

## How Trends Are Affecting Databases - Panel Discussion

**Meeting the Challenge of the Changing Food Marketplace: The MDRD Study Experience**, Monica E. Yamamoto, Fran L. Jones, Rebecca J. Meehan, Meribeth E. Riccio, Charlene A. Walter and the MDRD Study. University of Pittsburgh

Dietary assessments are professionally challenging. But if you add--dietary intervention, 15-collaborating sites, multiple years and ethnic and regional diversity, dietary assessments become an amazingly, exciting adventure. It's exciting because of the enormous pressures and complexities of the work and an adventure since this is largely uncharted territory.

The Modification of Diet in Renal Disease (MDRD) Study offered all of these challenges. This 15-center intervention study, sponsored by NIH-NIDDK and HICFA, examined whether diet and/or blood pressure interventions could slow the progression of renal disease in patients with mildly to moderately reduced renal function. Three levels of protein and phosphorus were tested: a protein level that approximated that of the US population, a level which was about half that amount which was approximately the level of the World Health Organization (WHO) recommendations and a lower level which was about half the WHO level for food protein but was supplemented to the WHO level with an amino- and keto-acid mixture. Two blood pressure levels were tested: one of which was the level of the usual standard of care and another level which was lower than that. A total of 840 patients were randomized to the study and followed for an average of 2.2 years (18 to 45 months) during the period of January 1989 to June 1993. Fifteen clinical centers participated in this Study and these included "Mega-urban" areas (New York City, Boston, Washington, DC and Los Angeles); Southern areas (Tennessee, North Carolina which had 2 centers and Georgia); Midwestern areas (Ohio and Iowa) and areas with large Hispanic populations (Miami, Texas and East Los Angeles). There were four central facilities including a MDRD Nutrition Coordinating Center (MDRD-NCC) located in Pittsburgh. I had the privilege of directing the MDRD-NCC's Dietary Data Center whose work is being discussed in this presentation.

Dietary assessments were done bimonthly and nutrient summary reports from these were provided to patients regularly throughout the study. Our challenge in providing nutrient intake estimates was to ensure that unbiased research quality information was available to the study while supporting the work of our intervention colleagues. Our research requirements were to provide estimates of protein, phosphorus and calorie intakes that were precise, that were consistent and reliable regardless of any change that might happen during the study. This included Dietary Data Center staff changes; staff changes at clinical centers as well as changes in the food marketplace. We were asked to meet a 10 percent precision level on those nutrients. This meant that a 55 kg women on the lowest protein prescription could have no more than a 0.5 gram error in protein per meal. Being blinded to the diet prescription assignment, all dietary data needed to be coded as carefully as possible. To meet compliance goals patients needed to be in compliance range by the Study's urinary protein compliance measure.

The MDRD nutrition intervention program was called "Protein Wise". To support intervention patients received feedback [nutrient summary reports] on their 3-day food records. Food composition information was provided for counseling. A prominent feature of this intervention was its ability to support "flexible" dietary pattern modifications. Patients were encouraged to try new foods as well as to modify their usual foods. Food records included "home" modifications of standard and personal favorite food items including ethnic foods, local/regional specialties, convenience food items, low

protein food products, market modified food items. The intervention also sought to support "quality of life" strategies: eating out, celebrating with friends, holidays & family occasions, business meetings, travel, etc. This included eating at favorite restaurants, local fast foods. This intervention was very successful. Patients showed outstanding long-term adherence to the three distinct protein goals. In fact, 60 to 80% of patients were in adherence range by biochemical measures over the entire period of follow-up.

Our strategy and planning for our work with MDRD Study dietary assessments included several levels of activities. We met with nutrition professionals who had participated in the MDRD Feasibility Study (MDRD Phase II) and who were slated to participate in the full trial (MDRD Phase III) and solicited suggestions and recommendations from them. A "problem item" tracking system was developed (reported at the 1989 National Nutrient Databank meetings in Framingham) and implemented which allowed flexibility in foods coding while maintaining important quality control standardization. Finally, we relied on "networking" among professionals doing similar types of work and this yearly National Nutrient Databank meeting was very important to this effort.

Over the five years of the Full Trial (1989-1993) the MDRD-NCC's Dietary Data Center coded and processed 41,093 days of data. Patient reported recipes totaled 13,562 and nearly one million foods were coded and processed. For this report we examined food trends through our tracking system for "problem food" items. These are reported foods for which specific food composition data were unavailable at the time the data was initially coded. "Problem food" items totaled 3,324. The average number of "problem foods" per record declined from a high of 0.8 (1989) to a low of less than 0.2 (1992) with a slight rise (to 0.3) in the Study's final year (1993). The majority of "problem foods" were regular foods; about 23% were new "modified" products, i.e. modified in total calories, fat, sodium, etc.; and less than 1% were foods which were specifically designed for therapeutic diets. "Problem" regular foods were from a variety of food types but the largest proportion were grains (36%) followed by meats (17%), fruits and vegetables (11%) and fats, oils, soups and sauces (11%). The vast majority (79%) of the "problem" grains were bakery products but included snack items (13%) and breakfast cereals (8%). Grains also constituted the largest proportion (37%) of "problems" for modified foods. The next largest groupings were fats, oils, soups and sauces (15%), dairy foods (12%) and fruits and vegetables (11%). Similar types of "problem" grains occurred for modified foods although the relative rankings of these were different: bakery (57%), breakfast cereals (29%) and snack items (14%). Grains modified for fiber content were the largest group (55%) followed by reduced calorie (16%), reduced fat (15%) and reduced salt (13%). "Problem" modified dairy products were likely to be reduced fat (52%) or reduced calorie (40%) although a few reported items were modified for protein, calcium or sodium. MDRD Study trends in reported fat modified items appeared to follow the market release timings reported by the previous speaker.

We also examined trends in reported recipes and ethnic foods usage. MDRD Study patients from Southern centers were more likely to report recipes (about 40% of total recipes) and patients from the Hispanic centers were least (less than 15%) likely. As expected higher usage of ethnic items and ethnic recipes was seen in MDRD Study Mega-urban areas and Hispanic foods in Hispanic areas. However, even Southern and Midwestern areas reported some usage. As expected, pasta and pasta recipes, which are very time efficient to prepare, were popular in Mega-urban areas. Regular pasta was generally popular and low-protein pastas were popular for patients on very low protein diets from Southern and Midwestern centers.

## CONCLUSION:

MDRD food choice trends reflect marketplace changes: changes in home cooking (as estimated from reported recipes) and ethnic food consumption even in Southern areas and the Midwest states. Mega-urban areas, as expected, showed a preference for a variety of ethnic foods but had less home cooking except for quickly prepared items such as pastas and "Asian" foods. Even though patients with a chronic disease might be expected to resist exploring new foods usage, MDRD patients showed similar food trends as did Americans as a whole (as reported earlier today by Dr. Bruce Stillings). Given our MDRD Study experience we'd strongly advise other nutrition research studies to expect foods marketplace changes and changes in their participants' food choices as well. To end my presentation, I would suggest that if we, nutritional professionals, are truly successful in supporting our clients change towards healthier eating behaviors, we will ensure their fully enjoying our Changing Food Marketplace.