



National Diet and Nutrition Survey: young people aged 4 to 18 years

Part 1: The diet and nutrition survey

Part 2: The oral health survey

User Guide

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Glossary

Glossary of abbreviations, terms and survey definitions

25-OHD	See <i>plasma 25-hydroxyvitamin D</i>
α_1 -ACT	α_1 -antichymotrypsin
Activity score	See <i>Blair score; calculated activity score</i>
Benefits (receiving)	Receipt of Income Support, Family Credit or Job Seeker's Allowance by the young person's mother and/or her husband/partner in the 14 days prior to the date of interview.
Biological parent	The term used to describe those who are biologically the parents of the young person, that is, not adoptive, step or foster parents or cohabiting partners not genetically related to the young person.
Blair score; calculated activity score	An indicator of energy expenditure, based on the MET value for an activity and the time spent on that activity.
BMI	see <i>Body Mass Index</i>
BMR	Basal Metabolic Rate, a measure of the energy needed per day to maintain vital functions which sustain life.
Body Mass Index	A measure of body fatness which standardises weight for height: calculated as [weight (kg)/height(m) ²]. Also known as the Quetelet Index.
CHD	Coronary heart disease
COMA	The Committee on Medical Aspects of Food and Nutrition Policy
CSE	Certificate of Secondary Education
Cum %	Cumulative percentage (of a distribution)
CV	Coefficient of variation
Deft	Design factor; see <i>Notes and Appendix E</i>
DH	The Department of Health
Diary sample	Young people for whom a seven-day dietary record was obtained.
dna	does not apply
DNU	Medical Research Council Dunn Nutrition Unit, Cambridge. See also <i>HNR</i>

DRV	Dietary Reference Value. The term used to cover LRNI, EAR, RNI and safe intake. (See Department of Health. Report on Health and Social Subjects: 41. <i>Dietary Reference Values for Food Energy and Nutrients for the United Kingdom</i> . HMSO (London, 1991))
EAATAC	The erythrocyte aspartate aminotransferase activation coefficient
EAR	The Estimated Average Requirement of a group of people for energy or protein or a vitamin or a mineral. About half will usually need more than the EAR, and half less.
Employment status	Whether at the time of interview the individual was working, unemployed, or economically inactive.
Economically inactive	Those neither working nor unemployed as defined by the International Labour Organisation (ILO) definition (see <i>Unemployed</i>); includes full-time students, the retired, individuals who were looking after the home or family and those permanently unable to work due to ill health or disability.
EGRAC	The erythrocyte glutathione reductase activation coefficient
EMLA cream	A topical local anaesthetic cream applied to the arm of some young people at the site of the venepuncture.
EQA(S)	External quality assurance (scheme)
ETKAC	The erythrocyte transketolase activation coefficient
ETK-B	The erythrocyte transketolase basal activity
Extrinsic sugars	Any sugar which is not contained within the cell walls of a food. Examples are the sugars in honey, table sugar and lactose in milk and milk products.
FAD	Flavin adenine dinucleotide
Fieldwork wave	see <i>Wave</i>
Frankfort plane	The desired position for the young person's head when measuring standing height.
FSA	Food Standards Agency
GCE	General Certificate of Education
GCSE	General Certificate of Secondary Education
GHS	The General Household Survey; a continuous, multi-purpose household survey, carried out by the Social Survey Division of ONS on behalf of a number of government departments.
GSH-Px	The erythrocyte glutathione peroxidase activity

GP	General Practitioner
HDL cholesterol	High density lipoprotein cholesterol
HEA	Health Education Authority, now the Health Development Agency.
Head of household	<p>The head of household is defined as follows:</p> <ul style="list-style-type: none"> a) in a household containing only a husband, wife and children under age 16 years (and boarders), the husband is always the head of household. b) in a cohabiting household the male partner is always the head of household. c) when the household comprises other relatives and/or unrelated persons the owner, or the person legally responsible for the accommodation, is always the head of the household. <p>In cases where more than one person has equal claim, the following rules apply:</p> <ul style="list-style-type: none"> i) where they are of the same sex, the oldest is always the head of household ii) where they are of different sex the male is always the head of household.
Highest educational qualification	<p>Based on the highest educational qualification obtained, grouped as follows:</p> <p>Above GCE 'A' level Degree (or degree level qualification) Teaching qualification HNC/HND, BEC/TEC Higher, BTEC City and Guilds Full Technological Certificate Nursing qualifications (SRN, SCM, RGN, RM RHV, Midwife)</p> <p>GCE 'A' level and equivalent GCE 'A' level/SCE higher ONC/OND/BEC/TEC not higher</p> <p>GCE 'O' level and equivalent GCE 'O' level passes (Grades A-C if after 1975) CSE (Grades A-C) CSE (Grade 1) SCE Ordinary (Bands A-C) Standard Grade (Levels 1-3) SLC Lower SUPE Lower or Ordinary School Certificate or Matriculation City and Guilds Craft/Ordinary Level</p> <p>CSE and equivalent CSE Grades 2-5, and ungraded GCE 'O' level (Grades D and E if after 1975) GCSE (Grades D-G) SCE Ordinary (Bands D and E) Standard Grade (Levels 4 and 5)</p>

Clerical or commercial qualifications
Apprenticeship
Other qualifications

None

No educational qualifications

The qualification levels do not in all cases correspond to those used in statistics published by the Department of Education.

HNR	Medical Research Council Human Nutrition Research, Cambridge, (formerly part of the Dunn Nutrition Unit).
HOH	<i>see Head of household</i>
Household	The standard definition used in most surveys carried out by Social Survey Division, ONS, and comparable with the 1991 Census definition of a household was used in this survey. A household is defined as a single person or group of people who have the accommodation as their only or main residence and who either share one main meal a day or share the living accommodation. (See McCrossan E. <i>A Handbook for interviewers</i> . HMSO: London 1991)
Household type	Classificatory variable based on whether the young person was living with one or both parents and with or without other children. See also <i>Two-parent household</i> .
HSE	The Health Survey for England
Income	Respondents were asked to give the usual gross weekly or annual income of their household from all sources before tax and other deductions by choosing one of 12 income groups from a show card (see <i>Appendix A</i>).
Intrinsic sugars	Any sugar which is contained within the cell wall of a food.
IQA	Internal quality assurance (see also EQAS, NEQAS)
lc	low calorie
LDL cholesterol	Low density lipoprotein cholesterol. LDL cholesterol was not measured in this survey. Total serum cholesterol minus HDL cholesterol is taken as approximation of LDL cholesterol, uncorrected for triglycerides. For brevity, the term LDL cholesterol is used for non-HDL cholesterol.
LREC	Local (NHS) Research Ethics Committee
LRNI	The Lower Reference Nutrient Intake for protein or a vitamin or a mineral. An amount of the nutrient that is enough for only the few people in the group who have low needs.
MAFF	The Ministry of Agriculture, Fisheries and Food

Manual social class	Young people living in households where the head of household was in an occupation ascribed to <i>Social Classes III manual, IV or V</i> .
MAP	Mean arterial pressure – see <i>Chapter 11</i>
Mean	The average value
MET	Metabolic equivalent. For adults metabolic equivalents are taken as numerically equivalent to energy expenditure. For an average adult 1MET is equal to 60kcal/hour or 1kcal/min.
MCH	Mean cell haemoglobin
MCHC	Mean cell haemoglobin concentration
MCV	Mean corpuscular volume
Median	see Quantiles
Menarche	The onset of menstruation in girls.
MRC	The Medical Research Council
MUAC	Mid upper-arm circumference
na	not available, not applicable.
NDNS	The National Diet and Nutrition Survey
NEQAS	The National External Quality Assurance Scheme
NFS	National Food Survey
NHS	National Health Service
nlc	not low calorie
NMES	see <i>Non-milk extrinsic sugars</i>
No.	Number (of cases)
Non-manual social classes	Young people living in households where the head of household was in an occupation ascribed to <i>Social Classes I, II or III non-manual</i> .
Non-milk extrinsic sugars	Extrinsic sugars, except lactose in milk and milk products
NSP	Non-starch polysaccharides. A precisely measurable component of foods. A measure of 'dietary fibre'.
ONS	Office for National Statistics
PAF	Postcode Address File; the sampling frame for the survey

Percentiles	see <i>Quantiles</i>
Physical activity sample	Those for whom a seven-day physical activity diary was obtained.
Plasma 25-hydroxyvitamin D; plasma 25-OHD	Plasma vitamin D
PSU	Primary Sampling Unit; for this survey, postcode sectors
PUFA	Polyunsaturated fatty acid
QA (QC)	Quality assurance/Quality control
Quantiles	The quantiles of a distribution divide it into equal parts. The median of a distribution divides it into two equal parts, such that half the cases in the distribution fall, or have a value, above the median, and the other half fall, or have a value below the median.
Quetelet Index	see <i>Body Mass Index</i>
Region	Based on the Standard regions and grouped as follows: Scotland Northern North Yorkshire and Humberside North West Central, South West and Wales East Midlands West Midlands East Anglia South West Wales London and South East London South East The regions of England are as constituted after local government reorganisation on 1 April 1974. The regions as defined in terms of counties are listed in Chapter 3.
Responding sample	Respondents who co-operated with any part of the survey.
RNI	The Reference Nutrient Intake for protein or a vitamin or a mineral. An amount of the nutrient that is enough, or more than enough, for about 97% of the people in a group. If average intake of a group is at the RNI, then the risk of deficiency in the group is small.

SD/Std Dev	Standard deviation. An index of variability which is calculated as the square root of the variance and is expressed in the same units used to calculate the <i>mean</i> .														
se	Standard error. An indication of the reliability of an estimate of a population parameter, which is calculated by dividing the <i>standard deviation</i> of the estimate by the square root of the sample size.														
SI units	Système Internationale d'Unitès (International System of Units)														
Social Class	Based on the Registrar General's Standard Occupational Classification, Volume 3. HMSO (London, 1991). Social class was ascribed on the basis of the occupation of the head of household. The classification used in the tables is as follows:														
	<table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Descriptive description</th> <th style="text-align: left;">Social class</th> </tr> </thead> <tbody> <tr> <td colspan="2"><i>Non-manual</i></td> </tr> <tr> <td>Professional and intermediate</td> <td>I and II</td> </tr> <tr> <td>Skilled occupations, non manual</td> <td>III non-manual</td> </tr> <tr> <td colspan="2"> <i>Manual</i></td> </tr> <tr> <td>Skilled occupations, manual</td> <td>III manual</td> </tr> <tr> <td>Partly-skilled and unskilled occupations</td> <td>IV and V</td> </tr> </tbody> </table>	Descriptive description	Social class	<i>Non-manual</i>		Professional and intermediate	I and II	Skilled occupations, non manual	III non-manual	 <i>Manual</i>		Skilled occupations, manual	III manual	Partly-skilled and unskilled occupations	IV and V
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 <i>Manual</i>															
Skilled occupations, manual	III manual														
Partly-skilled and unskilled occupations	IV and V														
SSD	The Social Survey Division, of the Office for National Statistics.														
Tertile	See <i>Quantiles</i>														
TIBC	Total iron-binding capacity														
Two-parent household	Households where the young person was living with two adults who were married or cohabiting, one or both of whom was the young person's parent, step parent or foster parent, or if none of these was present, a grandparent.														
Unemployed	International Labour Organisation (ILO) definition: those who were not in employment and were available to start work within two weeks and had either looked for work in the last four weeks, or were waiting to start a new job.														
Wave; Fieldwork wave	<p>The 3-month period in which fieldwork was carried out.</p> <p>Wave 1: January to March 1997 Wave 2: April to June 1997 Wave 3: July to September 1997 Wave 4: October to December 1997</p> <p>Because in some cases fieldwork extended beyond the end of the three-month fieldwork wave or cases were re-allocated to another fieldwork wave, cases have been allocated to a wave for analysis purposes as follows. Any case started more than 4 weeks after the</p>														

end of the official fieldwork wave has been allocated to the actual quarter in which it was started. For example, all cases allocated to Wave 1 and started January to April appear as Wave 1 cases. Any case allocated to Wave 1 and started in May or later appears in a subsequent wave; for example a case allocated to Wave 1 which started in May appears in the tables under Wave 2. All cases in Wave 4 (October to December 1997) had been started by the end of January 1998. Note that in relation to the results for plasma 25-hydroxyvitamin D, the analyses relate to the exact date the blood sample was taken (see *Chapter 12*).

WHO

World Health Organisation

Working

In paid work, as an employee or self employed, at any time in the 7 days prior to the interview or not working in the 7 days prior to interview but with a job to return to, including, for women, being on maternity leave.

Section 1

Background, purpose and research design

Section 1 Background, purpose and research design

1.1 The National Diet and Nutrition Survey Programme

The National Diet and Nutrition Survey programme is a joint initiative, established in 1992, between the Ministry of Agriculture, Fisheries and Food (MAFF) and the Department of Health (DH) which followed the successful completion and evaluation of the benefits of a survey of the diet and nutritional status of British adults aged 16 to 64 years carried out in 1986/7¹. MAFF's responsibility for the NDNS programme has now transferred to the Food Standards Agency.

The NDNS programme aims to provide comprehensive, cross-sectional information on the dietary habits and nutritional status of the population of Great Britain. It also contributes to the health improvement programme set out in the Government's White paper, *Saving Lives: Our Healthier Nation*².

The NDNS programme is intended to:

- provide detailed quantitative information on the food and nutrient intakes, sources of nutrients and nutritional status of the population under study as a basis for Government policy;
- describe the characteristics of individuals with intakes of specific nutrients that are above and below the national average;
- provide a database to enable the calculation of likely dietary intakes of natural toxicants, contaminants, additives and other food chemicals for risk assessment;
- measure blood and urine indices that give evidence of nutritional status or dietary biomarkers and to relate these to dietary, physiological and social data;
- provide height, weight and other measurements of body size on a representative sample of individuals and examine their relationship to social, dietary, health and anthropometric data as well as data from blood analyses;

- monitor the diet of the population under study to establish the extent to which it is adequately nutritious and varied;
- monitor the extent of deviation of the diet of specified groups of the population from that recommended by independent experts as optimum for health, in order to act as a basis for policy development;
- help determine possible relationships between diet and nutritional status and risk factors in later life;
- assess physical activity levels of the population under study; and
- provide detailed information on the condition and function of the tissues of the mouth in relation to dietary intake and nutritional status.

The NDNS programme is divided into four separate surveys, planned to be conducted at about three-yearly intervals. Each survey is intended to have a nationally representative sample of a different population age group: children aged 1½ to 4½ years; young people aged 4 to 18 years; people aged 65 years and over, and adults aged 19 to 64 years. The Reports of the NDNS of children aged 1½ to 4½ years and of people aged 65 and over were published in 1995 and 1998 respectively^{3,4}.

The next survey in the programme will be of adults aged 19 to 64 years, commissioned jointly by the Food Standards Agency and the Department of Health.

1.2 The need for a survey of young people

The Governments' White Paper, *Saving Lives: Our Healthier Nation* set out the key areas and targets for improving health as appropriate to children and young people. For example, in relation to targets for reducing death rates from coronary heart disease (CHD) and stroke, the White Paper noted that "... diet is central to our health throughout life. A balanced diet in childhood helps to ensure that children grow well and do not become overweight as they get older. Good nutrition throughout life, with plenty of fruit and vegetables, cereals, and not too much fatty and salty food, will help protect against coronary heart diseases, stroke and some cancers. Taken together with physical activity a healthy diet enhances not just length

but also the quality of life.¹² There is therefore a need for Government to be informed about the diet and nutritional status of young people.

The only large national survey of the diets of school-age children was carried out in 1983.⁵ Since then other studies have focused on subgroups of the school-age population, for example, children aged 13 and 14 years living in urban areas, adolescents living in Northern Ireland and adolescents living in the West of Scotland; there have been no further national surveys^{6,7,8}.

The 1983 survey was commissioned to investigate the effect of the 1980 Education Act, which released Local Authorities from the statutory requirement to provide school meals to prescribed nutritional standards. The survey provided extensive data on the dietary habits of British schoolchildren and the contributions made by school meals at that time. Two age groups were studied; children aged 10 and 11 years, and children aged 14 and 15 years. The survey found that the diets of British schoolchildren were generally adequate but provided more than the recommended amount of energy from fat. The diets of some children, particularly the girls, also fell short in several vitamins and minerals including riboflavin, iron and calcium⁵.

Since the 1983 survey it is likely that the diets of young people, in common with the diets of adults, have changed in response for example to changes in lifestyles, and the variety of foods available. 'Fast food' outlets have become widely available and are popular with young people, as are 'ethnic' foods that are available as 'take-aways' as well as restaurant meals. In schools the type and range of foods offered has changed; nowadays schools provide self-service meals and snacks, as well as more traditional served school lunches. Moreover many secondary-age school children can be seen leaving school premises at lunchtime to eat food taken from home, or items purchased outside school⁹. The contribution of food eaten at school lunchtime to the overall diet and nutrition of young people is of major interest.

One of the major uses of the NDNS data is for food chemical risk assessment. The availability of up-to-date survey data is important to ensure that estimates of dietary exposure to food chemicals are as close to reality as possible. Estimates for young people had been based on the Department of Health survey of the Diets of British schoolchildren⁵. However this survey was limited in scope, and had become out of date with respect to the

trends in the diets of this age group, particularly teenagers. For these reasons a new survey of this age group was needed.

MAFF and DH therefore commissioned the Social Survey Division of the Office for National Statistics (ONS) and the Medical Research Council (MRC) to carry out this work. The MRC component was conducted by the Micronutrient Status Laboratory, Cambridge, initially at MRC Dunn Nutrition Unit (DNU), and more recently at MRC Human Nutrition Research¹⁰. Staff at the DNU were responsible for obtaining ethical approval for the survey from National Health Service Local Research Ethics Committees (LRECs), for recruiting the blood takers and dealing with those aspects of the survey concerned with the venepuncture procedure and urine samples. A Survey Doctor was employed by the DNU principally to liaise with and deal with questions from LRECs, to provide support for ONS fieldworkers and the blood takers in the event of any medical problem arising, to identify abnormal results from blood pressure measurements and blood analyses and bring them to the attention of the young person's GP, and to be available to answer any questions from respondents on the venepuncture and blood pressure procedures¹¹. ONS, as the lead contractor, was responsible for all other aspects of the dietary and oral health components of the survey, including sample and survey design, recruitment and training of fieldworkers, data collection and analysis. For the oral health component of the survey, ONS collaborated with, and sub-contracted work to the Dental Schools at the Universities of Birmingham, Newcastle, Dundee and Wales.

1.3 The aims of the survey

The survey was designed to meet the overall aims of the NDNS programme in providing detailed information on the current dietary behaviour, nutritional status and oral health^{12, 13} of young people living in private households in Great Britain. Additionally the survey was designed to:

- provide data to assist in the development of dietary guidelines for young people, including dietary guidelines for food provided by schools;
- determine the frequency of bowel movement in this age group;

- provide baseline and comparative data for blood pressure and some anthropometric measurements in this age group;
- provide baseline and comparative data for some haematological and biochemical indices in blood and urine in this age group.

The survey design therefore needed to incorporate methods for collecting detailed information on the young person's household circumstances, general dietary behaviour and health status, on the quantities of foods consumed, and on physical activity levels, anthropometric measures, blood pressure levels and blood and urine analytes. Additionally an oral health component was needed to collect information on oral health behaviour and on the number and condition of the teeth, and the condition of the gums and other oral soft tissues^{12, 13}.

1.4 The sample design and selection

A nationally representative sample of young people aged 4 to 18 years living in private households was required. It was originally estimated that an achieved sample of about 2000 young people was needed for analysis, distributed across four age groups, 4 to 6 years, 7 to 10 years, 11 to 14 years and 15 to 18 years. The age groups were defined to correspond to the age groups for Dietary Reference Values¹⁴. However, since the youngest age group, 4 to 6 years, only covers three years, rather than four years as in the older age bands, it was agreed that the overall achieved sample should be proportionally adjusted to account for this; hence an achieved sample of about 1880 young people was desired.

As in previous surveys in the NDNS series, fieldwork was required to cover a 12-month period, to cover any seasonality in eating behaviour and in the nutrient content of foods, for example, full fat milk. The 12-month fieldwork period was divided into four fieldwork waves, each of three months duration. The fieldwork waves were:

Wave 1: January to March 1997

Wave 2: April to June 1997

Wave 3: July to September 1997

Wave 4: October to December 1997

Where there was more than one young person between the ages of 4 and 18 years living in the same household, only one was selected to take part in the survey. As well as reducing the burden of the survey on the household, and therefore reducing possible detrimental effects on co-operation and data quality, this reduces the clustering of the sample associated with similar dietary behaviour within the same household and improves the precision of the estimates. For the same reason it was decided that, unlike the earlier survey of the eating habits of school-age children⁵, the sample should be household based and not school based, that is the first stage units should be a sample of private addresses and not a sample of schools with young people selected from lists of those attending the school.

The sample was selected using a multi-stage random probability design with postal sectors as first stage units. The sampling frame included all postal sectors within mainland Great Britain, and selections were made from the small users' Postcode Address File. The frame was stratified by 1991 Census variables.

A total of 132 postal sectors was selected as first stage units, with probability proportional to the number of postal delivery points, and 33 sectors were allocated to each of the four fieldwork waves. The allocation took account of the need to have approximately equal numbers of households in each wave of fieldwork, and for each wave to be nationally representative. From each postal sector 210 addresses were randomly selected. To identify households that contained an eligible young person, each selected address was sent a postal sift form which asked for details of the sex and date of birth of every person living at the address. After two reminder letters, all non-responding addresses together with all multi-household addresses were called on by an interviewer in an attempt to collect the same information as on the sift form. The postal sift was also conducted in four waves, sift forms being sent out to the addresses in the relevant 33 selected postal sectors about five months before the start of the fieldwork wave. Copies of the sift form and accompanying letter and reminders are reproduced in Appendix A.

From the postal and interviewer sift returns, households containing an *eligible* young person were identified. Eligibility was defined as being aged between 4 and 18 years on the date of the mid-point of the relevant fieldwork wave. As fieldwork covered a three-month period, at the time of interview eligible young people could have been slightly under 4 years or slightly over 18 years.

One eligible young person was randomly selected from each household identified by the sift procedures as containing an eligible young person. To improve the statistical efficiency of the sample design, by reducing the effects of clustering and re-weighting, only half the households containing just one eligible child were selected. As the resulting sample of young people was larger than needed for fieldwork, sub-sampling was then carried out to reduce the overall set sample size and to achieve the required numbers of male and female young people in the four age groups.

A more detailed account of the sample design and response to the postal sift stages is given in Appendix C.

1.5 The elements of the survey

These were as follows:

- an initial face-to-face interview using computer assisted personal interviewing methods (CAPI) to collect information about the young person's household, their usual dietary behaviour, smoking and drinking habits (those aged 7 years and over only); their health status, and their use of dietary supplements, herbal remedies and medicines;
- a 7-day weighed intake dietary record of all the food and drink consumed by the young person both in and out of the home;
- a record of the number of bowel movements the young person had over the 7-day dietary recording period;
- a 7-day physical activity diary collected over the same period as the dietary record (those aged 7 years and over only);
- anthropometric measurements: standing height, body weight, mid upper-arm circumference and, for those aged 11 years and over, waist and hip circumferences;
- blood pressure measurements;

- the collection of a spot urine sample;
- if consent was given, a venepuncture procedure to collect a fasting sample of blood;
- a short post-dietary record interview to collect information on any unusual circumstances or illness during the period which might have affected eating behaviour;
- a face-to-face interview, using CAPI, to collect information on the young person's oral health history and oral health behaviour, and an oral health examination^{12, 13}.

While the aim was to achieve co-operation with all the various elements, the survey design allowed for a young person to participate in only some elements.

Depending on the age of the young person the interviews were conducted either with a parent, usually the mother, or were conducted jointly with the parent and young person. For young people who had left the parental home the interviews were conducted with the subject alone.

From age 11 years and over most young people were expected to keep their own dietary, bowel and physical activity record; younger children needed varying levels of help from parents, teachers and other carers. As a token of appreciation a gift voucher for £5 was given to the young person if the dietary record was kept for the full 7 days¹⁵. Each young person was also given a record of his or her anthropometric and blood pressure measurements.

To help the ONS nutritionists evaluate the quality of the dietary records completed by the young people, interviewers completed a quality assessment questionnaire. This included information on how accurate the interviewers thought the weighing and recording of items eaten in and out of the home had been and whether the diary was an accurate reflection of the young person's actual diet during the recording period.

Copies of the fieldwork documents and the interview questions are given in Appendix A.

Feasibility work carried out in February to April 1996 by the Social Survey Division (SSD) of ONS and the MRC Dunn Nutrition Unit tested all the elements of the survey and made

recommendations for revisions for the mainstage¹⁶. A second fieldwork test, mainly to evaluate changes to the dietary and physical activity recording documents, was carried out in October 1996. For a sub-group of the initial feasibility study sample the validity of the dietary recording methodology was tested using the doubly-labelled water methodology to compare energy expenditure against reported energy intake¹⁷. For the same sub-group the physical activity information collected in the diary was validated by directly measuring the young person's activity level using a motion sensor, the Tritrak monitor. Further details of the design and results of the feasibility studies can be found in the Report of the *Feasibility Study for the National Diet and Nutrition Survey: young people aged 4 to 18 years*¹⁶.

1.6 Fieldwork

Over the fieldwork period a total of 67 ONS interviewers worked on the survey, the majority working in at least two waves. All the interviewers working on the survey had been fully trained by the Social Survey Division of ONS and most had experience of working on other surveys in the NDNS programme, or of other surveys involving record keeping such as the Family Expenditure Survey (FES)¹⁸.

Each interviewer attended a five-day personal, residential briefing before starting fieldwork. The briefing was conducted by research and other professional staff from the Social Survey Division of ONS, staff from MAFF and DH, and from the Dunn Nutrition Unit (DNU). Prior to the residential briefing each interviewer was required to keep and code his or her own 3-day weighed intake record.

At the briefing, interviewers received individual feedback from the nutritionists on their record-keeping and coding and were trained in all aspects of the survey. The main elements covered by the training were:

- obtaining consents;
- the questionnaire interview, in particular how to deal with certain 'sensitive' topics;
- completing the weighed intake dietary record;
- collecting the physical activity information;

- checking, probing and coding the dietary record;
- techniques for making the anthropometric measurements and measuring blood pressure;
- collecting the spot urine sample;
- the procedures for obtaining a blood sample;
- the oral health interview^{12, 19}.

Emphasis was placed on the need for accuracy in recording and coding and in measurement techniques. Practice in the anthropometric measurements was achieved by measuring a group of young people who joined the briefing for the relevant session. A representative of the company supplying the sphygmomanometers assisted with the training on blood pressure measurement²⁰.

In addition to the personal briefings, written instructions were provided for all interviewers and for the phlebotomists who would be taking the blood samples. Interviewers working on non-sequential fieldwork waves were recalled for a one-day refresher briefing to maintain the accuracy of dietary coding and anthropometric and blood pressure measurement techniques.

In order that appropriate official bodies and personnel were informed about the nature of the survey, letters were sent by ONS, prior to the start of fieldwork, to Chief Constables of Police, Directors of Social Services, Public Health and Education and to Chief Executives in Health Authorities with responsibility for one or more of the selected fieldwork areas (postal sectors). The letters gave information on when and where the survey would take place, what was involved in the survey and asked that appropriate personnel at a more local level be informed. An example copy of one of these letters is reproduced in Appendix A.

In keeping with SSD normal fieldwork procedures, a letter was sent to each eligible household in the sample in advance of the interviewer calling, telling them briefly about the survey (see *Appendix A*).

Section 2 describes the methodologies and procedures used in the survey, including the 7-day weighed intake record, the physical activity diary, anthropometry and blood pressure, the urine sample and the venepuncture procedure. The key instructions issued to interviewers are reproduced in Section 3 including details on coding the dietary record. The database structure, derived variable specifications and details of the quality checks carried out on the data are given in Section 4 and Appendix J.

References and endnotes

- ¹ Gregory J, Foster K, Tyler H, Wiseman M. *The Dietary and Nutritional Survey of British Adults*. HMSO (London, 1990).
- ² Department of Health. *Saving Lives: Our Healthier Nation*. TSO (London, 1999).
- ³ Gregory JR, Collins DL, Davies PSW, Hughes JM, Clarke PC. *National Diet and Nutrition Survey: children aged 1½ to 4½ years. Volume 1: Report of the diet and nutrition survey*. HMSO (London, 1995).
- ⁴ Finch S, Doyle W, Lowe C, Bates CJ, Prentice A, Smithers G, Clarke PC. *National Diet and Nutrition Survey: people aged 65 years and over. Volume 1: Report of the diet and nutrition survey*. TSO (London, 1998).
- ⁵ Department of Health. Report on Health and Social Subjects: 36. *The Diets of British Schoolchildren* HMSO (London, 1989).
- ⁶ Hackett AF, Kirby S, Howie M. A national survey of the diet of children aged 13-14 years living in urban areas of the United Kingdom. *J Hum Nutr Dietet* 1997; **10**: 37-51.
- ⁷ Strain JJ, Robson PJ, Livingstone MBE et al. Estimates of food and macronutrient intake in a random sample of Northern Ireland adolescents. *Br J Nutr* 1994; **72**: 343-352.
- ⁸ Anderson A, Macintyre S, West P. Dietary patterns among adolescents in the West of Scotland. *Br J Nutr* 1994; **71**: 111-122.
- ⁹ Gardner Merchant. *What are today's children eating?* The Gardner Merchant School meals survey, Gardner Merchant Ltd (1998).
- ¹⁰ For simplicity and concordance with fieldwork documents (Appendix A), this organisation is referred to throughout as Dunn Nutrition Unit (DNU). However all communications regarding this aspect of the survey should be directed to MRC Human Nutrition Research, Cambridge.
- ¹¹ Further details of the role and responsibilities of the Survey Doctor are given in Chapter 2.
- ¹² An interview asking about the young person's oral health behaviour was carried out at the last visit to the household in connection with the dietary survey. After the interview the young person was asked to consent to the ONS interviewer calling back with a dentist to carry out an examination of their teeth, gums and other oral soft tissues. The results relating to the oral health component of the survey, including the interview and examination data, are presented in a separate report.
- ¹³ Walker A. *National Diet and Nutrition Survey: Young people aged 4 to 18 years. Volume 2: Report of the Oral Health Survey*. TSO (London, 2000).
- ¹⁴ Department of Health. *Dietary Reference Values for Food Energy and Nutrients for the United Kingdom*. Report on Health and Social Subjects 41. HMSO (London, 1991).
- ¹⁵ Gift vouchers were from WH Smith Ltd.

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- ¹⁶ Lowe S. *Feasibility study for the National Diet and Nutrition Survey: young people aged 4 to 18 years.* ONS (*In preparation*).
- ¹⁷ Smithers G, Gregory J, Coward WA, Wright A, Elsom R, Wenlock R. British National Diet and Nutrition Survey of young people aged 4 to 18 years: feasibility study of the dietary assessment methodology. Abstracts of the Third International conference on Dietary Assessment Methods. *Eur. J. Clin. Nutr.* (1998) **52**: S2. S76.
- ¹⁸ Down D (Ed.) *Family Spending. A Report on the 1998-99 Family Expenditure Survey.* TSO (London, 1999).
- ¹⁹ Training in the oral examination for interviewers and dentists was provided at a separate residential briefing.
- ²⁰ The Dinamap 8100 oscillometric blood pressure monitors were supplied by Johnson and Johnson Medical Ltd, Ascot, Berkshire UK SL5 9EY.

19. Number of cases

Survey component	Selected sample size	Achieved sample size	Weighted sample size	Weighting factors:			Indicator of valid cases
				Differential probability of selection	Differential probability of selection and differential non-response	Scaled weight for differential probability of selection and differential non-response	
<u>Interview</u>	2672	2127	8075	Casewgt (integer); Casewgt1 (Casewgt/100 to give weight to correct decimal place)	ICasewgt	ICasewgt2	[all cases are valid]
<u>7-day dietary record^m</u>	"	1701	6490	"	DCasewgt	n/a ^f	Diaryind
<u>Physical measurements</u>							
Weight	"	1986	7393	"	MCasewgt	MCaswgt2	Measind ^e
Height	"	1949	7391	"	MCasewgt	MCaswgt2	Measind ^e
Mid upper arm circumference	"	1944	7369	"	MCasewgt	MCaswgt2	Measind ^e
Hip and waist circumferences	"	987 ^a	3796 ^a	"	MCasewgt	MCaswgt2	Measind ^e
Blood pressure	"	1905	7215	"	BPCasewt	BPCasw2	AgeBP>=0
<u>Blood sample^{b,1}</u>							
Haematology group ^g	"	1181	4454	"	HmCasewt	HmSWt	HmCasewt>=0
Biochemistry group A ^h	"	1080	4103	"	GpAwt	GpASWt	GpAwt>=0
Biochemistry group B ⁱ	"	958	3651	"	GpBwt	GpBSWt	GpBwt>=0
Biochemistry group C ^j	"	1131	4295	"	GpCwt	GpCSWt	GpCwt>=0
Biochemistry group D [Zinc only] ^k	"	868	3296	"	PZincwt	Scalewzn	PZincwt>=0
<u>Urine sample</u>	"	1851	6963	"	UrCasewt	UrScale	UrCasewt>=0
<u>7-day physical activity diary</u>	"	1424 ^c	5422	"	PActwgt	PActswgt	Pactind ^c
<u>Post dietary record interview</u>	"	1991 ^d	n/a	"	DCasewgt ^d	n/a	Diaryind ^d

^a Hip and waist circumferences were only measured for young people aged 11 years and over

^b Blood analytes shown are those used to derive weighting factors for groups of analytes with similar numbers of reported result

^c Physical activity diaries were kept by young people aged 7 years and over. Data on hours of sleep and hours spent watching TV are available for all young people aged 4 to 18 years who completed a 'Diary of Eating and Drinking Away From Home' (N=1788; select on PCAllind)

^d This includes data for cases where diaries were not completed. To analyse the data only for those young people for whom a complete 7-day dietary record is available, select cases using Diaryind. Data for the 1701 valid cases were weighted using the weights for the 7-day dietary record

^e Indicates cases where young person has at least one measurement

^f Variables from the interview and diary were entered into multivariate analyses as independent variables rather than as dependent variables. Scaled weights applied in multivariate analyses are those for the dependent variable

^g Haematology group: haemoglobin concentration, red blood cell count, haematocrit, mean cell volume, mean cell haemoglobin, mean cell haemoglobin concentration, red cell distribution width, platelet count, mean platelet volume, platelet distribution width, white cell count, neutrophil count, lymphocyte count, monocyte count, eosinophil count, basophil count

^h Group A: plasma retinol, plasma retinyl palmitate, plasma α and γ tocopherol, plasma α and β carotene, plasma lycopene, plasma lutein and zeaxanthin, plasma α and β cryptoxanthin, plasma vitamin C, erythrocyte transketolase basal activity, erythrocyte transketolase activation coefficient, plasma iron, plasma total iron binding capacity, plasma iron % saturati

ⁱ Group B: plasma total cholesterol, plasma high density lipoprotein (HDL) cholesterol, non-HDL cholesterol, plasma triacylglycerides, anti-chymotrypsin.

^j Group C: blood lead, plasma selenium, plasma magnesium, plasma 25-hydroxyvitamin D, erythrocyte glutathione reductase activation coefficient, erythrocyte aspartate transaminase activation coefficient, red cell superoxide dismutase

^k Group D: plasma zinc was weighted; unweighted analytes in this group were: plasma urea, plasma testosterone, plasma alkaline phosphate, plasma creatinine, erythrocyte glutathione peroxidase.

^l To select fasting cases only, use variable BIEat [1=non-fasting sample; 2=fasting sample]

^m To select consumers only, use nutrient variable >0

Section 2

Methodologies and procedures

Section 2 Methodologies and procedures

2.1 The choice of dietary methodology

The survey used a weighed intake methodology since its main aims were to provide detailed quantitative information on the range and distribution of intakes of foods and nutrients for young people aged 4 to 18 years in Great Britain, and to investigate relationships between nutrient intakes, physical activity levels and various nutritional status and health measures.

The advantages and disadvantages of this method and the factors affecting the choice are discussed in Appendix D.

2.2 Choice of number and pattern of recording days

In deciding to use a weighed intake methodology, the period over which to collect information for an individual needed to be considered. Ideally it needed to be long enough to give reliable information on usual food consumption, but this had to be balanced against the likelihood of poor compliance if the recording period was lengthy.

The feasibility study concluded that it was possible to collect dietary information for a 7-day period from respondents of all ages and that the levels of response and quality of information would be acceptable.

For reasons of interviewer working arrangements, diaries were almost never placed on Saturdays or Sundays and only infrequently on Fridays; this means that the first day of recording was only rarely a Sunday or Monday. Apart from this, interviewers were not required to place diaries to a fixed placement pattern, for example placing equal numbers of diaries on each day of the week. The effects of this on the data were not investigated in the Report.

2.3 The questionnaire

Before starting the dietary record, background information about the young person's usual dietary behaviour and about their household was collected, using the computer-assisted

personal interviewing method (CAPI). The choice of respondent depended on the age and ability of the young person. Usually the young person and a parent, generally the mother, were interviewed together. Information was also collected on the young person's eating arrangements at lunchtimes on school days; the consumption of artificial sweeteners and herbal teas and drinks; any foods that were avoided and the reasons for doing so, including vegetarianism and dieting behaviours, the use of salt at the table and in cooking, the use of fluoride preparations and dietary supplements, and information on the young person's health status. Information on the frequency of consumption of a number of food types, together with information about the consumption of skin or peel on vegetables and fruit was collected; the respondent was offered the choice of self-completing this information using the interviewer's laptop computer (Computer Assisted Self Interviewing - CASI) or responding to questions from the interviewer.

For all young people aged 7 years and over, the interview also collected information on their smoking and drinking behaviour, and for girls aged 10 years and over on their age at menarché and whether they were taking the oral contraceptive pill. Because these topics were considered sensitive, in that some young people might prefer not to have to answer these questions in front of a parent or the interviewer, the young people were given the option of answering the questions on these topics on either a paper self-completion document or by CASI, entering the answers themselves direct into the interviewer's laptop computer.

The interview questionnaire is reproduced in Appendix A.

Information was also collected which was of use to the interviewer when checking the dietary record, for example, the young person's usual eating pattern on weekdays and at weekends, and on the types of certain commonly consumed food items usually eaten, such as milk, bread and fat spreads, (that is full or low fat milk, white or wholemeal bread, etc).

When the interviewer called back on the household at the end of the seven dietary recording days the main diary keeper was asked if there had been any special circumstances which might have affected the young person's eating behaviour during the period, such as a family celebration. Information was also collected on any illness the young person had during the recording period and any prescribed medication taken.

2.4 The dietary record

The parent and/or young person, depending on the age of the young person, was asked to keep a weighed record of all food and drink consumed by the young person, both in and out of the home, over seven consecutive days. From feasibility work, it was expected that young people from about 10 years upwards would be able to keep their own dietary record. Under 10 years the majority of record keeping would need to be done by the young person's mother or other carer. In describing the procedures for weighing and recording the dietary information we have assumed, for clarity, that the young person was the main diary keeper.

Each young person was issued with a set of accurately calibrated Soehnle Quanta digital food scales and two recording diaries; the 'Home Record' diary for use when it was possible for foods to be weighed, generally foods eaten in the home, and a smaller 'Eating and Drinking Away From Home' diary (the 'eating out' diary) for use when foods could not be weighed - generally foods eaten away from home. The 'eating out' diary was also designed for recording information on the young person's physical activities, and for keeping a record of any bowel movements the young person had while they were away from home, over the same 7-day period. The instruction and recording pages from these documents relating to the dietary information are included in Appendix A.

The young person, together with any other household member who might be involved in keeping the diary, was shown by the interviewer how to use the scales to weigh food and drinks, including how to zero the scales after each item was weighed so that a series of items put on to the same plate could be weighed separately. Instructions were also given on how to weigh and record leftovers, and how to record any food that was spilt or not eaten, which could not be re-weighed.

The 'Home Record' diary was the main recording and coding document. For each item consumed over the seven days a description of the item was recorded, including the brand name of the product, and where appropriate the method of preparation. Also recorded was the weight served and the weight of any leftovers, the time food was eaten, whether it was eaten at home, at school or elsewhere, and whether fruit and vegetables were home grown, defined as being grown in the household's own garden or allotment. Who did the weighing, the young person or someone else, was also recorded for each food item and for each day the young person was asked to indicate whether they were 'well' or 'unwell'.

Young people who completed a full 7-day dietary record were given a £5 gift voucher by the interviewer, as a token of appreciation. It was made clear that receiving the voucher was not dependent on co-operation with any other aspect of the survey, in particular, consenting to provide a blood sample.

2.4.1 The recording procedure

Recording what the young person consumed in the diaries started from the time the interviewer left the home; the interviewer called back approximately 24 hours after placing the diaries in order to check that the items were being recorded correctly, to give encouragement and to re-motivate where appropriate.

Everything consumed by the young person had to be recorded, including medicines taken by mouth, vitamin and mineral supplements and drinks of water. Where a served item could not be weighed, the young person was asked to record a description of the portion size, using standard household measures, such as teaspoons, or to describe the size of the item in some other way.

Each separate item of food in a served portion needed to be weighed separately in order that the nutrient composition of each food item could be calculated. For example, for a sandwich the bread, spread and filling(s) all needed to be weighed and recorded separately. In addition, recipes for all home-made dishes were collected.

The amount of salt used either at the table or in cooking was not recorded, as it would have been very difficult to measure accurately. However questions on the use of salt in the cooking of the young person's food and the young person's use of salt at the table were asked at the interview. All other sauces, pickles and dressings were recorded. Vitamin and mineral supplements and artificial sweeteners were recorded as units consumed, for example, one teaspoon of Canderel Spoonful.

A large amount of detail needed to be recorded in the dietary record to enable similar foods prepared and cooked by different methods to be coded correctly, as such foods will have different nutrient compositions. For example, the nutrient composition of crinkle cut chips made from old potatoes and fried in a polyunsaturated oil is different from the same chips fried in lard.

Therefore, depending on the food item, information could be needed on cooking method, preparation and packaging as well as an exact description of the item before it could be accurately coded.

Young people were encouraged to record details in the diary, including weight information if at all possible, of any leftovers or food that was spilt or dropped. Further details on the recording of leftovers and spillage are given in Appendix D.

The 'eating out' diary was intended to be used only when it was not possible to weigh the food items. In such cases, young people were asked to write down as much information as possible about each food item consumed, particularly the portion size and an estimate of the amount of any left over. To encourage this, the diary had a centimetre rule printed around the edge of the diary page. Prices, descriptions, brand names, place of purchase, and the time and place where the food was consumed were all recorded. Check questions to aid completeness of recording asked, for each day, how much the young person had spent on things to eat and drink while they were away from home, and whether they ate or drank anything that they did not have to buy, for example, items they were given, or were free. Duplicate items were bought and weighed by the interviewer where possible.

Where the young person consumed food or drink items provided by their school or college, the interviewer was required to visit the school to collect further information from the school catering manager about, for example, cooking methods, portion sizes, and types of fats used. This information could then be used by the interviewer and nutritionists when coding and allocating weights to items recorded in the 'eating out' diary. The information was recorded on a 'catering questionnaire' (see *Appendix A*) which included standard questions on cooking methods etc, and provision for recording information on specific items that the young person had consumed.

At each visit to the household, interviewers checked the diary entries with the diary keeper(s) to ensure that they were complete and all the necessary detail had been recorded. Reasons for any apparent omission of meals were probed by the interviewers and noted on the diaries. As the feasibility survey had identified a general problem with the completeness of information in the 'eating out' diaries and under-reporting of food consumed by the oldest group of girls, particular attention was paid to checking information about items consumed out of the home and the diaries of 15 to 18 year old girls.

Before returning the coded diaries to ONS headquarters interviewers were asked to make an assessment of the quality of the dietary record, in particular the extent to which they considered that the diary was an accurate reflection of the young person's actual diet. This information was recorded on an 'assessment questionnaire' (see *Appendix A*).

Further information on recording procedures is provided in *Appendix D*.

2.4.2 Coding the food record

Interviewers were responsible for coding the food diaries so they could readily identify the level of detail needed for different food items, and probe for missing detail at later visits to the household. They were therefore trained in recognising the detail required for coding foods of different types at the briefing and by exercises they completed before and during the briefing.

A food code list giving code numbers for about 3500 items and a full description of each item was prepared by nutritionists at MAFF and ONS for use by the interviewers. The list was organised into sections by food type, for example milk and cream, soft drinks, breakfast cereals, fruit, vegetables and different types of meat. Interviewers were also provided with an alphabetical index (paper copy) and an electronic version of the food code list that was loaded into their laptop computer to help them find particular foods in the code list. Additional check lists were provided to assist the interviewers when coding fats used for cooking and spreading, soft drinks and savoury snacks.

As fieldwork progressed, further codes were added to the food code list for home-made recipe dishes and new products found in the dietary records; by the end of fieldwork there were approximately 5000 separate food codes. The food code list is reproduced in *Appendix F*.

Brand information was collected for all food items bought pre-wrapped, as some items, such as biscuits, confectionery and breakfast cereals could not be food coded correctly unless the brand was known. However brand information has been coded only for artificial sweeteners, bottled waters, herbal teas and herbal drinks, soft drinks and fruit juices, to ensure adequate differentiation of these items.

Food source codes were also allocated to each group of foods in order to identify food eaten at school, including school meals, and other food obtained and consumed outside the home. The contribution to total nutrient intake by foods from different sources could then be calculated.

After the interviewers had coded the entries in the dietary records, ONS headquarters coding and editing staff checked the documents. ONS nutritionists carried out initial checks for completeness of the dietary records, and they and MAFF nutritionists dealt with specific queries from interviewers and coding staff, and advised on and checked the quality of coding (for further information about data checks and edits see *Section 4*). They were also responsible for converting descriptions of portion sizes to weights, and checking that the appropriate codes for recipes and new products had been used.

2.4.3 Editing the dietary information

Computer checks for completeness and consistency of information were run on the dietary and questionnaire data.

Following completion of these checks and calculations the information from the dietary record was linked to the nutrient databank and nutrient intakes were thereby calculated from quantities of food consumed. This nutrient databank, which was compiled by MAFF, holds information on 55 nutrients for each of the food codes. Details of the nutrients measured are provided in *Section 4* (see *Figure 4.22*).

Most of the dietary analysis presented in this report is based on average daily intakes of nutrients, either including or excluding dietary supplements. Each food code used was also allocated to one of 115 subsidiary food groups; these were aggregated into 57 main food groups and further aggregated into 11 food types (see *Section 4*). Information on the quantity of food consumed from each subsidiary group is tabulated in Chapter 4 of the Report, and data on the contribution of the main food types to intakes of energy and specific nutrients are included in Chapters 5 to 9 of the Report.

2.5 Physical activity

Information about levels of physical activity was required for all young people aged 4 to 18 years. The main purpose in collecting this information was to allow an investigation of the relationships between dietary intakes (particularly energy intake), body composition (body mass index), and physical activity levels.

If the body does not use all the energy it takes in as food for activity, growth, thermogenesis etc, then it will be stored; over time this will lead to an increase in body weight, which if it continues leads to an increased risk of obesity. The risk of cardio-vascular disease increases with obesity and many other illnesses and conditions are related to overweight.¹ This survey provides the opportunity to relate activity levels to energy intake and body size.

2.5.1 The choice of methodology

In consultation with experts² it was agreed that collecting information on physical activities from young people over a 7-day period by retrospective questioning was likely to be unreliable and that record keeping would be likely to provide more complete and accurate information.

Feasibility work tested this methodology and it was recommended that for young people aged 7 years and over, information on physical activities should be collected in a 7-day diary, which the young person should be asked to carry with them and complete during the day; if they were unwilling to do this they were asked to complete the diary at the end of each day³

For young people aged between 4 and 6 years the feasibility survey found that record keeping was an inappropriate methodology; this youngest group was unable to keep an accurate record of their activities while they were away from home and parents found it difficult to categorise the activities in the way required; physical activity was often unstructured and its duration and intensity difficult to define. It was therefore recommended that for the main stage survey physical activity information for young people aged 4 to 6 years should be collected in the initial interview, principally by asking the parent how active their child was compared with other children.

2.5.2 Outline of methodology

Young people aged 7 to 18 years were asked to keep a diary of their physical activities for seven days, coinciding with the dietary record-keeping period. The recording pages for physical activities were included in the 'Eating and Drinking Away From Home Diary' (see *Appendix A*).

Since it was considered sufficient for the purposes of the survey to collect information which would allow young people to be classified into broad bands of activity level, for example, very inactive, inactive, moderately active and very active, the diary asked for details of time spent on a list of specified activities. It was felt inappropriate within the context of an already onerous survey to ask young people to provide detailed information on how all their time was spent, for example, by obtaining a 'time use' diary.

Information was therefore collected for each of the seven days on the time spent::

- in bed - lowest energy expenditure;
- watching television, playing computer games, reading and listening to music - very low energy activities;
- on a range of prompted activities which were known to require moderate, high or very high levels of energy expenditure;
- on any other activities which made the young person '*breathe hard, huff and puff and get hot and sweaty*' - high energy activities;
- on any other activities which made the young person '*slightly out of breath and (.feel..) warm, but not exhausted*' - moderate energy activities.

If the young person was at school a further 5½ hours was added for each school day to allow for activities at school which require very low levels of energy expenditure.

For young people in employment their hours worked were recorded and they were asked to categorise their job according to whether it required very low, low or moderate levels of energy expenditure.

By totalling the time spent on all the above and subtracting from 24 hours, the time spent each day on all other activities requiring only low levels of energy expenditure could be obtained, without the need to record each of these activities separately.

Each of the prompted activities has an associated metabolic equivalent value (MET); for example watching television, which is a very low energy activity, has a MET value of 1.5. By multiplying the time spent on an activity by its MET value a score can be calculated each day for a young person which represents their level of energy expenditure that day (see *Appendix E* for MET values for activities). The scores for the seven recording days can then be averaged to give a score which can be categorised into the broad bands described above.

For young people aged 4 to 6 years information was collected for each of the 7 dietary record-keeping days on the hours spent in bed, and time spent watching TV, playing computer games and listening to music. Additionally parents were asked during the initial interview to describe their child's level of activity from prompted categories describing an "inactive" child, a "fairly active" child, and a "very active" child, and to say how active their child was compared with other children of the same age and sex (see *Appendix A*).

2.6 Bowel movements

During the seven days when the dietary record was being kept, young people were asked to keep a record of the number of bowel movements they had each day.

This information was required mainly to determine normative values for young people between the ages of 4 and 18 years, which are not available from other sources, and to be able to relate the information on the number of bowel movements to other information collected, principally dietary data.

The 'eating out' diary included a 7-day chart for recording bowel movements when the young person was away from home. Each day the daily total from the 'eating out' diary was copied onto a second 7-day chart, which was kept at home and used to record bowel movements while at home, and the total number of movements for the day calculated.

2.7 Anthropometry

One of the main aims of this survey is to provide anthropometric data on a representative sample of young people, which can be related to socio-demographic and dietary data.

Anthropometry, the measurement of body size, weight and proportions, is an intrinsic part of any nutritional survey and can be an indicator of health, development and growth. Derived indices, for instance to assess the proportion of body weight that is fat, provide additional information.

2.7.1 Choice of anthropometric measurements

In deciding which measurements should be taken a number of factors needed to be considered; these included the acceptability of the measurement to the young person (and his or her parent), whether equipment suitable for use in the home was available, and whether interviewers could be trained to take the measurements accurately.

Measurements of standing height, weight and mid upper-arm circumference were required for all young people. Additionally waist and hip circumferences were measured for young people aged 11 years and over.

Height and weight can also be used to calculate the Quetelet or Body Mass Index ($\text{weight}[\text{kg}]/\text{height}[\text{m}]^2$) or other indices which control for variations in body weight associated with height. Mid upper-arm circumference was measured to give information on body size. The ratio of waist to hip circumference gives indirect information on the distribution of body fat stores. Several studies in adults have shown that the location of body fat is associated with health risks, in particular cardio-vascular disease⁴. This study provides normative information about body fat distribution in young people. As these measurements are only appropriate post-puberty, waist and hip circumferences were only measured for young people aged 11 and over.

2.7.2 Techniques and instruments used

ONS interviewers have experience of taking height, weight and mid upper-arm circumference measurements on surveys of adults and pre-school children^{5,6,7,8}. It is recognised that children and young people are generally more difficult to measure accurately; deciding on appropriate equipment, techniques and training was therefore a requirement of the feasibility study³.

At the main stage all interviewers were trained in accurate measurement techniques at personal briefings. Once trained, any interviewer working on a subsequent, non-consecutive wave of fieldwork attended a one-day refresher briefing where the techniques were checked. Interviewers were able to practice the measurement techniques on young people at the briefings.

Interviewers were allowed to take the measurements at any point after the initial questionnaire had been completed; it was thought that specifying a particular time to take the measurements could affect response, as gaining the co-operation, particularly of the youngest group might be problematic and more than one attempt might be needed. Detailed descriptions of the techniques used to take the measurements are given in Appendix H.

Interviewers recorded the measurement, the date on which it was taken, and if there were any special circumstances which might have affected the accuracy of the measurement. The Department of Health advised on circumstances which were likely to affect the accuracy to such an extent that the measurement should be excluded from the analysis; for example, the young person being unable to keep the correct posture when standing height was being measured, or their hair being arranged in a 'permanent' style which affected the measurement of standing height. For each measurement the measurement protocol was repeated and a second measurement made.

Standing Height: the measurement was taken using the Leicester Height Measure. This is a light-weight, portable stadiometer, which is modular in construction and is produced for the Child Growth Foundation. The Measure has a foot plate, vertical back post with an analogue scale and an adjustable head plate with a friction lock; measurements were made to the nearest millimetre.

The measurement was made with the young person wearing as few clothes as possible; shoes and socks were removed. The young person's head was positioned such that the Frankfort plane was horizontal, and while maintaining this position, he or she was asked to stand as tall as possible. For young people aged between 4 and 6 years who were unable to comply with this instruction without moving their feet off the base plate the interviewer applied gentle traction to the back of the head/neck to attain the maximum unsupported height. For further details on the equipment used and the Frankfort plane see Appendix H.

Weight: Soehnle Quattronic digital personal weighing scales, calibrated in kilogram and 100 gram units were used, and placed on a hard level surface for taking the measurement. Where no hard level surface was available the interviewer made a note on the recording document. All the scales were checked for accuracy prior to each fieldwork wave before being issued to interviewers.

Young people were asked to wear as little as possible and a record was made of the clothing being worn. The measurement was not made at a standard time of day.

Mid upper-arm circumference: for consistency of technique this measurement was taken from the left side of the young person's body. If for any reason the interviewer was unable to take the measurement on the left side, then the measurement was taken on the right and a note made.

Mid upper-arm circumference was measured in two stages using a standard tape to identify the mid-point of the upper arm, and an insertion tape to measure the circumference.

Interviewers were instructed to take the measurement on bare skin with the young person in a T-shirt or other garment sufficiently loose fitting around the upper arm.

The position of the arm was standardised for each stage of the measurement. The mid-point of the upper arm was identified as halfway between the inferior border of the acromion process and the tip of the olecranon process. In taking the circumference measurement care was taken to ensure that the tape was horizontal and that the tissues of the upper arm were not compressed. Circumference measurements were taken to the nearest millimetre.

Waist and hip circumferences: waist was defined as the mid-point between the iliac crest and the lower rib. Hip circumference was measured at the widest circumference around the buttocks.

The young person was asked to wear only light clothing, and, where possible, to have the same thickness of clothing at both measurement sites. A standard insertion tape was used and interviewers checked the horizontal alignment of the tape before making the measurement. The waist circumference was measured at the end of a normal expiration; interviewers checked that the gluteal muscles were not contracted before measuring the hip circumference. The two measurements were repeated sequentially, and recorded to the nearest millimetre.

Each young person was given a record card with his or her measurements.

2.8 The physiological measurements

2.8.1 Ethical approval

Because this survey, in common with other surveys in the NDNS series, includes physiological procedures which are invasive - venepuncture procedure to take a blood sample - and measurements with possible clinical significance - venepuncture, measurement of blood pressure, and an examination of the teeth and oral soft tissues, it was necessary to obtain approval for the survey protocol from National Health Service Local Research Ethics Committees (LRECs) in the areas where fieldwork would be taking place. In particular approval was sought for the following elements of the survey:

- taking a venepuncture blood sample for nutritional status analyses;
- storing the residue of blood for future analyses;
- flagging the young person's details on the National Health Service Central Register (NHSCR) for subsequent outcome follow up.

However, approval from LRECs for the whole survey package was required, as it would not have been acceptable to proceed only with those aspects of the survey not specifically requiring approval, if approval for some aspects was withheld.

LRECs, in deciding whether to approve the survey, considered not only the measurement and venepuncture protocols, but also needed to be satisfied regarding the adequacy of procedures:

- to ensure that co-operation was voluntary - there was no undue coercion to participate;
- to ensure that the young person was fully informed of the reason for various procedures, and what was involved;
- relating to consent and confidentiality issues.

The Dunn Nutrition Unit sought ethical approval for the survey from the NHS Local Research Ethics Committees covering each of the 132 sampled areas; all gave their approval. Only two

Committees required significant changes to the standard survey method, in both cases the Committees required a letter to be sent to the sampled young person in advance of the interviewer calling, allowing the subject to refuse to take part if they so wished. Other changes were minor, mainly alterations to the wording in information leaflets and on consent forms.

A number of LRECs initially requested that the subject be offered the application of a topical anaesthetic cream before venepuncture; this was not part of the original survey protocol. However, immediately prior to the start of the fieldwork in January 1997 we were advised that the Standing Ethics Advisory Committee of the Royal College of Paediatrics and Child Health advocated that an anaesthetic cream should be offered to all subjects for the venepuncture. It was therefore necessary for the Dunn Nutrition Unit to re-contact all the LRECs to inform them of the change to the venepuncture protocol.

If, in the period between the sample being selected and the interviewer calling at the sampled address, the young person had moved, checks were made to ensure that the new address was in an area covered by LREC approval. If the new address was elsewhere then the young person was not approached to take part in the survey and the case was withdrawn (see Appendix C for further details of the sample design and response).

Information about the survey was also sent to Directors of Public Health, Social Services and Education, Chief Constables of Police and Chief Executives of Health Authorities with responsibility for the areas of residence of participant young people; they were asked to inform appropriate local staff (see *Appendix A*).

2.8.2 Consent procedures

GP notification of subject participation

Because the survey included measurements of possible clinical significance, that is blood pressure levels, results for blood analytes and the identification of 'serious oral pathology' during the oral health examination, it was necessary to obtain consent from the subject for their GP to be informed of these by the Dunn Nutrition Unit, and consequently for them to agree for their subject details, name, address, date of birth and gender, to be passed to the Dunn Nutrition Unit.

At the first visit to the young person's home the interviewer therefore sought verbal consent for the young person's GP to be informed that the young person was taking part in the survey and to record the GP details.

If this was given the interviewer immediately sent the GP a standard letter explaining that the young person was taking part in the survey, together with a copy of the survey purpose leaflet, which described the procedures with which the young person would be asked to co-operate. The letter was signed by, and gave a telephone number for the Survey Doctor.

If the young person was not registered with a GP, or consent to pass information to the GP was not given, the young person could not take part in the following aspects of the survey:

- the measurement of blood pressure;
- the venepuncture procedure;
- the oral health examination.

Signed consent

Individual signed consent was required for each of the following elements of the survey:

- the venepuncture procedure; witnessed consent was required;
- reporting blood pressure levels to the young person's GP;
- storing any remaining blood after all the analyses were complete for future nutritional analyses;
- passing information to allow the young person's details to be flagged on the NHSCR;
- reporting any serious oral pathology identified during the oral health examination to the young person's GP.

Consent signatures were obtained according to the age of the young person.

- age 4 to 15 years: signature of person with parental responsibility;

- age 16 and 17 years and living at home: signature of young person and signature of person with parental responsibility;
- age 16 and 17 years and living away from home: signature of young person;
- age 18 years: signature of young person.

For the venepuncture procedure the signature(s) needed to be obtained in the presence of an independent witness (not a member of the survey team or the young person's household) and the signature of the witness was required.

In all cases, even after consent signatures were obtained, the assent of the young person to the procedure was confirmed before it was undertaken.

2.9 Blood pressure

High blood pressure is an important and known risk factor for cardio-vascular disease in adults⁹. The significance of high blood pressure at younger ages is less well understood. Moreover there are no national data available on blood pressure levels for normal, healthy young people.

Blood pressure was measured, with the young person seated, using the Dinamap 8100 oscillometric monitor. This device has previously been used to measure blood pressure on the NDNS of people aged 65 years and over and the latest Health Survey for England, and was the instrument of choice for this NDNS of young people principally for reasons of methodological comparability between all these surveys, instrument reliability and ease of use^{10, 11}. There has, however, been some criticism of the validity and reliability of measurements obtained using the Dinamap; a review of studies comparing the Dinamap with other devices, including the standard mercury sphygmomanometer, is given in Appendix L of the Report.

Blood pressure could only be taken if all the following were obtained:

- consent to notify the young person's GP of their participation in the survey;
- consent to take the blood pressure measurements;
- signed consent to send a record of the blood pressure readings to the young person's GP.

Interviewers were trained at the personal briefings to make blood pressure measurements following a standardised procedure. Measurements could be made at any visit after the initial questionnaire had been completed and three complete and consecutive cycles of measurement were made at the one visit. The time of day when the measurements were made was not standardised, but interviewers asked that the young person should have been sitting quietly and not eaten or drunk anything for about 30 minutes before they made the first measurement. The three measurements were taken at pre-set one minute intervals. Interviewers recorded from the digital display on the monitor the systolic and diastolic levels, mean arterial pressure and pulse after each measurement cycle. Any unusual circumstances, including any difficulty in wrapping the cuff were noted on the recording document. The young person was given a record of their blood pressure readings. Interviewers were instructed that they should not discuss the blood pressure readings with the respondent or their family. If asked, interviewers suggested that the respondent should contact his or her GP or the survey doctor for advice and information on the interpretation of the measurements.

2.9.1 Reporting blood pressures

Although one of the reasons for making blood pressure measurements in the survey is to establish the normal range of readings for this population, it was a requirement for obtaining approval for the protocol from LRECs that in every case the young person's GP was informed of the blood pressure results and that a procedure for immediate reporting of seriously abnormal blood pressures to the young person's GP was established.

A copy of the blood pressure readings was therefore sent immediately by the interviewer to the Dunn Nutrition Unit where they were scrutinised by the Survey Doctor and then sent with an appropriate covering letter to the young person's GP.

Where the readings obtained by the interviewer were unusually high, defined as all three readings being equal to or above 160 mmHg systolic pressure and/or equal to or above 100 mmHg diastolic pressure, the interviewer immediately delivered a copy of the results with a standard accompanying letter to the young person's GP. In order that the Survey Doctor was sufficiently informed to discuss the readings with the GP should the need arise, the

interviewer also contacted the Survey Doctor by telephone, giving the young person's details, including age and weight.

2.10 The urine sample

2.10.1 The purpose of obtaining urine specimens

The relationship between dietary intakes of sodium, present in salt (sodium chloride) and blood pressure in adults has been investigated in relation to the established association between hypertension and cardio-vascular disease but the evidence regarding the relative importance of dietary sodium intakes remains unclear¹². Nevertheless the COMA Panel on Dietary Reference Values accepted the possibility that by reducing sodium intakes “public health benefits such as reduced cardiovascular disease mortality might arise..” while acknowledging that “...other interventions such as reduction of obesity, increased potassium, reduced energy intakes, altered quantity and quality of fat intake and reduced alcohol consumption may also have at least as great an impact on such diseases”¹³. In adolescents it has been suggested that obesity may increase the sensitivity of blood pressure to dietary intakes of sodium¹⁴. Other dietary surveys of young people have reported high consumption levels of snack products, many of which are high in sodium¹⁵. It was considered important therefore that this survey obtained information on both sodium intakes and blood pressure for young people.

It is not possible to obtain accurate estimates of dietary intake of sodium from weighed food intake information, mainly because it is not possible to assess accurately the amount of salt added to food in cooking or at the table. Estimates of sodium and potassium intakes can be obtained by measuring their urinary excretion, assuming the body is in balance for these minerals.

Since the rate of excretion of both sodium and potassium varies with intake, the best estimate of intake is obtained from the analysis of a urine sample taken from a complete 24-hour collection, which allows for the fluctuations in intake over the collection period.

The Dietary and Nutritional Survey of British Adults included a 24-hour urine collection, but in pilot work for the NDNS of people aged 65 years and over compliance was not sufficiently good,

less than 50%, for the procedure to be included in the mainstage survey^{7, 12}. It was agreed that compliance among young people, who may spend a lot more of their time away from home, either at school or on leisure activities, and who might be embarrassed by the procedure and the need to carry collection equipment with them, would probably be even lower. It was therefore decided that estimates of sodium intake would be obtained from the analysis of a 'spot' urine sample.

2.10.2 The procedure for collecting spot urine samples

All young people taking part in the survey were asked to provide a sample of urine for analysis, if possible during the 7-day dietary recording period. As the sample needed to be taken and despatched on the same day and be with the analytical laboratory the next day, the sample could only be taken on Mondays to Thursdays. The requirement was for approximately a 10ml sample of urine taken from the first void of the day; a first void sample is likely to give a better estimate of 'average' sodium levels, than a sample taken later in the day after eating and drinking.

The young person was left with the equipment for collecting the sample, together with an instruction card.

The equipment comprised:

- a small disposable urine collection container;
- a Sarstedt 'Urin-stabilisator' syringe; the syringe contains a small amount of boric acid powder as preservative, and has a removable extension tube for withdrawing the urine from the collection container into the syringe. After filling the syringe the extension tube is removed, the end of the syringe sealed with a plastic cap, and the syringe plunger stalk snapped.
- a plastic despatch container; the filled syringe was labelled with the young person's unique survey identifier (serial number) and placed inside the plastic despatch container.

The container with the labelled, filled syringe was then placed inside a padded postal envelope together with completed documentation and immediately posted by the interviewer to the Dunn Nutrition Laboratory in Cambridge to arrive usually the next day.

As well as sodium and potassium, the urine sample was analysed for levels of creatinine. The results from the analysis of the samples of urine are given in Chapter 9 of the Report.

2.11 Purpose of obtaining a sample of venous blood

One of the main aims of the NDNS programme is to measure haematological and other blood indices that give evidence of nutritional status and to relate these to dietary and social data. As in the earlier pre-school children's survey a main concern was to measure haemoglobin concentrations and other indicators of iron status, since iron deficiency is common among children under 5 years in Britain^{10 16}. Blood concentrations of other nutrients and analytes would give valuable information about the nutritional status of young people, and in many cases establish normative ranges for a healthy population of young people in Great Britain (see *Figure 4.26* for a full list of blood analytes).

Approval from LRECs for blood sampling was subject to a maximum volume of 10ml blood being taken from subjects aged under 7 years and a maximum of 15ml blood from those aged 7 and over. It was expected that the maximum permitted volume would not be obtained in all cases and therefore analytes were prioritised according to nutritional interest for analysis dependent on the volume of blood obtained. The order was as follows:

- haematological indices: including cell counts and haemoglobin
- haematinic indices: serum and red cell folate, serum B₁₂, serum ferritin
- whole blood lead, plasma selenium and magnesium
- plasma 25-hydroxyvitamin D
- plasma cholesterol
- plasma iron
- plasma total iron binding capacity
- all other analytes

Approval was obtained from the LRECs for any unused sample remaining after the above analyses to be stored, subject to consent, and an undertaking was given that neither the original sample nor any stored sample would be tested for viruses, including HIV.

2.11.1 Procedures for obtaining the blood sample

All procedures associated with obtaining and analysing the blood samples were contracted to the Medical Research Council Dunn Nutrition Unit in Cambridge whose staff worked closely with ONS throughout all stages of the survey.

All the procedures were tested in the feasibility study to ensure that they were safe and acceptable to the subjects, their parents, those taking the blood samples and to the medical profession¹⁷.

2.11.2 Training and recruitment of the blood takers

As taking blood from young people may be more difficult than bleeding adult subjects, it was decided that those recruited to take the blood samples should have recent paediatric experience of taking blood. A total of 80 personnel with appropriate experience was recruited by the Dunn Nutrition Unit to work on the survey. These were mainly phlebotomists, the remainder were nurses and medical laboratory scientific officers; one was a doctor. Some worked on more than one wave of fieldwork, some in more than one area, and some worked in pairs. All received written instructions and attended personal briefings where they were given training in the protocols for obtaining the blood sample and despatching it. For the first two fieldwork waves of the survey the training sessions for blood takers were held as part of the interviewer briefing sessions so that there was the opportunity for the blood taker to meet the interviewer with whom they would be working, and for the roles and responsibilities of the blood taker and interviewer to be clearly defined. Emphasis was placed on the need to standardise procedures and adhere strictly to the protocol that had been presented to and agreed by the LRECs.

2.11.3 Laboratory recruitment

For each area covered by the survey a local laboratory was recruited to receive and process a portion of the blood from each respondent. Blood takers delivered samples to these laboratories by hand in a cool box. Great Ormond Street Haematology Department and Southampton University Trace Elements Laboratory were contracted to receive and analyse other portions of the blood, for haematology and trace element analysis respectively, collected from all areas in all waves of the survey.

2.11.4 Outline consent procedures

Explicit formal consent was required for taking the blood sample from the young people. Interviewers were required to tell the young person and their parent(s) at the time they conducted the initial interview that their consent to a blood sample being taken would be sought. This was to avoid the possibility that having built a rapport with the interviewer, respondents might have felt obliged to consent to the venepuncture procedure against their true wishes.

A written statement of the purpose and procedures involved in taking the blood sample was provided and the family was given time to discuss this with others, for example the young person's family doctor, the Survey Doctor or the blood taker. Written, witnessed consent for the procedure was sought, as well as consent for the Dunn Nutrition Unit to inform the young person's GP of the results for the clinically significant analytes.

It should be noted that agreement to this aspect of the survey was independent of agreement to other elements in the survey, and was not associated with the £5 gift voucher given to the young person for completing the full 7-day dietary record.

The young person and their parents were informed that consent to the procedure could be withdrawn at any time, even after written consent had been given, and blood takers were instructed that they should stop the procedure at any point if they felt the young person or family became unduly distressed.

A copy of the consent forms used and information sheets handed to parents is given in Appendix B.

2.11.5 Outline venepuncture procedure

*EMLA Cream*¹⁸

It was a condition of approval for the survey from the Royal College of Paediatrics and Child Health that all subjects be offered the option of having a topical anaesthetic cream applied to the venepuncture site. It should be noted that there was no requirement for an anaesthetic cream routinely to be applied in all cases.

EMLA Cream was the product of choice, mainly for reasons of safety and minimal side effects. It is however a prescription-only medicine and individual signed prescriptions were obtained for each young person who requested EMLA Cream, allowing the Survey Doctor individually to assess whether there were any known allergies contraindicating its use.

Interviewers offered the option of EMLA Cream when explaining the purpose and procedures associated with the venepuncture, and before obtaining consent for the procedure. Subjects were provided with an information leaflet and offered the opportunity to discuss the use of EMLA Cream with the Survey Doctor or the blood taker. If EMLA Cream was requested then interviewers asked a check question to screen for any previous allergic reaction to any type of anaesthetic - general or local (including topical creams) which would make the subject unsuitable for EMLA Cream. If the young person had experienced any previous allergic reaction to anaesthetics they were asked if they were still willing to have a blood sample taken without EMLA Cream being applied.

If the young person requested and was suitable for EMLA Cream the interviewer completed their details on a 'prescription' pro-forma which was then sent to the Survey Doctor for signing. After signing the 'prescription' was returned to the interviewer in time for it to be available for the blood taker at the venepuncture visit.

Blood takers were provided with EMLA Cream in single dose units.

In about half the cases the blood taker applied the Cream; in the other cases after explaining how to apply the Cream the blood taker left it with the family or the young person for them to

apply themselves. This was decided on consultation with the young person's parent and was at the discretion of the phlebotomist.

Venepuncture

Blood was taken by the phlebotomist in the young person's home with the ONS interviewer present.

If possible, fasting blood samples were collected as the blood analyses included an assessment of triglyceride levels; this measurement is more useful if the sample is taken after fasting. Subjects were therefore asked to comply with the overnight fasting requirements - approximately 8 hours, although a sample could still be taken if they were unwilling to comply. If EMLA Cream was used then the blood taker and interviewer made a preliminary visit to the household to explain the use of the Cream. The Cream was applied to both antecubital fossae and occluded with a small dressing. A minimum of 60 minutes was required to elapse before attempting venepuncture.

Screening questions were asked by the blood takers before attempting to obtain the sample; any young person with epilepsy, or a blood clotting or bleeding disorder was not suitable for the venepuncture procedure.

The approved protocol allowed for a maximum of two attempts at bleeding from the antecubital fossa.

Details of the procedure for taking a blood sample are given in Appendix H.

References and endnotes

¹ Royal College of Physicians of London. Obesity. Report. *J Roy Col Phys*. London 1983; **17**: 3-58.

² See 'Authors' Acknowledgements'.

³ Lowe S. *Feasibility study for the National Diet and Nutrition Survey: young people aged 4 to 18 years*. ONS (In preparation).

- 4 Lapidus L, Bengtsson C, Larsson B, Pennert K, Rybo E, Sjöström L. Distribution of adipose tissue and risk of cardiovascular disease and death: a 12 year follow up of participants in the population study of women in Gothenburg, Sweden. *Br Med J* 1984; **289**: 1257-1260.
- Rimm EB, Stampfer MJ, Giovannucci E et al. Body size and fat distribution as predictors of coronary heart disease among middle aged and older US men. *Am J Epid* 1995; **141**: 1117-1127.
- 5 Gregory J, Foster K, Tyler H, Wiseman M. *The Dietary and Nutritional Survey of British Adults*. HMSO (London, 1990).
- 6 White A, Nicolaas G, Foster K, Browne F, Carey S. *Health Survey for England 1991*. HMSO (London, 1993).
- Breeze E, Maidment A, Bennett N, Flatley J, Carey S. *Health Survey for England 1992*. HMSO (London, 1994).
- Bennett N, Dodd T, Flatley J, Freeth S, Bolling K. *Health Survey for England 1993*. HMSO (London, 1995).
- 7 Knight I. *The Heights and Weights of Adults in Great Britain*. HMSO (London, 1984).
- 8 Gregory JR, Collins DL, Davies PSW, Hughes JM, Clarke PC. *National Diet and Nutrition Survey: children aged 1½ to 4½ years. Volume 1: Report of the diet and nutrition survey*. HMSO (London, 1995).
- 9 Pickering GW. *High Blood Pressure*. Churchill. (London, 1986).
- 10 Finch S, Doyle W, Lowe C, Bates CJ, Prentice A, Smithers G, Clarke PC. *National Diet and Nutrition Survey: people aged 65 and over. Volume 1: Report of the diet and nutrition survey*. TSO (London, 1998).
- 11 Prescott-Clarke P, Primatesta P (eds) *Health Survey for England 1995*. TSO (London, 1997).
- 12 Swales JD. Salt saga continued. *Br Med J* 1988; **297**: 307-308.
- 13 Department of Health. Report on Health and Social Subjects: 41. *Dietary Reference Values for Food Energy and Nutrients for the United Kingdom*. HMSO (London, 1991).
- 14 Rocchini AP, Key J, Bondie D et al. The effect of weight loss on the sensitivity of blood pressure to sodium in obese adolescents. *New Engl J Med* 1989; **321**: 580-585.
- 15 Hackett AF, Kirby S, Howie M. A national survey of the diet of children aged 13-14 years living in urban areas of the United Kingdom. *J Hum Nutr Dietet* 1997; **10**: 37-51.
- Anderson A, Macintyre S, West P. Dietary patterns among adolescents in the West of Scotland. *Br J Nutr* 1994; **71**: 111-122.
- Strain JJ, Robson PJ, Livingstone MBE et al. Estimates of food and macronutrient intake in a random sample of Northern Ireland adolescents. *Br J Nutr* 1994; **72**: 343-352.
- 16 Department of Health. Report on Health and Social Subjects: 45. *Weaning and the Weaning Diet*. HMSO (London, 1994).
- 17 The advice from the Royal College of Paediatrics and Child Health to offer an application of anaesthetic cream in all cases prior to venepuncture was only notified after the completion of the feasibility study; this procedure was therefore not tested prior to the main stage, although anaesthetic

cream had been used for some subjects on the *National Diet and Nutrition Survey: children aged 1½ to 4½ years* (ref. 9).

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EMLA® Cream (Astra) lignocaine 2.5%, prilocaine 2.5%. PL 0017/0213.

Section 3

Questionnaire and diary coding

Section 3 Questionnaire and diary coding

This section describes the main coding instructions which were issued to interviewers and office coders. All fieldwork documents are reproduced in Appendix A.

3.1 Initial dietary interview coding instructions for interviewers

3.1.1 Purpose of the interview

Apart from the obvious purpose of collecting information on dietary behaviour, health etc., topics of interest to MAFF and DH, the interview also has another important purpose - that is to give you background information about the young person's eating patterns and dietary behaviour which will help you when checking and coding the dietary records. For example, if you know from the interview that the young person takes a dietary supplement you should expect to see this recorded in the Home Record Diary.

3.1.2 Whom to interview:

Except for young people who have left home, your informant should generally be the young person's mother or mother-figure with the young person present. If there is no mother/mother-figure in the household then you should interview the father or father-figure. The young person should always be present during the interview, some sections are designed specifically as self-completions for them and other questions are designed to be addressed to the young person no matter who the main informant is.

The interview questions are mainly of a factual nature rather than opinion, therefore it should rarely matter whether the mother or young person answers. Should there be a discrepancy between their answers then please record the young person's answer, but make notes on what the mother said. However, see special instruction below for the *Follow up interview*.

At the end of this interview you should go on to ask Sections A and B of the Dietary Assessment Schedule (F7), and then place the Home, Eating Away from Home, Physical Activity and Bowel Movements Records (The fieldwork documents are reproduced in *Appendix A*).

3.1.3 Instructions on specific questions:

BLOCK - Household grid

Relationship to young person

Note that although in most questionnaires you ask about relationship to HOH, the NDNS needs to collect information on the relationship to the young person, so you should generally be coding relationships, such as 'mother' 'father', 'brother', 'sister' etc.

Age of the young person

Much of the structure of this interview, and other parts of the survey depend on the age of the young person; there are four age groups which determine the routing: 4 to 6 years; 7 to 10 years; 11 to 14 years; 15 to 18 years. Age is determined from date of birth and date of interview, so it is very important that you enter these two pieces of information correctly.

If the young person is 16 or over they are asked their marital status - you may have some married young people in your quota.

HOH and Informant

ASK OR RECORD

Which of these members of your household is the HEAD OF THE HOUSEHOLD?

INTERVIEWER: Which member of the household is the INFORMANT ?

IF 'MOTHER' IS IN HOUSEHOLD SHE SHOULD BE INFORMANT UNLESS SOMEONE ELSE IS MAIN CARER.

YOUNG PERSON CAN CHOOSE TO BE INFORMANT IF AGED 11 OR OVER

If the young person is not living alone you will be prompted to code which member of the household is the informant and which is the HOH. The list you are given is made up of the names you entered in the household grid. If the young person is under 16 and living with only one parent then the parent will automatically be coded as HOH.

Main activity

What does young person MAINLY do?

- 1. Not yet started school or nursery*
- 2. at school (including nursery)*
- 3. at college*
- 4. other training*
- 5. working*
- 6. unemployed*
- 7. Other (specify at next question)*

Most young people will still be at school, but those in the 15 to 18 age group may be at college, working, housewives or unemployed.

BLOCK: Accommodation

Independent living

ASK OR RECORD

When did you leave home, move away from your parent's home?

CODE HOW LONG AGO IN MONTHS OR YEARS

you will be asked which you entered at next screen

INTERVIEWER: DID YOU ENTER MONTHS OR YEARS?

- 1. Months*
- 2. Years*

If there is no parent or grandparent in the household i.e. the young person is assumed to have 'left home' and is asked how long ago they left home. For this question you should enter the

period either in months or years - do not enter both e.g. if it is 1½ years ago enter either 1.5 (years) or 18 (months). At the next question you are asked to code whether you entered the period as years or months.

Coast

ASK OR RECORD:

Do you live within 5 miles of the coast?

The interest is in the likelihood of the young person eating locally caught fish etc.

Cooking skills

In the last month has young person cooked a dish using several different ingredients?

This question is designed to find out about the cooking skills of young people. We want to know about whether they have cooked something which involves following a recipe; toasting bread and heating baked beans to put on it does not count.

BLOCK: General Eating

School meals

Can I check, when young person is at school/work what type of lunch time meal is he/she currently having?

INTERVIEWER - GIVE PRIORITY TO CODES 1 OR 2

- 1. Free school meal*
- 2. Reduced price or subsidised school meal*
- 3. Paid school meal*
- 4. Packed Lunch*
- 5. Other (specify at next question)*
- 6. No lunch time meal*

The clients hope to collect two kinds of information with this question; firstly they want to look at the proportion of young people who are eligible for free school meals who are actually taking up this benefit. It is therefore important that you probe carefully whether the school meal the young person has is free, or subsidised/reduced price, or is fully paid for by the young person. This means that even if they don't have a free or reduced price school meal **every** day, we would like this to be coded if they generally have them. Secondly MAFF are interested in what young people eat at lunch times when they are at school, and the dietary record will be analysed to look just at the contribution to total intake of food at school lunch time from different sources. Again the answer to this question tells you what to expect in the eating out diary. Specify answers where 'there is no usual pattern'. Also specify at 'other' if they come home at lunch time/go to grannies for lunch time/go out of school and buy something etc.

Variety of food eaten, appetite.

How would you describe the variety of foods that young person generally eats?

Does she/he ...

RUNNING PROMPT

1. eat most things,
2. eat a reasonable variety of things,
3. or is he/she a fussy or faddy eater?

Does he/she have ..

RUNNING PROMPT

1. a good appetite
2. an average appetite, or,
3. a poor appetite ..

For a young person of his/her age?

These are general questions to establish the eating habits of the young person.

BLOCK: Drinks

Milk

Nowadays, does he/she have cow's milk AS A DRINK?

INCLUDE ANY DRINK WHERE MILK IS PRIMARY INGREDIENT

e.g. milkshake, hot chocolate made with milk (not water)

Note that this question EXCLUDES milk on cereals and in puddings, sauces, custard etc.

IF 'No':

Has he/she ever had cow's milk AS A DRINK?

IF 'Yes':

What kind of milk does young person USUALLY have as a drink these days?

PROMPT AS NECESSARY

CODE ALL THAT APPLY

1. Whole milk
2. Semi-skimmed milk
3. Skimmed milk
4. Powdered baby milk
5. Soya Milk
6. Doesn't have ANY milk (as a drink)
7. Other (specify at next question)

All:

What kind of milk does he/she USUALLY have on cereal, in puddings these days?

PROMPT AS NECESSARY

CODE ALL THAT APPLY

1. Whole milk
2. Semi-skimmed milk
3. Skimmed milk
4. Powdered baby milk
5. Soya Milk

6. *Doesn't have ANY milk*
7. *Other (specify at next question)*

The kind of milk the young person has in drinks and on cereal/ in puddings is one of the details you should note for your reference when coding the diary. Note that not every diary entry should be assumed to be this kind of milk; see diary coding instructions.

Tea & Coffee

Does young person drink tea?

If 'Yes':

Does he/she usually take sugar in tea, is it sweetened with artificial sweetener, or does he/she drink tea without sugar or sweetener?

1. *Sugar in tea*
2. *Artificial sweetener in tea*
3. *Drinks tea unsweetened*

On average how many cups per day does he/she drink?

INTERVIEWER: IF LESS THAN ONE CODE AS 0

IF ANY NUMBER GREATER THAN 10 CODE AS 11

The same questions are asked for coffee. If artificial sweeteners are used then you should expect to see them recorded in the dietary record. The number of cups of tea per day is of interest in relation to the young person's iron status and of course also to their oral health if their drinks are sweetened with sugar.

Herbal teas-

(May I check) Does young person drink herbal teas OR herbal drinks?

If 'Yes':

SHOW CARD A

On average, how often does he/she drink herbal teas or have a herbal drink?

1. *More than once a day*
2. *Once a day*
3. *Most days*
4. *At least once a week*
5. *At least once a month*
6. *Less than once a month*

What brands of herbal tea or herbal drink is he/she drinking at the moment?

RECORD FULL BRAND NAME OF HERBAL TEAS GIVEN

What flavour is that herbal tea or herbal drink?

RECORD FLAVOUR

You should ask to see any herbal tea packets or containers and record details of the brand **AND** flavour. You should take down enough detail to use this information to find the correct Brand Code for this product. Note that different flavours of the same brand should be recorded separately.

Artificial sweeteners

(Apart from in tea and coffee) do you use artificial sweeteners to sweeten any of young person's food, either at the table or in cooking?

IF 'Yes':

*Do you use an artificial sweetener either at the table or in cooking, to sweeten ...
(each asked in turn as separate questions)*

- 1. stewed or cooked fruit?*
- 2. fresh fruit?*
- 3. breakfast cereals?*
- 4. cakes, biscuits or pastry that are home made?*
- 5. drinks other than tea or coffee?*
- 6. any other food or drink?*

IF 'Yes' above or 'Yes' to Tea or Coffee sweetened with artificial sweetener:

What (other) brand of artificial sweetener are you using to sweeten young person's food and drinks at the moment?

RECORD FULL NAME OF ARTIFICIAL SWEETENER

What form does that artificial sweetener take?

**RECORD TYPE - TABLET, LIQUID, GRANULATED - OF ARTIFICIAL SWEETENERS
BEING USED FOR YOUNG PERSON**

- 1. Tablet (INCLUDE MINICUBES)*
- 2. Liquid*
- 3. Granulated*

Note that we are interested in artificial sweeteners used either at the table or in cooking. We are NOT recording details here of processed foods which contain artificial sweeteners e.g. yogurts, soft drinks etc. Record the full brand name and type of any sweetener.

Use of salt

Do you usually add salt to young person's food DURING cooking?" :

- 1. Yes, includes sea salt*
- 2. Yes, uses 'Lo-Salt'/ Salt alternative (NOT Sea Salt)*
- 3. No, do not use salt in cooking*
- 4. Other (Specify at next question)*

AT THE TABLE, do you (or young person) add salt to his/her food:

RUNNING PROMPT

- 1. usually,*
- 2. occasionally,*
- 3. rarely,*
- 4. or never?*

IF 'Yes':

And can I check, what kind of salt do you add to young person's food AT THE TABLE?

- 1. Salt, includes sea salt*
- 2. uses 'Lo-Salt'/ Salt alternative (NOT Sea Salt)*
- 3. Other (Specify at next question)*

Do not confuse sea salt, which is coded with ordinary table or cooking salt, and salt alternatives, or low sodium preparations, coded separately. The analysis of the spot urine sample will provide more information on sodium intake.

BLOCK: Food frequencies

Food Frequency questions:

This section covers a whole range of foods, some of which may only be eaten rarely, and hence are unlikely to appear in the dietary record. The list of foods is quite long, and the definitions are very specific; we think it is best handled as a self-completion by the young person; children from age 7 upwards should be able to enter the answers direct into the laptop. We have not provided a paper version of the food frequency questionnaire, so if the child is too young or unwilling to use the laptop you will have to ask the questions using the prompt card. There are instructions for the young person to read about how to use the laptop, but you should be close by to supervise, particularly when they come across a question about a food to which they are allergic (see below).

I would now like you to think about some foods young person may eat. Can you tell me about how often, on average he/she eats the following foods:

Please choose your answer from CARD A

PROMPT EACH FOOD LISTED

FOR SEASONAL FOODS '...at this time of year'

e.g. Breakfast cereals

- 1. More than once a day*
- 2. Once a day*
- 3. Most days*
- 4. At least once a week*
- 5. At least once a month*
- 6. Less than once a month*
- 7. Never*

IF 'Never':

Why does he/she never eat breakfast cereals?

- 1. Allergy*
- 2. Religious reasons*
- 3. Health reasons*
- 4. Vegetarian/vegan*
- 5. Doesn't like it*
- 6. Can't afford it*
- 7. Can't get (in this area)*
- 8. Other (SPECIFY)*

IF 'Allergy':

What form does the allergy take?

- 1. Hyperactivity/Behavioural problems or changes e.g. tantrums and moods, aggressive and bad tempered*
- 2. Rash/Blotches all over*
- 3. Eczema*
- 4. Asthma/Wheeze*
- 5. Upset stomach/Diarrhoea/Vomiting*
- 6. Swelling to face/Neck/Hands*
- 7. Itching (NOT due to eczema or itchy eyes)*
- 8. Weight loss/Failure to thrive*

9. Runny nose/Itchy or sore eyes/Nasal symptoms

10. Migraine

11. Other (Specify at next question)

Has this allergy been diagnosed by a doctor?

For each food the respondent is asked how often they eat this item. Note that the question is 'at this time of year' - if you are asking about ice cream or ice lollies in winter then you would repeat this phrase to qualify this point - we do not want to know how often they would eat these in the summer. The fact that the survey covers all four seasons should allow for this seasonal variation.

For each food frequency item, if the young person says that they 'never' eat the food, you should firstly probe that they really mean 'never' as opposed to just very rarely, which should be coded under 'less than once a month'. If they do code 'never' they will then be asked why they do not eat this food - whether they are allergic to it, for religious reasons, health reasons etc. If they code that they are allergic to the food they will be asked what form the allergy takes and whether it has been diagnosed by a doctor.

Please read and note the definitions that are given for each food frequency item listed below. It is important that you are familiar with these so that you can probe effectively. You should take as much care with these definitions as you would in finding the correct food code for an item in the code list; you will notice that some of the definitions will be familiar e.g. soft drinks if you have read your coding list.

- Breakfast cereals
- Biscuits - sweet
- Biscuits - savoury
- Cakes
- Yogurt (flavoured or plain but not fromage frais) - INCLUDES FROZEN YOGURT AND YOGURT DRINKS
- Fromage frais, plain or flavoured
- Cheese or cheese spread (not fromage frais)
- Cow's milk (NOT SOYA, SHEEP OR GOATS) - INCLUDE IN COOKING
- Sheep or goat's milk - INCLUDE IN COOKING
- Soya milk - INCLUDE IN COOKING
- Ice cream (NOT ICE LOLLIES)
- Ice lollies
- Eggs (including in home cooking)
- Beef (including beef products) - INCLUDES CARCASS BEEF PURCHASED RAW, COOKED AND CANNED BEEF, CORNED BEEF, BEEF IN MANUFACTURED PRODUCTS e.g. BURGERS, PIES ETC. NOT BEEF SAUSAGES OR BEEF OFFAL
- Pork (including pork products, ham, gammon or bacon) - INCLUDES CARCASS PORK PURCHASED RAW, COOKED PORK AND PORK IN MANUFACTURED PRODUCTS E.G. PIES ETC. NOT PORK SAUSAGES OR OFFAL
- Lamb or mutton (including products) - INCLUDES CARCASS LAMB PURCHASED RAW AND LAMB IN MANUFACTURED PRODUCTS E.G. PIES, ETC. - NOT OFFAL

- Chicken and poultry (including products) - INCLUDES PURCHASED RAW AND IN MANUFACTURED PRODUCTS E.G. PIES, NUGGETS, BURGERS, ETC. - NOT OFFAL
- Game INCLUDES GROUSE, HARE, PARTRIDGE, PHEASANT, PIGEON, RABBIT, VENISON
- Sausages - ENGLISH TYPE REQUIRING COOKING. NOT CONTINENTAL SAUSAGES OR VEGETARIAN SAUSAGES
- Liver and liver products - INCLUDES LIVER PATE AND LIVER SAUSAGE
- Other offal e.g. kidney - ANY OFFAL EXCEPT LIVER
- Oily fish (e.g. herring, mackerel, sardines, pilchards, salmon) - INCLUDES PRODUCTS e.g. salmon/smoked mackerel pate
- Shellfish e.g. prawns and shrimps
- Leafy green vegetables - INCLUDES BROCCOLI, GREENS, SPINACH - NOT CAULIFLOWER, COURGETTES, LEEKS
- Savoury snacks including crisps NOT NUTS
- Nuts and nut products - ALL TYPES OF NUTS, NUT ROAST
- Fruit juice (not fruit drinks, squash)
- Fizzy drinks : NOT diet/low calorie/no added sugar/sugar free - EXCLUDE MINERAL WATER
- Fizzy drinks : diet/low calorie/no added sugar/sugar free - EXCLUDE MINERAL WATER
- Concentrated fruit drinks : SQUASHES - NOT diet/low calorie/no added sugar/ sugar free
- Concentrated fruit drinks : SQUASHES - diet/low calorie/no added sugar/ sugar free
- Ready to drink fruit drinks : NOT diet/low calorie/no added sugar/ sugar free - NOT FRUIT JUICE
- Ready to drink fruit drinks : diet/low calorie/no added sugar/ sugar free - NOT FRUIT JUICE
- Chocolate - confectionery
- Sugar confectionery
- Sugar free confectionery - LABELLED AS SUGAR FREE
- Chewing gum NOT sugar free gum
- Sugar free chewing gum - LABELLED AS SUGAR FREE

Skins

*Can you tell me whether he/she usually eats the skin on **e.g. pears?***

For some fruits and vegetables they are also asked whether they eat the skin e.g. on apples . This is also asked for potatoes cooked in different ways.

Food avoidances

(Apart from the foods you have already told me about) Are there any (other) foods that young person avoid because he/she is allergic to them, or for religious, health or other reasons?

IF 'Yes'

Which food does he/she avoid?

If the young person answers 'Yes' the routing is as for a food frequency item above, asking why they avoid it, and if this is because of an allergy they answer the same set of questions. You can enter as many food items as necessary here, but note that we are only really interested in foods that are actively avoided rather than ones they simply have never eaten e.g. they may never have eaten venison, but this does not necessarily mean that they actively avoid it for a specific reason.

Slimming

Can I check, is young person dieting to lose weight at the moment?

The clients are interested in knowing about slimming in young people. The young person may be cutting down on their food to get fitter, or to fit into their jeans, without calling it a diet, so please probe this question fully. We are not interested in special diets for health reasons, which is asked under the food avoidances section, but any young person who is reducing their intake deliberately should be coded 'yes' at this question.

Vegetarianism

Can I check, is young person a vegetarian or a vegan?

IF 'Yes':

(Apart from foods you have already told me about) What foods does he/she avoid?

CODE ALL THAT APPLY

1. Red meat
2. White meat
3. Fish
4. Eggs
5. Milk
6. Other dairy products - butter, cheese
7. All animal products
8. Avoids other food (specify at next question)

Why did he/she become a vegetarian/vegan?

CODE ALL THAT APPLY

1. Moral or ethical reasons (includes cruelty to animals)
2. Religious reasons
3. Health reasons
4. Preference (doesn't like the taste of meat)
5. Convenience, cost
6. Other (Specify at next question)

Where did he/she get information about a vegetarian/vegan diet?

CODE ALL THAT APPLY

1. *Parents or other relatives*
2. *Friends*
3. *Doctor/GP*
4. *Dietitian/Nutritionist*
5. *Vegetarian Society/Vegan Society*
6. *Newspapers, magazines, books*
7. *TV / Radio*
8. *Other (Specify at next question)*
9. *Did not get any information*

Being vegetarian can mean widely different things to different people. This means that you should always probe fully for kinds of foods not eaten and specify any other foods not already listed. Also specify if the category is too wide for the young person's definition e.g. if they eat lamb but not beef then 'red meat' would not be the correct code - this should be coded under other. We want to know the young person's reason for becoming vegetarian so always address the question to them. We also want to know where they found out about a vegetarian diet - here you enter as many codes as the young person mentions, so probe fully.

Organic foods

A lot of shops and supermarkets are selling foods which are labelled as 'organic' or 'organically grown'. What do you understand by the term 'organic' or organically grown?

1. *Grown without pesticides and without artificial fertilizers*
2. *Grown without pesticides*
3. *Grown without artificial fertilizers or 'Grown without chemicals'*
4. *Free Range*
5. *A Health Food - Healthier/Better for you*
6. *Something Else - including no antibiotics/hormones, Fresh or Naturally grown fruit and veg*
7. *Don't Know, Don't understand*

Do you buy any 'organic' foods for young person?

1. *Yes,*
2. *No.*

IF 'Yes' this question asked for a list of foods:

Do you buy organic e.g. fresh fruit (including fruit juice) for young person

1. *always,*
2. *sometimes,*
3. *or never?*

These questions should be addressed to the mother figure unless the young person is living away from home. Note that the main question is an opinion question; you may only repeat the question as it is written if your informant does not understand and only standard opinion probes may be used. Probe answers fully especially answers like 'grown without chemicals' (but do not prompt) and fit into one of the precodes. Questions are then asked about specific 'organic' food items that may be bought. Note that the informant's definition of 'organic' applies at these questions, and the question still applies even if they don't know what 'organic' means.

Animals kept by household:

Do you or does anyone in your household keep hens or other animals to provide you with food?

1. Yes,
2. No.

IF 'Yes':

What kinds of food do these animals provide?

1. Eggs
2. Milk/milk products
3. Meat
4. Honey
5. Other (specify at next question)

Here you must be clear who is included in the young person's household. This question is about animal products, the next question is about fruit and vegetables. If the young person lives on a farm and they eat some of the animals farmed then code as 'yes'.

Home grown foods

Do you grow your own fruit and vegetables, either in your garden or on an allotment?

INCLUDES salad vegetables INCLUDES herbs grown in the garden/allotment

EXCLUDES Herbs grown on the window-ledge

EXCLUDES PRODUCE GROWN IN THE GARDEN OF A FRIEND OR RELATIVE

1. Yes,
2. No

IF 'Yes':

Do you grow them without using pesticides?

1. Yes,
2. No

Do you grow them without using any ARTIFICIAL fertilizers?

1. Yes,
2. No

Include as 'yes' fruit, vegetables etc. from farm/market garden if young person lives there. In the dietary record a tick should show whether any fresh fruit or vegetables consumed were home grown; the answers to this question will alert you to possible omissions. Note what is included under the definition of home grown.

'Free foods'

Apart from food you grow yourself, does young person ever eat any 'free foods' that you have picked or got, yourself (e.g. berries, mushrooms, windfall apples) ?

1. Yes,
2. No

What 'free' foods do you eat?

1. *Game (rabbit, partridge, pheasant etc.)*
2. *Venison,*
3. *Berries,*
4. *Other fruit (apples, pears etc.)*
5. *Fungi (Mushrooms)*
6. *Fish*
7. *Other (Specify at next question)*

Don't forget we are interested in consumption by the young person, not their mother. You should be clear what we mean by 'free foods' - including windfall apples, berries or mushrooms picked in the woods etc. Exclude gifts of food.

Farm foods

Do you BUY any foods directly from a farm?

1. *Yes,*
2. *No*

What foods do you buy from a farm?

1. *Meat*
2. *Fish*
3. *Milk*
4. *Other dairy (yogurt, cheese, butter)*
5. *Eggs*
6. *Fruit*
7. *Vegetables*
8. *Other (Specify at next question)*

Note that this question asks whether they 'buy' any foods direct from a farm. Informants living on a farm and getting food from their own farm will have been identified at the previous question.

Store cupboard

Thinking about any food you have in the house TODAY, which of the following items do you have here today?

e.g. a) A breakfast cereal?

This set of questions asks which of a list of foods they have in their home on the day of the interview. This should not include foods they may buy later in the day or have eaten before the interview starts.

Food stored in cans

*****SHOW CARD B*****

Thinking now about different foods that come in cans.

How long, on average, would you keep :

e.g. a) Baked beans

in an opened can before eating them?

1. *More than a week*
2. *No more than 4 or 5 days*
3. *No more than 2 or 3 days*

4. *No more than 1 day*
5. *Use on same day*
6. *(SPONTANEOUS ONLY) Never stored in open can*
7. *(SPONTANEOUS ONLY) Not eaten/drunk*

MAFF are interested in the length of time that food is kept in an unopened can. The question relates to the time stored in a **can**; if food is kept for 'no more than 1 day' in the can and then transferred to another container for another few days, code 4 would apply.

BLOCK: Supplements

Food supplements

At present are you taking fluoride tablets or drops?

1. *Yes,*
2. *No*

IF 'Yes':

Full name of fluoride supplement, including brand

Form:

1. *Tablets*
2. *Capsules*
3. *Drops*
4. *Liquid / Syrup*
5. *Powder*

Dose: no. of tablets, drops, 5 ml spoons

INTERVIEWER OPEN A NOTE IF NECESSARY

Frequency: no. of times and period

1. *Once a day*
2. *Twice a day*
3. *Three times a day*
4. *More than three times a day*
5. *Five times a day*

Product licence no. (if any)

ENTER e.g. 1111/1111

ENTER '0' IF NONE AVAILABLE

CODE CATEGORY FOR THIS SUPPLEMENT

1. *Fluoride only*
2. *Cod liver oil and other fish based supplements*
3. *Evening primrose oil type supplements*
4. *Vitamin C only*
5. *Other single vitamins NOT vitamin C*
6. *Vitamins A, C and D only*
7. *Vitamins with iron*
8. *Iron only*
9. *Multivitamins and multiminerals*

10. Multivitamins, NO minerals
11. Minerals ONLY; NOT Fluoride or iron ONLY
12. Other (specify at next question)

At present (apart from fluoride tablets/drops) are you taking any extra vitamins or minerals as tablets, pills, powders, syrups or drops?

INCLUDE PRESCRIBED AND NON-PRESCRIBED SUPPLEMENTS E.G. CHILDREN'S VITAMIN DROPS, MULTIVITAMIN TABLETS, IRON TABLETS.

EXCLUDE DRINKS, YOGURTS OR FOODS FORTIFIED WITH VITAMINS

1. Yes,
2. No

IF 'Yes', then questions repeated as for Fluoride supplement

Does young person take any herbal preparations or other traditional remedies?

IF 'Yes', then questions repeated as for Fluoride supplement

These questions ask whether the young person is taking any fluoride supplements, vitamin and mineral supplements, or any herbal preparations or traditional remedies. Ask to see any supplements being taken and copy down all details. Fluoride, vitamins and minerals should be coded into categories during the interview. Remember to check for these in the dietary record. You will notice that if fluoride supplements are being taken the program automatically enters the correct code because it already knows which category fluoride is in. For other vitamins you will have to refer to your supplements coding list **V1** which is attached to the prompt cards.

Please record the dose and frequency with which the supplement is actually taken - not the recommended/prescribed dose or frequency.

Activity level - 4 to 6 year olds

The youngest group are not asked to record their physical activities in detail in the 'Diary of Eating and Drinking Away from Home'. However, information is collected in this diary about when they get up, go to bed, how much television they watch etc. which is necessary to assess their activity level. In the interview additional information is collected by asking their parent to think about how active the young person is and then asking them to compare their level of physical activity to other young people.

How would you describe (Young person's) current level of activity?

1. Fairly Inactive - gets little exercise, spends most of his/her time watching television, looking at books, or sitting playing with toys or games
2. Fairly Active - Spends more time in active play or running around than watching television, looking at books, or sitting playing with toys or games
3. Very Active - Spends nearly all the time running around or in very active play or games

How would you describe (young person's) level of activity when compared with boys AND girls of the same age?

1. More active,
2. about the same,
3. or less active?

How would you describe (young person's) level of activity when compared with other children of the same sex?

- 1. More active,*
- 2. about the same,*
- 3. or less active?*

It is important that you give the correct emphasis when reading these questions so that the respondent realises the difference between them. First they are presented with three simple descriptions on a show card and asked which one best describes their son or daughter. They are then asked to compare their child to children of their **own age** (boys and girls) and the finally to compare their child with other children of the **same sex** (of all ages):

Illness and disability - Standard long-standing illness and disability questions relating to the young person, taken from the GHS.

BLOCK: HOH's employment

This is a standard employment status block, which includes standard questions on occupation and industry taken from the GHS. If the young person is the head of household then the questions will be answered by the young person in a separate section which has extra questions in it about working part time.

BLOCK: Mother's employment

If the mother is the HOH then these questions will not appear as a separate block as you have already collected the information. So this section applies only when the mother-figure is living in the household and has not already been asked these questions as the HOH.

This is a standard employment status block, which includes standard questions on occupation and industry.

BLOCK: Mother's education

MOTHER'S' EDUCATION

How old was mother when she finished her continuous full-time education?

Not Yet finished

- 1 14*
- 2 15*
- 3 16*
- 4 17*
- 5 18*
- 6 19 or over*
- 7 No formal education*

*****SHOW CARD E*****

MOTHER'S EDUCATION

Please look at this card and tell me whether she has any of the qualifications listed. Start at the top of the list and tell me the first one you come to that she has passed

CODE FIRST THAT APPLIES

1. Degree
2. Teaching qualifications
3. HNC/HND, BEC/TEC Higher, BTEC Higher
4. City and Guilds Full Technological Certificate
5. Nursing qualifications (SRN, SCM, RGN, RM, RHV, Midwife)
6. 'A' levels/SCE Higher
7. ONC/OND/BEC/TEC NOT Higher
8. City and Guilds Advanced/Final
9. 'O' Level passes (Grade A to C if after 1975)
10. GCSE (Grades A to C)
11. CSE (Grade 1)
12. SCE Ordinary (Bands A to C)
13. Standard Grade (Levels 1 to 3)
14. SLC Lower
15. SUPE Lower or ordinary
16. School certificate or Matric
17. City and Guilds Craft/Ordinary level
18. CSE Grades 2 to 5
19. GCE 'O' Level (Grades D&E if after 1975)
20. GCSE (Grades D,E,F,G)
21. SCE Ordinary (Bands D & E)
22. Standard Grade (Level 4, 5)
23. Clerical or commercial qualifications
24. Apprenticeship
25. CSE Ungraded
26. Other qualifications (Specify at next question)
27. No formal qualifications

Standard questions to identify the age when she finished full-time education and highest qualification level (from GHS). Note that we are not collecting all educational qualifications.

Hand the Informant Card E. They should tell you which is the first qualification that they have, reading down from the top of the card. Check that the informant has understood, asking them to confirm that they have not got any of the qualifications on the card which are listed above the one they mentioned.

Smoking

Do you smoke cigarettes at all?

1. Yes,
2. No

About how many cigarettes a day do you usually smoke?

Enter code between 0 and 97

The questions are asked of the mother figure first; we suggest that you introduce the change of topic! If the father is in the household the same questions are asked about his smoking.

Young person's employment:

If the young person lives away from home: The young person is assumed to be their own head of household and so the standard employment status and occupation and industry questions are asked.

If aged 15 years and over and living at home: Standard employment status questions are asked of all young people in this age group; some may have left school and be working full time. Part-time jobs are also very important so we ask the standard employment status questions even if they are at school to identify those who are working part time.

If aged 11 - 18 years:

Does young person have a part-time job at the moment?

INCLUDE SATURDAY AND EVENING JOBS, PAPER ROUNDS, STACKING SHELVES ETC.

1. Yes,
2. No

Thinking back over the last 7 days, that is from last to yesterday, in total how many hours did he/she work?

_____?

****SHOW CARD D** INTERVIEWER: note this in your notebook!!!****

INTERVIEWER: DIRECT QUESTION TO YOUNG PERSON

How would you describe your job .. is it:

1. A job where he/she is sitting or standing for most of the time, which is not physical or active,
2. A job which is physical and active, but not so hard as to make him/her puff and pant and get hot and sweaty for a lot of the time,
3. or a job which is very physical and active and makes him/her puff and pant and get hot and sweaty for a lot of the time?.

BLOCK: Young Person's education

Education

Age at completion of full-time education (as above for mother) These questions will be asked if the young person is aged 15 - 18 years. If they have left school they are asked at what age they left school. All young people are asked the standard highest qualification question as for mother (see the instructions about asking and checking this question above under 'mother's education').

Travel to and from school

How does young person USUALLY get to school/work?" :

1. Walk
2. Cycle
3. Motorcycle
4. Car
5. Bus
6. Other (SPECIFY AT NEXT QUESTION)

IF 'Cycle' or 'Walk':

How long does it take young person to cycle/walk to school/work?

IN MINUTES

The same questions are asked of the journey home.

Information is collected about travel to and from school or work. If they cycle or walk then we want to know how long this takes. The clients are concerned that fewer young people are walking or cycling to school and that more are being taken by car so this information will be used when looking at physical activity. You should be aware of their usual mode of transport when checking the 'Diary of Activity .. and Eating and Drinking Away from Home'.

Ethnic origin

In which country was young person born?" :

1. *England*
2. *Scotland*
3. *Wales*
4. *N Ireland*
5. *Outside UK*

****SHOW CARD F****

INTERVIEWER: DIRECT QUESTION TO (young person if 11+ /mother:)

To which of the groups listed on this card do you consider young person belongs?

White

1. *Black - Caribbean*
2. *Black - African*
3. *Black - Neither Caribbean nor African*
4. *Indian*
5. *Pakistani*
6. *Bangladeshi*
7. *Chinese*
8. *None of these (Include Mixed Race)*

How would you describe the racial or ethnic group to which he/she belongs?

_____?

Young Person's ethnic origin: these are standard questions from the GHS. These are asked for all young people - but the question should be directed to the parent if they are aged under 11. Note that this is an opinion question. Note that Southern Ireland is outside the UK.

BLOCK: Financial information:

Does your household own or rent this house or flat?

PROMPT AS NECESSARY

1. *Owns - with mortgage /loan*
2. *Owns - outright*
3. *Rents - Local Authority/new town*
4. *Rents - Housing Association*
5. *Rents - privately unfurnished*
6. *Rents - privately furnished*

7. Rents - from employer
8. Rents - other with payment
9. Rent free

Note that this is the tenure status of the HOH. For example, if the mother and young person are living with the mother's father (who is HOH) and mother and the young person's grandparents own the property outright then code 2 applies.

Can I just check, are you currently receiving Family Credit?

1. Yes,
2. No

And have you drawn Income Support at any time within the last 14 days?

1. Yes,
2. No

And have you drawn (Income related) Job Seeker's Allowance at any time within the last 14 days?

1. Yes,
2. No

****SHOW CARD G****

Could you please look at this card and tell me which group represents the GROSS income of the whole household?

Please include income from all sources before any compulsory deductions such as income tax, national insurance and superannuation contributions.

REMIND INFORMANT WHO IS INCLUDED IN THE HOUSEHOLD

PER WEEK GROUP .. PER YEAR

1. less than £40 01.... less than £2,000
2. £40 - less than £80 02 .. £2,000 - less than £4,000
3. £80 - less than £120 .. . 03 .. £4,000 - less than £6,000
4. £120 - less than £160 .. 04 .. £6,000 - less than £8,000
5. £160 - less than £200 .. 05 .. £8,000 - less than £10,000
6. £200 - less than £240 .. 06 .. £10,000 - less than £12,000
7. £240 - less than £280 .. 07 .. £12,000 - less than £14,000
8. £280 - less than £350 .. 08 .. £14,000 - less than £18,000
9. £350 - less than £400 .. 09 .. £18,000 - less than £20,000
- 10.£400 - less than £500 .. 10 .. £20,000 - less than £25,000
- 11.£500 - less than £600 .. 11 .. £25,000 - less than £30,000
- 12.£600 or more 12 .. £30,000 or more

Standard questions are asked about tenure, receipt of benefits and gross income of **the household**. Note that the young person may receive benefits in their own right if aged 16 to 18. These are important for the analysis of the uptake of free school meals. Only a limited amount of income information is collected and in the analysis we will use 'whether the household is receiving Family Credit, or Income Support' as the measure of financial status.

BLOCK: Smoking and Drinking

You have the option of either letting the young person complete the section on your laptop computer or giving them a paper self-completion document (and envelope) and subsequently your entering their answers into the lap top program. We do of course want to collect accurate information and the young person's privacy and the confidentiality of their answers should be preserved; at the same time we do not wish to upset parents.

Smoking and drinking: these questions apply to young people aged 7 and over. The questions have been taken from the schoolchildren's survey of smoking (and drinking) and hence we know that they work. However that survey was carried out in schools - away from parental eyes...you should emphasise the fact that the young person's privacy will be respected.

SMOKING AND DRINKING QUESTIONNAIRE

1 Purpose

As you know SSD regularly carries out large surveys of smoking and drinking behaviour, including such behaviour among schoolchildren.

The information on smoking and drinking behaviour is required in this survey in order to be able to look at their relationships with dietary behaviour, nutrition, growth, as measured by the anthropometry, and blood pressure. It is therefore very important that accurate information is collected.

2 Eligibility

All young people aged 7 years and over should be asked to answer the questions on smoking and drinking.

3 Collecting the information

Because of the sensitivity of this information, and the need to collect accurate information, the data should be obtained by self-completion, either:

- by the young person being offered your laptop computer to enter his or her answers directly into the Blaise

or

- by the young person being given the paper schedule (and an envelope) to write in their answers.

In the feasibility survey both methods were used by different young people and both worked well.

4 The paper schedule

There are two versions of this schedule:

- S1 - for all boys aged 7 years and over and girls aged 7 to 9 years
- S2 - for girls aged 10 years and over.

The schedule S2 contains some additional questions for older girls on age at menarche (age started their monthly periods) and oral contraception, which are best suited to being in the self-completion schedule. See separate instructions on *Age at menarche*.

The questions in the paper schedule and the Blaise object are identical. If the young person chooses to complete the paper schedule then you should transfer their answers into the Blaise object before transmitting the case, and also return the paper schedule to ONS with all other

documents for the serial number. For instructions on how to key this information from the paper schedule see '*The Laptop Programs*'.

Don't forget to stick a serial number on the front of the schedule.

5 The questions

As the section is designed for self completion it is fairly straightforward and apart from an explanation of how to use the lap top keys or how to complete the paper schedule, no further instructions should be needed.

In order to maintain confidentiality, if the paper schedule is completed, you will not be able to check that all the questions have been answered until after you have left the home.

We would therefore like you when you see that the young person has finished answering the questions, and before they put the schedule into the envelope, to ask them to please just go back and check that they have not missed any of the questions.

The following points can be explained to the young person if they need help.

Q4

By a proper alcoholic drink, we mean a whole glass or bottle, not just a taste of someone else's. We are not counting drinks labelled as 'low alcohol' like Kaliber - or 'alcohol free' drinks like 'beers' and 'wines', but we are including shandy and alcoholic soft drinks, known as 'alco-pops'. These are things like Hooch, Two Dogs and Lemon Head, which are heavily promoted and very popular with young people.

Qs 6 - 17

Young people are asked whether they have had a drink in the last 7 days, and if so, how much they drank.

The drinks are in six categories:

- beer, lager and cider (not low alcohol);
- shandy; this includes ready mixed cans, pub mixes and own mixes - of any strength;
- wine, not low alcohol;
- Martini and sherry, this includes Cinzano and vermouth;
- spirits and liqueurs; this includes gin, whiskey, vodka, brandy, Cointreau, tequila, Malibu, Creme de Menthe etc, and cocktails which include spirits or liqueurs;
- alcoholic lemonade, cola and other alcoholic soft drinks, e.g. Two Dogs, Hooch, Jag, Decoda

In the analysis the amounts drunk are converted into 'units'; for example, 1 glass of wine, 1 measure of spirits and ½ pint of beer are all equivalent to 1 unit. We therefore need the information on the amounts consumed in the measures given so that we can make the conversion. Note that for a glass of wine and spirits and liqueurs we mean a single pub measure.

Age of Menarche and Oral Contraceptive

Have you started your monthly periods yet?

1. Yes,
2. No

How old were you when you first started your monthly periods?

Please enter how old you were in years, put in a full stop, then enter the months, e.g. 10.06 means 10 years 6 months old.

IF YOU CANNOT REMEMBER YOUR AGE EXACTLY PLEASE TRY TO GET AS CLOSE AS YOU CAN.

_____?

Are you taking a contraceptive pill?

1. Yes,
2. No

Girls aged 10 and over will be asked whether they have started their monthly periods and if so at what age they started. They are then asked if they are taking the oral contraceptive pill. This information is needed because it can affect some of the blood analyses.

3.2 Coding instructions for the dietary diary

3.2.1 Weighing and recording

This section describes the method of weighing and recording the foods eaten. Detailed instructions on weighing and recording are given, followed by a summary, which should help you introduce the task to the young person and their mother.

a. Weighing the food items

The scales

You will be issuing people with a lightweight electrical scale, powered by a 9v battery, either the Soehnle Quanta, or Soehnle Vita.

The scales are easy to read because they give a digital readout. But apart from the weight of an object, the readout panel can tell you other things about the scale.

When you first switch on the scales 8888 appears briefly then a zero should appear. The scale is now ready for the container to be added.

If ---- appears then the scale cannot register any weight as the item is too light for the scale.

If when something is weighed - - - - appears, the scale has been overloaded, so use a lighter plate or cup.

If the digits appear disjointed, it means the batteries are failing. Replace with a new 9 volt battery, and claim for the cost, if you have used your spare.

If the plate is removed from the scale to add more food to it, a minus number will appear. When the plate is placed back on the scale the number will be positive.

The machine will switch off automatically after about two minutes.

The plate or cup can be removed from the scale to add food items but the scale **MUST** be zeroed before removing the plate. In this way, when the plate and food items are put back on the scale only the weight of the last food item added is displayed.

Note: you may have difficulty in getting the scales to work if the battery has been kept in a very cold place (e.g. the boot of your car); try to keep the spare batteries at room temperature. Please also remove the battery from the scales when they are not being used and check that all batteries have been removed from all scales before returning them at the end of your quota of fieldwork.

Weighing and recording with the scales

- 1) Switch on the scale by pressing firmly on the word "on".
- 2) Place the container on the scale and record its weight in Column A on the '***empty plate line***'
- 3) Leaving the plate on the scale, press the 'Tara' or 'Zero' firmly so that the scale reads zero again.
- 4) Write down the description of the first food in the brand and food description Columns B and C e.g.. Brand = Birds Eye; Description = 2 Economy Cod Fingers in breadcrumbs, grilled.
- 5) Place the first food item(s) on the plate (still on the scale) and record the weight in Column D.
- 6) Leaving the plate on the scale, press the tara pad firmly so that the scale reads zero again.
- 7) Record the next food item - Tesco frozen peas, boiled - in the diary.
- 8) Place the helping of peas on the plate and record the weight, and so on.

If a large plate is being used, e.g. a dinner plate, placing it on the scale may obscure the digital display. To overcome this you have been given a plastic bowl which should be used as a spacer to raise the plate so that the digital display can be read.

If the spacer is needed follow the following procedure:

- 1) Turn on the scale and place the spacer on it.
- 2) Press the tara button to zero the scale.
- 3) Place the plate on top of the spacer, and record its weight in the Home Record.
- 4) Food items should be described and recorded in the diary as described earlier.

Remember, if the plate is removed from the scale, the scale must be displaying zero before placing the plate back on the scale.

Note

1) Once the scale has been zeroed the plate (and previously weighed foodstuffs) can be removed to add the next food to it, and return all to the scale. The weight shown will then be that of the last food added. But remember that when the scale has been zeroed, and the food has been removed (for example, bread taken off the scale to spread butter on it), the scale will only stay switched on for about two minutes. If more time is taken to spread the bread, when the scale is switched on again the weight will be the weight of bread AND butter. If this happens, "bread and butter" should be written in the diary and the combined weight which the scale shows recorded.

2) The food scales are calibrated in 1 gram units up to 1 kg, and in 2 gram units from 1-2 kg.

3) Where several items served on the same plate need to be weighed and recorded, it may be easier to record in the diary all the separate items being served, before starting to weigh the portions.

b. The food recording diaries

We need a record of all food and drinks consumed which can be coded in such a way that a computer can convert it to a measure of the intake of energy, protein and a wide range of other nutrient values. Brand names of foods are also required so that we can identify the additives, colourings etc in the foods; for the same food type these may vary between manufacturer, for example, the amount of artificial sweetener in different brands of soft drink. In order to do this we need very exact details of the food and its preparation.

Obviously we do not expect informants to remember or understand all the detail required and you must expect omissions and mistakes in the recording of the food information; you will need to identify and correct these at checking calls. Notes on the sort of detail required are given later.

There are two recording diaries; a large A3 diary with white recording pages, called the 'Home Record' which is used for all foods eaten or prepared in the home, and a smaller A4 diary, 'Eating and Drinking Away from Home' used for all foods and drinks consumed away from home and not weighed; this will include snacks, sweets, and drinks as well as meals.

There are two versions of the diary for recording food and drinks consumed out of the home:

- for young people aged 7 years and over: the diary includes pages for recording details of physical activities;
- for young people aged 4 to 6 years: the diary does not include the pages for recording details of physical activities.
- Both versions of the Eating Out Diary also include a chart for recording the number of bowel movements the young person has on each of the 7 dietary recording days (see *later instructions*).

Ideally the Eating and Drinking Away from Home Diary (the Eating Out Diary) should always be carried when the young person is away from home during the recording period, together with a small pencil or the survey pen. Less information is recorded in the Eating Out Diary than in the Home Record but the Eating Out Diary should show the description and brands of foods eaten, and, if they were purchased, the price and place of purchase, and where and when they were eaten.

We appreciate that not all young people will be prepared to take the diary with them when they are away from home; they should be encouraged to do so, but if they refuse then they should take the small notebook - P3 - to jot down details of what they eat and drink while they are out of the home, and then fill in the Eating Out Diary at the end of each day.

We have provided a plastic, zip wallet for each young person to keep their diary in, together with an envelope to keep their diary private, a survey pen, a notebook and a pencil.

You should also leave the young person a white plastic carrier bag, with a serial number label attached. This should be used by the young person to collect any wrappers from sweets and snacks eaten away from home; where the recording of brand or weight information is incomplete, referring to these wrappers might help you in your coding and checking. Please return any wrappers or containers for items where you have a coding, weight or other query to ONS in the serial number-labelled plastic bag, with the completed diary. It is not necessary to return every wrapper and container that the young person collects. For health and hygiene reasons please ensure that all containers returned to ONS are clean

The instructions below apply to both recording in the Home Record and the Eating Out Diary, unless otherwise stated.

c. Completing the diaries: general points

1) Put serial number labels on the cover of the Home Record and Eating Out Diary, on the back cover of the small pocket diary and on the white plastic carrier bag. Make sure that every page in the Home Record, including any pages you re-write, and all blue transcription pages have the either a serial number label or the serial number written in.

2) On the front cover of the Home Record you will find an appointment table. Use this to record the time of your next visit (checking calls) as a reminder to your subject.

3) For both the Home Record and the Eating Out Diary a new page should be started at the beginning of each day. In the Home Record any continuation sheets for the same day should have the day of the week and the date filled in.

4) Both the Home Record and the Eating Out Diary have a space for recording the time of day (specifying am or pm) when the item is consumed: this information is required for ALL **empty plate lines** in the Home Record and for all entries in the Eating Out Diary. You should check that each **empty plate line** has a time recorded against it. If it is missing you should probe for the information when you pick up the completed pages.

3) In the Home Record each food item or drink should be described on a separate line. Where there is more than one component to a food item, for example, a cup of tea, each component should be weighed and fully described on a separate line. See the example page at the front of the Home Record which shows how a cheese and tomato sandwich should be recorded.

4) Home Record only

a) Everything eaten should be weighed on a plate or in a container. The plate/container should be weighed first, and the weight entered on the '**empty plate line**' .

If a food is eaten from the container in which it was purchased, e.g. yogurt, Pot Noodles etc then the following method should be used.

Weigh an empty plate, bowl or container, as usual. Place the pot containing the yogurt on the plate and weigh the plate, pot and yogurt. Eat the yogurt from the pot and then weigh the plate and empty pot (containing any leftover yogurt) as 'leftovers'.

The entry should then look like this:

A	C	D	E
Wt of empty plate = 10(g)	EMPTY PLATE		30(g)
	Low fat, vanilla flavoured, sweetened yogurt, not fortified <u>and container</u>	120	✓ (pot)

Note that the weight recorded in column E is the weight of the empty plate and empty pot. The tick and note indicates the nature of the 'leftovers', in this case the empty yogurt pot.

It is important that all items are weighed on a plate so that any leftovers can be correctly allocated (see *later*) and for your own purpose when checking the entries in the diary.

Items not normally eaten from a plate, e.g. an apple, should still be weighed on a plate or container with a plate/container entry in the diary. The '**empty plate line**' is there as a reminder to always weigh on a plate ; if the young person forgets to weigh on a plate you should write in a weight of 1 gram against the '**empty plate**'.

If more than 6 items are served on the same plate then, after the 6th item the young person should cross through the '**empty plate line**' and continue using the following line for the 7th and subsequent items served on that plate.

b) Second helpings should be weighed on the original plate and recorded in the diary using the following procedure.

Original serving of baked beans, one fried egg and chips. The young person eats all the chips and has another helping. The plate still has an egg and beans on it when the second helping of chips is weighed.

- (i) The plate (with egg and beans) is placed on the scales and the scales are zeroed.
- (ii) Put the second helping of chips on the plate and record the weight of chips as another chips entry.
- (iii) Flag the second helping for the attention of the nutritionists at HQ.

Any leftovers should be recorded in the usual way.

The entry in the diary should be as follows:

A	C	D
Wt of empty plate = 150 (g)	EMPTY PLATE	
	One egg, fried in lard	50
	Baked beans, canned	50
	Chips, crinkle cut, deep fried in lard	100
	Chips, crinkle cut, deep fried in lard	50

c) Weighing a cup of tea made with a tea bag

As this seems to cause some difficulty it may be worth while demonstrating the procedure if your young person drinks tea made with a tea bag.

In the food code list you will find that the food code refers to 'tea infusion'; if you remember that therefore you need the weight of tea infusion then the method for weighing is straightforward.

- weigh the empty cup/mug and record weight in the diary;
- zero the scales;
- remove the empty mug/cup from the scales, add the tea bag and hot water and allow to infuse; remove the tea bag;
- place the mug/cup containing the tea infusion back on the scales - record the weight of tea infusion in the diary;
- zero the scales;
- add milk; record the weight of milk in the diary;
- zero the scales;
- add sugar; record the weight of sugar in the diary;
- drink the tea;
- if any remainder, weigh and record as leftovers in the usual way.

d. Summary: completing the diaries

- i) Everything eaten or drunk must be recorded either in the Home Record or in the Eating Out Diary, including drinks of water, medicines, vitamin supplements (tablets or drops) and fluoride supplements.
- ii) A new page must be started each day in both the Home Record and the Eating Out Diary.
- iii) Each day in the Home Record should show whether the young person was well or unwell by a tick in the box at the top of the recording page.
- iv) The time of day (specifying am or pm) when the item is consumed must be written in Column A of the diary.

- v) The person who weighed the food should also be shown in Column A of the diary page.
- vi) The food should be described, and for foods eaten or prepared at home, weighed. It is particularly useful to include a description of the portion size here, i.e. 2 slices of bread or half a banana.
- vii) Each item of food must be weighed and recorded on a separate line of the diary. For example, for a cup of coffee, the weights and descriptions of the coffee granules, milk, water and sugar should be shown separately.
- viii) There must be a completed '**empty plate line**' preceding every item or group of items served together.
- ix) Liquids added during cooking should be recorded as part of any recipe (*see later*). If eggs are used in a recipe the size of the egg should be recorded.
- x) Condiments used at the table, other than salt and pepper, should be recorded in the diary with the weight and a description of how much was used e.g. 1 tablespoon of tomato ketchup. Descriptions of amounts should not be recorded in the 'weight' column. The entry should be flagged. Salt and pepper should not be recorded in the diary.
- xi) Any medicines, prescribed or bought without a prescription, that the young person takes by mouth should be described and recorded in the diary. The description should include quantity; e.g. two 5 ml spoonfuls, one 50 mg tablet etc. Ask to see the container for any medicine recorded in the diary and write down the full product name from the container (on the back of the diary page, if necessary). Proprietary medicines normally have a product number printed on the packaging. You should record this as it can provide nutritional information. All medicines should be flagged. For liquid oral medicines check and make sure the description includes whether the medicine is labelled as a sugar-free formulation.
- xii) You have been given a card which gives advice on using the scales (**W1**) and on the other side, on recording in the Home Record (**W2**). This should be left with informants as an aide-memoire.

3.2.2 Recording leftovers

When food is left over we need to know the total weight of all leftovers (including the weight of the plate) and what items were left.

Informants should weigh the plate or container containing all the leftovers and record this total weight in the leftovers Column E, against the '**empty plate line**' then put a tick next to those items that were leftover. Here is an example of how it should look:

A	C	D	E
Wt of empty plate = 140 (g)	EMPTY PLATE		220 (g)
	Cheese and tomato pizza, deep pan, home made	168	✓
	Frozen, crinkle cut chips, fried at home in corn oil	140	✓
	Baked beans in tomato sauce, canned	74	

Here the leftovers consisted of some of the pizza and some chips. Weighed on the plate this was 220 grams - entered in the leftovers column opposite '**empty plate**'. The pizza and the chips lines are ticked to show that both were left.

Ticks should appear next to all items which are leftover. For example, if the young person had a bowl of cornflakes with sugar and milk and some was leftover there should be ticks next to the cereal, sugar and milk, as all these items would be leftover.

The weight recorded in Column E should be the weight of plate and leftovers. Please check that the weight given for leftovers is greater than the weight of the plate, but not greater than the weight of the plate plus all the original served weights - i.e. the plate cannot weigh less with leftovers than empty, and you cannot have more leftovers than the original servings.

On other dietary surveys we have found that some people were able and willing to weigh the different leftover items on the same plate individually, and entered the separate weights in the leftovers column, adjacent to the particular item not fully eaten. If this appears to have happened on a recording sheet you are checking, ask the informant if this is what they have done, and if so, flag the entry for the attention of the nutritionists. There is no need to change it back to the conventional way of recording leftovers.

a. **Summary: recording leftovers**

The total weight of any leftovers plus the plate weight, should be recorded against the '**empty plate line**' and all the leftover items ticked. If food is left over when eating away from home then the young person should write in the Eating Out Diary, against the relevant entry, an indication of how much was left, e.g. "half a round of sandwiches", "2 slices of tomato". If all of a particular item is left, this should be indicated in the description. For example, "cheese and tomato sandwich, all tomato left and half the sandwich".

Make sure that ticks appear next to ALL food items that are left over. Assuming there is spread on bread, toast, rolls etc, if any bread is left over, then there should always be a tick in the leftovers

column against the entry for spread. Similarly, if cereals are served with milk (and sugar) then if any cereal is left there should be ticks next to the milk and sugar as well.

3.2.3 *Spilt and lost food*

It is very important that we collect accurate information the amount of food and drink being consumed, which may be different from the amount served. It is likely that at least some of the younger children in this survey will be messy eaters therefore this may be somewhat difficult to achieve, but we must attempt to do this.

If the young person eats some of the food and leaves the rest on his/her plate then the leftovers can be recorded in the normal way. However, there may be several situations when this does not happen. Some examples of possible situations are:

- the young person spills a beaker of orange squash over the floor.
- the young person may splash runny food out of his/her bowl, e.g. custard, soup.
- the young person may drop food on the floor and the dog may eat it.
- someone else consumes some of a weighed item.

Wherever possible we want any food lost due to spillage etc re-weighed. If something is spilt or dropped, then an attempt should be made to pick it up and re-weigh it on the original plate together with any other leftovers. In some cases however it will just not be possible to re-weigh food that has been lost and sometimes this may be a considerable amount of food. In cases where lost food cannot be re-weighed we want an estimate of how much of the original item was lost, and a record of this in Column F of the Home Record. For example, if, from a plate of toast, half the toast gets fed to the dog, then the diary should show in Column F that half of the original serving of toast was lost and that it was not possible to re-weigh it.

3.2.4 *Keeping the dietary record*

The range of ages covered by this survey means that there will be some young people who will be able to keep their own home and eating out record, some who will need some help and some who will need to have the records kept for them.

From experience on the Family Expenditure Survey and from the feasibility survey we expect that most young people from age 7 years upwards should be able to complete the diaries themselves, or with a little help.

Most children aged under 7 years will probably need to have the diaries kept for them.

a. The Home Record for children under 7 years

At times when the child is not at school (after school, during holidays), and weekend days, if the child's mother (figure) is at home then she should do the weighing and recording. However, if the child is looked after by other people when they are not at school then it may be more of a problem. Also when these younger children are out of the home - at school, or elsewhere without their mother, then it will be more difficult to get accurate data on what that child has consumed.

If, when they are not at school, the child is regularly looked after by someone else, because, for example, the mother works, we want the mother to give the Home Record and some scales to the carer so that that person can complete the weighed record while the child is in his/her care.

If you come across an arrangement like this, try, if possible, to see the carer as well as the mother to explain how to weigh and record the food. If this is not possible you will have to ask the mother if she will explain how to weigh and record the food and keep the record.

If this 'childminder' is unwilling to weigh the food then the mother should ask her to write down, in the Eating Out Diary, all the food and drink that the child has while he/she is with them child. If the 'childminder' will not do this, then the mother should ask what the child has had to eat and drink while he/she has been with them and record the information herself in the eating out diary.

For each item in the Home Record we want to know who was doing the weighing and recording - whether it was the young person, mother (or other parent figure) or whether it was someone else (e.g. the childminder). This is to see whether the accuracy of the data appears to be affected when someone other than the mother is keeping the dietary record.

3.2.5 *Estimated weight column*

The *estimated weight* column should be ticked when a food item has not been weighed but its weight has been estimated.

You are most likely to use this column as a result of probing and checking the diary with the young person and finding that s/he has forgotten to record a drink or snack. For example, the young person remembers a drink of orange squash that s/he had but did not record it in the diary. The weight of the drink is estimated using the recipe of a previously recorded drink of orange squash. The weight of the glass, orange concentrate and water are taken as standard. However you should tick the *estimated weight* column to indicate that the weight of the beaker, concentrate and water are all estimates. They were not weighed by the young person when s/he made this particular drink.

This procedure should be used whenever a substitute weight is used, i.e. when you have bought a duplicate or used the weight information from a wrapper or carton.

The 'informant' should not use this column.

This column will also be used by the nutritionists to estimate the weight of foods eaten outside the home which could not be weighed, and for composite items which were split, for example oranges in jelly, where the weight of the composite is known but the individual weight of components will be estimated. All items on white Home Record pages shown with estimated weights should be flagged.

NOTE: This column should only be ticked to indicate a food item weight which has been estimated. It should not appear on a plate line, whether the plate was weighed or not.

3.2.6 Food descriptions

Introduction

The description of the food in either the Home Record or the Eating Out Diary needs to be sufficiently detailed to allow the item to be coded. However, the food code list not only separates different food items, but also takes account of how any particular food item was processed before it was purchased, e.g. bought as frozen, canned, fresh or dehydrated produce; how it was cooked e.g. fried, boiled, roasted, grilled etc; and its fat content, e.g. low fat products, meat dishes with the fat skimmed or removed. This amount of detail is necessary in order to determine the nutrient value of the food item.

Because we need very detailed descriptions of the food items, and because informants will not always record all the information we need, we are asking you, the interviewers, to undertake the coding of the food items. In this way you will see when an item cannot be coded because the description is inadequate, and you will have the opportunity to try to collect the information by calling back shortly after the diary entry was made. Also, as you become more familiar with the food code list you will be able to probe inadequate food descriptions when you call to collect the completed records.

You have been given a '**Food Descriptions**' prompt card (F1) to remind you about the sort of probing questions you will need to ask in order to get a description detailed enough for you to select the correct food code.

Probes for food descriptions

As well as the basic, but full, description of the food item, e.g. All Bran cereal, Danish Blue cheese, oyster mushrooms etc, you will need to check that you have recorded information on:

- i) the bought form: e.g. fresh, frozen, canned, dehydrated, bottled, or was the item home made or home grown (fresh);
- ii) any coatings: was the item cooked in a coating; what was the coating - flour, batter, egg, breadcrumbs etc;
- iii) any thickenings in sauces, gravy, stews or casseroles;
- iv) details of pastry products: what type of pastry was it - shortcrust, flaky etc; was there a pastry crust top and bottom or only one crust; what type of flour was used - wholemeal or white; what type of fat was used - see (vi);
- v) cooking method: grilled, shallow fried, deep fried, boiled, poached, roasted (with fat), baked (no fat), or reconstituted, i.e. water added to dried product, e.g. Pot Noodles. For poached items record what the food was poached in - milk, milk and water, or water only. For fried items record the type of fat the food was fried in: see (vi);
- vi) the fat content: for dairy products check and record whether a low/high fat item, e.g. low fat milk (semi-skimmed or skimmed), low fat or creamy yogurt, and low fat cheese. Also check for low fat sausages.

For items cooked in fat (fried or roasted) which will absorb fat in cooking, e.g. fried fish, chips, or products in batter or coated, record the type of fat used. Also record the type of

fat used in home made pastry and cakes. *See later for notes on the different types of fats and oils.*

For meat, meat products and meat dishes record whether the fat was removed before or after cooking (i.e. not eaten) or, if appropriate, whether fat was skimmed from the dish before serving.

NOTE: accurate information on the amount and nature of the fat in young people's diets is VITAL to this survey because of the apparent association between fat intake, cholesterol levels in the blood and coronary heart disease.

- vii) Sweeteners used: record whether the item was sweetened or unsweetened. If sweetened we need to know whether the sweetener was sugar or an artificial sweetener. For cooked items sweetened with an artificial sweetener, e.g. stewed fruit, the fruit and artificial sweetener should be weighed, recorded and coded separately, coding the fruit as 'unsweetened'.
- viii) Smoked or not: for foods such as cheese, bacon and fish record if the item was smoked.
- ix) As well as weighing each food item it is useful if the description includes information on the portion size; e.g. 2 slices of bread; 1 teaspoon of brown sugar; 6 eating cherries. This information will alert us to any problems in weighing, or if a weight is omitted in error, it means we can make an estimate of the weight consumed.

Brand information

Brand names should only be coded for the following items; herbal and fruit teas, bottled waters, fruit juices and soft drinks and artificial sweeteners. However, because MAFF may require other types of food to be brand coded at a later date, and because recording brand names for only selected types of food may lead to omissions, the brand or product name should be recorded for every food item or drink EXCEPT fresh foods which are not pre-packaged, such as meat, fish, cheese or pasta sold loose, and unwrapped bread and cakes; doorstep delivered fresh milk, and all eggs. Fresh fruit and fresh vegetables do not require brands whether or not they are pre-packed.

NOTE: shrink wrapped/ vacuum packed cheese and meats have a brand.

Foods bought as fresh and then frozen at home are regarded as fresh produce and hence will not have a brand name.

In many cases the brand name will be an "own brand", e.g. Sainsbury's, Tesco, St Michael, Leo's etc. Local shops may also market "own brands".

It is important that the brand and product name are as detailed as possible. Again you will be coding the brand information because it may only be at the point of coding that a brand description is found to be inadequate.

Summary: food descriptions

The detail required for food descriptions should answer these questions:

- i) What type of food or drink was it?
- ii) Did it have a brand or product name?

- iii) How was it bought - fresh, canned, frozen etc?
- iv) How was it cooked - boiled, poached, fried etc?
- v) If it was cooked in fat, or fat was used in pastry or cakes, what sort of fat or oil was used?
- vi) Was fat skimmed from any meat dish? Was fat on meat eaten or removed before or after cooking?
- vii) Was the food item coated before cooking?
- viii) Were any sauces thickened?
- ix) What type of flour was used in pastry?
- x) Was it unsweetened, sweetened with sugar, or artificially sweetened?
- xi) Was it a low fat item?
- xii) Was it smoked or unsmoked?
- xiii) Is there a description of the portion size as well as the weight?
- xiv) Was it home grown or not?

When introducing this part of the survey we suggest that you go over the foods that the young person has eaten so far that day and ask them to record the descriptions as practice. Try also to get the person(s) who will be doing the weighing and recording to weigh something the young person would normally eat and to weigh and record the components. They may be willing to get a drink or make a sandwich, and you can help in the weighing and recording. If this is not possible then demonstrate the procedure using pens, pencils, or whatever you have to hand. There is an example of what a completed diary page should look like at the front of the Home Record. However, many interviewers who worked on previous dietary surveys did their own example page. If you can think of a more helpful example then please use it.

3.2.7 Coding the diaries

Food coding: general points

The description of the food, with the recorded information on its bought form, how it was cooked etc, should enable you to identify the correct food code.

The food code is a number with a maximum of 5 digits, and should be written in the first set of digit boxes (five boxes) in the column of the recording sheet headed "*Office Use Only*" adjacent to the food weight to which it refers. (The "*Office Use Only*" is to discourage informants from writing in the boxes.) Where a food code has fewer than 5 digits the numbers should be "right adjusted": there is no need to fill the empty boxes with leading zeroes.

On the 'empty plate line' the food and brand code boxes should be left blank.

The food code list you have been given classifies foods according to their type - bread and rolls, fruit, eggs and egg dishes etc, and within each group food items are generally listed alphabetically. For some foods inclusion in more than one group might be appropriate; where

possible we have included them (with the same code number) in all places, but inevitably there will be some cases where the food item does not appear where you might first expect it.

You have been given an electronic version of the food code list, which will allow you to search for items which may not be in what seems to you the most obvious food group. Enter at least three letters of the food that you are trying to identify and the system will search for all foods containing these letters. For example, if you are searching for macaroni, and for some obscure reason you type in 'oni' the system will find foods such as macaroni, pepperoni, etc. The system will display the page number of the relevant foods in the hard copy of the food code list. However, the electronic version of the food code list does not give the same amount of detail about a food item as in the hard copy and must only be used to help locate an entry in the more detailed code list.

Eventually every line entry in the Home Record, **except the empty plate line**, should have a food code. However, you may not be able to code all the entries. This is because:

- i) the code list does not cover every possible food item, only those for which information on the nutritional content is available or can be calculated.
- ii) The food item as recorded is not discrete, but is a composite food item or a recipe dish, e.g. home made pies, cakes, casseroles etc. Some common recipe dishes have their own single code in the food code list, but for others special treatment is required.

Composite foods and recipe dishes which do not have their own code

Although you should be asking young people to make separate entries for each food item some foods are served in combinations which cannot easily be weighed separately, e.g. fruit in jelly. In some cases a single code covers a combination, for example, code 542 covers the fruit and sponge in a fruit sponge pudding. For other combinations there are no such single codes and the foods must be split into their separate components.

For all items in the food code list with a numerical code prefixed by the letter "R" - "Recipe" - if the dish was home made, you need to record on the back of the diary page the ingredients and their relative quantities in the whole dish (not just in their serving), as well as coding the composite food item. Note, if the code is prefixed by the letter 'R', but was not home made, e.g. shop bought cake, do not record a recipe. For cooked dishes or other composite items which do not have a composite food code, you need to record the ingredients and their relative quantities in the whole dish on the back of the diary page as previously, but you will not be able to attribute a food code to the serving.

Note that the prefix 'R' is NOT part of the food code and should not be written in the food code column on the diary.

You are provided with 'flags'. Flags indicate coding and other queries for the nutritionists, for example, you are unable to match a food description with a code or a composite recipe item needs to be checked by the nutritionist. The rule with flags is, 'If in doubt, flag'. Flags should be stuck to the right hand side of the diary page, so that they protrude over the edge of the page and can be seen: make sure they do not cover any coding columns. The flag should be as near to the item to which it refers as possible. The flag should contain a brief description of the item to which it refers and the nature of the query.

Examples:

- i) Mixed salad: No composite food code, therefore code individual food items, and flag.

How much lettuce: a few large leaves, half a small lettuce?

How many tomatoes: 3 large, half a pound?

How much celery: a few sticks, a medium sized head?

Anything else?

- ii) Canned oranges in jelly: No composite food code, therefore code individual items -canned oranges and jelly, and flag.

What size can of oranges in what volume of jelly?

- iii) Toad-in-the-hole: No composite food code, therefore code as separate food items, sausages and Yorkshire pudding, and flag.

How many sausages? Pork or beef sausages?

What quantity of Yorkshire (batter) pudding: made with one egg and half a pint of whole milk?

What size of egg was used in the Yorkshire pudding?

- iv) Lasagne: composite food code 1348; therefore do not code separate items but record recipe and flag

e.g. 8 oz dried lasagne

12 oz minced beef

12 oz can of tomatoes

2 large onions

1 dessertspoon of cornflour

pinch of mixed herbs

1/2 pint packet mix cheese sauce made with whole milk

2 oz English cheddar cheese, unsmoked

If the description of the composite item is different to that given in the code book you cannot code it; therefore list each ingredient and their weight and flag the entry.

NOTE: Food items recorded for recipes DO need their brand names recorded EXCEPT when a recipe dish was eaten away from home and it was not possible to obtain this information.

Recipe information should be recorded on the back of the diary page containing the original entry, in the space indicated for recipes. All recipe dishes recorded in this way should be flagged and referenced back to the original entry. Flags should not cover coding columns. Nutritionists at ONS will allocate weights to the components of a recipe dish where there is no composite food code. They will also code items not on your food code list, and will check your coding of recipe data where there is a composite food code.

NOTE: for recipes using eggs please record the size of the egg as part of the recipe.

Where a combination food or recipe dish can be coded straight from the food code list, we need the recipe so that the nutritionists can check that the home recipe is sufficiently similar to the standard recipe on which the nutritional information for food is based and hence that the single code can be used. If the recipe differs significantly then the nutritionists will have the information in the Home Record to allow them to code the separate components.

Liquids used in cooking: MAFF are interested in the amount of liquid consumed by young people. Liquids in recipes are important in order to know the 'concentration' of nutrients, e.g. vegetable soup - 2 pints of water in the recipe or ½ pint?

Coding fats and oils: you have been given two cards; one (C2) showing how all the various fats and oils that can be used in cooking are classified, i.e. what products are polyunsaturated fats and oils, what fats should be included under the heading of "dripping" etc. This will help you allocate the correct food code to foods cooked in, or made with, fats and oils. The other card (C1) shows the various fats used for spreading.

Coding inedible leftovers

Some food codes relate to what has been consumed, thus the associated weight information should reflect the actual amount of the item consumed, and should not include the weight of any wastage. For example, for a banana, the food code relates to the edible flesh, and the weight recorded against that code should therefore be the weight of the edible flesh only, not the skin.

If foods are weighed with parts that are not eaten, e.g. nuts weighed in shells, bananas weighed in skins, the wastage or inedible portion should be weighed and shown as a leftover. The food code used will be for the edible portion only and the computer will calculate the net weight eaten, i.e. the total weight less the weight of the leftovers. For example, a fresh peach should be weighed whole, on a plate, eaten, and then the weight of the stone shown as a leftover, as follows.

A	C	D Weight of item	E Leftovers	Food
Wt of empty plate = 200 (g)	EMPTY PLATE		210 (g)	
	Fresh peach	100	✓ stone	2 1 0 1

The food code for the peach is 2101 - "peach, fresh, flesh and skin only, no stones, or leftover stones weighed", i.e. weight of fruit eaten is known. The computer will calculate the weight associated with that code as 90 grams, i.e. 100 grams less 10 grams leftovers (stone).

Unfortunately informants will not always record in the way we would like and may forget to weigh leftovers: for example a peach may have been weighed whole (on a plate) but the weight of the stone left over is not shown. The computer will then have to estimate the weight of the eaten fruit. To indicate this estimation it is necessary that the food code should show that the stone was not weighed as a leftover and the weight recorded is greater than the weight of the fruit eaten. In this case code 2102 should be used, "peach, fresh, leftover stone not weighed". The entry should then look like this:

A	C	D Weight item	of	E Leftovers	Food
Wt of empty plate = 200 (g)	EMPTY PLATE		(g)	
	Fresh peach	100		✓ stone	2 1 0 2

Here are two more complicated examples.

A: a grilled lamb loin chop

i) Lamb loin chop, grilled, weighed with fat and bone. All the fat and the bone are not eaten, they are weighed as leftovers.

A	C	D Weight item	of	E Leftovers	Food
Wt of empty plate = 200 (g)	EMPTY PLATE			260 (g)	
	Lamb loin chop, grilled, lean and fat	120		✓ bone and all fat	9 8 0

The code used, 980, is for a lamb loin chop, grilled, lean only, leftover bone weighed; the weight of meat is known. It is important to record whether any of the fat was eaten.

ii) Lamb loin chop, grilled, weighed with fat and bone. Only the bone not eaten, weighed as leftovers.

A	C	D Weight item	of	E Leftovers	Food
Wt of empty plate = 200 (g)	EMPTY PLATE			240 (g)	
	Lamb loin chop, grilled, lean and fat	120		✓ bone	9 8 2

The code used, 982, is for a grilled lamb loin chop, lean and fat, leftover bone weighed; the weight of lean and fat meat eaten is known.

iii) Lamb loin chop, grilled, weighed with fat and bone. All the fat and the bone are not eaten, but they are not weighed as leftovers.

A	C	D Weight item	E of Leftovers	Food
Wt of empty plate = 200 (g)	EMPTY PLATE	 (g)	
	Lamb loin chop, grilled, lean and fat	120	✓ bone and all fat	9 8 1

The code used, 981, is for a grilled lamb loin chop, lean only, leftover bone not weighed; the weight of the lean meat is not known. It is important to record whether any of the fat was eaten.

iv) Lamb loin chop, grilled, weighed with fat and bone. Only the bone not eaten, not weighed as leftovers.

A	C	D Weight item	E of Leftovers	Food
Wt of empty plate = 200 (g)	EMPTY PLATE	 (g)	
	Lamb loin chop, grilled, lean and fat	120	✓ bone	9 8 3

The code used, 983, is for a grilled lamb loin chop, lean and fat, leftover bone not weighed; weight of lean and fat meat eaten is not known.

Example B: Skate (cartilaginous fish)

i) Skate, fried in butter, weighed with flesh, skin and bones. Skin and bones not eaten, weighed as leftovers.

A	C	D Weight item	E of Leftovers	Food
Wt of empty plate = 200 (g)	EMPTY PLATE		220(g)	
	Skate, fried in salted butter	130	✓ skin and bones	1 5 4 9

Code 1549: skate, fried in butter, leftover bones and skin weighed; weight of flesh eaten is known.

ii) Skate, fried in butter, weighed with flesh, skin and bones. Skin and bones not eaten, not weighed as leftovers.

A	C	D Weight item	E of Leftovers	Brand	Food
Wt of empty plate = 200 (g)	EMPTY PLATE	(g)		
	Skate, fried in salted butter	130	✓ skin and bones		1 5 5 0

Code 1550: skate, fried in butter, leftover bones and skin not weighed; weight of flesh eaten is not known.

Coding tap water

MAFF are interested in the amount of water that young people drink both on its own and as a diluent to make up other drinks, such as squash, coffee, instant chocolate drinks etc.

The food code for tap water depends on how the tap water was used. Tap water drunk on its own, not used as a diluent, is food coded 5000; there are separate codes for water used to dilute concentrated soft drinks - non-diet and diet separately (5101 and 5102); to make up instant coffee (5103); instant tea (5104); dried milk (5105); instant beverages (5106); and to make up powdered medicines or dietary supplements (also 5106).

For water used in any other way, for example to dilute fruit juice, you should flag the entry.

The food codes for water are shown in the food code list on page 7 and on the pages with drinks they are used to dilute, and for ease of use on a card, Card C3.

Summary

- 1) Food codes have a maximum of 5 digits. Where a food code has fewer than 5 digits the number should be right adjusted.
- 2) Empty plates, bowls etc are NOT food coded.
- 3) All other diary entries should have a food code. If you cannot code the item because it does not appear in the code list or because it is a composite or recipe item, the entry should be flagged for the attention of the nutritionists at head office.
- 4) All home-made recipe items should be written out on the following diary page. Recipe food items in the food code list are indicated by an 'R'.
- 5) Composite items: composite items for which a food code cannot be found should be split into their constituent parts, showing the weight of each part in the serving.

- 6) Use the *Fats and Oils for Cooking* and the *Fats for Spreading* cards to help you identify the type of fat or oil used.
- 7) Food descriptions need to contain details of leftovers as some food codes relate to what has been consumed; i.e. have skin, bones or stones been weighed as leftovers or not? Ticks should appear next to the items left over, in the weight column, Column E, with notes, e.g. leftover stone, bone or fat etc.
- 8) Note the form of the artificial sweetener, i.e. liquid, granulated, tablet etc, as the food code list is organised according to the form of the sweetener.
- 9) Code tap water according to whether or not it is used as a diluent.
- 10) 'B' to indicate brand information required, and 'R' to indicate recipe information required are not part of the food code and should NOT be written in the food code column.

3.2.8 Brand coding

Brand coding is not needed for all items; only the following types of food should be brand coded:

- herbal and fruit teas
- fruit juices and soft drinks
- bottled waters
- artificial sweeteners

We have decided however that informants should be asked to record the brand names of all the items that are consumed; selective recording is likely to lead to lost information. Also it is likely that at some time in the future MAFF will ask for other types of food to be brand coded. You will find that in the Food Code List those foods or food groups that need to be brand coded are marked with a 'B' against the food code.

Brand codes are needed for items eaten in and outside the home. Artificial sweeteners should be brand coded when they are used 'at the table' and when they are used in cooking. Artificial sweeteners added to pre-packaged products, such as yogurt and soft drinks are not coded separately.

You have been provided with separate brand code lists for each of the food types that need brand coding; these lists should be filed with your food code list, the brand code pages following the relevant food code pages.

The brand code has a maximum of three digits and should be entered in the three digit space headed 'Brand' in the *Office Use Only* Column. Codes with fewer than three digits should be right adjusted; there is no need to enter leading zeros. If the food item is not one of those to be brand coded then the 'Brand' Column should be left empty. Note that the prefix 'B' is not part of the brand code and should not be entered in the brand code column.

Herbal and fruit teas

Note that we are interested not only in the brand name but also in the flavour of the tea.

Codes are included for 'own brand' herbal teas at the end of the list.

Any herbal tea sold loose (i.e. not pre-packed) should be brand coded 243 .

Any herbal tea brand not separately listed should be brand coded 600.

If the brand of the herbal tea is not known then brand code 601

Bottled waters

The codes listed cover the most popular brands of bottled water and those of specific interest to MAFF. We are not interested in the specific brand of any bottled water not listed, but we do need to know whether it is a British Isles product (code 318) or a foreign product (code 328). Therefore any 'own brand' bottled water not specifically listed will be coded according to its place of origin: there are no 'own brand' codes for bottled waters.

If the brand of bottled water is not known brand code 601.

Fruit juices and soft drinks

As for bottled waters, the brand codes for soft drinks cover the most popular brands. Codes for 'own brand' soft drinks are given at the end of the list.

Any brand (including own brands) not listed should be coded 600 (there is no need to flag).

If the brand of fruit juice or soft drink is not known brand code 601.

Artificial sweeteners

Note that we are interested not only in the brand name of the artificial sweetener but also in its form, that is, whether it is in tablet or minicube form, granulated (or powder), or a liquid.

The brand code list is organised according to the form the sweetener is in for non-own brand products. Codes for own brand artificial sweeteners are given at the end of the list; cross-checking with the food code will tell us the form (tablet/granulated/liquid) for own brands.

Any brand not given on the code list should be coded 600.

If the brand of artificial sweetener is not known, brand code 601.

Summary:

- 1) Foods requiring brand coding are marked with a 'B' against the food code.
- 2) Artificial sweeteners should be food and brand coded when added at the table or used in cooking. All artificial sweetener entries should be flagged.
- 3) Brand codes have a maximum of 3 digits. Where the brand code has fewer than 3 digits it should be right adjusted. The prefix 'B' should not be written in the brand coding column.
- 4) All own brand herbal and fruit teas should be brand coded and flagged.
- 5) Herbal and fruit teas sold loose and not branded should be coded 243.

- 6) Any fruit juice or soft drink not listed on the brand code list should be brand coded 600. It does not need to be flagged.
- 7) Own brand bottled waters should be brand coded according to their country of origin. There are no own brand codes for bottled waters.
- 8) Any artificial sweetener not listed on the brand code list should be coded 600.
- 9) If the brand name is not known, brand code 601.

3.2.9 Food source code

Every '**empty plate line**' on both white and blue diary pages needs to have a food 'source' code entered in the *Office Use box*.

In order to decide which code to use you need to refer to three pieces of information:

- * where the food was eaten - column A in the home record and from the description in the eating out diary;
- * where the food was obtained - from the food description and the eating out diary;
- * when it was eaten - was it a school lunch time, at some other time during the school day, or at some other time.

The food source code is a single digit range 1-6.

Codes 1, 4, 5 and 6 only apply to food eaten during school hours. If the young person is unwell and at home on what would normally be a school day, then codes 1,4, 5 and 6 cannot apply.

Start by checking where the food was eaten; the food source codes are then grouped into 3 sets:

for foods eaten at home - coded 1 in column A

for foods eaten at school - coded 2 in column A

for foods eaten elsewhere - coded 3 in column A

Then refer to the code list on Card C4 and select the appropriate code.

Note the food source code is entered only on the '**empty plate line**', not against every food on that plate.

If the foods on one plate have come from different sources, for example a takeaway eaten at home, with some food from the home store-cupboard e.g. rice/pickles, then code the food source for the main or majority food item - in this example the takeaway meal.

Flag any queries or entries you cannot code.

3.2.10 Flagging entries on the home record - Card F6

The following items should be flagged on the white Home Record pages:

- Any item not weighed
- Any item where the quantity is not in grams - e.g. drops/units/ teaspoons/fl.ozs
- All composite and recipe items
- Cumulative weights
- All artificial sweeteners
- Foods not shown in the food code list
- Interviewer queries on weights/food codes/brand codes
- Any item where an estimated weight has been recorded
- Any medicine recorded
- Any vitamin, mineral or fluoride supplement
- Items too light to register on the scale
- Condiments added at the table (not salt and pepper) and not weighed in grams
- All cases where some of the item was lost, spilt etc and could not be re-weighed (entry in Column F of the Home Record)
- Cases where individual leftovers have been weighed (rather than total weight of leftovers)
- All second helpings should be flagged
- Tap water used to dilute fruit juice or in any other way not covered by the diluent codes

NOTE: All entries recorded on blue diary pages will be checked by the nutritionist; there is no need to flag blue sheets.

3.2.11 Field procedures in relation to the weighing and recording tasks: summary

At the Placement Call

- (i) Explain the purpose of the survey.
- (ii) Demonstrate the scales, and the weighing technique by means of an example.
- (iii) Demonstrate the recording technique, again by means of an example.

- (iv) Explain that detailed descriptions are required, but be careful not to go into too much detail or the informant will be discouraged from participating. You can explain and probe for more detail on the brand and food descriptions at subsequent calls, and as the need arises.
- (v) Tell the young person that you will be calling back after 24 hours to see how s/he is getting on, and to help with any difficulties. Tell them that in our experience, most difficulties arise in the first day whilst people are getting used to the recording and weighing, so you would like to call back in about 24 hours.
- (vi) The 7-day diary recording period starts at 00:01 hours on the morning after your placement call. However, the young person should start weighing and recording from the time you leave them. These items should be entered in the diary under day order "0"; this gives them the chance to try out the scales and practice the measuring techniques. The recording period lasts for 7 full days and always starts with the first item eaten or drunk on day 1, running through to the end of day 7. There should always be a practice page and it should be left in the diary for returning to ONS. However entries during the practice period should be crossed through; there is no need to code/flag any of these entries.

At the 24 Hour Checking Call

At your 24 hour recall, and any other checking calls, you are there to:

- a. encourage the young person who may become disheartened or bored by the amount of weighing and recording required;
- b. to probe for missing detail, or even missed food, on the diaries;
- c. to query weights of items which seem excessively high or low, or so badly written that you are unsure of what they are;
- d. to make sure that the young person is remembering to record items eaten away from home either in the home record, or if it was not weighed, in their eating out diary.

On the 24 hour recall in particular, it is worth checking every single entry in the Home Record and Eating Out Diaries while you are still in the home. (You can detach the sheets and take them away to check and code them).

Checks to be made

Time eaten: must be entered for each **empty plate line**. The time must be specified in am or pm. If this information is missing you should probe while you are still at the home or at your next call.

Survey day order and date: must be shown for each sheet. The young person should start a new sheet at the beginning of each day; if s/he has not done so, you should find, and clearly mark, where the new day starts (and subsequently rewrite the necessary pages).

Who weighed the food: must be entered for each empty plate line recorded on white diary pages.

Descriptions of foods and drinks: must be adequate for you to code them. Can you code from the written description? Are the brand names included?

Weight served must be correctly recorded: has each food item been separately weighed? Are the individual weights sensible? If the weight of an item seems a bit unusual but not so way out as to be

suspicious then query it, making a note to show you have done so. If you are very suspicious of the weight it might be better to ask if the young person has another example of the food item in question for which you could check the weight because "we have found x food is often difficult to weigh". Use the **Guide Weights (F5)** card to help you judge whether a weight is sensible or not. Encourage informants to include as part of the food description, the number of units served, i.e. 2 Weetabix or 3 fish fingers. This information will also help you judge whether the weight is sensible or not.

Watch out for 'g' for grams; this is already printed in the weight column. Weights not in grams and volumes should be written in the food description column and flagged.

Leftovers must be weighed. Certain types of food are likely to include leftovers:

meat/poultry: often yield bones
apples (fresh): usually cores are not eaten.

Check for leftovers in these and other cases where they are likely.

Check that the weight given for leftovers plus plate is greater than the weight of the empty plate and that the weight of leftovers is no greater than the original weight of all foods served on that plate. Some young people may weigh the plate plus leftovers but subtract the weight of the plate and record the weight of the leftover food items. Please check any such entries with your informant and amend.

We must have a weight and ticks to show us what was left from the items shown in the diary (i.e. chicken bones left: tick would appear by chicken entry with the word "bones" next to it).

Remember that if bread and spread appear in the diary and bread is leftover then there should be ticks next to the bread AND spread. Breakfast cereals served with milk and sugar which are leftover will also have milk and sugar as leftovers. Check ticks appear next to these items as they are commonly missed.

Time periods: most young people will eat at breakfast, lunch and evening meal times; whilst this will vary as to the exact time and the type of food consumed you should expect to have entries for all time periods - or a note to explain why not, e.g. does not eat breakfast.

Drinks: there should normally be a minimum of 500 grams of drink in a day's diet - if not probe for missed drinks. (Nothing may have been recorded because they thought that water did not count). Should the young person genuinely not have had any fluids note this clearly.

You have been given an **Eating Pattern Check Sheet (F2)** which lists particular food types; drinks, crisps and savoury snacks, biscuits and sweets and supplements. This sheet is designed to help you check for under-recording of these food items. For each diary day you should ring the number of entries you find of each type of food in both the home record and eating out diaries. If you find, for example, that the young person has had no or a very few drinks on a particular day you should query this with at your next call.

If the Eating Pattern Check Sheet identifies any daily differences in the intake of a particular food you should query this at the next call and write a note in the diary to explain why the difference occurred, i.e. young person was ill.

- Please complete the Eating Pattern Check Sheet as you pick up and code a few day's completed pages. There is little point in finding out several days after the whole diary has been completed that items are being omitted; you need to identify the problem while something can still be done about it.

Snacks: if no snacks or sweets are recorded this should be queried, and a note made of the answer.

Vegetables: if a meat dish is recorded without any vegetables this should be queried, and noted.

Separate Weighing

Although you will of course be stressing to the informant the importance of separately weighing every item, our experience shows that some tend to forget. In particular they seem to forget to weigh bread and butter separately and the components of a glass of squash separately. If possible, when this happens try to persuade the informant to make a duplicate glass of squash or whatever and weigh the items (you may already have a duplicate example from the practice weighing on the placing day). If that is not feasible, try to gather sufficient information about the components to enable us to make a duplicate. Even with the most forgetful or careless person you should try to achieve at least one fully detailed weighed record of squash/ cup of tea, and bread and spread(s).

Nevertheless, when pointing out to the young person that s/he has forgotten to separately weigh the items in a particular cup or bowl, you should make it clear that you are pleased that they did at least record the items. After all, we do not want to encourage people who have forgotten to separately weigh the components of a dish to therefore "forget" to record it at all, lest we grumble about their failure to weigh properly. We would rather have an inadequately weighed dish than a non-recorded one.

It is important to check soft drink concentrates made up with water and breakfast cereals with milk for cumulative weighing error, with the informant. It is almost impossible for us to tell whether a series of increasing weights are cumulative or not, especially for drinks of squash where dilution varies. Please check such entries and make a note to reassure us.

Liquids used in cooking/recipes: you should check that informants are recording how much liquid they use in cooking, i.e. how much water they add to a casserole or how much milk they add to a sauce. This should appear in the recipe.

Vitamin and fluoride supplements: check that informants who said at the interview that the young person was given vitamin and/or fluoride supplements, are being recorded in the diary. If they are not ask why and record answer. Also check that all medicines (prescribed and proprietary) that are taken by mouth are recorded.

Other Checking Calls

It is VITAL that you keep up with your coding of the diaries and do not leave this work until the end of the recording period. If you do leave it, you will find the task onerous, and if you find you need additional information before you can code an item, the informant may not remember the detail. You should therefore be calling back at least once more (after the 24 hour recall) during the recording period.

On these intermediate calls you should carry out the same checks as at the 24 hour recall, collect completed days' entries and query any points that have arisen from your coding work on previous days' entries.

Before sending in the diaries

Check that the food items and brand information have been coded as far as you are able. Any food descriptions or brand name that you cannot code should be checked with HQ and, whether or not you get a ruling or a request for further information, you should flag the query with a flag for the attention of the nutritionists. Any code about which you have doubts should also be flagged and detailed notes given.

Before sending in the diaries you should also check:

- you have recorded all recipes for home-made dishes, including those for home-made dishes included in the food code list, which are prefixed by the letter "R";
 - every group of foods eaten together has the necessary plate line information in column A and a food source code;
 - all entries from the eating out diary have been transferred to the blue transfer sheets (EXCEPT where food has been prepared and weighed at home to eat out); that the food and brand information has been coded, and that where you bought a duplicate item the weights are shown in the weight column. There should be a tick in the 'estimated weight column' if a duplicate was bought and its weight recorded in the diary. The bag for collecting sweet wrappers etc should be attached to the diary, whether used or not.
 - the notebook (P3) should be returned with the diaries, whether used or not;
 - any leftovers have been recorded against foods where leftovers would be expected; or that there is a note attached to explain an unexpected situation;
 - that you have given empty plates which were not weighed a weight of 1 gram;
 - that if more than one entry has been written on the same line you have transferred the entries to two separate lines;
 - that each page is correctly dated and serial numbered; if there are entries for more than one day on the same page you should transfer one day's entries to a separate page; the pages should be tagged into correct day order; entries for day 0 should be crossed through but left in the diary.
- NOTE: the entries on the white and blue pages do not have to be in chronological, time order; however the pages must be in date order and entries for more than one day should not appear on the same page.
- the *Eating Pattern Check Sheet* is completed and tagged to the back of the Home Record ;
 - that you return the eating out diary with the Home Record in all cases, even when it has not been used;
 - please use the red pen provided for all your notes on the diaries unless the informant has used this colour. In this circumstance you should use a different colour and indicate this on the front cover of the home record, so that your entries and amendments can be distinguished; and
 - if you rewrite any pages, return the original entry, crossed through.
 - send the completed Home Record and Eating Out Diary with their cover pages back to the Titchfield office in the wallet provided, with a serial number label attached to the outside.
 - the documents should be sent to the Titchfield Office, Office for National Statistics

There is no need to address documents to any of the nutritionists in person.

Anything queried with the informant should be noted on the diary so that the coders and nutritionists at HQ know that you have correctly coded the food.

NOTE: for artificial sweeteners in tablet or liquid form, vitamin or fluoride supplements, medicines etc, the quantity taken or used must be fully described, e.g. the number of tablets, the number of 5 ml teaspoons, the number of drops etc and the entry flagged. This information should be recorded as part of the food description, NOT in the weight column. Where no weight has been registered for other items e.g. Marmite or vinegar, the quantity should be fully described but the weight column left blank and the entry flagged.

3.3 Coding instructions for the Eating Out Diary

NOTE: the Eating Out Diary is now a tagged document, rather than a booklet. This means than you can now collect completed pages at mid-weeks calls for checking and coding. Please ensure:

- that the young person realises that there is space for recording on the back of each page;
- that each page is serial numbered (either a label or written in by you);
- that the pages are tagged back into the diary in the correct day order before returning the diary to Titchfield;

3.3.1 *Young people who can keep their own Diary*

The young person should weigh everything s/he can. If s/he are eating or drinking somewhere where the food and drink cannot be weighed, for example at school, at work, in a cafe or at a friend's home then the young person should write down as much information as possible, including the brand name, if possible, in the Eating Out Diary. S/he should also write down the place where the food is being eaten for example, at school, at a friends, in a cafe. The Eating Out Diary should only be used when food cannot be weighed.

3.3.2 *Young children who cannot keep their own Diary.*

If the mother (figure) will not be with the child s/he should give the Eating Out Diary to whoever will be looking after the child, for example the teacher if the child is at school, so that they can record what the child has to eat and drink while he/she is with them. If it is not possible for the person who is looking after the child to do this, then the mother should ask them what the child has had to eat and drink while the child has been with them, and record this herself in the small diary.

It is important that details of where the food was eaten are recorded in all eating out diaries. It will be needed by you for coding (see later). It is also needed in order to buy duplicates.

If the young person is at school, then regardless of who keeps the eating out record, you will probably need to get in touch with the school catering staff to find out some more information, for example on portion sizes, fats used for cooking and spreading etc. (*see instructions on the Catering Questionnaire*).

3.3.3 *Transfer of information from the eating out diary to the home record*

The Eating Out Diary will contain entries for all items bought and eaten away from the home which were not weighed. If the young person is able to weigh food eaten outside the home, then it should be recorded on a white Home Record page. If food or drink has been prepared at home but eaten away from it, e.g. a sandwich lunch, this should be recorded in the Eating Out Diary as well as being recorded in the Home Record, as it was made at home.

All Eating Out Diary entries must be transferred onto the blue Home Record transfer sheets. These should be inserted in the Home Record at the appropriate place. If the food was prepared and weighed at home, but eaten away from home, then the time the item was eaten should be copied from the Eating Out Diary onto the white Home Record page where details of the food have already been recorded. Also copy over any details about leftovers etc. This is the only situation in which foods recorded in the Eating Out Diary will appear on white sheets.

All entries require a ***empty plate line***. However, when transferring information from the Eating Out Diary to the Home Record the weight of the plate will generally not be known so record it as 1g.

The foods entered in the Eating Out Diary will generally not have their weights given. This information is required where at all possible, and can be obtained in a number of ways:

i) Buying duplicates: when food is bought out as a 'take-away' you should, in certain circumstances, buy a duplicate of what was eaten and weigh it yourself (and then you can eat it if you want to!). The eating out diary should show you where the food was purchased and the price paid. You should expect to have to buy duplicates of:

- cakes and buns;
- ice creams: weigh the ice cream and wafer components separately;
- sandwiches: weigh the bread and filling separately;
- fish and chips; and
- take away hamburgers, kebabs, pizzas etc, from LOCAL and NON-NATIONAL cafes and shops.

NOTE: When buying duplicates of sandwiches you need to ask about the spread used. When buying duplicates of fish and chips or other fried foods you need to check what type of fat or oil they were fried in and record this.

Take-away food purchased from NATIONAL fast food chains, e.g. Wimpy, McDonalds, Kentucky, Pizza Hut, Burger King, Huckleberry's, Little Chef, Happy Eater, etc will be dealt with by the nutritionists, as portion sizes are roughly similar from all outlets in a chain. Duplicates are NOT required for purchased pre-packaged foods that are widely available, e.g.. confectionery, soft drinks. If you have any doubts as to whether you should purchase a duplicate ring the nutritionists for guidance.

Please note that you are NOT authorised to purchase duplicate meals eaten out in a cafe or restaurant - sorry! In these and similar cases e.g.. meals at a friend's house, the young person should have given as much detail about portion size as possible.

ii) Weight information on packaging: bought snacks, sweets and drinks will often have packaging which gives information on weight. You have been provided with white carrier bags which you should give to the young person and ask them to collect the wrappers and cartons of food items they

consume while out of the home. You can use these to fill in the missing weight information in the eating out diary. Return (clean) wrappers for products where you have queries in the serial number-labelled plastic bag to ONS with the completed diary.

iii) School meals or a meal at work: where the young person has food prepared by the school or their employer at lunchtime we would like you to try to get some further information about the sizes of portions served and any other information which will allow you more accurately to code the foods, for example, type of spread used in sandwiches, type of fat used for cooking/baking; type of milk used; concentration of squash etc. Separate instructions are given on collecting this information (see the *Catering questionnaire*).

Where it is impossible to collect weight information by any of the above means, e.g. when the food scales have not been taken out to a friend's house where the young person has eaten, then they should be encouraged to estimate the size of the portion or food item. To help them, the notes page of the eating out diary has a centimetre measure printed on it which should be used to estimate portion size.

3.3.4 Summary: the Eating Out Diary

- i) The Eating Out Diary and should be taken with the young person whenever they are away from home without the food scales. If they will not do this then notes should be made in the small notebook provided - P3 - and the Eating Out Diary completed at the end of each day. Please return the notebook, whether or not it was used, with the Diary.
- ii) Anything eaten or drunk away from home which cannot be weighed, should be entered in the Eating Out Diary.
- iii) The time of day (specifying am or pm) that the item was consumed must be recorded in the Eating Out Diary.
- iv) The place where the item was consumed must be recorded in the Eating and Drinking Away from Home Diary.
- v) For items bought and consumed away from home, the price and place of purchase must be recorded.
- vi) The description of the item should be as detailed as possible with an indication of portion size. The notes pages in the Eating Out Diary have a centimetre measure printed on them which should be used to help estimate portion size.
- vii) Brand names should be recorded (when known); the young person should keep wrappers of sweets and snacks. These will be useful to you when checking/coding foods and brands, and you will need to see them for information on weight.
- viii) All entries in the Eating Out Diary (except food prepared and weighed at home and eaten out) must be copied onto the blue transfer sheets and tagged into the Home Record in the appropriate place. Entries which appear as composite items in the Eating Out Diary must be split into their components when transferring to the blue sheets, even though the individual weights may not be known, e.g. a cup of coffee should have separate line entries for coffee granules/ powder, water, milk and sugar; a toasted cheese sandwich should have separate line entries for toasted bread, butter/margarine and cheese. The total weight of the composite item, if known, should be recorded in the description column - Column C, bracketing the components together, NOT in the weight column.

- ix) Where possible the weights of foods eaten away from home should be determined by buying duplicates, if so authorised.
- x) When transferring information from the Eating Out Diary to the Home Record make sure every food entry has a corresponding completed **empty plate line** entry. Where the weight of the plate is not known use 1g.
- xi) When transferring weight information from the Eating Out Diary to the Home Record, if the weight information is taken from a wrapper, please tick the 'estimated weight column' in the OFFICE USE ONLY box. If the weight information is in household measures or in centimetres, record it as part of the food description. The nutritionists will convert this information to grams.

3.4 Coding instructions for the physical activity diary

Some information on physical activity will be collected in the initial dietary interview which you carry out with the young person, and/or their parent. For young people aged 7 years and over there is also a physical activity diary. **These instructions relate to the physical activity diary.**

3.4.1 Purpose

This is a new element in the NDNS; it was tested at the feasibility survey and then again after some revisions were made to the way the information is collected.

The interest in activity is primarily in the amount and degree of physical activity that young people take and its relationship to energy intake and body composition.

In the Toddlers' Survey we found that mean energy intakes were below the Estimated Average Requirements (EARs), and it was presumed that since these children had adequate growth, the EARs possibly overestimated energy requirements.

The current figures for estimated energy requirements have been used for a number of years and it was hypothesised that requirements may have changed over the period due to a number of factors, including a reduction in the amount and quality of physical activity in which children participate. The popular view is that children are watching television more, play more computer games, and listen to music rather than go outside and play physically active games. It also seems that children are more likely to travel to school by car, rather than walk or cycle, and with smaller family sizes, there is less active play with brothers and sisters. There are other reasons why energy requirements may be lower - including a reduction in the body's requirement to use energy to keep warm - our houses are more likely to be centrally heated, and a reduction in the body's requirement to use energy to fight infections - we are more disease resistant.

The health implications of physical activity relate to body composition and obesity; if the body does not use the energy it takes in as food, then it stores it; in time this will lead to an increase in body weight and BMI (Body Mass Index) and an increased risk of obesity. The risk of cardiovascular disease increases with obesity and many other illnesses and conditions are related to obesity.

This survey provides the opportunity to relate activity levels to energy intake and body size.

3.4.2 Procedure

It is important that you appreciate that within the context of this survey it would be impossible to collect sufficient information accurately to measure precisely the amount of energy expenditure by a young person each day. This would require either physiological measurement, or the young person keeping a 'time use diary', recording exactly what they were doing every hour, or more frequently, every day. Only from this very detailed information would it be possible to calculate precisely how much energy was being spent on each activity and hence energy expenditure over a period.

We are not attempting to collect such detailed information. We are only collecting the following information:

- time spent on activities which require the very lowest level of energy expenditure: mainly accounted for by time spent in bed;
- time spent on activities which require only a very low level of energy expenditure: collected by asking about time spent watching TV, playing computer games, and listening to music;
- time spent on activities which require a moderate level of energy expenditure: collected by asking about a range of prompted moderate activities;
- time spent on activities which require a high level of energy expenditure: collected by asking about a range of prompted vigorous activities;
- time spent on activities which require the highest level of energy expenditure: collected by asking about a range of prompted very vigorous activities;

By totalling the time on all the above and taking it away from 24 hours we can obtain the time spent on light activities - those which require energy expenditure levels between very low and moderate.

From the information we will be able, sufficiently reliably for the purposes of this survey, to categorise the young people into a small number of groups - very inactive, inactive, moderately active and active.

Please note that although we are collecting only a limited amount of information and categorising into broad groups, it is still very important that the information recorded is accurate and reliable.

1 Eligibility

A 'Diary of Activities .. and Eating and Drinking Away from the Home' should be completed by all young people aged 7 years and over. For young people aged 4 to 6 years, the daily information about e.g. when they went to bed, from the 'Diary of Eating and Drinking Away from Home' is still necessary. This should be checked with the same care and kept to the same level of accuracy.

2 Timing

The physical activity diary should be kept for the same 7 days as the dietary record.

3 Documents

- A4 Blue Young Person's Diary of Activities ...and Eating and Drinking Away from Home. For Wave 3 this is a tagged document (not a booklet). Completed pages can now be taken away for coding before the end of the 7-day recording period;
- envelope for the young person to keep the diary;
- plastic zip wallet for the young person to carry the diary around (and keep other documents together);
- survey pen;
- small pencil;
- notebook (P3);

At the feasibility stage and the subsequent re-testing, the physical activity and eating out diaries were separate documents. It was decided that it would be easier and more convenient for young people if both sets of information could be recorded in the same diary.

NOTE: for young people aged 4 to 6 years the Eating and Drinking Away from Home Diary does NOT include any pages for recording physical activities; however the information about bedtimes, time spent watching TV is still required and will be keyed for this youngest age group.

4 Outline of the procedure

NOTE: young people aged 7 years and over who are on school holidays or away from school through illness should still record their physical activities in the blue diary for 7 days.

- The diary should be completed for each of the 7 days of the dietary record.
- Ideally we would like young people to take this diary with them when they are out of their home, so that they can record information at the time. You should therefore encourage them to take the diary with them, in the plastic wallet provided, together with the pen.
- We recognise that some young people will not be prepared to do this or may forget. You should therefore ask them always to carry the small notebook (P3) and a pen or pencil with them when they are away from home, so that they can make notes about their activities (and what they are eating and drinking) and then complete the diary at the end of each day.
- In order to get accurate and reliable information the diary must be completed on a daily basis at the end of each day. Please give the young person an envelope for them to keep their diary in, for their privacy.
- At each visit to the home, you must check that the diary is being kept, and help with any problems. Take away completed pages for transferring dietary information onto blue transcription pages and coding.
- Attach a serial number label to the front of the diary and to the small pocket notebook (P3)

- You should show the young person how to complete the diary; there is an example at the front of each diary. You might try asking them what they did the previous day, and seeing how that would be recorded.

5 Recording in the diary

The blue diary contains 5 pages for each of the 7 recording days.

The first of the 5 pages collects information about:

- which day it is;
- time spent in bed;
- whether at school or college or at work;
- if at work, time spent at work;
- (eating arrangements at lunchtime - needed for the dietary aspects of the survey);
- time spent watching TV, playing computer games and listening to music.

This page should be completed for each of the 7 recording days, at the end of each day.

NOTE: on the 7th and final recording day we need to know what time the young person went to bed. There is a place for recording this information on the front cover of the diary, where hopefully it will not be forgotten. Please make sure that this piece of information has been recorded when you collect this diary at the end of the 7-day recording period.

The second of the 5 pages collects information about:

- time spent on a range of listed activities;
- time spent on any other activities “which made ... the young person...breathe hard, huff and puff, and get hot and sweaty” - other vigorous physical activities;
- time spent on any other activities “ which made...the young person...slightly out breath and feel warm, but not exhausted” - other moderate physical activities.

Pages 3 to 5 for each day collect information about eating and drinking out of the home (see Section 3.4).

6 Activity information

When explaining to the young person how to complete the diary the following points need to be covered.

- The diary covers activities done at any time on that day: at school or work, or in free time.
- Activities done during the school day include those done as part of lessons, in clubs, during break times and after school.

- The diary is private and will not be shown to or discussed with anyone at the young person's school, nor, if they prefer, in front of their parents or family.
- It is not a test; there are no right or wrong answers.
- Recording time spent:

should be as accurate as possible, not rounded - to the nearest 10 minutes is acceptable;

should be in hours and minutes; 2.5 hours could mean 2 hours and 5 minutes, or 2 hours and 30 minutes; check and, if necessary amend any times which are unclear each time you check the diary with the young person - and at the end of the 7 days;

should be the total time spent on the activity that day; if it is done more than once then the times need to be added together;

should only include time spent actually doing the activity - not getting ready, changing, on breaks, waiting or chatting. For example, 2 hours spent at the swimming pool, with only 40 minutes swimming, should be recorded as 40 minutes. Please make this very clear to the young person; there is a tendency for the total length of the games lesson etc to be recorded rather than just the time spent on the activity; this obviously will lead to an overestimate of energy expenditure. Please carefully check times spent on disco dancing and the like; was all the time recorded spent actually dancing or does it include time chatting to others etc?

should exclude anything done for less than 5 minutes.

- Other activities:

these are divided into 2 groups those that make the young person breathe hard, huff and puff and get hot and sweaty, (vigorous) and those that make them slightly out of breath, feel warm, but not exhausted (moderate).

In each case the level of exertion should have continued for most of the time the activity was being done (apart from warming up and down); for example, playing cricket and only breathing hard when occasionally running after the ball would not be classified as vigorous physical activity. However we would prefer that the young people wrote down as many activities as they felt met the description; a decision about whether they should be included can be made later. Please probe any other activities that are recorded which you feel may match the category description.

3.4.3 Young people aged 4 to 6 years

Although we are not collecting a physical activity diary for young people aged 4 to 6 years, some information from the Eating and Drinking Away from Home Diary, which relates to physical activity will need to be entered into the lap top program for them.

The information to be keyed is taken from the first page for each day of the Eating and Drinking Away from Home Diary and is as follows:

- time went to bed
- time got up
- time spent watching TV, playing computer games and listening to music

NOTE: you will have to check that information on the time the young person when to bed on the 7th and final recording day has been recorded on the front cover of the diary.

For young people aged 4 to 6 years the laptop will NOT calculate their activity score; this will be computed at a later stage from information collected in the interview for this youngest age group.

3.5 The bowel movements record

1 Documents

- recording cards B1 and Diary (of Activities and) Eating and Drinking away from Home

2 Purpose

In adults, frequency (and type) of bowel movement is implicated in some diseases of the gastrointestinal system - some more serious than 'simple' constipation - and the relationship between diet and bowel movement is established. There is less information on what is the normal pattern of bowel movement for young people and on whether there is a similar association with dietary factors. Hence we have been asked to collect information on the numbers of bowel movements the young people in this sample have over a 7-day period.

3 Eligibility

All young people should be asked to provide this information, even if they decline to complete a dietary record.

4 Timing

A record should be kept of each bowel movement the young person has on each of the 7 dietary recording days, starting at just past midnight on the first recording day.

If a dietary record is not being kept then the bowel movement record should be kept for the 7 days immediately following the first interview.

5 Consent

Only verbal consent is required.

6 Procedure

(i) Assuming that the young person is keeping a dietary record, after placing the record, give each young person (or their parent) the card B1 and show them the chart on the inside cover of the Diary (of Activities and) Eating and Drinking away from Home.

(ii) B1 should be kept at home. Ideally the Eating Away From Home Record should be taken with them whenever they are out of the home; the young person can then record any bowel movements they have while they are away from home. If they are unable or unwilling to do this then the record of bowel movements away from home should be completed at the end of each of the 7 days.

(iii) Attach a serial number label to the card B1, and on both the card and the chart in the diary write in the days on which the record should be kept, before giving it to the young person.

(iv) Go through the procedure for recording:

- explain that any bowel movement after midnight should be counted as the first bowel movement of the day;
- bowel movements during the day and in the evening up to midnight should count towards that day's total;
- the recording finishes at midnight on the final day of the dietary recording period;
- if the young person does not have a bowel movement on a particular day either at home and/or away from home then they should ring '0' on the appropriate card or chart.

(v) At the end of each day the young person should write in the total for the day (at home plus away) in the column on the card B1. If they did not have a bowel movement on any particular day they should enter '0' as the day's total.

(vi) Check any blanks, and also check that any entries on the 'away record' have been added into the total for the day. You should check that both bowel movement records - at home and away - are being kept at each call you make.

(vii) The completed cards B1 and the Eating Away from Home Record should be collected when you collect the Home Record Diary; please return Card B1 tagged to the front of the Measurement Schedule M1.

(viii) You should enter the total number of bowel movements for each of the 7 dietary recording days into the Blaise object.

(ix) Please use the remaining space on the reverse of the card B1 to note any exceptional circumstances:

- explain why a full record has not been kept;
- if you think it may not be an accurate record;
- other comments about this aspect of the survey.

3.6 Post dietary record interview

3.6.1 Whom to interview

These questions should be asked at the end of the 7-day dietary recording period, when you collect the completed home and eating out records, bowel movements record and physical activity diary. The oral health questions are administered as part of the pick-up visit. Separate instructions for the oral health interview are to follow in Part B: the oral health survey.

If the diary was refused you will not ask the follow-up questions because they ask about diary-keeping issues. You will be asked whether the respondent will answer the oral health questions. If the diary was discontinued (i.e. the respondents kept the diary for fewer than 7 days) you will not ask the pick-up questions but should ask if you can administer the oral health questions.

The questions in this section should be addressed to the person who did most of the weighing and recording; the young person should always be present. If the mother did most of the weighing, but the young person did some, perhaps when they had a drink after school before they had dinner, then any problems that the young person had should be noted.

3.6.2 Instructions on specific questions

Snacks eaten during diary-keeping

*During the 7 days that you were weighing and recording young person's food do you think he/she had more, less or about the same amount of e.g. **BISCUITS** as usual?*

1. More
2. Less
3. Same
4. Never eats item

This question is asked for a list of items that are often missed out of weighed intake diaries. These will be used to give an assessment of the accuracy of the diary-keeping.

Portion size

On the whole, do you think that young person had:

RUNNING PROMPT

1. Bigger
2. Smaller
3. Or the same size portions as usual while you were keeping the diary?

During the 7 days do you think young person ate out of the home including at friends, work or school:

RUNNING PROMPT

1. More often
2. Less often
3. Or about the same as usual?

These questions are designed to find out whether the diary accurately represents the normal diet of the young person.

Problems with diary-keeping

Did the eating out diary have to be left with someone else, for example a childminder or teacher, for them to record food and drink eaten by young person?

If 'Yes':

Were there any problems in keeping the eating out diary when young person was with someone else?

1. Yes,
2. No

What were the problems?

_____?

Did you have any problems with the weighing and recording of what he/she had to eat and drink during the 7 day period?

1. Yes
2. No

What were the problems?

_____?

In addition to the dietary assessment schedule which you will fill out for every case - even where there is a discontinued diary - we would like to know if the respondents felt there was any reason why the diary may not be complete.

Illness during diary-keeping

(During the past few days/while you were keeping the diary) Has young person been unwell at all?

1. Yes,
2. No

IF 'Yes':

Has he/she been SICK OR VOMITED?

1. Yes,
2. No

This question also asked for each of:

1. ILL WITH DIARRHOEA
2. ILL WITH COLD OR FLU (INCLUDE SORE THROAT, RUNNY NOSE, TONSILS WITH TEMPERATURE, CHEST INFECTION, COUGH, SNUFFLES)
3. ILL WITH EAR INFECTION'
4. ILL WITH ASTHMA
5. ILL IN ANY OTHER WAY (SPECIFY AT NEXT QUESTION INCLUDE: OFF FOOD; CHICKEN POX; HEADACHE; FEVERISH)

For each of the above coded 'Yes':

On which day(s) was he/she (ill in that way)?

Enter day 1 to 7

On which day(s) did (being ill in that way) affect his/her eating habits?

Enter day 1 to 7

It is very important for measuring the accuracy of a diary to know whether the young person was ill. If we have days where there is very little food and the diary day has been coded 'unwell' we can find out from these questions what the illness was.

Unusual circumstances

Have there been any (other) unusual circumstances which have affected young person's eating habits (during the past few days/while you were keeping the diary)?

1. Yes,
2. No

What has been different about young person's eating habits over these days?

_____?

Courtesy question

Is there anything you would like to say about the diary you kept (for young person)?

1. Yes,
2. No

IF 'Yes':

Enter comments here: _____

Prescribed medicines

This question does not require you to key any information that you have collected about the prescribed medicines. It is located at the end of the pick-up interview because it is at this visit that you should be collecting the information. You are required only to confirm that information was collected or refused, and within that whether the young person was taking any medicines. This will allow us easily to find those schedules from which information needs to be sent to the Dunn for their analysis of the blood.

You will be prompted to code whether full details of any prescription medicines were collected. The information should be recorded in detail only on Measurements Schedule M1; you should ask to see the container and copy down details onto the paper schedule. The question on the laptop allows you to enter one of three codes:

If diary was kept (even if it was later discontinued):

Has young person taken any prescribed medicines since the start of the record-keeping period?

- Yes
- No

This information was refused

If diary refused

Is young person currently taking any prescribed medicines?

- Yes
- No

This information was refused

3.7 Prescribed medicines

3.7.1 Purpose

The dietary record should include details of all proprietary and prescribed medicines being taken orally. This will include supplements, such as vitamin and mineral preparations and fluoride supplements, cough medicines and sweets, pain killers etc. Apart from the vitamin and mineral supplements we have little nutrient information available about medicines.

We are interested in the consumption of 'sugar free' liquid medicines taken by mouth, and rather than give instructions to young people that only certain types of medicines need be recorded we ask them to record everything they take by mouth.

There is also a need to know about all prescribed medicines that are being taken by the young person, not just those being taken by mouth. The information is needed because some prescribed medicines may have an effect on some of the blood or urine analytes being measured or the young person's blood pressure. For example, it would be relevant to know when considering a young person's blood cholesterol levels that they were taking drugs prescribed to lower their blood cholesterol. Similarly when considering blood pressure readings it would be relevant to know whether the young person was taking anti-hypertensive drugs - to lower their blood pressure. While it is less likely that young people will be taking these sorts of drugs than adults, we nevertheless need to collect the information.

2 Documents

Measurements schedule M1: Section H pages 21 and 22

3 Eligibility

All young people fully or partially co-operating with the survey should be asked about prescribed medicines.

4 Timing

If the dietary record is fully or partially kept:

ask at the pick-up call at the end of the 7-day recording period;

ask about any prescribed medicines taken since the start of the record keeping period.

If the dietary record is refused:

ask at the end of the initial interview;

ask about any prescribed medicines currently being taken.

5 Recording the information on the Measurements Schedule

Details should be recorded for every prescribed medicine, including any injections, inhalers, skin or eye preparations and the oral contraceptive pill.

NOTE:

Girls between aged 10 and over will already have recorded whether they are currently taking the oral contraceptive pill, either on the self-completion paper schedule S2, or by keying their answers into your laptop computer. You will need to use your discretion as to whether you can now ask openly for details of the oral contraceptive pill being taken; if there is any possibility of it causing embarrassment, breaching confidentiality within the household, or affecting public relations or co-operation in any way, then do NOT ask for details, simply record that the oral contraceptive pill is being taken.

Record all the information in BLACK PEN, in BLOCK CAPITALS; we need to photocopy these pages from the Measurements Schedule.

Ask to see each medicine bottle, packet or container and carefully copy down the details required - the full name of the preparation, including the brand name, if this is available, and the strength.

Some medicines are dispensed in the manufacturer's packaging, and for these the brand name should be obvious. Medicines dispensed into different containers may or may not have the brand name shown on the dispensing label. In either case the strength will be shown; do not confuse strength with dose and frequency.

Strength will be shown in units such as mg; dose is number of tablets/spoons/puffs etc taken each time; frequency is the number of times per day the dose should be taken. Information on dose and frequency is not required.

6 Entering the information into the lap top program

The lap top program will ask you to confirm that you have asked about prescribed medicines and code whether any prescribed medicines are being taken - 'Yes' or 'No'. No detail about the medicines is transferred from the Measurements Schedule into the lap top program.

Section 3 List of figures

- Figure 3.1 Brand codes for artificial sweeteners
- Figure 3.2 Brand codes for bottled waters
- Figure 3.3 Brand codes for fruit juices and soft drinks
- Figure 3.4 Brand codes for herbal and fruit teas

Figure 3.1 BRAND CODES FOR ARTIFICIAL SWEETENERS

Tablets or Minicubes

501	Canderel (tablets)
502	Flix (tablets or minicubes)
503	New Taste Hermesetas (tablets)
504	Original Hermesetas (tablets)
506	Medicare (tablets or minicubes)
507	Natrena
508	Natriblend
509	Saxin
510	Shapers (tablets or minicubes)
511	Shapers with Nutrasweet (tablets or minicubes)
512	Supatrim (tablets)
513	Sweetex (tablets)
514	Sweet 'n' Low (tablets or minicubes)
515	Ti'Light (tablets or minicubes)

Granulated

516	Canderel Spoonful
517	Flix granulated
518	Hermesetas Granulated Sweetener
532	Supatrim Gold
529	Medicare (granulated)
520	Shapers Sugar Lite (granulated)

- 521 Sionin
- 522 Sucron
- 530 Sweetex (granulated)
- 531 Sweet 'n' low (granulated)
- 524 Sweet 'n' Slim
- 525 Ti'Light (granulated)
- 526 Trimspoon

Liquids

- 527 Original Hermetas Liquid
- 528 Sweetex Liquid Sweetener

Own brands

- 1 Asda
- 2 Bejam
- 3 Best Buy
- 4 Boots NOT 'Shapers'
- 5 Budgen
- 6 Co-op
- 7 Family Choice
- 8 Fine Fare
- 9 Gateway
- 10 Hillards
- 11 Iceland
- 12 Londis

13	Mace
14	Morrisons
15	My Mums
16	Peacock
17	Presto
18	Safeway
19	Sainsbury
26	Somerfield
21	Spar
25	Superdrug
22	Tesco
23	VG
24	Waitrose
600	Other brand
601	Brand not known

Figure 3.2 BRAND CODES FOR BOTTLED WATERS

Code on place of origin.

British Isles Products

301	Abbey Well
338	Aqua Pura
302	Ashbourne
303	Bally Gowan
339	Brecon Carreg
304	Buxton
341	Caithness Spring
340	Caledonian
342	Campsie Spring
334	Chiltern Hills
305	Cotswold Spring
329	Cwm Dale
343	Crystal Spring
308	Glens of Antrim
344	Devon Hills
345	Glenburn
346	Glencarin
309	Highland Spring
347	Hildon
310	Malvern Water
311	Manor Hopkin

- 348 Mountain Spring
- 313 Northumbrian
- 354 Pennine Still
- 314 Penwith
- 312 Strathallan
- 349 Strathglen Spring
- 315 Strathmore
- 350 Stretton Hills
- 316 Tipperary
- 351 Ty Nant
- 318 Any other British Isles product

Foriegn Products

- 319 Apollanaris
- 320 Badoit flavoured/unflavoured
- 330 Evian
- 321 Ferrarelle
- 322 Miral
- 331 Perrier, all varieties
- 323 Peters Val
- 324 Radin
- 325 San Pellegrino
- 326 Vals
- 327 Vichy St Yorre
- 353 Vittel

352	Volvic
328	<u>Any other foreign product</u>
601	Brand not known

Figure 3.3 BRAND CODES FOR FRUIT JUICES AND SOFT DRINKS

401	Appletise
402	Alpine
403	Baldwins
404	Barrs (NOT Irn Bru or Tizer)
478	Barracloughs Jucee
479	Barracloughs Rosetta
480	Barracloughs Vogue
405	Benshaws
406	Bon Accord
407	Britvic (code for fruit juices only. NOT 7-Up, Citrus Spring or Quosh)
474	Britvic 55: <u>fruit juice drink</u> only; NOT fruit juice, 7-Up, Citrus Spring or Quosh
408	Calypso
409	Canada Dry
410	Capri Sun
411	Cariba
412	Carters
482	Citrus Spring
413	Coca Cola
414	Corona
434	Cow and Gate
415	Cowley & Richardson
416	Curries
417	C-Vit

418	Dairy Gate
419	De L'Ora
420	Del Monte
450	Delrosa
421	Dexters
422	Dr Pepper
423	Energen/One-Cal
424	Fanta
425	Five Alive
483	Fruitopia
426	Full Swing
427	Gee Bee
428	Gini
484	Hero
429	Hunts
430	Idris
431	Irn Bru
432	Just Juice
478	Jucee
433	Kia Ora
435	Kiri
436	Laws
437	Libby's and Libby's C (NOT Libby's Um Bongo)
470	Libby's Um Bongo
438	Lilt

439	Lowcocks
440	Lucozade
441	Mandora
442	Masons/Super-Jaff
485	Oasis
481	One-cal
443	Orangina
444	Panda
445	Pepsi Cola
475	Pepsi Max
476	Princes
446	Quatro
447	Quosh
448	Ribena
486	Rio
449	Robinsons
479	Rosetta
451	Roses
487	Rowntree
488	Rubicon
453	Schweppes
457	[Schweppes] Slimline
454	Seven-Up
455	[Boots] Shapers
452	Shloer

456	Silver Spring
490	Snapple
458	Sodastream
477	Southern Delight
460	Sprite
461	St Clements
462	Suncharm
463	Sunfresh
464	Sunkist
465	Sunquick
466	Tab Clear
467	Tango
491	Tip Top
468	Tizer
469	Top Deck
470	(Libby's) Um Bongo
471	Vimto
489	Virgin
480	Vogue
472	Wells
473	R Whites
454	7-Up

Own brands

1	Asda
2	Bejam
3	Best Buy
4	Boots
5	Budgen
6	Co-op
7	Family Choice
8	Fine Fare
9	Gateway
10	Hillards
11	Iceland
27	Kwik Save
12	Londis
13	Mace
14	Morrisons
15	My Mums
16	Peacock
17	Presto
18	Safeway
19	Sainsbury
26	Somerfield
21	Spar
20	St Michael (Marks & Spencer)
25	Superdrug

22	Tesco
23	VG
24	Waitrose
600	Other brand
601	Brand not known

Figure 3.4 BRAND CODES FOR HERBAL AND FRUIT TEAS

101	Bioforce Devil's Claw Tea
102	Bioforce Golden Grass Tea
103	Celestial Seasonings Inc Almond Sunset
104	Celestial Seasonings Inc Cinnamon Apple Spice
105	Celestial Seasonings Inc Cinnamon Rose
106	Celestial Seasonings Inc Emperor's Choice
107	Celestial Seasonings Inc Red Zinger
108	Cow & Gate Camomile with Apple Herbal Drink
109	Cow & Gate Fennel with Orchard Fruits Herbal Drink
110	Cow & Gate Fennel with Pear & Apple Herbal Drink
111	Cow & Gate Peppermint with Apple & Peach Herbal Drink
112	Culpeper Celery Tea
113	Culpeper Cowslip Flowers Tea
114	Culpeper German Chamomile Tea
115	Culpeper Lime Blossom Tea
116	Culpeper Mate Tea
117	Culpeper Peppermint Tea
118	Culpeper Raspberry Tea
119	Culpeper Rose Hip Tea
120	Dietade Day fresh Tea
121	Dietade Dreamtime Tea
122	Dietade Freshmint Tea
123	Dietade Wideawake Tea
296	Douwe Egbert Herbal Tea Kaneel

274	Dr Stuarts Camomile Tea
700	Eden Herbal Tea with Ginseng
124	Golden Temple Yogi Tea
125	Health and Diet Food Company Ltd Pompadour - Chestea
126	Health and Diet Food Company Ltd Pompadour - Digestatea
127	Health and Diet Food Company Ltd Pompadour - Nervatea
128	Health and Diet Food Company Ltd Pompadour - Sennatea
129	Healtheries Nutritional Products Ltd Almond Spice Tea
130	Healtheries Nutritional Products Ltd C Sharp Tea
131	Healtheries Nutritional Products Ltd Camomile Tea
132	Healtheries Nutritional Products Ltd Herbs of Tranquility
133	Healtheries Nutritional Products Ltd Lemon Tea
134	Healtheries Nutritional Products Ltd Morning Fresh
135	Healtheries Nutritional Products Ltd Nightcap Tea
136	Healtheries Nutritional Products Ltd Peppermint Tea
137	Healtheries Nutritional Products Ltd Rosehip Tea
138	Healtheries Nutritional Products Ltd Verbena Tea
154	Heath & Heather Apple and Cinnamon
295	Heath & Heather Banana and Cinnamon
155	Heath & Heather Camomile Tea
156	Heath & Heather Lemon Grove
157	Heath & Heather Orange Grove
158	Heath & Heather Peppermint Tea
159	Heath & Heather Rosehip Tea
160	Heath & Heather Wild Cherry Herbal Tea

161	Heath & Heather Wild Strawberry Herbal Tea
162	Heath & Heather Wild Raspberry Herbal Tea
163	Heath & Heather Night Time
164	Heath & Heather Morning Time
253	Herba Hagenbuttentee Rosehip Herb Tea
297	Instantina Apple and cinnamon tea
244	Jacksons of Piccadilly any flavour
139	Life Tree Herbal Teas
265	The London Herb and Spice Co. Apple Tea
273	The London Herb and Spice Co. Blackcurrant Tea
299	The London Herb and Spice Co. Bright and Early
140	The London Herb and Spice Co. Camomile Flowers Tea
257	The London Herb and Spice Co. Cherry Pickers Punch Tea
141	The London Herb and Spice Co. Comfrey Tea
142	The London Herb and Spice Co. Elderflower Tea
143	The London Herb and Spice Co. Fennel Tea
144	The London Herb and Spice Co. Flower Garden Tea
282	The London Herb and Spice Co. Fruit and Herb tea
287	The London Herb and Spice Co. Golden Slumbers Tea
145	The London Herb and Spice Co. Hibiscus Tea
146	The London Herb and Spice Co. Lemon Verbena Blend Tea
147	The London Herb and Spice Co. Mate Tea
148	The London Herb and Spice Co. Melissa Tea
251	The London Herb and Spice Co. Mixed Fruit Tea
149	The London Herb and Spice Co. Nettle Blend Tea

252	The London Herb and Spice Co. Orange Dazzler Herb Tea
150	The London Herb and Spice Co. Peppermint Tea
293	The London Herb and Spice Co. Passionfruit tea
151	The London Herb and Spice Co. Raspberry Leaf Tea
152	The London Herb and Spice Co. Rosehip Tea
153	The London Herb and Spice Co. Champneys Camomile Tea
165	The London Herb and Spice Co. Secret Garden Apple Magic Tea
258	The London Herb and Spice Co. Strawberry Fair Tea
292	The London Herb and Spice Co. Strawberry and Vanilla Tea
260	Lyons Peppermint Tea
166	Michael Matthew Jasmine Tea - jasmine flowers
167	Michael Matthew Flavoured Teas - Almond Tea
168	Michael Matthew Flavoured Teas - Apricot Tea
169	Michael Matthew Flavoured Teas - Blackcurrant Tea
170	Michael Matthew Flavoured Teas - Cinnamon Tea
171	Michael Matthew Flavoured Teas - Green Peppermint Tea
172	Michael Matthew Flavoured Teas - Lemon Tea
173	Michael Matthew Flavoured Teas - Mango Tea
174	Michael Matthew Flavoured Teas - Orange Tea
175	Michael Matthew Flavoured Teas - Passion Fruit Tea
176	Michael Matthew Flavoured Teas - Peach Tea
177	Michael Matthew Flavoured Teas - Strawberry Tea
178	Michael Matthew Flavoured Teas - Vanilla Tea
179	Michael Matthew Flavoured Teas - Wild Cherry Tea
180	Milford Apple Cup Tea

181	Milford Berry Cup Tea
182	Milford Fennel Tea
183	Milford Good Evening Tea
259	Milford Mint Tea
262	Milupa Blackcurrant Herbal Drink
254	Milupa Fennel Drink
255	Milupa Camomile
245	Milupa Herbal Blend
246	Milupa Hibiscus and Rosehip
271	Milupa Hibiscus Apple and Raspberry herbal infant drink
702	Milford Peach and Mango tea
184	Nature's Sunshine Products Herbal Beverage
185	Nature's Sunshine Products Pau D'Arco/Taheebo Tea
186	Nature's Sunshine Products Red Clover Blend
187	Net Foods Ltd After Dinner Mint Tea
188	Net Foods Ltd Hedgerow Rose Flavour Tea
189	Net Foods Ltd Wild and Mild Ginger Drink
190	Potter's Alpine Tea
191	Potter's Constipation Tea
192	Potter's Sciargo Tea
294	Power Health Products Nettle Herb Tea
247	Robinsons Orange and Elderflower
248	Robinsons Orange and Camomile
249	Robinsons Apple and Mint
250	Robinsons Apple and Fennel

- 193 **Salus-Haus UK Ltd** Birch Leaf Tea
- 194 **Salus-Haus UK Ltd** Thyme Tea
- 195 **Salus-Haus UK Ltd** Apple & Rosehip Tea
- 196 **Salus-Haus UK Ltd** Blackberry Leaf Tea
- 197 **Salus-Haus UK Ltd** Breakfast Beverage Tea
- 198 **Salus-Haus UK Ltd** Camomile Tea
- 199 **Salus-Haus UK Ltd** Dandelion Tea
- 200 **Salus-Haus UK Ltd** Devil's Claw tea
- 201 **Salus-Haus UK Ltd** Fennel Tea
- 202 **Salus-Haus UK Ltd** Hawthorn Tea
- 203 **Salus-Haus UK Ltd** Horsetail Tea
- 204 **Salus-Haus UK Ltd** Lemon Balm Tea
- 205 **Salus-Haus UK Ltd** Linden Blossom Tea
- 206 **Salus-Haus UK Ltd** Malva Tea
- 207 **Salus-Haus UK Ltd** Mate Tea
- 208 **Salus-Haus UK Ltd** Mistletoe Tea
- 209 **Salus-Haus UK Ltd** Nettlewort Tea
- 210 **Salus-Haus UK Ltd** Orange Blossom Tea
- 211 **Salus-Haus UK Ltd** Peppermint Tea
- 212 **Salus-Haus UK Ltd** Rose Hip Tea
- 213 **Salus-Haus UK Ltd** Ruby Red Tea
- 214 **Salus-Haus UK Ltd** Sage Tea
- 215 **Salus-Haus UK Ltd** St John's Wort Tea
- 216 **Salus-Haus UK Ltd** Thyme Tea
- 217 **Salus-Haus UK Ltd** Yarrow Tea

218	Salus-Haus UK Ltd Vervain Tea
219	Salus-Haus UK Ltd Paradise Herbal Tea
220	Salus-Haus UK Ltd Twilight Herbal Tea
221	Salus-Haus UK Ltd Sunrise Herbal Tea
222	Salus-Haus UK Ltd Country Apple Herbal Tea
270	Secret Garden Camomile Tea
283	Teekanne Pompadour herbal tea
223	Traditional Herbals Throat Coat
224	Traditional Herbals Smoker's Tea
225	Traditional Herbals Pregnancy Tea
226	Traditional Herbals Lady's Choice
227	Traditional Herbals Mother's Help
228	Traditional Herbals Smooth Move
229	Traditional Herbals Female Harmony
230	Traditional Herbals Easy Now
231	Traditional Herbals Weightless Tea
232	Traditional Herbals Nighty Night
233	Traditional Herbals Breathe Easy
234	Traditional Herbals Cold Season Care
235	Traditional Medicinals Creamy Carob After Dinner Mint Tea
236	Traditional Medicinals Creamy Carob Orange Royale Tea
237	Traditional Medicinals Creamy Carob Original Spice Tea
266	Twinings Camomile Tea
275	Twinings Camomile and Spearmint Herbal Tea
238	Twinings Country Way

- 239 **Twinings** Early Morn
- 277 **Twinings** Fennel and Lemon Balm herbal tea
- 278 **Twinings** Mixed fruit herbal tea
- 240 **Twinings** Orchard
- 289 **Twinings** Peppermint
- 241 **Twinings** Spring Garden
- 242 **Twinings** Sunset
- 286 **Twinings** Strawberry and Mango tea
- 276 **Twinings** Strawberry and Vanilla herbal tea
- 701 **Yogi** mocha mint spice herbal tea

- 243 Herbal or fruit teas sold loose not branded

Own Brands:

- 1 Asda
- 2 Bejam
- 3 Best Buy
- 4 Boots
- 5 Budgen
- 6 Co-op
- 7 Family Choice
- 8 Fine Fare
- 9 Gateway
- 10 Hillards
- 11 Iceland

12	Londis
13	Mace
14	Morrisons
15	My Mums
16	Peacock
17	Presto
18	Safeway
19	Sainsbury
26	Somerfield
21	Spar
20	St Michael (Marks & Spencer)
25	Superdrug
22	Tesco
23	VG
24	Waitrose
600	Other brand
601	Brand not known

Section 4

Database structure and variable specifications

Section 4 Database structure, derived variables, weighting and contents of SPSS files

4.1 The SIR database structure

There are 32 SIR database files, each containing the data for a different *record type*. Data are separated into record types for convenience, for example to separate interview data from diary data, or to create files giving data at different hierarchical levels (see Figure 4.8 for a list of record types). Each SIR data file contains the data for one record type plus the core demographic data, including some variables derived from the dietary interview data.

Dietary data were collected at various levels for this survey, for example at the day level and at the plate level. Each level of data is a separate record type, for example the day level data is in record type 2 while the plate level data is in record type 3, and contains a number of key variables which link the data on one file with another. The key variable used on this survey was CASEID which is a unique case identifier. Figure 4.8 lists the SIR record types, giving a description of the data held on each and Figure 4.9 shows which variables and record types are included in each of the SPSS portable/save files (see Section 4.7 below). Figure 4.15 gives the number of valid cases each database contains and the weighting variables developed for each record types.

Specifications for the dietary and interview data variables and for the dietary variables derived in SIR are given in the tables and figures for this chapter, while specifications for the variables derived in SPSS are given in Appendix J. The SIR data files include data collected either by interview or in the dietary or physical activity diaries; each SIR file includes the 'common' socio-demographic variables (see Figure 4.9). The SPSS files include the same variables as the SIR files and in addition all relevant derived variables for the record type (see Appendix J for further information)

NA refers to 'no answers'. These were assigned a -8 code. DNA refers to 'does not apply'. Where a question did not apply to a certain group of people, a -9 code was assigned. Where a case did not have data for a complete record type, a -6 code was assigned.

4.2 Quality checks

A number of quality checks were carried out on the data, throughout the data collection process, at the coding stage, the data entry stage and thereafter.

The interview was carried out using Computer Assisted Personal Interviewing (CAPI) for which the routing of the questions is pre-programmed and therefore automatic. It was therefore not possible for routing errors to occur except in cases where the programming was incorrect. This minimised the need for continuity checks on the questionnaire routing. It was, however, still possible for interviewers to enter the wrong codes at various points and this did introduce errors into the data. One area where this occurred was in the section collecting data about the household; where most ONS surveys collect 'relationship to the Head of Household (HOH)' for each individual in the household, for this survey it was decided to collect the 'relationship to the young person'. Errors were introduced into the data set where 'relationship to HOH' had been coded rather than 'relationship to the young person'. These errors were relatively easy to identify e.g. the relationship to a 4-year-old cannot be 'husband or wife'. In most cases, recoding at HQ was sufficient to correct

this problem. However, where the problem had affected the data collected later in the interview the interviewer was asked to return to the household to collect the missing information.

The interviewers were trained in the data collection methods required, and in the coding of the dietary record and the taking of anthropometric measurements. Training exercises in diary coding were completed by the interviewers both prior to the briefing and during the briefing. Once the interviewer had coded their first diary, they were required to send it back to the nutritionists at ONS immediately for a 100% coding check. Any problems with the coding were fed back to the interviewer.

Nutritionists did 100% coding checks on all dietary records for a number of different food groups. These were:

milk
soft drinks
fat spreads
yogurts
liver and liver products
artificial sweeteners
vitamin and mineral supplements

Nutritionists also checked any queries that had been flagged by the interviewers regarding the correct coding of a food item, or the weight of a food item.

The data were then keyed into a database using an intelligent keying programme to reduce keying errors. A number of computer edit checks were run. These fell into two categories:

- continuity checks between interview and diary data; and
- consistency checks which check the 'logic' of answers; for example that the mother of the young person is female; that data are within expected ranges.

At the office, a number of other quality checks were carried out at the coding stage to check the consistency of answers. For example, if the young person had been ill over the recording period, and the illness had affected their eating habits, the coders were advised to check that in the dietary record the WELL variable had been coded correctly (see Figure 4.1 for a list of the checks that were carried out between the interview data and diary data).

A number of nutrition edits, in particular on food and nutrient intake ranges were run to check the calculation of the amount of food consumed by the young person and the young person's nutrient intake. Errors identified were corrected.

During the editing process some diary derived variables were created which were required in the calculation of weights of food consumed and nutrient intakes at food and day level. For example, the weight of leftovers was calculated and then used to calculate the weight of food consumed by the young person. If a tick appeared in the diary in the leftover column next to a particular food and this was the only food item to have been left then the weight of food consumed would equal the weight of food served minus the weight of food left. If more than one item of food was left by the young person then the total weight of leftovers was distributed between the food items in the same proportions as the food items were served. Weight consumed has to be calculated so that, for example, the amount of calcium obtained from cheese consumed by the young person on a particular diary day can be calculated. These derived variables were checked and cases which were out of range were investigated.

Once the data had been 'cleaned' derived variables were created and added to the database. The specifications for these are reproduced in the figures at the end of this Section (nutrient variables)

and Appendix J (all other derived variables). The programmes for creating these were fully tested, and frequencies were checked to make sure all cases were accounted for, and had been assigned the correct code or value.

4.3 Anthropometric measurements

As part of the interviewer training a validation exercise was carried out to assess the level of observer variation when taking anthropometric measurements. Young people from schools local to the briefing location were recruited for the exercise and each was measured by each interviewer. This exercise allowed individual interviewers whose measurements were significantly different from the average to have individual tuition in the measurement protocol before going out into the field. These interviewers also had more frequent visits from field trainers to supervise their work.

For the anthropometric measurements, the interviewers were asked to record any special circumstances encountered while the measurement was being taken, for example if the young person was uncooperative or would not stand still while the measurement was made. In addition, consistency checks were made within the data for each measurement. Where a measurement lay at either extreme of the distribution, all of the anthropometric measurements for the individual were scrutinised for inconsistency. Measurements that were considered unreliable were excluded from the analysis.

Height measurements were achieved for a total of 1949 young people; for three young people the measurements were excluded from the analyses as likely to be unreliable. These measurements were excluded due to inconsistency with other anthropometric measurements; the remaining measurements for these individuals were retained if they were consistent with each other. There were two young people for whom only one measurement of height was made.

Measurements were achieved for 1946 young people, none of which were excluded. There were no cases where only one measurement was recorded.

Mid upper-arm circumference measurements were achieved for a total of 1944 young people; the measurements for one young person were excluded as there was a difference of more than 15% between the first and second measurement. There were two cases where only one measurement was taken.

Waist and hip circumference measurements were achieved for 987 young people. After checking the data, all of the measurements were included in the analysis. There were two cases where only one of each measurement was recorded.

Figure 4.7 shows which circumstances recorded at the appropriate question on the questionnaire meant that the measurement was not thought to be reliable and therefore should not be used in analysis.

4.4 Blood data

As mentioned in *Section 2*, a blood sample was taken if written consent was given by the young person and/or their parents. A maximum of 10 ml of blood could be taken for young people aged 4 to less than 7 years, while a maximum of 15 ml could be taken for those aged 7 years and over. Depending on the amount of blood obtained a number of analytes were measured. The analytes were ordered to take account of technical constraints and nutritional interest. Figure 4.26 shows the analytes in order of analytic priority.

If less than the maximum amount of blood was obtained, the sample of blood was exhausted during the assays accorded a high priority and thus less than the full total of analyses was done. For this reason, the number of cases with a value for each analyte varies. If written consent was given, residual bloods after all assays had been completed were stored.

Information was recorded at the time of the survey interview on any prescribed medicine being taken by the young person. For each drug identified, checks were subsequently made to establish whether the drug was likely to have any interaction that would affect the results of any of the full range of blood analytes being carried out. None of the medicines was identified as having any interaction with the blood analytes being measured. Hence it is not necessary to exclude any results.

For further information on the procedures for obtaining blood samples and on methods of blood analysis refer to Appendices P and Q of the *Report*. Appendix Q of the aforementioned report contains details of the assay techniques used and the quality assurance procedures.

4.5 Nutrient databank

Intakes of nutrients were calculated from the records of food consumption using the MAFF nutrient databank, developed for the NDNS: children aged 1½ to 4½ years¹. This was revised for this survey of young people aged 4 to 18 years. Some nutrients were added, some nutrient values were updated and many more new codes were added to accommodate foods and drinks consumed by this age group. The databank now contains information on nearly 5000 foods and drinks, including manufactured products and recipe dishes, many soft drinks and vitamin and mineral supplements.

Each food on the databank has values assigned for 55 nutrients and energy. The nutrient values assigned to the foods on the databank are based on *McCance and Widdowson's The composition of foods*; and its supplements. MAFF has an ongoing programme of nutritional analysis of foods and a project was commissioned to analyse foods consumed by young people of this age as identified in the feasibility study for the survey. Data obtained from food manufacturers were also used, as was nutritional information given on labels. All data were carefully evaluated before being incorporated into the databank.

During the survey fieldwork period the range of foods included in the databank were extended as new products with different nutrient contents were consumed by young people.

For dietary supplements information was collected on the brand name, type (tablets, drops or syrup), strength, and quantity of each supplement taken over the 7-day dietary recording period. Each supplement was coded. Manufacturers' data were applied to each individual supplement taken by the young person in the survey and the total nutrients provided by the supplements was calculated.

Figure 4.22 gives details of the nutrients measured and units of measurement.

4.6 SIR derived variables

There were two main types of derived variable produced; questionnaire derived variables and dairy derived variables.

Questionnaire derived variables

Appendix J lists all of the questionnaire derived variables and provides details on their specifications.

For variables giving grouped age - young people aged under 4 years of age are included in the category 4 to 6 years, and young people aged over 18 years of age are included in the category 15 to 18 years. (For an explanation of why this survey contains young people aged under 4 years and over 18 years please see *Appendix C*).

REGION uses the first part of CASEID; a look-up table is provided (see Figure 4.16).

Diary derived variables

Diary derived variables build upon each other into higher levels of aggregation. At the diary editing stage a number of derived variables were produced which calculated nutrient intakes at the food and day level, and quantities of each food consumed. These form the building blocks for other derived variables which express nutrient intakes at the weekly level and quantities of food consumed at the daily and weekly level.

Each food code was allocated by MAFF to one of 115 food subgroups; these food subgroups can be collapsed into 57 food groups, which in turn can be grouped into 11 food types. The complete list of food types, groups and subgroups, with examples of the types of foods included in the food groups, is given in *Appendix G*.

All data on the SIR database, except the blood data, are held as integers. Thus to obtain the correct level of measurement of a particular nutrient or quantity the user must divide the value by the appropriate factor. Figure 4.21 shows the multipliers that should be used for particular variables.

4.7 SPSS file structure

The content of the SPSS portable and save files was determined by the analysis required for the *National Diet and Nutrition Survey: young people aged 4 to 18 years Report, Volume 1*.

There are 36 SPSS portables files:

- 26 contain dietary diary data and the SIR derived variables relating to those data; see Figures 4.10 to 4.12 and Figures 4.18 to 4.20, 4.22 and 4.23 for the dietary record schema and specifications for dietary variables derived in SIR;
- 10 contain interview data, anthropometry data, physical activity diary data etc. and the SIR derived variables relating to those data; see Appendix J for specifications for the SIR derived variables.

In addition there are 8 SPSS save files:

- These files contain the same data as the corresponding SPSS portable file but in addition include the SPSS derived variables relating to the specific data file. For a list of these files and the data they contain see Figure 4.9; for further information about SPSS derived variables see Appendix J.

Each file has a number of 'common' variables, which are the main demographic variables by which all analyses were carried out. These are listed in Figure J.5.

References and notes

¹ Gregory JR, Collins DL, Davies PSW, Hughes JM, Clarke PC. *National Diet and Nutrition Survey: children aged 1½ to 4½ years. Volume 1: Report of the diet and nutrition survey.* HMSO (London, 1995).

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Figure 4.1 Checks between interview and diary

Vitamins

1-way check:

- if diary = vitamin and questionnaire = no vitamin: recode questionnaire
- if diary = no vitamin and questionnaire = vitamin: accept

Fluoride

1-way check:

- if diary = fluoride and questionnaire = no fluoride: recode questionnaire
- if diary = no fluoride and questionnaire = fluoride: accept

Home grown

1-way check:

- if diary = any home grown and questionnaire = nothing home grown: recode questionnaire
- if diary = nothing home grown and questionnaire = any home grown: accept

Unwell

<u>diary day</u>	<u>questionnaire</u>		<u>recode</u>
	<i>unwell that day?</i>	<i>eating affected that day?</i>	
unwell	yes	no	diary day = well
well	yes	yes	diary day = unwell
well	yes	no	diary day = well
NA	yes	no	dairy day = well
NA	yes	yes	diary day = unwell

Food frequency information

Background note

Where the food frequency information shows that a young person never eats a food item, but that item is recorded in the diary, the interview information should be automatically recoded to show that the food is eaten.

Note that there are no other cross diary/interview checks on frequency of consumption for those who are coded as eating the item in the diary.

Editing and re-coding is best done after the diary information has been matched with the nutrient databank; foods in the food frequency questionnaire can then be located in the food diary by food group, rather than food code; food group indicator is attached to the nutrient data bank.

The food frequency questionnaire has 3 parts:

- foods where frequency of consumption only is recorded -group 1
- foods where frequency of consumption is recorded, then, if item is consumed whether any skin/peel is consumed -group 2
- foods - different types of potato - where frequency of consumption is NOT recorded, but if the item is consumed whether skin is eaten is recorded -group 3.

Different automatic recodes are required for each group.

- group 1: count frequency of consumption in diary and recode interview frequency.
- group 2: count frequency of consumption in diary, recode interview frequency and recode whether skin eaten on basis on distribution of answers before including recodes;
- group 3: identify whether item was eaten in diary and recode whether skin eaten on basis on distribution of answers before including recodes.

Group 1

- For each item if interview = never, check diary and count total frequency of food item/group for 7 days.

if frequency = 1:	recode = at least once a week
if frequency = 2 to 6	recode = most days
if frequency = 7:	recode = once a day
if frequency > 7:	recode = more often than once a day

Group 2

- Recode frequency of consumption as for group 1 food items based on frequency of recording in diary.

- Then recode SKIN0* as follows:

if CAROTC never eaten	recode SKIN01 = 2
if CAROTR never eaten	recode SKIN02 = 2
if ROOTS never eaten	recode SKIN03 = 2
if MUSHB never eaten	recode SKIN04 = 1
if APPLE never eaten	recode SKIN05 = 1
if PEAR never eaten	recode SKIN06 = 1

if CITRUS never eaten	recode SKIN07 =2
if TOMS never eaten	recode SKIN08 =1
if CUCS never eaten	recode SKIN09 = 1

Group 3

- For each item = 4 (never eaten) check diary:

if BAKED never eaten (4)	recode BAKED = 1
if BOILNEW never eaten (4)	recode BOILNEW = 1
if BOIOLD never eaten (4)	recode BOIOLD = 3
if ROAST never eaten (4)	recode ROAST = 3
if FRIED never eaten (4)	recode FRIED = 3

These food items in the interview can be identified in the diary by food group/sub-group code

Interview food item	Food group code
breakfast cereals	5, 6
yogurt	15B
fromage frais	15A
cows' milk	11, 12, 13
ice cream	53R
sausages	30
liver & products	28
oily fish	35
shellfish	34B
leafy green veg	37D
savoury snacks	42
fruit juice	45
fizzy drinks - not diet	57B
fizzy drinks - diet	58B
squash - not diet	57A
squash - diet	58A
ready to drink drinks - diet	57C

ready to drink drinks - not diet	58C
chocolate	44
raw carrots	36A
cooked carrots	37E
citrus fruit	40B
raw tomatoes	36C
cheese	14
eggs	16
beef	23R
pork	22, 25
lamb	24
chicken	26, 27
nuts	56
chips	38A

These items in the interview can only be identified in the diary at food code level

Interview food item	Food code
soya milk	650, 8512, 7715, 8726
sheep/goats' milk	623-626
ice lollies	2262, 7762
game	1133-1142, 1159-1164, 1167, 9403, 9406
offal	1171-1173, 1175-1178, 1206-1216, 1218-1220, 1245, 1247-1255, 1261-1263
sugar free confectionery	7968
sugar free chewing gum	7970
other chewing gum	2253
other confectionery	Food group 43, <u>except</u> 7968, 7970, 2253, 2262, 7762
other root veg	1801-1805, 1753, 7852, 9792, 1941 -1942, 1921
mushrooms	1772-1779, 1781, 9309
apples	1951-1952, 1954-1962, 2601, 2106, 2159
pears	2110-2111, 2113-2114, 2240-2241, 2112

cucumber	1740
baked/jacket potatoes	1834-1839
boiled new potatoes	1830, 8294, 1832
boiled old potatoes	1829, 1831, 1833, 9249
roast potatoes	1841 - 1848, 8785, 8827, 8683 8371, 9789

Figure 4.2 The diary edit program

1. The edit program

The editing program is divided into Consistency checks and Nutrient checks:

- The consistency checks include cross checks with the interview data and are corrected mainly when keying the diaries.
- The nutrient checks involve calculations using the MAFF nutrient database and are the responsibility of the nutritionists.

On entering the edit program, the editor is asked to enter the Wave, Area & Address to identify the case for which they want to run the edits. After the entry of a valid serial number the program begins to run the various sections of the edit. The program only proceeds with an edit section after the errors from the preceding section have been cleared. If the diary fails an edit section, a message to that effect is displayed on the screen. The editor can then view the error file on screen or print out the error file. If no errors are found, the error file is printed off and retained with the diary for future reference.

There are various error checks, some of which are suppressible, where the condition may be unusual but correct. After an edit section has run twice and if there are no other errors, the editor is given the option of overriding any suppressible errors and proceeding to the next section.

2. Sequence of edit checks

The program first checks for the presence of the interview data. If none is found, the following message will be seen in the error file and no further edit checks will be performed.

10, No Blaise data file found for this case

If this is found, it is because the data base needs updating with the latest interview data received. Once the update has been carried out by Survey Computing Branch, the edit can be rerun.

2.1 Food item level consistency checks

Checks on whether winter milk has been coded in summertime and vice-versa:

20, *S* dmonth=5-10 and foodcode=603/604/626/8543/8544

20, *S* dmonth=1-4/11-12 and foodcode=602/608/613/623/625

Checks on number of spoons \ tablets of medicines:

21, *S* FoodCode=2527(Medicine) but number of spoons\tablets served gt 5

Checks 22 to 25 involve cross checks against interview data:

22, *S* Artificial sweetener in diary but TeaA & CoffA<>2 and Cook<>1

23, *S* Tea coded in diary but TEA <> 1

24, *S* Coffee coded in diary but COFF <> 1

25, *S* Herbal tea in diary but HERB <> 1

If the total weight of leftovers is the same as the weight of the plate, then either TOTLEFT (total weight of leftovers) on the Plate record is incorrect or LEFTOVER (indicating that there WERE leftovers) on the Food record should not be ticked:

26, TOTLEFT=PLATEWT but item(s) on plate have leftovers

A valid food code must be assigned before the edit can continue:

27, 9999 Dump code - correct code not yet assigned

2.2 Plate level consistency checks

Missing data:

30, No food items on this plate

Duplicate food codes may be correct and the check may be overridden:

31, *S* Duplicate food codes on this plate

Food is sometimes eaten in school at odd times and the check may be overridden:

32, *S* School Foodsource entered out of normal school hours Mon-Fri 9-16

The weights may appear to be cumulative (i.e. each item weighs more than the last) but may in fact be correct and the check may be overridden:

33, *S* Cumulative weights on this plate

Either TOTLEFT on the Plate record is incorrect or LEFTOVER on the Food record(s) should be ticked:

34, TOTLEFT gt total weight served - LEFTOVERS not ticked

2.3 Day level consistency checks

Missing data:

40, No plates for this day

2.4 Case level consistency checks

Checks 50 to 76 involve cross checks against interview data:

50, *S* SCHMEAL = 4 but no packed lunch in diary

51, *S* WKMEAL = 1 but no packed lunch in diary

WELL in the diary or Sick0 to Sick5 or Which100 to Which141 may need to be altered:

60-66, Dayno Inconsistency between WELL: Day1-7 & Which100 to Which141

67, *S* QH1A = 1 but code 2527(medicine) not found in diary

70-76, Dayno "S" Inconsistency between WELL Day1-7 & Which000 to Which041

3. Correction of diary and interview data

It is possible to correct the various data errors whilst viewing the error file from within the edit program. The editing program can then be rerun. A final copy of the Edit error listing should be printed when clear and retained with the diary for future reference, before filing as 'awaiting Nutrient checks'.

In the case of errors 22 to 25 and 50 to 76, it may be necessary to edit the interview data. This is done using an interview data edit program. The editor is asked to enter the serial number and follow the instructions displayed to amend any appropriate fields.

3.1 Questionnaire data edit screen

```

+-----+
| SERNO: nnnnnn SEX: F AGE: 11 years |
+-----+
| SCHOOL 2 | WHICH003 | WHICH114 5 | WHICH126 | WHICH035 |
| SCHMEAL 4 | WHICH004 | WHICH115 6 | WHICH127 | WHICH036 |
| WKMEAL | WHICH005 | WHICH116 7 | WHICH024 | WHICH037 |
| TEA 2 | WHICH006 | WHICH117 | WHICH025 | WHICH038 |
| TEAA | SICK1 | WHICH118 | WHICH026 | SICK5 2 |
| HERB 2 | WHICH107 | WHICH119 | WHICH027 | WHICH135 |
| COFF 2 | WHICH108 | WHICH120 | WHICH028 | WHICH136 |
| COFFA | WHICH109 | WHICH016 | WHICH029 | WHICH137 |
| COOK 2 | WHICH110 | WHICH017 | WHICH030 | WHICH138 |
| SICK0 2 | WHICH111 | WHICH018 | SICK4 2 | WHICH139 |
| WHICH100 | WHICH112 | WHICH019 | WHICH128 | WHICH140 |
| WHICH101 | WHICH113 | WHICH020 | WHICH129 | WHICH141 |
| WHICH102 | WHICH008 | WHICH021 | WHICH130 | WHICH040 |
| WHICH103 | WHICH009 | WHICH022 | WHICH131 | WHICH041 |
| WHICH104 | WHICH010 | SICK3 2 | WHICH132 | WHICH042 |
| WHICH105 | WHICH011 | WHICH121 | WHICH133 | WHICH043 |
| WHICH106 | WHICH012 | WHICH122 | WHICH134 | WHICH044 |
| WHICH000 | WHICH013 | WHICH123 | WHICH032 | WHICH045 |
| WHICH001 | WHICH014 | WHICH124 | WHICH033 | WHICH046 |
| WHICH002 | SICK2 1 | WHICH125 | WHICH034 | PRESC 2 |
+-----+

```

Variable values:-

SCHOOL - 1(not yet at school), 2(at school), 3(at college), 4(training), 5(at work), 6(unemployed)

SCHMEAL - 1(free), 2(subsidised), 3(paid), 4(packed lunch), 5(other), 6(none)

WKMEAL - 1(packed lunch), 2(bought at work), 3(bought outside work), 4(other), 5(none)

TEA, HERB & COFF - 1 or 2 (Yes or No - if drunk in diary week)

TEAA, COFFA - 1(sugar), 2(artificial sweetener), 3(unsweetened)

COOK - 1 or 2(Yes or No - if artificial sweetener used in cooking)

SICK0 - 1 or 2(Yes or No - if diarrhoea in diary week)

WHICH100 to WHICH106 - on which days(1 to 7) SICK0

WHICH000 to WHICH006 - on which days(1 to 7) SICK0 affected eating habits

SICK1 - 1 or 2(Yes or No - if sick or vomiting in diary week)
WHICH107 to WHICH113 - on which days(1 to 7) SICK1
WHICH008 to WHICH014 - on which days(1 to 7) SICK1 affected eating habits

SICK2 - 1 or 2(Yes or No - if cold, flu or sore throat in diary week)
WHICH114 to WHICH120 - on which days(1 to 7) SICK2
WHICH016 to WHICH022 - on which days(1 to 7) SICK2 affected eating habits

SICK3 - 1 or 2(Yes or No - if ear infection in diary week)
WHICH121 to WHICH127 - on which days(1 to 7) SICK3
WHICH024 to WHICH030 - on which days(1 to 7) SICK3 affected eating habits

SICK4 - 1 or 2(Yes or No - if asthma in diary week)
WHICH128 to WHICH134 - on which days(1 to 7) SICK4
WHICH032 to WHICH038 - on which days(1 to 7) SICK4 affected eating habits

SICK5 - 1 or 2(Yes or No - if any other illness in diary week)
WHICH135 to WHICH141 - on which days(1 to 7) SICK5
WHICH040 to WHICH046 - on which days(1 to 7) SICK5 affected eating habits

PRESC - 1 or 2 (Yes or No - if prescribed medicine in diary week)

The following messages result from errors in the nutrient edit section, but the means of amending the diary records are the same as for the consistency edit.

3.1 Food item level Nutrient checks

81, FOODCODE: fdcd "new food group:"+foodgrp+" encountered

82, FOODCODE: FO->foodcode+ not found in Nutrient database

83, *S*foodcode + foodname + wteaten + greater than foodmax

3.2 Plate level Nutrient checks

Where food items are eaten together, e.g. breakfast cereal and milk, leftovers cannot be assigned to one item without being assigned to the other:

90, *S* Bread has leftovers spread does not

91, *S* Cereal has leftovers milk does not

92, *S* Cereal has leftovers sugar does not

3.3 Day level Nutrient checks

These are followed by a list of the nutrients to which they apply. Nutrients can be out of range due to gluttony or starvation, thus these checks are suppressible.

out of range Nutrients with supplements

out of range Nutrients without supplements

However, all nutrients must be calculated. If any are undefined due to the absence of certain data then this must be resolved before the edit is complete.

undefined Nutrients

Figure 4.3 Edit check-list

General checks

- read through interviewer's electronic notes for each questionnaire/instrument and make any changes required e.g. where interviewer was not sure how to code the answer.

Admin block

- list cases where outcome code = 35

Several cases were coded as 35 (refusal) when a placement interview had been completed. These cases were recoded as partial cases (code 21).

Household block:

- list cases where no RelToYp = 6 in household
- list cases where RelToYP = 3,4,5 (child, step, foster)
- list cases where Marstat = 1,2 (married, co-hab)

These cases were investigated to see whether the household relationship types had been coded with HOH as the reference person when it should have been the young person. The relevant changes were made.

Missing information

- list cases where no record08 (HOH employment details) present

These cases arose where relationship had been coded with reference to the HOH, meaning that social class and occupation coding were not completed.

- list cases where no self-completion keyed (NowSC = 2)
- list cases where no anthropometry keyed (NowAn = 2)

Where interviewers had failed to key the self-completion or the anthropometry, this was completed at HQ.

- list cases where Chooz1 = 1; code SOCs

Where interviewers had failed to complete home coding tasks (coding occupations etc.) this was done at HQ.

Range checks

- look for - very low or high BP
- look for - very high response to drinking questions.
- look for - odd age of menarche
- look for - rejected observations among brand codes
- run a scatter plot of each anthropometry measurement to spot outliers

Common mistakes included interviewers transposing digits when keying data and interviewers reading off measurements in inches rather than cm when taking the measurements. For suspected transposed digits, the paper record was checked and the relevant change made. Where inches were recorded rather than cm, the calculation to transform to cm was carried out in SPSS (see Section J for derived variable specifications).

Figure 4.4 Editing decisions

1. Yage (record type 11 : SPSS file schedule.exp)
Cases where Yage (age at which young person left school) was coded as 15 (code 3):

Check was made that country of birth was within UK – all were. All recoded to 16, assuming was interviewer miskey.

2. g10t182 (record type 12 : SPSS file smoke.exp)
Cases with strange values for age at menarche re-coded:

case number	G10T182	new value
095/26	1181	1108
024/10	1214 (SPSS) 1215 (SIR)	1205

3. DMuch*** (record type 12 : SPSS file smoke.exp)
Strange values for Dmuch*** - subsidiary questions on drinking

variable	old value	new value
DMuch403	20.00	2
DMuch600	0.10	1
DMuch700	3.40	3
DMuch800	0.10	1
DMuch500	0.20	2
DMuch402	0.20	2
DMuch402	0.30	3
DMuch402	3.10	3

4. HOH and INFO (record type 16 : SPSS file – **COMMON**)
Incorrect coding of HOH and Informant person number.

Variable	Old value	New Value
HOH	20	2
HOH	20	2
INFO	11	2

Main questionnaire

- If frequency of taking a vitamin etc was <1/day **leave as 1/day**
 - Age of Menarche <9 not accepted **code as na**
 - Where self-completion = later at NowSC and no paper copy **code as na**
 - Where alcopop subsidiary not available in paper version **code as na**
 - Where anthro = later at NowAN and no paper copy **leave as missing**
 - where worklwk2 differs between rec08 and rec09 **code as yes/no**
- If XMother was calculated in error as =1 (meaning 'mother in household', e.g. if father originally coded as female in error), then questions about mother were edited to remove incorrect data and transfer to record type for father.

Physical activity

- Wheelchair activity **code as light**
- Mucking out -stables METS = 4.0 **code as moderate**
- Grooming - METS = 6.0 **code as vigorous**
- Other activities associated with horse riding or care **code as light**

Wave 1 top 10% of calculated activity scores scrutinised and edited where necessary (see Appendix E).

Wave 2 onwards, any interviewers with significant numbers of edits on diaries already seen were given a 100% edit. Also use Wave 1 cut-off for calculated activity score created using top 10% to edit further.

Cases deleted from data set

22/13 Initial dietary interview incomplete.

Figure 4.5 Checks and edits for physical activity diary data

Interviewers keyed the physical activity diary data into their lap top computer and internal consistency checks were applied to avoid keying mistakes, for example to check that the time spent in all activities did not add up to more than 24 hours. Subsequent data editing involved further consistency checks and the examination at HQ of some completed activity diaries. See Appendix E for further details.

1. Checks carried out on full data set

- Check that the 24 hour clock had been used correctly to key the times when the young person got up and went to bed each day.
- List cases and inspect diary if the time spent in any 'other' activity was greater than 3 hours.
- If less than 1 hour or more than 12 hours of sleep were recorded for any day.
- If less than 60 minutes of light activity was recorded for any diary day.
- If the calculated activity score was less than 30. This was an indicator that the time spent in all activities added up to more than 24 hours for an individual day.

2. Checks made to try to reduce the scores at the top end

For wave one, cases in the top 10% were scrutinised for:

- keying mistakes e.g. transposed digits;
- duplicated activities e.g. where the young person had a paper round and had coded this both under hours spent at work and under 'cycling ...' ;
- coding mistakes e.g. where a moderate intensity activity had been coded as a vigorous intensity activity;

For waves 2 to 4, cases with a CAS greater than 46 (the level established as the cut-off point using wave one data) were scrutinised as above.

3. Checks carried out only on those diaries scrutinised for other reasons

- Activities written in the 'other moderate' or 'other vigorous' categories that are less than a moderate intensity level e.g. 'walking around the shops', 'driving' etc. were deleted
- If an interviewer had failed to correct an error in the data (e.g. had keyed data for a light activity as a moderate activity), all diaries for that interviewer were manually checked.

- Duplicated activities were deleted
- Check whether activities listed under 'other' can be recoded under one of the precoded activities.

After editing, 'other' activities, not on the prompted list or deleted, included:

- some sports in which mainly young people in the oldest age group (15 to 18 years) participated, for example conditioning exercises (e.g. press-ups), body-building, weight-lifting, rock-climbing;
- relatively uncommon activities, for example majorettes, scuba diving, shinty;
- DIY, decorating or building work;
- maintenance work for cars or bikes;
- activities connected with army cadets, for example 'field-gun training'.

Figure 4.6 Data edits for anthropometric measurements: SIR

BP

MAPO-2, SYTOL0-2, DIASTOL0-2, AND PULSE0-2 invalid if:

any BPWEAR0 to BPWEAR3 = 2

HEIGHT

CHEIGHT1 AND CHEIGHT2 invalid if:

any HWEAR0 to HWEAR5 greater than or equal to 1 and less than or equal to 6

WEIGHT

CWEIGHT1 AND CWEIGHT invalid if:

MUAC

CMUAC1 AND CMUAC2 invalid if: CIRCW = 2

any MWEAR0 to MWEAR2 greater than or equal to 1 and less than or equal to 2

WAIST AND HIP

CWAIST1, CWAIST2, CHIP1 AND CHIP2 invalid if:

any HIPWEAR0 to HIPWEAR3 greater than or equal to 1 and less than or equal to 4

Figure 4.7 Data edits for anthropometric measurements: SPSS

For each of : HEIGHT, WEIGHT, MUAC, WAIST AND HIP:

- run scatter plot of measurement by age separately for boys and girls - note outliers and investigate; edit data (e.g. where can see from paper record that numbers have been transposed) or exclude data from the analysis where necessary
- subtract measurement 1 from measurement 2 and look at frequency of differences; look for transposed digits; after editing, exclude remaining cases where difference between measurements is greater than 15%

For WAIST and HIP:

- where difference between measurement 1 and measurement 2 is great, check whether measurements have become transposed, with one hip measurement keyed instead of a waist or vice versa

Figure 4.8 SIR database record types

<u>Record type</u>	<u>Content</u>
1	Initial interview (see below)
2	Dietary diary data (day)
3	Dietary diary data (plate)
4	Dietary diary data (food item)
5 .. 11	Initial interview (see below)
12	Self completion - drinking and smoking
13	Pick-up interview and medicines
14	Oral health interview
15	Measurements schedule
16 .. 17	Initial interview (see below)
18	Blood and urine analytes
19	Oral health examination
21	Dietary diary SIR derived variables
27	Questionnaire derived variables
28	Weighting data
30	Physical activity diary summary
31 .. 37	Physical activity diary days one to seven
40	Nutrient ADI per food subgroup
41	Nutrient ADI per food subgroup per food source (Nutrient elements)

Initial dietary interview

<u>Variables</u>	<u>Record type</u>
NPERSON to SOTHER	16
COAST to CARS	1
SCHMEAL to TABLA	17
CEREAL to FRIED	5 and 6
ALREL to CMATTER	7
WORKLWK1 to UNEMPTIM (HOH)	8
WORKLWK1 to UNEMPTIM (Mother)	9
WORKLWK1 to UNEMPTIM (YP)	10
INDD to FCIGSA	1
YPPTJOB to ETHNOTH	11
OWNHOME to GINCOME	1

Figure 4.9 Record types included in the SPSS files: non diary data

N.B. All SPSS .sav files include caseid and are merged with COMMON.EXP

File name	Variables	Summary
COMMON.EXP	<p><u>rec type 27</u>: all, incl casewgt</p> <p><u>rec type 16</u>: dob00, hoh, info, sex00, nperson, marsta00, xmother, xfather, gano</p> <p><u>rec type 7</u>: slim, veg, vita, fluor</p> <p><u>rec type 8</u> : all</p> <p><u>rec type 9</u>: all</p> <p><u>rec type 10</u>:all</p> <p><u>rec type 1</u>: intdate, iempsta0, iempsta1, seg0, seg1, sc0,sc1, mage, mqual, mcigs, mcigsa, fcigs, fcigsa, fcredit, isupp, isseek, gincome, ownhome</p> <p><u>rec type 13</u>: unwell, sick0 - 5; which100 - 141; which000 - 047</p> <p><u>rec type 12</u>: sure, soften</p>	Main classificatory variables from interview data - <i>as defined left</i>
Schedule.sav	1, 7 (slim to ndyscutd) 8, 9, 10, 11, 17 + COMMON.EXP + SPSS common derived variables (see Fig J.5)	Initial interview, excluding smoking and drinking, food frequency, and household composition
Smoke.sav	12 + COMMON.EXP + SPSS common derived variables + SPSS self-completion derived variables (see Figs J.7 & J.8)	Smoking and drinking self-completion 11-18 years only
Frequency.sav	5, 6, 7 + COMMON.EXP + SPSS common derived variables	Food frequency information from interview
HBox.sav	16 + COMMON.EXP + SPSS common derived variables	Household composition information
Pickup.sav	13 + COMMON.EXP + SPSS common derived variables	Pick-up interview
Measure.sav	15 + COMMON.EXP + SPSS common derived variables + SPSS anthropometry derived variables (see Figs J.7 & J.8)	M1 schedule: anthropometry, blood, urine, bowel
Blood.sav	30 + COMMON.EXP + SPSS common derived variables + SPSS blood and urine derived variables (see Fig J.14)	Blood and urine analytes
PAct.sav	30 to 37 + COMMON.EXP + SPSS common derived variables + SPSS physical activity derived variables (see Figures J.11 & J.12)	Physical activity diary

Figure 4.10 Dietary record schema definition

Rec type	Level	Variables								
2	day	Nutrients	TDNUTS01-55 TDINTS03	TDNUT01-55	TDEFSC	TDEFSJ	TDEFC	TDEFJ	TDINTS01	TDINTS02
		Foods	TDFD001-115							
3	plate		MEALTIME	WHEREEAT	WEIGHBY	PLATEWT	TOTLEFT	FOODSRCE	WTLEFT	
4	food item	Nutrients	NUTF01-55* WTEATEN	FOODGRPC SPILLAGE	DILUTE BRAND	HOMEGROW	WTSERVED	LEFTIND	ESTIMATE	FOODCODE
21	young person	Nutrients	ADNUTS01-55 PSRAT	ADNUT01-55 IRONRATS	ADEFSC IRONRAT	ADEFSJ ADINTS01-04****	ADEFC	ADEFJ	REQUIV	REQUIVS
			EFAT EMONUNS FEFAT FEMONO	EPROTEIN ESATFAT FEPROT FESAT	ECARBOHY ENMES FECARB FENMES	ESTARCH EIMSS FESTAR FEIMSS	ESUGARS ETRANSFA FESUG FETRANS	EN3PUFA EALCOHOL FEN3 FESATRAN	EN6PUFA ESATRAN FEN6P	EPOLYUNS FEPUFA
		Foods	WKFD001-115	ADFSG011-112	ADSUG011-112					
40	nutrient	Nutrients from sub-gp	NUTOT001-115**	NUTOTAL(1-55)						
41	foodsource	Nutrients x source x sub-group	NUSRC001-115***	NUSRCAL(1-55) & (1-6)						

* NUTF01-55 = nutrient values per food item eg NUTF03 = starch per item; NUTF05 = energy per item

**NUTOT001-115 is iterated 55 times for each nutrient on separate sequences.

***NUSRC001-115 is iterated on separate sequences for each nutrient (55 times) by food source (7 times) .

**** ADINT01-04, TDINT04 and TDINTS04 do not exist.

Figure 4.11 Dietary record types 40 and 41: re-naming variables

Rec type	Old name	New name format	Example	
40	NUTOT001-115	N**T001-115 where ** = nutrients 01-55	N05T006	= energy (nut05) from white bread (gp006)
			N39T028	= cholesterol (nut39) from eggs (gp028)
	NUTOTAL	N**TOTAL where ** = nutrients 01-55	N36TOTAL	= total n-3pufa (nut36)
41	NUSRC001-115	N**~S001-115 where ** = nutrients 01-55 ~ = source 1-7	N054S006	= energy (nut05) from white bread (gp006) eaten at school (source 4)
			N051S006	= energy (nut05) from white bread (gp006) eaten as home lunch (source 1)
			N395S028	= cholesterol (nut39) from eggs (gp028) eaten in packed lunch (source 5)

Figure 4.12
Dietary variables by SPSS file

N.B. All diary .exp files to include CASEID and interview file COMMON.EXP

Production order	File name .exp	COMMON.EXP + rec types	Variables
1	QUANT.	21	WKFD001-115
2	DIARY1.	21	ADNUT(S)** where ** = 01-55; ADEF(S)C, ADEF(S)J, IRONRAT(S), REQUIV(S), ADINTS01 to 04, PSRAT
3	ENERGY.	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 05; 06; ADEF(S)C; ADEF(S)J
4	CARBS.	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 03, 04, 09, 46; ECARBOHY;ESTARCH; FECARB; FESTAR
5	SUGARS. <i>(includes alcohol)</i>	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 02, 40 to 45, 53, 54, 10; ADINTS01; ESUGARS;ENMES; EIMSS; EALCOHOL;FESUG; FENMES; FEIMSS
6	PROTEIN.	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 07, 55; EPROTEIN; FEPROT
7	FATS.	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 08, 34-39; ADINTS02, ADINTS03, ADINTS04, PSRAT, EMONO, EN3PUFA, EN6PUFA, EMONUNS, ESATFAT, EFAT, EPOLYUNS, ETRANSFA, ESATRAN, FEMONO, FEN3, FEN6P, FEMONO, FESAT, FEFAT, FEPUFA, FETRANS, FESATRAN
8	SWTFOODS	21	ADEFSG011-16, 27, 74,76-82,103,110-112; ADFSUG011-16, 27, 74,76-82,103,110-112; ADFSUG011

Production order	File name .exp	COMMON.EXP + rec types	Variables
9	MIN11	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 11;
10	MIN12	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 12
11	MIN13	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 13
12	MIN14	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 14
13	MIN15	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 15
14	MIN16	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 16
15	MIN17	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 17
16	MIN18	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 18
17	MIN19	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 19
18	MIN20	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 20
19	MIN47	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 47
20	MIN51	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 51
21	MIN52	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 52; IRONRAT(S)

Production order	File name .exp	COMMON.EXP + rec types	Variables
22	VIT21	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 21
23	VIT22	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 22; REQUIV(S)
24	VIT23	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 23
25	VIT24	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 24
26	VIT25	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 25
27	VIT26	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 26
28	VIT27	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 27
29	VIT28	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 28
30	VIT29	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 29
31	VIT30	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 30
32	VIT31	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 31
33	VIT32	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 32
34	VIT33	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 33
35	VIT48	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 48
36	VIT49	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 49
37	VIT50	21,40,41	ADNUT(S)**; N**T001-115; N**1S001-115 to N**6S001-115: where ** = 50

Figure 4.13 Specifications for sample weights

Differential probability of selection

Derivation:

if SIZE = 1: CASEWGT = (TOTAL/SUB) x 2

if SIZE > 1: CASEWGT = (TOTAL/SUB) x SIZE

Missing values: none

Store value as integer (*100) after rounding to 2 decimal places.

Differential non-response

See Figure 4.14 Non-response weighting calculations. This shows the proportion of young people in the population by age, sex and region. The calculations to produce the weights are given. The weights were produced separately for each component of the survey – see Figure 4.15 for response groups and names of relevant weighting variables.

Figure 4.14 Non-response weighting calculations

The empty boxes were filled with weighted (casewgt1) sample sizes for each group. The calculations are then automatic - Excel formulae are shown.

Population estimates are calculated using the 1991 census data and adjusted annually.

		E	F	G	H	J
Age						
		4-6	7-10	11-14	15-18	
8	Scotland	Weighted sample size				
9	Male	Proportion in pop.	10.3749889430821	13.7029669567865	13.4782286714625	13.6204772062923
10		Expected sample size	=(E11*\$J\$18)/100	=(F11*\$J\$18)/100	=(G11*\$J\$18)/100	=(H11*\$J\$18)/100
11		Weight	=E12/E10	=F12/F10	=G12/G10	=H12/H10
12						
13	Scotland	Weighted sample size				
14	Female	Proportion in pop.	9.93970636940186	13.003141193242	12.8890749422469	12.991415717486
15		Expected sample size	=(E16*\$J\$18)/100	=(F16*\$J\$18)/100	=(G16*\$J\$18)/100	=(H16*\$J\$18)/100
16		Weight	=E17/E15	=F17/F15	=G17/G15	=H17/H15
17						
18	North	Weighted sample size				
19	Male	Proportion in pop.	10.5475475864561	14.0690696526977	13.5713627881389	13.1170428795492
20		Expected sample size	=(E21*\$J\$28)/100	=(F21*\$J\$28)/100	=(G21*\$J\$28)/100	=(H21*\$J\$28)/100
21		Weight	=E22/E20	=F22/F20	=G22/G20	=H22/H20
22						
23	North	Weighted sample size				
24	Female	Proportion in pop.	10.004002525478	13.3507511476183	12.8965713099114	12.4436521101503
25		Expected sample size	=(E26*\$J\$28)/100	=(F26*\$J\$28)/100	=(G26*\$J\$28)/100	=(H26*\$J\$28)/100
26		Weight	=E27/E25	=F27/F25	=G27/G25	=H27/H25
27						
28	C&SW&Wales	Weighted sample size				
29	Male	Proportion in pop.	10.4036246195962	14.0871211213222	13.5358436729277	13.3179506419764
30		Expected sample size	=(E31*\$J\$38)/100	=(F31*\$J\$38)/100	=(G31*\$J\$38)/100	=(H31*\$J\$38)/100
31		Weight	=E32/E30	=F32/F30	=G32/G30	=H32/H30
32						
33	C&SW&Wales	Weighted sample size				
34	Female	Proportion in pop.	9.92522956202424	13.3742688530666	12.7748879493842	12.5810735797024
35		Expected sample size	=(E36*\$J\$38)/100	=(F36*\$J\$38)/100	=(G36*\$J\$38)/100	=(H36*\$J\$38)/100
36		Weight	=E37/E35	=F37/F35	=G37/G35	=H37/H35
37						
38	L&SE	Weighted sample size				
39	Male	Proportion in pop.	10.9409231252458	14.1088989689373	13.0516517990979	13.2017821816283
40		Expected sample size	=(E41*\$J\$48)/100	=(F41*\$J\$48)/100	=(G41*\$J\$48)/100	=(H41*\$J\$48)/100
41		Weight	=E42/E40	=F42/F40	=G42/G40	=H42/H40
42						
43	L&SE	Weighted sample size				
44	Female	Proportion in pop.	10.4361779484361	13.4028220308382	12.3660962801936	12.4916476656229
45		Expected sample size	=(E46*\$J\$48)/100	=(F46*\$J\$48)/100	=(G46*\$J\$48)/100	=(H46*\$J\$48)/100
46		Weight	=E47/E45	=F47/F45	=G47/G45	=H47/H45

weighted sample size for Scotland

weighted sample size for North

weighted sample size for CSW&Wales

weighted sample size for L&SE

Figure 4.15 Weighted and unweighted sample sizes for each separately-weighted component of the survey

Survey component	Selected sample size	Achieved sample size	Weighted sample size	Weighting factors:			Indicator of valid cases
				Differential probability of selection	Differential probability of selection and differential non-response	Scaled weight for differential probability of selection and differential non-response	
<u>Interview</u>	2672	2127	8075	Casewgt (integer); Casewgt1 (Casewgt/100 to give weight to correct decimal place)	ICasewgt	ICasewgt2	[all cases are valid]
<u>7-day dietary record^m</u>	"	1701	6490	"	DCasewgt	n/a ^f	Diaryind
<u>Physical measurements</u>							
Weight	"	1986	7393	"	MCasewgt	MCaswgt2	Measind ^e
Height	"	1949	7391	"	MCasewgt	MCaswgt2	Measind ^e
Mid upper arm circumference	"	1944	7369	"	MCasewgt	MCaswgt2	Measind ^e
Hip and waist circumferences	"	987 ^a	3796 ^a	"	MCasewgt	MCaswgt2	Measind ^e
Blood pressure	"	1905	7215	"	BPCasewt	BPCaswt2	AgeBP>=0
<u>Blood sample^{b,i}</u>							
Haematology group ^g	"	1181	4454	"	HmCasewt	HmSWt	HmCasewt>=0
Biochemistry group A ^h	"	1080	4103	"	GpAwt	GpASWt	GpAwt>=0
Biochemistry group B ⁱ	"	958	3651	"	GpBwt	GpBSWt	GpBwt>=0
Biochemistry group C ^j	"	1131	4295	"	GpCwt	GpCSWt	GpCwt>=0
Biochemistry group D [Zinc]	"	868	3296	"	PZincwt	Scalewzn	PZincwt>=0
<u>Urine sample</u>	"	1851	6963	"	UrCasewt	UrScale	UrCasewt>=0
<u>7-day physical activity diary</u>	"	1424 ^c	5422	"	PActwgt	PActswgt	Pactind ^c
<u>Post dietary record interview</u>	"	1991 ^d	n/a	"	DCasewgt ^d	n/a	Diaryind ^d

^a Hip and waist circumferences were only measured for young people aged 11 years and over.

^b Blood analytes shown are those used to derive weighting factors for groups of analytes with similar numbers of reported results.

^c Physical activity diaries were kept by young people aged 7 years and over. Data on hours of sleep and hours spent watching TV are available for all young people aged 4 to 18 years who completed a 'Diary of Eating and Drinking Away From Home' (N=1788; see [\(original text missing from here\)](#))

^d This includes data for cases where diaries were not completed. To analyse the data only for those young people for whom a complete 7-day dietary record is available, select cases using Diaryind. Data for the 1701 valid cases were weighted using the weig [\(original text missing from here\)](#)

^e Indicates cases where young person has at least one measurement.

^f Variables from the interview and diary were entered into multivariate analyses as independent variables rather than as dependent variables. Scaled weights applied in multivariate analyses are those for the dependent variable.

^g Haematology group: haemoglobin concentration, red blood cell count, haematocrit, mean cell volume, mean cell haemoglobin, mean cell haemoglobin concentration, red cell distribution width, platelet count, mean platelet volume, platelet distribution width

^h Group A: plasma retinol, plasma retinyl palmitate, plasma α and γ tocopherol, plasma α and β carotene, plasma lycopene, plasma lutein and zeaxanthin, plasma α and β cryptoxanthin, plasma vitamin C, erythrocyte transketolase basal activity, erythrocyte t

ⁱ Group B: plasma total cholesterol, plasma high density lipoprotein (HDL) cholesterol, non-HDL cholesterol, plasma triglycerides, α anti-chymotrypsin.

^j Group C: blood lead, plasma selenium, plasma magnesium, plasma 25-hydroxyvitamin D, erythrocyte glutathione reductase activation coefficient, erythrocyte aspartate transaminase activation coefficient, red cell superoxid dismutase.

^k Group D: plasma zinc was weighted; unweighted analytes in this group were: plasma urea, plasma testosterone, plasma alkaline phosphate, plasma creatinine, erythrocyte glutathione peroxidase.

^l To select fasting cases only, use variable BIEat [1=non-fasting sample; 2=fasting sample]

^m To select consumers only, use nutrient variable >0.

Figure 4.16 Look-up table for linking CASEID to Region

<i>First 3 digits of CASEID</i>	<i>Region number</i>	<i>Fieldwork wave</i>	<i>Region name</i>
001	01	01	North
002	01	01	
034	01	02	
035	01	02	
067	01	03	
068	01	03	
100	01	04	
003	02	01	Yorkshire and Humberside
004	02	01	
005	02	01	
036	02	02	
037	02	02	
038	02	02	
069	02	03	
070	02	03	
071	02	03	
101	02	04	
102	02	04	
103	02	04	
006	03	01	
007	03	01	
008	03	01	
039	03	02	
040	03	02	
041	03	02	
042	03	02	
072	03	03	
073	03	03	
074	03	03	
075	03	03	
104	03	04	
105	03	04	
106	03	04	
107	03	04	

009	04	01	East Midlands
010	04	01	
011	04	01	
043	04	02	
044	04	02	
076	04	03	
077	04	03	
108	04	04	
109	04	04	
110	04	04	
012	05	01	West Midlands
013	05	01	
014	05	01	
045	05	02	
046	05	02	
047	05	02	
078	05	03	
079	05	03	
080	05	03	
111	05	04	
112	05	04	
113	05	04	
015	06	01	East Anglia
048	06	02	
081	06	03	
082	06	03	
114	06	04	

016	07	01	London
017	07	01	
018	07	01	
019	07	01	
049	07	02	
050	07	02	
051	07	02	
052	07	02	
083	07	03	
084	07	03	
085	07	03	
086	07	03	
115	07	04	
116	07	04	
117	07	04	
118	07	04	
020	08	01	The South East
021	08	01	
022	08	01	
023	08	01	
024	08	01	
025	08	01	
053	08	02	
054	08	02	
055	08	02	
056	08	02	
057	08	02	
058	08	02	
059	08	02	
087	08	03	
088	08	03	
089	08	03	
090	08	03	
091	08	03	
092	08	03	
119	08	04	
120	08	04	
121	08	04	
122	08	04	
123	08	04	
124	08	04	

026	09	01	South West
027	09	01	
028	09	01	
060	09	02	
061	09	02	
093	09	03	
094	09	03	
095	09	03	
125	09	04	
126	09	04	
127	09	04	
029	10	01	Wales
030	10	01	
062	10	02	
063	10	02	
096	10	03	
128	10	04	
129	10	04	
031	11	01	Scotland
032	11	01	
033	11	01	
064	11	02	
065	11	02	
066	11	02	
097	11	03	
098	11	03	
099	11	03	
130	11	04	
131	11	04	
132	11	04	

Figure 4.17 Variables comparable between NDNS and GHS for sample validation

Comparisons with a subsample of GHS data for 1996/7 based on population of households where at least one person is aged 4 to 18 years

GHS variables:

- Social class of HOH SEGHOH3
- Employment status of HOH ECSTILO5
- Region REG2

Figure 4.18 Dietary derived variable types

Variable type	Description
TDNUT(S)**	Total daily intake of nutrient (01-55) - with/out supps
TDEF(S)C TDEF(S)J	Total daily intake energy - with/out supps kcals/kjoules
TDINTS01-03	Total daily intake derived nutrients - with supps: imss, n3+n6 pufa, total fatty acids
TDFD***	Total daily intake food sub-group 001-115
WKFD***	Total weekly intake food sub-group 001-115
ADFSG***	Average daily frequency of consumption of sugary foods 011-112
ADSUG***	Average daily intake sugary foods 011-112
ADNUT(S)**	Average daily intake nutrients - with/out supps 01-55
ADINTS01-04	Average daily intake derived nutrients - with supps: imss, n3+n6 pufas, total fatty acids, saturated + trans fats
ADEF(S)C ADEF(S)J	Average daily intake food energy - with/out supps kcals/kjoules
E(nut)	Energy from (macronutrients): fat, protein, carbohydrates, starch, sugars, n-3pufa, n-6pufa, polyunsats, monounsats, sats, nmes, imss, trans, alcohol, sats+trans
FE(nut)	Food energy from (macronutrients): fat, protein, carbohydrates, starch, sugars, n-3pufa, n-6pufa, polyunsats, monounsats, sats, nmes, imss, trans, sats+trans
REQUIV(S)	Retinol equivalents - with/out supps
**RAT(S)	Ratios - pufa:sats (incl supps only) haem:non-haem iron (incl/excl supps)
NUTOT*** (SIR) N**T*** (SPSS)	Average daily intake nutrient (01-55) from sub-group (001-115)
NUTOTAL (SIR) N**TOTAL (SPSS)	Average daily nutrient total (01-55)
NUSRC*** (SIR) N**~S*** (SPSS)	Average daily intake nutrient (01-55) by food source (1-6) by sub-group (001-115)
NUSCRAL	Average daily intake nutrient (01-55) by food source (1-6)

Figure 4.19 Nutrient types by variable name

Nutrient type	Derived variable name
Foods	WKFD001 - WKFD115
Energy	ADNUT(S)**; N**T001-115; N**1S001-115 to N**7S001-115: where ** = 05, 06; ADEF(S)C, ADEF(S).
Minerals	ADNUT(S)**; N**T001-115; N**1S001-115 to N**7S001-115: where ** =11-20; 47, 51, 52; IRONRAT(S).
Vitamins	ADNUT(S)**; N**T001-115; N**1S001-115 to N**7S001-115: where ** =21-33; 48, 49, 50; REQUIV(S).
Carbohydrates (sugars, starch, fibre) protein, alcohol + water and nitrogen	ADNUT(S)**; N**T001-115; N**1S001-115 to N**7S001-115: where ** =02 - 04, 07, 09, 10, 40 - 45, 46, 53, 54, 55, 01; ADINTS01, EPROTEIN, ECARBOHY, ESTARCH, ESUGARS, ENMES, EIMSS, EALCOHOL, FEPROT, FECARB, FESTAR, FESUG, FENMES, FEIMSS
Fats and fatty acids	ADNUT(S)**; N**T001-115; N**1S001-115 to N**7S001-115: where ** =08, 34 - 39; ADINTSO2, ADINTSO3, ADINTSO4, EMONO, PSRAT, EN3PUFA, EN6PUFA, EMONUNS, ESATFAT, EFAT, EPOLYUNS, ETRANSFA, ESATRAN, FEMONO, FEN3, FEN6P, FEMONO, FESAT, FEFAT, FEPUFA, FETRANS, FESATRAN
Sugary foods	ADFSG011-112; ADSUG011-112

Figure 4.20 Further derived dietary variables

Nutrient dv:	sats + trans (nut34+nut38)*
% energy dv:	from sats + trans (factor = x 9) energy and food energy from alcohol (factor = x 7) energy from total fatty acids energy and food energy*
NUTOT001-115:	IMSS*, N3+N6*, tot fatty acids*, sats+ trans*, REQUIV*
NUTSRC001-115:	IMSS*, N3+ N6*, tot fatty acids*, sats + trans*, REQUIV*

* As results for these variables can be obtained by adding SPSS tables they are not being derived.

New derivations:

- % energy from alcohol

variable name	=	EALCOHOL
variable label	=	% of energy fom alcohol (with supp)
rec types	=	source = rec 21 dv add to rec 21
EALCOHOL	=	((ADNUTS10 * 7) / (ADNUTS05)) * 10,000

Saturated + trans fatty acids

- variable name = ADINTS04

variable label(s)	=	adi of sats plus trans fatty acids (supps)
rec types	=	source = rec 21 dvs add to rec 21
ADINTS04	=	ADNUTS34 = ADNUTS 38
- variable name = ESATRAN / FESATRAN

variable labels	=	% energy from sats plus trans fatty acids (supps) % food energy from sats plus trans fatty acids (supps)
rec types	=	source = rec 21 dvs add to rec 21
ESATRAN	=	((ADINTS04 * 9) / (ADNUTS05)) * 10,000
FESTRAN	=	((ADINTS04 * 9) / (ADEFSC)) * 10,000

Figure 4.21 Multipliers required to carry data into SPSS from SIR as integers

Multipliers for physical measurements

Variable type	Multiplier used
Physical measurements	x 10

Multipliers for dietary record data

Variable type	Multiplier used
Nutrients	x 10,000
Foods	x 10
Casewgt	x 100

Multipliers for blood and urine data

SPSS variable name	Multiplier used
plat rc_fol s_b12 s_ferr esod gpx	no multiplier
ihb imcv imch imchc irdw impv ipdw iwbc ineut ilymph ihbf ihba2 isfol ibpb ipatoc ipohd ipvitc iptibc ippcsat ipurea ipzn ipalkp ipcreat iuna iuk	x 10

irbc imono ieosin ibaso ipse ipmg ipgtoc ipfe ietkb ietkac iegrac ieaatac iptc iphdlc ipldlc iptg iptest ipact iucreat iunac iukc	x 100
ihct ipret ipretp ipacry ipbcry iplyco iplut ipacar ipbcar	x 1000

Figure 4.22 Details of nutrients measured and units

Variable number	Nutrient	Units
01	water	(g)
02	sugars	(g) total sugars, expressed as monosaccharide
03	starch	(g) expressed as monosaccharide
04	dietary fibre	(g) expressed as modified Southgate method ¹
46	non-starch polysaccharides	(g) expressed as Englyst method ²
05	energy (kJ)	(17 x protein) + (37 x fat) + (16 x carbohydrate) + (29 x alcohol)
06	energy (kcal)	(4 x protein) + (9 x fat) + (3.75 x carbohydrate) + (7 x alcohol)
07	protein	(g)
55	nitrogen	(g)
08	fat	(g)
09	carbohydrate	(g) sum of sugars plus starch, expressed as monosaccharide equivalent
10	alcohol	(g)
11	sodium	(mg)
12	potassium	(mg)
13	calcium	(mg)
14	magnesium	(mg)
15	phosphorus	(mg)
16	iron	(mg)
51	haem iron	(mg)
52	non-haem iron	(mg)
17	copper	(mg)
18	zinc	(mg)
19	chloride	(mg)
20	iodine	(µg)
47	manganese	(mg)
21	retinol	(µg) all trans retinol equivalents
22	total carotene	(µg) β-carotene equivalents
49	* -carotene	(µg)
48	β-carotene	(µg)
50	β-cryptoxanthin	(µg)
24	thiamin	(mg)
25	riboflavin	(mg)
26	niacin equivalent	(mg) niacin + (tryptophan / 60)
29	vitamin B6	(mg)
30	vitamin B12	(µg)
31	folate	(µg)
32	pantothenic acid	(mg)
33	biotin	(µg)
27	vitamin C	(mg)
23	vitamin D	(µg)
28	vitamin E	(mg) * -tocopherol equivalents
	<i>fatty acids</i>	
34	saturated	(g)
35	cis monounsaturated	(g)
36	cis n-3 polyunsaturated	(g)
37	cis n-6 polyunsaturated	(g)

Variable number	Nutrient	Units
38	trans fatty acids	(g)
39	cholesterol	(mg)
	<i>sugars</i>	
40	glucose	(g)
41	sucrose	(g)
42	fructose	(g)
43	lactose	(g)
44	maltose	(g)
45	other sugars	(g) includes oligosaccharides
53	non-milk extrinsic sugars	(g) includes all sugars in fruit juices, table sugar, honey, sucrose, glucose and glucose syrups added to food + 50% of the sugars in canned, stewed, dried or preserved fruits ³ .
54	intrinsic and milk sugars	(g) includes all sugars in fresh fruit and vegetables + 50% of the sugars in canned, stewed, dried or preserved fruits + lactose in milk.

References

- 1 Southgate DAT. Dietary fibre analysis and food sources. Am J Clin Nutr 1978; 31: Suppl S107-110.
- 2 Englyst HN and Cummings JH. An improved method for the measurement of dietary fibre as the non-starch polysaccharides in plant foods. J Assoc Off Anal Chem 1988; 71: 808-814.
- 3 Buss DH, Lewis J and Smithers G. Non-milk extrinsic sugars. J Hum Nutr Diet 1994; 7: 87.

Figure 4.23 Specification for variables based on food energy (i.e. excluding energy from alcohol)

1. Derive total daily food energy:
 - TDEFSC: incl. supplements, kcals
 - TDEFC: excl. supplements, kcals
 - TDEFSJ: incl. supplements, kJ
 - TDEFJ: excl. supplements, kJ

TDEFSC: = energy in kcals from all food items on day in all food groups except 47 - 49

TDEFSJ: = energy in kJ from all food items on day in all food groups except 47 - 49

TDEFC: = energy in kcals from all food items on day in all food groups except 47 - 49 and 54

TDEFJ: = energy in kJ from all food items on day in all food groups except 47 - 49 and 54

2. Sum daily intakes for 7 days to give weekly intakes for all 4 variables (in flight).

3. Derive average daily intake variables:

- ADEFSC, ADEFC, ADEFSJ, ADEFJ

4. Compute variables for % food energy from selected nutrients using ADEFSC:

total fat	FEFAT
protein	FEPROT
carbohydrate	FECARB
starch	FESTAR
total sugars	FESUG
n-3 PUFA	FEN3
n-6 PUFA	FEN6
n-3 + n-6 PUFA	FEPUFA
mono-unsaturated fats	FEMONO
saturated fats	FESAT
non milk extrinsic sugars	FENMES
intrinsic milk sugars, and starch	FEIMSS
trans fatty acids	FETRANS

Figure 4.24 Physical activity diary page annotated with variable names

N.B. Figure J.11 documents the physical activity derived variables.

How long did you actually spend doing this today?	Variable name:		Level of activity**	Have you done any other activities today that made you breathe hard, huff and puff and get hot and sweaty? If so, please write them on the lines below.	Variable name:		Level of activity**
	Hours	Mins			Hours	Mins	
playing football (soccer)	PA*Hour1	PA*Mins1	moderate				
hockey	PA*Hour2	PA*Mins2	vigorous				
rugby or touch rugby	PA*Hour3	PA*Mins3	vigorous				
netball or lacrosse	PA*Hour4	PA*Mins4	moderate				
tennis, NOT table tennis	PA*Hour5	PA*Mins5	moderate		PA*Hour26	PA*Mins26	vigorous
badminton	PA*Hour6	PA*Mins6	moderate		PA*Hour27	PA*Mins27	vigorous
squash	PA*Hour7	PA*Mins7	vigorous		PA*Hour28	PA*Mins28	vigorous
basketball	PA*Hour8	PA*Mins8	vigorous		PA*Hour29	PA*Mins29	vigorous
volleyball	PA*Hour9	PA*Mins9	moderate		PA*Hour30	PA*Mins30	vigorous
rounders	PA*Hour10	PA*Mins10	moderate		PA*Hour31	PA*Mins31	vigorous
golf	PA*Hour11	PA*Mins11	moderate				
playing other ball games outside	PA*Hour12	PA*Mins12	moderate				
playing tag, chasing games outside	PA*Hour13	PA*Mins13	moderate	Have you done any other activities today that made you slightly out of breath and feel warm, but not exhausted? If so, please write them on the lines below.			
athletics	PA*Hour14	PA*Mins14	v. vig				
running hard or jogging	PA*Hour15	PA*Mins15	v. vig				
PE or gymnastics	PA*Hour16	PA*Mins16	moderate				
boxing, karate, tae kwan do or judo	PA*Hour17	PA*Mins17	vigorous		Hours	Mins	
ice skating or ice hockey	PA*Hour18	PA*Mins18	vigorous				
swimming	PA*Hour19	PA*Mins19	moderate				
walking briskly	PA*Hour20	PA*Mins20	moderate		PA*Hour32	PA*Mins32	moderate
disco dancing, line or step dancing	PA*Hour21	PA*Mins21	vigorous		PA*Hour33	PA*Mins33	moderate
roller or in-line skating or skateboarding	PA*Hour22	PA*Mins22	vigorous		PA*Hour34	PA*Mins34	moderate
cycling, including doing a paper round on a bike	PA*Hour23	PA*Mins23	vigorous		PA*Hour35	PA*Mins35	moderate
doing a paper round on foot	PA*Hour24	PA*Mins24	moderate		PA*Hour36	PA*Mins36	moderate
cleaning your room, gardening, or Hoovering	PA*Hour25	PA*Mins25	moderate		PA*Hour37	PA*Mins37	moderate

* PA*Hour and PA*Mins relate to the diary day for which the data are being presented (i.e. from 1 to 7).

** v. vigorous = very vigorous intensity.

Figure 4.25 Blood analyte variable names in SIR and SPSS

Analyte	SIR variable name (alphabetical order)	SPSS variable name - integer version	SPSS variable name - correct number of decimal places	No. of results
Basophil count	BASO	ibaso	baso	954
Blood lead	B_PB	ibpb	bpb	1143
Erythrocyte aspartate transaminase activation coefficient	EAATAC	ieaatac	eaatac	1109
Erythrocyte glutathione reductase activation coefficient	EGRAC	iegrac	egrac	1109
Eosinophil count	EOSIN	ieosin	eosin	956
Red cell superoxide dismutase	ESOD	esod	esod	1108
Erythrocyte transketolase activation coefficient	ETKAC	ietkac	etkac	1095
Erythrocyte transketolase basal activity	ETKB	ietkb	etkb	1095
Erythrocyte glutathione peroxidase	GPX	gpx	gpx	659
HB haemoglobin	HB	ihb	hb	1181
HB haemoglobin type A2	HBA2	ihba2	hba2	1098
HB haemoglobin type F	HBF	ihbf	hbf	1096
Haematocrit	HCT	ihct	hct	956
Lymphocyte count	LYMPH	ilymph	lymph	956
Mean cell haemoglobin	MCH	imch	mch	1181
Mean cell haemoglobin concentration	MCHC	imchc	mchc	956
Mean cell volume	MCV	imcv	mcv	956
Monocyte count	MONO	imono	mono	956
Mean platelet volume	MPV	impv	mpv	956
Neutrophil count	NEUT	ineut	neut	956
Plasma alpha-carotene	P_ACAR	ipacar	pacar	1080
Plasma alpha-cryptoxanthin	P_ACRY	ipacry	pacry	1080
Plasma alpha-antichymotrypsin	P_ACT	ipact	pact	929
Plasma alkaline phosphatase	P_ALKP	ipalkp	palkp	619
Plasma alpha-tocopherol	P_ATOC	ipatoc	patoc	1080
Plasma beta-carotene	P_BCAR	ipbcar	pbcar	1080
Plasma beta-cryptoxanthin	P_BCRY	ipbcry	pbcry	1080
Plasma creatinine	P_CREAT	ipcreat	pcreat	567
Plasma iron	P_FE	ipfe	pfe	1044
Plasma gamma-tocopherol	P_GTOC	ipgtoc	pgtoc	1080
Plasma high density lipoprotein cholesterol	P_HDLC	iphdlc	phdlc	958
Non-HDL cholesterol	P_LDLC	ipldlc	pdlc	958
Plasma lutein and zeaxanthin	P_LUT	iplut	plut	1080
Plasma lycopene	P_LYCO	iplyco	plyco	1080
Plasma magnesiuim	P_MG	ipmg	pmg	1132
Plasma 25-hydroxyvitamin D	P_OHD	ipohd	pohd	1105
Plasma iron percentage saturation	P_PCSAT	ippcsat	fesat	1019
Plasma retinol	P_RET	ipret	pret	1080
Plasma retinyl palmitate	P_RETP	ipretp	pretp	1080
Plasma seleniuim	P_SE	ipse	pse	1131
Plasma total cholesterol	P_TC	iptc	ptc	958
Plasma testosterone	P_TEST	iptest	ptest	260
Plasma triglycerides	P_TG	iptg	ptg	956
Plasma total iron binding capacity	P_TIBC	iptibc	ptibc	1019
Plasma urea	P_UREA	ipurea	purea	611

cont...

Analyte	SIR variable name (alphabetical order)	SPSS variable name - integer version	SPSS variable name - correct number of decimal places	No. of results
Plasma ascorbate (vitamin C)	P_VITC	ipvitc	pvitc	1095
Plasma zinc	P_ZN	ipzn	pzn	868
Platelet distribution width	PDW	ipdw	pdw	956
Platelet count	PLAT	plat	plat	956
Red blood cell count	RBC	irbc	rbc	1181
Red cell folate	RC_FOL	rc_fol	rcfol	1094
Red cell distribution width	RDW	irdw	rdw	956
Serum vitamin B12	S_B12	s_b12	sb12	1167
Serum ferritin	S_FERR	s_ferr	sferr	926
Serum folate	S_FOL	isfol	sfolate	1169
Urine creatinine	U_CREAT	iucreat	ucreat	1829
Urine potassium	U_K	iuk	k	1829
Urine potassium : creatinine ratio	U_K_C	iukc	kcr	1829
Urine sodium	U_NA	iuna	na	1829
Urine sodium : creatinine ratio	U_Na_C	iunac	nacr	1829
White cell count	WBC	iwbc	wbc	1096

Figure 4.26 Blood analytes in priority order for analysis, and urine analytes

Analyte	Unit of measurement	Conversion from SI units (factor)	Resulting metric units
Blood analytes			
<i>Haematology</i>			
Haemoglobin concentration	g/dl	*	
Red blood cell count	$\times 10^{12}/l$	*	
Haematocrit	l/l	*	
Mean cell volume	fl	*	
Mean cell haemoglobin	pg	*	
Mean cell haemoglobin concentration	g/dl	*	
Red cell distribution width	%	n/a	
Platelet count	$\times 10^9/l$	*	
Mean platelet volume	fl	*	
Platelet distribution width	%	n/a	
White cell count	$\times 10^9/l$	*	
Neutrophil count	$\times 10^9/l$	*	
Lymphocyte count	$\times 10^9/l$	*	
Monocyte count	$\times 10^9/l$	*	
Eosinophil count	$\times 10^9/l$	*	
Basophil count	$\times 10^9/l$	*	
<i>Haemoglobin electrophoresis</i>			
HbF	%	n/a	
HbA2	%	n/a	
Serum folate	nmol/l	$\times 0.441$	$\mu\text{g}/l$
Red cell folate	nmol/l	$\times 0.441$	$\mu\text{g}/l$
Serum vitamin B ₁₂	pmol/l	$\times 1.357$	ng/l
Serum ferritin	$\mu\text{g}/l$	*	
Blood lead	$\mu\text{g}/l$	*	
Plasma selenium	$\mu\text{mol}/l$	$\times 0.079$	mg/l
Plasma magnesium	mmol/l	$\times 24.3$	mg/l
Plasma 25-hydroxy vitamin D	nmol/l	$\times 0.400$	$\mu\text{g}/l$
<i>Blood lipids</i>			
Plasma total cholesterol	mmol/l	$\times 0.387$	g/l
Plasma high density lipoprotein cholesterol	mmol/l	$\times 0.387$	g/l
Non-HDL cholesterol	mmol/l	$\times 0.387$	g/l
Plasma triglycerides	mmol/l	†	
Plasma iron	$\mu\text{mol}/l$	$\times 55.8$	$\mu\text{g}/l$
Plasma total iron binding capacity	$\mu\text{mol}/l$	$\times 55.8$	$\mu\text{g}/l$
Plasma iron % saturation	%	n/a	
Plasma retinol	$\mu\text{mol}/l$	$\times 0.286$	mg/l
Plasma retinyl palmitate	$\mu\text{mol}/l$	$\times 0.525$	mg/l
Plasma α -tocopherol	$\mu\text{mol}/l$	$\times 0.552$	mg/l
Plasma γ -tocopherol	$\mu\text{mol}/l$	$\times 0.417$	mg/l
Plasma α -cryptoxanthin	$\mu\text{mol}/l$	$\times 0.552$	mg/l
Plasma β -cryptoxanthin	$\mu\text{mol}/l$	$\times 0.552$	mg/l
Plasma lycopene	$\mu\text{mol}/l$	$\times 0.537$	mg/l

Analyte	Unit of measurement	Conversion from SI units (factor)	Resulting metric units
Plasma lutein + zeaxanthin	µmol/l	x 0.569	mg/l
Plasma α-carotene	µmol/l	x 0.537	mg/l
Plasma β-carotene	µmol/l	x 0.537	mg/l
Plasma vitamin C	µmol/l	x 0.176	mg/l
Erythrocyte transketolase: basal activity	? mol/min/g Hb	*	
activation coefficient	ratio	n/a	
Erythrocyte glutathione reductase activation coefficient	ratio	n/a	
Erythrocyte aspartate transaminase activation coefficient	ratio	n/a	
Plasma urea	mmol/l	x 60	mg/l
Plasma zinc	µmol/l	x 0.065	mg/l
Plasma testosterone	nmol/l	x 0.289	µg/l
Plasma alkaline phosphatase	IU/l	*	
Plasma alpha ₁ -antichymotrypsin	g/l	*	
Red cell superoxide dismutase	nmol/mg Hb/min	*	
Plasma creatinine	µmol/l	x 0.113	mg/l
Red cell glutathione peroxidase	nmol/mg Hb/min	*	
<u>Urinary analytes</u>			
Urine sodium	mmol/l	x 23	mg/l
Urine potassium	mmol/l	x 39.1	mg/l
Urine creatinine	mmol/l	x 113	mg/l
Urine sodium: creatinine ratio	ratio	n/a	
Urine potassium: creatinine ratio	ratio	n/a	

* Analyte measured in metric units

† Triglycerides are measured as glycerol; the molecular weight of a glycerol molecule varies with the different fatty acid constituents. Conversion from SI to metric units is not appropriate.

n/a not applicable

Figure 4.27 Variable names for the physical measurements

Physical Measurements Record - completed by interviewers

This section gives the variable names for the measurements record; see Appendix A for the measurements schedule M1.

BLOOD PRESSURE

1. QA1 BLOOD PRESSURE CAN ONLY BE MEASURED WHEN ALL THE FOLLOWING = YES

CODE ALL THAT = YES

GP notified of subject's participation in study (Z1)	1
Consent to take measurement given (Z3)	2
Consent to notify GP of results given (Z3)	3
No to all the above	4

2. QA2 If codes 1 and 2 and 3 at QA1

ASK

Can I just check, has *young person* eaten or drunk anything in the last 30 minutes?

Yes	1
No	2

3. DPress If codes 1 and 2 and 3 at QA1

RECORD

Yes	1
No	2

a. WhyBP If code 2 at DPress

IF MEASUREMENT NOT MADE CODE REASON(S)
CODE ALL THAT APPLY

Attempted, unsuccessful	1
Not attempted, consent withdrawn by young person	2
Not attempted, consent withdrawn by 'parent'	3
Equipment failure or unavailable	4

- 4. DateBP** **If code 1 at DPress**
- ENTER DATE BP MEASURED
 _ _ . _ _ . _ _ _ _ (date format variable)
- a. BPAge** **If code 1 at DPress**
[Hidden variable calculated within program]
- Age of young person on date BP measured (years)
- 3..19
- 5. TimeBP** **If code 1 at DPress**
- ENTER TIME FIRST BP MEASUREMENT MADE (24 HOUR CLOCK)
- 0000..2359
- 6. Map0 - Map2** **If code 1 at DPress**
- MEAN ARTERIAL PRESSURE - 3 READINGS (mmHg)
- 001..997
- 7. Systol0 - Systol2** **If code 1 at DPress**
- SYSTOLIC PRESSURE - 3 READINGS (mmHg)
- 001..997
- 8. Pulse0 - Pulse2** **If code 1 at DPress**
- PULSE RATE - 3 READINGS (BPM)
- 001..997
- 9. Diastol0** **If code 1 at DPress**
- Diastol2
- DIASTOLIC PRESSURE - 3 READINGS (mmHg)
- 001..997
- 10. Chk160** **If code 1 at DPress**
- RECORD
- Are all three systolic readings equal to or above 160 mmHg?
- Yes 1
 No 2

a. Report1

If code 1 at Chk160

All three systolic readings were above 160 mmHg.

RECORD

Have you reported this result to GP & (survey doctor)?

Yes 1
No 2

11. Chk100

If code 1 at DPress

RECORD

Are ALL THREE DIASTOLIC readings equal to or above 100 mmHg?

Yes 1
No 2

a. Report2

If code 1 at Chk100

All three diastolic readings were above 100 mmHg.

RECORD

Have you reported this result to GP & (survey doctor)?

Yes 1
No 2

12. Cuff

If code 1 at DPress

CODE CUFF SIZE USED

Large adult size 1
Adult size 2
Small adult size 3
Child size 4

13. CuffD

If code 1 at DPress

RECORD

Were there any difficulties in fitting or wrapping cuff?

Yes 1
No 2

a. CuffDC

If code 1 at CuffD

CODE DIFFICULTIES
CODE ALL THAT APPLY

- Conical shaped arm 1
- Obese arm: correct circumference cuff too deep 2
- Other difficulties with the cuff (Specify at next question) ... 3

i. CuffOth

If code 3 at CuffDC

SPECIFY OTHER DIFFICULTY

14. CircBP

If code 1 at DPress

RECORD

Were there any unusual circumstances?

- No unusual circumstances 1
- Unusual circumstances 2

a. BPWear

If code 2 at CircBP

CODE UNUSUAL CIRCUMSTANCES
CODE ALL THAT APPLY

- Young person was upset or anxious or nervous 1
- Dinamap system error no. 844 - excessive movement 2
- Right arm unavailable, taken from left arm 3
- Other (Specify at next question) 4

i. BPOther

If code 4 at BPWear

SPECIFY OTHER SPECIAL CIRCUMSTANCES

15. DUNN

If code 1 at DPress

RECORD

Interviewer - have you sent a copy of this reading to the Dunn Nutrition Unit?

- Yes 1
- No 2

HEIGHT

1. DHeight

All

RECORD

Was *young person's* height measured?

Yes 1
No 2

a. WhyH

If code 2 at DHeight

IF MEASUREMENT WAS NOT MADE CODE REASON(S)
CODE ALL THAT APPLY

Attempted, unsuccessful 1
Not attempted, consent withdrawn by young person 2
Not attempted, consent withdrawn by 'parent' 3
Young person chairbound/bedfast..... 4
Equipment failure or unavailable 5

2. DateH

If code 1 at DHeight

ENTER DATE HEIGHT MEASURED

__ . __ . __ . __ . __ (date format variable)

a. HAge

If code 1 at DHeight

[Hidden variable calculated within program]

Age of young person on date height measured (years)

3..19

**3. CHeight1 -
CHeight 2**

If code 1 at DHeight

HEIGHT - 2 MEASUREMENTS (cm)

000.1..999.7

4. CirCH

If code 1 at DHeight

RECORD

Were there any unusual circumstances?

Yes 1
No 2

a. HWear

If code 1 at CircH

CODE UNUSUAL CIRCUMSTANCES
CODE ALL THAT APPLY

- Affected by hairstyle 1
- Wearing turban 2
- Posture: back not straight 3
- Posture: legs not straight 4
- Unable to stand still or uncooperative 5
- Other person made measurement 6
- Other (Specify at next question) 7

i. HSpec

If code 7 at HWear

SPECIFY OTHER CIRCUMSTANCE(S)

5. HMum

All

RECORD HEIGHT OF 'BIRTH' MOTHER
ENTER M & CM OR FEET AND INCHES

0.50..7.00

a. MFM

If HMum <> don't know or refused

RECORD

Interviewer: did you enter the height in:

- Feet and inches 1
- M and cm 2

6. HDad

All

RECORD HEIGHT OF 'BIRTH' FATHER
ENTER M & CM OR FEET & INCHES

0.50..7.00

a. DFM

If HDad <> don't know or refused

RECORD

Interviewer: did you enter the height in:

- Feet and inches 1
- M and cm 2

WEIGHT

1. DWeight

All

RECORD

Was *young person* weighed?

Yes 1
No 2

a. WhyW

If code 2 at DWeight

IF MEASUREMENT WAS NOT MADE CODE REASONS(S)
CODE ALL THAT APPLY

Attempted, unsuccessful 1
Not attempted, consent withdrawn by young person 2
Not attempted, consent withdrawn by 'parent' 3
Young person chairbound/bedfast..... 4
Equipment failure or unavailable 5

2. DateW

If code 1 at DWeight

ENTER DATE WEIGHT MEASURED

__ . __ . __ . __ . __ (date format variable)

a. WAge

If code 1 at DWeight

[Hidden variable calculated within program]

Age of young person on date weight measured

3..19

**3. CWeigh1 -
CWeigh2**

If code 1 at DWeight

WEIGHT - 2 MEASUREMENT (KILOGRAMS)

000.1..999.7

4. Scales

If code 1 at DWeight

CODE ALL THAT APPLY

Scales placed on:

- Uneven floor 1
- Carpet 2
- Neither 3

5. Clothes

If code 1 at DWeight

CODE

- Clothing record completed by *young person* or parent 1
- Clothing record refused - interviewer completed 2
- No clothing record 3

a. WWear1

If code 1 at DWeight and code 1 at Sex for young person and code 1 or 2 at Clothes

RECORD ITEMS TICKED ON THE CLOTHING RECORD
CODE ALL THAT APPLY

- Vest 1
- Pair of socks 2
- Pants or briefs 3
- T-shirt 4
- Shirt 5
- Tie 6
- Trousers or jeans 7
- Shorts 8
- Belt 9
- Jumper or sweatshirt 10
- Something else not on the list (Specify at next question) .. 11

ai. WMO1

If code 11 at WWear1

SPECIFY OTHER ITEM(S) ENTERED ON CLOTHING RECORD

b. WWear2

If code 1 at DWeight and code 2 at Sex for young person and code 1 or 2 at Clothes

RECORD ITEMS TICKED ON THE CLOTHING RECORD
CODE ALL THAT APPLY

- Vest 1
- Pair of socks 2
- Stockings or tights 3
- Pants or knickers or briefs 4
- Bra 5
- Suspender belt 6
- Petticoat or slip 7

Blouse	8
T-shirt	9
Skirt	10
Trousers or jeans	11
Leggings	12
Shorts	13
Belt	14
Dress	15
Jumper	16
Cardigan	17
Something else not on the list (Specify at next question) ..	18

bi. WMO2

If code 18 at WWear2

SPECIFY OTHER ITEM(S) ENTERED ON CLOTHING RECORD

6. CircW

If code 1 at DWeight

RECORD

Were there any unusual circumstances?

Yes	1
No	2

a. C5a

If code 1 at CircW

CODE UNUSUAL CIRCUMSTANCES
CODE ALL THAT APPLY

Wearing heavy clothes or shoes	1
Other person did weighing	2
Other (Specify at next question)	3

b. C5aSpec

If code 3 at C5a

SPECIFY OTHER UNUSUAL CIRCUMSTANCE(S)

MID UPPER-ARM CIRCUMFERENCE - MUAC

1. DMuac

All

RECORD

Was *young person's* mid upper arm circumference measured?

Yes 1

No 2

a. WhyM

If code 2 at DMuac

IF MEASUREMENT WAS NOT MADE CODE REASON(S)

Attempted, unsuccessful 1

Not attempted, refusal by young person 2

Not attempted, refusal by 'parent' 3

2. DateM

If code 1 at DMuac

ENTER DATE MEASUREMENT MADE

__ . __ . ____ (date format variable)

a. MAge

If code 1 at DMuac

[Hidden variable calculated within program]

Age of young person on date muac measured (years)

3..19

**3. Cmuac1 -
CMuac2**

If code 1 at DMuac

CIRCUMFERENCE - 2 MEASUREMENTS (CM)

5.5..99.7

5. CircM

If code 1 at DMuac

RECORD

Were there any unusual circumstances?

Yes 1

No 2

a. MWear

If code 1 at DMuac

CODE UNUSUAL CIRCUMSTANCES
CODE ALL THAT APPLY

- Uncooperative or would not keep still 1
- Other person took measurement 2
- Left arm unavailable, measured right arm 3
- Other (Specify at next question) 4

i. MOther

If code 4 at MWear

SPECIFY OTHER UNUSUAL CIRCUMSTANCE(S)

HIP AND WAIST CIRCUMFERENCE

1. DHip **If young person aged 11 to 18 years**

RECORD

Were *young person's* waist and hip circumferences measured?

Yes 1
No 2

a. WhyHp **If code 2 at DHip**

IF MEASUREMENT(S) WERE NOT MADE CODE REASON(S)?
CODE ALL THAT APPLY

Attempted, unsuccessful 1
Not attempted, refusal by young person 2
Not attempted, refusal by 'parent' 3
Not attempted, chairfast or bedfast 4

2. DateHp **If code 1 at DHip**

ENTER DATE WAIST AND HIP MEASURED

__ . __ . ____ (date format variable)

a. HWAge **If code 1 at DHip**

[Hidden variable calculated within program]

Age of young person on date waist and hips measured (years)

3..19

3. CWaist1 - CWaist2 **If code 1 at DHip**

WAIST CIRCUMFERENCE - 2 MEASUREMENTS (CM)

000.1..999.7

4. CHip1 - CHip2 **If code 1 at DHip**

HIP CIRCUMFERENCE - 2 MEASUREMENTS (CM)

000.1..999.7

7. CircHp

If code 1 at DHip

RECORD

Were there any unusual circumstances?

- Yes 1
- No 2

a. HpWear

If code 1 at CircHp

CODE UNUSUAL CIRCUMSTANCES
CODE ALL THAT APPLY

- Clothing thickness different at waist and hips 1
- Posture difficulty 2
- Uncooperative or would not keep still 3
- Other person made measurement 4
- Other (Specify at next question) 5

i. HpOther

If code 5 at HpWear

SPECIFY OTHER UNUSUAL CIRCUMSTANCE(S)

BLOOD SAMPLE

1. Consent

All

CODE

Consented to fasting blood sample being attempted 1
Consented to non-fasting sample being attempted 2
Refused consent to attempt blood sample 3
Blood DNA 4¹

a. RFast

If code 2 at Consent

SPECIFY REASONS FOR REFUSAL TO FASTING SAMPLE

b. RRef

If code 3 at Consent

SPECIFY REASONS FOR REFUSAL TO ATTEMPT BLOOD SAMPLE

2. BIDate

If code 1 or code 2 at Consent

ENTER DATE SAMPLE ATTEMPTED

__ . __ . ____ (date format variable)

a. BIAge

If code 1 or code 2 at Consent

[Hidden variable calculated within program]

Age of young person on date blood sample attempted

3..19

3. BITime1

If code 1 or code 2 at Consent

ENTER TIME AT START OF BLOOD VISIT (24HR CLOCK)

0000..2359

4. BIEat

If code 1 at Consent

RECORD

Did *young person* have anything to eat or drink this morning?

Yes 1

No 2

¹ Temporary code used at start of Wave 1 only, while blood taking was suspended pending revision of protocol to include option for using Emla Cream (see Chapter X)

- a. BIEatW** **If code 1 at BIEat**
- SPECIFY WHAT EATEN OR DRUNK
- 5. BIEpil** **If code 1 or code 2 at Consent** (*NOT asked in Wave 1*)
- PHLEBOTOMIST TO ASK
- Does *young person* have epilepsy?
- Yes 1
No 2
- a. BICheck1** **If code 1 at BIEpil** (*NOT asked in Wave 1*)
- RING CODE TO CONFIRM BLOOD SAMPLE NOT TAKEN
- Blood was not taken 1
- 6. BIHaem** **If code 1 or code 2 at Consent**
- PHLEBOTOMIST TO ASK
- Has *young person* ever been told that s/he has a clotting or bleeding disorder?
- Yes 1
No 2
- a. BICheck2** **If code 1 at BIHaem**
- RING CODE TO CONFIRM BLOOD SAMPLE NOT TAKEN
- Blood was not taken 1
- 7. BI2Yrs** **If code 2 at BIEpil and code 2 at BIHaem**
- PHLEBOTOMIST TO ASK
- Has *young person* had a blood sample taken in the last 2 years?
- Yes 1
No 2
- a. BIProb** **If code 1 at BI2Yrs**
- PHLEBOTOMIST TO ASK
- Was there a problem?
- Yes 1
No 2

- i. BIPrbS** **If code 1 at BIProb**
- SPECIFY PROBLEM
- 8. BITry** **If code 2 at BIEpil and code 2 at BIHaem**
- RECORD
- Number of attempts made to obtain sample:
- None 1
 One 2
 Two 3
- a. BIWhy** **If code 1 at BITry**
- RECORD
- Reason did not attempt to obtain sample:
- No suitable vein 1
Young person refused 2
Young person too upset or nervous 3
 Refusal on behalf of *young person* 4
- 9. BISamp** **If code 2 or 3 at BITry**
- RECORD
- Was sample obtained?
- Yes 1
 No 2
- a. BIUn** **If code 2 at BISamp**
- RECORD
- Reason sample attempted, but unsuccessful
- Young person's* discomfort or distress 1
 Vein collapsed 2
 Other (Specify at next question) 3
- i. BISpec** **If code 3 at BIUn**
- SPECIFY OTHER REASON(S)

10. BIVol If code 1 at BISamp

RECORD

Volume of blood obtained (ml) - maximum 15 ml

01..15

11. BIPhle If code 1 at BISamp

RECORD

Any other problems reported by the phlebotomist?

Yes 1
No 2

a. If code 1 at BIPhle

RECORD PROBLEMS REPORTED BY PHLEBOTOMIST²

12. BIInt If code 1 at BISamp

RECORD

Any problems or unusual circumstances you (the interviewer) wish to note?

Yes 1
No 2

a. If code 1 at BIInt

RECORD PROBLEMS AND UNUSUAL CIRCUMSTANCES³

13. BIEmla If code 1 at BISamp

RECORD

Was Emla Cream used?

Yes 1
No 2

² Problems reported by the phlebotomist were recorded on the paper measurement schedule (M1) but not coded.

³ Problems and unusual circumstances reported by the interviewer were recorded on the paper measurement schedule (M1) but not coded.

a. BILong

If code 1 at BIEmla

RECORD

How long was it left on before attempting to take the sample?
In minutes

00..120

b. EmlaWho

If code 1 at BIEmla (NOT asked in Wave 1)

RECORD

Who applied the Emla Cream?

- Phlebotomist 1
- Young person 2
- Parent 3
- Other (Specify at next question) 4

14. BITime2

If code 1 or code 2 at Consent

ENTER TIME AT END OF BLOOD VISIT (24HR CLOCK)
0000..2359

URINE SAMPLE

1. UrAnn

All

RECORD

Agreed to provide urine sample and sample obtained 1
Agreed to provide urine sample and sample not
obtained 2
Refused to provide urine sample 3

a. G1a

If code 2 at UrAnn

SPECIFY REASON SAMPLE NOT OBTAINED

b. G1b

If code 3 at UrAnn

SPECIFY REASON SAMPLE REFUSED

2. UrDate4

If code 1 at UrAnn

ENTER DATE URINE SAMPLE COLLECTED (BY YOUNG PERSON)

__ . __ . ____ (date format variable)

a. UrAge

If code 1 at UrAnn

[Hidden variable calculated within program]

Age of young person when urine sample attempted

3..19

3. UrTime4

If code 1 at UrAnn

ENTER TIME SAMPLE COLLECTED (BY YOUNG PERSON) IN
HOURS AND MINUTES
USE 24 HOUR CLOCK

0000..2359

4. UrVoid

If code 1 at UrAnn

Was it an 'early morning' sample - i.e. first void of the day?

Yes 1
No 2

5. UrPost

If code 1 at UrAnn

ENTER APPROXIMATE TIME SAMPLE POSTED
USE 24 HOUR CLOCK

0000..2359

6. UrProb

If code 1 at UrAnn

Were there any problems in collecting the sample?

Yes 1
No 2

a. UrSpec

If code 1 at UrProb

SPECIFY PROBLEMS COLLECTING SAMPLE

7. UrPack

If code 1 at UrAnn

Were there any problems in packing or posting the sample?

Yes 1
No 2

a. UrPSpec

If code 1 at UrPack

SPECIFY PROBLEMS PACKING OR POSTING SAMPLE

BOWEL MOVEMENT RECORD

1. Bowel

All

Interviewer: was a bowel movement record kept?

Yes 1
No 2

2. Bowel1

If code 1 at Bowel

ENTER NUMBER OF BOWEL MOVEMENTS RECORDED FOR
DIARY DAY ONE

0..8

3. Bowel2

If code 1 at Bowel

ENTER NUMBER OF BOWEL MOVEMENTS RECORDED FOR
DIARY DAY TWO

0..8

4. Bowel3

If code 1 at Bowel

ENTER NUMBER OF BOWEL MOVEMENTS RECORDED FOR
DIARY DAY THREE

0..8

5. Bowel4

If code 1 at Bowel

ENTER NUMBER OF BOWEL MOVEMENTS RECORDED FOR
DIARY DAY FOUR

0..8

6. Bowel5

If code 1 at Bowel

ENTER NUMBER OF BOWEL MOVEMENTS RECORDED FOR
DIARY DAY FIVE

0..8

7. Bowel6

If code 1 at Bowel

ENTER NUMBER OF BOWEL MOVEMENTS RECORDED FOR
DIARY DAY SIX

0..8

8. Bowel7

If code 1 at Bowel

ENTER NUMBER OF BOWEL MOVEMENTS RECORDED FOR
DIARY DAY SEVEN

0..8

NHS NUMBER

1. NHSQ

All

interviewer: were you able to collect an NHS number?

Yes 1

No 2

a. Nhs

If code 1 at NHSQ

NOW ENTER THE NHS NUMBER FROM NHSCR CONSENT FORM
(Z5)