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Mr. Chairman and Members of the Committee:

I am pleased to present to you the work that our University of Colorado research team conducted on the important issue of nursing home staffing and its effect on quality of care. We were charged with designing and conducting the analyses to determine whether there is some ratio of nurses to residents below which nursing home residents are at substantially higher risk of quality problems. We were assisted with this work by other researchers from Abt Associates, Fu Associates, a national panel of technical experts, and the HCFA Project Officer Marvin Feuerberg. Congress and HCFA should be commended for their strong support of this work.

The existence of a relationship between staffing and quality of care in nursing homes is inherently logical. But this relationship is difficult to demonstrate because of the complexities in measuring quality, the limitations in staffing information, and the differences between facilities in the residents that they treat -- termed case mix. An even greater challenge is to determine the staffing levels that are required to assure adequate quality of care across an array of measures. These levels are likely to vary across facilities, with facilities that treat more complex patients requiring higher minimum levels than those treating less complex patients.

We were able to draw three conclusions from our analysis, which I will discuss in my testimony:

- Staffing levels (or thresholds) below which facilities are at substantially greater risk for quality problems exist and can be identified for all types of staff;
- These thresholds are dependent on the characteristics of residents in each facility (or case mix);
- Staffing levels will need to be increased in a substantial portion of facilities to improve quality of care.

Before discussing these findings further, I would like to make a brief comment about the methods used in these analyses. This was the largest and most rigorous study of the relationship between staffing and quality of care conducted to date; it involved data on more than 1800 nursing homes largely from three states. Staffing data were obtained from the Medicaid Cost Reports rather than the OSCAR system, which is the usual source of staffing data, because analyses in this project demonstrated substantial inaccuracies in the OSCAR staffing data. Unique features of these analyses were the range of quality measures studied and our attempt to find specific thresholds below which quality was impaired.

Taking the conclusions of the analysis one at a time:

First, we found clear and strong relationships between quality of care and specific staffing levels for registered nurses (RNs), licensed staff (including both RNs and licensed practical nurses), and certified nurse's aides. Nurse staffing levels were associated with hospitalizations for potentially avoidable causes including pneumonia, urinary tract infections, sepsis -- a life-threatening blood borne infection, congestive heart failure, and dehydration. Staffing levels were also associated with new pressure sores -- a problem that occurs in immobilized and disabled nursing home residents when not adequately treated; inability to restore function in basic activities such as dressing, getting out of bed, and using the toilet; likelihood of residents resisting care -- a problem that is likely to increase when staff does not take the time or care in assisting residents with eating and daily hygiene; significant weight loss; and poor

resident hygiene. We were able to find staffing levels below which facilities were two, three, four, or more times as likely to have significant quality of care problems in these areas. The magnitude of the differences between facilities that met certain staffing levels and did not meet these staffing levels were surprisingly large.

For example, if we have two groups of nursing homes. The first group is staffed such that residents receive at least 120 minutes of nurse's aide time each day; whereas facilities in the second group do not have sufficient staff to provide 120 minutes of nurse's aide time to each resident per day. Our analysis showed that only 2% of the facilities in the first group had a high rate of avoidable hospitalizations. In contrast, 22% of those facilities that had the lower staffing levels had a high rate of avoidable hospitalizations. If you had to go to a nursing home, would you rather go to a nursing home from the first group or the second group? One in fifty facilities in the first group had problems with hospitalization; whereas more than one in five nursing homes in the second group had problems with hospitalization. Similarly, 12% of facilities in the higher staffed group had a significant rate of new pressure sores, but 46% of facilities in the group with less than 120 minutes of nurse's aide time per resident had a high rate of pressure sores. Although increased staffing will not cure all of our quality of care problems in nursing homes, these findings leave no doubt about the importance of adequate staffing in nursing homes.

Second, the characteristics of residents in a facility (case mix) must be taken into consideration in setting staffing levels. That is, facilities that take care of residents with complex care needs require higher minimum staffing levels than facilities that take care of residents with less complex care needs. For example, if a nursing home admits a large number of individuals with chronic lung disease or difficulty swallowing, both of which increase someone's risk for pneumonia, then this nursing home will need to staff higher to take care of these patients and avoid hospitalization for pneumonia. This will require more licensed staff to monitor the resident's breathing so that if it gets worse, problems can be addressed immediately. From certified nurse's aides, more time will be required for assisting someone who has difficulty swallowing with eating to avoid aspiration, where partially digested food ends up in the lungs, possibly causing severe pneumonia. Similarly, if the nursing home admits more individuals who are confined to bed and immobile as well as incontinent, more staff time is required to reposition and keep these residents dry so that pressure sores do not occur. While this relationship between staffing and resident characteristics is logical, our first task was to demonstrate that different levels of staffing are required to assure quality in facilities treating residents with different needs.

We were able to demonstrate this. For example, in facilities with residents requiring the least complex care, a minimum licensed staff level of 40 minutes per resident each day resulted in only 2% of facilities having a high rate of avoidable hospitalizations. Thirty-one percent (31%) of similar facilities with less than 40 minutes of licensed staffing had a high rate of avoidable hospitalizations. However, in facilities with residents needing moderately complex care, a minimum licensed staff level of 48 minutes per resident each day was required to reduce the percentage of facilities with a high rate of avoidable hospitalizations to 6%. Forty minutes per resident each day was not sufficient. In the group of facilities treating residents in need of the most complex care, 60 minutes of licensed staff time reduced the percentage of facilities with a high rate of hospitalizations to 4%. Forty-eight minutes was not sufficient. Thus, the minimum levels of licensed staff per day to improve quality were 40 minutes per resident for facilities with the least complex care needs, 48 minutes per resident for facilities with moderate care needs, and 60 minutes per resident for facilities with the most complex care needs. We found similar progressions in staffing level requirements for RNs. About 18 minutes per resident day were required in facilities treating residents with the least complex care needs, in contrast to 35 minutes in facilities treating residents with the most complex care needs.

The second challenge is how to group facilities into these categories based on the residents they treat.

We made progress in this development during the project. However, categorizing facilities and designing regulations that reflect the appropriate staffing levels for different categories of facilities is not a simple matter. Nevertheless, we would be doing a disservice if we were to implement a staffing minimum regulation that disregards differences in the types of residents that facilities treat. In short, a single minimum standard would be too low for some facilities and too high for other facilities.

Third, significant numbers of facilities fall below the levels required for improved quality of care. For example, 54% of facilities do not meet the standard of two hours of certified nurse's aide time that we found to be a minimum standard even in facilities treating the least complex residents. If these standards were implemented for all facilities, 54% of them would have to increase their nurse's aide time. About half of these facilities provide less than 96 minutes of nurse's aide time per day to each resident, which would require substantial increases in nurse's aide staff. Registered nurse time would need to be increased in at least 31% of facilities in order to meet the most minimal standards in the facilities treating residents with the least complex care needs. Substantially higher rates will be required in facilities with greater needs, affecting larger numbers of facilities. When we tested lower thresholds to determine whether quality might be improved by more modest staff increases, we generally found that lower levels of staffing were not associated with improved quality. Thus, a fairly substantial investment in increased staffing will be necessary to bring about quality improvements in nursing homes.

Despite the thoroughness of these analyses, the specific staffing levels identified in this report are not ready for national implementation. A sample of facilities from three states is not sufficient to set national staffing levels. Methods for grouping facilities so that staffing minimums can be appropriately matched to the mix of residents need to be refined. Without categorizing facilities in this manner, we risk requiring minimum staffing levels that do not ensure quality in any facilities except those treating residents who require the least care. Other important attributes of staffing such as staff turnover, staff training, and staff allocation among units or shifts in nursing homes must be taken into consideration before national policy can be drafted. All of these issues are being addressed in a second phase of this project that is currently underway.

Allow me to leave you with two final thoughts. First, we definitely need a method for assuring that higher levels of staffing are provided in nursing homes in order to improve quality of care. Second, while there is a need to proceed expeditiously, we must take care at this stage to design an approach that is fair to both residents and facilities, and is feasible for successful implementation.