EMA Research for Suicide Prevention: Practical examples in 3 settings

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• Post-discharge transitions are associated with suicide risk (Ching et al, 2019)

• Ecological momentary assessment (EMA) have potential to identify short-term suicide risk or track response to interventions in the “real world”

• Growing use of EMAs and daily surveys in suicide prevention research (reviews Ammerman & Law, 2022; Gee et al., 2020; Kleiman & Nock, 2018)

• Questions remain about the clinical utility of these methods as well as practical and ethical considerations regarding implementing EMA protocols
  • Special considerations for high-risk transitions and subpopulations (e.g., minors)

• Objective: Describe 3 examples of EMA/daily diary protocols with youth
  • after hospitalization (adolescents)
  • During hospitalization (adolescents)
  • after ED (young adults)
Example 1

Population

• 34 adolescents ages 13-17 (76% female)
• Recruitment: psychiatric hospitalization (recent SI / SA)
• Data collection: Jan-May 2017
• Context: Post-discharge period

Design

• Daily survey: 1 x day for 28 days
  • ~32 questions
• Delivery: Qualtrics survey sent by text message between 5-7pm (open for 1.5 hours)
• Compensation: yes ($4/survey)
• Rationale:
  • Purpose to track intervention response
  • Different rules about phones at school
  • Risk management considerations

Funding: AFSP (PDF-0-028-14); MICHR
Example 1

**Risk Management**

- **Risk-related items:** SI and SA in 24h
  - SI: At any point in the last 24 hours, did you have any thoughts of killing yourself?
    - Time intervals *when* SI occurred
    - Frequency, Duration, Urge items
    - **Filler items when SI = no**
  - SA: At any point in the last 24 hours, did you try to kill yourself?
    - *What did you do? Did you do this as a way to end your life?*

**Approach**

- **Start with** informed consent!
- **Two-tiered designation**
  - **Tier 1:** SI in last 24 hours without intent or plan → automated message at end of survey
    - Encouragement to seek support and reminder about crisis resources
  - **Tier 2:** Current SI with intent or plan OR suicide attempt in last 24 hours → automated message + call from on-call research staff that same evening
Example 1: take aways

Risk-related Disclosures

- 650 /943 surveys completed (68.9%)
  - Decrease over time
- 159 (24.4%) SI occurrences by 24 (70.6%) adolescents
  - At 1 mo. phone assessment, 45% reported SI
- Current SI + intent/plan: >1%; SA: 2
  - 6 calls (4 adolescents)

Acceptability

- Generally high acceptability: minimally disruptive, vast majority would participate again, and...

<table>
<thead>
<tr>
<th>After filling out the daily questionnaires, my thoughts and feelings were usually</th>
<th>Week 2 (n=28)</th>
<th>Week 4 (n=34)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive / I felt better</td>
<td>21.4% (n=6)</td>
<td>28.1% (n=9)</td>
</tr>
<tr>
<td>Neutral / I felt the same</td>
<td>78.6% (n=22)</td>
<td>68.8% (n=22)</td>
</tr>
<tr>
<td>Negative / I felt worse</td>
<td>0% (n=0)</td>
<td>3.1% (n=1)</td>
</tr>
</tbody>
</table>

Czyz et al (2018), Psychiatry Res
Example 1 Part B

**Population**
- 78 adolescents ages 13-17 (68% female)
- Data collection: March ‘19-Jan ‘20
- Context: Post inpatient period

**Design**
- Daily survey: 1 x day for 28 days
  - ~35 questions
- Delivery: Qualtrics survey sent by text; open 5-8pm (w/ 1 reminder)
- Compensation: yes ($4/survey)
- Rationale:
  - Purpose to track intervention response
  - Different rules about phones at school
  - Risk management considerations

Funding: NIMH (K23-MH-113776)
Example 1 Part B take aways

Changes

• Longer window for completing surveys (3 hrs. vs. 1.5)

• No “gateway” question: *At any point in last 24 hours, did you have thoughts of killing yourself?*

Part B

• 1621 /2184 surveys completed (74.2%)
  • Decrease over time

• 631 (38.9%) SI occurrences by 64 (82.1%) adolescents
  • At 1 mo. phone assessment, 51.4% reported SI

• Current SI + intent/plan (n=16) >1%; SA: 5
  • 21 calls (13 adolescents)
Example 2

**Population**

- 62 adolescents ages 13-17 (69% female)
  - 1 withdrawn per treatment team recommendations

- **Recruitment:** psychiatric hospitalization (recent SI / SA)

- **Data collection:** Dec ‘18-March ‘20

- **Context:** during hospitalization
  - Unable to monitor responses in real-time: WiFi disconnected

**Design**

- **EMAs:** during hospitalization (M=6.62 days)
- **Delivery:** app on study-provided phone between 8:30am-9pm (open for 20 min)
- **Compensation:** yes (up to $70)
- **Rationale:** Assessment

Funding: University of Michigan, Dept of Psychiatry
Example 2

Risk Management

• Risk-related items:

• SI EMAs since last survey [time]
  • Frequency, Duration, Urge items
  • Filler items when SI = no

• Confidence to refrain from suicidal action

Approach

• Start with informed consent!
  • Responses not monitored by study or treatment team; when information shared

• Two-tiered designation

  • Tier 1: any SI on EMAs $\rightarrow$ automated message at end of survey
    • Encouragement to seek support from tx team & reminder EMAs not being monitored

  • Tier 2: Review of EMAs day of discharge: High SI urge or low confidence within 48 hours $\rightarrow$ inpatient team informed
Example 2: take aways

Risk-related Disclosures
• SI occurred \(~41\%\) of time, reported by 44 (72%) teens
• Risk met: 20 (32.7%) teens

Challenges and Lessons Learned
• Critical to partner with unit
  • Establish risk management criteria
  • Channel for communicating concerns
• WiFi restrictions introduced logistical challenges
  • Physical availability of staff on unit
• Phone access limitations
  • Missing data (~66% adherence)

Czyz et al (2022) J Psychiatr Res
Example 3

Population

- 110 adults ages 18-25 (81% female)
  - 3 (2.7%) withdrew; 1 completed no EMAs

- Recruitment: ED (recent SI / SA)

- Remote data collection: July ‘20-August ‘21

- EMA surveys: 4 x day for 8 weeks
  - 9:30am-9:30pm (randomized in blocks)

Rationale: Assessment

Design

Funding: AFSP (SRG-0-036-19)
Example 3

Risk Management

• Risk-related items:
  • **EMA SI**: Duration & severity items
    • Within last hour
  • **End-of-day SI**: Frequency & severity
    • For the entire day
  • SA: At any point *yesterday*, did you try to kill yourself?
    • *What did you do? Did you do this as a way to end your life?*

Approach

• Start with *informed consent*!
  • Consent script/checklist clearly specifying EMAs are *not* reviewed
  • Review that app will provide reminders about crisis support

• **EMA Platform**
  → How/when to contact study team and reminder about crisis support
  → *for any SI*, message at end of survey
  • Encouragement to seek support and reminder about crisis resources
  • Reminder EMAs are *not* monitored
Example 3: take aways

Risk-related Disclosures

• SI instances: 2201 EMAs (14.9%) by 91 (85.8%) individuals

• End-of-day SI: 975 (25.7%) SI days by 86 (81.1%) individuals

Acceptability

• ~87.5% expressed interest in participating again (≥5 on 1-7)

• Top 2 barriers: too busy (79%); didn’t see notification in time (58%). *18% noted didn’t feel like completing.

<table>
<thead>
<tr>
<th>After filling out the daily questionnaires, my thoughts and feelings were usually</th>
<th>End of study at 2 months</th>
</tr>
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<tbody>
<tr>
<td>Positive / I felt better</td>
<td>10.5% (n=10)</td>
</tr>
<tr>
<td>Neutral / I felt the same</td>
<td>76.8% (n=73)</td>
</tr>
<tr>
<td>Negative / I felt worse</td>
<td>12.6% (n=12)*</td>
</tr>
</tbody>
</table>

*8/12 would participate again (≥5 on 1-7); 2/12 had low interest
Summary

• EMAs allow for more fine-grained understanding of suicidal thoughts and behavior in real-world conditions
  • New possibilities for identifying elevations in suicide risk

• Important to weight pros and cons of different EMA study designs and approaches
  • Frequency, duration, study purpose → implication for burden, adherence/missing data

• Risk management procedures warrant consideration of context (broadly defined), resources, and population
  • More conservative approach could be warranted if minors assessed during high-risk period
  • Protocol could be feasible, yet still call for considerable staff resources

• Consult, consult, consult
  • Developing area; unique situations / applications
Thank you!

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