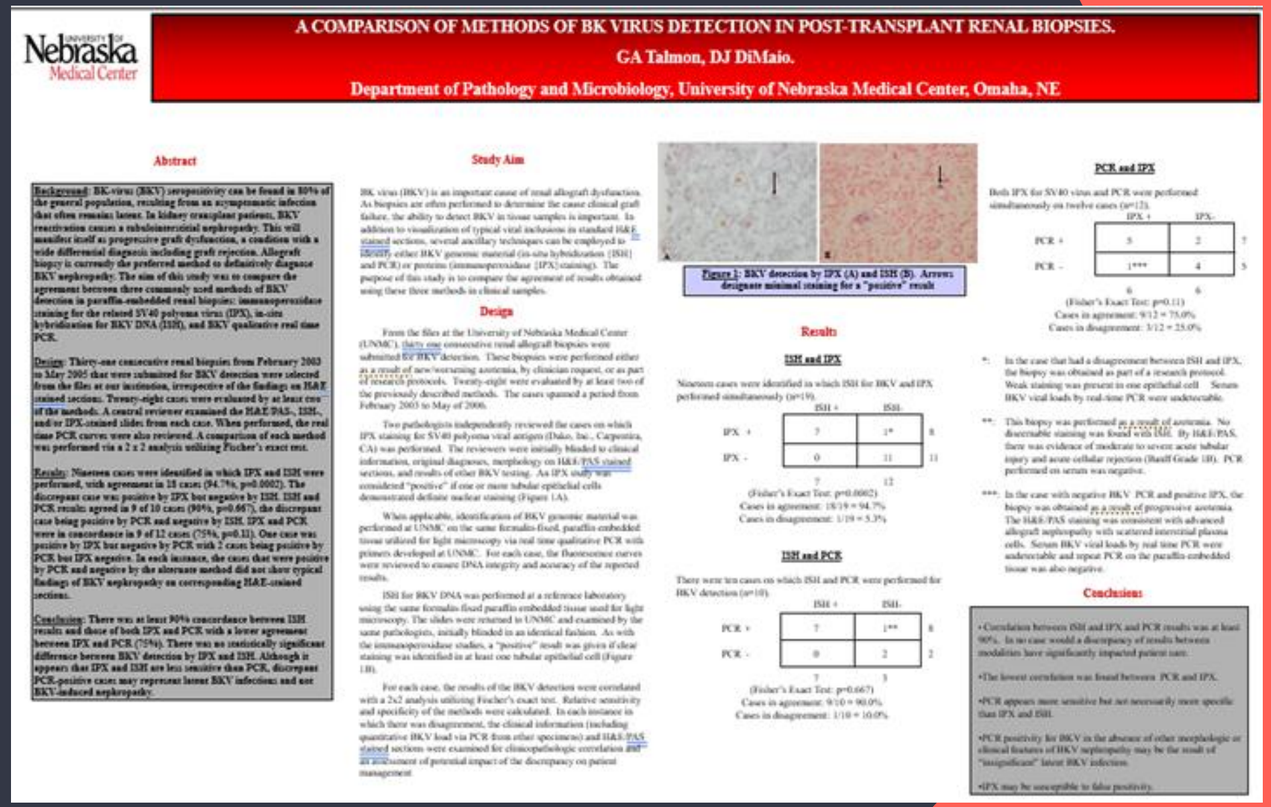
OBJECTIVES

- Describe the purpose and benefits of presenting academic posters.
- Describe methods to structure your poster based on its goals and audience.
- Apply strategies to design an effective and visually clear research poster to communicate key findings and support overall objectives.
- List the important skills to effectively present a poster.


DOCTOR

ACADEMIC POSTERS: THE WHAT

- Visual presentations to disseminate academic work concisely and attractively
- Displayed during poster sessions at conferences or other academic events
- Allows presenters to:
  - Quickly communicate findings
  - Interact with a broad audience
  - Facilitate bidirectional interaction
    - Feedback
    - Ideas
    - Networking



Nebraska Medical Center

A COMPARISON OF METHODS OF BK VIRUS DETECTION IN POST-TRANSPLANT RENAL BIOPSIES.

GA Talmon, DJ DiMaio.

Department of Pathology and Microbiology, University of Nebraska Medical Center, Omaha, NE

Abstract

Background: BK-virus (BKV) seropositivity can be found in 80% of the general population, resulting from an asymptomatic infection that often remains latent. In kidney transplant patients, BKV reactivation causes a tubulointerstitial nephropathy. This will manifest itself as progressive graft dysfunction, a condition with a wide differential diagnosis including graft rejection. Allograft biopsy is currently the preferred method to definitively diagnose BKV nephropathy. The aim of this study was to compare the agreement between three commonly used methods of BKV detection in paraffin-embedded renal biopsies: immunoperoxidase staining for the related SV40 polyoma virus (IPX), in-situ hybridization for BKV DNA (ISH), and BKV qualitative real time PCR.

Design: Thirty-one consecutive renal biopsies from February 2003 to May 2005 that were submitted for BKV detection were selected from the files at our institution, irrespective of the findings on H&E stained sections. Twenty-eight cases were evaluated by at least two of the methods. A central reviewer examined the H&E/PAS-, ISH-, and/or IPX-stained slides from each case. When performed, the real time PCR curves were also reviewed. A comparison of each method was performed via a 2 x 2 analysis utilizing Fischer's exact test.

Results: Nineteen cases were identified in which IPX and ISH were performed, with agreement in 18 cases (94.7%, p=0.0002). The discrepant case was positive by IPX but negative by ISH. ISH and PCR results agreed in 9 of 10 cases (90%, p=0.667), the discrepant case being positive by PCR and negative by ISH. IPX and PCR were in concordance in 9 of 12 cases (75%, p=0.11). One case was positive by IPX but negative by PCR with 2 cases being positive by PCR but IPX negative. In each instance, the cases that were positive by PCR and negative by the alternate method did not show typical findings of BKV nephropathy on corresponding H&E-stained sections.

Conclusion: There was at least 80% concordance between ISH results and those of both IPX and PCR with a lower agreement between IPX and PCR (75%). There was no statistically significant difference between BKV detection by IPX and ISH. Although it appears that IPX and ISH are less sensitive than PCR, discrepant PCR-positive cases may represent latent BKV infections and not BKV-induced nephropathy.

Study Aim

BK virus (BKV) is an important cause of renal allograft dysfunction. As biopsies are often performed to determine the cause clinical graft failure, the ability to detect BKV in tissue samples is important. In addition to visualization of typical viral inclusions in standard H&E stained sections, several ancillary techniques can be employed to demonstrate either BKV genomic material (in-situ hybridization [ISH] and PCR) or proteins (immunoperoxidase [IPX] staining). The purpose of this study is to compare the agreement of results obtained using these three methods in clinical samples.

Design

From the files at the University of Nebraska Medical Center (UNMC), thirty-one consecutive renal allograft biopsies were submitted for BKV detection. These biopsies were performed either as a result of new worsening azotemia, by clinician request, or as part of research protocols. Twenty-eight were evaluated by at least two of the previously described methods. The cases spanned a period from February 2003 to May of 2006.

Two pathologists independently reviewed the cases on which IPX staining for SV40 polyoma viral antigen (Dako, Inc., Carpentria, CA) was performed. The reviewers were initially blinded to clinical information, original diagnoses, morphology on H&E/PAS stained sections, and results of other BKV testing. An IPX study was considered "positive" if one or more tubular epithelial cells demonstrated definite nuclear staining (Figure 1A).

When applicable, identification of BKV genomic material was performed at UNMC on the same formalin-fixed, paraffin embedded tissue utilized for light microscopy via real time qualitative PCR with primers developed at UNMC. For each case, the fluorescence curves were reviewed to ensure DNA integrity and accuracy of the reported results.

ISH for BKV DNA was performed at a reference laboratory using the same formalin-fixed paraffin embedded tissue used for light microscopy. The slides were returned to UNMC and examined by the same pathologists, initially blinded in an identical fashion. As with the immunoperoxidase studies, a "positive" result was given if clear staining was identified in at least one tubular epithelial cell (Figure 1B).

For each case, the results of the BKV detection were correlated with a 2x2 analysis utilizing Fischer's exact test. Relative sensitivity and specificity of the methods were calculated. In each instance in which there was disagreement, the clinical information (including quantitative BKV load via PCR from other specimens) and H&E/PAS stained sections were examined for clinicopathologic correlation and an assessment of potential impact of the discrepancy on patient management.

Figure 1: BKV detection by IPX (A) and ISH (B). Arrows designate minimal staining for a "positive" result

Results

ISH and IPX

Nineteen cases were identified in which ISH for BKV and IPX performed simultaneously (n=19).

	ISH +	ISH-	
IPX +	7	1*	8
IPX -	0	11	11
	7	12	

(Fisher's Exact Test: p=0.0002)
Cases in agreement: 18/19 = 94.7%
Cases in disagreement: 1/19 = 5.3%

ISH and PCR

There were ten cases on which ISH and PCR were performed for BKV detection (n=10).

	ISH +	ISH-	
PCR +	7	1**	8
PCR -	0	2	2
	7	3	

(Fisher's Exact Test: p=0.667)
Cases in agreement: 9/10 = 90.0%
Cases in disagreement: 1/10 = 10.0%

PCR and IPX

Both IPX for SV40 virus and PCR were performed simultaneously on twelve cases (n=12).

	IPX +	IPX-	
PCR +	5	2	7
PCR -	1***	4	5
	6	6	

(Fisher's Exact Test: p=0.11)
Cases in agreement: 9/12 = 75.0%
Cases in disagreement: 3/12 = 25.0%

*: In the case that had a disagreement between ISH and IPX, the biopsy was obtained as part of a research protocol. Weak staining was present in one epithelial cell. Serum BKV viral loads by real-time PCR were undetectable.

**: This biopsy was performed as a result of azotemia. No discernable staining was found with ISH. By H&E/PAS, there was evidence of moderate to severe acute tubular injury and acute cellular rejection (Banff Grade 1B). PCR performed on serum was negative.

***: In the case with negative BKV PCR and positive IPX, the biopsy was obtained as a result of progressive azotemia. The H&E/PAS staining was consistent with advanced allograft nephropathy with scattered interstitial plasma cells. Serum BKV viral loads by real time PCR were undetectable and repeat PCR on the paraffin embedded tissue was also negative.

Conclusion:

- Correlation between ISH and IPX and PCR results was at least 90%. In no case would a discrepancy of results between modalities have significantly impacted patient care.
- The lowest correlation was found between PCR and IPX.
- PCR appears more sensitive but not necessarily more specific than IPX and ISH.
- PCR positivity for BKV in the absence of other morphologic or clinical features of BKV nephropathy may be the result of "insignificant" latent BKV infection.
- IPX may be susceptible to false positivity.

POSTERS ≠ MINI MANUSCRIPTS

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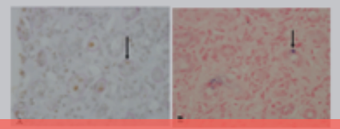

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Conclusions

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Supporting Medical Students with Learning Accommodations: A Front-Line Educator's Guide

Geoffrey Talmon, M.D., M.Ed.[1]

Jacque Knedler, MS[2]

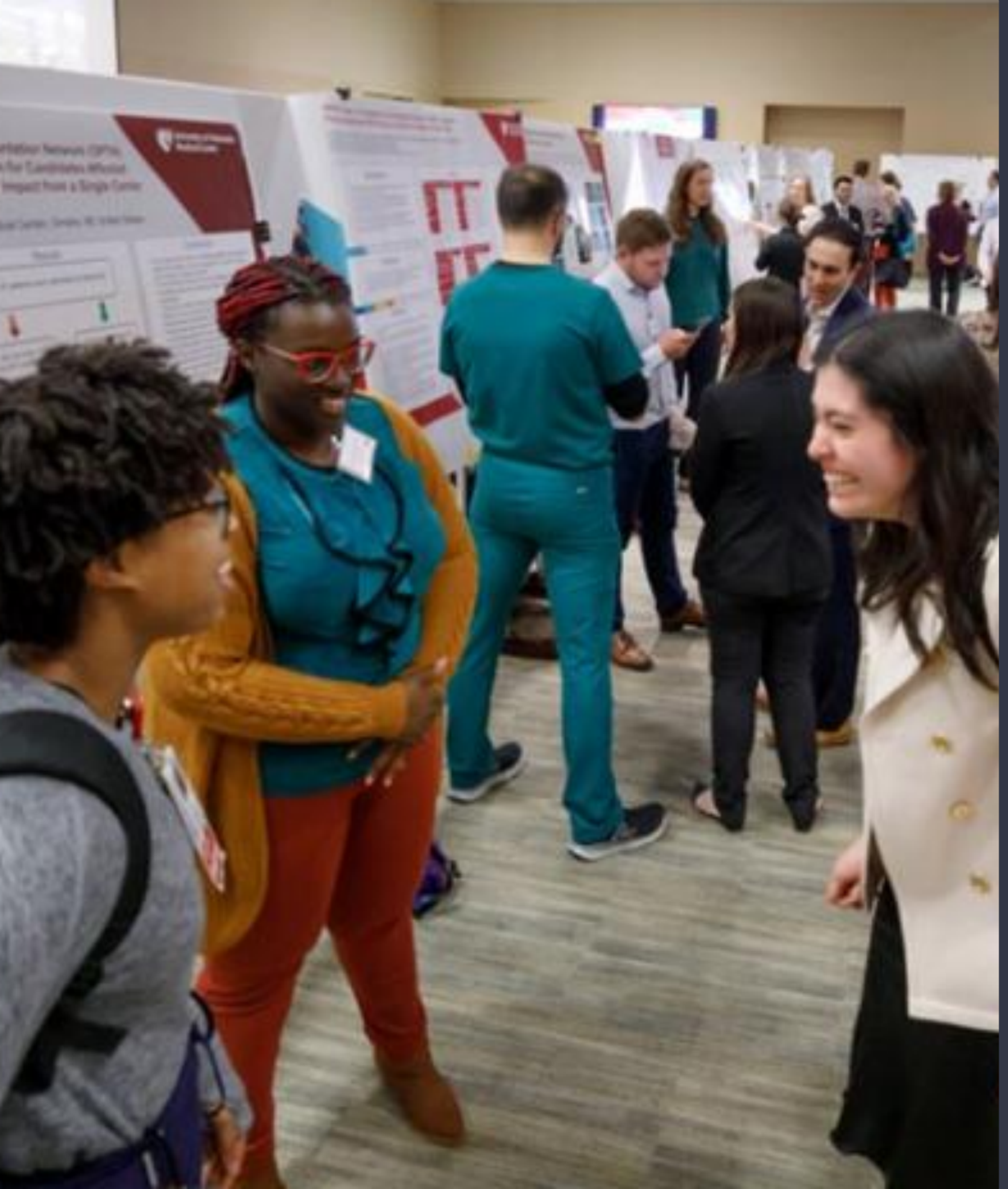
[1] Office of Medical Education, University of Nebraska Medical Center College of Medicine

2 Accessibility Services Center, University of Nebraska Medical Center

3Office of Admissions and Student Affairs, University of Nebraska Medical Center College of Medicine

ACADEMIC POSTERS: THE WHY

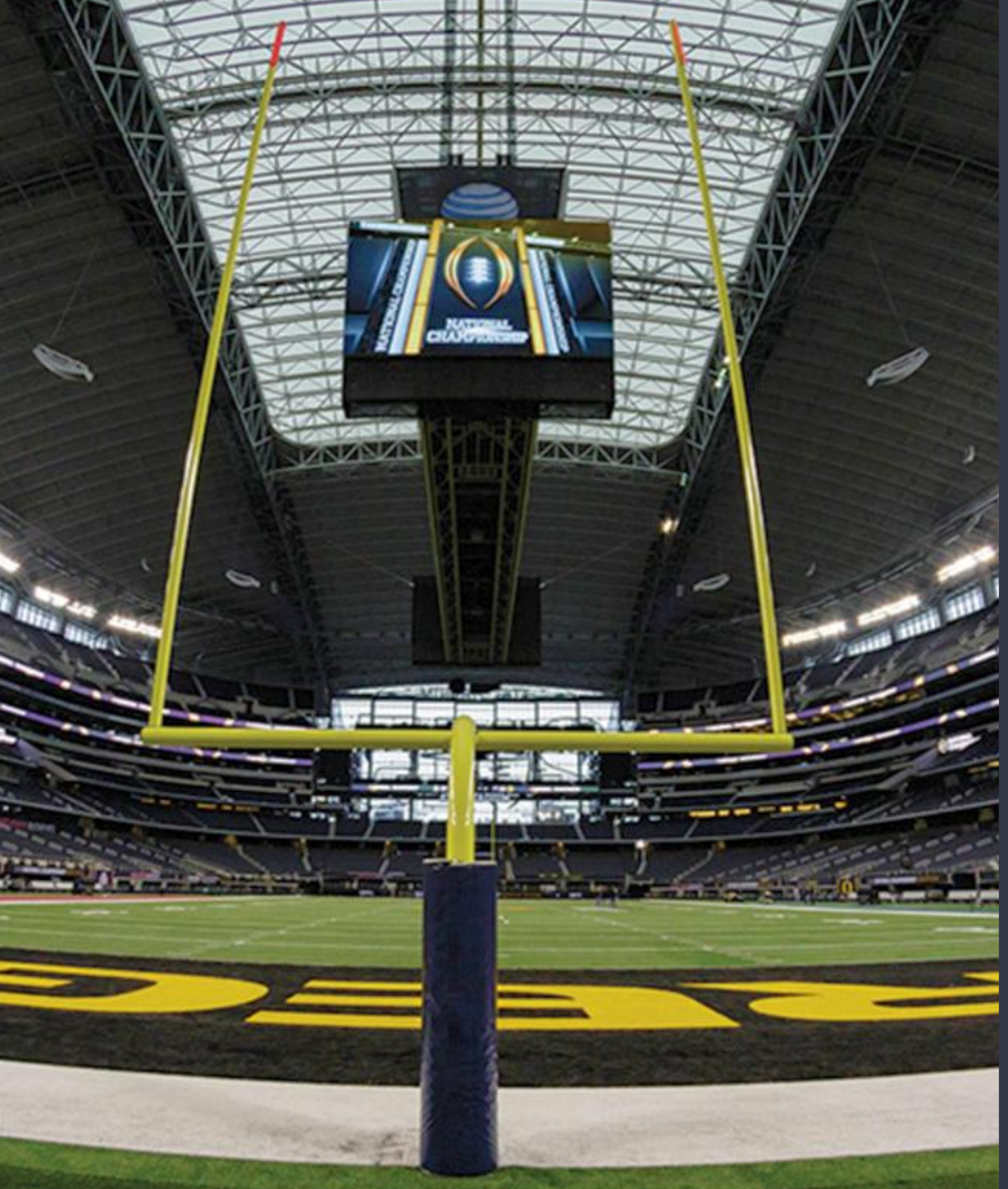
- Scientific/pragmatic benefits:
  - Quicker turnaround time from submission
  - Opportunity to present preliminary or incomplete studies
  - “Less strenuous” up front peer review
  - Structure for subsequent manuscript
  - Identify weaknesses, follow up studies, etc. before manuscript drafting
  - May be included in meeting proceedings (read: indexed publication)



ACADEMIC POSTERS: THE WHY

- Personal/professional benefits:
  - Learn from others
  - Gain visibility in community
  - Be “The FIRST”
  - Practice communication skills
  - Network with other investigators
  - Line on the CV

FOUR KEY SKILLS FOR SUCCESSFUL POSTERS



ACADEMIC POSTERS: THE HOW

KEYS TO SUCCESS - FOUR SKILLS

1. Set your goals
2. Define your audience
3. Design thoughtfully
4. Practice and refine presentation

KEYS TO SUCCESS

1

SET YOUR GOALS

- Set your goal - What do I hope to accomplish?
  - Feedback for future work or manuscript?
  - Share methodology or new program?
  - Highlight a novel discovery?
  - Find collaborators?
  - Raise awareness on a topic?

KEYS TO SUCCESS

2

AUDIENCE

- Who are the best people to help me meet my goal(s) and will likely be present?
  - General meeting vs. specialty society?
  - Experts vs. generalists vs. novices vs. mixed?
  - Who else is going to be there?

KEYS TO SUCCESS

2

TITLE

- Keep goal and audience in mind
- Succinct and in line with message
- Attention grabbing
- Easy to consume in seconds

CONSIDER THIS PROJECT...

Objective

Examine the prevalence and sources of stress and burnout among pathology trainees.

Methods

Cross-sectional online survey of a national sample of pathology trainees.

Results

Job stress and burnout were prevalent, with more than a third of the respondents reporting that they were currently experiencing burnout, struggling with academics, work-life balance, and emotional well-being. Workload was the leading factor.

Conclusions

One of the overarching implications is the need to address a range of interdependent considerations in designing resources to reduce job stress, promote work-life balance, and prevent burnout.

Am J Clin Pathol. 2020; 153(4):449–69,

KEYS TO SUCCESS

3

BASIC FUNDAMENTALS

- Emphasis
- Balance & Alignment
- Contrast
- Repetition
- Proportion
- Movement
- White Space/Negative Space

LEAST UTILIZED

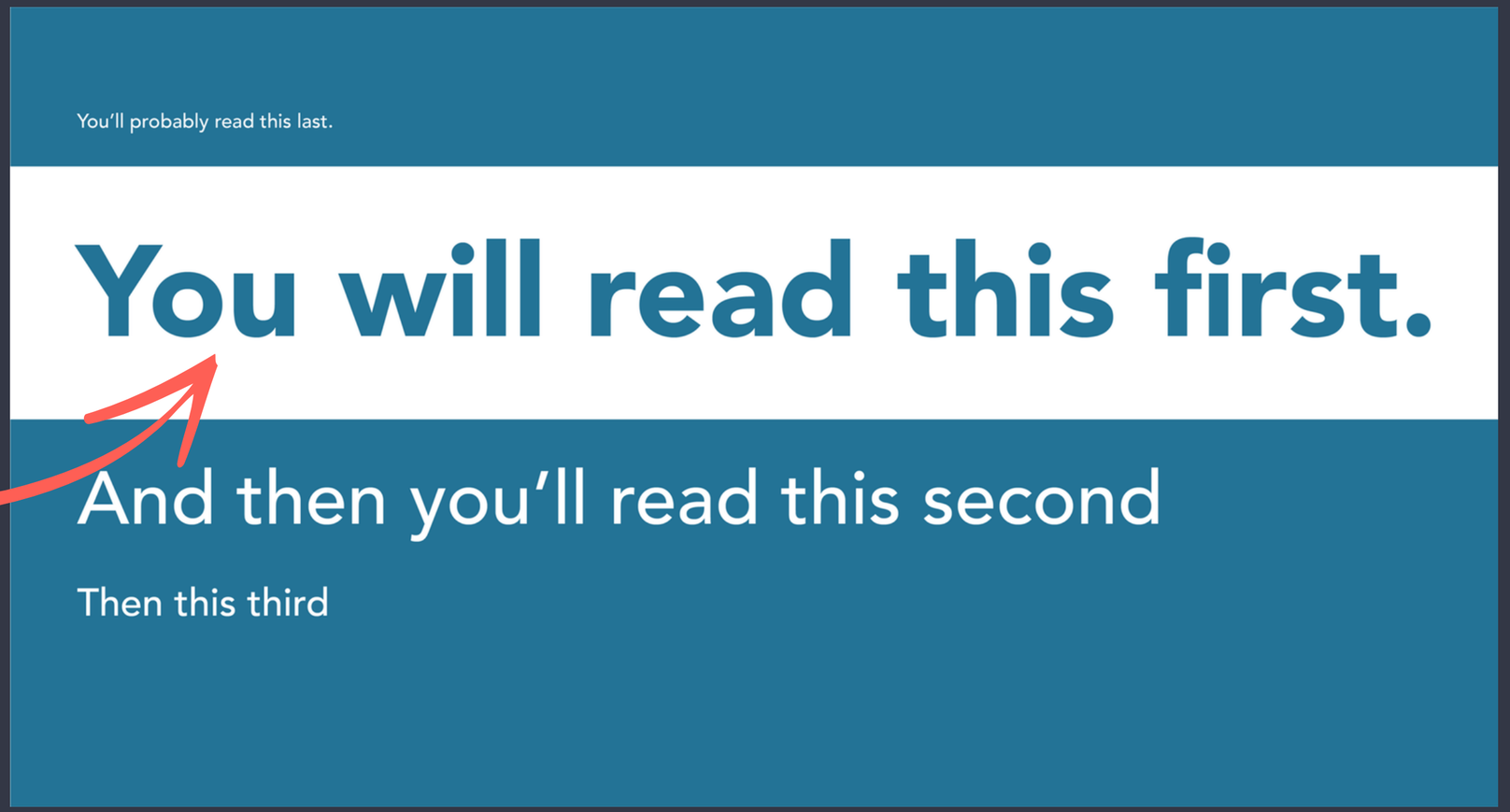
PROPORTION Size and scale of elements to each other

CONTRAST Highlights the differences utilizing color, size, shape, or texture

WHITE SPACE AKA ‘Negative’ space, provides visual clarity and organization

PROPORTION

Size and scale of elements to each other



Titles should be 90-100 pt & BOLD

PROPORTION

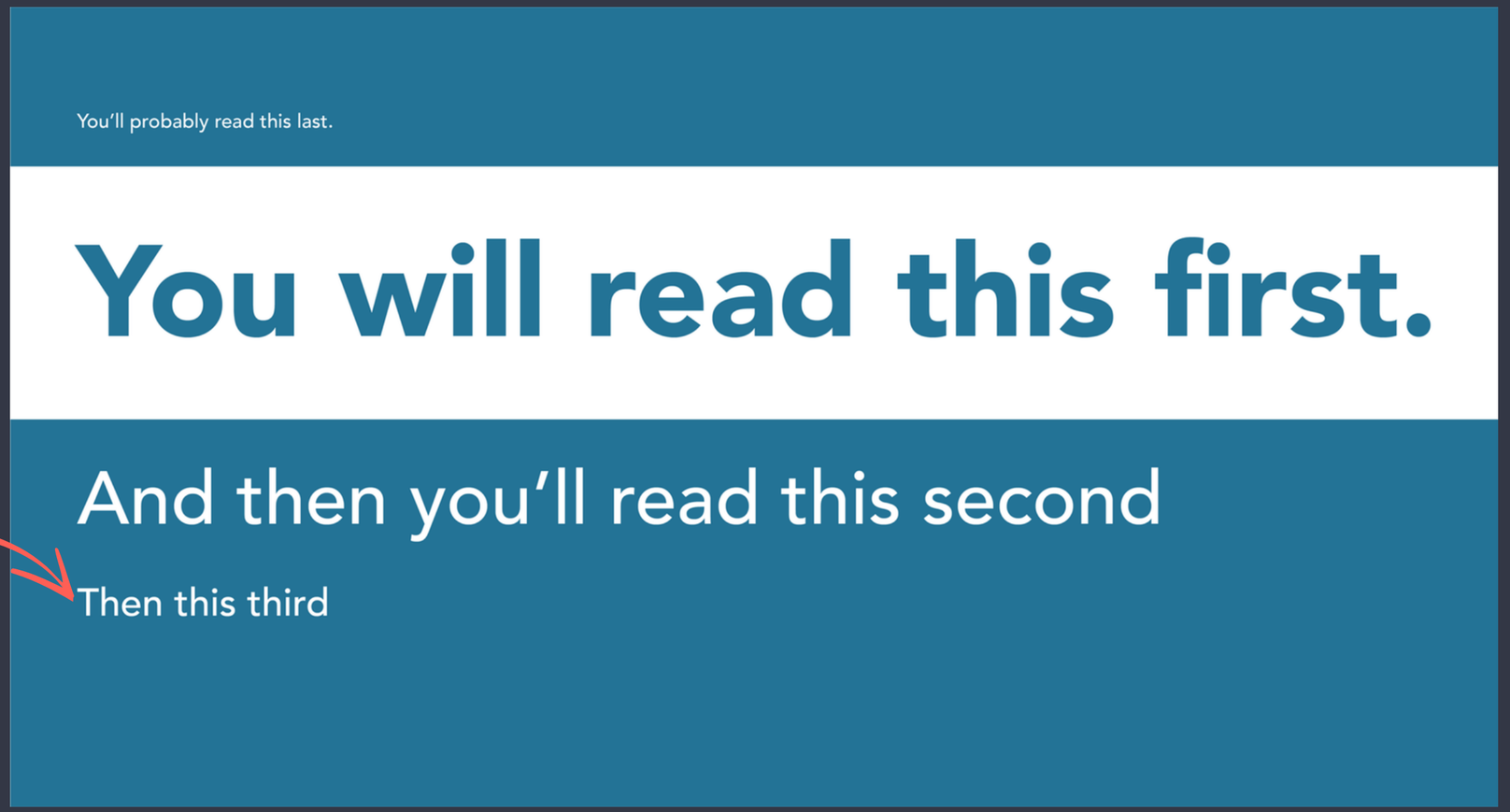
Size and scale of elements to each other

Headings should be 50-60 pt

PROPORTION

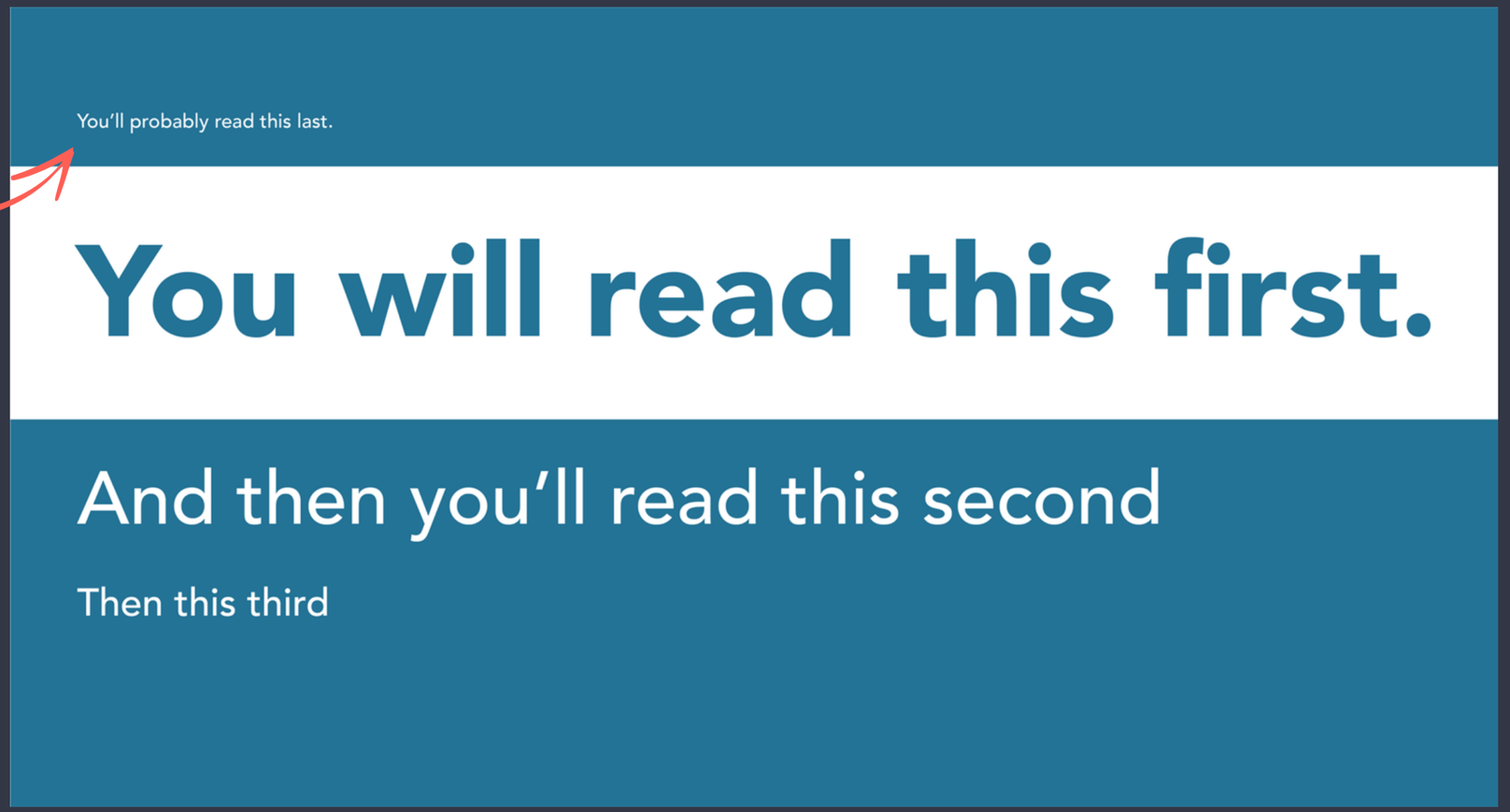
Size and scale of elements to each other

Body text should be 30-36 pt



PROPORTION

Size and scale of elements to each other



References should be NO LARGER than 20-25 pt

TRUNCATE THEM!!!!

10-15 pt is approved!

PROPORTION

Size and scale of elements to each other

Make your main finding or purpose the largest. It should be your TITLE!

WHAT IS CIM?

CiM provides resources to help U.S. MD, U.S. DO, Canadian MD, and international medical students and graduates in choosing a specialty and applying smart to residency in the United States.

4-PHASE PROCESS

CiM's 4-phase model is tailored for medical students and rooted in career development theory and research, designed to support future career satisfaction.

Understand Yourself
Self-exploration is essential to a satisfying specialty choice

Explore Options
Knowing about all career options that exist ensures well-informed decisions

Choose Your Specialty
...ised choice that makes you happy is harder than you think

Prepare for Residency
Much is involved in a transition from applying to and arriving at residency

WHY USE CIM?

- CiM is a **FREE** AAMC members benefit!
- CiM framework **supports LCME requirement 11.2** for medical school career advising
- CiM provides 4 self-assessment tools specific to medicine:
  - **Interests** Medical Specialty Preference Inventory (MSPI)
  - **Values** Physician Values in Practice Scale (PVIPS)
  - **Skills** Physician Skills Inventory (PSI)
  - **Indecision** Specialty Indecision Scale (SIS)
- CiM maintains information & data for **160+** specialty profiles & **27** specialty spotlights

- Twice-yearly CiM Workshop
  - **Spring – March/April**
  - **Fall – September/October**
- Virtual and in-person training at your institution
- Training for advisors, students, or both

FIND YOUR FIT WITH AAMC CAREERS IN MEDICINE®

A person is more likely to be **satisfied** if their career **aligns** with their **values**, **skills**, & **interests**.

The CiM program supports medical students, and the faculty and staff who advise them, to choose a specialty and meet their career goals!

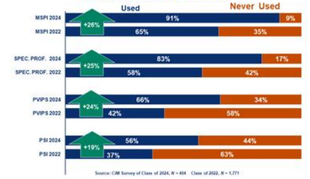
Scan the QR code for more details about, and references for, this poster.

careersinmedicine.aamc.org

STUDENT USAGE

Since 2017, nearly **9** out of **10** graduates have created a CiM profile!

Student Use of CiM Resources Increased 2022-2024



The MSPI is the most popular CiM assessment, used by nearly 70% of recent graduates!

Those who use CiM often rated the following CiM resources moderately to very useful

Annually, U.S. MD graduates who find CiM useful also report **higher satisfaction** with their school's career planning services

Graduating U.S. MD seniors who rated CiM as "very useful" were "satisfied" or "very satisfied" with the following elements of their school's career planning services:

- **overall career planning services** **88%**
- **information about specialties** **90%**
- **career preferences assessment activities** **90%**

AAMC

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Size and scale of elements to each other

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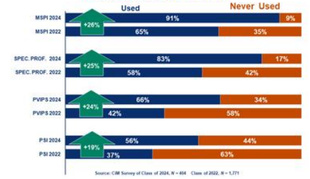

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Make graphics easy to see!

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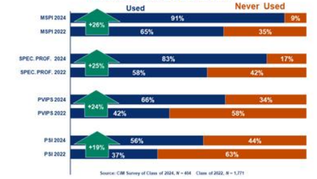

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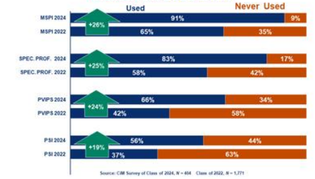

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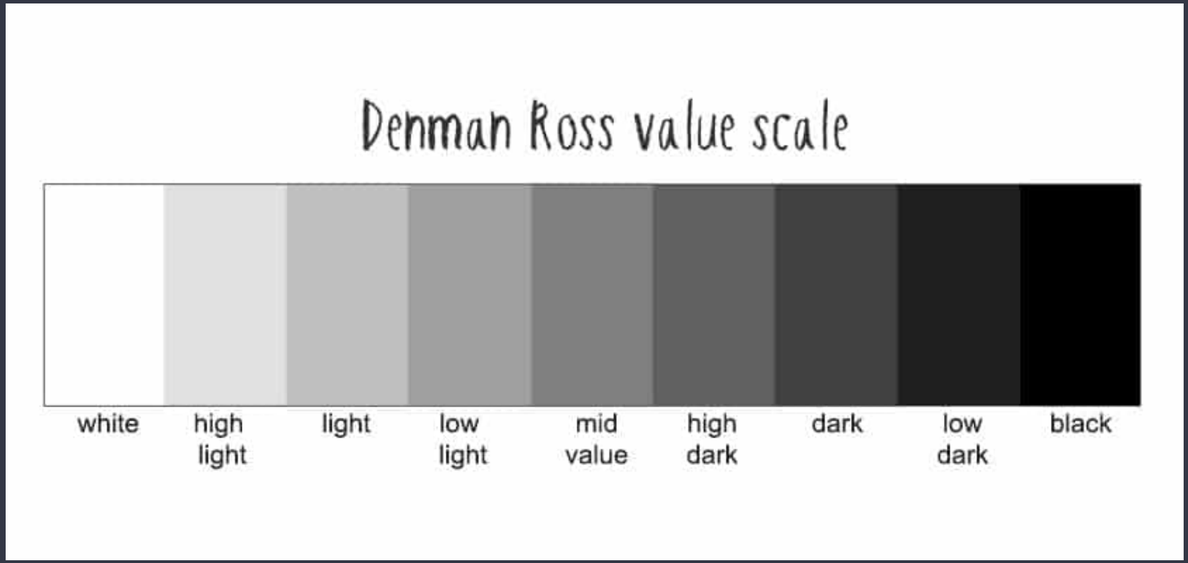
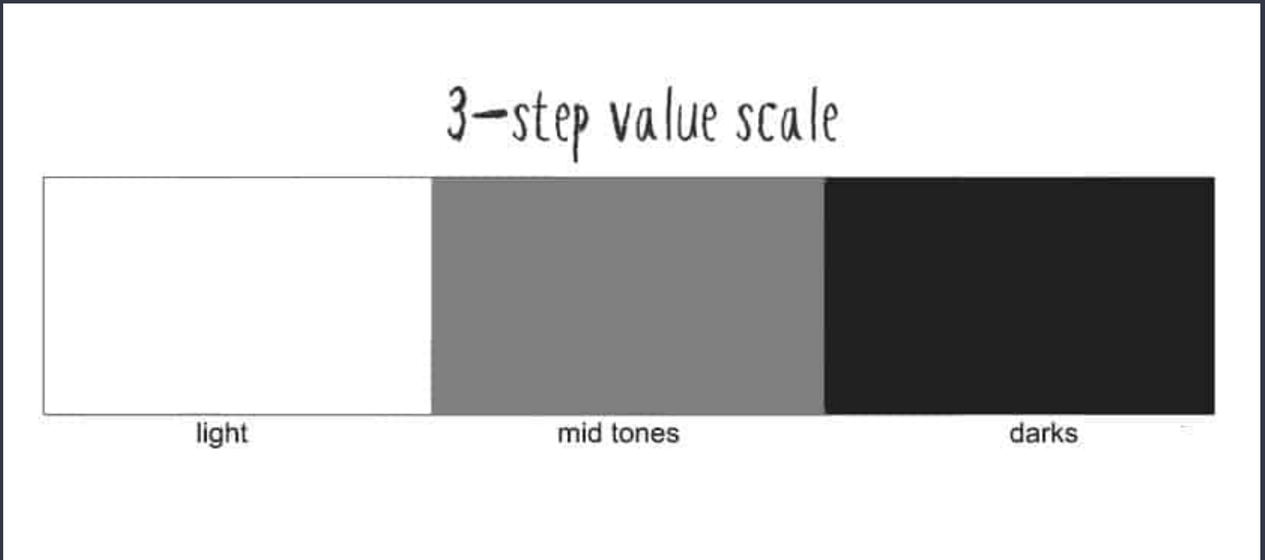
AAMC

Notice the logo is the SMALLEST

CONTRAST

Highlights the differences utilizing color, size, shape, or texture





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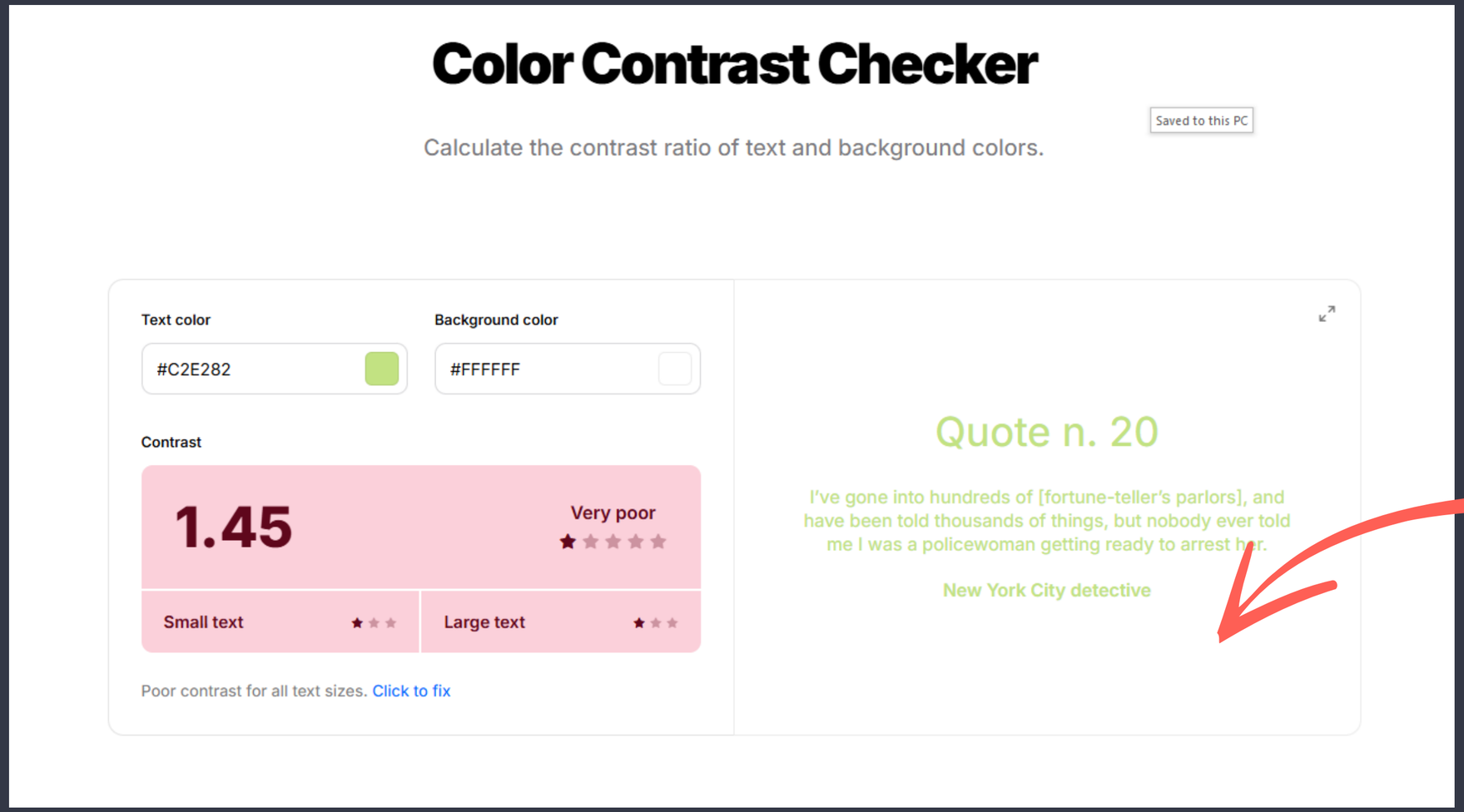
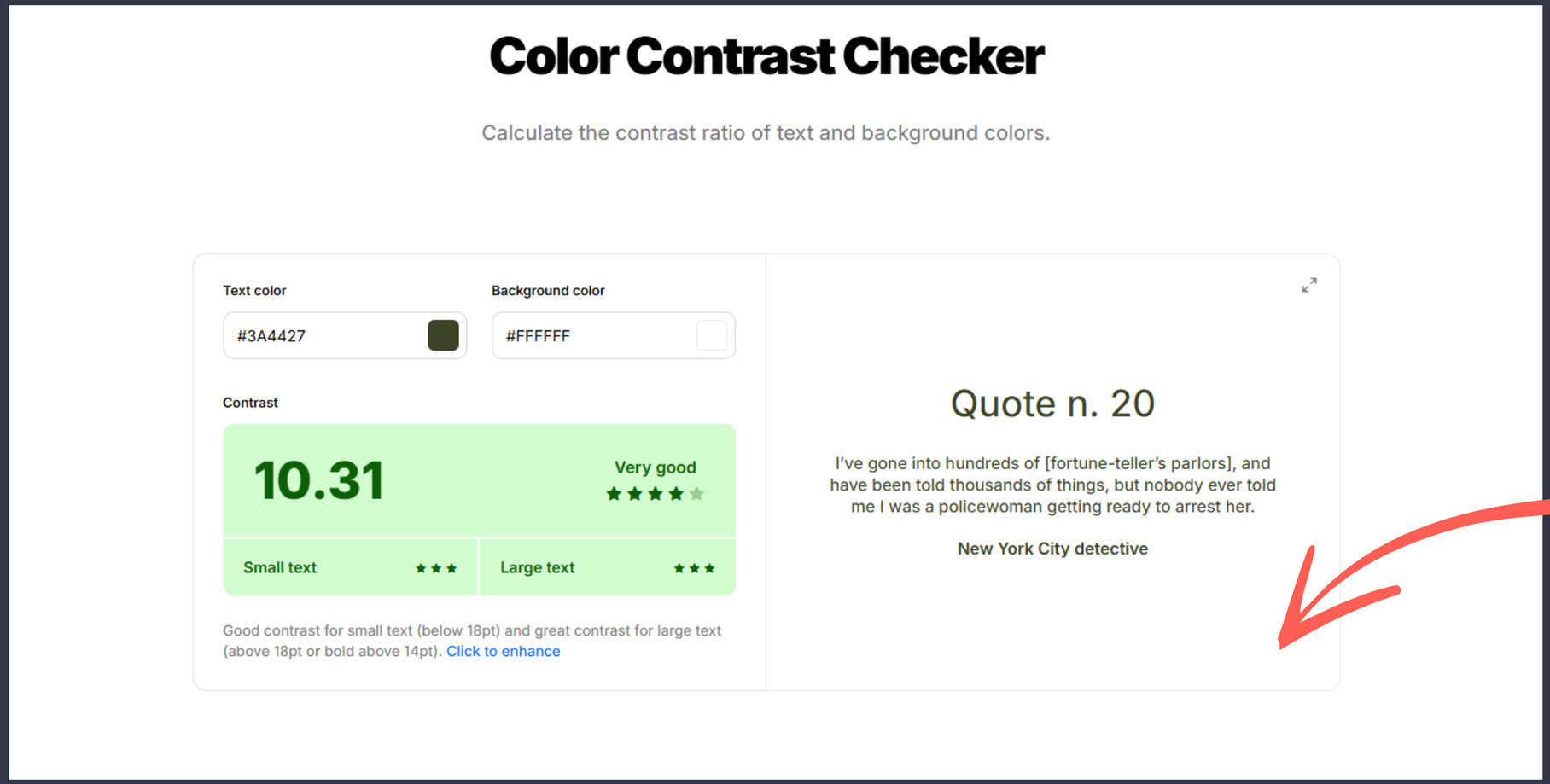


The value here is white heavy, making the contrast VERY POOR

CONTRAST

Highlights the differences utilizing color, size, shape, or texture



The value here is black heavy, making the contrast VERY GOOD

CONTRAST

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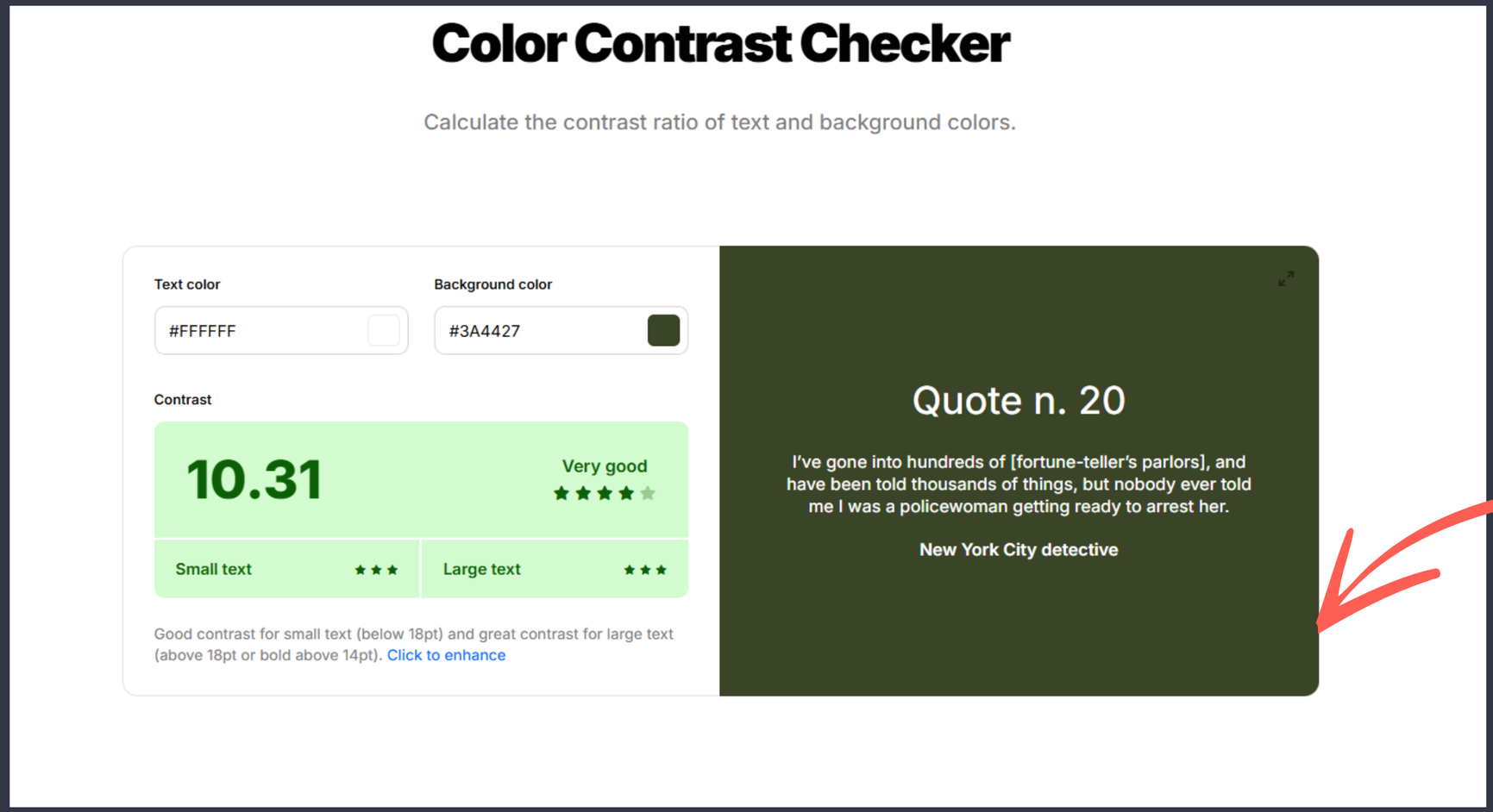

Here it is in reverse!

WHITE SPACE

AKA ‘Negative’ space, provides visual clarity and organization

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- **Enhances visual hierarchy**
- **Improves readability**
- **More appealing**
- **CLARITY - Accessibility!!!**
- **Emphasizes KEY information**

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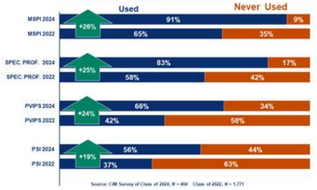

Source: CiM Survey of Class of 2024, N = 414 Class of 2022, N = 1,771

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Even if it's not the color white, it still COUNTS!

Which poster is more appealing?

A COMPARISON OF METHODS OF BK VIRUS DETECTION IN POST-TRANSPLANT RENAL BIOPSIES.

GA Talmon, DJ DiMaio.

Department of Pathology and Microbiology, University of Nebraska Medical Center, Omaha, NE

Abstract

Background: BK virus (BKV) seropositivity can be found in 80% of the general population, resulting from an asymptomatic infection that often remains latent. In kidney transplant patient, BKV reactivation causes a tubulointerstitial nephropathy. This will manifest itself as progressive graft dysfunction, a condition with a wide differential diagnosis including graft rejection. Allograft biopsy is currently the preferred method to definitively diagnose BKV nephropathy. The aim of this study was to compare the agreement between three commonly used methods of BKV detection in paraffin-embedded renal biopsies: immunoperoxidase staining for the related SV40 polyoma virus (IPX), in-situ hybridization for BKV DNA (ISH), and BKV qualitative real time PCR.

Design: Thirty-one consecutive renal biopsies from February 2003 to May 2006 that were submitted for BKV detection were selected from the files at our institution, irrespective of the findings on H&E stained sections. Twenty-eight cases were evaluated by at least two of the methods. A central reviewer examined the H&E/PAS-, ISH-, and/or IPX-stained slides from each case. When performed, the real time PCR curves were also reviewed. A comparison of each method was performed via a 2 x 2 analysis utilizing Fischer's exact test.

Results: Nineteen cases were identified in which IPX and ISH were performed, with agreement in 18 cases (94.7%, p=0.0002). The discrepant case was positive by IPX but negative by ISH. ISH and PCR results agreed in 9 of 10 cases (90%, p=0.067), the discrepant case being positive by PCR and negative by ISH. IPX and PCR were in concordance in 9 of 12 cases (75%, p=0.11). One case was positive by IPX but negative by PCR with 2 cases being positive by PCR but IPX negative. In each instance, the cases that were positive by PCR and negative by the alternate method did not show typical findings of BKV nephropathy on corresponding H&E-stained sections.

Conclusion: There was at least 80% concordance between ISH results and those of both IPX and PCR with a lower agreement between IPX and PCR (75%). There was no statistically significant difference between BKV detection by IPX and ISH. Although it appears that IPX and ISH are less sensitive than PCR, discrepant PCR-positive cases may represent latent BKV infections and not BKV-induced nephropathy.

Study Aim

BK virus (BKV) is an important cause of renal allograft dysfunction. As biopsies are often performed to determine the cause clinical graft failure, the ability to detect BKV in tissue samples is important. In addition to visualization of typical viral inclusions in standard H&E stained sections, several ancillary techniques can be employed to identify either BKV genomic material (in-situ hybridization [ISH] and PCR) or proteins (immunoperoxidase [IPX] staining). The purpose of this study is to compare the agreement of results obtained using these three methods in clinical samples.

Design

From the files at the University of Nebraska Medical Center (UNMC), thirty one consecutive renal allograft biopsies were submitted for BKV detection. These biopsies were performed either as a result of new/worsening azotemia, by clinician request, or as part of research protocols. Twenty-eight were evaluated by at least two of the previously described methods. The cases spanned a period from February 2003 to May of 2006.

Two pathologists independently reviewed the cases on which IPX staining for SV40 polyoma viral antigen (Dako, Inc., Carpentria, CA) was performed. The reviewers were initially blinded to clinical information, original diagnoses, morphology on H&E/PAS stained sections, and results of other BKV testing. An IPX study was considered "positive" if one or more tubular epithelial cells demonstrated definite nuclear staining (Figure 1A).

When applicable, identification of BKV genomic material was performed at UNMC on the same formalin-fixed, paraffin-embedded tissue utilized for light microscopy via real time qualitative PCR with primers developed at UNMC. For each case, the fluorescence curves were reviewed to ensure DNA integrity and accuracy of the reported results.

ISH for BKV DNA was performed at a reference laboratory using the same formalin fixed paraffin embedded tissue used for light microscopy. The slides were returned to UNMC and examined by the same pathologists, initially blinded in an identical fashion. As with the immunoperoxidase studies, a "positive" result was given if clear staining was identified in at least one tubular epithelial cell (Figure 1B).

For each case, the results of the BKV detection were correlated with a 2x2 analysis utilizing Fischer's exact test. Relative sensitivity and specificity of the methods were calculated. In each instance in which there was disagreement, the clinical information (including quantitative BKV load via PCR from other specimens) and H&E/PAS stained sections were examined for clinicopathologic correlation and an assessment of potential impact of the discrepancy on patient management.

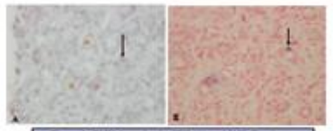

Figure 1: BKV detection by IPX (A) and ISH (B). Arrows designate minimal staining for a "positive" result

Results

ISH and IPX

Nineteen cases were identified in which ISH for BKV and IPX performed simultaneously (n=19).

	ISH +	ISH-	
IPX +	7	1*	8
IPX -	0	11	11
	7	12	

(Fisher's Exact Test: p=0.0002)
Cases in agreement: 18/19 = 94.7%
Cases in disagreement: 1/19 = 5.3%

ISH and PCR

There were ten cases on which ISH and PCR were performed for BKV detection (n=10).

	ISH +	ISH-	
PCR +	7	1**	8
PCR -	0	2	2
	7	3	

(Fisher's Exact Test: p=0.667)
Cases in agreement: 9/10 = 90.0%
Cases in disagreement: 1/10 = 10.0%

PCR and IPX

Both IPX for SV40 virus and PCR were performed simultaneously on twelve cases (n=12).

	IPX +	IPX-	
PCR +	5	2	7
PCR -	1***	4	5
	6	6	

(Fisher's Exact Test: p=0.11)
Cases in agreement: 9/12 = 75.0%
Cases in disagreement: 3/12 = 25.0%

*: In the case that had a disagreement between ISH and IPX, the biopsy was obtained as part of a research protocol. Weak staining was present in one epithelial cell. Serum BKV viral loads by real-time PCR were undetectable.

**: This biopsy was performed as a result of azotemia. No discernable staining was found with ISH. By H&E/PAS, there was evidence of moderate to severe acute tubular injury and acute cellular rejection (Banff Grade IB). PCR performed on serum was negative.

***: In the case with negative BKV PCR and positive IPX, the biopsy was obtained as a result of progressive azotemia. The H&E/PAS staining was consistent with advanced allograft nephropathy with scattered interstitial plasma cells. Serum BKV viral loads by real time PCR were undetectable and repeat PCR on the paraffin-embedded tissue was also negative.

Conclusions

- Correlation between ISH and IPX and PCR results was at least 90%. In no case would a discrepancy of results between modalities have significantly impacted patient care.
- The lowest correlation was found between PCR and IPX.
- PCR appears more sensitive but not necessarily more specific than IPX and ISH.
- PCR positivity for BKV in the absence of other morphologic or clinical features of BKV nephropathy may be the result of "insignificant" latent BKV infection.
- IPX may be susceptible to false positivity.

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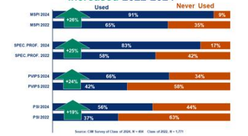

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REMEMBER!

PROPORTION Size and scale of elements to each other

CONTRAST Highlights the differences utilizing color, size, shape, or texture

WHITE SPACE AKA ‘Negative’ space, provides visual clarity and organization

RESOURCES

Animate Your Science Blog

- Fonts
- Templates

Coolors.com

- Color Palette Generator
- Contrast Checker - accessibility!

The Online Scientist

- Poster presentation guidelines
- Checklists and template downloads

EASY BUTTON VIDEO

PRESENTING

Image credit:
www.usgs.gov

KEYS TO SUCCESS

4

REMEMBER YOUR GOAL & AUDIENCE

KEYS TO SUCCESS

4

PRESENTING

- Be present
- Be a salesperson
- Be knowledgeable
- Be ready
- Be available

KEYS TO SUCCESS

4

PRESENTING

- Be present
  - Stay with your poster
  - Don't block visibility
  - Be welcoming and enthusiastic
  - Dress for success

KEYS TO SUCCESS

4

PRESENTING

- Be a salesperson
  - Give your pitch (<30 second “elevator speech”)
  - What you did
  - What you found
  - Why the findings are important

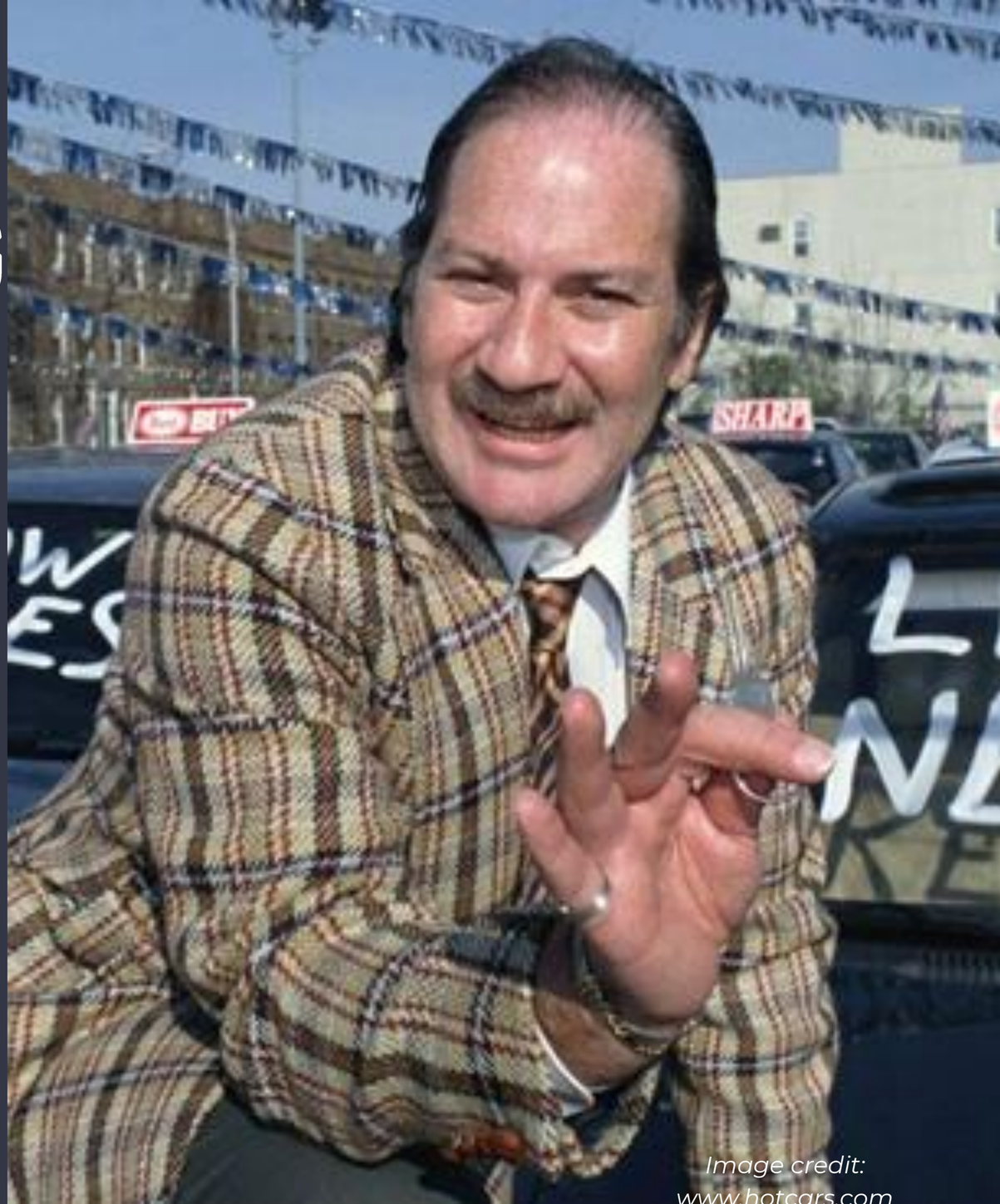

Image credit: www.hotcars.com

KEYS TO SUCCESS

4

PRESENTING

- Be knowledgeable
  - Tell a story
    - Why you did the project
    - How you designed your study
    - Results
    - Conclusions (~3 key take home messages)
  - Be prepared for “standard” questions
    - Why did you do A instead of B?
    - What about confounding variables?
    - Could other conclusions be reached?
    - What are you going to do next/what are the limitations?
    - If unsure, ask the viewer for their thoughts

KEYS TO SUCCESS

4

PRESENTING

- Be ready (i.e., practice, practice, practice)
  - Memorize your pitch
  - Be conversational
  - Be able to explain all points (including figures!) without notes
  - Rehearse with colleagues, family, etc. Have them ask you the tough questions if they have background knowledge
  - Be open to feedback

KEYS TO SUCCESS

4

PRESENTING

- Be available
  - Facilitate follow up
  - Provide your business card, email, etc.
  - Ask viewer for their information, as applicable
  - Include of a QR code with link to poster or contact information

REVIEW

KEYS TO A SUCCESSFUL POSTER

1. Set your goals
2. Define your audience
3. Design thoughtfully
4. Practice and refine presentation