C.T. Lin MD
Chief Medical Information Officer, UCHealth
Professor, University of Colorado School of Medicine

Medicine in the age of Facebook

Social media, transparency, and disrupting traditions
Disclosures:

• None
Your takeaways

• Facebook-like forces will change relationships in healthcare.
• Patients will want to read AND write in their healthcare record.
• Moore’s law will disrupt traditional healthcare.
• Will we be nimble enough to keep up?
Social media Q and A

– What social media do you (admit that you) use?
– **Email, Texting, Blogging, Podcasting, Twitter, Facebook, Tumblr, Hangouts, Yelp, Waze, Tinder?**
– What about social media and healthcare? Any experiences good or bad?
Mythbusters (transparency)

• If patients talk to doctors online, then surely THE FLOODGATES WILL OPEN

• Releasing test results online will create more misunderstanding and re-work for doctors

• Showing doctor’s progress notes to patients is “just asking for trouble”

• Releasing INPATIENT results will increase patient trust and empowerment

• Social media can be used as a force for better patient care
UCH 9th Avenue Campus
46 acres at 9th & Colorado
Vision 2020

Re-inventing health care for the next century
Former Fitzsimons Army Base, now Anschutz Medical Campus

One square mile; 30,000 employees
Paternalism
(doctor-centered)
Knowledge is power, I am the expert
I am too important for clerical tasks
Patients do best when they do what I say
There is nothing wrong with the way I work
Knowledge...power
Collaboration is powerful

I am too important
Communication improves safety

Pts...do what I say
Connection fosters participation

Nothing wrong...
Change requires a burning platform
Traditional relationships...
Doctor-centered
Patient-centered
<table>
<thead>
<tr>
<th></th>
<th>Doctor-centered</th>
<th>Patient-centered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor-centered</td>
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<td><img src="#" alt="Up Arrow" /> !!</td>
</tr>
<tr>
<td>Patient-centered</td>
<td><img src="#" alt="Down Arrow" /></td>
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SERIOUS CREATIVITY
Using the Power of Lateral Thinking to Create New Ideas

Edward de Bono
myth #1

If patients talk to doctors online, then surely THE FLOODGATES WILL OPEN
Online communication

• 87% of U.S. adults have Internet access
  • (Pew Internet Poll, Feb, 2014)
• 90% of online patients want to e-mail their doctor
• 56% of online patients say e-mail access would influence their choice of doctor
  • Harris Interactive poll, April, 2002
• 41% of patients say that social media affects their choice of doctor
  • DCinteractive Media, 2014
Online communication
(MD opinions)

“The floodgates will open”

“Patients will send chest pain messages--at midnight!”

“Patients can reach me”

“Less telephone tag!”
Patient satisfaction improved

Sending a message to Docs: 24% ↑
Prescription refills: 19% ↑
Appointment requests: 24% ↑

Overall care from the clinic 11% ↑
Overall communication 32% ↑
Most messages were sent after hours

Only 27% of messages were sent during clinic hours. 50% from 5pm-MN.
Online Communication Summary

- MDO patients are more satisfied with communication and overall care
- Patients say it saves phone calls, visits
- Physicians are neutral to positive
- Messaging volume is modest
  - 1 message for 250 patients online
- 2016: 150,000 patients enrolled
myth #1

If patients talk to doctors online, then surely THE FLOODGATES WILL OPEN

BUSTED
myth #2

Releasing test results online will create more misunderstanding and more work for doctors
myth #3

Showing doctor’s progress notes to patients is “just asking for trouble”
Online release of test results

“Patients will be confused.”

“The only reason I will participate is that you are doing a rigorous study.”

“Patients will be better participants in their care.”
### Congestive Heart Failure BNP

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Units</th>
<th>Ref. Range</th>
<th>Result</th>
</tr>
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<tbody>
<tr>
<td>BNP</td>
<td>pg/mL</td>
<td>0-100</td>
<td>118 H</td>
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</table>

**Result Date:** 11/11/2003 9:10:00 AM

### Report Comments

<table>
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<th>Test Name</th>
<th>Date</th>
<th>Note</th>
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<tbody>
<tr>
<td>BNP</td>
<td>11-NOV-2003</td>
<td>15886020</td>
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<tr>
<td></td>
<td>09:10:00</td>
<td>BNP = Brain Natriuretic Peptide</td>
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</table>

### Basic Metabolic Panel

<table>
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<th>Units</th>
<th>Ref. Range</th>
<th>Result</th>
<th>Ref. Range</th>
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<th>Result</th>
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<tbody>
<tr>
<td>NA</td>
<td>mmol/L</td>
<td>133-145</td>
<td>137</td>
<td>133-145</td>
<td>136</td>
<td>133-145</td>
<td>136</td>
<td>133-145</td>
<td>138</td>
</tr>
<tr>
<td>K</td>
<td>mmol/L</td>
<td>3.3-5.0</td>
<td>4.6</td>
<td>3.3-5.0</td>
<td>4.3</td>
<td>3.3-5.0</td>
<td>4.4</td>
<td>3.3-5.0</td>
<td>4.5</td>
</tr>
<tr>
<td>CO2</td>
<td>mmol/L</td>
<td>22-29</td>
<td>26</td>
<td>22-29</td>
<td>26</td>
<td>22-29</td>
<td>23</td>
<td>22-29</td>
<td>24</td>
</tr>
<tr>
<td>GLU R</td>
<td>mg/dL</td>
<td>60-199</td>
<td>90</td>
<td>60-199</td>
<td>85</td>
<td>60-199</td>
<td>77</td>
<td>60-199</td>
<td>81</td>
</tr>
<tr>
<td>BUN</td>
<td>mg/dL</td>
<td>6-23</td>
<td>25 H</td>
<td>6-23</td>
<td>34 H</td>
<td>6-23</td>
<td>32 H</td>
<td>6-23</td>
<td>36 H</td>
</tr>
</tbody>
</table>
Patients will act on errors in transcripts.
Patients will be more anxious.
This is a crazy idea; the phone will ring off the hook.

Patients can already request their paper chart. Why not?
Dear Dr. [Name],

I had the pleasure of seeing your patient, [Patient Name], today in the Heart Failure Clinic at the University of Colorado Hospital. As you know, she is a pleasant 67-year-old female with a history of [condition]. This is currently her four-month follow-up and she was last seen on 07/15/2003. Her last evaluation of pumping function was done on 04/08/2003. At that time, her left ventricular function was moderately reduced, with a left ventricular ejection fraction of approximately 53.8%. She had some diastolic dysfunction, moderate mitral regurgitation which was better from her previous echo done on 08/03/2002, and mild tricuspid regurgitation, which is considerably better from her previous echocardiogram. She also had right ventricular systolic elevated pressure, which was consistent with [Adriamycin-induced].

Sincerely,

[Your Name]
Surprise!

I am quicker to notify my patients of their results. Before, if I was busy, I might let a result wait on my desk for a few days. Now, because the patient might already have seen it, I will make a phone call, or send an online comment.

-Physician participant
Trust
Empowered
Felt understood
Adherence to treatment
SPPARO Summary

**NO**: patient overuse or misunderstanding

**NO CHANGE**: health utilization (visits, calls) physician documentation MD, RN, patient satisfaction

**IMPROVED**: Patients felt more empowered
Patients felt more in control
Patients felt more trust in their doctors

Patients described many uses for their records (travel, clarification, learning, error checking)
SPPARO update

Presenting this data to University audience
- Administration saw a competitive advantage
- Nursing saw a patient education tool
- Physicians saw “no clinical benefit”

Study completed 2002, and after 6 yrs of lobbying
- My Medical Record launched in July 2008, house-wide
  - Patient access to test results
  - No delay for labs, XR, US, 1 wk for CT/MRI, 2wk for Path

After 7 years of patient utilization:
- 120,000 patient accounts
- Over 1.7 million web pages of results viewed by patients
- 1 PET scan incident, 1 Dilantin level incident
Perspective

The Road toward Fully Transparent Medical Records


Comments open through January 8, 2014

Forty years ago, Shenkin and Warner argued that giving patients their medical records “would lead to more appropriate utilization of physicians and a greater ability of patients to participate in their own care.”¹ At that time, patients in most states could obtain their records only through litigation, but the rules gradually changed, and in 1996 the Health Insurance Portability and Accountability Act entitled virtually all patients to obtain their records on request. Today, we’re on the verge of eliminating such requests by simply providing patients online access. Thanks in part to federal financial incentives,² electronic medical records are becoming
myth #2

Releasing test results online will create more misunderstanding and more work for doctors
myth #3

Showing doctor’s progress notes to patients is “just asking for trouble”
myth #4

Releasing INPATIENT test results will increase patient trust and empowerment.
Divergent Care Team Opinions About Online Release of Test Results to an ICU Patient


Abstract

Summary: Many health care organizations release test results to outpatients through an online patient portal. However, there are no reports in the literature about the immediate release of online test results to patients who are in the hospital. We report an experience with a patient's family member who reviewed online test results in the intensive care unit (ICU) and the divergent opinions of care team members about how this information affected the patient's care.

Keywords: EHR, medical transparency, patient portal, access to data, HIT, patient engagement.

Citation: Sprague J, Pell J, Lin CT. Divergent care team opinions about online release of test results to an ICU patient. J Participat Med. 2013 Jun 12; 5:e24.

Published: June 12, 2013.

Competing Interests: The authors have declared that no competing interests exist.

Introduction

The University of Colorado Hospital deployed its electronic health record in 1994 and began offering an online patient portal to improve communication in 2001. The portal was initially deployed in primary care clinics and was eventually adopted by all specialty clinics. Patients may choose to use the portal to communicate with physicians and clinic staff about clinical questions, appointments, prescriptions, and referrals.

Patient satisfaction and perceptions of quality of care improved after the portal was implemented, and physician satisfaction with the portal was neutral to positive.[1] Test results were released immediately through the portal to a limited number of clinic outpatients in a controlled study.[2][3] Compared to patients who did not use the portal, those who used it had higher rates of adherence to therapy and greater trust in their physicians.[2] Additionally, patients described the usefulness of this tool for continuity of care: for example, one patient lost his luggage when traveling, and was able to obtain replacement prescriptions by showing his online medical record to a local urgent care provider.
Patient Access to Electronic Health Records During Hospitalization

Jonathan Michael Pell, MD¹; Mary Mancuso, MA²; Shelly Limon, BSN, MS, CNRN³; Kathy Oman, RN, PhD⁴; Chen-Tan Lin, MD¹,⁵


In 2001, the Institute of Medicine¹ recommended improving patient engagement by providing continuous care, allowing patients to be the source of control and fostering transparency with patients and families. Electronic health records (EHRs) facilitate these objectives via the use of patient portals.² Giving outpatients direct access to their health information helps clinicians find errors and improves patient satisfaction, although the implications of this type of access have not been well studied in the inpatient setting.³⁴ ⁵ This hospital-based study evaluates the experiences of patients, clinicians (including physicians and advanced practice providers), and nurses with immediate (real-time) release of test results and other EHR information through a patient portal.
RELEASE RULES

All lab results immediately EXCEPT initial HIV and genetic panels never released.

All radiology immediately except CT/MRI/PET held for 1 week

Pathology held for 2 weeks
Patients worries:

- Confusion
- Call MD/RN more
- Error Finding

Worries NOT CONFIRMED!
Nurse worries:
Workload
Confused Patients
Error Finding

Worries NOT CONFIRMED!
MD worries:  NOT CONFIRMED!

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pts ask for provider more</td>
<td>67%</td>
<td>35%</td>
</tr>
<tr>
<td>Pts would worry</td>
<td>85%</td>
<td>67%</td>
</tr>
<tr>
<td>Pts find errors in meds</td>
<td>96%</td>
<td>65%</td>
</tr>
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</table>

MD optimism:  CONFIRMED!

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pts more reassured</td>
<td>75%</td>
<td>82%</td>
</tr>
<tr>
<td>Pts feel more in control</td>
<td>92%</td>
<td>96%</td>
</tr>
</tbody>
</table>
Comments - Providers

When [patients] look at results, they are over anxious and have more questions about incidental findings which aren’t clinically useful

I think it’s a good idea. I did not see a huge difference in my workload or that of my colleagues. With one patient, it was especially helpful for the family by helping them feel more empowered

Overall, the patients felt more in control. It didn’t impact provider care but helps the patient feel more involved
Inpatient results release summary

**Patients:** had very high expectations that were tempered by end of study, but still felt
  - More empowered, reassured
  - More trust in their providers

**Nurses and Providers:** had low expectations, and by end of study felt:
  - Less worried about workload fears
  - Less worried about patient confusion
  - No impact on “error finding” and “d/c timing”
myth #4

Releasing INPATIENT test results will increase patient trust and empowerment
myth #5

Social media can be used as a force for better patient care
Jonathan Cohen
Be mindful to appreciate the small joys in your day
Welcome!

Whether you are thinking about quitting tobacco or have already quit, Colorado QuitLine is a FREE program and here to help you.

ENROLL ONLINE NOW
or call 1-800-QUIT-NOW (784-8669) and speak to a Quitline coach today!

JOIN TODAY AND RECEIVE FREE:
- Personally tailored quit program
- Nicotine replacement therapy
- Support network
- Telephone coaching
- Tools and tips based on the latest research

CALL 1-800-QUIT-NOW (784-8669)
ENROLL ONLINE

What kind of smoker/tobacco user are you?
Take The Short Quiz

Smoking Calculator

Frequently Asked Questions

Fact Sheets

LOGIN

ENTER Login help?
What is ACOR?

ACOR is a unique collection of online cancer communities designed to provide timely and accurate information in a supportive environment. It is a free lifeline for everyone affected by cancer & related disorders.

You are not alone! Use one of ACOR's 142 online communities to connect with people like you online and share information and support.

Who uses ACOR?

ACOR online communities are for parents, caregivers, family members, and friends to discuss clinical and nonclinical issues and advances pertaining to all forms of a specific disease. This includes patient and caregiver experiences, psychosocial issues, new research, clinical trials, long-term side effects and discussions of current treatment practices.

See what others say about us...

How do I get started?

To find the right online cancer-related community for you, simply use the search form below with cancer-related terms such as "prostate"

OR

Browse the full list of communities...

Search for Cancer online communities...
Example search phrases: prostate, renal cell carcinoma

Take me to the following list: Childhood Cancers Side Effects - Quality of Life Country Specific Diseases Other Than Cancer Treatments - Side Effects

Browse the general list of ACOR online communities...

Acinic Cell Carcinoma (ACC) Extraskeletal Chondrosarcoma Multiple Myeloma
Acute Lymphoblastic Leukemia - Adult (ALL) Fallopian Tube Cancer Mycosis Fungoides
109,134 patients
500+ conditions

Who’s like you?

There is 1 male patient between 40 and 49 years old with Polymyalgia rheumatica.
They do not have a public profile. Join Now to see them.

Age & Gender in patients with Polymyalgia rheumatica

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Number</th>
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<tbody>
<tr>
<td>0–19 yrs</td>
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</tr>
<tr>
<td>20–29 yrs</td>
<td>19</td>
</tr>
<tr>
<td>30–39 yrs</td>
<td>45</td>
</tr>
<tr>
<td>40–49 yrs</td>
<td>85</td>
</tr>
<tr>
<td>50–59 yrs</td>
<td>42</td>
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<tr>
<td>60–69 yrs</td>
<td>14</td>
</tr>
<tr>
<td>70+ yrs</td>
<td>0</td>
</tr>
</tbody>
</table>

Numbers based on subset of users who provided data.

I have

I take

I am Male Female

For-profit, peer-to-peer
Zestril, Prinivil (Lisinopril)  

Reviews

You decide what matters most. See how this medication affects:

- Pregnancy
- Alcohol
- Food
- Kidneys
- Liver
- Sex
- Sleep
- Weight

Is Lisinopril worth it overall?

- Worth it: 61%
- Not sure: 25%
- Nope: 14%

How well does Lisinopril work for you?

- Worth it: 49%
- Not sure: 41%
- Nope: 10%
myth #5

Social media can be used as a force for better patient care
Imminent technology disruptions:
Patient generated data
Patient reported outcomes
Patient eVisits
Patients choosing doctors
Patients empowered with WATSON
Patients with a Tricorder?!
Patient generated data
In 50 year old men like you, with pain 7/10, choosing Knee Surgery vs. PT alone

<table>
<thead>
<tr>
<th></th>
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<th>12M</th>
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<tbody>
<tr>
<td>Satisfaction</td>
<td>50%</td>
<td>60%</td>
</tr>
<tr>
<td>Pain score</td>
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<td>3/10</td>
</tr>
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</table>
eVisits: who is your competitor?

Don’t want to see patients online?
Walgreens will.

Mayo clinic telehealth?
Dubai Health?
Health service of India?
So, how to find:

A good **Surgeon** who treats **Aortic Aneurysms** near me?
## Aortic Aneurysm Repair, Zip 80045

<table>
<thead>
<tr>
<th>Sal “your pal” Jones MD</th>
<th>Frank “my way” Sinatra MD</th>
<th>CT “Devo” Lin MD</th>
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<tr>
<td><strong>Rating</strong></td>
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<tr>
<td>Cases/year</td>
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<td>500</td>
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<tr>
<td>Survival:</td>
<td>96%</td>
<td>99%</td>
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<tr>
<td>Re-admits:</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Pt Satisfaction:</td>
<td>99%</td>
<td>89%</td>
</tr>
<tr>
<td>Cost:</td>
<td>$8,000</td>
<td>$10,000</td>
</tr>
</tbody>
</table>
Tricorder X-Prize

The device will be a tool capable of capturing key health metrics and diagnosing a set of 15 diseases, helping consumers make their own reliable health diagnoses, anywhere, anytime.

10/2012: X-prize announced
8/2014: 10 finalists selected!
1/2016: To be awarded:
Patients using IBM WATSON

Too Much Information: The Doctor’s Data Dilemma

By 2020, doctors will face
200x the amount of medical data and facts that a human could possibly process.¹

And it will get worse... The volume of medical data doubles every five years.²

81% of physicians can’t even spare 5 hours per month to keep up.³

The answer? IBM Research and the Cleveland Clinic are bringing IBM® Watson™ to medical school to create a learning application for students.

Watson will help students navigate medical information and make the best decisions for improving patient care.

Students will also be able to teach and train Watson to advance its knowledge.

¹ Watson breast cancer meeting, October 8, 2017: Growth in cancer-related medical tasks versus human cognitive capacity
² University of Cus, Finland, January 9, 2018
Your takeaways

• Facebook-like forces will change relationships in healthcare.
• Patients will want to read AND write in their healthcare record.
• Moore’s law will disrupt traditional healthcare.
• Will we be nimble enough to keep up?
Thank you!

CT Lin MD
c.t.lin@ucdenver.edu