



Beyond the Pager

Communication and Collaboration
Technology in Healthcare

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Harvard Medical School
President, Society for Participatory Medicine

Disclosures

Employee and shareholder,
Cisco Systems, San Jose, CA

How Crucial is Communication in Healthcare?

“...communication extends all the way from the intimate interaction between a clinician and a patient, to the most public dissemination of information.”

Harvey Fineberg, MD, PhD
President,
Institute of Medicine
Former Dean,
Harvard School of Public Health



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Many Reasons for Collaboration

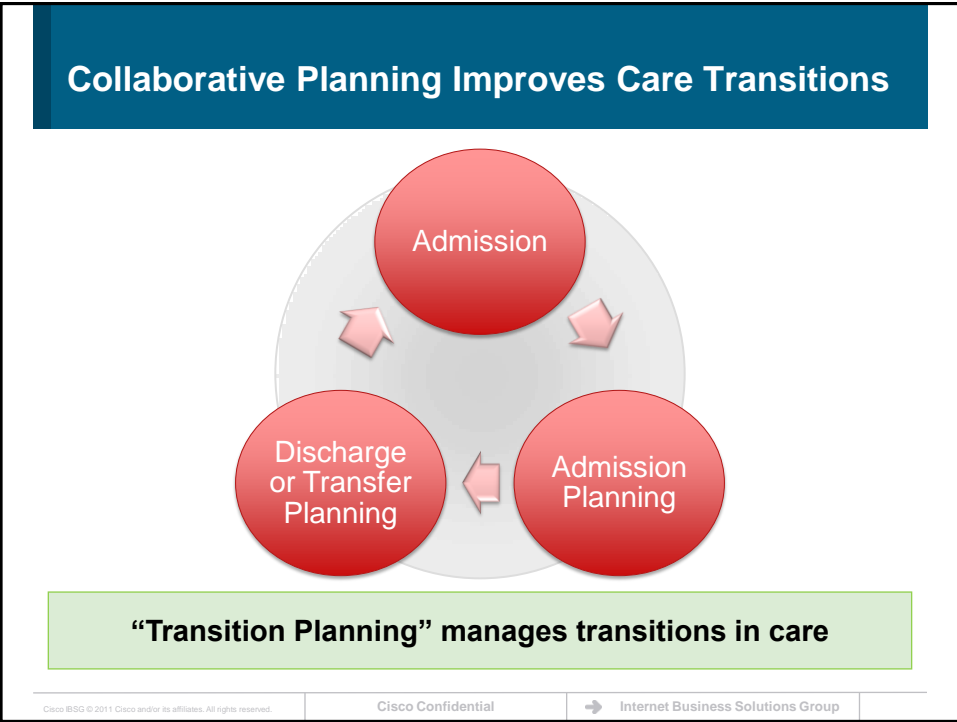
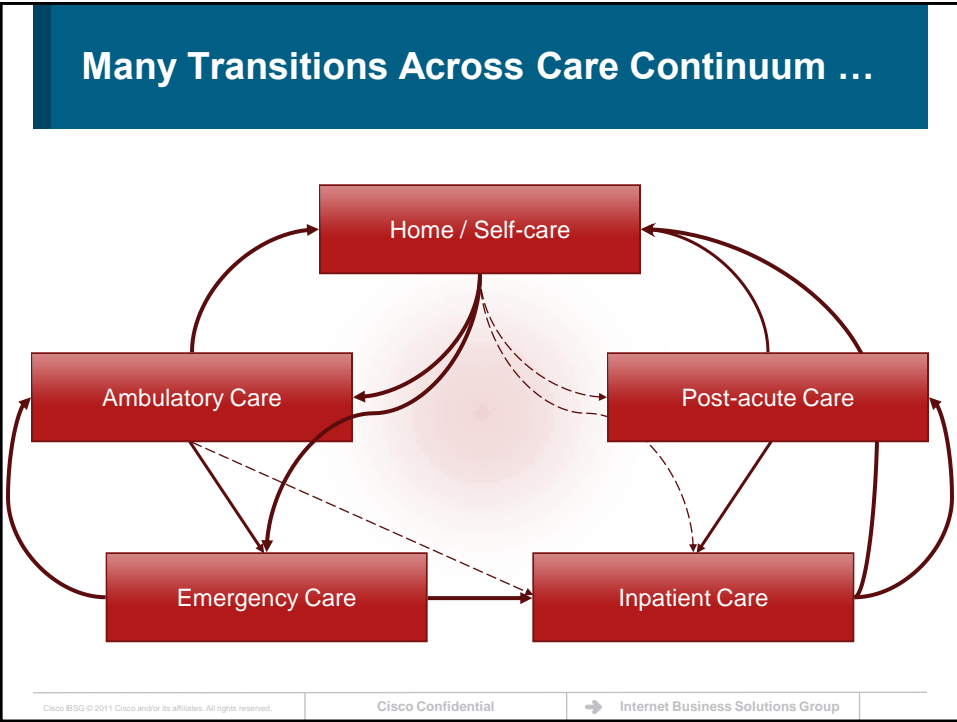
- Sharing and co-creating knowledge
- Learning
- Negotiating
- Building consensus



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Two Types of Connections

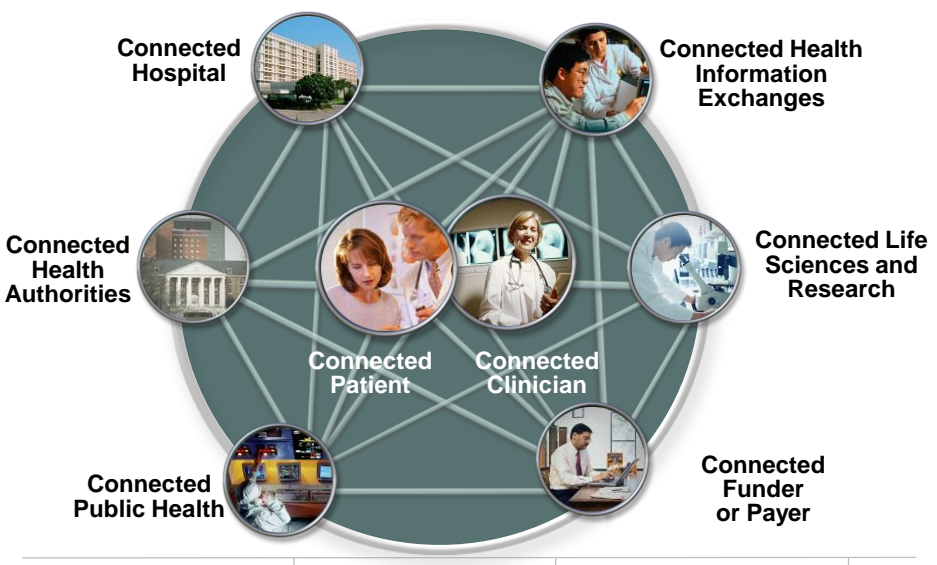


Deliver the right information to the right person for the right patient at the right time



Connect to the right person about the right patient at the right time

Human Connections are as Important as Data Connections in Healthcare



Many Tools for Communication...



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...Yet Reaching People is Difficult

65% → 20-60+ min / shift
just trying to reach staff

66% → Search more than
one channel to reach staff

84% → Time spent trying to
reach staff impacts patient care



“Every minute engaged in tracking and locating others reduces a nurse’s availability for the patient.”

Source: Forrester Research, February 2006

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Other Research

- > 50% pages received by first-year medical residents were considered non-urgent and frequently interrupted the care interns were delivering to a patient at the time (Katz M.H., Schroeder S.A., NEJM 1988. 319:4)
- Hospital clinicians made successful connection 74% of the time, and 1/4 of the calls associated with determining who needed to be contacted for a specific situation (Coiera E., Tombs V., BMJ February 28, 1998)
- The value of high quality communication systems and processes measured in Buckles and Herrin 2007, and Kuruzovich et al. 2010.

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Negative Outcomes of Communication Bottlenecks

Process	Negative Outcomes
Care delivery	<ul style="list-style-type: none"> ▪ Doctors/nurses see fewer patients, difficulty in tracking patient ▪ Length of stay increases ▪ Delay in delivery of medicine and receipt of test results ▪ Duplicate tests ▪ Patient satisfaction decreases
Discharge	<ul style="list-style-type: none"> ▪ Can not find appropriate discharge planning stakeholders ▪ Length of stay increases ▪ Loss of information, resulting in potential non-compliance with recovery regimen
Specialty Consultation	<ul style="list-style-type: none"> ▪ Time wasted locating specialist ▪ Suboptimal use of expertise
Billing/ Reimbursement	<ul style="list-style-type: none"> ▪ Reimbursement timeframe extended ▪ Non-reimbursed care if standards are not met
Ad hoc teaming	<ul style="list-style-type: none"> ▪ Limited new knowledge generation ▪ Reduced quality of care
Overall	<ul style="list-style-type: none"> ▪ Lost productivity ▪ Length of stay increases ▪ Loss of information and quality in health outcomes ▪ Negative effect on patient satisfaction ▪ Increased costs

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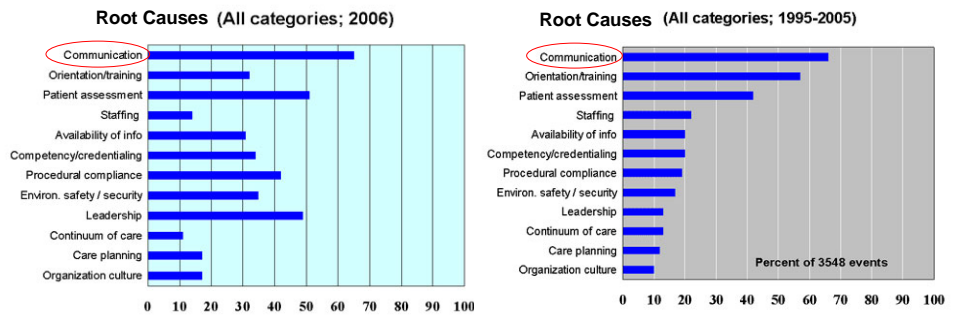
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Communications Lapses Contribute to 70% of “Sentinel Events”

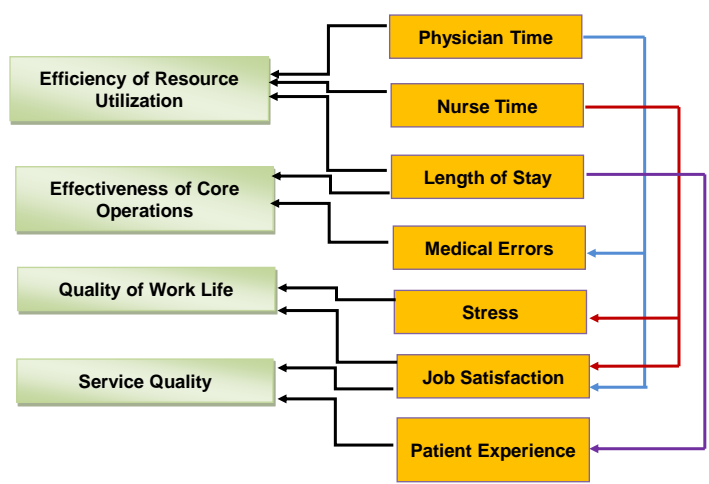
- Sentinel events are unexpected occurrences involving death, or serious injury
- Top sentinel events include wrong site surgery, medication errors, delay in treatment

Statistics on Root Causes of Sentinel Events



Source: the Joint Commission

Impact of Communication in Hospital



Agarwal R, Sands DZ, Diaz J. J Healthcare Management 55:4 2010.


The Cost of Communication Challenges

Efficiency


Safety

Satisfaction

}



>US\$25
Billion



Agarwal R, Sands DZ, Diaz J. J Healthcare Management 55:4 2010.

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Economic Burden of Poor Communication

US Hospitals	Dollars Annually
Wasted Physician Communication	\$835 Million
Wasted Nurse Communication	\$4.95 Billion
Wasted Length of Stay	\$6.59 Billion
TOTAL	\$12.38 Billion

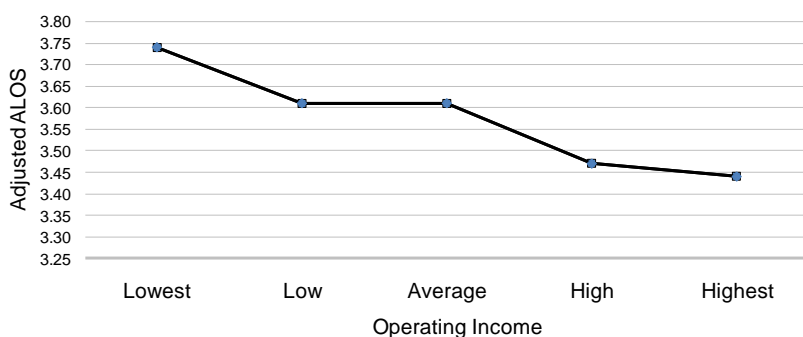
Typical 500-bed hospital wastes \$4.59 million/year

Agarwal R, Sands DZ, Diaz J. J Healthcare Management 55:4 2010.

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Operating Margin Falls as ALOS Rises

Average length-of-stay by operating income (2006-2008)



Source: Thomson Reuters ACTION O-I Comparative Database

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Connecting with Patients: e-Communication

- e-Communication includes encrypted e-mail or, more commonly, secure web messaging
- e-Communication can provide an efficient means of communication because it is asynchronous
- This is cost-effective and benefits both patients and physicians



Sources: Kane B, Sands DZ, JAMIA 1998. Delbanco T, Sands DZ, NEJM 2004.

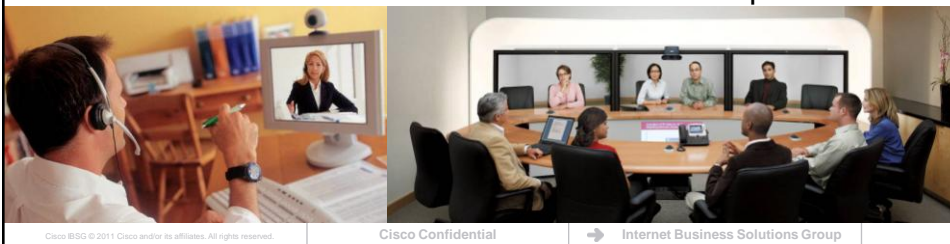
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Communication Using Video

- Adds video to telephone calls
- Three different video technologies:
 - IP telephone or soft phone w/ webcam (e.g., Skype, iChat, WebEx)
 - Dedicated video phone
 - Dedicated video conferencing unit or TelePresence
- Enhances verbal communication with visual queues



Web-based Collaboration

- Adds desktop/application sharing to IP video telephony
- Permits:
 - Sharing and annotation of documents, images, or videos
 - Presentations
 - Collaborative document development



Increasing Effectiveness While Decreasing Complexity

↑ Simplicity
 ↓ Effectiveness

↓ Simplicity
 ? Effectiveness

↑ Simplicity
 ↑ Effectiveness

Unified Communications

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Changing the Way We Work

Medium

“We are looking to technology to reduce administrative costs as well as direct care delivery costs... Collaboration plays an important role in both strategies.”

— Terry Bayer, Chief Operating Officer, Molina Healthcare

Attributes of Technology Channels

Technology	Synchronous?	Information Density
Telephone	<input checked="" type="checkbox"/>	★★
E-messaging	<input type="checkbox"/>	★
Text messaging/IM	<input type="checkbox"/> / <input checked="" type="checkbox"/>	★
Remote monitoring	<input checked="" type="checkbox"/>	★
Telemedicine	<input checked="" type="checkbox"/> (usually)	★★★
Advanced Telemedicine	<input checked="" type="checkbox"/>	★★★★★
Office visit	<input checked="" type="checkbox"/>	★★★★★



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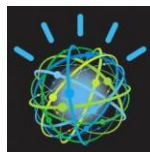


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Optimizing Personnel

	Patient Self-care	Counselor/ Educator	Clinical Nurse	NP/PA	Physician
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- Different personnel can provide care
- Each has attributes
- Each should practice at “top of their license”
- Can add others to this list, even perhaps, Watson...



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Optimizing Channel and Personnel

	Patient Self-care	Counselor/Educator	Clinical Nurse	NP/PA	Physician
Telephone					
E-messaging					
Text messaging/IM					
Remote monitoring					
Telemedicine					
Advanced Telemedicine					
Face-to-face visit					

Optimization based on:

- Clinical scenario
- Patient preference
- Availability



SignIn
 for Patients
 for Providers

<http://www.patientsite.org>

New User Registration
 Demo

Mail:

- Secure
- Automated routing
- Task assignment

Services:

- Prescription refills
- Appointment requests
- Referrals
- View bill

Records:

- Secure
- All CG records
- Upcoming appointments
- Meds/Problems/Results...
- Personal records

Education:

- Info prescriptions
- Patient selected links
- Predefined collections
- Videos

Learning Center Links

- [Sleep](#)
- [Sleep](#)
- [General Health Information](#)
- [Children and Child Development](#)
- [Multiple Sclerosis](#)
- [Searching the Literature](#)
- [Womens Health](#)
- [Eye Disease](#)

General Links

- [David Delaney MD's Web Site](#)
- [John D. Halamka MD's Web Site](#)
- [Find a Doctor](#)
- [Medical Dictionary](#)

Other visible elements: Beth Israel Deaconess Medical Center PatientSite, Home, Sign Out, Help, Prescriptions, Appointments, Referrals, Links, Account Statement, About Me, Records, Personal Profile, Support, Tech Support, FAQ / Tutorial, Privacy Policy, Cisco IBSG © 2011, Cisco and/or its affiliates. All rights reserved., Cisco Confidential, Internet Business Solutions Group.

54M Consultant with HTN, Hyperlipidemia

This is too cool. It's almost SILLY that things can be this easy. I am having a very good patient/customer experience so far.

61M Minister with DM and Chronic Pain

I have a lot of medical issues. This email system has left me feeling comfortable and in good hands! Otherwise, I would feel as cold, depleted, and alone, as the lifeless tree in my front yard in the deepest of winter!

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The screenshot shows a Twitter profile for DrDannySands. The header includes the Twitter logo, a search bar, and navigation links for Home, Profile, Messages, and Who To Follow. The profile name is DrDannySands. The main content area is divided into two columns. The left column, titled 'What's happening?', shows a timeline of tweets. The right column, titled 'Your Tweets 1,143', shows a tweet from @ePatientDave. Below the tweet are sections for 'Following 171', 'Followers 1,975', 'Favorites 2', and 'Listed 203'. The 'Listed' section shows DrDannySands is listed in 'Physicians', 'Health', 'Healthcare', 'thebrave', and 'Dedicated doctors'. There are also sections for 'Trends' and 'Twestival'.

What's happening?

Timeline @Mentions Retweets Searches Lists

sgreene24 Sarah Greene
Ingletfinger, Blood, Ivan, F1000 - elements of a thriller! Airstrike against closed science & old-guard STM publishing <http://bit.ly/f5u7nF>
5 minutes ago

EndoGoddess Jen Dyer MD, MPH
Thanks! @AHRQIX @ePatientDave @endogoddess Join @AHRQIX Chat April 5th 2-3pm ET #patient #centeredness #innovation. go.usa.gov/2pF
5 minutes ago

drval drval
New Post: Coffee Talk And Type 1 Diabetes: It's been well-documented that my coffee addiction is ... substantial. ... <http://bit.ly/hfLJIZ>
5 minutes ago

gfry Gilles Frydman
#ArabDictatorManual #Yemen ministry of educ fires teachers going 2 anti-gov protests, replaced w/unqualified loyalists <http://bit.ly/f1Culr>
6 minutes ago

ePatientDave Dave deBronkart
#SDMI RT @boltyboy Jack Wennberg is up for a lifetime achievement award from the BMJ -- vote here <http://bit.ly/d4O8Zd>
7 minutes ago

mashable Pete Cashmore
HOW TO: Land a Job at Facebook - <http://on.mash.to/h0AYLY>
10 minutes ago

boltyboy Matthew Holt

Your Tweets 1,143

1 hour ago. @ePatientDave Glad you're keeping fit while on the road. Sunny day in #Boston, so ran 10k today to train for Copenhagen. :-)

Following 171 **Followers 1,975**

Favorites 2 **Listed 203**

DrDannySands I love this psychological interpretation of social media-it's over...

Recently listed in: Physicians, Health, Healthcare, thebrave, Dedicated doctors

Trends

Boston - change
#MM2011 Promoted
#sincewebeinghonest
Carl Crawford
Kinsler
Source Code

#hingthatpissmeoff
#nottofemales
KCAs
RBI
LCD Soundsystem

Twestival

A way to take part in a global event that transforms lives.

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Advertisers · Businesses · Media · Developers · Resources · © 2011 Twitter

HOME ABOUT TWITTER LANDING CONTACT RSS EXPLAINED TWITTER TALK #HCSM TWITTER

phil baumann online

health is social

140 Health Care Uses for Twitter

by PHIL BAUMANN on JANUARY 16, 2009
in TWITTER

223
tweets

retweet




Image by krazdad / ibum via Flickr

Twitter may either be the [greatest prank \(R-rated\)](#) ever played on the internet community or it may be the best thing since sliced bread. It's easy to make the first case if you read the [public timeline](#) for a few minutes. It's a bit harder to make the second case, but I'll do my best to make it. Specifically,

I'd like to take a stab at offering 140 health care uses for Twitter.

Twitter's simplicity of functional design, speed of delivery and ability to connect two or more people around the world provides a powerful means of communication, idea-sharing and collaboration. There's potency in the ability to burst out 140



What are Social Networks?

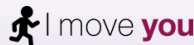


- Illuminate our social and professional networks
- Expand our communication options
- Provide context and meaning to our communication
- Validate who we are through our associations

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Sign in with Facebook Sign in with Twitter Sign in with Email

Challenge your friends.

I will

if my friend will

Get up and move

The influence friends have over each other is ridiculously powerful—more than 50% of challenges get completed by both friends, even more if you're persistent! Let's use this opportunity to make each others' lives better (or at least more fun).

Bartelomeus De Witte, Matthew Hub, and 8 friends have connected to I Move You.



- susanlindsey** will do 6 flights of stairs. Completed 3 days ago, ended.
- susanlindsey** will do 15 pushups. Completed 3 days ago, ended.
- moorek13** will consume 500 fewer calories per day. Created 4 days ago · Join 2 people
- baker** will make my own service as nice as this :). Created 4 days ago · Join baker
- baker** will write this date library for elixir tonight!. Created 5 days ago · Join baker
- baker** will finish hoopla. Created 5 days ago · Join 2 people
- susanlindsey** will walk 2 miles. Created 5 days ago · Join susanlindsey
- susanlindsey** will do 15 pushups. Created 5 days ago, ended.
- susanlindsey** will dance 2 songs. Created 5 days ago · Join susanlindsey
- susanlindsey** will do 15 desk chair triceps dips. Created 5 days ago · Join susanlindsey

feedback

By Contagion Health Blog Feedback

Medical Professional Social Networks

NEWS
REFERENCE
EDUCATION
Dr. D Sands (Log Out) 2 Open Invitations Connect My Account

Medscape Connect

SEARCH

Physician Discussions > Clinical > Internal Medicine Start a New Discussion >

Younger vs. Older Docs: Keeping up with the Literature

"I have had some run-ins with older physicians who may not have always kept up with the literature and are doing some things that I question..."

[\[read more\]](#)

A Patient Cashes In

"What should I do? A patient I have seen a few times has been receiving all the insurance checks (because I am out of network) and cashing them. When I sent her an invoice..."

[\[read more\]](#)

Profile

SEARCH

NEW COMMENTS IN MY WATCH LIST:

You are not currently watching any discussions

[View Watch List](#)

Discussion	Started	Last Comment		
<p>If it ain't broke, don't fix it</p> <p>Started by: sbrown Rating: ☆☆☆☆☆</p>	10:22AM	10:22AM		
<p>Influenza season winding down - some remarkable cases</p> <p>Started by: lukec00 Rating: ☆☆☆☆☆</p>	10:49PM	10:49PM		
<p>Alabama Outbreak of Bloodstream Infections due to Serratia ma...</p> <p>Started by: lukec00 Rating: ☆☆☆☆☆</p>	10:39PM	10:39PM	Apr 02	08:54AM
<p>Angioedema and ACEIs</p> <p>Started by: frandoc Rating: ★★☆☆☆ Comments 21 (21 New)</p>	Apr 02	03:54PM		
<p>Replacement of Storytelling for HTN Tx.</p> <p>Started by: krikher Rating: ☆☆☆☆☆ Comments 2 (2 New)</p>	Apr 01	Apr 02		
<p>Lancet: Conservative treatment for sepsis superior to aggress...</p> <p>Started by: MikeGinnMD Rating: ☆☆☆☆☆ Comments 14 (14 New)</p>	Apr 01	03:07PM		

TOP RATED CLINICAL DISCUSSIONS

- Epstein Barr Virus-Induced Hemophagocytic Lymphohistiocytosis (HLH)

Patient Network Plus: patientslikeme™

Create a Profile

Join Forum Discussions

Compare Treatment Reports

SHARE

Patients' **sharing detailed health data** is what makes our communities special. This information is the basis of the PatientsLikeMe network and validates each individual

FIND

Patients' **find other patients like them.** They discover what options are available for treatment and if their experience with their disease is normal. They can reach out to others like them for advice and insight.

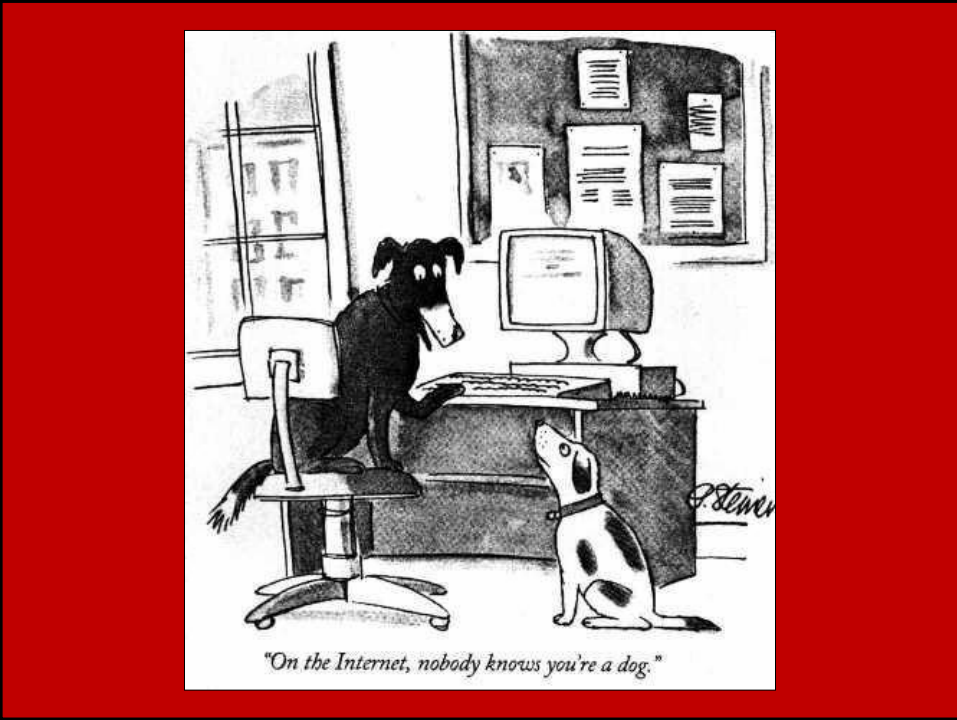
LEARN

The shared information creates a **new knowledge** about the real world **treatment, symptoms,** and reality of living with illness. Patients learn about their disease and themselves in context of the community

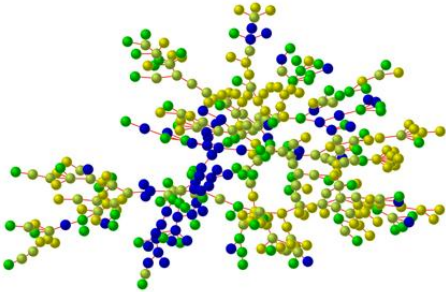
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Social Network Analysis



By Nicholas A. Christakis and James H. Fowler

Links Site Map

HOME ABOUT US TECHNOLOGY OFFERINGS PARTNERSHIPS SUMMIT 2011 NEWS BLOG CONTACT US

Home

MedNetworks offers the only fully validated and functional technology to map, analyze and activate social networks across the healthcare sector, including consumers, patients, health plan members, physicians, hospitals, and more. Based on groundbreaking research of Harvard University Professor Nicholas Christakis, this technology enables MedNetworks' customers to dramatically increase the efficiency and effectiveness of their targeting interventions for marketing.

MedNetworks technology can work with nearly any type of data that reveals connections among individuals, groups, or institutions. With MedNetworks' unique technology, you can:

- Map networks — whether existing or created — using and integrating single or multiple data sources: Administrative data (e.g., medical and pharmacy claims data), Communications data (e.g., email/phone traffic), and more.
- Discern and make optimal use of influence patterns among networks of physicians, patients, plan members, and others, in order to facilitate accurate, efficient targeting and network activation.

“... our ability to manipulate and participate in networks is highly relevant to the new opportunities and challenges that we are facing in our hyperconnected world.”
- Nicholas Christakis

JOIN US AT THIS FIRST-OF-A-KIND EVENT!
Social Networks and Healthcare / Pharmaceutical Summit 2011 - From Insight to Action
Tuesday, May 3rd, 2011 | 7:30 am – 6:00 pm
The Charles Hotel, Cambridge, MA

Conclusions

- Human connections as important as data connections
 - Collaborations are key!
- Communication inefficiencies are costly
- Many newer tools for connecting and collaborating
 - Must study impact of these technologies
- Collaborations can improve care of patients
 - Considering patients as collaborators yields benefits
 - Need more data to support

Questions?

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Twitter: @DrDannySands

<http://www.facebook.com/DrDannySands>

<http://www.linkedin.com/in/DannySands>