Social Media and Electronic Platforms for Treatment Adherence: Opportunities for Patient Engagement and Patient Care

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Disclosures

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Nonadherence

- 50% of children and adults with a chronic illness
- Increased mortality, morbidity, healthcare utilization, healthcare costs
- $100-300 billion annually in the US
- Increase in $2000-$8000 spent per patient
- Single, greatest cause of treatment failure

DiMatteo 2004, Medical Care; Wu & Hommel, 2013, The Journal of Pediatrics
Multicomponent and behavioral interventions shown to result in most significant improvements in patient adherence, BUT…

Paucity of information regarding social media use to monitor or improve medication adherence

- Existing adherence studies largely focused on SMS text messaging
- RCTs are lacking

Interest among patients to communicate with providers and receive health information via electronic methods
Social Media

Why the appeal of social media?

- Capitalizes on medium that many patients already use and are familiar with
  - As of 2017, daily social media usage of global internet users amounted to 135 minutes per day (2016; 126 daily minutes)
  - Global social networking audiences surpassed 2 billion users in 2016
- Greater tailoring to unique needs of patient (e.g., time, language)
- Greater reach to patients with limited health care access
- Can monitor health behaviors from work, school, home
- In the moment clinical data

Sources: Domo 2017, © Statista 2018
Social Media

- **Baptist et al 2011**
  - Email (58%) most preferred method to receive health information AND communicate with a physician
    - Facebook (23.2%) and text messaging (34.1%)
    - Twitter (3.7%) and MySpace (3.6%)

- **Murray et al 2005**
  - Cochrane review of Interactive Health Communication Applications (IHCA)
  - Positive effects on knowledge (e.g., disease, self-management) and clinical outcomes (e.g., symptoms-free days, HbA1c)

Social Media

- Stinson et al 2009
  - Review of internet based self-management RCTs for youth with health conditions
  - 7 out of 9 studies: improved symptoms management
  - Conflicting evidence for disease-specific knowledge and QOL

- Diabesties, College Diabetes Network
  - Allows young adults to track blood glucose, insulin dosage, carb counts and share this information with other young adults
  - Provides social networking to improve adherence
Social Media

- Scalzi et al 2018
  - Preliminary data on online educational program with and without social media (SM) experience, aimed at improving medication adherence in adolescents with systemic lupus
    - More robust improvements in self-efficacy, sense of community, empowerment in SM group
    - Medication adherence improved in both control (n = 14) and SM (n = 13) groups, BUT proportion of adherent patients significantly improved only in SM group

- bant app
  - Wireless transfer of glucose readings, social community, and gamification (rewards via iTunes music/apps)
  - Pilot test (2012) → daily average frequency of BGM increased 50%
  - RCT (2017) → no change in HbA1c or BGM, positive association between BGM and HbA1c
SMS Text Messaging

- Fjeldsoe et al 2009
  - Individually tailored SMS messages providing advice/support or tailored feedback re: test results
  - 13 out of 14 studies showed positive behavior changes (8 with statistical significance)
  - Tailored messages more effective at changing health behaviors than untailored ones

- Wald et al 2015
  - 1-way versus 2-way text messaging on medication adherence
  - 2-way messaging associated with significantly improved medication adherence
    - 20% increase
    - No effect with 1-way text messaging
SMS Text Messaging

- More support for tailored text messaging to improve adherence in pediatrics
  - SweetTalk: texts to prompt self-management in T1 diabetes
  - Adherence prompts, texts to caregivers if nonresponsive to prompts
  - Feedback on self-reported adherence

- Why the appeal of text messaging?
  - 15,220,700 texts sent every minute of every day worldwide
  - Median # texts sent daily = 60-100

Electronic Monitors

Advantages

- “Gold standard”, compared to pill counts, provider estimates, and self-report, produce lower adherence rates
- Captures objective data rather than self-report
- Options for setting alarms/prompts, record date and time

Disadvantages

- Costly; limits generalizability and use in clinical settings
- Malfunctions occur (“phantom openings”)
- Proxy of medication-taking

Electronic Monitors

- Herzer et al 2011
  - EM feedback facilitated non-adversarial discussions with providers regarding adherence AND enabled active discussions and problem-solving tailored to patient’s unique adherence barriers

- de Bruin et al 2011 (adult), Otsuki et al 2009 (pediatric)
  - Patients receiving EM feedback demonstrated significantly greater improvements in adherence compared to those in the “no feedback” condition

  - High satisfaction with electronic pill box ➔ easy to use, visual reminder, helpful for organizing pills, helpful to promote greater responsibility and independence in youth

Ethical Considerations

- **E-health equity ("digital divide")**
  - Barriers to Internet and computer access among low income, low education, and minority populations
  - Computer terminals with Internet access at community health centers

- **Protection of health information from unauthorized access, use, and disclosure**
  - Encryption, secure messaging services that are HIPAA compliant
  - Notifying patients of potential risks

- **Protection of vulnerable populations (e.g., children)**
Future Directions

- RCTs on feasibility and effectiveness of social media platforms are needed in both adult and pediatric care
  - Adherence-promoting intervention versus assessment of patient adherence and barriers
  - Long-term sustainability, maintenance of treatment gains
  - Level of patient engagement for optimal outcomes
- Evaluation of benefits above and beyond usual face-to-face care
  - Can we enhance access while providing quality care?
- Integration into real-world clinical settings
- Data management demands
Thank you

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