One-to-One Observation: A Systematic Review

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VA Evidence Synthesis Program overview

- Established in 2007
- Provides tailored, timely, and accurate evidence syntheses of VA-relevant, Veteran-focused healthcare topics. These reports help:
  - Develop clinical policies informed by evidence;
  - Implement effective services and support VA clinical practice guidelines and performance measures; and
  - Set the direction for future research to address gaps in clinical knowledge.
- Four ESP Centers across the US:
  - Directors are VA clinicians, recognized leaders in the field of evidence synthesis, and have close ties to the AHRQ Evidence-based Practice Center Program and Cochrane Collaboration
- ESP Coordinating Center in Portland:
  - Manages national program operations and interfaces with stakeholders
  - Produces rapid products to inform more urgent policy and program decisions

To ensure responsiveness to the needs of decision-makers, the program is governed by a Steering Committee comprised of health system leadership and researchers.

The program solicits nominations for review topics several times a year via the program website.
Acknowledgments

Operational Partners
Operational partners are system-level stakeholders who have requested the report to inform decision-making. They recommend TEP members; assure VA relevance; help develop and approve final project scope and timeframe for completion; provide feedback on draft report; and provide consultation on strategies for report dissemination.

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The review team developed the report’s scope, study questions, and methodology in consultation with the Operational Partners (i.e., topic nominators), the ESP Coordinating Center, and the technical expert panel (TEP). Broad expertise and perspectives were sought. Divergent and conflicting opinions are common and perceived as healthy scientific discourse. Therefore, in the end, study questions, design, methodologic approaches, and/or conclusions do not necessarily represent the views of individual technical and content experts. The authors gratefully acknowledge Roberta Shanman and the following individuals for their contributions to this project:
Acknowledgments, continued

The authors gratefully acknowledge the following individuals for their contributions to this project:

**Technical Expert Panel (TEP)**

To ensure robust, scientifically relevant work, the TEP guides topic refinement; provides input on key questions and eligibility criteria, advising on substantive issues or possibly overlooked areas of research; assures VA relevance; and provides feedback on work in progress.

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Full-length report available on ESP website:
http://www.hsrdrresearch.va.gov/publications/esp/reports.cfm
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One-to-One background

• Preventing adverse events in hospitalized patients is a priority goal of patient safety programs.

• In-facility falls and in-facility suicide are 2 priority conditions that are thought to be preventable.

• One-to-one sitters or constant observation is an intervention that has long been used, rooted in tradition: staff that are immediately at hand can help prevent a fall or redirect a patient from engaging in a harmful act.

• One-to-one sitters is a costly intervention, and evidence that it is effective is uncertain; hence, VA policymakers asked for an up-to-date review to inform policy and practice.
KQ1. What is the effectiveness of patient sitters (one-to-one observation, patient safety companions, etc.) for reducing falls?

KQ2. What is the effectiveness of patient sitters (one-to-one observation, patient safety companions, etc.) for reducing suicide or self-harm?

KQ3. What is the effectiveness of patient sitters (one-to-one observation, patient safety companions, etc.) for reducing wandering?

KQ4. What is the cost-effectiveness of one-to-one observations compared to usual care for patients at risk of falls, suicide, or wandering?
Selection of Studies

Reference Mine:
10
Google Search: 5

149 Publications
• Setting
• References
• Sample Size
• Study Design
• Use of Existing Theory/Logic Model

82 Publications
• Control/Pre-intervention
• Sitter Practice

82 References
• Alternative(s) to Sitters

62 Publications
• Implementation Details
• Condition: 6
• Outcome: 9
• Intervention: 21
• Setting: 8

20 Includes
• Outcomes
• Post-implementation
• Follow-up Interval

Background: 32
Intervention: 21
Outcome: 9
Setting: 8
Non-systematic review: 6
No original data: 3
Commentary: 1
Duplicate: 1
Population: 1

Unavailable: 13
Condition: 6
Intervention: 5
Letter/Commentary/Non-research article: 5
Duplicate: 4
No Original Pre-Intervention Data: 1
Scoping review: 1
Setting: 1
Systematic review: 1

Systematic review: 1
Non-systematic review: 6
Research article: 5
Commentary: 1
No original data: 3
Duplicate: 4
No Original Pre-Intervention Data: 1
Scoping review: 1
Setting: 1
Systematic review: 1
20 included publications

- 2 Studies that added sitters as an intervention to existing care without sitters
- 3 Studies that included Nurse Assessment and Decision Tools
- 8 Studies that included Video Monitoring of Patients
- 5 Studies with Miscellaneous Sitter Reduction Interventions
- 2 Studies that have designation of Physical Space for Higher Risk Patients, such as a “Close Observation” Unit
Two studies that added sitters as an intervention to reduce falls:

• Were from Australia

• Used volunteer sitters called “companion-observers.”

• Both had baseline fall rates four times USA rates.

• Both included close-observation units.

• Results were mixed for both.


Studies of Alternatives to Sitters: Videomonitoring

Studies of Alternatives to Sitters: Videomonitoring

Figure. Patient fall reduction graph.

Studies of Alternatives to Sitters: Nurse Assessment and Decision Tools

Figure. Sitter hours pre-/postintervention.


NOTE: Hospital staff denotes any staff assigned as a sitter for the shift.
Rating the Body of Evidence

We used the principles of the Grading of Recommendations Assessment, Development and Evaluation (GRADE) working group plus those advocated by Howick and colleagues to assess the quality of the evidence as follows:

• High: We are very confident that the true effect lies close to that of the estimate of the effect.

• Moderate: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

• Low: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

• Very Low/Insufficient: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

http://www.gradeworkinggroup.org

## Certainty of Evidence for One-to-One Sitters on Aims of Healthcare

<table>
<thead>
<tr>
<th>Intervention/Outcome</th>
<th>Study Limitations</th>
<th>Consistency</th>
<th>Directness</th>
<th>Precision</th>
<th>Certainty of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adding Sitters to Usual Care</strong></td>
<td></td>
<td></td>
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<tr>
<td>Preventing falls</td>
<td>Observational</td>
<td>Inconsistent</td>
<td>Direct</td>
<td>Imprecise</td>
<td>Very Low</td>
</tr>
<tr>
<td></td>
<td>studies: High</td>
<td></td>
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<tr>
<td><strong>Removing Sitters</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Using video monitoring to reduce sitter use and not adversely influence falls</td>
<td>Time Series: Low</td>
<td>Consistent</td>
<td>Direct</td>
<td>Imprecise</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Pre/post: High</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using designated spaces to reduce sitter use and not adversely influence falls</td>
<td>Time Series: High</td>
<td>Inconsistent</td>
<td>Direct</td>
<td>Imprecise</td>
<td>Very Low</td>
</tr>
<tr>
<td></td>
<td>Pre/post: High</td>
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<tr>
<td>Using nurse assessment and decision tools to reduce sitter use and not adversely influence falls</td>
<td>Time Series: Low</td>
<td>Inconsistent</td>
<td>Direct</td>
<td>Imprecise</td>
<td>Very Low</td>
</tr>
<tr>
<td></td>
<td>Pre/post: High</td>
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<tr>
<td>Using a multicomponent intervention tailored to meet local needs and challenges to reduce sitter use and not adversely influence falls</td>
<td>Time Series: Low</td>
<td>N/A</td>
<td>Direct</td>
<td>N/A</td>
<td>Low</td>
</tr>
</tbody>
</table>
## Interventions that Include Video Monitoring of Patients

<table>
<thead>
<tr>
<th>Author, Year</th>
<th>Cost Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burtson, 2015</td>
<td>Estimated savings $772,000 year 1, $1,720,000 year 2</td>
</tr>
<tr>
<td>Cournan, 2018</td>
<td>Net $40,000 savings in 21-month period for Falls and fall-related injuries. $186,120 saved on one-to-one sitters in 12 months</td>
</tr>
<tr>
<td>Jeffers, 2013</td>
<td>$2.02 million in deferred cost savings in 1.5 years $24,225 in first 3 months from 57 prevented falls First quarter deferred staff savings of $392,000 exceeded original technology investment of $305,000</td>
</tr>
<tr>
<td>Spano-Szekely, 2018</td>
<td>$84,000 annual savings</td>
</tr>
<tr>
<td>Votruba, 2016</td>
<td>24/7 telesitter cost ($120,000) almost completely offset by combined fall cost avoidance and sitter reduction savings ($77,200-$112,700)</td>
</tr>
</tbody>
</table>
Cost Savings

Nurse Assessment and Decision Tools

<table>
<thead>
<tr>
<th>Author, Year</th>
<th>Cost Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spiva, 2012</td>
<td>Decreased from $536,955 to $215,132, total cost savings of $321,822.</td>
</tr>
<tr>
<td>Wray, 2014</td>
<td>41.3% ($533,917) decrease in expenditures ($1,292,228 to $758,311)</td>
</tr>
</tbody>
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Miscellaneous Sitter Reduction Interventions

<table>
<thead>
<tr>
<th>Author, Year</th>
<th>Cost Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adams, 2013</td>
<td>$1.2 million annual savings; $400,000 sitter agency savings</td>
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</tbody>
</table>
Limitations

Publication Bias
• It is highly likely that unsuccessful alternative interventions are less likely to be published, particularly for the “alternatives to sitters” articles.

Study Quality
• While some of the studies used a time series design sufficient to support causal relationships, most did not.
• Study quality was considered in our overall rating of the certainty of evidence.

Heterogeneity
• Studies’ interventions most often included multiple components, and these were all idiosyncratic—no study tested the same intervention, in all its components, as any other study.
• We attempted to group study interventions into categories of interventions that shared some similarities.
• The key finding of this review is that, despite the strong mechanistic rationale for the use of one-to-one sitters, there is surprisingly little evidence of its effect, with only 2 studies assessing the effect on falls and no studies assessing the effect on wandering or suicide/self-harm.

• Of the alternatives to sitters that have published results, the use of interventions with video monitoring is the most promising, although like any information technology intervention, the success is likely to be highly context-dependent.

• The effect of one-to-one sitters on reducing falls, wandering, or suicide/self-harm has yet to be established. The available data are most compatible with a hypothesis that sitters are at best only modestly effective for fall prevention.
Acknowledgements

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Full-length report available here (via Intranet only):
https://www.hsrdr.research.va.gov/publications/esp/reports.cfm

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