Urologic Telehealth: Substitution or Expansion?

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2. University of Michigan Medical School
3. Institute for Healthcare Policy and Innovation

Abstract ID: MP02-15
Background

What is a video visit?

Real-time, audio and visual interaction between patient and provider

Who was using video visits?

Established patients + commercial insurance* + physically in Michigan

Physical exam less likely to impact decision making
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**Methods**

**Timeline:** July 2016 to Feb 2020

- **Established patients**
  - Scheduled for 15 min return visits
  - 13 urology providers

- 600 completed video visit appointments

- Stratified, random sample of 600 completed clinic appointments

**Questions to answer**

- Are there characteristics that differ for patients who chose to have video visits?

- What types of diagnoses were managed with telehealth?

- Did these visits substitute in-person encounters? Or did patients have to come back to clinic or the emergency department?
## Results

### Demographic characteristics

<table>
<thead>
<tr>
<th></th>
<th>Video visits</th>
<th>Clinic visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, yrs</td>
<td>51 (36 – 62)</td>
<td>61 (45 – 71)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>382 (64%)</td>
<td>434 (72%)</td>
</tr>
<tr>
<td>Female</td>
<td>218 (36%)</td>
<td>166 (28%)</td>
</tr>
<tr>
<td>Insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial</td>
<td>487 (81.2%)</td>
<td>328 (54.7%)</td>
</tr>
<tr>
<td>Medicare</td>
<td>81 (13.5%)</td>
<td>166 (27.7%)</td>
</tr>
<tr>
<td>Medicare</td>
<td>14 (2.3%)</td>
<td>64 (10.7%)</td>
</tr>
<tr>
<td>Advantage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicaid</td>
<td>10 (1.7%)</td>
<td>37 (6.2%)</td>
</tr>
</tbody>
</table>

### Socioeconomic characteristics

<table>
<thead>
<tr>
<th></th>
<th>Video visits</th>
<th>Clinic visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hometown</td>
<td>53,237 (39,000 – 68,403)</td>
<td>54,722 (37,037 – 63,876)</td>
</tr>
<tr>
<td>Income, $</td>
<td>p = 0.53</td>
<td>p &lt; 0.0001</td>
</tr>
<tr>
<td>Round-trip</td>
<td>82 (36 – 228, 1548)</td>
<td>68 (34 – 128, 3686)</td>
</tr>
<tr>
<td>Distance, mi</td>
<td>p &lt; 0.0001</td>
<td>p &lt; 0.0001</td>
</tr>
</tbody>
</table>

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Results

Proportion of visits by diagnostic group

<table>
<thead>
<tr>
<th>Diagnostic Group</th>
<th>Clinic</th>
<th>Video</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrology</td>
<td>14.3%</td>
<td>11.3%</td>
</tr>
<tr>
<td>PVR/PSA</td>
<td>5.0%</td>
<td>4.2%</td>
</tr>
<tr>
<td>GU pain</td>
<td>3.5%</td>
<td>2.8%</td>
</tr>
<tr>
<td>General urology</td>
<td>12.2%</td>
<td>12.2%</td>
</tr>
<tr>
<td>Imaging findings</td>
<td>3.3%</td>
<td>2.8%</td>
</tr>
<tr>
<td>LUTS</td>
<td>16.5%</td>
<td>9.2%</td>
</tr>
<tr>
<td>Nephrolithiasis</td>
<td>28.7%</td>
<td>28.7%</td>
</tr>
<tr>
<td>Oncology</td>
<td>17.5%</td>
<td>18.0%</td>
</tr>
<tr>
<td>Other</td>
<td>2.0%</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

Proportion of post-operative visits

<table>
<thead>
<tr>
<th></th>
<th>Video visits</th>
<th>Clinic visits</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-op Visits</td>
<td>144 (19%)</td>
<td>113 (18.8%)</td>
<td>0.94</td>
</tr>
</tbody>
</table>

Number of revisits within 30-days of initial encounter

- Video visit: 3
- Clinic visit: 4

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Discussion

Pre-COVID

Younger, commercially insured patients who would have traveled greater distances for care

<1% required in-person evaluation within 30 days, similar to clinic visits. There were no ED visits or unexpected hospitalizations.

Evaluate telehealth now to plan for post-pandemic use
The utilization of eConsults in Urology

Adam J. Gadzinski, MD, MS
Department of Urology, University of Washington Medical Center
Disclosures

- None
Interprofessional consultation: “eConsults”

- Asynchronous form of telehealth whereby a primary care provider requests electronic consultation with a specialist to replace a clinic visit
- Used in successfully by other medical specialties
- Their use for urologic consultation is relatively unknown
Overview

Objective

- Characterize the current use of eConsults in urology
  - What diagnoses are addressed?
  - Completion rates and urologist time investment?

Approach

- Retrospective review of multi-institutional eConsult database
- University of Washington, University of Michigan, University of California – San Francisco, Montefiore Health System
eConsult example

“What are next steps in work-up of microscopic hematuria intermittent for almost 2 years now?”

“Enlarging renal cyst found incidentally. How likely is this to be benign? Does it need follow-up?”

Urologist reviews consult question and medical record

In person evaluation (e.g., cystoscopy)

“Converted”

“Resolved”

eConsult note to referring provider w/ recommendations
Results

- 462 eConsults reviewed from 2017-2019
  - 36% Converted to in-person consultation
  - 64% Resolved with no appointment needed
- Urologist completion time (available data n = 283)
  - 50% completed by urologist in 1-10 minutes
  - 47% completed in 11-20 minutes
- Time to response (available data n = 119)
  - 83% eConsults addressed in 1 day or less
### Distribution of eConsult diagnoses

#### Total (N = 462)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renal mass/cyst</td>
<td>12.1%</td>
</tr>
<tr>
<td>Hematuria</td>
<td>15.6%</td>
</tr>
<tr>
<td>UTI</td>
<td>7.8%</td>
</tr>
<tr>
<td>BPH/LUTS</td>
<td>14.5%</td>
</tr>
<tr>
<td>Andrology/Infertility</td>
<td>18.9%</td>
</tr>
<tr>
<td>Nephrolithiasis/Hydronephrosis</td>
<td>11.2%</td>
</tr>
<tr>
<td>Elevated PSA/Prostate cancer</td>
<td>12.8%</td>
</tr>
<tr>
<td>Other</td>
<td>7.1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

#### Converted (N = 156*)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renal mass/cyst</td>
<td>4.5%</td>
</tr>
<tr>
<td>Hematuria</td>
<td>25.6%</td>
</tr>
<tr>
<td>UTI</td>
<td>6.4%</td>
</tr>
<tr>
<td>BPH/LUTS</td>
<td>14.7%</td>
</tr>
<tr>
<td>Andrology/Infertility</td>
<td>12.8%</td>
</tr>
<tr>
<td>Nephrolithiasis/Hydronephrosis</td>
<td>14.7%</td>
</tr>
<tr>
<td>Elevated PSA/Prostate cancer</td>
<td>12.6%</td>
</tr>
<tr>
<td>Other</td>
<td>15%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

#### Resolved (N = 260*)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renal mass/cyst</td>
<td>10%</td>
</tr>
<tr>
<td>Hematuria</td>
<td>7.7%</td>
</tr>
<tr>
<td>UTI</td>
<td>10%</td>
</tr>
<tr>
<td>BPH/LUTS</td>
<td>13.8%</td>
</tr>
<tr>
<td>Andrology/Infertility</td>
<td>23.1%</td>
</tr>
<tr>
<td>Nephrolithiasis/Hydronephrosis</td>
<td>11.5%</td>
</tr>
<tr>
<td>Elevated PSA/Prostate cancer</td>
<td>11%</td>
</tr>
<tr>
<td>Other</td>
<td>15%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Converted & resolved eConsults by institution
Conclusions

• eConsults are a feasible alternative for many urological diagnoses

• Rapid completion and response times

• Future work on impact of healthcare costs and access to urologic care
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W

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UNIVERSITY OF MICHIGAN

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San Francisco

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Anobel Odisho, MD, MPH

Montefiore
HEALTH SYSTEM

Kara Watts, MD
An Evaluation of Misinformation of Erectile Dysfunction Following Radical Prostatectomy on YouTube

Zeyad Schwen MD

Co-Authors: Michael J. Biles, Ridwan Alam, Hiten D. Patel, Christian P. Pavlovich

@ZSchwen @cpavmd @MichaelBiles @Ridwantweets @HitenDPatel @brady_urology
YouTube Videos Often Mislead on Prostate Cancer
— Misinformation, bias, and lack of balance in content

by Charles Bankhead, Senior Editor, MedPage Today November 28, 2018

**Science News**

Reliance on 'YouTube medicine' may be dangerous for those concerned about prostate cancer

By Shaker Hallin - 28th November 2018

Study: The More Popular the Health-Related YouTube Video, the More Likely It Is to Be Inaccurate

Published: Dec 14, 2018 | By Mark Terry
Dissemination of Misinformative and Biased Information about Prostate Cancer on YouTube

Stacy Loeb, Shomik Sengupta, Mohit Butaney, Joseph N. Macaluso Jr., Stefan W. Czarniecki, Rebecca Robbins, R. Scott Braithwaite, Lingshan Gao, Nataliya Byrne, Dawn Walter, Aisha Langford

Department of Urology, New York University, New York, NY, USA; Department of Population Health, New York University, New York, NY, USA; Manhattan VA Medical Center, New York, NY, USA; Eastern Health Clinical School, Monash University, Box Hill, Australia; Royal College of Surgeons in Ireland, Dublin, Ireland; LSU Health Center, Department of Urology at LSU Health Foundation, New Orleans, LA, USA; MSK Clinic, Prostate Cancer Center, Warsaw, Poland

Substantial utilization of Facebook, Twitter, YouTube, and Instagram in the prostate cancer community


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A Content Analysis of YouTube™ Videos Related to Prostate Cancer

Corey H. Basch, EdD, MPH, Anthony Menafro, BS, Jennifer Mongioli, MS, Grace Clarke Hillyer, EdD, MPH, and Charles E. Basch, PhD

Research Correspondence

Racial disparities and online health information: YouTube and prostate cancer clinical trials
Dissemination of Misinformative and Biased Information about Prostate Cancer on YouTube

Stacy Loeb\textsuperscript{a,b,c,*}, Shomik Sengupta\textsuperscript{d}, Mohit Butaney\textsuperscript{e}, Joseph N. Macaluso Jr.\textsuperscript{f}, Stefan W. Czarniecki\textsuperscript{g}, Rebecca Robbins\textsuperscript{h}, R. Scott Braithwaite\textsuperscript{i}, Lingshan Gao\textsuperscript{a}, Nataliya Byrne\textsuperscript{a,b,c}, Dawn Walter\textsuperscript{a,b,c}, Aisha Langford\textsuperscript{b}

\textsuperscript{a} Department of Urology, New York University, New York, NY, USA; \textsuperscript{b} Department of Population Health, New York University, New York, NY, USA; \textsuperscript{c} Manhattan VA Medical Center, New York, NY, USA; \textsuperscript{d} Eastern Health Clinical School, Monash University, Box Hill, Australia; \textsuperscript{e} Royal College of Surgeons in Ireland, Dublin, Ireland; \textsuperscript{f} LSU Health Center, Department of Urology \& LSU Health Foundation, New Orleans, LA, USA; \textsuperscript{g} HIFU Clinic, Prostate Cancer Center, Warsaw, Poland

- 77\% of all videos contained biased or misrepresented content, reaching >6 million viewers.

- There was a negative correlation between scientific quality and viewer engagement (for both views and ‘thumbs up’).
• Also a source of misinformation for:

– Transrectal biopsy of the prostate
– Prostate cancer screening
– Prostate cancer racial disparities and clinical trials
Prostate Cancer Social Media

- Still, YouTube and other social media platforms are popular sources of prostate cancer information used by patients.

  YouTube: >500 videos, with a total of 43,966,634 views

  Facebook: 99 groups, 31,262 members

  Twitter: 110,971 tweets on #ProstateCancer with 544 million impressions

Struck JP et al. World J Urol. 2018
Prostate Cancer Misinformation

• Patient misinformation affects treatment decisions

• Influences shared decision-making

• Influences patient treatment expectations
Post-Radical Prostatectomy Erectile Dysfunction

- Erectile dysfunction (ED) is an adverse effect of radical prostatectomy for prostate cancer
  - Rates of ED vary widely
  - Based on a number of patient factors

- Can negatively impact patients' quality of life post-treatment

Post-Radical Prostatectomy ED Counseling

- Preservation and recovery of erectile function based on:
  - Patient comorbidities
  - Pre-treatment erectile function
  - Surgical factors
    - Nerve-sparing technique
  - Extent of cancer burden

Post-Radical Prostatectomy ED Counseling

- Gradual recovery of erectile function
  - up to 18-24 months

- May not reach pre-RP baseline

- Many will require treatment
  - PDE-5i, ICI, vacuum devices, or penile prosthesis

1. Walsh PC, & Burnett, A. L. *Urology* 2000
Purpose

• We sought to characterize the content and quality of resources available to patients on YouTube regarding erectile dysfunction (ED) following radical prostatectomy (RP)

• Inclusion of important counseling points

• Comparisons between quality, video content, and dissemination
Methods

• Performed a evaluation of the first 100 YouTube videos
  – Used the search criteria “radical prostatectomy” and “erectile dysfunction”
Methods

• For each video we evaluated:
  – Source and origin of the video
  – Viewer engagement, dissemination
  – Content
    • Accuracy of information
    • Addressing counseling points
    • Quality of content using the DISCERN score
DISCERN

• Validated scoring tool to evaluate the quality of consumer health information
• 16-questions, each scored 1-5 (out of 80 points total)
Results

• 19 videos were excluded due to a lack of relevance to either ED or RP
  – 81 videos for analysis
• Compiled a total of 529,428 views, 2,111👍, 175👎
• Median 1,635 views, 5👍, and 1👎
Sources of YouTube Videos

- Hospital Systems or Practices: 44%
- Advocacy Groups: 12%
- Industry Sponsored: 30%
- MDs on YouTube: 10%
- Other: 4%
Sources of YouTube Videos

- 2/3rds featured a MD
  - Mostly a urologist (58%)
- 44% promoting their practice or institution
Content Quality

• A total of 34 false claims were noted in 20% of videos (16/81)
Best of False Statements

- “No side effects of radical prostatectomy”
- “Robotic surgery lets you see all the nerves”
- “Kegel exercises improve ED”
- “Amniotic membrane prevents ED in 96% of patients”
- “Coffee irritates the new anastomosis”
Counseling Points

- Quote expected rate of ED: **12.3%**
  - Reported rates of ED varied between 10% and 100%
- Risk factors for ED after RP: **23%**
- “Nerve sparing”: **28%**
- Delayed recovery of erections: **17%**
- Discuss possible need for treatments: **35%**
• 29 (IQR 21-40) out of a maximum score of 80
  – Overall quality questions: low (median 2 out of 5)
  – Unbiased and balanced: low (median 2 out of 5)
  – Shared decision making: low (median 1 out of 5)

• No association between DISCERN score and false statements, source of video, or number of views
Limitations

• Did not review all YouTube videos (only first 100)

• Inter-observer variability, subjectivity of DISCERN score

• Did not evaluate other social media platforms
Conclusion

- The quality of YouTube videos regarding ED after radical prostatectomy was low
  - High rate of false or misleading information
    - Reached over half a million viewers
  - Low rates of appropriate counseling education
Conclusion

• Misinformation may have negative implications for patient expectations and shared decision-making
Thank you

• Questions?

• Follow us on Twitter!

@ZSchwen
@CPavmd
@MichaelBiles
@Ridwantweets
@HitenDPatel
@brady_urology
References


• Borno HT, Loeb S. Racial disparities and online health information: YouTube and prostate cancer clinical trials. BJU Int. 2020 Apr 10.


Fake News About Prostate Cancer: Distinguishing Language Patterns in Misinformative Online Videos

Verónica Pérez-Rosas, Ashkan Kazemi, Rada Mihalcea, Rui Hou, Nataliya Byrne, and Stacy Loeb

From the University of Michigan, New York University and the Manhattan Veterans Affairs
Dissemination of misinformation through social media is a major societal issue.

YouTube: most popular social media platform in U.S.

Many top YouTube videos about prostate cancer are biased and/or misinformative

It is not logistically feasible for experts to manually review the all health content on YouTube
Objective

• To develop automated solutions for identification of misinformation
Methods

• Used 354 PCa publications in PubMed Central to build PCa language model
• Compared language in 250 YouTube video transcripts versus language model using perplexity (a measure of language fit)
• Machine learning experiments to differentiate trustworthy versus misinformative videos
Results

Perplexity (lower values = better fit)

- Trustworthy 1733
- Misinformation 7033
- p < 0.001
<table>
<thead>
<tr>
<th>Feature</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acoustic</td>
<td>0.58</td>
</tr>
<tr>
<td>Metadata</td>
<td>0.62</td>
</tr>
<tr>
<td>Linguistic</td>
<td>0.72</td>
</tr>
<tr>
<td>Combined Model</td>
<td>0.74</td>
</tr>
</tbody>
</table>
Conclusion

• The language in trustworthy videos is closer to the published prostate cancer literature

• In the future, machine learning may provide a scalable solution to help health consumers identify trustworthy online health videos