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Review

# Systematic Review of Interdisciplinary Interventions in Nursing Homes

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A B S T R A C T

*Background:* The role of interdisciplinary interventions in the nursing home (NH) setting remains unclear. We conducted a systematic evidence review to study the benefits of interdisciplinary interventions on outcomes of NH residents. We also examined the interdisciplinary features of successful trials, including those that used formal teams.

*Data Sources:* Medline was searched from January 1990 to August 2011. Search terms included *residential facilities, long term care, clinical trial, epidemiologic studies, epidemiologic research design, comparative study, evaluation studies, meta-analysis* and *guideline.*

*Study Selection:* We included randomized controlled trials (RCTs) evaluating the efficacy of interdisciplinary interventions conducted in the NH setting.

*Measurements:* We used the Cochrane Collaboration tools to appraise each RCT, and an RCT was considered positive if its selected intervention had a significant positive effect on the primary outcome regardless of its effect on any secondary outcome. We also extracted data from each trial regarding the participating disciplines; for trials that used teams, we studied the reporting of various team elements, including leadership, communication, coordination, and conflict resolution.

*Results:* We identified 27 RCTs: 7 had no statistically significant effect on the targeted primary outcome, 2 had a statistically negative effect, and 18 demonstrated a statistically positive effect. Participation of residents' own primary physicians (all 6 trials were positive) and/or a pharmacist (all 4 trials were positive) in the intervention were common elements of successful trials. For interventions that used formal team meetings, presence of communication and coordination among team members were the most commonly observed elements.

*Conclusion:* Overall interdisciplinary interventions had a positive impact on resident outcomes in the NH setting. Participation of the residents' primary physician and/or a pharmacist in the intervention, as well as team communication and coordination, were consistent features of successful interventions.



The Institute of Medicine, in its "Crossing the Quality Chasm: A New Health System for the 21st Century" report, referred to the United States' health care system as a "poorly organized delivery system."[1] A key recommendation was to develop an interdisciplinary approach to minimize "suboptimization" of health care processes. Interdisciplinary care entails at least 2 disciplines that rely on each other, participate in team activities, and share leadership to accomplish team goals.[2] The Chronic Care Model,[3] a comprehensive, evidence-based approach to chronic illnesses, also emphasizes the role of interdisciplinary team care. As a result, researchers have been studying interdisciplinary care models in multiple settings to improve care fragmentation and poor communication.

For nursing homes (NHs), Section 483 of the Code of Federal Regulations (483.20 [k][2]) mandates an interdisciplinary approach for care planning. It requires evaluations by "an interdisciplinary team that includes the physician, a registered nurse… other appropriate staff in disciplines as determined by the resident's needs.…"[4] The federal guidelines do not define specifics about NH care team composition and operation.[5] Moreover, the involvement of physicians in the mandated interdisciplinary care processes has been minimal.[6]

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Interdisciplinary care is viewed as more effective than disciplines working independently,[7] especially for older patients in need of chronic care[3] in the home, acute care, or the long term care settings.[8–11] A recent meta-analysis confirmed the benefits of interdisciplinary care for older hospitalized patients.[12] Qualitative evidence links various organizational team elements in interdisciplinary approaches with better working conditions,[13] increased staff motivation, and reduced staff turnover in NHs. In 1991, Shortell et al[14] described a model for high-performance interdisciplinary teams in the intensive care unit. The model suggested that the perceived efficacy of interdisciplinary teams depends on the presence of 4 elements: effective leadership, communication, coordination, and conflict resolution.[15] Although this model was validated in the long term care setting,[16] the documentation of association between successful interdisciplinary interventions and the presence of these organizational team elements is lacking.[17,18]

We conducted this systematic review of interdisciplinary interventions in the NH setting to (1) study the impact of interdisciplinary interventions on health outcomes of NH residents, and (2) document features of successful interventions including those that used formal teams.

## Methods

### *Search Strategies*

A comprehensive MEDLINE search was performed for articles published between January 1990 and August 2011. MeSH search terms included *residential facilities, long term care, clinical trial, epidemiologic studies, epidemiologic research design, comparative study, evaluation studies, meta-analysis,* and *guideline*. Two reviewers (A.N. and M.T.) reviewed the titles and abstracts to exclude irrelevant studies. The remaining articles were retrieved, and those not meeting the inclusion criteria were excluded. Any disagreements were settled by the input from the third reviewer (M.B.). The reference lists of these articles were reviewed to retrieve additional articles meeting the inclusion criteria. References of available systematic reviews of NH care were also reviewed.

### *Inclusion and Exclusion Criteria*

The inclusion criteria included randomized controlled trials (RCTs), NH setting, or residential care facilities; mean age of study population of older than 65 years; team-based interventions; and outcomes that were facility or resident based. Interdisciplinary intervention was defined as requiring collaboration among more than one discipline, including physicians, nursing staff, nurse aides (assistants), the directors of nursing, administrators, pharmacists, dieticians, social services, activities directors, psychiatrists, medical directors, and physical, occupational, or speech therapists. Trials that included only primary psychiatric patients were excluded. Drug trials that did not include interdisciplinary designs were also excluded.

### *Study Appraisals*

Two investigators (K.U. and M.T.) graded selected studies on the strength of evidence using the Cochrane Collaboration's tool.[19] Strength of evidence was graded *A* if randomization, placebo-control, and concealed allocation were done; *B* if randomization without clearly defined concealment was used; and *C* if randomization was not done or was done with inadequate concealment. In case of disagreement, a third author (M.B.) resolved the disagreement.

### *Data Extraction*

Data were extracted using a tool devised by the research team. Characteristics including year and country of study, topic of intervention, number of facilities and participants, structure of teams, description of team meetings, and outcomes were extracted. A trial was deemed positive if there was a statistically significant ($P < .05$) advantage in the primary outcome for the group randomized to interdisciplinary care intervention.

We also reviewed the selected RCTs for the use of formal team-based care through meetings, and description of organizational team elements among these teams. *Leadership* was considered to be present if the study described a formal leader who clarified team's norms and expectations and communicated goals and expectations. *Communication and/or coordination* were present if the authors described procedures for formal communication and coordination of tasks among team members. *Conflict management* was considered present if the authors documented a process for addressing disagreements among team members. If these elements were not explicitly described, they were considered absent.

## Results

The initial search led to a total of 4841 citations. Figure 1 describes the detailed process for selecting the final pool of 27 articles.

Table 1 describes basic characteristics of these trials, various disciplines that were included in the intervention, and the outcomes of these trials. Only RCTs were included, and among these, cluster randomization was the most common design. Fourteen studies received an *A* and others received a *B* quality rating. Ten trials were performed in the United States, 4 in Australia, 3 each in the United Kingdom and the Netherlands, and the remaining were done in Taiwan, Germany, Sweden, New Zealand, Denmark, and Austria. All but 6 trials were done after 2000. The range of enrolled residents was from 74[20] to 10,000 residents.[21] Trial durations ranged from 2 to 12 months. Disciplines included in the studies were primary care physicians, geriatricians, psychiatrists, therapists, nurses and nurse aides, podiatrists, dieticians, activity staff, and administration. In regard to the primary outcomes of these trials, 18 were positive, 7 were without benefit, and 2 had negative (harmful) outcomes.[22,23] Included trials used various combinations of a broad variety of interventions, including education; case conferences; environmental modifications; medical, psychosocial, and pharmacological assessments; exercise and therapy programs; podiatry care; and visual and nutritional supplements.

Table 2 describes these interventions, use of teams in these trials, and the organizational elements of these teams. It also summarizes the primary outcomes of these trials. Of the 4 trials[21,22,24,25] that failed to prevent falls, none used formal team meetings. In one of the successful trials with the aim to reduce antipsychotics, the pharmacist who led the teams received formal training in teamwork and communication skills. Of the 4 trials targeting a decrease in behaviors, 3 were successful, all of which used formal team meetings.[26–28] One of 2 trials that used multidisciplinary education and meetings for restraint reduction[23] led to a statistically significant increase in restraints in the intervention group. The 5 trials targeting medication use (other than psychoactive drugs) demonstrated mixed results but only 1 used formal team-based care. The remaining selected trials targeted miscellaneous outcomes, out of which only 2 used formal team meetings.[29]

Table 3, in relation to the success of the primary outcome, describes the participation of various disciplines in the interdisciplinary interventions. For trials that used formal team meetings in their intervention, Table 3 also details the assessment of organizational team elements. Team communication and coordination among

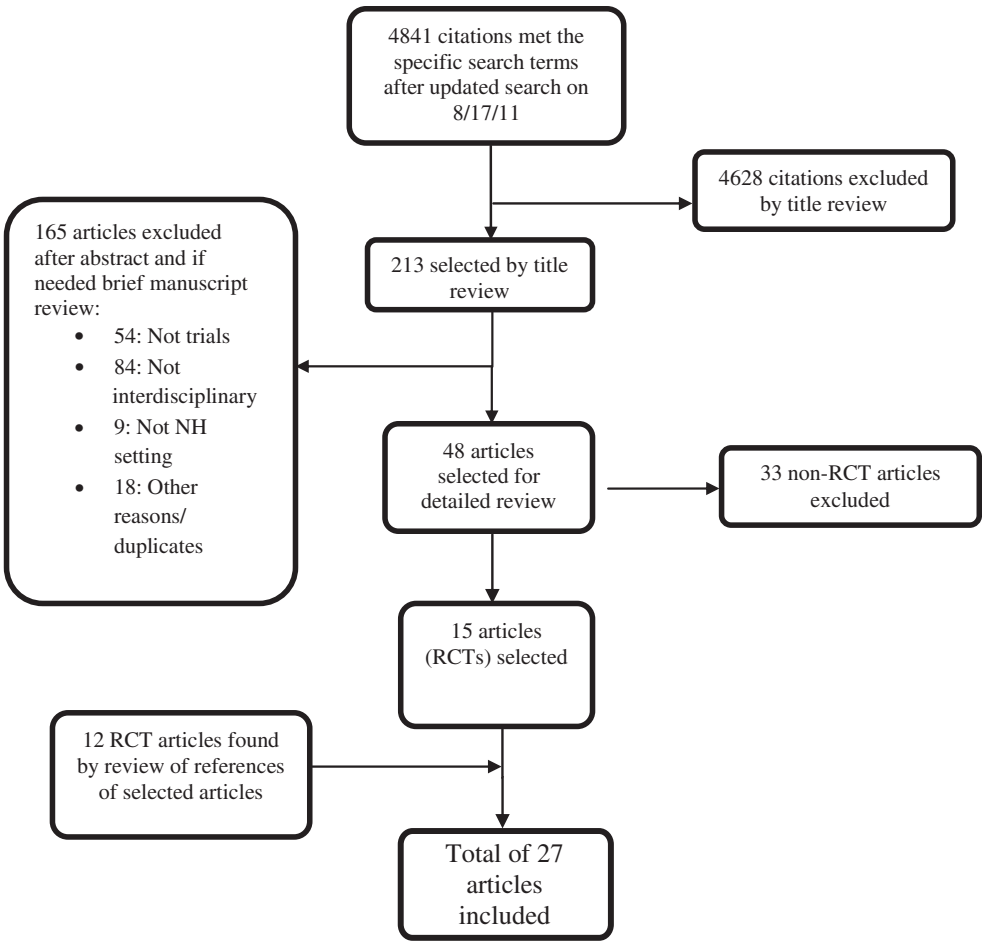


**Fig. 1.** Search strategy.

team members were most commonly addressed in successful trials. All 4 trials that documented team leadership also had positive outcomes.

With regard to inclusion of disciplines on the team, all 4 interventions that included a pharmacist succeeded in achieving a positive primary outcome. Physicians (residents' primary care physician [PCP] or an outside consultant) were involved in interventions among 21 of the 27 RCTs. They were included either as a member of the intervention team (active involvement) or as the recipient of education or recommendations from the intervention team. The overall success rate for studies with any physician involvement was similar to the overall success rate (ie, 66%). For the trials in which residents' PCPs actively participated in the intervention, the success rate was 100%. The rate was 53% for trials in which the residents' PCPs were not actively involved in the intervention.[28–33]

## Discussion

This review summarizes the trials that used interdisciplinary interventions in the NH setting and documents team elements in trials that used team care. The overall success rate for the NH trials included in this review was positive, with 66% of the trials successfully affecting the primary outcome. Interdisciplinary interventions have also yielded convincing outcomes in other health care settings, in acute care, for example, team assessments have been shown to shorten the length of patient stay,[11] and in the outpatient settings, geriatric teams have led to a decrease in the use of the emergency department by low-income older adults.[9] These results need to be interpreted with caution, as most of the trials included in this review did not primarily aim to assess the effect of multiple disciplines in their intervention designs.

The review establishes an association between the active involvement of the residents' PCPs in the interdisciplinary interventions and positive outcomes among the included trials. It is quite possible that the inclusion of residents' PCPs as active team members signified their engagement, resulting in higher acceptance and follow-through of the interdisciplinary recommendations by the intervention team. The PCPs, who are usually needed to approve orders on their patients, would have the opportunity to raise any concerns with recommendations during a team meeting, allowing the team to adjust and tailor them. A study of geriatric evaluation units in the acute care setting showed similar benefits through the direct implementation of orders by the consultants.[34] Moreover, the engagement of the clinicians may have led to enhanced team dynamics and care planning processes. Krichbaum et al[35] found that in NHs, presence of clinicians on quality assurance and problem-solving teams resulted in better outcomes. A similar trend between the presence of a pharmacist in the interdisciplinary intervention and positive trials was witnessed in this review. This observation points to the significance of medication management in the frail NH population, as validated by the results of a recent systematic review of pharmacists' impact in health care teams.[36]

It is important to note that 2 of the selected RCTs yielded negative (harmful) results, one of which used formal team care.[22,23] This could have been because of diversion of limited resources to processes that may not have been helpful for the involved residents, emphasizing

**Table 1**
Basic Characteristics of Included Trials in Chronological Order

| Author/Year/Country | Setting/No. of Participants; Average Age | Study Duration | Disciplines | Primary Outcome | Results* | Grade |
|---|---|---|---|---|---|---|
| Avorn 92, US[37] | 12 NHs/678; n/a | Not available | N; NA; P; Pharm. | Psychotropic reduction | Positive | B |
| Rovner 96, US[26] | 1 NH/118; n/a | 6 mo | Act; N, NA, Psych | Behavior presence | Positive | A |
| Evans 97, US[38] | 3 NHs/643; >83 | 6 mo | N; NA; N. consult. | Restraint reduction | Positive | A |
| Meador 97, US[39] | 12 NHs/1152; >65 | 6 mo | N; NA; P | Antipsychotic use decrease | Positive | B |
| Ray 97, US[40] | 14 NHs/499; >82 | 12 mo | Psych; N; NA; OT; | Decrease in fallers | Positive | A |
| Schmidt 98†, Sweden[33] | 33 NHs/1854; >83 | 12 mo | P; Pharm; N; NA | Decrease in antipsychotics | Positive | B |
| McMurdo 2000, UK[24] | 9 NHs/133; >84 | 9 mo | P; PT | Falls rate | NS | B |
| Roberts 2001, Australia[41] | 52 NHs/3230; >65 | 12 mo | P; N; Pharm; NA | No. of prescriptions | Positive | B |
| Naughton 2001, US[42] | 10 NHs/n/a; >81 | Not available | P; N; NA | Proper antibiotic usage | NS | B |
| Stein 2001, US[43] | 20 NHs/n/a; >81 | 3 mo | P; N; Admin | Change in mean days use | Positive | B |
| Jensen 2002†, US[31] | 9 RCs/n/a; >83 | 11 wk | P; PT, N | No. of residents who fell | Positive | A |
| Opie 2002†, Austria[27] | 45 NHs/102; >83 | 4 wk | Psych; N | Behaviors incidence | Positive | B |
| Becker 2003, Germany[44] | 6 NHs/981; >85 | 12 mo | N; NA; PT | Incidence falls and no. of fallers | Positive | B |
| Brodaty 2003†, Australia[45] | 11 NHs/102; >82 | 12 wk | Psych; Psychologist; N | Depression, behaviors | NS | A |
| Crotty 2004†, Australia[30] | 10 NHs/154; >83 | 12 wk | P; Geriatr, staff; Pharm | Medication appropriateness | Positive | A |
| Dyer 2004, UK[25] | 20 RCs/196; n/a | 12 mo | PT; Geriatr; Optician; N; Podiatrist; OT | No. of falls; recurrent falls | NS | A |
| Kerse 2004, New Zealand[22] | 14 NHs/628; >83 | 12 mo | P; N; NA | Fall rate; Injury rate | Harmful | A |
| K. English 2004, Australia[46] | 22 RCs/106; >82 | 3 mo | Psych; N; SW; Psychologist | Medical utilization, antipsychotic use | NS | A |
| Loeb 2005, US[47] | 12 NHs/4217; n/a | Not available | N; NA; P | Overall antibiotic use | Positive | A |
| Ray 2005, US[21] | 112 NHs/10558; >82 | 12 mo | N; NA; OT; PT; Admin | Injurious falls | NS | A |
| Chapman 2007†, US[28] | 2 NHs/118; >84 | 8 wk | P; N; NA; PT; OT; Dietician | Depression; pain; behaviors | Positive | B |
| Beck 2008, Denmark[48] | 7 NHs/121; >86 | Not available | PT, N, dietician | Weight decrease | Positive | B |
| Sackley 2008, UK[49] | 6 NHs/34; >85 | 6 wk | PT; N | Incontinence; mobility | Positive | A |
| Huizing 2009, Netherlands[23] | 15 NHs/371; >82 | 8 mo | N; NA; Specialist nurse | Restraint use | Harmful | B |
| Wu 2009†, Taiwan[20] | 7 NHs/74; >82 | 12 mo | Geriatr; PT; SW; Dietician; N | Nutritional status | NS | B |
| Neyens 2009, Netherlands[32] | 12 NHs/518; n/a | 12 mo | N; P; PT; OT | Falls per patient per year | Positive | A |
| Boorsma 2001†, Netherlands[29] | 10 RCs/318; >85 | 6 mo | P; Geriatr; N; | Composite Quality Indicator score | Positive | A |

Act, activities personnel; Admin, administrator; Geriatr, geriatrician; N, nurse; NA, nurse aide; n/a, not available; N. consult, nurse consultant; NH, nursing homes; NS, nonsignificant; NSAIDs, nonsteroidal anti-inflammatory drugs; OT, occupational therapist; P, physician; Pharm, pharmacist; Psych, psychiatrist; PT, physical therapist; RC, residential care facilities; SW, social worker.

*Significance of the results was based on the Primary Outcome only.

†These studies included assessment of the interdisciplinary intervention as one of the aims.

**Table 2**
Team Interventions, Formats, and Member Roles

| Study | Intervention/Formal Team Meetings/Meeting Format | Meeting Content (Yes = Y; No = N) | Communication/ Coordination | Conflict Management | Leadership | Primary Outcome |
|---|---|---|---|---|---|---|
| Avorn 92[37] | Pharmacist-educated physicians, nursing and nurse aides. No FORMAL team meetings | NA | NA | NA | NA | Positive |
| **Rovner 96[26]** | **Consultant provided psychiatric care and activities were planned/1-hour weekly formal meetings** | **Education: Y Clinical: Y** | **Yes: psychiatrist arranged weekly meetings** | **NR** | **NR** | **Positive** |
| Evans 97[38] | A nurse consultant provided education and case-based consultation. No FORMAL meetings. | NA | NA | NA | NA | Positive |
| Meador 97[39] | A geriatric psychiatrist educated physicians and a nurse educated nurses. No FORMAL team meetings | NA | NA | NA | NA | Positive |
| **Ray 97[40]** | **Interdisciplinary team met regularly and made recommendations for physicians and facility staff.** | **Education: Y Clinical: Y** | **Yes. Each facility assigned a falls coordinator** | **NR** | **Yes: Falls coordinator oversaw implementation** | **Positive** |
| **Schmidt 98[33]** | **Pharmacist led team meetings focusing on antipsychotic prescribing.** | **Education: N Clinical: Y** | **Yes. A trained pharmacist facilitated formal communication** | **NR** | **NR** | **Positive** |
| McMurdo 2000[24] | Clinicians assessed blood pressure and medications and made recommendations. Also exercise sessions were done. No FORMAL team meetings. | NA | NA | NA | NA | NS |
| Roberts 2001[41] | Education sessions for nurses; pharmacist reviewed medications with geriatrician; recommendations to physicians. No FORMAL meetings | NA | NA | NA | NA | Positive |
| Naughton 2001[42] | Physicians and nursing and staff educated about guidelines and given educational tools. No FORMAL meetings. | NA | NA | NA | NA | NS |
| Stein 2001[43] | Educational program for physicians and nursing staff. No FORMAL meetings. | NA | NA | NA | NA | Positive |
| **Jensen 2002[31]** | **Staff education, environment modifications, and exercise arranged for the residents. Weekly fall meetings included physicians.** | **Education: N Clinical: Y** | **No details available about the weekly meeting** | **NR** | **NR** | **Positive** |
| Becker 2003[44] | Staff education, environmental modification, and exercise were performed. No FORMAL team meetings. | NA | NA | NA | NA | Positive |
| **Brodaty 2003[45]** | **A psychogeriatric case management model OR psychiatric consultative model was used.** | **Education: Y Clinical: Y** | **Yes. Team used strict protocols to communicate** | **NR** | **NR** | **NS** |
| **Opie 2002[27]** | **Psychosocial, medical, pharmacologic, and pain management by a team and recommendations to staff and physicians.** | **Education: N Clinical: Y** | **Yes.** | **Yes. Strategies unacceptable to staff members were abandoned** | **Yes. The consultancy team clarified roles and goals.** | **Positive** |
| **Crotty 2004[30]** | **Staff behaviors education; case conferences led by physician. Team met regularly; recommendations sent to facility staff and physicians** | **Education: Y Clinical: Y** | **Yes.** | **NR** | **Yes. Authors documented that PCP led the meetings.** | **Positive** |
| Dyer 2004[25] | Exercise, staff education, medical reviews, environment modifications and podiatry assessments. Recommendations were sent by letter to the physicians. No FORMAL meetings. | NA | NA | NA | NA | NS |
| Beck 2008[48] | Residents offered exercise sessions, provided chocolate supplements and oral/dental hygiene. No FORMAL team meetings. | NA | NA | NA | NA | Positive |
| **Huizing 2009[23]** | **Five 2-hour educational sessions for nursing and other staff; specialist nurse consultant planned team meetings.** | **Education: Y Clinical: Y** | **NR** | **NR** | **NR** | **Harmful** |
| **Wu 2009[20]** | **Integrated care by an external team of professionals visiting the facility monthly to attend formal meetings.** | **Education: N Clinical: Y** | **NR** | **NR** | **NR** | **NS** |
| **Neyens 2009[32]** | **The team met formally for medical assessment and fall risk as needed; performed medication review, environment hazard evaluations and exercise programs.** | **Education: N Clinical: Y** | **Yes. Authors reported processes of communication** | **NR** | **NR** | **Positive** |

(*continued on next page*)

**Table 2** (*continued*)

| Study | Intervention/Formal Team Meetings/Meeting Format | Meeting Content (Yes = Y; No = N) | Communication/ Coordination | Conflict Management | Leadership | Primary Outcome |
|---|---|---|---|---|---|---|
| Ray 2005[21] | Intense training of a multidisciplinary team that focused on safety, ambulation and medication for high risk residents. No FORMAL team meetings | NA | NA | NA | NA | NS |
| Loeb 2005[47] | Educational sessions for nursing, other staff and facility physicians. No FORMAL meetings. | NA | NA | NA | NA | Positive |
| **Chapman 2007[28]** | **Holistic approach including medical, psychological and behavioral assessments, along with activities planning by the team led by head nurse; included physicians** | **Education: N Clinical: Y** | **Yes. The social worker provided coordination** | **NR** | **Yes. The teams were led by head nurses** | **Positive** |
| Kerse 2004[22] | Education sessions for physicians and nursing staff; tools to identify high risk residents. No FORMAL meetings. | NA | NA | NA | NA | Harmful |
| K. English 2005[46] | Qualifying residents referred to an interdisciplinary psychiatric team. No in-facility FORMAL team meetings. | NS | NA | NA | NA | NS |
| Sackley 2008[49] | Staff education on mobility and continence along with therapy for mobility enhancement. No FORMAL team meetings. | NA | NA | NA | NA | Positive |
| **Boorsma 2011[29]** | **Biweekly team met and did geriatric assessment, care planning, referral to geriatrician if needed; performed review of quality indicators.** | **Education: N Clinical: Y** | **Yes. Clear mechanisms of formal communication were described.** | **NR** | **NR** | **Positive** |

NA, not applicable; NR, not reported; NS, no significant benefit in the Primary Outcome; PCP, primary care physician.
Studies with interventions that included FORMAL team meetings are bolded.

the fact that interdisciplinary team interventions should be carefully targeted. Available evidence shows that poorly planned and disorganized team activities may be harmful to care.[13] Thus, taking the time to structure the interdisciplinary interventions, particularly those that include team care, is essential for resource-poor NH environments; balancing team activities with the time the team members might otherwise spend providing direct patient care.

Of the12 trials that used formal team care models, 9 described elements of team communication and coordination, and 88% of these were successful. The value of communication is evident and it has been described as "the cement which holds teams together."[50] Research in acute care settings has revealed that team traits, such as better communication, result in higher perceived quality of care and shorter hospital stays.[51] Four trials that documented an assigned team leader showed positive results, but these results have to be interpreted with caution as the sample sizes were small. Moreover, health care literature describes multiple leadership styles, not all of which have been associated with positive results. Havig et al[52] found that a leadership style that was task-oriented, specified tasks and roles, and used accountability enhanced care quality. In contrast, "relationship-oriented" leadership style that supported staff, helped them develop skills, and then praised them was not associated with higher quality of care.

Mandated NH interdisciplinary processes should be analyzed from an organizational, fiscal, and policy perspective to ensure that precious resources are being directed appropriately to care for this vulnerable population. Although these mandates have led to an improvement in the interdisciplinary processes,[6] the integration of these processes into daily NH operations has been less than ideal.[53] Effective integration may have suffered because of limited physician and pharmacist involvement in the interdisciplinary processes, ambiguity about the roles of various team members, and the lack of formal training among the facility nurses regarding implementation of care plans.[53,54] This review provides support for well-planned interdisciplinary interventions, including the use of structured communication mechanisms and the engagement of the residents' PCPs and facility pharmacists. A recent initiative put forth through the collaboration of the Centers for Medicare & Medicaid Services (CMS) Innovation Center and the CMS Medicare-Medicaid Coordination Office has funded 7 programs across the country that aim to decrease the avoidable hospitalizations of NH residents.[55] All of these programs have devised multidisciplinary interventions that use trained team members and formal communication tools to enhance interdisciplinary resident care. At least 1 of these 7 interventions is introducing specific tools and protocols to enhance the roles of PCPs and pharmacists in interdisciplinary comprehensive care.[56] Lessons learned from this unique initiative will further inform regarding best practices in effective interdisciplinary care in NHs.

Several limitations of this review should be acknowledged. First, for most studies, information regarding facility characteristics (size, profit status, dementia units, patient acuity, dementia severity, and staff skill mix) was lacking, and that may have affected the individual study results. Second, in this review, we were limited to how authors chose to describe their interventions and for several studies specific details about exactly what function each team member performed were not available. Such information will be vital for devising future interventions to study the impact of teams within the interdisciplinary interventions in the NH setting. Third, as per federal regulations, NHs are required to provide interdisciplinary care to their residents; thus, it is difficult to conduct an RCT evaluating the efficacy of interdisciplinary team care in the NHs and, therefore, our review did not identify any RCT evaluating this outcome. Furthermore, the included studies lacked information regarding the intensity of such care at baseline in the participating facilities. Fourth, the fact that

**Table 3**
Rate of Studies With Positive Primary Outcome Across Various Interdisciplinary Team Characteristics

| Characteristics | Total Studies | Positive Studies | Success Rate, % |
|---|---|---|---|
| All studies | 27 | 18 | 66 |
| Formal team meeting | | | |
| Yes | 12 | 9 | 75 |
| No | 15 | 9 | 60 |
| Formal Team Characteristics n = 12 | | | |
| Communication and coordination | | | |
| Yes | 9 | 8 | 88 |
| No | 3 | 1 | 33 |
| Conflict management | | | |
| Yes | 1 | 1 | 100 |
| No | 11 | 8 | 72 |
| Leadership | | | |
| Yes | 4 | 4 | 100 |
| No | 8 | 5 | 62 |
| Any Physician | | | |
| Yes | 21 | 14 | 66 |
| No | 6 | 4 | 66 |
| Involvement of residents' physicians among all interventions that included a physician | | | |
| Yes | 6 | 6 | 100 |
| No | 15 | 8 | 53 |
| Involvement of Nurse Aides | | | |
| Yes | 13 | 9 | 69 |
| No | 14 | 9 | 64 |
| Pharmacist | | | |
| Yes | 4 | 4 | 100 |
| No | 23 | 14 | 61 |
| Nurse | | | |
| Yes | 25 | 17 | 68 |
| No | 2 | 1 | 50 |

studies were performed in different countries, with their unique regulatory and reimbursement systems, may also have affected these results. Finally, NHs are complex environments that offer serious obstacles to conducting rigorous randomized, controlled trials and contamination of the intervention could be possible that may affect the validity of the results.[57]

## Conclusion

This review provides an overview of NH RCTs that used interdisciplinary interventions, 12 of which used formal team meetings. Most of the studied trials were positive. All interventions that included residents' primary PCPs and/or a pharmacist had positive outcomes. For trials that used formal team-based care, communication, coordination, and leadership were consistent features of successful interventions. This review identifies future areas of research for enhancing impact of interdisciplinary interventions in nursing homes.

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