REPORT 4 OF THE COUNCIL ON SCIENCE AND PUBLIC HEALTH (A-11)
Dietary Intake of Incarcerated Populations
(Resolution 420-A-10)
(Reference Committee D)

## EXECUTIVE SUMMARY

Objective. To review current guidelines, standards, and menu planning practices at correctional and detention facilities, the health status of incarcerated adult and adolescent populations, and the need for special therapeutic diets for chronic disease management. Additionally, to identify challenges as well as strategies in providing affordable, palatable, and safe foods for inmates that will also meet their nutrient needs. Strategies for improving the menu standards for correctional and detention facilities are explored, along with areas requiring further research.

Methods. Literature searches were conducted in the PubMed and Google Scholar databases using the search terms "prison," "inmates," "health," "diet," and "nutrition." Articles were selected that focused on practices in US facilities or in some cases Northern European prisons. Additional articles were identified by reviewing the reference lists of pertinent publications. Web sites managed by federal agencies and applicable professional organizations also were reviewed for pertinent information. Experts at relevant professional organizations were contacted directly to identify additional resources, as well as contemporary issues that are not well-documented in the literature.

Results. Nearly 2.3 million Americans are incarcerated in state and federal prisons and local jails. Incarcerated individuals rely on these institutions for their basic needs, including food and health care. Limited data is available on the health status of inmates in the US, as institutionalized individuals are excluded from most nationally representative health surveys. Menu planning for incarcerated populations varies according to the regulations and standards set by the governing agency, accreditation status, food service contracts, and court mandates, and few incentives exist for facilities to meet non-mandatory standards. Therapeutic and religious diets offered and available to inmates vary across jurisdictions and facilities; as with general diets, there are no set standards. The National Commission on Correctional Health Care (NCCHC) recommends that all inmates receive a heart healthy diet, but that is not a requirement for accreditation.

Conclusion. Numerous challenges exist in planning affordable, palatable, and low security-risk foods for inmates that will also meet their nutrient needs. Limited data on the health status of inmates indicate that many suffer from the same chronic diseases afflicting non-institutionalized Americans, such as overweight and hypertension. Current menu planning practices vary across facilities, depending on the governing agency, accreditation status, food service contracts, and court mandates. Without clearly defined, authoritative guidelines, dietitians in correctional and detention facilities must rely on their own science-based knowledge to determine what an acceptably low potential prevalence of nutrient inadequacy should be, and for which nutrients. The current national dietary guidelines can be difficult to use when planning menus for groups, particularly groups of incarcerated individuals, whose nutrient status and requirements are generally unknown. In the absence of clearly defined, authoritative guidance, and, at times, directed limitations, dietitians in corrections use their own professional expertise to define nutritional adequacy for their inmate populations. There is a need for an authoritative, contemporary set of nutrition standards that are adaptable to the unique character of correctional institutions, but that also recognize the authority of governing agencies. More research also is needed on the nutritional status and dietary requirements of juvenile and adult inmates, as well as cost-benefit analyses of healthy menus in relation to health care costs across the range of correctional facilities.

REPORT OF THE COUNCIL ON SCIENCE AND PUBLIC HEALTH

CSAPH Report 4-A-11

Subject: Dietary Intake of Incarcerated Populations (Resolution 420-A-10)

Presented by: Al Osbahr, III, MD, Chair

Referred to: Reference Committee D (Theodore Zanker, MD, Chair)

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Resolution 420-A-10, "Dietary Intake of Incarcerated Populations," introduced by the American Association of Public Health Physicians at the 2010 American Medical Association (AMA) Annual Meeting and referred to the Board of Trustees, asks:

> That our AMA Council on Science and Public Health be instructed to collaborate with the United States Department of Agriculture (USDA) to establish and publicize appropriate standards for institutional menus for incarcerated adult and adolescent populations as recommended by the National Commission on Correctional Health Care and such other organizations advocating for optimal health care in correctional facilities, with a report back at the 2010 Interim Meeting of the AMA House of Delegates.

This report reviews current guidelines, standards, and menu planning practices at correctional and detention facilities (defined in Table 1). The health status of incarcerated adult and adolescent populations is discussed, along with the need for special therapeutic diets for chronic disease management. This report highlights the challenges in providing affordable, palatable, and safe foods for inmates that will also meet their nutrient needs. Strategies for improving the menu standards for correctional and detention facilities are explored, along with areas requiring further research.

## CURRENT AMA POLICY RELATED TO DIETARY INTAKE OF INCARCERATED POPULATIONS

Current AMA policy on incarcerated populations does not directly address dietary needs. AMA Policy H-430.997 (AMA Policy Database) states that "correctional and detention facilities should provide medical care that meets prevailing community standards." AMA Policy D-430.997 supports "the National Commission on Correctional Health Care Standards that improve the quality of health care services...delivered to the nation's correctional facilities." As described below, the National Commission on Correctional Health Care (NCCHC) provides some voluntary recommendations on diet, particularly for therapeutic diets.[1]

## METHODS

Literature searches were conducted in the PubMed and Google Scholar databases using the search terms "prison," "inmates," "health," "diet," and "nutrition." Articles were selected that focused on

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Action of the AMA House of Delegates 2011 Annual Meeting: Council on Science and Public Health Report 4 Recommendations Adopted, and Remainder of Report Filed.

practices in US facilities or in some cases Northern European prisons. Additional articles were identified by reviewing the reference lists of pertinent publications. Web sites managed by federal agencies and applicable professional organizations also were reviewed for pertinent information. Experts at relevant professional organizations were contacted directly to identify additional resources, as well as contemporary issues that are not well documented in the literature.

## CURRENT MENU PLANNING PRACTICES AND CONSIDERATIONS

### Nutritional Considerations

Menu planning for incarcerated populations varies according to the regulations and standards set by the governing agency, accreditation status, food service contracts, and court mandates.[1] Correctional facilities and detention facilities may have separate standards within their state jurisdiction. While many states have menu standards for their detention facilities, not all are mandatory or closely regulated. Additionally, few incentives exist for facilities to meet non-mandatory standards. (Personal communication, Barbara Wakeen, 11/19/10)

Food service standards and regulations may be limited to little more than caloric needs and food safety issues, or they may reference other standards and best practices, such as those of the National Commission on Correctional Health Care (NCCHC) and the American Correctional Association (ACA) standards. Both of these nonprofit organizations offer voluntary accreditation programs, although accreditation does not require adherence to all of their recommended standards.[1]

Many facilities use nationally accepted nutrition guidelines for menu planning, such as the Dietary Reference Intakes (DRIs) established by the Institute of Medicine (IOM). Facilities also may follow other guidelines such as the: US Department of Agriculture (USDA) and the Department of Health and Human Services (HHS) Dietary Guidelines for Americans, USDA's MyPyramid, American Heart Association dietary recommendations, and/or comply with state and county regulations, court orders, and food service contractual agreements. Some adolescent facilities participate in the USDA's National School Lunch and Breakfast programs, which require adherence to specific nutrient requirements including the DRIs, Dietary Guidelines for Americans, and USDA approved menu-planning systems.[1]

### Other Considerations

Menu planning in correctional facilities involves additional considerations beyond nutrition. Budget limitations and contract requirements influence the availability of affordable and healthy food. In addition, a number of facilities manage farms that produce some of the food used in their menus. As in most food service environments, food preferences are a concern, which may vary by ethnicity, cultural backgrounds, and region of the country. Security issues may limit access to specific foods and even eating utensils. Common contraband items include certain fruits, sugar, yeast, selected spices, glass, plastic, or metal containers or utensils, and knives. For example, many facilities will only serve chicken patties, to avoid the security risk of inmates fashioning weapons from bone-in chicken. Other facilities may restrict spinach because inmates might dry and smoke it, or pepper because it could be thrown in a correctional officer's face.[1,2] In addition, availability of cooking equipment may be limited, due to space, cost, or staffing issues.[1]

In most facilities, cooks and other kitchen staff are inmates, which may further restrict the types of cooking equipment, utensils, and cleaning supplies that are available. Menu planning must consider the ability of inmate cooks to follow recipe instructions given their literacy level or

fluency in English. Menu planning also is affected by the type of meal service system the facility employs: cafeteria style, with or without hot and cold self-service bars; pre-portioned trays for immediate service or delivery to satellite feeding areas; or, on-site kitchen service or off-site delivery.[1]

Commissaries

While inmates have little or no choice in the foods and beverages available for their consumption as part of the standard meal menus, they may be able to purchase additional foods and beverages at on-site commissaries. Foods and beverages sold in the commissary are not generally governed by rules regarding nutritional needs of inmates and are not always subject to dietitian review or approval. Like vending machines and snack stores in schools and hospitals, the foods and beverages in the commissaries are often unhealthy. In some facilities, commissary sales fund educational or other activities for the inmates. (Personal communication, Benson Li, Association of Correctional Food Service Affiliates [ACFSA]), 02/23/11)

SPECIAL DIETS

Therapeutic and religious diets that are offered and available to inmates vary across jurisdictions and facilities; as with general diets, there are no set standards. Medically prescribed diets may include diabetic/controlled carbohydrate, low fat/cholesterol, low sodium, lactose-free, gluten-free, high-calorie/high-protein, finger food, and allergen-free diets.[1] Corrections dietitians aim to set up standardized therapeutic diet programs for individual facilities or across jurisdictions; however, recommendations for medically prescribed diets are not always standardized, and vary by facility and prescribing physicians. For example, a prescribed "diabetic" diet may or may not be comprised of foods that adequately help regulate an inmate's blood glucose. The prescribing physician may have little or no contact with the dietitian and food service director to discuss individual inmates' dietary needs.

The NCCHC recommends that all inmates receive a heart healthy diet, but that is not a requirement for accreditation (Personal communication Scott Chavez, NCCHC, 02/24/11). Nevertheless, due to increasing demand for therapeutic diets for hypertension, hypercholesterolemia, diabetes, and heart disease, facilities are increasingly moving toward universal "heart-healthy" menus, in order to minimize the need for a variety of therapeutic diets.[1]

Many facilities also attempt to accommodate dietary restrictions due to religious beliefs, notably those of Muslim and Jewish inmates. "Common fare" is one accommodation, usually a vegetarian-style menu that accommodates multiple religious-based dietary restrictions.[1]

In general, facilities aim to keep food for therapeutic and other special diets as similar as possible to that of the main population, for financial and logistical reasons, as well as to avoid appearances of favoritism or possibilities for trading food, etc.[1]

HEALTH STATUS OF INMATES

Nearly 2.3 million Americans are incarcerated in state and federal prisons and local jails.[3] Incarcerated individuals rely on these institutions for their basic needs, including food and health care. The high concentration of long-term inmates, with their corresponding increase in health care needs as they age, has contributed to concerns about the nutritional adequacy of their diets as a

means of preventing and managing chronic disease.[4] By 2030, more than one-third of US prison inmates are predicted to be older than 50 years of age.[4]

Limited data is available on the health status of inmates in the US, as institutionalized individuals are excluded from most nationally representative health surveys. The most recent data comes from the 2002 Survey of Inmates in Local Jails and the 2004 Survey of Inmates in State and Federal Correctional Facilities. These data indicate that a high percentage of incarcerated adults report suffering from chronic medical conditions, including 39% of federal prisoners, 43% of state prisoners, and 39% of local jail inmates.[5] Compared with non-institutionalized adults, jail and prison inmates were more likely to suffer from hypertension, asthma, arthritis, cervical cancer, and hepatitis.[6] In addition, the adjusted prevalence of overweight was higher in prison inmates (but not jail inmates) than in non-institutionalized adults.[6]

The health status of inmates may be influenced by their health care status prior to incarceration.[6] Many lacked regular access to care, particularly adolescents,[7] and report a history of substance abuse.[6] Other factors that may impact inmates' health both before and during incarceration include inadequate diets and amounts of physical activity and sleep, as well as increased levels of stress, anxiety, depression, and other mental health conditions.[6] Strikingly large percentages of state and federal prisoners report being homeless in the year before their arrest, particularly those with medical conditions, more than 50% of whom were living under such circumstances.[8]

Data on the health status of adolescents in detention and correctional facilities is mostly limited to mental health, substance abuse, and infectious diseases. While concerns exist about ensuring adequate dietary intake for proper growth and development, adolescent stays in detention and correctional facilities tend to be shorter, on average, than those of adult inmates.

## CHALLENGES IN MENU PLANNING FOR INCARCERATED POPULATIONS

As mentioned above, numerous challenges exist in planning affordable, palatable, and low security-risk foods for inmates that will also meet their nutrient needs. However, the greatest challenge may be that the recommended and/or mandated nutrient needs of inmates are generally not well defined (except for calorie levels, which may be more than sedentary inmates require, and which may contribute to overweight and obesity). For example, a mandatory standard of the ACA requires that a dietitian review an institution's dietary allowances at least annually "to ensure that they meet the nationally recommended allowances for basic nutrition."[1] Even when standards are more specific, most are not as comprehensive as national dietary recommendations, such as the DRIs and US Dietary Guidelines. Nevertheless, most correctional dietitians rely on these national dietary recommendations in designing and approving menus, despite the fact that these standards were developed for healthy, free-living populations.[1]

The lack of defined nutrient guidelines for captive audiences, such as those incarcerated in correctional or detention facilities, has recently become a more pressing challenge, due to increases in the number of dietary reference standards and the number of nutrients with recommended standards. These changes have been particularly challenging to incorporate into menu planning given the varying health status and dietary needs of inmates, as well as budget limitations, security issues, and other concerns that may restrict the number and types of foods that may be served.

### *Overhaul of National Dietary Reference Standards*

Historically, the Recommended Dietary Allowances (RDAs) were the standard most dietitians in corrections referenced to ensure menus met "nationally recommended allowances."[9] However, the

RDAs are no longer the standard recommended for assessing or planning the dietary intakes of large groups.

The RDAs were redefined beginning in the mid-1990s, when the IOM began introducing DRIs. DRIs are actually an umbrella term for multiple types of reference values, including RDAs, Estimated Average Requirements (EAR), Adequate Intakes (AI), and Tolerable Upper Intake Levels (UL) (Table 2). The DRIs address a wider range of nutrients than the old RDAs. However, not all nutrients have RDAs and EARs; nutrients without sufficient research evidence to establish an RDA and EAR will have an AI. For adolescents and adults, 21 nutrients have EARs and RDAs, 14 have AIs, and 24 have ULs (Table 3).[10]

*Limitations of New DRIs*

Unfortunately, the DRIs do not offer clear guidance for menu planning for incarcerated populations, in which the goal is to ensure that most individuals consume adequate levels of nutrients to meet their dietary needs. The RDAs are no longer recommended for groups because they exceed the needs of more than 97% of the people in the group.[9] Instead, EARs are recommended for use with groups (for those nutrients that have an EAR). The EAR is the "average daily nutrient intake level estimated to meet the requirements of half of the healthy individuals in a group."[11]

Neither the RDAs nor EARs are easily designed for group menu planning, as they require data on the group's nutrient intakes, which is generally incomplete;[9] for example, inmates may not eat all of the food items they are served, and/or may purchase additional items from the commissary. In addition, both the RDA and EAR assume that a group's requirements are normally distributed.[9] Given the poor health status, as well as the inadequate nutrition and physical activity of many inmates before, and sometimes during, incarceration, it is probable that their nutrient needs do not follow the same normal distribution as the general non-institutionalized American population.

AIs and ULs are considered appropriate standards when planning for groups for those nutrients with AIs and ULs.[9] Still, the AI is only useful in determining if there is a low prevalence of inadequate intakes (i.e., mean intakes are above the AI). If mean intakes are below the AI, no assumptions can be made about the prevalence of inadequacy.[9]

*Why Specific Guidance for Incarcerated Populations is Necessary*

Cleary, estimating the nutrient goals for menu planning is more difficult and time consuming with the new DRIs than it was with the old RDAs. There are more standards for more nutrients, and the menus must be designed for a captive audience whose dietary needs may not follow the same distribution as the healthy, non-institutionalized audience from whom, and for whom, the DRIs were derived. In addition, the DRIs encompass many more nutrients than are available on nutrition facts panels or from food manufacturers.

Without clearly defined, authoritative guidelines for menu planning, dietitians in correctional and detention facilities are left to use their own science-based knowledge to determine what an acceptably low potential prevalence of nutrient inadequacy should be, and for which nutrients.[9] Some aim to develop menus that provide 100% of the RDA or AI for all 38 nutrients with DRIs, others address only those nutrients listed on a product's nutrition facts panels, while others address an intermediate number of nutrients and/or try to meet the RDAs for some nutrients and EARs or AIs for others.[9]

The lack of authoritative guidance on the nutrient needs for incarcerated populations, and the amount of clinical judgment it requires, opens the possibility for legal liabilities if the food served to inmates contributes to the development or worsening of diet-related diseases or conditions (Personal communication, Benson Li, ACFSA, 02/23/11). While physicians may prescribe special diets to help manage existing diseases or conditions, they generally do not prescribe diets for the general inmate population. Governing agencies and facility administrators are unlikely to invest in menus that promote disease prevention without authoritative guidance or mandates, or data which confirms cost savings and/or improved outcomes for inmates from better nutrition.

## STRATEGIES TO IMPROVE MENU STANDARDS FOR INCARCERATED POPULATIONS

Clearly, a number of factors impact the development of menus in correctional and detention facilities. Authoritative guidance, from governmental or health organization(s), that is tailored for incarcerated populations, and that specifies the daily or weekly target levels of nutrients across age and gender groups, would assist dietitians and food service managers in their efforts to provide nutritionally adequate meals to inmates. However, such guidance would, by its nature, be voluntary, and other factors that impact menu development, such as cost, may limit its implementation. Accrediting agencies such as the NCCHC or ACA should recommend the guidance as part of their recommendations, but unless the guidance was required for accreditation, its implementation also would likely be limited. The governing local, state, or federal agency would have to mandate the guidance for it to be implemented.

At the very least, universal menu standards, even if not as complete as guidelines such as the DRIs, would help reduce variances among dietitians, food service managers, and facility administrators. Universal menu standards also may improve the availability of affordable, healthy items from food suppliers. Currently, some attempts are being made to synchronize menus within correctional systems (Personal communication, Benson Li, ACFSA, 02/23/11).

## AREAS REQUIRING FURTHER RESEARCH

In order for governmental or health organization(s) to develop authoritative guidance specifically for incarcerated populations, research is needed on the dietary requirements of adult and juvenile inmates given their unique situation. Little is known about the nutrient status of inmates upon their arrival at facilities, during their incarceration, or upon discharge. In addition, little is known about the state of menus in corrections on the whole. The ACFSA has begun collecting food service standards for jails and state departments of corrections in the US, but it is a voluntary project and widespread participation has been lacking to date. More research on the cost of healthcare for current and former inmates would also inform efforts to improve the menu standards for incarcerated populations, particularly for chronic diseases that are associated with diet and nutrition.

## SUMMARY AND CONCLUSION

Current menu planning practices vary across facilities, depending on the governing agency, accreditation status, food service contracts, and court mandates. The menu planning regulations of facilities tend to be fairly general, referring to national dietary guidelines. However, the national dietary guidelines can be difficult to use when planning menus for groups, particularly groups of incarcerated individuals, whose nutrient status and requirements are generally unknown. In the absence of clearly defined, authoritative guidance, and, at times, directed limitations, dietitians in corrections are left to their own professional expertise to define nutritional adequacy for their inmate populations. This can be particularly challenging to implement given the myriad non-

nutritional considerations facilities require, such as budget limitations, contract requirements, food preferences, availability of cooking equipment, meal service systems, and security issues that restrict the types of food served, serving and cooking utensils, and cleaning supplies.

Limited data on the health status of inmates indicate that many suffer from the same chronic diseases afflicting non-institutionalized Americans, such as overweight and hypertension. Many inmates report a lack of access to health care, and many likely had inadequate diets prior to incarceration. As prison populations age, their health care needs are likely to increase. In response, many facilities have begun offering heart-healthy menus for their general populations, in order to reduce the need for special therapeutic diets.

There is a need for an authoritative, contemporary set of nutrition standards that are adaptable to the unique character of correctional institutions but that also recognize the authority of governing agencies. More research is needed on the nutrient status and dietary requirements of juvenile and adult inmates, as well as cost-benefit analyses of healthy menus in relation to health care costs across the range of correctional facilities.

RECOMMENDATIONS

The Council on Science and Public Health recommends that the following statements be adopted in lieu of Resolution 420-A-10 and the remainder of this report be filed:

1. That our American Medical Association (AMA) urge the National Commission on Correctional Health Care, the American Correctional Association, and individual states to mandate adherence to the current Dietary Reference Intakes and Dietary Guidelines for Americans (with adjustments, as needed, for special populations) as a criterion for accreditation and/or standards compliance, until national dietary guidelines specific for adolescent and adult incarcerated populations becomes available. (Directive to Take Action)

2. That our AMA urge the Food and Nutrition Board of the Institute of Medicine to examine the nutrient status and dietary requirements of incarcerated populations and issue guidelines on menu planning for adolescent and adult incarcerated populations. (Directive to Take Action)

Fiscal Note: Less than $500

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TABLE 1. TYPES OF DETENTION AND CORRECTIONAL FACILITIES[1, 6, 12]

| | |
|---|---|
| **Detention facilities** | Generally house individuals who have not been convicted of a crime, although definitions may vary by facility |
| Jails | • House adults awaiting trial or serving short term sentences for misdemeanors<br>• Generally run by county governments and municipalities |
| Juvenile detention facilities | • House youth (up to age 15 – 18 years, depending on state laws) awaiting court hearings and/or placement in long-term care facilities and programs.<br>• May or may not have been charged with an offense (e.g. victims of abuse, neglect, or suffering mental illness)<br>• Generally operated by local (city, county, or municipal) governments or private non-profit or for-profit corporations or organizations (e.g. group homes, shelters, ranch/wilderness camps) |
| **Correctional facilities** | Generally house individuals convicted of crimes |
| Prisons | • House adults convicted of crimes and serving sentences of one year or longer<br>• Generally run by state or federal governments or for-profit corporations or organizations |
| Juvenile correctional facilities | • Generally long-term secure facilities operated by state governments (public) or private non-profit or for-profit corporations or organizations |

TABLE 2. DIETARY REFERENCE INTAKES (DRIs) DEFINED[13]

| | | |
|---|---|---|
| DRI | Dietary Reference Intakes | Umbrella term for 4 nutrient reference values: RDAs, EARs, AIs, and ULs |
| RDA | Recommended Dietary Allowance | The average daily dietary nutrient intake level sufficient to meet the nutrient requirement of nearly all (97 to 98 percent) healthy individuals in a particular life stage and gender group<br><br>The RDA is calculated from the EAR for a given nutrient |
| EAR | Estimated Average Requirement | The average daily nutrient intake level estimated to meet the requirement of half the healthy individuals in a particular life stage and gender group |
| AI | Adequate Intake | The recommended average daily intake level based on observed or experimentally determined approximations or estimates of nutrient intake by a group (or groups) of apparently healthy people that are assumed to be adequate<br><br>Used when an RDA cannot be determined due to a lack of studies or limitations in existing studies. |
| UL | Tolerable Upper Intake Level | The highest average daily nutrient intake level that is likely to pose no risk of adverse health effects to almost all individuals in the general population<br><br>As intake increases above the UL, the potential risk of adverse effects may increase |

TABLE 3. NUTRIENTS WITH DEFINED DIETARY REFERENCE INTAKES (DRIs) FOR ADOLESCENTS AND ADULTS[10,13]

| # | Nutrient | RDA | EAR | AI | UL |
|---|---|---|---|---|---|
| 1 | Vitamin A | X | X | | X |
| 2 | Vitamin C | X | X | | X |
| 3 | Vitamin D | X | X | | X |
| 4 | Vitamin E | X | X | | X |
| 5 | Vitamin K | | | X | |
| 6 | Thiamin | X | X | | |
| 7 | Riboflavin | X | X | | |
| 8 | Niacin | X | X | | X |
| 9 | Vitamin B6 | X | X | | X |
| 10 | Folate | X | X | | X |
| 11 | Vitamin B12 | X | X | | |
| 12 | Pantothenic acid | | | X | |
| 13 | Biotin | | | X | |
| 14 | Choline | | | X | X |
| 15 | Calcium | X | X | | X |
| 16 | Chromium | | | X | |
| 17 | Copper | X | X | | X |
| 18 | Fluoride | | | X | X |
| 19 | Iodine | X | X | | X |
| 20 | Iron | X | X | | X |
| 21 | Magnesium | X | X | | X |
| 22 | Manganese | | | X | X |
| 23 | Molybdenum | X | X | | X |
| 24 | Phosphorus | X | X | | X |
| 25 | Selenium | X | X | | X |
| 26 | Zinc | X | X | | X |
| 27 | Potassium | | | X | |
| 28 | Sodium | | | X | X |
| 29 | Chloride | | | X | X |
| 30 | Boron | | | | X |
| 31 | Nickel | | | | X |
| 32 | Vanadium | | | | X* |
| 33 | Water | | | X | |
| 34 | Carbohydrate (total digestible) | X | | | |
| 35 | Total fiber | | | X | |
| 36 | Total fat** | | | | |
| 37 | *n-6* polyunsaturated fatty acids (linoleic acid) | | | X | |
| 38 | *n-3* polyunsaturated fatty acids (linolenic acid) | | | X | |
| 39 | Protein | X | X | | |
| Totals | | 21 | 21 | 14 | 24 |

*For adults over age 19 years

**No RDA, EAR, AI, or UL was defined for total fat. Instead, an Acceptable Macronutrient Distribution Range (AMDR) was established, ranging from 25 – 35% of energy for individuals under age 19 years, and 20 – 35% of energy intake for adults aged 19 years and older. AMDRs reflect the range of macronutrient intakes associated with decreased risk of chronic disease, while providing recommended intakes of other essential nutrients.