Table 2 Coefficients of variation (CV) for person-to-person variations used to estimate the Recommended Dietary Allowance (RDA) from Estimated Average Requirements (EAR)

Variation coefficient	Coefficient for calculating RDA	Nutrients
10%	1.2	Vitamin B_1, vitamin B_2, vitamin B_6, niacin, folic acid, vitamin C, magnesium, iron (for adults and 15-17 years old), molybdenum, zinc, selenium
12.5%	1.25	Proteins
15%	1.3	Copper
20%	1.4	Vitamin A, iron (for 1-14 years old), iodine

2-3-4. Adequate Intake (AI)

Adequate Intake (AI) is defined as a sufficient quantity to maintain a certain nutritional state in a specific group. It is set at the level which only a few would develop a deficiency. It is set only when the RDA cannot be established. In general, AI is decided based on epidemiological studies worked on nutritional intake of healthy individuals.

AI is based on one of the following three concepts, depending on the nutrients or an individual's gender or age group.

(1) Established based on a value which is estimated intake level that shows nearly no deficiency, based on health status from biological and other indices and intake survey of the concerned nutrient conducted simultaneously. The median of the nutrient intake is used as AI when there is only a few individual with deficiency.

(2) Established based on the median for the nutrient intake when health status cannot be confirmed by using biological markers and similar indicators but representative nutrient distribution among Japanese can be obtained.

(3) Established based on intake level of healthy infants fed by human milk. The product of nutrient concentration of human milk and volume of consumed is used as AI.

2-3-5. Tentative Dietary Goal for Preventing Lifestyle-related Diseases (DG) for Modern Japanese

DG is set mainly for the primary prevention of lifestyle-related diseases. The quantity is designed to achieve that nutritional state at which the risk of developing diseases or the biological markers (substitute markers) are reduced. It is based on knowledge from epidemiological studies with some input from the findings obtained in experimental nutritional studies. However, the relationship between nutritional intake and the risk for developing lifestyle-related diseases is continuous in nature and quite often there is no threshold. In such an instance, it is difficult to propose a certain quantity or threshold as an optimum value. Therefore, considering intake, food composition, and food preferences of the modern Japanese, as well as foreign dietary reference intakes and guidelines for disease prevention, it was decided putting emphasis on feasibility.

In the DRIs-J, particular emphasis was placed on the primary prevention of cardiovascular diseases (e.g., hypertension, hyperlipidemia, stroke, and myocardial infarction), cancer (in particular, stomach cancer), fractures, and osteoporosis. Specifically, it was directed toward the intake of proteins, lipids (fatty acids), cholesterol, carbohydrates, dietary fiber, calcium, sodium (table salt), and potassium.

Regarding calcium, DG is not set as a prevention of lifestyle-related disease. Its AI was set by another method and DG was based on the AI. The calcium balance was determined by a factorial method. Because of this difference in computation, special attention is required in its application. Specifically, it is not intended simply to prevent a lifestyle-related disease: it is for the maintenance of each nutrient in the body.

Protein, lipids, and carbohydrates are nutrients that generate energy. Because the balance (ratios) among them is important, their percentage to energy (% energy) was used as intake units. The DG was designed only for adults.

The DG may be set to bring one's habitual intake as close to this dietary goal as possible or it may be within the indicated threshold. The relationship between the type of DG vis-à-vis the content and nutrients is shown in Table 3.

Table 3 Type of DG relative to the contents and its relations to the nutrients

Types of DG relative to the contents	Nutrients
Nutrients defined to bring their intake close to DG	Dietary fiber, n-3 fatty acids, calcium, potassium (with the intake increase desired)
	Cholesterol, sodium (with reductions in intake increase desired)
DG is defined within a range and nutrients intake is designed to be within this defined range	Total fats, saturated fatty acids, carbohydrates
EAR, RDA, or AI are given but only UL is listed for DG	Proteins, n-6 fatty acids

DG, tentative dietary goal for preventing life-style related diseases; EAR, estimated average requirement; RDA, recommended dietary allowance; AI, adequate intake; UL, tolerable upper intake level

2-3-6. Tolerable Upper Intake Level (UL)

UL is defined as the quantity that shows the upper limit of the habitual intake that is considered to be free of the risk of causing a disease due to excessive intake. If the intake exceeds this level, it is believed that a latent risk for developing a disease increases (Fig. 3). One should be reminded that the disease in this section is that caused by excessive intake of nutrients (an excess intake disease) and not a disease due to insufficient intake (deficiency disease).

Theoretically speaking, the true "UL" is the maximum value (no observed adverse effect level: NOAEL) of "the quantity that is known not to cause a disease," according to studies that were conducted on humans (Fig. 3). However, studies of NOAEL on humans are extremely limited or conducted on specific populations. To be on the safe side, therefore, the UL was obtained by subtracting the "uncertain factor (UF)" from NOAEL in many instances (Fig. 3). In doing so, an appropriate number between 1 and 5 was selected as UF.

On the other hand, when minimum of the "amount that is known to cause health problem" (lowest observed adverse effect level: LOAEL) is obtained from specific populations known to have consumed excessive amounts of certain nutrient or on cases that developed a health problem due to excessive intake of certain supplements or similar sources, UF is set at 10 and the estimated NOAEL is obtained by subtracting 10 from LOAEL. Considering occurrence frequency and extent of health problems due to excessive intake, UF was exceptionally set low for magnesium, calcium and zinc.

Diseases in humans caused by excessive intake of nutrients are rarely reported. Needless to add, one cannot conduct studies on humans to find the dose-response relationship and other details to establish NOAEL or LOAEL. The UL must be estimated from NOAEL or LOAEL that is obtained from animal experiments in which a disease (intoxication) is induced or in some instances from *in vitro* experiments. If only the LOAEL is reported, NOAEL is estimated as a rule by subtracting a UF of 10 from this LOAEL. If NOAEL obtained from animal experiments is to be extrapolated to estimate UL in humans, such NOAEL is usually subtracted by UF 10.

There is not sufficient scientific data to set UF and therefore has not necessarily reached consensus among professionals. Consequently, as described above, an appropriate number for UF was selected in range of 1 to 5 for reports based on humans, and in range of 10 to 100 for those based on animals. When NOAEL is used for computation, a smaller UF is chosen and when LOAEL is used, a larger value was selected. Furthermore, UF was determined by giving due consideration to the characteristics of each nutrient, severity of the projected disease caused by excessive intake, quality and number of the studies reporting on NOAEL and LOAEL, characteristics of the subjects or cohorts observed (sex, age, and health status), group characteristics, and the number of subjects. UF used in the computation is shown in Table 4 for nutrients that have UL.

The details for computing UL differ in each nutrient and it is suggested to refer to the particular chapters. For some nutrients, reports that offer a solid basis for computation were scarce and for those nutrients, either the computation was postponed or only tentative values have been indicated.

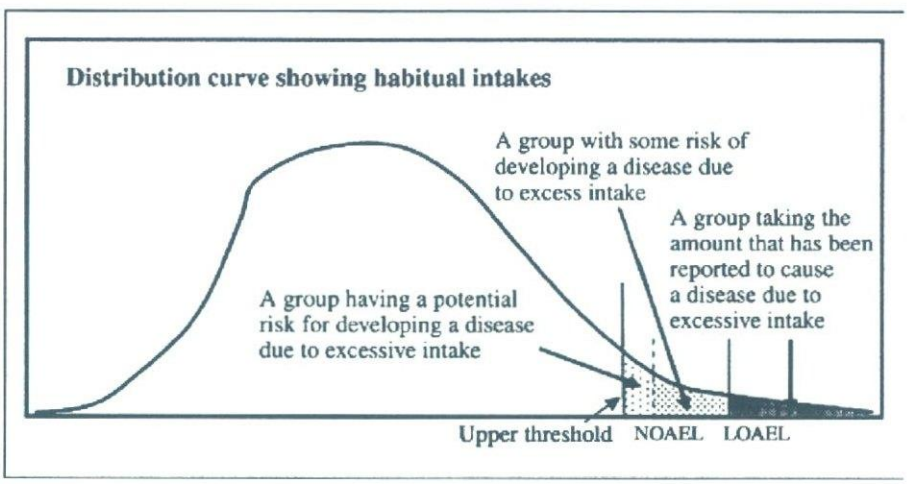

Fig. 3 A model to aid in understanding a cohort that has a risk for developing diseases due to excessive intake

The group of individuals who habitually consume quantities above the upper threshold has a potential risk for developing health problems from excessive intake; those in the group consuming nutrients over LOAEL are in fact consuming the amounts that have been confirmed to produce diseases due to excessive amount of the nutrients in question.

LOAEL, lowest observed adverse effect level; NOAEL, no observed adverse effect level

Table 4 Uncertain factor (UF) used for calculation of Tolerable Upper Intake Level

UF	Nutrients
1	Vitamin D (infants), vitamin E, magnesium, phosphorus, manganese, copper, iodine
1.2	Calcium
1.5	Vitamin A (pregnant women), zinc
2	Vitamin D (adults, children), selenium
5	Vitamin B_6, niacin, folic acid, vitamin A (adults, children)
10	Vitamin A (infants), molybdenum
30	Iron

3. Basic Parameters That Were Noted in Designing the DRIs-J

3-1. Age Groups

The age groups employed in the current design are shown in Table 5. Infants were divided into 2 groups: "after birth to under 6 months (ages 0 through 5 months)" and "6 months to under one year (ages 6 through 11 months)."

Children were defined as those ages 1 through 17 years and adults, those ages 18 years and over. If there is a need for separating the aged from adults, those ages 70 years and over were designated as such.

3-2. Reference Physiques

For DRIs-J, only a single representative value is obtained through computation for each gender and age group, without giving any consideration to physical distinctions (heights and weights) within each group. In other words, the DRIs-J are designed for those in the group with the representative physique. The representative physiques for those ages one year and over were based on the median heights and weights of the corresponding gender and age that were obtained at the 2001 National Nutrition Survey in Japan[1)] and for infants ages 0 through 11 months, the median of the group of corresponding age (in months) obtained from the 2000 National Growth Survey in Infancy and Childhood[2)] were used. These are called the "reference physiques" (reference heights and reference weights) (Table 5).

Table 5 Reference physique (reference height and reference weights)

Sex	Males		Females[1]	
Age	Reference height (cm)	Reference weights (kg)	Reference height (cm)	Reference weights (kg)
0-5 months	62.2	6.6	61.0	6.1
6-11	71.5	8.8	69.9	8.2
1-2 years	85.0	11.9	84.7	11.0
3-5	103.5	16.7	102.5	16.0
6-7	119.6	23.0	118.0	21.6
8-9	130.7	28.0	130.0	27.2
10-11	141.2	35.5	144.0	35.7
12-14	160.0	50.0	154.8	45.6
15-17	170.0	58.3	157.2	50.0
18-29	171.0	63.5	157.7	50.0
30-49	170.0	68.0	156.8	52.7
50-69	164.7	64.0	152.0	53.2
≥70	160.0	57.2	146.7	49.7

[1] Excluding pregnant women.

3-3. Nutrient Intakes Used to Establish AI and DG

In certain instances, the baseline of the state of nutrient intake for the population is needed to compute AI and DG. In the DRIs-J, the median and percentile of intake for each gender and age group (ages one year and over) according to the 2001 National Nutrition Survey[1)] were used for computation. During the process of setting the DRIs-J, the results of the 2002 National Nutrition Survey were made public.[3)] The results were not used as the base materials: it was confirmed that the use of the 2001 Survey data constituted no problem.

The age groups for children age 6 through 11 differs between the DRIs-J and the National Nutrition Survey (the age groups of 6 through 7 years, 8 through 9 years, and 10 through 11 years for the former, and the age groups of 6 through 8 years and 9 through 11 years for the latter). Therefore the data reported by the National Nutrition Survey for the age group 6 through 8 years were used for the DRIs-J for the age group 6 through 7 years; the mean of the age groups of 6 through 8 years and 9 through 11 years reported by the National Nutrition Survey was used for

the age group of 8 through 9 years for the DRIs-J; and the results of the age group 9 through 11 years of the National Nutrition Survey was used for the age group of 10 through 11 years for the DRIs-J.

It is known that almost all nutritional surveys (including dietary recording method) are plagued with the problem of underreporting. Although varied depending on survey method and subjects, 5 to 15% underreporting of energy intake has been reported by studies conducted in the western world.[4] Among Japanese also, underreporting of approximately 8% has been reported as a group mean.[5] The extent of underreporting that occurred in the 2001 National Nutrition Survey, the main data source of the current revision, is unknown. No logical or practical solutions to this problem have been proposed in the western world. In the DRIs-J, it was decided that the values obtained from the 2001 National Nutrition Survey and other related survey would be used as they were.

In establishing AL and DG for the DRIs-J, intake data were used for the following nutrients (Table 6).

Table 6 Nutrients with intake data used to compute their AI and DG

	Nutrients
AI	n-6 fatty acids, n-3 fatty acids, pantothenic acid, biotin[1], vitamin E, vitamin D, phosphorus, manganese[1]
DG	Total fats, saturated fatty acids, n-3 fatty acids, calcium, sodium, potassium

AI, adequate intake; DG, tentative dietary goal for preventing life-style related diseases

[1] Study data other than those from the National Nutrition Survey in Japan were used for references.

3-4. Method to Integrate the Research Results

The DRIs-J were based on the results of as many reliable studies as possible. In doing so, the results were integrated in accordance with the approach that is introduced in Table 7.

Table 7 Method to integrate the research results

Quality of the study	The presence (or absence) of studies on the Japanese	Basic concept in integration
When it is relatively even	When there are studies on Japanese as the research subjects	Priority placed on the results of studies conducted on Japanese
	When there are no studies on Japanese as the research subjects	Use of the overall means
When the quality is highly variable in each study	When there are high-quality studies on Japanese as the study subjects	Priority placed on the results of studies on Japanese
	When there are studies on Japanese as the study subjects but these studies are relatively low in quality in comparison with other studies	Select high-quality studies and use the mean of such studies
	When there are no studies on Japanese as the test subjects	

3-5. Notes for Each Life Stage

3-5-1. Infants

Experiments cannot be conducted on infants less then 6 months old to determine their EAR or RDA. It was assumed that the quality and quantity of human milk consumed by healthy infants would be equivalent to the optimum nutritional requirement for infants. For the infants' DRIs-J, AI was computed: specifically, the product of the nutrient concentration of the human milk and the amount consumed by the infant was used. The mean quantity taken by an infant during this period has been reported to be 0.78 L/day.[6] Therefore the standard quantity consumed by a healthy infant was set at 0.78 L/day for the DRIs-J.

For infants ages 6 through 11 months, consumption of food other than human milk (or other milk products prepared for infants) must be taken into consideration. But relevant information is scarce. The values for infants aged 0 through 5 months and/or those 1 through 2 years were extrapolated. For the method of extrapolation, refer to section (3-6) for the "basic approach of the extrapolation method."

3-5-2. Children

Very few studies are available that would be sufficient to set children's DRIs-J. When sufficient data were not extant, the values were estimated by employing the extrapolation method to those values of adults. A basic approach for extrapolation is shown in 3-6.

Because of the scarcity of information, it was often not able to set ULs. It should be noted that the absence of UL does not necessarily assure freedom from developing health problems when the intake becomes excessive.

3-5-3. Aged

For aged, weakening of their masticatory function, deterioration of digestive and absorptive fraction, and a reduction in food intake due to less physical activities exist. One characteristic of this age group is that their individual intake varies widely; another is that many aged individuals are affected by an illness. Sufficient attention should be directed not only to the age but also to individual characteristics.

3-5-4. Pregnant and Lactating Women

First, the DRIs-J for non-pregnant and non-lactating are computed for their specific age category, and then certain amount is added for pregnant and lactating women.

The typical duration of pregnancy was assumed to be 280 days and the cumulative effect for fetal growth was expressed in terms of volume per day. If it is necessary to divide the duration of pregnancy, the following 3 divisions were proposed: early stage (less than 16 weeks); mid-stage (16 to less than 28 weeks); and late stage (28 weeks and thereafter).

For the lactating stage, data on lactation is necessary; no reliable data for Japanese women were available; so the amount of maternal milk ingested by an infant (0.78 L/day)[6] was used as the daily volume of lactation.

Because of the paucity of data on UL for pregnant and lactating women, many nutrients are without UL. The absence of UL does not necessarily assure that one is free from developing health problems due to excessive intake. It is convenient as a rule to refer to the UL for non-pregnant or non-lactating women of comparable age; but a lack of any consideration about the effect of the fetus during pregnancy or the milk during the lactating period may be associated with a certain risk. A close attention should be paid to the UL for these women. Because the scientific basis related to these problems is not available, the quantitative reference was forced to be omitted.

3-6. Method for Extrapolation

The DRIs-J (EAR, RDA, AI, DG, and UL) were obtained through observation of certain gender and at certain age group. Thus they are called "references" and used as a basis for extrapolation. An extrapolation procedure is necessary to create DRIs-J for each genders and age group.

References for EAR and AI are often based on the intake per day (weight/day), while the reference for UL is obtained as a quantity per kg of body weight. Therefore extrapolation methods were prepared individually.

For RDA, the EAR for each gender and age level is computed by extrapolating from the reference value for EAR; then each resulting EAR was multiplied by the RDA computing coefficient shown in Table 2. For DG, the AI for both genders and all age levels was computed by extrapolating from the reference AI; then the corresponding DG were obtained by using each extrapolated AI and the median of the intake of the respective gender and age groups.

3-6-1. Extrapolation Methods of EAR and AI

3-6-1-1. Adults and Children

It is difficult to decide on the method of extrapolation with due consideration given to the characteristics of each nutrient. It has been noted that there is a significant correlation between efficiency in energy metabolism and body surface area. Formulas to estimate the body surface area from body height and/or body weight were developed and are now widely used.[7] There are a number of formulas and for the DRIs-J have adopted which was proposed by Kleiber, et al. in 1947 and uses 0.75th power of the weight ratio.[8] Further studies have been conducted in recent years and it has been reported that the method is useful in estimating the organ weights of a number of organisms (including cardiovascular and respiratory organs of mammals).[9]

When the reference for EAR or AI is given in intake per day (weight/day) and the representative value (median or mean) of the body weight in a given group of the study from which the reference has been obtained is clear-cut, extrapolation was effected by using the following:

$$X = X_0 \times (W/W_0)^{0.76} \times (1 + G)$$

Where

X = EAR or AI (intake per day) of the specific age group

W = reference weight of the specific age group

X_0 = Reference (intake per day) for EAR or AI

W_0 = mean or median representative weight of the studied subjects that provided EAR or AI reference

G = growth factor (refer to Table 8 for data)

In some studies, the reference for EAR or AI may be given as a number per kg of body weight. If so, extrapolation was conducted as follows:

$X = X_0 \times W \times (1 + G)$

Where

X = EAR or AI (intake per day) of the desired age group

W = reference weight of the age group in question

X_0 = reference for EAR or AI (intake per kg body weight)

G = growth factor (refer to Table 8 for data)

For children, the following should be taken into consideration: (1) quantity that is needed for growth; and (2) the quantity that is accumulated in the body during the growth stage. For the growth factors for the DRIs-J, the values that have been adopted by WHO/UNA[10] and the United States/Canada in their dietary reference intakes were modified to suit the Japanese at each age group (Table 8).

Table 8 Growth factors used in setting the EAR or AI (age one year old and over)

Age groups	Growth factors
1-2 years	0.30
3-14	0.15
15-17 (boys)	0.15
15-17 (girls)	0
≥18	0

EAR, estimated average requirement; AI, adequate intake

3-6-1-2. Infants (ages 6 through 11 months)

Two methods for extrapolation were considered to the DRIs-J for infants 6 through 11 months: (1) extrapolate based on the value for infants (aged 0 through 5 months); and (2) use the median values of infants (aged 0 through 5 months) and those of 1 to 2-years-old. As a rule, it was decided that either of the following two formulas could be applied.

When extrapolating form infants 0 through 5 months' DRIs-J, the following formula has been suggested:[7)]

(reference weight of infants 6 through 11 months / reference weight of infants 0 through 5 months)$^{0.75}$

However, infants 0 through 5 months are in the growth stage and their DRIs-J probably make allowance for the growth factor. So the formula given above does not take the growth factor into consideration. When the weight of reference physique is substituted, the products for boys and girls are $(8.8/6.6)^{0.75}$ and $(8.2/6.1)^{0.75}$ or 1.24 and 1.25, respectively. This formula produces values for extrapolation that are slightly different for boys and girls. Therefore the mean of these values was computed and used as the common AI for both genders.

3-6-2. UL

Like EAR and AI, there are no methods for extrapolating UL that are logical and sufficiently reliable. For those age groups with insufficient evidence, computations were not made for those ages under 18 years. As a rule, either of the following two methods was used for those aged 18 years and over.

If the reference value for UL is given per kg of body weight:

$X = X_0 \times W$

Where X = UL (intake per day) for the specific age level

W = reference weight for the specific age group

X_0 = Reference for UL (intake per kg of body weight)

If the reference for UL is given as a value per day:

$X = X_0 \times (W/W_0)$

Where X = UL for the specific age level (intake per day)

X_0 = reference for UL (intake per day)

W = reference weight for the specific age group

W_0 = mean or median representative weight of the studied subjects that provided UL reference

3-7. Rounding

In view of the convenience of use and reliability of the values, EAR, RDA, AI, DG and UL were routinely rounded off according to the rule shown in Table 9. For children, adults, and aged, a single rule applied for each nutrient, regardless of their gender. For infants, pregnant and lactating women, the value to be added was rounded to the same number of digits as that used for the other gender or the corresponding age groups.

After the rounding operation, the numbers were smoothed if necessary to remove excessive ups and downs among age groups. Refer to the section on each nutrient for the method and practice of smoothing.

Also refer to the respective section for the nutrients for which the numbers were rounded by methods other than that shown here.

Table 9 Basic formulas for rounding numbers

Approximate median value	Method	The digit that is shown[1]
0.5	Rounded to the nearest tenth fraction.	0.X
1.0	Rounded to the nearest tenth fraction.	X.X
5	Rounded so that the 10th fraction will be 0 or 5.	X.Y
10	Rounded to the nearest whole number.	XX
50	Rounded so that the first digit will be 0 or 5.	XY
100	The first digit is rounded off.	XX0
500	Rounded off so that the second digit will be 0 or 5	XY0
1,000	Rounded to the nearest hundred.	X,X00
5,000	Rounded so that the third digit will be 0 or 5.	X,Y00

[1] (X or Y is replaced with a number: X, a number; Y, 0 or 5)

4. Basic Approach for Application

4-1. Individuals or Groups

The subjects to whom the DRIs-J are applied are, as a rule, healthy individuals or groups that is composed of healthy individuals. The healthy individuals here may include those who have some mild conditions such as hypertension, hyperlipidemia and hyperglycemia but enjoy a normal life and no specific dietary guidance is being given or diet therapy or diet restriction is imposed.

4-2. Nutrient Sources

Nutrients sources include the energy and nutrients that are contained in substances normally taken in meals. They also include those energy and nutrients that are contained in tonic drinks, nutritional aids, food fortified with nutrients, specified health food, functional food, so-called "health food", and dietary supplements, which are not intended for the treatment of any specific disease but are used to promote one's general health. Note that the ULs for folic acid and magnesium were created only for sources other than normal food.

4-3. Habitual Intake

The DRIs-J give standards for habitual intake but do not constitute standards for meals taken over a short period (e.g., one day). This is because nutrient intake varies widely from day to day[12-15] and DRIs-J are references for habitual intake of energy and nutrients.

It is difficult to specify a duration for one's "habitual intake" but based on the results obtained from observations of daily variations in the intake of energy and nutrients,[12-15] approximately one month appears to be reasonable. Because of the difficulty associated with dietary surveys over extended periods, diet-recording or diet recall is employed for assessment. In such a case it is desirable that surveys be conducted for least 2 days (preferably 2 non-consecutive days) and use the mean of the results.

Except for vitamin C, there is no seasonal difference in intake for Japanese;[13, 16, 17] therefore there is no need for special consideration.

DRIs-J do not indicate the quantity that should be included in a specific meal for a day or that included in a particular meal (e.g., breakfast, lunch or dinner). If a specific meal (such as lunch) is to be supplied for a group, it is desirable that due consideration be given to the intake by the group at all meals and a plan made for the specific meal.

4-4. Basic Method of Application

4-4-1. Basic Concept of DRIs-J Use

DRIs-J are used for various purposes but its application may be roughly classified into the following: for the "assessment of the current state of nutrient intake" and "for designing dietary plans (including planning for dietary consultation, public nutrition and food service)." The application is further divided by whether it is for "individuals" or "groups."

Excluding energy requirements, basic handling of all nutrients is shown in Table 10 (dietary assessment) and Table 11 (dietary planning). In preparing these, the concept adopted in the dietary reference intakes of the United States and Canada was used as a reference.[19)]

It is essential that a dietary plan be prepared and implemented, based on a dietary assessment (not only the intake but also biochemical indices and physical measurements). It should be noted that the value indicated by the DRIs-J are not necessarily the amount that should be applied accomplished in real life.

For energy requirements, refer to the section (2-2) on energy.

Table 10 Concept of Dietary Reference Intakes for Japanese uses for dietary assessment (excluding energy requirements)[1-3]

	For an Individual	For a Group
EAR	If the habitual intake is less than EAR, the probability for deficiency is more than 50%: the probability increases as the habitual intake is reduced below EAR.	The percentage of those with a habitual intake less than EAR is generally equal to that suffering from insufficient intake.
RDA	When the habitual intake exceeds the EAR and approaches RDA, the probability for deficiency is reduced. When it reaches RDA, the probability becomes low (2.5%).	Not used.
AI	If the habitual intake exceeds AI, the probability for deficiency becomes very low.	When the median intake of the group is more than AI, the percentage of those suffering from a deficiency is small. If the median intake is less than AI, the percentage cannot be determined.
DG[4]	If the habitual intake has reached DG or within the range indicated, the risk for lifestyle-related disease[6] is very unlikely.	The percentage of those not achieving DG or those with an intake outside the range corresponds to those having a risk of developing a lifestyle-related disease.[6]
UL[5]	As the habitual intake exceeds the upper limit and continues to increase, the risk for developing a disease[6] related to excessive intake increases.	The percentage of those with habitual intake exceeding UL corresponds to the percentage of those having a risk for developing a disease[6] due to excessive intake.

EAR, estimated average requirement; RDA, recommended dietary allowance; AI, adequate intake; DG, tentative dietary goal for preventing lifestyle-related diseases; UL, tolerable upper intake level

[1] The assessment based on intake is meant to be used for screening. To know the true nutritional state, it is necessary to obtain clinical information, results of biochemical determinations and physiological data.

[2] It has been reported in American and European studies that the energy intake (although the extent may vary in the method of survey or study subjects) is often underreported by 5 to 15%.[4)] Among Japanese, it is also known that the mean for a group be underreported by 8% than actual intake.[5)] The tendency is particularly notable when the subjects are obese;[20)] but the quantitative relationship has not been elucidated. For the nutrients, underreporting, such as seen for energy, is suspected but details are not known.

[3] It is desirable that the habitual intake be estimated as accurately as possible. (Refer to 4-3.)

[4] The nutrient intake and related risk for developing a lifestyle-related disease are ongoing events and should be regarded carefully. The "high" and "low" risks are relative concepts.

[5] There are some nutrients for which no UL is indicated because there is no sufficient scientific basis to determine the actual value. It by no means assures safety from excessive intake.

[6] The "risk" here means the probability of developing a lifestyle-related disease or disorder due to excessive consumption of the nutrient in question.

Table 11 Concept of Dietary Reference Intakes for Japanese uses for dietary planning[1] (excluding energy requirements)

	For an Individual	For a Group
EAR	Not used	The percentage of those with a habitual intake below EAR should be brought down to less than 2.5%
RDA	Those whose habitual intake is less than EAR should try to achieve the RDA.	Not used
AI	One should try to bring his/her habitual intake close to AI.	The goal is to bring the mean of the group to AI.
DG[2]	One should strive to bring his/her habitual intake close to DG or within the range indicated.	Reduced the percentage of those whose habitual intake is below DG or outside the range.
UL[3]	One should bring the habitual intake below UL.	The percentage of those whose habitual intake exceeds UL should be brought to zero (0)

EAR, estimated average requirement; RDA, recommended dietary allowance; AI, adequate intake; DG, tentative dietary goal for preventing lifestyle-related diseases; UL, tolerable upper intake level

[1] It is important to design and implement a plan tailored to the subject, based on a dietary assessment (using not only the dietary intake but also biochemical and physiological data). The numerical indices are not to be followed faithfully. The dietary assessment, which constitutes the basis of planning, is used for screening purposes. To understand one's true nutritional status, clinical information, results of biochemical tests and physiological data are needed.

[2] The nutrient intake and related risk for developing a lifestyle-related disease are ongoing events and should be regarded carefully. The "high" and "low" risks are relative concepts. The "risk" here means the probability of developing a lifestyle-related disease or disorder due to excessive consumption of the nutrient in question.

[3] There are certain nutrients for which no UL are indicated because there is no sufficient scientific basis to determine the actual value. It by no means guarantees safety from excessive intake.

4-4-2. Priority

DRIs-J show the standards for the intake of energy and nutrients but that do not mean that the reliability of presented indices or the importance in the use is necessarily same between nutrients.

For EAR, RDA, AI and DG, a high priority is placed on those nutrients that are essential to the maintenance of life and health and to promote healthy growth; and those nutrients that are selected to prevent lifestyle-related diseases are considered when the supply of those with a high priority is assured. Lower priority is assigned to those nutrients the deficiency of which is not