

## Chapter 29. Multidisciplinary Geriatric Consultation Services

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### **Background**

Multidisciplinary geriatric consultation teams provide comprehensive assessment of physical, emotional, and functional status in older persons and make recommendations regarding prevention and management of common geriatric syndromes, functional impairments, and other problems. Teams vary in composition but usually include a geriatrician, nurse, social worker and other health professionals such as rehabilitative therapists, psychologists, and dieticians. Their expertise may improve the safety of hospitalized elders (or nursing home residents) by reducing hospital-acquired complications such as falls, delirium, functional decline, and “preventable” deaths. Consultation teams and inpatient geriatric evaluation and management (GEM) units share this multidisciplinary approach but differ in who controls the implementation of recommendations. A patient’s primary physician decides whether to implement a consultation team’s recommendations, whereas geriatric teams have direct control over implementation in GEM units. As this difference may impact effectiveness, GEM units are reviewed separately (Chapter 30). Multidisciplinary consultation services are available to elders living in the community, however this chapter reviews the evidence for geriatric consultation improving the safety of hospitalized patients or nursing home residents.

### **Practice Description**

The structure of consultation teams, the types of evaluations they routinely perform, and the recommendations they make vary from institution to institution. A review of published studies reveals some common features. A team has at least one physician, a nurse practitioner or similarly professionally-trained provider, rehabilitative experts, and usually a social worker. Assessments typically include measures of mobility and functional status, mental status examinations, psychological screening, evaluation of common geriatric problems (eg, risk for falls, incontinence, and polypharmacy), and plans for rehabilitation and/or appropriate placement at the time of discharge. The team notes its recommendations in the hospital chart, communicates them to the physician directing care for the patient, and provides follow-up until the patient is discharged.

### **Prevalence and Severity of the Target Safety Problem**

Patients aged 65 years and older account for almost half of inpatient hospitalization days.<sup>1</sup> In 1996, they comprised 13% of the population yet accounted for 38% of the approximately 31 million discharges from non-government, acute care hospitals.<sup>2</sup> The actual target population is smaller because, although all hospitalized elders are at risk for complications, some patients are unlikely to benefit from multidisciplinary geriatric consultation. Strategies to target geriatric services to those patients most likely to benefit have been reviewed in the literature.<sup>3</sup> The characteristics associated with potential benefit include advanced age (eg, over 75 years old), specific geriatric conditions (eg, falls or confusion), functional impairments

(eg, limitations in bathing, feeding, or transferring), and psychosocial impairments (depression or living alone).

As a patient safety practice, consultations may decrease the occurrence of iatrogenic complications such as functional decline related to hospitalization, delirium, and falls. Functional decline occurs in 25 to 60% of older persons after entering acute care, due to the interaction of a patient's existing co-morbidities with the hospital environment.<sup>4</sup> It results in worsened cognitive status and physical functioning due to the stressors of hospitalization (bedrest and immobility, medical procedures and pharmacotherapy, and the hospital environment) in older patients. For information on the prevalence and severity of falls and delirium, see Chapters 26 and 28, respectively.

Mortality is another important clinical outcome that may be affected. The number of deaths that might be prevented by implementation of this practice is unknown, although the most common medical diagnoses of patients enrolled in these consultation studies (cardiac, pulmonary, and gastrointestinal disorders) reflect the prevalent admitting medical diagnoses for all older patients. The in-hospital, all-cause mortality in the reviewed studies (approximately 5 to 15%) provides a context against which one can consider the potential for improvement if these practices influence mortality.

### **Opportunities for Impact**

The number of hospitals with multidisciplinary geriatric consultation services is not reported in the literature. However, data from the American Hospital Association<sup>5</sup> indicate that fewer than half of hospitals offer comprehensive geriatric assessment.\* Researchers in the field believe that even in those hospitals with consultation services, only a minority of the patients most likely to benefit are being referred. Thus, if the practice is effective, there is substantial opportunity for improvement by increasing its utilization in this vulnerable patient population.

### **Study Designs**

A structured literature search identified 14 controlled trials: 12 randomized,<sup>6-17</sup> 1 alternate-allocation,<sup>18</sup> and 1 prospective cohort study<sup>19</sup> (see Table 29.1). Four of the 14 articles report different outcome measures from the same clinical trial.<sup>6-9</sup> One study focuses on nursing home residents;<sup>14</sup> all other studies were of hospitalized patients. Three of the studies were performed in Canada and one in the United Kingdom.<sup>16-19</sup> Two trials were limited to elderly patients with hip fractures.<sup>15, 17</sup> In the study by Fretwell et al, patients were admitted to a medical ward designated for seniors and staffed with specially trained nurses.<sup>13</sup> Because the team still functioned in a consultative role and could not implement its own recommendations, the study is included here rather in the chapter on GEM units (Chapter 30).

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\* Of the 4953 acute medical/surgical hospitals in the American Hospital Association (AHA) database, 4398 (89%) responded to the AHA 1999 Annual Survey. Of responding hospitals, 1823 (41%) indicated availability of "geriatric services," which was defined as providing one or more of the following: comprehensive geriatric assessment, adult day care, Alzheimer's diagnostic-assessment services, geriatric acute care units, and/or geriatric clinics. A conservative, upper-limit estimate assuming all 555 non-responding hospitals have "geriatric services" would be 48%. As the survey does not ask the availability of each type of geriatric service, the percentage of hospitals offering inpatient comprehensive geriatric assessment based on the AHA Survey data can only be described as "less than 48%" (how much less is unknown).

## Study Outcomes

Ten studies reported functional status outcomes, measured by the Katz<sup>20</sup> or Lawton<sup>21</sup> index of activities of daily living, or the Barthel Index.<sup>22</sup> Marcantonio et al<sup>15</sup> measured the occurrence and severity of delirium defined according to the Confusion Assessment Method criteria.<sup>23</sup> Ray and colleagues reported the proportion of recurrent fallers and the rate of injurious falls in nursing home patients during one year.<sup>14</sup> Becker et al measured 6 classes of hospital-acquired complications: medication-related, procedures, infections, trauma or injury (eg, falls and pressure sores), psychiatric, and other (eg, urinary retention, fecal impaction).<sup>7</sup> Eight trials reported all-cause mortality in-hospital, at 6 months, or at one year.<sup>8,10-13,16,18,19</sup> A recent meta-analysis<sup>24</sup> incorporated unpublished mortality data from several other studies<sup>6,17</sup> reviewed here. Other clinically relevant outcomes were changes in pharmacotherapy prescribed, length of hospital stay, and discharge location.

## Evidence for Effectiveness of the Practice

Two non-blinded trials showed a statistically significant improvement in patients' functional ability.<sup>17,18</sup> Kennie et al targeted a population at high risk for functional decline during hospitalization: elderly women with hip fractures.<sup>17</sup> In the study by Hogan et al,<sup>18</sup> the difference was significant at one year but not at 3 or 6 months, suggesting that the intervention group's post-discharge follow-up by a geriatric team may have accounted for the difference rather than prevention of iatrogenic functional decline in-hospital. The study by Thomas and colleagues<sup>12</sup> showed a trend towards improved functional status. No other study reported improved functional outcomes.

The trial by Becker et al<sup>7</sup> showed no significant difference in the incidence of hospital-acquired complications between intervention and control groups. Two studies that targeted specific high-risk populations did show benefit.<sup>14,15</sup> In the study by Marcantonio et al, a multidisciplinary consultation including assessment and targeted recommendations per a structured protocol in 10 domains (including pain treatment, bowel/bladder function, nutrition, pain treatment, mobility, and environmental stimuli) resulted in a significant decrease in perioperative delirium in patients with hip fracture.<sup>15</sup> Ray et al enrolled nursing home residents 65+ years of age who had fallen in the previous year and had a possible problem in at least one of 4 safety domains: environmental safety, wheelchair use, psychotropic drug use, or mobility.<sup>14</sup> Patients who received care from the consultation team, including structured assessments and specific recommendations in these safety domains, experienced a significant reduction in the rate of recurrent falls (43.8% intervention group vs. 54.1% control group,  $p=0.03$ ).<sup>14</sup>

The reported randomized clinical trials yielded mixed results for the outcome of all-cause mortality, with most studies demonstrating no benefit. The study by Thomas<sup>12</sup> reported a statistically significant improvement in mortality at 6 months, but Gayton et al<sup>19</sup> reported only a trend toward improvement at 6 months. Neither of Hogan's studies found in-hospital mortality benefits. One study<sup>16</sup> showed improved mortality at 4 months and one<sup>18</sup> at 6 months but these benefits were not sustained at one year. Hospital-acquired complications would be expected to reduce in-hospital or short-term mortality, so the survival benefit observed many months after hospitalization in these studies suggests that other carry-over effects (eg, improved medication regimens) or better post-discharge care may be influencing these results. According to a meta-analysis<sup>24</sup> the summary odds ratio for 6-month mortality in 8 of the studies cited<sup>6,10,12,13,16-19</sup> was 0.77 (95% CI: 0.62-0.96), but the effect on 12-month mortality was not statistically significant. The authors tested for heterogeneity of outcomes before pooling results of the trials ( $p=0.07$ ). Of

note, the large trial (n=2353) by Reuben et al<sup>11</sup> was not eligible for inclusion in the meta-analysis because it was published later. Because it was larger than all other studies combined, its effect on the pooled estimate of 6-month mortality would be to reduce any statistically significant differences between intervention and study groups, since no survival advantage was reported at up to one year in the study (p=0.89 for survival curve).

### **Potential for Harm**

No harm attributable to the geriatric consultation was reported in the trials.

### **Costs and Implementation**

Implementation of the multidisciplinary team entails logistic planning to determine the number and type of consultative team members, and human resource coordination regarding time allocation and staffing. Few studies included data on costs of the practice, such as hospital costs incurred by assembly of the consultation team. Fretwell and colleagues,<sup>13</sup> however, have reported hospital charges in their study of 436 patients in a university-affiliated hospital. The percentage of patients exceeding DRG reimbursement for hospitalization was similar in both intervention and control groups, 69.7% and 71.2%, respectively. Winograd<sup>25</sup> reported that the cost of screening about 1200 patients to identify suitable candidates for consultation (using predefined criteria discussed in the paper) could be accomplished by employing a trained employee working one-quarter time, at a cost (in 1998 dollars) of about \$7000 over the course of one year.

### **Comment**

Inpatient geriatric consultation may have an impact on care for the hospitalized older patient, but the potential improvement in patient-safety outcomes is unclear. All-cause mortality differences may be due to differences in patient selection, and the data for improvement in functional outcomes suggests that certain patients may experience greater benefit than others. Appropriate targeting of services to patients at high risk for adverse outcomes such as falls and delirium seems to result in benefit. Consequently, multidisciplinary geriatric consultation and other efforts directed towards preventing iatrogenic functional decline, the most common complication of older hospitalized patients, deserve careful attention.

Identified problems in the reviewed studies include inadequate targeting of individuals who would most benefit from the intervention, potential between-group cross-contamination, and differences in local expertise in carrying out recommended interventions. Lack of effectiveness in some studies may reflect poor compliance with team suggestions or inadequate staffing to implement a consultant's recommendations, regardless of desire to comply. Lack of control over the direct management of the patient could also represent a serious shortcoming that limits effectiveness of this practice.

Multidisciplinary geriatric consultative teams, in contrast to specialized geriatric evaluation and management (GEM) units, provide expertise in geriatric care throughout a hospital, but in a consultative role. In comparing this strategy with GEM units or Acute Care for Elders (ACE) units, several differences should be noted. Multidisciplinary teams are less expensive to organize and can be implemented within a shorter period of time. Since older patients reside throughout an institution, there is also greater opportunity to reach a larger number of patients when the consultation team is not single-unit based. There is no bed limit, and the capacity of the team to provide interventions is therefore limited by their available time rather than the number of beds in any one unit. The resources required to assemble an

experienced geriatric team in a hospital that has no pre-existing geriatric expertise remains an important consideration. In addition, costs associated with enhancing and monitoring adherence with recommendations should be included when designing an effective program. Physical redesign of the unit environments to accommodate special needs (eg, special flooring, bed layout, reorienting devices) is likewise not part of this practice. Specially trained geriatric nurses are also not available equally throughout the hospital, in contrast to designated geriatric inpatient units, which have nurses focused exclusively on care of the older patient.

Notwithstanding these considerations, the practice of multidisciplinary geriatric consultation services has high face validity. More research is needed to evaluate which patients might receive maximal benefit for the associated resource commitment. Other areas for further research include examining the problems most appropriate for geriatric assessment and consultation in the hospital, developing strategies to improve adherence to and execution of recommendations, and identifying the components of a successful and cost-effective consultation team.

**Table 29.1. Studies of multidisciplinary geriatric consultation services**

<b>Study</b>	<b>Setting and Participants</b>	<b>Study Design, Outcomes</b>	<b>Results</b>
Allen, 1998 <sup>6</sup> Becker, 1987 <sup>7</sup> Saltz, 1988 <sup>8</sup> McVey, 1989 <sup>9</sup>	185 patients at a VA hospital, 1983-1984	Level 1, Level 1	No significant differences in hospital-acquired complications (overall 38% for both groups) No statistically significant improvement in functional status (activities of daily living) No statistically significant differences in rehospitalization or placement Compliance with recommendations: 71.7% overall (from 47-95% for selected interventions)
Fretwell, 1990 <sup>13</sup>	436 patients at a university-affiliated hospital, 1985-1987	Level 1, Level 1	No significant difference in mortality at discharge No significant differences in length of stay, physical or cognitive function, or hospital charges
Gayton, 1982 <sup>19</sup>	222 patients at a Canadian university-affiliated hospital, 1982-1984	Level 2, Level 1	No significant mortality difference up to 6 months follow-up, but trend favoring intervention group No significant differences in functional status, length of stay, or mental status between study groups
Hogan, 1987 <sup>16</sup>	113 patients at a Canadian tertiary care hospital, 1984	Level 1, Level 1	Mortality at 4 months lower in the intervention group (p<0.05), but not at 12 months Fewer medications on discharge (p<0.05) and improved mental status (p<0.01) in the intervention group
Hogan, 1990 <sup>18</sup>	132 patients at a Canadian hospital, 1985	Level 1, Level 1	Decreased 6-month mortality in the intervention group (p<0.01) No significant difference in outcomes at discharge Improved functional ability at one year but not at 3 or 6 months in the intervention group
Kennie, 1988 <sup>17</sup>	144 orthopedic patients at a U.K. district hospital, year not stated	Level 1, Level 1	Intervention patients more functionally independent (p=0.005) at discharge and were discharged to home at higher rates (p=0.03)

Marcantoni o, 2001 <sup>15</sup>	126 orthopedic patients at an academic medical center, year not stated	Level 1, Level 1	Occurrence of delirium: 32% vs. 50% in control group (p=0.04) Adherence to recommendations: 77%
Ray, 1997 <sup>14</sup>	482 residents in 14 nursing homes, 1993- 1995	Level 1, Level 1	Lower rate of recurrent falls: 19% vs. 54% in control group (p=0.03) Trend toward lower mean rate of injurious falls
Reuben, 1995 <sup>11</sup>	2353 patients at 4 HMO- run hospitals, 1991-1994	Level 1, Level 1	No statistically significant differences in mortality at up to one-year follow-up No significant change in functional status at 3 or 12 months
Thomas, 1993 <sup>12</sup>	120 patients at a community hospital, year not stated	Level 1, Level 1	Reduced 6-month mortality: 6% vs. 21% controls (p=0.01) Trend toward improved functional status in the intervention group Hospital readmission in 6-months significantly lower in the intervention group
Winograd, 1993 <sup>10</sup>	197 men at a VA hospital, 1985-1989	Level 1, Level 1	No significant mortality differences between groups No significant change in physical function, length of stay, or placement between groups Compliance with all recommendations: 67%

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