



NONPHARMACOLOGICAL INTERVENTIONS FOR DELIRIUM

Sharon K. Inouye, M.D., M.P.H.
Professor of Medicine
Beth Israel Deaconess Medical Center
Harvard Medical School
Milton and Shirley F. Levy Family Chair
Director, Aging Brain Center
Hebrew SeniorLife

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Nonpharmacologic Delirium Prevention

- Effectiveness and cost-effectiveness well-demonstrated
- Multiple clinical trials and systematic reviews
- Strong recommendation in multiple delirium guidelines
 - AGS-ACS in U.S.- 2015
 - NICE in U.K. - 2010 (updated 2014)

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Delirium Prevention Trials

Systematic review and meta-analysis of delirium prevention trials to evaluate effect on adverse outcomes

T Hsieh, JAMA Intern Med. 2015; 175: 512-52

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Methods

- Data Sources: PubMed, Google Scholar, Science Direct, Cochrane Database of Systematic Reviews
 - January 1, 1999 – December 31, 2013
- Study selection: Studies of targeted multi-component delirium interventions that reported on any of the following outcomes:
 - Delirium incidence
 - Falls
 - Length of stay
 - Rate of discharge to long-term care institutions
 - Change in functional or cognitive status

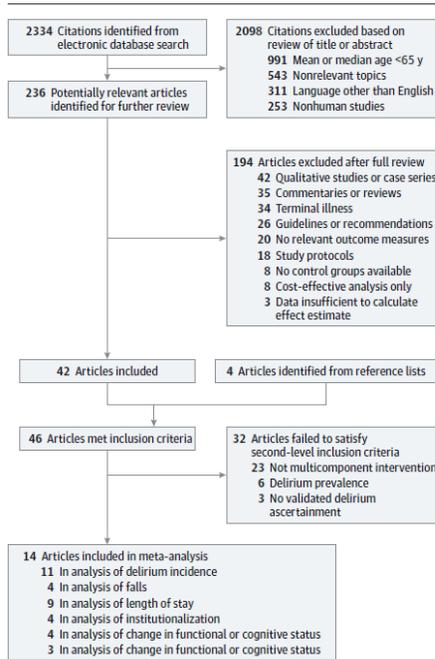
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Data Extraction

- Two experienced physician reviewers independently and blindly abstracted data
 - Study population
 - Outcome measures
 - Intervention strategy
- Reviewers also determined:
 - Quality ratings (Cochrane Risk of Bias)
 - Number of evidence-based HELP-type interventions
- Abstractions were compared
 - Any disagreements in ratings resolved through consensus conferences with third reviewer

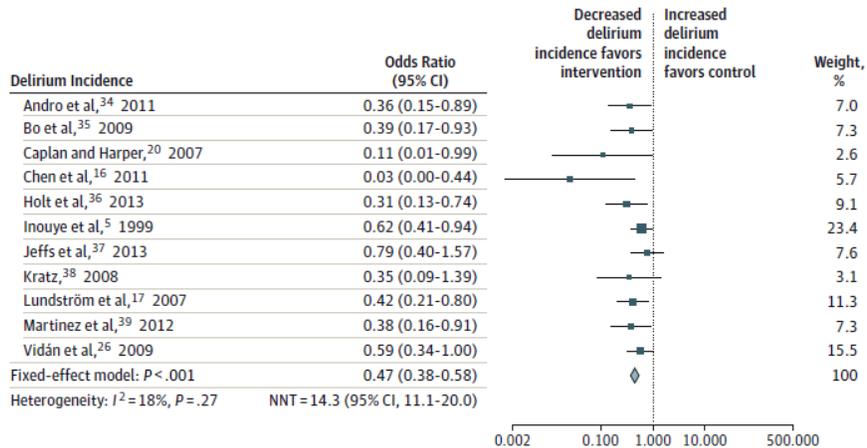
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Figure 1. Literature Identification, Review, and Selection for Inclusion in the Meta-analysis



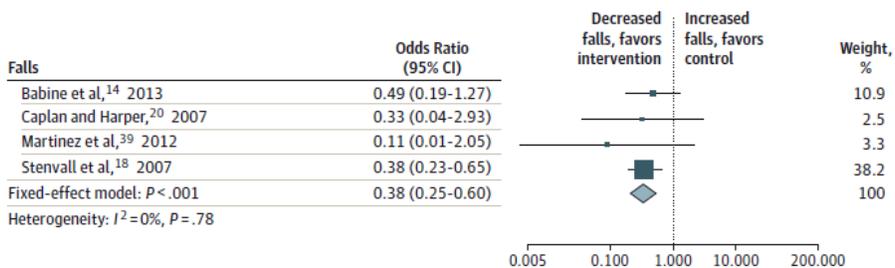
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Results: Delirium Incidence



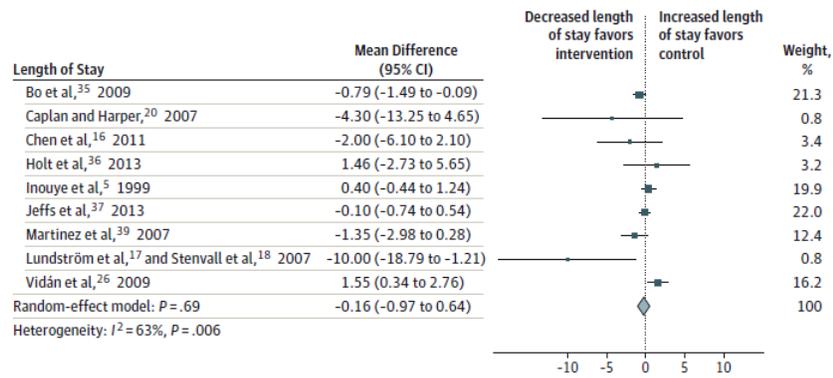
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Results: Falls



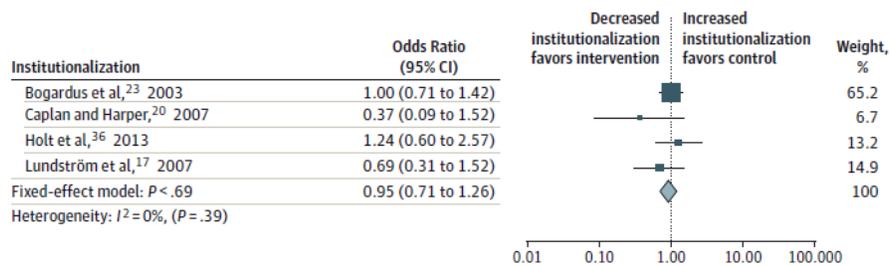
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Results: Length of Stay



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Results: Institutionalization



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Study Conclusions

- Provides evidence that multicomponent, non-pharmacologic delirium prevention interventions are effective:
 - Reducing incidence of delirium
 - Preventing falls
 - Trend towards avoiding institutionalization
 - Trend towards decreasing length of stay
- One million cases of delirium in the hospital could be prevented → cost savings of \$10,000 per case - **\$10 billion Medicare dollars per year**
- Based on preventable falls, **\$5-7 billion additional Medicare dollars saved per year**

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HELP-based Interventions

- Of the 14 studies, 12 were based on HELP
- Effectiveness noted if at least 2 of the 6 HELP-based interventions were included in the study

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Hospital Elder Life Program (HELP)

- Effective and cost-effective
- Why did it work?
 - Appropriate study population
 - Targeted risk factor intervention
 - Intervention potency tested and assured
 - Standardized protocols
 - Multifactorial approach but individually tailored
 - Trained multidisciplinary staff
 - Built-in quality assurance strategies



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Limitations of HELP

- Complex, requires system-wide changes
- Time-intensive behavioral interventions
- Nonpharmacologic—not just a pill
- Not effective for treatment



Design a delirium treatment trial

- Approaches based on pathophysiology: would be ideal
- Lacking this, target to address important areas we know about:
 - Address most common causes
 - Prevent known complications
 - Bolster reserve

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Designing the Ideal Intervention

What would it look like?

- Highly potent
- No adverse effects
- Straightforward, standardizable
- Acceptable to patients and staff

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New Challenges for Secondary Prevention

- More complex, since treating delirium is more difficult once it occurs
- Many different etiologies need to be addressed
- Multi-pronged approach will be required for potency
- Select factors which are amenable to intervention

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What approaches are likely to be effective?

Multi-pronged approach

1. Remove or treat underlying cause(s)
2. Manage delirium behaviors
3. Prevent or remediate complications
4. Restore cognitive and physical function

Caveat: not feasible to address all— prioritize to realistic number

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#1. Remove or treat underlying cause(s)

- Primary approach:
 - Identify 5-10 most common etiologies
 - Standardized assessments/interventions for these
- Some individualization:
 - Stepped approach to further assessments and interventions for potency
 - Must be able to standardize and monitor adherence

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Common causes to consider

- Medications
- Infections (UTI, respiratory)
- Dehydration
- Electrolyte imbalance
- Impaired oxygenation
- Severe pain
- Sleep deprivation

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#2 Manage delirium behaviors

- Agitation and inappropriate behaviors
- Nonpharmacologic strategies 1st: behavioral interventions, family participation
- Pharmacologic approaches reserved for severe agitation: beware of vicious cycles of medications and worsening delirium
- Low-dose pharmacologic approach

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#3 Prevent or remediate complications

- Oversedation/medication adverse effects
- Immobility, functional decline, falls
- Poor oral intake, dehydration/malnutrition
- Aspiration risk
- Sleep disturbance
- Urinary incontinence
- Pressure ulcers
- DVT/pulmonary embolism

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#4 Restore cognitive and physical function

- Rehabilitative approaches, targeted to maximizing functioning and independence.
- Consider more intensive PT/OT options
- Cognitive retraining
- Family education and participation
- Coordinated transitional care

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Principles of Implementation

- Target at-risk patients
- Pilot test all protocols for feasibility, acceptability, and potency
- Design approach to assure that all interventions are received
- Build in procedures to track and maximize adherence

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Implementation Issues

- Multidisciplinary team likely needed for effectiveness:
 - Physician: proactive consultation for causes
 - Nursing: interventions
 - Pharmacist: medications
 - Rehabilitation therapists
 - Trained volunteers
- Develop standardized interventions
- Prioritize: avoid unfeasible number of interventions per patient
- Ongoing monitoring and standardization of team

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Assuring Adherence

- Monitoring and assuring adherence may be complex, and will require systematic approaches
- Building in quality assurance will be critical to assure success of this complex intervention
- HELP has developed a number of strategies that can assist

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Issues in Evaluation

- Randomized controlled trial preferred
- Careful selection of appropriate controls
- Minimize or account for contamination
- Blinded outcome assessment
- Skilled, standardized assessors
- Adequate power
- Minimal drop-outs
- Intention to treat analysis

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How to define “effectiveness”?

- Choose your endpoints carefully
- Delirium: [do not overweight agitation]
 - Shortening duration and/or severity
 - Decrease delirium recurrence
- Not delirium alone:
 - Reduce adverse clinical outcomes (both short- and long-term): LOS, costs, readmission, NH placement, death
 - Return to functional independence
- NB: Large sample size may be needed

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