**Discussions of Poster Presentations**

**Molaschi et al. (Dr. Cappa)**

*Dr. Vellas:* Is it a physician or a nurse who does the MNA in the nursing home?

*Dr. Cappa:* The physician does it.

*Dr. Chumlea:* You had 24 men. There can be sometime a sex and age interaction, particularly in men. Were the men more severely affected or was there no sex difference in the analysis?

*Dr. Cappa:* There was no sex difference.

**Saletti et al. (Ms. Saletti)**

*Dr. Vellas:* I am surprised that 70% of the people living in your nursing homes have an MNA of <17. In most studies the proportion is <30%. What is the explanation for this?

*Ms. Saletti:* People in nursing homes in Sweden tend to be very sick. Maybe that is the explanation. Old people tend to live in service flats, sheltered homes, or old people’s homes. The people who live in nursing homes are really in the final stages.

*Dr. Rubenstein:* So how much of the effect on MNA is due to disease and how much to insufficient nutrition?

*Ms. Saletti:* I don’t know, but from the point of view of a dietician I think there is a lot that we can do with food, and we have developed routines for working with these people.

*Dr. Morley:* Your proportion of malnourished individuals is very high compared with almost any “free-living” population. This would suggest a problem with nutrition in old people. Why is Sweden, which is supposed to be a good place to live, struggling with its old people? Do you think the food is not well prepared in the nursing homes?

*Ms. Saletti:* I think they often give the wrong kind of food. They tend to give food that is low in fat and high in fiber.

**De Ridder et al. (Dr. Vanderbroele)**

*Dr. Vellas:* One problem is that nobody uses the same scores for ADL assessment.

*Dr. Vanderbroele:* I know. One of the advantages of the MNA is that you have one score which is used by everyone.
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Dr. Guesry: You still have a lot of malnourished people who are not identified by the ADL assessment.

Dr. Vanderbroele: Yes, but that’s a choice we had to make. We can’t carry out MNA on everybody.

Dr. Guesry: This is an important point. Is the test for populations or for individuals?

I think this needs further discussion.

Dr. Rubenstein: I was going to make a similar observation. I’m surprised that activities of daily life and malnutrition are so overlapping that one could be a screen for the other, but I think it is an interesting hypothesis. It is an important idea that the MNA may be too long an instrument for general population screening. Maybe we need to do a screening test with follow-up confirmation.

Dr. Vellas: MNA was designed for frail elderly people. If you want a screening test for healthier people, you need other kinds of tools.

Dr. Vanderbroele: Our patients were all sick people receiving home care, so with the chosen cutoff point we actually defined frail people by the ADL assessment.

Dr. Wiesel: In your hands, was MNA suitable for use as a screening test in a large population, or did you find it too difficult to do in patients with recall problems who cannot answer the questions?

Dr. Vanderbroele: I don’t think MNA was too difficult. The data were collected by the nurses who were looking after the patients. It motivates them strongly, because it’s something new for them, and for the patients too. It gives them something to talk about!

Dr. Morley: Would it not be better to concentrate on people at risk rather than people who are severely malnourished? Particularly in the home care population, there will be a subgroup with severe malnutrition whom you will never be able to help, no matter what you do. It might be better to focus on the people who are on the borderline rather than the ones who are severely malnourished. From a public health point of view, perhaps the worst people are not the best ones to look at.

Dr. Gries: Did you calculate the correlation between the ideal score and risk of malnutrition? Isn’t it true that the higher the degree of dependency, the higher the risk of malnutrition?

Dr. Vanderbroele: There is certainly a correlation.

Dr. Henes: As a nurse, I would like to commend you for this work. I’ve tried to implement the MNA in home care patients in the USA, but many nurses find it too difficult to do in the home care setting. In the USA it is now a regulatory requirement to screen all home care patients and I’d like to use MNA across the board, but it is a little cumbersome.

Dr. Vanderbroele: I don’t want to be too optimistic. This is the first stage of the study. We then have a second stage where we must design the nursing intervention protocol, and then we have to try to make it generally applicable. That part may be the most difficult of all. So we’re not there yet.

Dr. Vellas: For healthy elderly people we probably only need a simple, easy-to-apply screening tool, but sick elderly people are so likely to be malnourished and nutritional intervention is so important that the MNA is really necessary. It is a lot of work, but necessary.

Gazzotti et al. (Dr. Gazzotti)

Dr. Camilla: Was there any correlation between MNA and the length of the stay in hospital?

Dr. Gazzotti: A very good question, but we don’t have these data.

Dr. Vellas: Do you have any data on the reliability of the MNA in your hospital?
Dr. Gazzotti: Yes, we studied interobserver agreement. MNA was done by two clinicians in 40 patients. We measured agreement by the $k$ coefficient and found that it was significantly different from zero, so we concluded that MNA was a reliable and useful tool in clinical practice.

Dr. Chumlea: Maybe I’m missing something, but in administering the MNA, the observer is passive. The answers are dependent upon the subject, so there should be no observer effect. If all I do is ask you to answer the questions, as an observer I have no effect upon the outcome. The way you ask the questions may add additional variance, but that means that the interpretation of MNA scores from one location to another will then be affected by who is asking the question. That will affect the interpretation of comparisons between two studies. This is an issue that needs looking into.

Dr. Rubenstein: What difficulties did you have in the practical use of MNA?

Dr. Gazzotti: We have had difficulty with patients who can’t answer the questions. We have also had problems with three items where there was poor agreement between clinicians, though we don’t know why. These were brachial circumference (two clinicians could not agree on this item), hydration score, and the presence of skin ulcers.

Dr. Chumlea: Some physicians and nurses have difficulties in doing the anthropometric measurements. That’s normal. The difficulty is that they often don’t receive adequate training, and they don’t do the measurements often enough to maintain their skills.

Dr. Salvà: What special problems do you have in doing MNA in acute care?

Dr. Gazzotti: The main one is when the patient is confused or disoriented, when it’s difficult to get answers.

Dr. Vellas: In such cases you can question the family. That’s the way we do it.

Blanchon et al. (Dr. Beauchet)

Dr. Guessry: Do you agree that calf circumference is the best variable for this type of assessment?

Dr. Beauchet: Maybe Dr. Chumlea can give us a commentary on calf circumference?

Dr. Chumlea: The amount of data relating calf circumference directly to fat-free mass specifically in the elderly is not that large. The data at present mainly involve relations reported in surveys that were not actually measuring body composition. In those studies, individuals who had been active had a decrease in calf circumference, though not of arm circumference, as their activity level decreased. Our own studies of changes in fat-free mass, and several other smaller studies, appear to support this, but there are no large studies at present. The available reference data for calf circumference are primarily from the studies we’ve done in the United States and from the studies in Toulouse, France, and those that have been reported here. There are some calf circumference data from the health examination surveys conducted by the National Center for Health Statistics in the early 1960s, and calf circumferences will be included in NHANES IV, which will start next year.

Dr. Cohendy: In postoperative patients I would definitely not use serum albumin as a nutritional indicator, particularly after fractured neck of femur, because of the quantities of fluid that are likely to be given to patients during and after the operation. Secondly in postoperative patients, I would be quite reluctant to use calf circumference because of the high incidence of leg vein thrombosis. In such cases variation in the diameter of the calf is directly related to the deep vein thrombosis and has nothing to do with nutritional state. These kinds of results, in my opinion, should be treated with caution.

Dr. Guessry: You don’t systematically give prophylaxis against deep venous thrombosis?

Dr. Cohendy: Recent studies have shown that in this kind of surgery, even with prophylaxis, for example low molecular weight heparin and early mobilization, the amount of the deep vein thrombosis remains very high, more than 20%.
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Dr. Camilla: I am still puzzled by your comment that you consider calf circumference to be a good indicator of chronic undernutrition because elderly people have many reasons for edema and hence an increased calf circumference.

Dr. Beauchet: I agree, but in our small study we excluded all patients with any pathology that could cause calf edema, such as phlebitis, renal insufficiency and cardiac failure. However, we found it difficult to assess the role of immobilization on calf muscle volume. Although I have no proof of the reliability of my data, I have three indirect arguments to back me up: (1) the immobilization period in our patients was very short, on average 8 days; (2) we measured the opposite calf to the femoral neck fracture; (3) we instituted a very early program of exercise, with twice daily isometric contractions to limit the decrease in muscle volume during immobilization.

It must be admitted as well that our control group was at the lower limit of the distribution of the anthropometric norms published by Vellas et al. in 1992 [1]. This could explain the albumin value. I believe it also gives added confidence to our calf circumference and MNA results. Moreover, when we measure calf circumference we assess muscle mass and lean body mass, which is directly related to wasting and decreased muscle strength following falls and fractures.

Because of the indirect nature of our arguments we will be conducting a second study involving the patients very early, before surgery.

Khavinson and Solovieva (Dr. Khavinson)

Dr. Guigoz: Do you have measures of albumin in your patients?
Dr. Khavinson: No, we measured that in a previous study. This study was specifically to investigate immunological indices in this kind of patient.

Dr. Vellas: You found some significant differences between the MNA results and immunological function that we did not find in Toulouse. Do you have the mean MNA scores in the three groups? What was the mean MNA in people with a score of <17?

Dr. Khavinson: It was 12. And in people whose MNA was >23, it was 28.

Dr. Vellas: That may be the explanation. In the nursing home patients in Toulouse the mean MNA was nearer 25, certainly not as high as 28.

Dr. Guesry: In your conclusion, you propose the use of T lymphocyte function as an additional variable in MNA. Do you really think that it is practical? How much does it cost and how long does it take? How easy is it to obtain this type of measurement? After all, MNA was designed to be done easily by a non-specialized person at the bedside. It has to be cheap and fast.

Dr. Khavinson: Our hope was that this could improve the precision of MNA.

Dr. Morley: I'm happy to see that the CD4/CD8 ratio reflected the MNA score, because that is the one thing that is specific for malnutrition as people get older. The way we have used the CD4/CD8 ratio in St. Louis is in people who look very malnourished, if we are having trouble treating them. People with a low CD4/CD8 ratio often need 10 or 20 days of antibiotics before they get better, and they have more atypical infections. So I would see this measurement as a treatment indicator, as in AIDS patients. I would not go straight to T cell measurement.

Dr. Rea: I'd like to confirm what Dr. Morley has been saying. In a large study in Northern Ireland of 80- and 90-year-olds, we found a 10% incidence of CD4 lymphopenia in healthy elderly people living in the community. And although we did not have information then about MNA status, we do know that the CD4 count correlated with BMI, weight, and cholesterol. I suppose those measures are similar to the measures of malnutrition that are being measured in the MNA.
Dr. Khavinson: I would like to make one comment. It is well known that thymic function declines with age. From our immunological investigations, it was also clear that the T lymphocyte function and T cell numbers decrease with age, and we noted that the state of malnutrition was correlated with lymphocyte function and the function of the thymus. We carried out an in vitro study in which we treated lymphocyte cultures with thymus extract and showed an improvement in the function of T lymphocytes. Maybe the way to help these malnourished people is to use a food additive derived from thymus extract in order to normalize their T cell function.

Maaravi et al. (Dr. Maaravi)

Dr. Vellas: I think it is really important that a nutritional assessment is part of a comprehensive geriatric assessment. This is straightforward for geriatricians, because they are used to doing geriatric assessments, and it’s easy to add one tool. It’s more difficult for nutritionists, because they have no experience in geriatric assessment.

Dr. Guesry: You said you modified the MNA. Could you tell us how you modified it, and to what extent? I was interested to see that your correlation with mortality was poor, or rather nonexistent, with $p = 0.7$. Dr. Guigoz got a much better correlation. I wonder whether in your modification you have lost something important. At the start of this meeting I said that it would be nice to have one tool that is used by everybody, so that we can compare studies. However, I think we have had more communications on modified MNA than we have on MNA. I’m worried that these many changes may make comparisons difficult.

Dr. Maaravi: As I explained, at the time we designed our study, we did not know about the MNA. We extracted from our data as many items as possible that are collected in the MNA and the modification was not great: we are only missing some of the data from the dietary block. As to mortality, we are considering relatively healthy free-living 70-year-olds whom we have been following for two years. This is too short a time for reliable mortality statistics. We are conducting a second stage of this longitudinal study on a larger scale. We are going to use the complete original MNA, and I hope we will have more results to present the next time we meet.

Dr. Guesry: My comment did not reflect a desire to sell the MNA, only to have a common language!

Dr. Morley: You should not apologize for the modified MNA; we will present our one tomorrow! Our data are very similar to yours, and the important message is that a good nutritional assessment tool can predict frailty and health care utilization, which is something we can intervene in. Thus it is very important to pick out the nutritional component. We can argue whether or not the MNA, or other tools, truly picks out nutrition or whether it identifies something else, but clearly a large component is nutrition, and we are showing that nutrition is an extremely important factor in poor outcomes for older people.

Dr. Maaravi: We are planning to put MNA into routine practice in our services, that is, the geriatric emergency department, the geriatric rehabilitation department, and home care services.

Dr. Vanderbroele: You specifically mentioned the correlation between MNA and cardiac disease. Was this one of your modifications and did you screen other systems or diseases?

Dr. Maaravi: Our study was on a very large scale. We had thousands of variables from all chronic diseases that we thought could be correlated with nutritional status. The ones that I presented were the ones that yielded correlations. Having ischemic heart disease can influence your nutritional state or vice versa. We studied many other diseases and could not find other correlations.
Dr. Vellas: When we use MNA in clinical practice, we have to be careful about the scores. For example, someone with a score of 23 is not necessarily at risk of malnutrition. It is the same as with Mini Mental State. People scoring 26.5 or 26 on Mini Mental State do not necessarily have dementia. We need to be careful about that.

Dr. Rea: I’m saying that this group is at risk.

Dr. Vellas: I don’t know if people with a score of 23 are really at risk. Maybe.

Dr. Arnaud-Battandier: What did you do with your patients who were malnourished?

Dr. Rea: Nothing to date, because they are living in the community. The MNA is just a tool. I’ve also looked at BMI in 90-year-olds in the community and found that 10% of them have a BMI of < 18.5. So many of these elderly people are apparently well, it’s very hard to know what to do. Will we harm them by introducing nutritional supplements, or by causing worries about their health? If they have already survived to 90, maybe we should not interfere.

Dr. Rubenstein: You seem to be making a fairly large distinction over relatively small differences in means. A small proportion of people with very low scores will of course bring your mean down. I was also struck by the relatively high percentage of people “at risk” compared with some of the other studies presented today. You said that there were many people who had only one or two meals a day, but I wasn’t sure whether this was a cultural difference. Maybe people in your area always eat two meals a day, and therefore automatically lose a point on the scale. Is this merely a cultural difference or do you think they are really at risk?

Dr. Rea: I’m not sure whether they are at risk, given that so many of them are apparently well and living in the community. Perhaps the MNA is not a sensitive enough indicator for people at risk. In other words, it may be picking up too many people. I began to use the tool simply because we had found that 10% of 90-year-olds had CD4 lymphopenia, which does seem to be associated with undernutrition. I wanted a simple screening tool to see if I could pick out these people. I have not gone on to put those two groups together, but there does seem to be a rather large number of people in this “at risk” group, which I was a bit concerned about.

Dr. Guesry: Is MNA too sensitive?

Dr. Guigoz: I don’t think it is too sensitive. I have the impression that the “at risk” people form an unstable population. So some will stay as they are, others will go up to the normal range, but most will probably have an event which will cause them to decline into the malnourished range. It would be interesting to follow up your subjects who were at risk during this study.

Dr. Charles: In the Irish Republic, as opposed to Northern Ireland, there is a great scarcity of information on nutritional status of the elderly. We are at present trying to get together a food and nutrition policy for the elderly on a national level. I’d like to comment about the eating habits of Irish people, which could have a lot to do with nutritional intakes. Traditionally we are a population that has relied in the past on a certain limited number of foods. I would prefer the MNA to be too sensitive for the Irish population, because at the moment we have a huge problem in identifying malnutrition among the elderly. If it is too sensitive, for me that’s good because that means I get referrals rather than not getting them! I’d like to ask whether you think that the MNA is a good measure of nutritional status for the Irish?

Dr. Rea: I’m not sure.

Dr. Chumlea: You showed a sex difference. How many of the men were widowers and how many still had a living spouse? Normally, the men who live longest tend to have their wives with them still.

Dr. Rea: I can’t say for MNA, but when we looked at BMI in elderly men, there did seem to be a difference. BMI in elderly men who lived alone was lower than it was in those who
lived with someone else, regardless of who that was. As you would know, there are not as many 90-year-old men living in the community as women, so we had a limited group to do statistics on.

*Dr. Salvá:* I did not understand how you selected the population?

*Dr. Rea:* The population of the greater Belfast area is 250,000 people. We wrote to all the general practitioners and asked them if they would allow us access to their patients who were over 90 (that was initially, because the 90-year-olds were done first); in that group we were given perhaps 200 or 300 names. We then approached the practices who helped us the first time, and asked for access to the 80-year-olds, and we selected these randomly. The study is ongoing; this is only a small part of what is happening.

*Dr. Morley:* There have been other studies from Ireland which have shown nutrient deficiency. Ireland looks worse than many other places, and there are two factors that I wonder about: one is the use of alcohol which may be high; the other is depression. Certainly when you look at Belfast, there are reasonable grounds for a high incidence of depression. Have you looked at those two as potential causes?

*Dr. Rea:* I have information on alcohol intake. There is no difference in alcohol intake between 70-, 80- and 90-year-olds. I don’t have information comparing them with the rest of the population. I don’t know about the geriatric depression scale. All I know is that all these people could score at least 28 and higher on what is the equivalent of the Fallstein mini mental score. So they were mentally competent, and they were going to get 1 on the MNA for that.

**Piquet et al. (Dr. Piquet)**

*Dr. Schwenk:* I have two questions. First, you chose the absolute value of body cell mass as a reference. What was you rationale for that? Body weight is generally used as the reference? Second, did you look to see whether individual questions within the MNA had better predictive value than total MNA? Nobody among us will be very surprised that the MNA did not perform very well in this particular population, since it was developed for the geriatric population.

*Dr. Piquet:* In answer to the first question, we took dry lean body mass as the reference norm. These values come from Geneva and were derived from a large scale study on several thousand people. They are not yet published but I hope they will be soon. As to your second question, various factors such as not living independently, or needing help to perform social activities were strongly correlated with end-stage chronic disease, not surprisingly, but generally the correlation was poor.

*Dr. Vellas:* We have tried to use bioelectrical impedance as a reference value, but we had strange results in sick malnourished patients. Do you think bioelectrical impedance is a useful measurement in sick patients with malnutrition?

*Dr. Piquet:* The problem with malnutrition is that the patient may be overhydrated. We use BIA only if there is no problem with hydration. In old patients we also have the problem of norms for BIA.

*Dr. Vellas:* Because there are very few studies of BIA in patients with malnutrition.

*Dr. Ferry:* What kind of bioelectrical impedance did you use? There is a difference between one frequency, two frequency, or multi-frequency.

*Dr. Piquet:* We used one frequency.

*Dr. Ferry:* So Dr. Vellas was right when he said it was difficult to obtain a good impedance value with one frequency. I think Dr. Chumlea will agree with me.

*Dr. Chumlea:* The issue is between single frequency impedance measurement and the newer multifrequency impedance measurement that technically allows you to separate
intracellular and extracellular fluids. Much work has been done with the single frequency
and the work with the multifrequency impedance is just starting to be published. The ques-
tion that Dr. Vellas was addressing was the use of impedance in elderly populations or in
clinical populations. The problem has been that most of the work has been done in healthy
normal populations, and has then been applied to clinical populations. That’s always the
wrong way to do it. Kotler et al. [2] have done a lot of very good work with impedance in
patients with HIV and have developed certain specific equations, validating the technique
in these patients. So that’s the way to do it. The other issue is that prediction equations have
a standard error of the estimate for a group and a standard error of the estimate for an
individual, which is not always quoted. Once you start using the equations on individuals,
the standard error can become greatly inflated. Thus a prediction of 20% body fat may have
a standard error in the individual of ± 10%, so the variance around that prediction can be
very large. You need to be very careful in using it.

Dr. Rubenstein: Did you do some individual question analysis to find out why the MNA
was not working in AIDS patients? Was it perhaps because of malabsorption, so the patients
were eating enough but nothing was absorbed, thus making the food intake question unhelp-
ful, or was there some other factor involved?

Dr. Piquet: I think that malabsorption may have played a role, because most of our
patients have diarrhea.

Dr. Cohendy: I believe that subjective evaluation will have decreased the MNA score in
these patients. They were all taking at least three to five drugs, and all of them knew that they
were very sick. If you ask them: Do you believe that your health is better than that of your
neighbor?, they will obviously answer no. So many of them will lose points in the MNA
evaluation. In my opinion this decreases the power of the MNA in this kind of patient.

Dr. Morley: Beside the bioelectrical impedance problem, people with AIDS have low
testosterones, and because of that they develop loss of muscle mass. So you cannot rely on
anthropometric measurement – even midarm circumference may be a poor measurement of
malnutrition in this particular population. I would have concluded from your study that
MNA may be better than the classical measurements for this population.

Dr. Vellas: It is good that this study was done in adults. In the past, geriatric medicine has
taken a lot from other specialties; now it is other specialties that have taken something from
geriatries.

Ciraffici et al. (Dr. Wiesel)

Dr. Cohendy: What was the nutritional management of these postoperative patients, in
particular the emergency patients?

Dr. Wiesel: The nutritional care of the patients was very poor. Most of the patients had
no nutritional support, some had TPN. In this surgical department there were plans to
change nutritional support from TPN to enteral feeding or oral feeding, but that had not
taken place when the study was done in 1995. Things have changed now, and there is less
TPN and more enteral feeding. We plan to do a study in which one group of patients is
managed by a nutritional team and another by the surgeons.

Dr. Miller: It seems to me that you have a very nice setup to take the important next step,
which is to start to tease apart the MNA and rebuild it to some extent according to what it
shows about the type of patients who can respond to nutritional intervention and do well.

Dr. Camilla: Since there is no gold standard for nutritional assessment and MNA might
be better for this group, did you compare it with subjective global assessment?

Dr. Wiesel: I did not show the data, because we could not do this in all the patients. We
tried, but we only achieved it in two thirds of the group and the correlation was poor. The
subjective assessments were poorly done, mainly because of lack of training which intro-
duced bias. The purpose of our study was to get nurses to do a nutritional assessment using the easy parts of the MNA. We think it could be an easy tool without the biological measurements – that is, using only the questionnaire components and measuring the easy things.

References
