

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

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# Disclosures

- No conflicts of interest to disclose

# Nonadherence

- 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



# Social Media

- 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



# 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
- Maddux et al (2017)
  - 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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