



NEWS BRIEFING #3

October 26, 2021



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3-D virtual reality volumetric imaging review in cancer patients' understanding and education of their disease and treatment

Presented by Douglas E. Holt, MD, Eastern Idaho Regional Medical Center

Impact of Pediatric Radiation Oncology with Movie Induced Sedation Effect (PROMISE) on patient movement and general anesthesia use in pediatric radiation therapy

Presented by Jeffrey T. Chapman, BS, University of Texas Southwestern Medical Center

Development and impact of a virtual PSA monitoring clinic for follow-up of prostate cancer patients

Presented by Richard Boyajian, MSN, RN, NP, Dana-Farber/Brigham and Women's Cancer Center

Site-specific education using digital media to improve patients' understanding of the radiotherapy trajectory: An interventional study

Presented by Hussain Almerdhemah, B.App.Sc-RT, King Faisal Specialist Hospital and Research Centre

Moderator: Laura A. Dawson, MD, FASTRO, Princess Margaret Cancer Center; Chair, ASTRO Board of Directors



3-D Virtual Reality Imaging Review in Cancer Patients' Understanding and Education of Their Disease and Treatment

Douglas E. Holt, MD

Idaho Cancer Center

Disclosure

- Disclosure: I have no conflicts of interest to disclose.
- This study was supported by funding from the Colorado Cancer Coalition and the University of Colorado

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Background

- A cancer diagnosis is a traumatic event that impacts patients along with information processing and retention.
- One of the big struggles for people diagnosed with cancer is just trying to understand what is happening to them (i.e. information is complex/abstract).
 - Up to 80% of the information presented to patients is forgotten nearly immediately
 - Up to 50% of the information retained is inaccurate
- Poor understanding is associated with worse clinical outcomes and patient experiences.
- How can clinics/providers help patients understand their disease and treatment more fully?

Evolution of Patient Education

Nothing

Verbal
Description

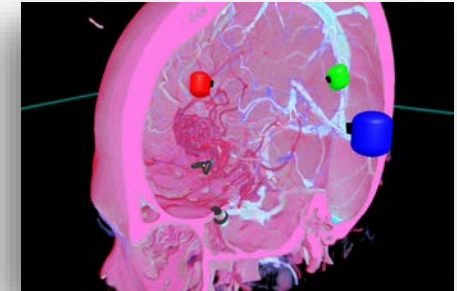
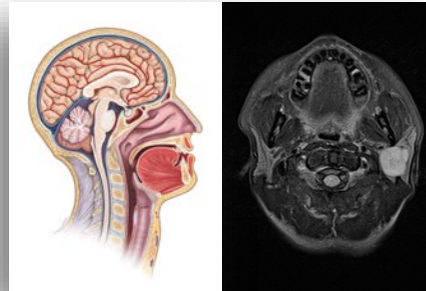
Illustrations,
Videos, Medical
Imaging

3D Printed
Models

Augmented/
Virtual Reality



*Least effective
method when
used alone



Virtual Reality for Patient Education

- Information is personalized to the patient
- Presenting anatomical information in 3D vs. 2D reduces cognitive load and enables learning
- Supported by several learning theories
- Existing studies show high satisfaction, increased engagement and strong preference for VR



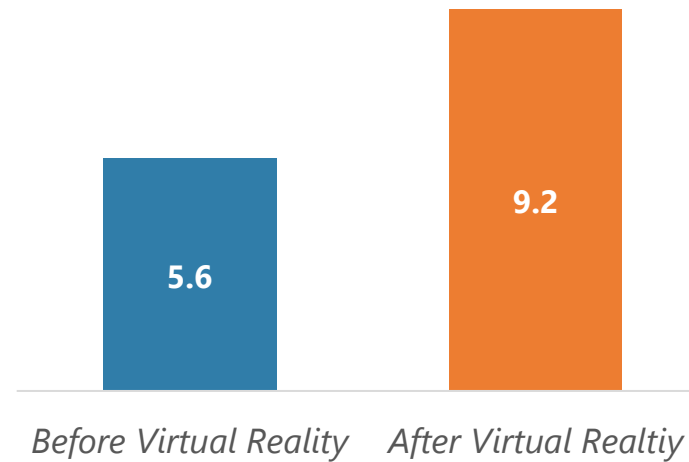


Patient Impact

- Improve understanding of disease (despite multiple prior consultations)
- Strongly preferred in imaging review
- Top ranked tool over other methods
- High majority (97%) of patients agreed VR should be standard of care

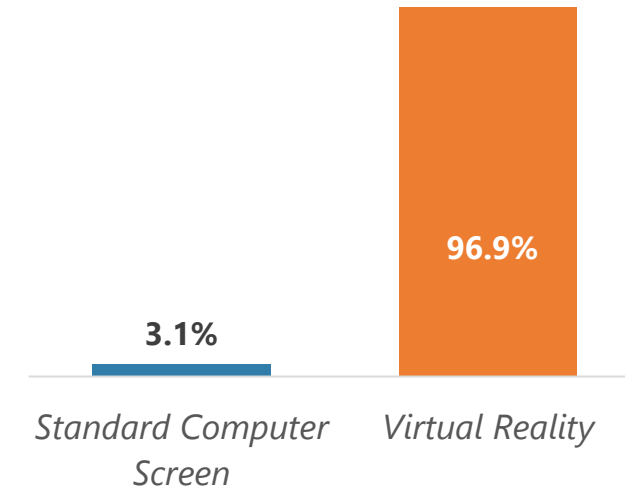
Understanding of Tumor/Disease

Level of Understanding
(0=None, 10=Full)



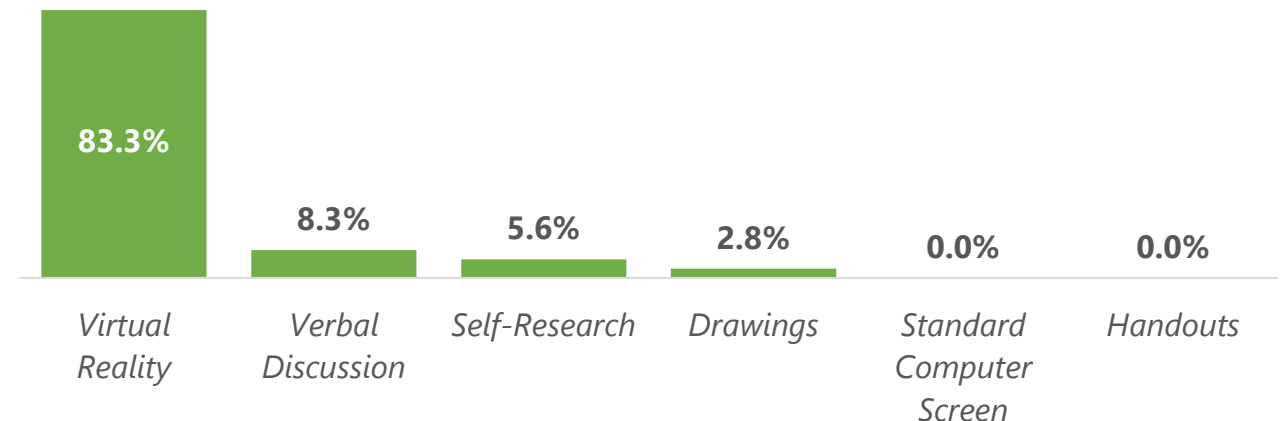
Preferred Method for Medical Imaging Review

(% of participant)



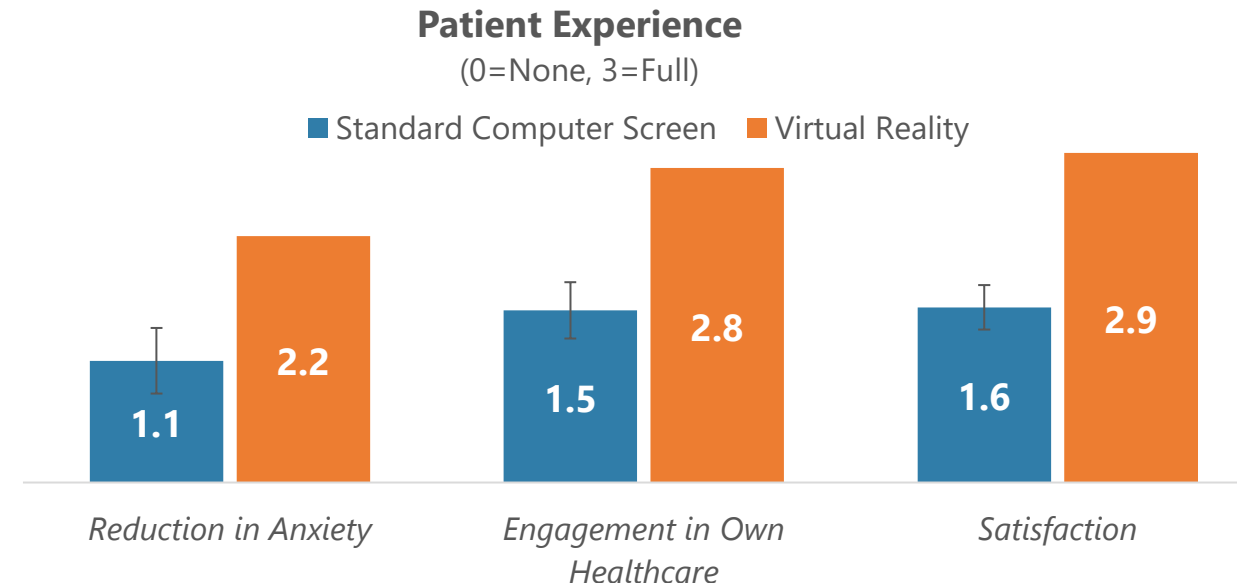
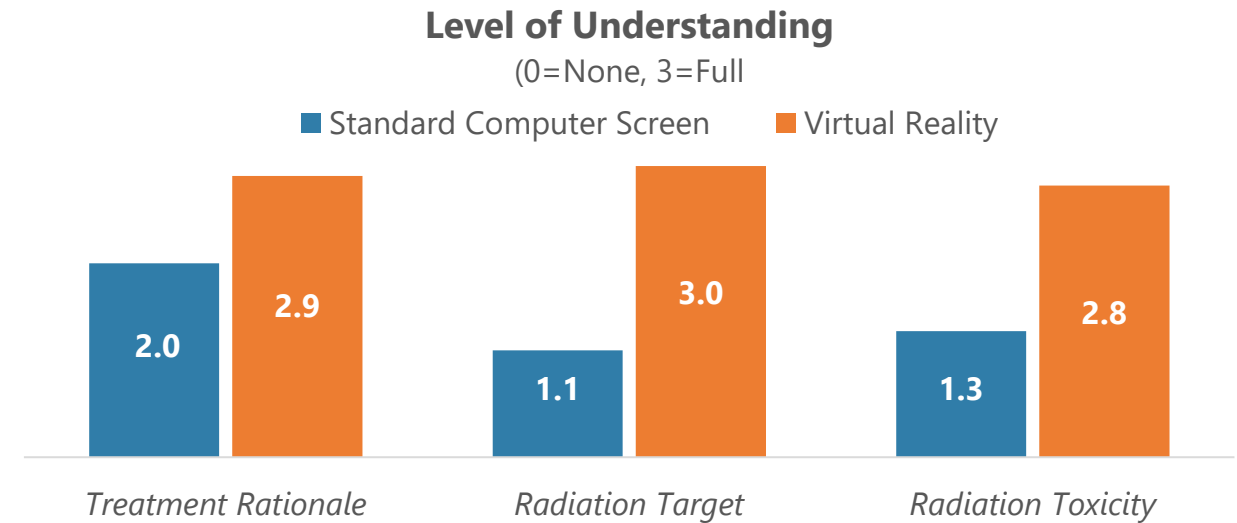
Top Ranked Educational Tool

(% of participants)



Patient Impact

- Improved understanding in treatment rationale, radiation treatment, and related toxicity
- Less anxiety, greater engagement, and higher satisfaction
- Routinely positive experience
"amazing", "phenomenal", "fantastic"
"awesome", "too short"



Patient Impact

- *"It [VR] seems like one of the things you have as soon as you get diagnosed with cancer."*
- *"[VR] was more helpful than my doctors just trying to explain it, or not even explaining it to me...[VR] was really helpful."*
- *"This visual moment leveled the playing field...for me. It just let me in on my own healthcare."*
- *"I had a certain amount of fear what was going on to my body. But now it feels like it's less."*
- *"This helped me make sense of why the radiation could be really helpful."*
- *"[VR] changed everything...I would prefer seeing the VR and everything. Like every single piece of the puzzle- it just fills in the blanks."*
- *"I think people should understand because they need to be their own best advocate for what's going on with their body, and the only way you can do that is if you have knowledge of all that."*





**Impact of Pediatric Radiation Oncology with
Movie Induced Sedation Effect (PROMISE) on
Patient Movement and General Anesthesia
Use in Pediatric Radiation Therapy**

Jeffery T. Chapman, MS

University of Texas Southwestern Medical Center

Disclosure

- I have nothing to disclose
- Thank you to Wipe Out Kids Cancer for funding our upcoming phase II clinical trial
- Author list:
Jeffrey Chapman BS, Tsuicheng Chiu PhD, David Parsons PhD, Eric Chambers MBA, Yang K. Park PhD, Xuejun Gu PhD, Tu D Dan MD, Steve Jiang PhD, Kiran A Kumar MD MBA

Radiation Therapy for Children with Cancer

- Pediatric radiation therapy (RT) often requires daily anesthesia to ensure precise immobilization for safe and accurate treatment
 - Potential harm to the patient's health and quality of life
 - Significant logistical and financial burden

Is there a better way to help children stay still during their treatments?

PROMISE: Pediatric Radiation Oncology with Movie Induced Sedation Effect

- Interactive, incentive-based system
- Wireless video streaming to a screen directly in front of the patient
- Real-time video monitoring of patient motion
- Automatically stops the radiation beam and video if the patient moves outside of defined parameters





The Impact of PROMISE

- Estimated ~30% absolute reduction in need for daily general anesthesia in children 3-7 years old with PROMISE
- Anecdotally, significant improvement in patient & family quality of life
- Upcoming phase II clinical trial to safely reduce anesthesia use in children 3-11 through PROMISE



Special Thanks



Dr. Kumar



Dr. Jiang



Dr. Chiu



Development and Impact of a Virtual PSA Monitoring Clinic for Follow-up of Prostate Cancer Patients

Richard Boyajian, APRN, NP & Ashleigh Kowtoniuk PA-C

Dana-Farber/Brigham and Women's Cancer Center

Disclosure

- Employer: Brigham and Women's Hospital
- Funding: Brigham Care Redesign Incubator & Startup Program (BCRISP) grant
- Financial benefit: Potential royalties from VPCC DHP commercialization

- Author List:

R. Boyajian^{1,2}, W. J. Gordon³, A. M. Kowtoniuk^{1,2}, K. R. Boyajian², M. Mackin³, N. E. Martin⁴, P. F. Orio III⁵, G. P. Walsh⁶, and P. L. Nguyen⁷; ¹Dana Farber/Brigham and Women's Cancer Center, Boston, MA, ²Brigham and Women's Department of Radiation Oncology, Boston, MA, ³Brigham and Women's Hospital, Boston, MA, ⁴Department of Radiation Oncology, Brigham and Women's Hospital, Dana Farber Cancer Institute and Harvard Medical School, Boston, MA, ⁵Department of Radiation Oncology, Brigham and Women's Hospital and Dana-Farber Cancer Institute, Boston, MA, ⁶Brigham and Women's Physician Organization, Boston, MD, ⁷Brigham and Women's Hospital/Dana-Farber Cancer Institute, Boston, MA

Background

2021 estimated 248,530 will be diagnosed ¹



15 yr relative Survival rate is 95% ²

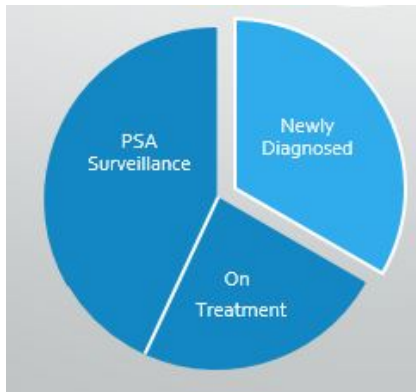
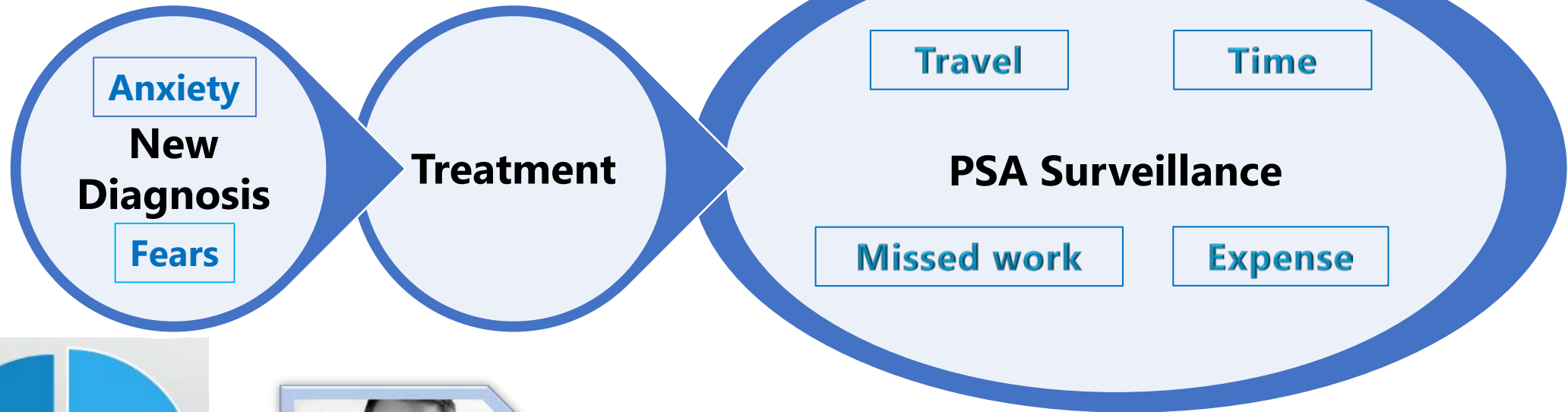
2021 estimated > 3,100,000 living with ¹

Prostate Cancer

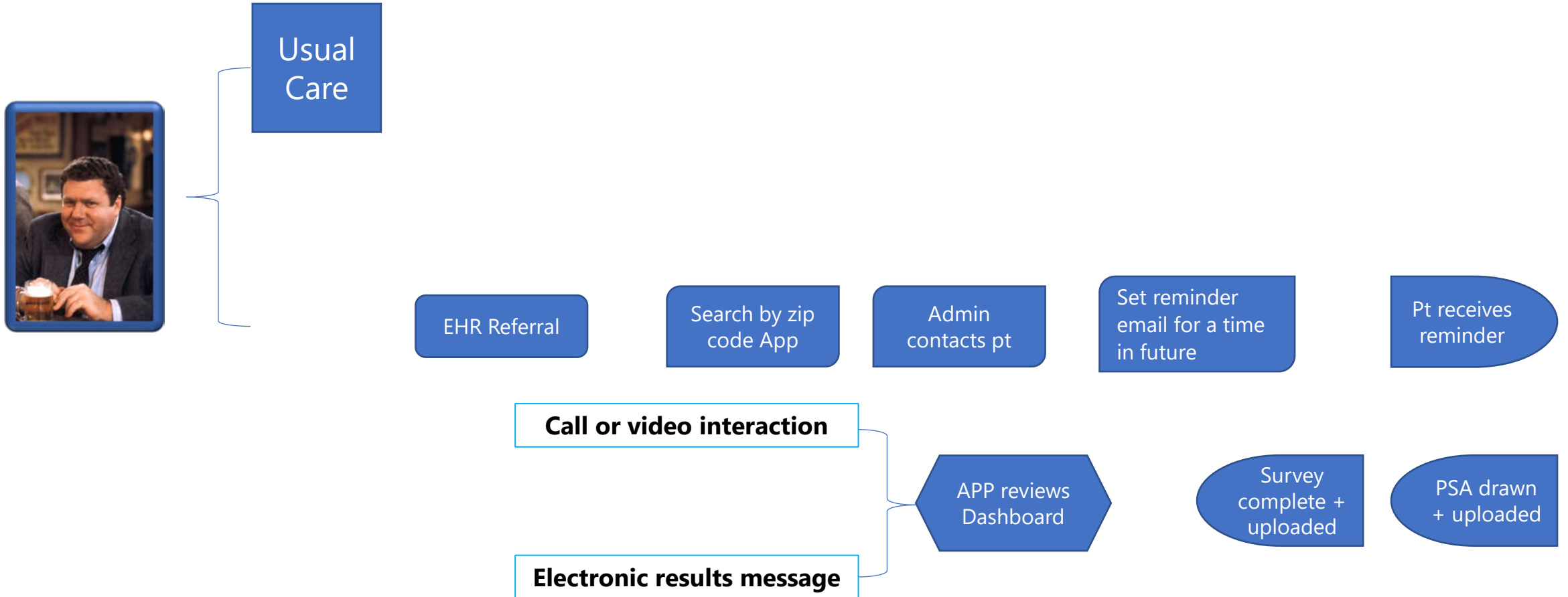
1. American Cancer Society, *Cancer Facts & Figures 2021*

2. <https://www.hopkinsmedicine.org/health/conditions-and-diseases/prostate-cancer/prostate-cancer-prognos>

Background



Virtual Prostate Cancer Clinic (VPCC)



VPCC Digital Health Platform was designed based on evidence-based standards of care

VPCC Labs

https://batchgeo.com/map/30ff75e4d6f77d18c3a45e59566a9ed3

VPCC Labs

03053

03053 Zip

North Shore Physician Group
1 Widger Rd Marblehead MA 01945
10.03 miles away

Salem Hospital- Lab & Vascular Services Building (Mon-Sat)
57 Highland Avenue Salem MA 01970
10.22 miles away

North Shore Physician Group
2 Essex Center Drive Peabody MA 01960
11.25 miles away

MGH-NSMC for Outpatient Care-Suite LL01
104 Endicott St Danvers MA 01923
12.23 miles away

MGH/NSMC for Outpatient Care
104 Endicott St Danvers MA 01923
12.23 miles away

NSMC Outpatient Services
1 Hutchinson Dr Danvers MA 01923
12.46 miles away

NWH Walk-in Service
9 Hope Ave Waltham MA 02453
13.56 miles away

Newton-Wellesley Hospital (Mon-Fri + Sat-Sun)
2014 Washington St Newton MA 02462
13.76 miles away

DF/BWHCC at South Shore Hospital
101 Columbian Street South Weymouth MA 02190
13.81 miles away

NW Patient Service Center (Mon-Fri-closed 1:00-1:30PM)-First Floor

Map Satellite

Keyboard shortcuts | Map data ©2021 Google | 20 mi | Terms of Use

Contact map owner

MGB Affiliate | a. BWH | b. MGH | c. NSMC | d. DF | e. NWH | f. CDH | Others

5:21 PM 10/19/2021

Hello, Mr. -----,

Our records show that you are due for a repeat PSA in October 2021. After receiving treatment for prostate cancer, your PSA needs to be monitored on a regular basis. This is done to ensure that your prostate cancer has not returned.

Step 1 - Visit a lab for your PSA blood work

The lab you had chosen during enrollment is:
BWH/MGH Health Care Center at Foxborough
20 Patriot Place Foxborough, MA 02035

An electronic lab order has been entered for you. Lab results from this facility are automatically linked to our medical record system. Our VPCC team will have access to the lab results when they are ready.

If the lab listed above is no longer your preferred lab, you're welcome to visit any Mass General Brigham lab, and the electronic lab order will still work. If you need to visit a lab outside the Mass General Brigham network, let us know, so we can send you a new lab order.

Step 2 - Update us about your symptoms

Tell us about your symptoms by filling out the survey here:
[Symptom Survey](#)

Please complete the survey to help us better understand any symptoms you may be experiencing.

Step 3 - Review your results

When we have the results of your PSA and symptom survey, we will contact you to review the information.

Please contact our office directly with any questions or concerns.

Thank you,
Virtual Prostate Cancer Clinic (VPCC)

Phone: 617-525-8431
Fax: 617-394-2692
Email: VPSAM@partners.org

October 26, 2021

Hello -----,

We hope you are well. It has been 36 months since you completed your radiation therapy.

Your most recent PSA continues to show no sign of cancer. If your PSA stays below 2.0, we would not be concerned about any cancer recurrence.

PSA RESULT in the EHR IS PULLED INTO MESSAGE

If you would like to speak with a clinician about your PSA or radiation-related symptoms (particularly any blood in your stool or urine), please call our office or schedule an appointment online using patient gateway.

To schedule your appointment online, log in to your Patient Gateway account [here](#) and select 'Schedule an Appointment' under the menu button. Simply follow the prompts to find a date and time that is convenient for you. If you have not had an appointment with Richard Boyajian NP and Ashleigh Kowtoniuk PA-C in the past, you will not be able to self-schedule this appointment. If this is the case, please call our office to schedule.

After completing treatment, we must continue to regularly check your PSA levels (Prostate-Specific Antigen). We do this to ensure your prostate cancer has not returned. It is also important to monitor for any radiation-related symptoms. Your current symptom survey indicates that you are not experiencing any significant symptoms.

Your next check-in is due in April 2022. We have placed an order in the system so you can go to your MGB lab. We will send you a reminder email for your next check-in prompting you to get your next PSA.

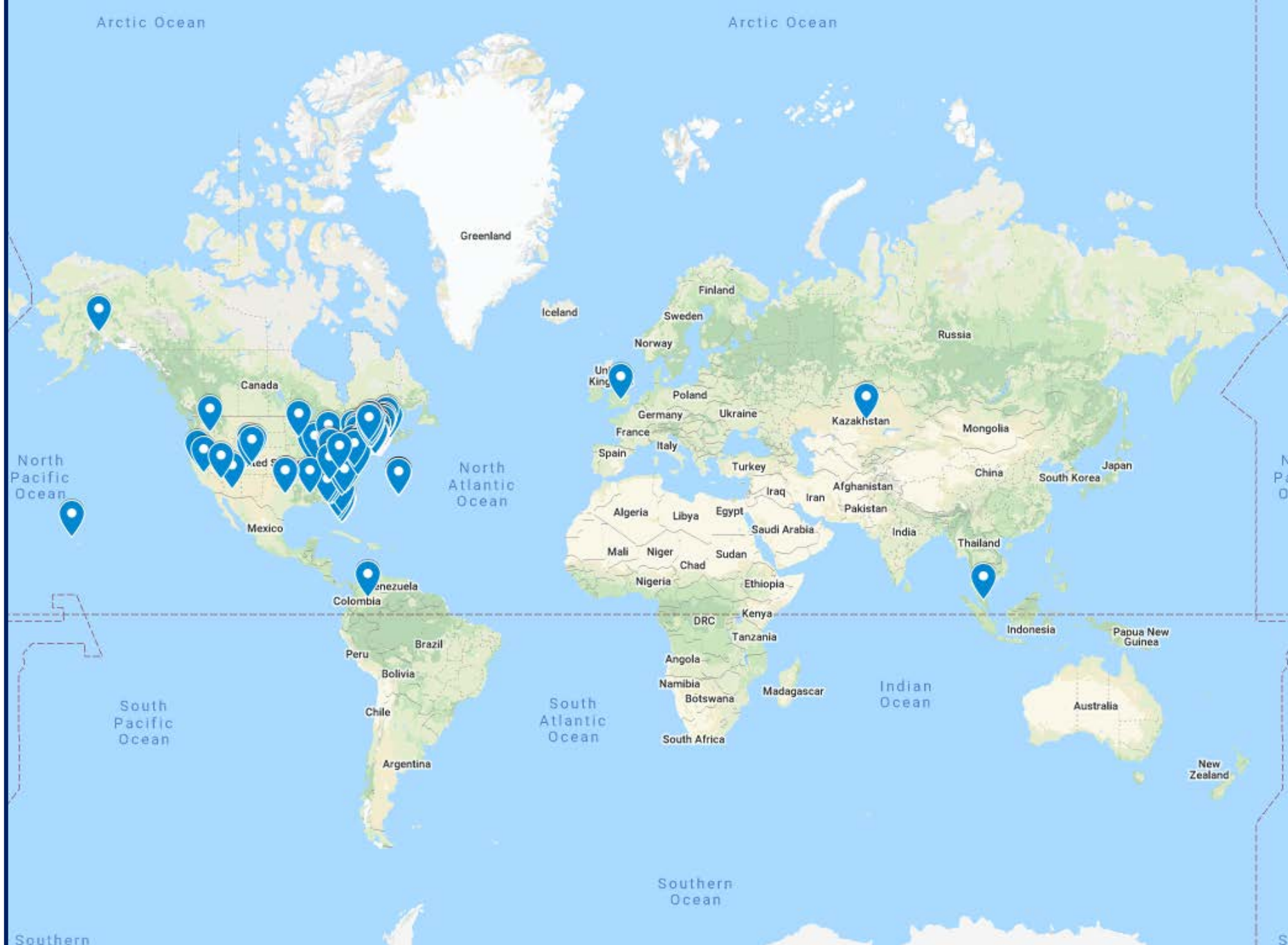
If you have any questions or concerns please call our office at (617) 525-8431.

Thank you,

Richard N. Boyajian, NP
Virtual Prostate Cancer Clinic
Brigham & Women's Hospital
Department of Radiation Oncology
Office: 617-525-8431
Fax: 617-394-2692

Virtual Care Misconceptions

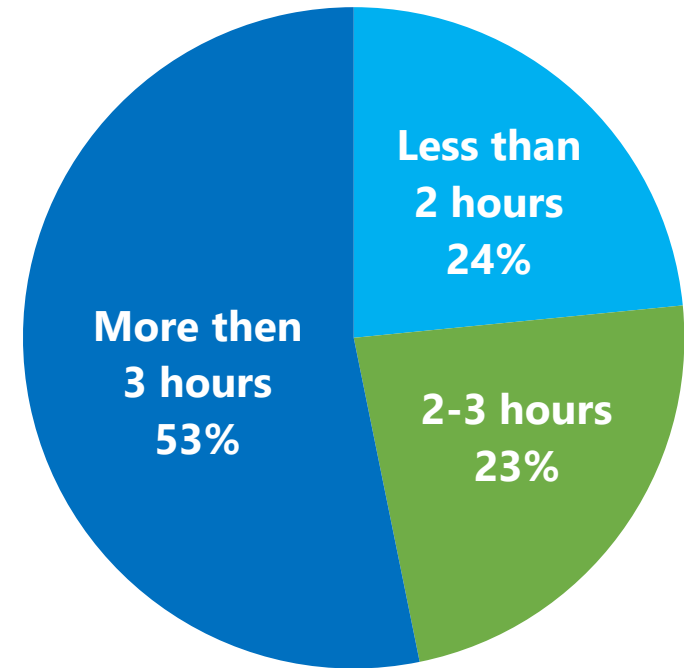
- Too many in healthcare fall victim to maintaining a **one : one** relationship between in person & virtual visits.
- Transfer 1 in person visit to 1 virtual visit.
- Not a long-term solution to the healthcare provider shortage
- Healthcare needs to understand the benefit of the **One : Many** relationship
- Score patients on **urgency of need**
- **Higher needs** require a provider visit
- **Lower needs** first contact is electronic to report their “normal” results.
- This approach allows a small number of provider to manage a larger patient population, while still ensuring the entire population receives the care they need



Patient Impact

1,505 surveys completed by 636 unique pts, ~45% response rate.

- **Access:** Compared to Pre-VPCC (FY15)...
 - By FY2019, consults had more than doubled, **109.74%** because the doctors had more time
 - By FY2019, we have treated **79.3%** more pts with prostate cancer
- **Convenience:** 92% of patients saved time overall



Amount of Time Saved
N=1,408

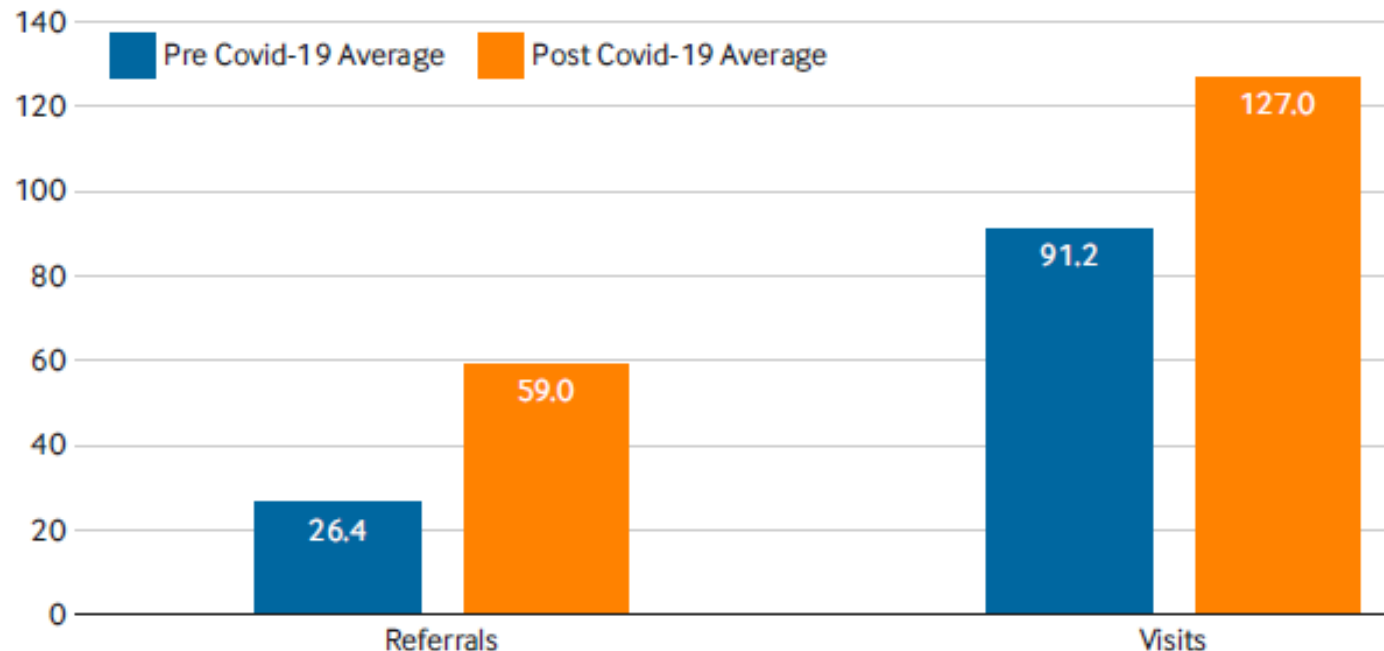
- **Patient Impact** 1,505 surveys completed by 636 unique pts, ~45% response rate.

- **Satisfaction:** 94% of patients were comfortable with this form of monitoring
- **Stay Connected:** 95.1% reported, it was important to have **DF/BWCC team** monitoring as opposed to outside providers
- **Financial savings:** 87.3% reported reduced out-of-pocket expenses
- >90% reported that VPCC made their health care
 - **easier and more flexible & convenient**
 - **met their medical needs**
 - **reduced travel-related stress**
 - **receive PSA results in a timely manner, and**
 - **pts were comfortable with this form of monitoring**

Patient Impact

1,505 surveys completed by 636 unique pts, ~45% response rate.

Access: The number of virtual follow up increased steadily each year, with a spike in FY2019 due to COVID-19



During the pandemic, the VPCC allowed for very rapid switching of patients from in-person follow-ups to virtual monitoring



Site-specific Education Using Digital Media to Improve Patients' Understanding of the Radiotherapy Trajectory: An Interventional Study

Hussain Almerdhemah, B.App.Sc-RT
King Faisal Specialist Hospital and Research Centre

Disclosure



مستشفى الملك فيصل التخصصي ومركز الأبحاث
King Faisal Specialist Hospital & Research Centre
مؤسسة عامة Gen. Org.

- Disclosure: I have no conflicts of interest to disclose.

Author list:

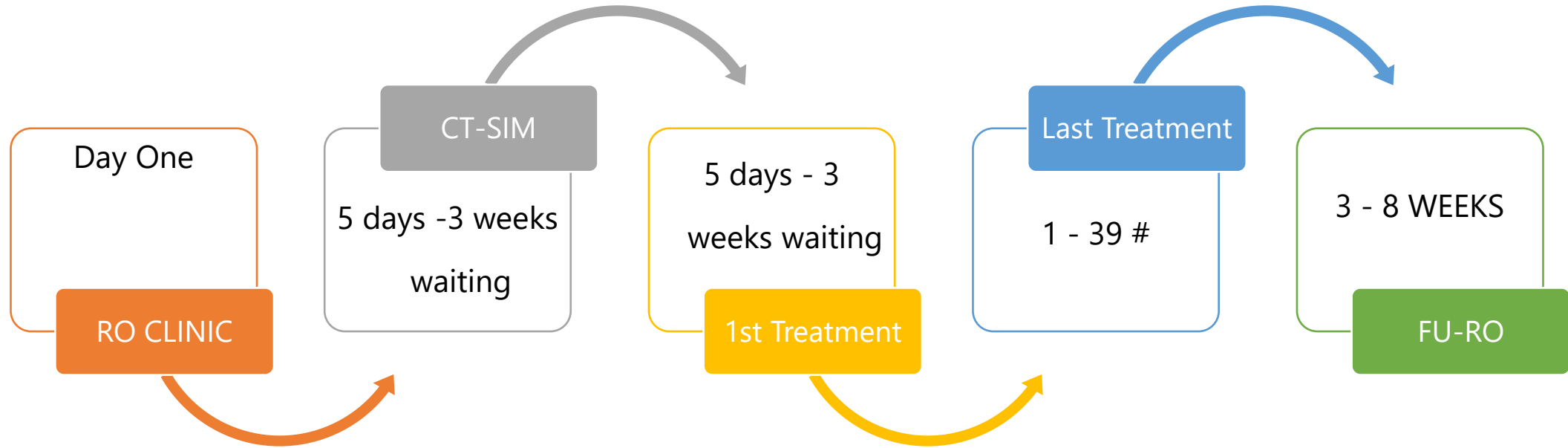
- H. Almerdhemah¹, Z. Mulla¹, H. M. Muamenah¹, A. Weber¹, T. Boubakra¹, H. Taha¹, H. Habibullah¹, B. Albeirouti¹, and A. M. Ahmed^{1,2}; ¹*King Faisal Specialist Hospital and Research Centre, Jeddah, Saudi Arabia*, ²*Department of Clinical Oncology, Sohag University Hospital, Sohag, Egypt*

Background

- Access to radiation therapy in Saudi Arabia has grown extensively over the past decade
- Patients receive education at the time of diagnosis, but providers noticed that much of the information was not digested or retained
- Not many Arabic speaking centers use digital media for site-specific information on radiation therapy
- **How can providers increase patients' and families' knowledge about radiation treatments?**



The Patient's Journey



MIND THE GAP!

Impact of COVID-19



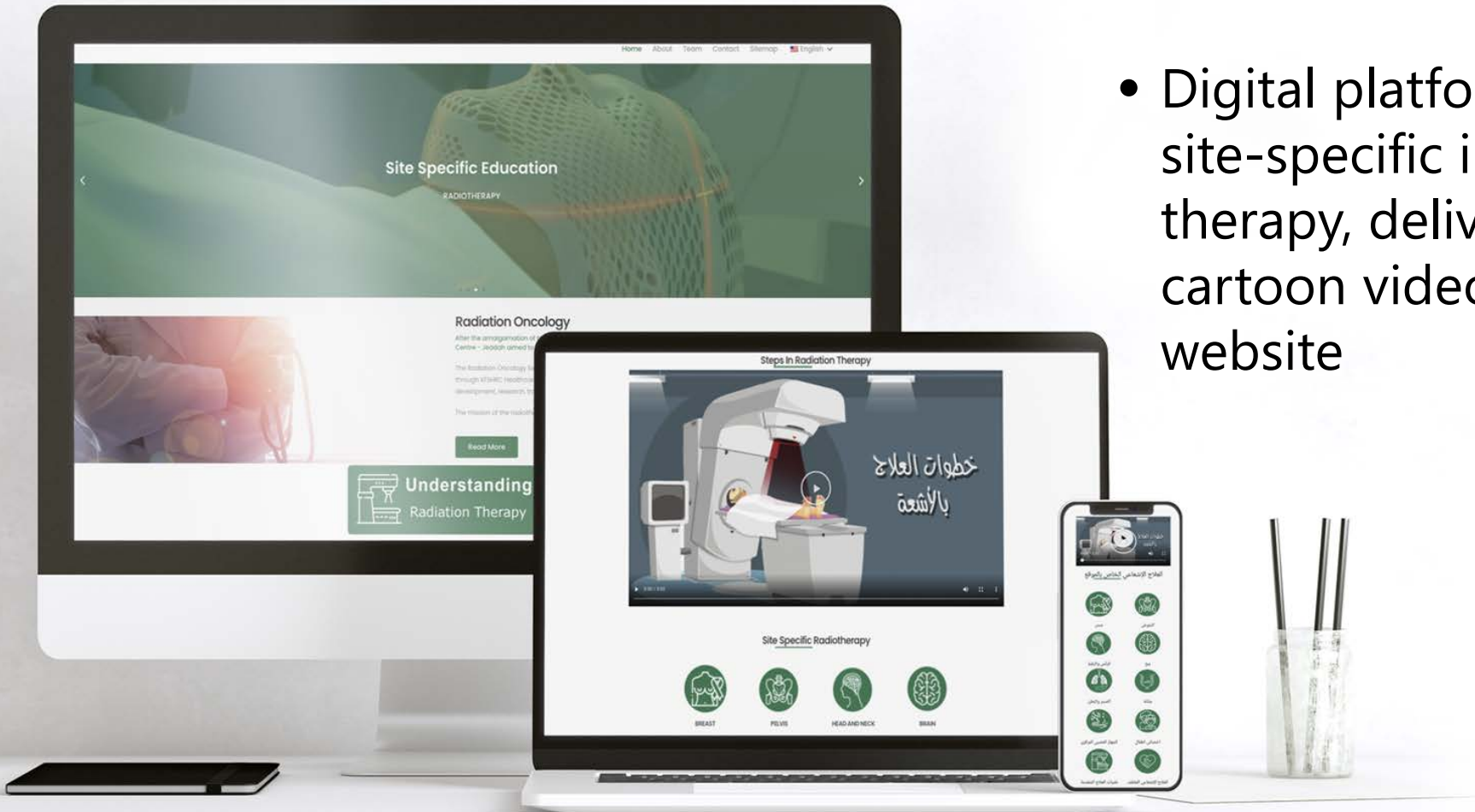
REDUCING HOSPITAL VISIT



MODERN COMMUNICATION
TECHNOLOGY

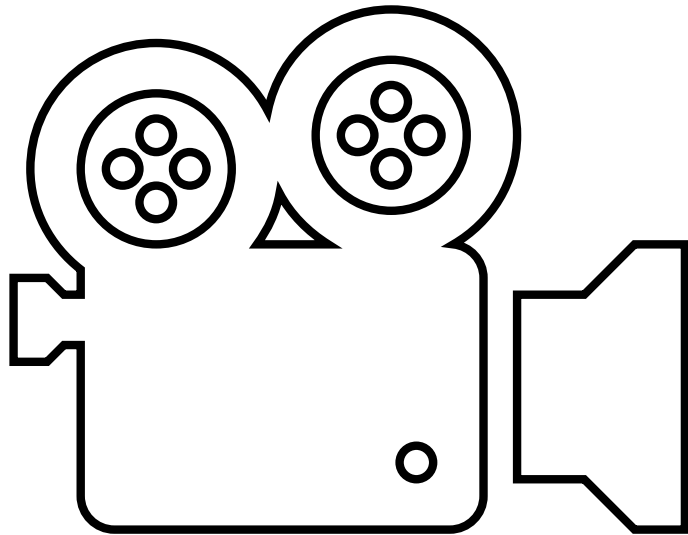
Role for Digital Media

Site-Specific Education on Radiation Therapy



- Digital platform with general and site-specific information on radiation therapy, delivered via animated cartoon videos and a patient-friendly website

One Generic Animated Video



(4 min. length)

Introduction to radiation therapy for cancer treatment

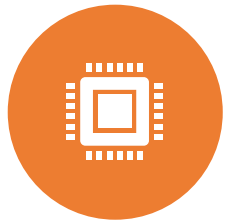
Steps involved in radiation therapy

Concise overview of patient's trajectory from referral to end of RT and follow-up



Site-specific Digital Media

- 3-to-4-minute animated videos and infographic information



CT-SIMULATION



RT TREATMENT
PROCEDURES



SITE-SPECIFIC
PREPARATION



PRE- & POST-
RT MEASURES



PRECAUTIONS

Site Specific Radiotherapy



BREAST



PELVIS



HEAD AND NECK



BRAIN



CHEST AND ABDOMEN



BLADDER



CNS



PEDIATRIC



ADVANCED TREATMENT
TECHNIQUES

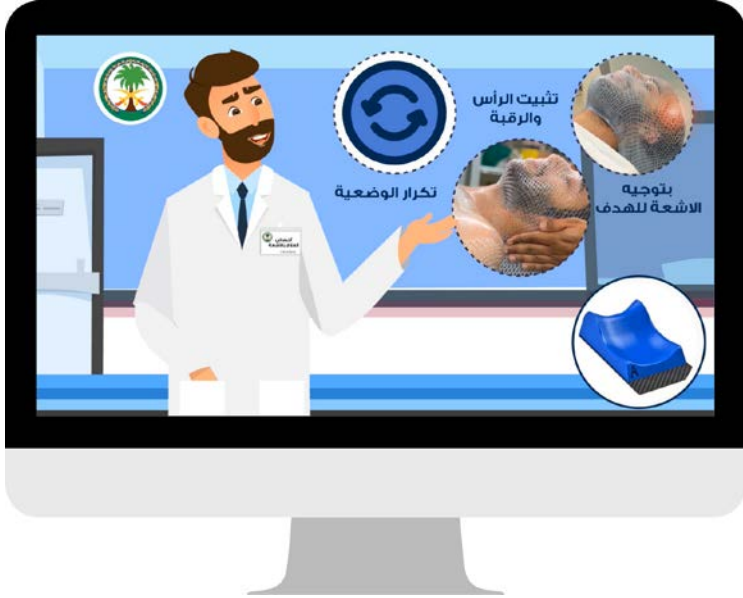


PALLIATIVE
RADIO THERAPY

Thermoplastic Mask Formation



Bladder and Bowel Preparation



Mouth Care during Radiotherapy

عزيزي المريض:

العلاج الإشعاعي لمنطقة الرأس والعنق قد يصاحب بعض الأعراض الجانبية المحتملة، ولكنها تختلف في الشدة من مريض إلى آخر بناءً على:

- 1 المنطقة المعالجة ومكانها.
- 2 جرعة الإشعاع المقررة لكل مريض.

علمًا بأن بعض هذه الأعراض الجانبية قد تبدأ بعد ما يقارب ١٠ أيام من العلاج الإشعاعي، وتستمر إلى ما بعد جلسات العلاج بأسابيع.

الإسهال:

قد يشعر بعض المرضى بتقلصات أو ألم في البطن أو الحوض؛ وذلك لأن غشاء المعدة والأمعاء حساس للعلاج الإشعاعي، مما قد يؤدي إلى الإسهال

في حالة الإسهال تناول
(أطعمة منخفضة الألياف والدهون):

- 1 الخبز الأبيض.
- 2 البطاطا مسلوقة أو مشوية.
- 3 اللحوم، والدجاج، والأسماك مشوية أو مسلوقة.
- 4 الأرز والمكرونات.
- 5 الشوربة مثل شوربة الأرز ومرق اللحم أو الدجاج.
- 6 الموز، والجزر.

الأعراض الجانبية المحتملة للعلاج الإشعاعي لمنطقة الدماغ

الأعراض الجانبية المحتملة للعلاج الإشعاعي لمنطقة الدماغ:

- 1 تغيرات في الجلد وفروة الرأس.
- 2 تساقط الشعر.
- 3 الكسل والخمول "الإحساس بالنعاس".
- 4 فقدان الشهية أو الاستفراغ.
- 5 الصداع.

Patient Impact

- Of the 14 dimensions explored, 8 were observed to have remarkable improvement
- Increased understanding and confidence score UCS.
- Gains were especially pronounced for specific dimensions, such as:
 - What to expect with radiotherapy
 - The purpose of pre-treatment tattoo marks
 - Reasons for daily or weekly imaging

Example: Understanding the purpose of the tattoo

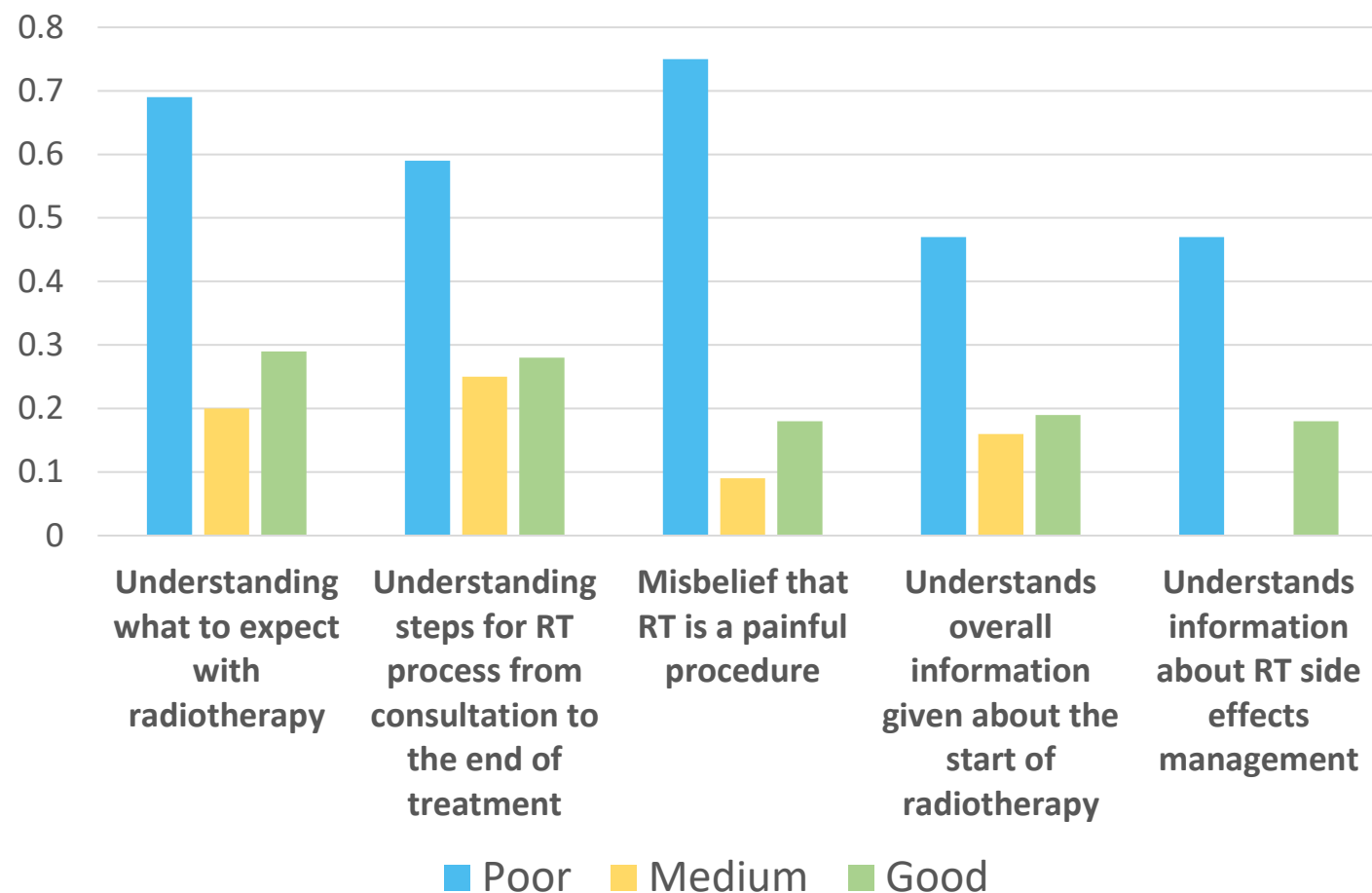
- Mean knowledge improved by ~ 0.5 out of 1 as an effect of the intervention.



Reading ability

- By analyzing each dimension separately, we observed significant associations of reading ability across five dimensions

Pre- to post-intervention change in mean score by level of reading ability



Conclusions

- The use of digital educational material in radiation oncology meets an urgent need for concise and site-specific patient education, while sparing extra hospital visits to meet with education coordinators
- Further studies are needed to assess the clinical and long-term effectiveness of this educational material



Expert Perspective

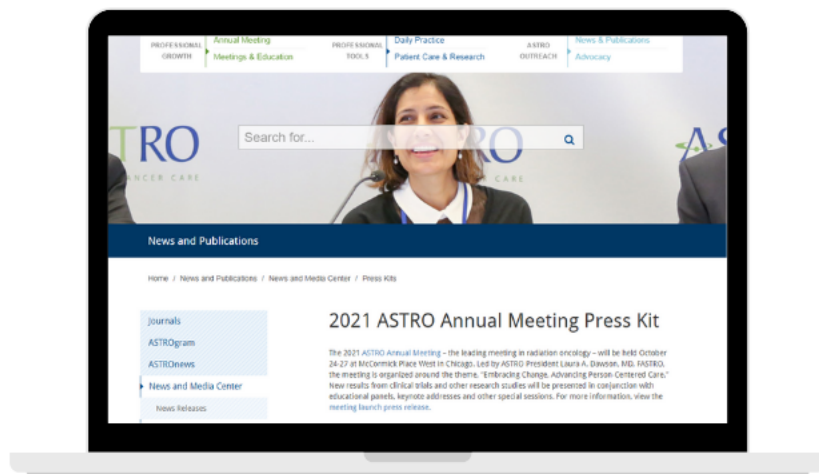
Laura A. Dawson, MD, FASTRO

*Princess Margaret Cancer Center
Chair, ASTRO Board of Directors*



Question & Answer

Please submit your questions in the chat.



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[#ASTRO21](https://twitter.com/astro)