



DIARRHOEAL DISEASES CONTROL PROGRAMME

GUIDELINES FOR PLANNING CLINICAL TRIALS IN DIARRHOEAL DISEASES

CONTENTS

	<u>Page</u>
1. Purpose of the trial .....	2
1.1 Background .....	2
1.2 Specific objectives .....	2
2. Study design .....	3
2.1 Inclusion and exclusion criteria for study subjects .....	3
2.2 Sample size estimate .....	6
2.3 Enrolment of subjects .....	7
2.4 Standard case management and the experimental treatment .....	10
2.5 Withdrawals from the study .....	11
2.6 Organization of the trial .....	11
3. Data analysis .....	13
 ANNEXES	
1. Important definitions .....	14
2. Assessment of degree of dehydration .....	15
3. Stool output and duration of diarrhoea in control subjects with acute diarrhoea .....	16
4. Factors for $\alpha$ , $\beta$ to be used in formulas for sample size calculation .....	17
5. Sample formats for data presentation in progress or final reports .....	18
6. NCHS reference values: weight for length .....	20

This document is not issued to the general public, and all rights are reserved by the World Health Organization (WHO). The document may not be reviewed, abstracted, quoted, reproduced or translated, in part or in whole, without the prior written permission of WHO. No part of this document may be stored in a retrieval system or transmitted in any form or by any means - electronic, mechanical or other without the prior written permission of WHO.

The views expressed in documents by named authors are solely the responsibility of those authors.

Ce document n'est pas destiné à être distribué au grand public et tous les droits y afférents sont réservés par l'Organisation mondiale de la Santé (OMS). Il ne peut être commenté, résumé, cité, reproduit ou traduit, partiellement ou en totalité, sans une autorisation préalable écrite de l'OMS. Aucune partie ne doit être chargée dans un système de recherche documentaire ou diffusée sous quelque forme ou par quelque moyen que ce soit - électronique, mécanique, ou autre - sans une autorisation préalable écrite de l'OMS.

Les opinions exprimées dans les documents par des auteurs cités nommément n'engagent que lesdits auteurs.

## INTRODUCTION

These guidelines are intended to assist researchers to prepare proposals for clinical trials involving patients with acute watery diarrhoea, persistent diarrhoea, or dysentery. The document is not an exhaustive manual on how to design and carry out clinical trials, nor is it meant for use by persons unfamiliar with clinical trials. Rather, it is intended as a guide and checklist for those with some prior experience or knowledge in this area, such as might be gained by participation in a WHO workshop on clinical trials in diarrhoeal diseases.

It is hoped that use of this guide will speed the process of proposal development. Researchers are urged to read the guide before preparing a research proposal for submission to WHO for support and to check the proposal for completeness after it has been written by reviewing the contents of the guide. In general, the sequence in which topics are covered in the guide follows that used in preparing a proposal for a clinical trial.

### 1. PURPOSE OF THE TRIAL

#### 1.1 Background

This should include:

- a statement of the objective;
- a general review of the topic being addressed by the study, with selected references;
- the rationale for the planned study, including the basis for selection of the treatment or diet to be studied; this should include an explanation of the relevance of the results of the trial for the country or region in which the study will be performed.

#### 1.2 Specific objectives

##### 1.2.1 Questions to be answered

The trial should have only one **primary objective**, which should be clearly stated. It should be worded as a question which will be answered by the trial. The primary objective should be realistic and of practical clinical importance with regard to the management of diarrhoeal diseases. For example, does treatment with a particular drug reduce stool output (ml per kg per 24 hours) during acute diarrhoea in children aged 6 months to 3 years?

A few **secondary objectives** may also be mentioned. However, they can only be achieved if the sample size is sufficient to detect a significant difference between the groups for the appropriate secondary response variables. Nevertheless, by indicating important trends, useful information may be obtained even when statistically significant differences are not achieved. One should however be alert to the danger of over-zealous interpretation of apparent trends.

##### 1.2.2 Response variables

The **major response variables** are the clinical outcomes that will be measured during the course of the trial in order to achieve the primary objective. Usually not more than three major response variables should be given. These should be precisely defined and the units in which they will be measured should be stated.

For example, to study a new ORS formulation or an anti-diarrhoeal drug, the major response variables could be:

- total stool output, in g/kg of body weight, from the time of randomization or initiation of treatment with the study drug or formulation until the end of diarrhoea;

- duration of diarrhoea, in hours, after randomization and initiation of treatment with the study drug or formulation;
- rate of stool output, in g/kg/h, during the first 18 or 24 hours of treatment with the study drug or formulation.

These variables are defined in Annex 1.

**Secondary response variables** are those that are not directly relevant to the primary objective, but will help to interpret the results obtained with the major variables or will achieve secondary objectives.

For the study of an experimental ORS solution these might include:

- intake of ORS and plain water, in ml/kg of body weight, from initiation of treatment with the new solution until diarrhoea stops;
- urine output, in ml/kg of body weight;
- weight gain, expressed as percent increase in weight, after diarrhoea stops compared with admission weight;
- occurrence of hypernatraemia or hyponatraemia.

On the other hand, to study the effect of a new antibiotic on the clinical course of dysentery due to Shigella, the major outcome variables could be:

- duration of diarrhoea after starting treatment with the antibiotic, in hours;
- duration of excretion of visible blood in the stools after starting the antibiotic, in hours;
- duration of fever after starting the antibiotic, in hours; or area under a fever curve, in degree-hours.

Important **secondary variables** might be:

- frequency of bowel motions for each day of treatment;
- duration of abdominal pain after starting the antibiotic, in hours;
- duration of anorexia after starting the antibiotic, in hours; this may be measured by response to food offered in a standard manner.

These variables are also defined in Annex 1.

## 2. STUDY DESIGN

### 2.1. Inclusion and exclusion criteria for study subjects

In order to clearly identify which patients are eligible for the study, the inclusion and exclusion criteria to be used for the selection of study subjects should be precisely stated. Some commonly used criteria are given below.

#### 2.1.1 Type of diarrhoeal illness to be studied

For many studies patients with **acute watery diarrhoea** will be selected:

- they will usually be patients who have had diarrhoea for less than 5 days (and in some studies less than 3 days) prior to admission, and three or more watery stools in the last 24 hours;

- diarrhoeal stool should be liquid or watery and without visible blood;
- if cholera is to be studied, patients should have had severe watery diarrhoea for less than 24 hours prior to admission; to select cholera patients with an established high rate of stool loss (e.g., stool output greater than 5 ml/kg/h) and who thus are very likely to continue to purge at a high rate, the rate of stool output should be measured during an initial observation period (usually 6 hours) prior to the selection of patients for the study. During this period required fluid should be given intravenously.

For studies of patients with **dysentery** (usually caused by Shigella or Campylobacter jejuni):

- diarrhoea should be of recent onset (usually less than 5 days);
- the stool should contain visible blood.

When **persistent diarrhoea** is the topic of study:

- patients should have diarrhoea that begins as an acute episode and lasts for at least 14 days, but usually not more than 4 weeks;
- evidence of weight loss during the illness may also be required.

#### 2.1.2 Degree of dehydration on admission

To study the effect of a new ORS formulation or an anti-diarrhoeal drug, only patients with clinically evident dehydration should be selected. These will usually be patients with either moderate or severe dehydration (criteria for the diagnosis of dehydration are given in Annex 2). When severe dehydration is present, patients should be given rapid intravenous rehydration before being selected for the study (infants: Ringer's lactate solution, 70 ml/kg within 3 hours; adults and older children: Ringer's lactate solution, 100 ml/kg within 4 hours; in all ages, 30-40% of these volumes should be given rapidly within 30-60 minutes, to restore normal blood pressure and an adequate circulating blood volume as evidenced by a good volume radial pulse).

#### 2.1.3 Age

The age limits of patients selected for study should be defined. Some considerations in making this decision are:

- infants below 3 months of age are often excluded from studies because they may require a modified treatment or feeding protocol;
- the outcome of a clinical trial may be affected by the etiology of the diarrhoeal cases studied. Rotavirus is an important etiological agent in children between 3 months and 2 years of age, while cholera will be encountered mostly in older children and adults, and diarrhoea or dysentery caused by C. jejuni occurs mostly in children under 1 year of age. Thus, if it is desired to include diarrhoea of specific etiologies in a study, the age of recruitment must be appropriately defined. However, it is important to emphasize that the results of a study cannot be generalized unless all common etiologies are included.

#### 2.1.4 Sex

If accurate stool collection is required, only males should be selected because reliable separation of stool and urine is not possible in females. However, for other outcome variables, such as the duration of diarrhoea or weight gain, females may also be selected. If both sexes are selected, but stool volume is measured only in males, randomization should be done separately according to sex (see "stratification" in 2.3.3.1).

### 2.1.5 History of medication prior to entry into the study

In some studies patients with a history of taking an anti-diarrhoeal drug or antibiotic within 3 days prior to admission should be excluded, especially if there is reason to believe the medication would have an action similar to that of a medication being studied (e.g., an antibiotic) or would substantially alter the course of illness after admission. However, in many cases patients given prior treatment may be selected for study provided that they meet other inclusion criteria, are randomized separately, and a record of prior drug use is kept on an appropriately designed recording schedule for consideration during analysis (see 2.3.3.1).

### 2.1.6 Complicating illness

Patients with a serious concurrent illness (e.g., meningitis or pneumonia) or with a recognized chronic disease should not be included.

### 2.1.7 Nutritional status

The nutritional status of children to be selected for study should be stated. The criteria to be used in nutritional assessment and classification are described below. These are based on the ratio of weight (kg) for height (cm) expressed as a percentage of the expected median weight for height, using NCHS reference standards.

<u>Nutritional status</u>	<u>Ratio of weight for height*</u>
Normal	>90%
Mild malnutrition	80-89%
Moderate malnutrition	70-79%
Severe malnutrition	<70% or oedema

\* As percent of reference median value (U.S. National Center for Health Statistics). See Annex 6 for tables.

If nutritional status is a basis for patient selection, it will often have to be assessed before patients are rehydrated, in which case the measured weight will usually be less than the rehydrated weight, and the extent of malnutrition will be overestimated. However, as the patients will be randomized, no bias will be introduced into the study. For a more accurate nutritional classification of the patients in the study, weight for height determined after diarrhoea has stopped and sufficient time has elapsed to allow the effect of treatment to disappear may be used (e.g., weight at discharge). However, if the study involves different treatments which may influence discharge weight (e.g., different diets), the weight on admission should be compared.

Many studies will exclude severely malnourished children. For studies that do involve such patients, a definition of nutritional status on the basis of findings on admission to hospital can be difficult because signs of dehydration may also be present. Clinical criteria for diagnosing severe malnutrition include:

- kwashiorkor: oedema of the lower limbs (even when dehydrated) and an enlarged liver; characteristic skin lesions and dry, sparse, pluckable hair may also be present.
- marasmus: marked loss of subcutaneous fat in the upper and lower limbs, sometimes with dry, pluckable hair, and weight for height <70%.

### 2.1.8 Feeding status

The type of diet being fed to a child prior to hospitalization should be defined and may be a basis for patient selection in some studies. Commonly used definitions of feeding status are given below:

- exclusively or mostly breast-fed: these are infants, usually below 6 months of age, who receive only or mostly breast milk (i.e., breast-feeding occurs at least 5 times per day and provides more calories than other foods).

- **partially breast fed:** these are infants who receive breast milk, but most calories come from animal milk and/or other foods (children who receive 2 or more formula or cow's milk feeds per day will usually fall in this category).
- **formula or cow's milk fed:** infants who receive only formula or fresh cow's milk.
- **mixed feeding:** infants or children who receive mixed soft or solid foods with or without formula or breast milk.

Some studies may exclude children in certain feeding categories. For example, dietary interventions should not be studied in children who are exclusively or mostly breast-fed.

## 2.2 Sample size estimate

A clinical trial should have sufficient statistical power to detect plausible differences of practical importance in the major outcome variables. If the difference which is plausible is of no practical importance, there is no point in doing the trial; similarly, if the difference which is of practical importance is implausible, then again there is no point in doing the trial.

The following information is necessary to calculate sample size:

- **the mean ( $\bar{x}$ ) and standard deviation (sd) of the major outcome variables when standard (control) treatment is given:** These can be obtained either by analysing data previously obtained in the facility where the trial will be conducted or by using published data obtained in other facilities from patients similar to those who will be selected for study. (Annex 3 provides samples of the means and standard deviations of stool output and duration of diarrhoea from control subjects in four different clinical trials conducted in children.)
- **the significance level (also called "type I error" or " $\alpha$ "): This is the probability of demonstrating a falsely positive outcome - i.e., detecting a "significant difference" between two treatments when the treatments studied are, in fact, equally effective (usually the significance level sought is 0.05; which means there is only 1 chance in 20 of getting a difference as extreme as the difference observed when in fact the two treatments have an identical impact on diarrhoea).**
- **type II error (or  $\beta$ ):** The type II error is the probability of not achieving significance when a real difference of the magnitude of interest exists. The power level (represented by  $1 - \beta$ ) of a trial for a given difference in a major outcome variable is the degree of certainty that a difference of that magnitude between two treatments, if present, will be detected (the power is often set at  $1 - 0.10 = 0.90$  or  $1 - 0.20 = 0.80$ , which are often called 90% or 80% power, respectively).
- **the worthwhile difference (wd).** This is the difference, expressed in the same units as the mean and standard deviation, that it is important to detect between the means of the major outcome variables for the two groups. The worthwhile difference must be plausible for the proposed intervention and also of practical clinical importance.

Using these definitions, the number of patients (n) to be studied **per group** is given by the formula:

$$n = \frac{2 (sd)^2}{(wd)^2} \times \text{factor for } \alpha, \beta *$$

This formula should be applied to all major quantitative outcome variables (e.g., stool volume in ml/kg) and the largest sample size obtained should be selected.

When using qualitative outcome variables to calculate sample size (i.e., comparison of success rates), the following formula should be used:

$$n = \frac{P1 \times (100-P1) + P2 \times (100-P2)}{(P2-P1)^2} \times \text{factor for } \alpha, \beta *$$

\*(In Annex 4, the factors for  $\alpha$ ,  $\beta$  are given for different values of  $\alpha$  and  $\beta$  ).

where: P1 = the percentage of successes expected for the control treatment; and

P2 = the percentage of successes expected for the experimental treatment.

In both of the above formulas, n is the number of subjects required in each of two treatment groups and the difference between P1 and P2 is the minimum difference that the researcher wants to be able to detect. All applications should justify the worthwhile difference by reference to the literature on similar interventions (and should recognize that the observed difference in the first reported study of a specific treatment is likely to exaggerate the true difference).

Applications should also describe how the sample size was calculated, including the source of reference values, the formula used, the calculations made, the differences sought, and the level of significance and power used.

## 2.3 Enrolment of subjects

### 2.3.1 Informed consent and ethical review

It is the responsibility of the institution and the Principal Investigator to safeguard the rights and welfare of human subjects involved in research supported in whole or in part by funds from WHO in accordance with the appropriate national code of ethics.

#### 2.3.1.1 Ethical review

The investigator must submit to WHO, with the research proposal, the written approval of an institutional ethical review panel before any proposed research involving human subjects can start. For countries with national ethical review bodies for research involving human subjects, that Group's written approval should also be provided. Research funds will not be awarded by WHO until evidence of ethical review and approval is provided.

#### 2.3.1.2 Informed consent

For all studies involving human subjects the Principal Investigator must fully inform potential subjects (or their parents or legal guardian) about the trial and obtain freely given consent for the subject to participate, preferably in writing.

The informed consent form should indicate in simple words, easily understood by a non-professional person:

- the general purpose of the trial;
- the benefits and any known risks to a subject in the study;
- that treatment will be randomly allocated and (for placebo controlled trials) that some subjects will receive a safe but ineffective substitute for the test drug;

- the length of the study or of the hospitalization;
- any examinations to be performed (blood samples to be taken, tubes to be swallowed, biopsies to be taken, etc.).

The consent form should also clearly indicate that the subject is free to withdraw from the study at any time and will then receive the standard treatment used in the hospital for his or her disease. A sample of a written consent form, in English or French, should be attached to the proposal.

The staff member who will give this information, and the person who will ascertain that the information is understood, should be clearly identified in the proposal. For dependent children, consent must be given by the parents or the legal guardian. In some countries, verbal consent is considered acceptable by the local authorities. In this case, a sample of the information to be read or explained should be attached to the proposal.

Subjects usually do not receive any incentives or rewards for participating in a study. If any are given, they should be clearly described and their use fully justified.

### 2.3.2 Baseline examination

A baseline history and examination should be obtained in order to:

- determine the subject's eligibility for inclusion in the trial;
- collect relevant data prior to beginning the study that will allow, (i) comparison of the study groups after randomization, and (ii) description of the study population to determine whether the results obtained can be compared with those from other trials.

The baseline history and examination will usually include:

- identification of the patient (name, age, birthdate, sex, address, etc.);
- a description of symptoms prior to admission and their duration;
- details of any treatment given for the illness before admission;
- a description of the feeding status prior to admission (and also before the onset of illness, as these may differ);
- a description of the stool using standard terminology;
- results of the physical examination, including the state of hydration and nutrition determined according to standard criteria (see 2.1.1.7 and Annex 2);
- results of any microbiological, microscopic and biochemical examinations performed on admission (in general, only centres that are both well equipped and experienced should attempt comprehensive studies of the etiology of diarrhoea; for many studies, identification of rotavirus and Vibrio cholerae O1 would be sufficient and can be reliably accomplished).

The form on which the results of the baseline history and examination will be recorded should be attached to the proposal. (Upon request, WHO can provide sample baseline history and examination forms in English or French.)

### 2.3.3 Allocation to treatment group (randomization)

Subjects must be randomly allocated to treatment groups using methods that avoid bias.

#### 2.3.3.1 Randomization technique

A clear description of the technique of randomization should be provided with the proposal. This should include:

- **preparation of the randomization code:** Because the number of subjects to be included in most studies is relatively small (i.e., less than 200), steps should be taken to ensure that nearly equal numbers of patients will be assigned randomly to each treatment group as the study progresses. In **single-blind studies**, random permuted blocks of variable length should be used; in **double-blind trials**, permuted blocks of constant length (usually 6 to 10 subjects per block) should be used in the randomization code. The randomization list should contain more subjects than the estimated sample size, to allow for replacement of patients that leave the study prematurely.
- **single-blind study (use of sealed envelopes):** After the randomization code has been prepared, individual patient assignments, corresponding to the master randomization list, should be placed in a series of sealed envelopes. After each patient is selected for study, the next envelope in order of trial number (i.e., in numerical sequence) is opened to determine the treatment assignment; thus the investigator cannot know the order of randomization and he is unable to predict what the next assignment will be.
- **double-blind study (use of coded medications):** The test medication and placebo (or standard treatment) should be identical in appearance (and flavour and weight) and be packaged in identical containers. The containers should be arranged in a sequence of drug and placebo (or standard treatment) that corresponds to the randomization code and then numbered sequentially (note that letter codes for the different treatments, such as A, B, and C should not be used). When a new subject is selected for study, e.g., the 15th patient, he/she should be assigned the medicine in container number 15. A careful record must be kept of the treatment number assigned to each subject.
- **stratification:** When patients with differing characteristics that may affect the outcome of treatment are admitted to the study (i.e., males and females, patients with different nutritional status, or patients of substantially differing age), it is important to ensure that the treatment groups will contain similar proportions of subjects with these characteristics. This can be accomplished by stratifying the randomization for the characteristics of concern. To do this, separate randomization lists are prepared for the groups or strata defined, e.g., one randomization list for males and another for females. As stratification creates more sub-groups, it makes the randomization process more complex, and should only be used when the characteristics concerned are likely to affect the outcome of treatment to an important extent.

#### 2.3.3.2 Preparation and safekeeping of the randomization list

The randomization list, sealed envelopes, and numbered medication containers should all be prepared by a responsible and appropriately trained person who is **not otherwise associated with the study**. The randomization list will **not normally** be accessible to the persons in charge of recruiting the patients or responsible for observing and recording outcome variables. For certain types of studies it may be necessary, in the event of an untoward side effect, for the investigator to have quick access to the treatment assignment of the child; for such studies a copy of the master randomization list should be kept sealed with a responsible person in the study institution who is not directly involved in the study.

WHO will normally request a copy of the randomization list prior to the start of the study and may ask that all other copies of the list be destroyed.

### 2.3.3.3 Time of randomization

The point during case management at which randomization will occur should be clearly stated. If possible, randomization should be delayed until just before the study intervention is initiated.

In double-blind studies, the randomization code should not be broken until the study has been completed and the data have been analysed according to groups, and not without the prior agreement of WHO.

## 2.4 Standard case management and the experimental treatment

### 2.4.1 Observation period

If an initial observation or treatment period is planned, for example to determine the baseline rate of stool loss, to accomplish rapid rehydration of severely dehydrated patients, or to carry out certain tests prior to the start of the study, this should be explained and the treatments to be given or tests to be carried out during this period should be clearly described. In the case of initial intravenous rehydration, for example, the description should include the type and amount of solution to be administered, the clinical observations to be made, and the duration of the period or how its endpoint will be determined.

### 2.4.2 Standard case management

Case management procedures should be described in detail. The following are some items that are often required (others may also be appropriate):

- **correction of dehydration:** The amount and composition of solutions to be given (in ml/kg), route(s) of fluid administration, duration of therapy, and method of clinical surveillance should be described;
- **maintenance phase:** The same details as described above should be provided, as well as the criteria for determining the amounts of fluid to be given and the adequacy of hydration during maintenance.
- **supplemental intravenous fluid therapy:** The indications for giving supplemental IV fluids during the course of a trial (and their composition) should be clearly described and may include:
  - during the rehydration phase: failure to achieve adequate rehydration within a specified period (e.g., 8 hours), or a worsening of the signs of dehydration, despite intake of the estimated fluid requirement;
  - during the maintenance phase: reappearance of clinical signs of dehydration despite intake of the estimated fluid requirement;  
uncontrollable vomiting during any phase of treatment.
- **feeding:** The diets to be administered to patients should be described in detail, specifying the composition of the diet, the amounts to be given, and the feeding schedule, including the time when feeding will be initiated;
- **medications:** The amounts to be given (with necessary adjustment for body weight), the schedule of administration, and the route of administration should be clearly stated.

### 2.4.3 The experimental treatment and placebo

The experimental treatment will usually be a diet, a drug, or a specially formulated oral rehydration fluid. It should be described in detail with regard to both the composition and mode of use of the treatment, as indicated above. The control diet, drug, or fluid should be described in equal detail. Known side effects or risks of the experimental

treatment should be stated. If a placebo is used, its composition, possible side effects, and appearance (and flavour and weight) should be described. If possible, examples of the placebo and active preparations should be sent to WHO for comparison.

#### 2.4.4 Follow-up after discharge

In some cases treatment of the patients should continue beyond the end of the study (e.g., continued nutritional rehabilitation of severely malnourished children after diarrhoea has stopped). Any additional or extended treatments required to achieve full rehabilitation should be described.

### 2.5 Withdrawals from the study

#### 2.5.1 Definitions

The reasons for withdrawing a patient from the study should be clearly described in the proposal. The most common ones are:

- non-compliance of the subject, either because the patient leaves (or is removed from) the hospital before the end of the study, or because the patient requires unscheduled treatment for a serious intercurrent illness (e.g., pneumonia, meningitis);
- treatment failures or complications that prevent the planned treatment from being conducted or resumed.

Precise definitions of what will be considered treatment failures should be given prior to starting the study. Examples of treatment failures are patients who cannot be adequately treated with an experimental or control ORS due to glucose malabsorption, or patients who experience serious side effects related to a study drug. Such patients should be withdrawn from the study and treated as the circumstances require.

On the other hand, patients who must receive supplemental IV fluids during the course of a clinical trial of an ORS solution, but who can resume ORS therapy after the infusion is completed, should not be considered treatment failures. Instead, they should resume oral treatment with their randomly allocated formulation and observation of the outcome variables should continue.

#### 2.5.2 Consideration of withdrawals and treatment failures during analysis

Results from all randomized patients should be included in the analysis of the study. Data from patients withdrawn because of treatment failure or other reasons should be included in the analysis up to the time of withdrawal. If desired, a supplemental analysis in which such patients are excluded (and their exclusion is clearly indicated) may be made. The reasons for patient withdrawal should be summarized and a description of such patients provided.

### 2.6 Organization of the trial

#### 2.6.1 Description of facilities and patient population

A precise description of the facilities and patient population available for the study should be included in the proposal. This should include:

- the approximate number of patients fulfilling the inclusion criteria being received in the centre each week;
- the source of the patients to be included in the study, i.e., admitted from the outpatient clinic, referred from other hospitals, etc.

- the number of beds reserved for the study;
- a description of the study area and its relation to normal treatment areas.

#### 2.6.2 Study schedule

Based on the above information, it should be possible to estimate the approximate duration of the study. An outline schedule for the study should be given in the proposal. This should indicate the time required for the different phases of the project, such as:

- procuring supplies and establishing methods;
- developing study materials, e.g., data forms, questionnaires;
- recruiting and training the study personnel;
- conducting a pre-trial or pretest of study materials (if one is planned);
- conducting the main trial;
- analysing the data and writing up the results.

#### 2.6.3 Personnel requirements

A list of the personnel needed to conduct the study should be provided. This should include the number of physicians, nurses, auxiliaries, and technicians, their roles in the study, and the percentage of working time that each worker will devote to the study. Nurses involved in the care of study patients and the measurement of response variables will not usually have any other concurrent clinical duties. The amount of time devoted to the study by the Principal Investigator should be described, and also his role in the day-to-day supervision of the project. Personnel who will assist in data recording and analysis (including a statistician, when available) should be described.

#### 2.6.4 Methods

A precise description of the methods used to measure the response variables should be included in the proposal. Some examples are:

- stool volume: by using pre-weighed diapers (for children) or cholera cots (for adults);
- urine volume: by collection in urine bags for children (males);
- vomitus: by wiping it up with pre-weighed napkins; and
- body weight: by weighing children nude on a scale sensitive to 20 grams.

All materials to be used, e.g., balances, diapers, urine collectors, scales, and laboratory methods to be employed should be described.

#### 2.6.5 Data collection

The forms used to record data should be provided with the proposal. WHO has designed summary data collection forms, in English and French, for studies on infants and small children. These can be provided upon request and should be used if they are suitable for the study.

### 3. DATA ANALYSIS

During a clinical trial two types of data are collected: admission (or pre-intervention) data and response data. The proposal should indicate how these two types of data will be analysed and presented in the progress or final reports. The study groups should be compared on admission (or before the intervention) with regard to the mean (and standard deviation) and median of age (in months or years), duration of diarrhoea prior to admission (in hours), and stool output (ml/kg/h) from admission until the start of the intervention. Prior drug therapy, weight for height, and the percentage of children with vomiting, fever, and mild, moderate, or severe dehydration should also be summarized and compared. Serum electrolytes on admission (or before the intervention) should be summarized and compared. Transformed data (using natural logarithms, i.e.,  $\log_e$ ) on stool output (in g/kg, or g/kg/h), ORS intake (in ml/kg, or ml/kg/h), and duration of diarrhoea (in hours) may be used when appropriate to perform significance tests because of the usually asymmetric distribution of these measurements. All statistical tests that will be used should be listed. Adverse drug reactions observed in the two groups should be summarized. Annex 5 shows an example of the format for data presentation in a study report.

### IMPORTANT DEFINITIONS

1. Duration of diarrhoea after admission

The time in hours from initiation of the study treatment until passage of the last liquid or semi-liquid stool prior to two formed stools or prior to 12 hours during which no stool is passed.

2. Stool output

The weight of stool in g/kg of admission body weight expressed per time period (e.g., per hour, per 6 hours, per 24 hours, or for the entire duration of diarrhoea).

3. ORS and plain water intake

The volume of ORS or plain water taken in ml/kg of admission body weight expressed per time period (e.g., per hour, per 6 hours, per 24 hours, or for the entire duration of diarrhoea).

4. Weight gain (or loss)

The increase (or loss) in weight at a specified interval after admission (e.g., after 6 hours or 24 hours, or after recovery) compared with weight on admission and expressed as a percent of admission weight.

5. Hypernatraemia

Serum sodium concentration  $\geq 150$  mEq/l.

6. Hyponatraemia

Serum sodium concentration  $< 130$  mEq/l.

7. Dysentery

Acute diarrhoea with visible blood in the stool, often with abdominal pain and fever.

## ASSESSMENT OF DEGREE OF DEHYDRATION

SIGNS AND SYMPTOMS	MILD DEHYDRATION	MODERATE DEHYDRATION	SEVERE DEHYDRATION
1. General appearance	Alert, restless	Restless, or lethargic but irritable	Drowsy; limp, cold, moist, cyanotic extremities; may be comatose
2. Skin elasticity*	Pinch retracts immediately	Pinch retracts slowly	Pinch retracts very slowly (>2 seconds)
3. Eyes*	Normal	Sunken	Deeply sunken
4. Anterior fontanelle (if open)*	Normal	Sunken	Very sunken
5. Radial pulse	Normal rate and volume	Rapid	Rapid, feeble, sometimes impalpable
6. Respiration	Normal	Deep, may be rapid	Deep and rapid
7. Tears	Present	Absent	Absent
8. Mucous membranes*	Moist	Dry	Very dry
9. Thirst	Thirsty	Very thirsty	Very thirsty or unable to drink
10. Urine flow*	Normal	Reduced amount and dark	None passed for several hours - empty bladder

\* Signs that are the most useful and important for the assessment of dehydration in infants.

## ANNEX 3

STOOL OUTPUT AND DURATION OF DIARRHOEA IN CONTROL SUBJECTS  
WITH ACUTE DIARRHOEA

Author	Age (mths)	Period	STOOL OUTPUT (g/kg)		DURATION OF DIARRHOEA (hours)	
			Arith- metic mean	sd	Arith- metic mean	sd
1. Patra et al. <sup>a</sup>	3-59	1st 24 hrs	180	155		
		Total	264	242	38	26
2. Madkour et al. <sup>b</sup>	3-11	1st 24 hrs	143	65		
		Total	285	112	60	15
3. Santos Ocampo <sup>c</sup> et al.	3-35	1st 24 hrs	160	218		
		Total	344	455	47	32
4. Römer et al. <sup>d</sup>	3-35	1st 24 hrs	110	71		
		Total	192	145	45	23

<sup>a</sup> Patra, F.C. et al., *J. Diarr. Dis. Res.*, 4: 16-19 (1986). The study was conducted in India on children with acute diarrhoea. Some children with cholera are included.

<sup>b</sup> The study was conducted in Egypt on infants with moderate dehydration due to acute diarrhoea.

<sup>c</sup> The study was conducted in the Philippines on children with mild to moderate dehydration due to acute diarrhoea.

<sup>d</sup> The study was conducted in Venezuela on children with mild to moderate dehydration due to acute diarrhoea.

FACTORS FOR  $\alpha, \beta$  TO BE USED IN FORMULAS FOR SAMPLE SIZE CALCULATION

	Power level (Type II error, or $1-\beta$ )				
	0.95	0.90	0.80	0.50	
	(95%)	(90%)	(80%)	(50%)	
	0.1	10.8	8.6	6.2	2.7
Significance level	0.05	13.0	<u>10.5</u> <sup>a</sup>	<u>7.9</u> <sup>a</sup>	3.8
(Type I error, or $\alpha$ )	0.02	15.8	13.0	10.0	5.4
	0.01	17.8	14.9	11.7	6.6

<sup>a</sup> The factors for the most frequently used levels of significance (0.05) and power (80% and 90%) are underlined.

## SAMPLE FORMATS FOR DATA PRESENTATION IN PROGRESS OR FINAL REPORTS

TABLE 1: COMPARISON OF STUDY GROUPS

	STUDY GROUP n =	CONTROL GROUP n =
1. Age (months)		
3-11 months <sup>a</sup>		
12-23 months		
24-59 months		
median		
2. Weight for height <sup>b</sup> (% of NCHS norms)		
>80%		
70-79%		
<70%		
3. History of vomiting before admission (number)		
4. Duration of vomiting before admission (hours) mean (sd), n =		
5. Duration of diarrhoea before admission (hours) mean (sd)		
6. Degree of dehydration on admission		
Mild		
Moderate		
Severe		
7. Stool output after admission and before start of intervention (ml/kg/h) mean (sd)		

<sup>a</sup> For most quantitative data, means and standard deviations should be presented. However, some quantitative data, such as age, nutritional status, history of vomiting, and degree of dehydration are better represented qualitatively, indicating the number of subjects in a given range or category.

Other data that may be presented include percent of male subjects (if both sexes are studied), number with stool having certain characteristics (e.g. visible blood, watery, etc.), number receiving a specified treatment (antibiotic, anti-diarrhoeal drug) within a stated period before admission, and mean values (sd) for serum electrolytes on admission or at the start of the intervention.

<sup>b</sup> See 2.1.7

TABLE 2: OUTCOME VARIABLES

	<u>STUDY GROUP</u> n =	<u>CONTROL GROUP</u> n =
1. Duration of diarrhoea after start of intervention (hours) mean (sd)		
2. Stool output (g/kg) First 24 hrs after start of intervention Total mean (sd)		
3. ORS intake (ml/kg) First 24 hrs after start of intervention Total mean (sd)		

As the distribution of the above variables is asymmetric, geometric means with the 95% confidence intervals (CI) of the means may also be presented. Other outcome variables might include duration of fever (mean and sd in hours) for patients with dysentery, and weight change after rehydration (in feeding studies), expressed as grams lost or gained (mean and sd) or mean percent change in weight after rehydration and until discharge or follow-up visit. Serum sodium values at specified intervals after starting treatment may be presented as mean (sd) mmol/l and the number of subjects developing hyper- or hyponatraemia may be shown.

NCHS REFERENCE VALUES: WEIGHT FOR LENGTH

TABLE 26. WEIGHT BY LENGTH: BOYS

LENGTH CM	CENTILES																LENGTH CM					
	3RD	5TH	10TH	20TH	30TH	40TH	50TH	60TH	70TH	80TH	90TH	95TH	97TH	-2S.D.	-1S.D.	MEDIAN		+1S.D.	+2S.D.	+3S.D.		
49.0	2.5	2.6	2.7	2.9	3.0	3.1	3.1	3.1	3.3	3.4	3.6	3.8	4.0	4.1	2.1	2.5	2.8	3.1	3.7	4.2	4.7	49.0
49.5	2.5	2.6	2.8	2.9	3.0	3.1	3.2	3.4	3.4	3.5	3.7	3.9	4.1	4.2	2.1	2.5	2.9	3.2	3.7	4.3	4.8	49.5
50.0	2.6	2.7	2.8	3.0	3.1	3.2	3.3	3.4	3.6	3.7	4.0	4.2	4.4	4.3	2.2	2.6	2.9	3.3	3.8	4.4	4.9	50.0
50.5	2.6	2.7	2.9	3.1	3.2	3.3	3.4	3.5	3.7	3.8	4.1	4.3	4.4	4.4	2.2	2.6	3.0	3.4	3.9	4.5	5.0	50.5
51.0	2.7	2.8	2.9	3.1	3.2	3.3	3.4	3.5	3.6	3.8	4.2	4.4	4.5	4.5	2.2	2.6	3.1	3.5	4.0	4.6	5.1	51.0
51.5	2.8	2.9	3.0	3.2	3.3	3.5	3.6	3.7	3.9	4.0	4.3	4.5	4.5	4.6	2.3	2.7	3.1	3.6	4.1	4.7	5.2	51.5
52.0	2.8	2.9	3.1	3.3	3.4	3.6	3.7	3.8	4.0	4.1	4.4	4.6	4.7	4.7	2.3	2.8	3.2	3.7	4.2	4.8	5.4	52.0
52.5	2.9	3.0	3.2	3.4	3.5	3.7	3.8	3.9	4.1	4.3	4.5	4.7	4.9	4.9	2.4	2.9	3.3	3.8	4.3	4.9	5.5	52.5
53.0	3.0	3.1	3.3	3.5	3.6	3.8	3.9	4.0	4.2	4.4	4.6	4.8	5.0	5.0	2.4	2.9	3.4	3.9	4.5	5.0	5.6	53.0
53.5	3.0	3.2	3.3	3.6	3.7	3.9	4.0	4.1	4.3	4.5	4.7	5.0	5.1	2.5	3.0	3.5	4.0	4.6	5.2	5.8	6.3	53.5
54.0	3.1	3.3	3.4	3.7	3.8	4.0	4.1	4.3	4.4	4.6	4.8	5.1	5.2	2.6	3.1	3.6	4.1	4.7	5.3	5.9	6.4	54.0
54.5	3.2	3.3	3.5	3.8	3.9	4.1	4.2	4.4	4.5	4.7	5.0	5.2	5.4	2.6	3.2	3.7	4.2	4.8	5.4	6.0	6.5	54.5
55.0	3.3	3.4	3.6	3.9	4.1	4.2	4.3	4.5	4.7	4.9	5.1	5.4	5.5	2.7	3.3	3.8	4.3	5.0	5.6	6.2	6.7	55.0
55.5	3.4	3.5	3.7	4.0	4.2	4.3	4.5	4.6	4.8	5.0	5.3	5.5	5.6	2.8	3.3	3.9	4.5	5.1	5.7	6.3	6.8	55.5
56.0	3.5	3.7	3.9	4.1	4.3	4.4	4.6	4.7	4.9	5.1	5.4	5.6	5.8	2.9	3.5	4.0	4.6	5.2	5.9	6.5	7.0	56.0
56.5	3.6	3.8	4.0	4.2	4.4	4.6	4.7	4.9	5.0	5.3	5.5	5.8	5.9	3.0	3.6	4.1	4.7	5.4	6.0	6.6	7.1	56.5
57.0	3.7	3.9	4.1	4.3	4.5	4.7	4.8	5.0	5.2	5.4	5.7	5.9	6.1	3.1	3.7	4.3	4.8	5.5	6.1	6.8	7.3	57.0
57.5	3.8	4.0	4.2	4.5	4.7	4.8	5.0	5.1	5.3	5.5	5.8	6.1	6.2	3.2	3.8	4.4	5.0	5.6	6.3	7.0	7.5	57.5
58.0	4.0	4.1	4.3	4.6	4.8	5.0	5.1	5.3	5.5	5.7	6.0	6.2	6.4	3.3	3.9	4.5	5.1	5.8	6.4	7.1	7.6	58.0
58.5	4.1	4.2	4.4	4.7	4.9	5.1	5.2	5.4	5.6	5.8	6.1	6.4	6.5	3.4	4.0	4.6	5.2	5.9	6.6	7.3	7.8	58.5
59.0	4.2	4.3	4.6	4.9	5.0	5.2	5.4	5.6	5.7	6.0	6.3	6.5	6.7	3.5	4.1	4.8	5.4	6.1	6.7	7.4	7.9	59.0
59.5	4.3	4.5	4.7	5.0	5.2	5.4	5.5	5.7	5.9	6.1	6.4	6.7	6.8	3.6	4.2	4.9	5.5	6.2	6.9	7.6	8.1	59.5
60.0	4.4	4.6	4.8	5.1	5.3	5.5	5.7	5.9	6.0	6.2	6.6	6.8	7.0	3.7	4.4	5.0	5.7	6.4	7.1	7.8	8.3	60.0
60.5	4.6	4.7	5.0	5.3	5.5	5.6	5.8	6.0	6.2	6.4	6.7	7.0	7.1	3.8	4.5	5.1	5.8	6.5	7.2	7.9	8.4	60.5
61.0	4.7	4.9	5.1	5.4	5.6	5.8	5.9	6.1	6.3	6.5	6.9	7.1	7.3	4.0	4.6	5.3	5.9	6.7	7.4	8.1	8.6	61.0
61.5	4.8	5.0	5.2	5.5	5.7	5.9	6.1	6.3	6.5	6.7	7.0	7.3	7.4	4.1	4.8	5.4	6.1	6.8	7.5	8.3	8.8	61.5
62.0	5.0	5.1	5.4	5.7	5.9	6.1	6.2	6.4	6.6	6.8	7.2	7.4	7.6	4.2	4.9	5.6	6.2	7.0	7.7	8.4	9.0	62.0
62.5	5.1	5.3	5.5	5.8	6.0	6.2	6.4	6.6	6.8	7.0	7.3	7.6	7.8	4.3	5.0	5.7	6.4	7.1	7.8	8.6	9.1	62.5
63.0	5.2	5.4	5.6	5.9	6.2	6.4	6.5	6.7	6.9	7.1	7.5	7.7	7.9	4.5	5.2	5.8	6.5	7.3	8.0	8.8	9.3	63.0
63.5	5.4	5.5	5.8	6.1	6.3	6.5	6.7	6.9	7.1	7.3	7.6	7.9	8.1	4.6	5.3	6.0	6.7	7.4	8.2	8.9	9.4	63.5
64.0	5.5	5.7	5.9	6.2	6.5	6.6	6.8	7.0	7.2	7.5	7.8	8.1	8.2	4.7	5.4	6.1	6.8	7.6	8.3	9.1	9.6	64.0
64.5	5.6	5.8	6.1	6.4	6.6	6.8	7.0	7.2	7.4	7.6	7.9	8.2	8.4	4.9	5.6	6.3	7.0	7.7	8.5	9.3	9.8	64.5
65.0	5.8	6.0	6.2	6.5	6.7	6.9	7.1	7.3	7.5	7.8	8.1	8.4	8.6	5.0	5.7	6.4	7.1	7.9	8.7	9.4	10.0	65.0
65.5	5.9	6.1	6.3	6.7	6.9	7.1	7.3	7.5	7.7	7.9	8.3	8.5	8.7	5.1	5.8	6.5	7.3	8.0	8.8	9.6	10.1	65.5
66.0	6.1	6.2	6.5	6.6	7.0	7.2	7.4	7.5	7.8	8.1	8.4	8.7	8.9	5.3	6.0	6.7	7.4	8.2	9.0	9.8	10.3	66.0
66.5	6.2	6.4	6.6	6.9	7.2	7.4	7.6	7.8	8.0	8.2	8.6	8.9	9.0	5.4	6.1	6.8	7.6	8.3	9.1	9.9	10.4	66.5
67.0	6.3	6.5	6.8	7.1	7.3	7.5	7.7	7.9	8.1	8.4	8.7	9.0	9.2	5.5	6.2	7.0	7.7	8.5	9.3	10.1	10.6	67.0
67.5	6.5	6.6	6.9	7.2	7.5	7.7	7.8	8.0	8.3	8.5	8.9	9.2	9.4	5.7	6.4	7.1	7.8	8.6	9.5	10.3	10.8	67.5
68.0	6.6	6.8	7.0	7.4	7.6	7.8	8.0	8.2	8.4	8.7	9.0	9.3	9.5	5.8	6.5	7.3	8.0	8.9	9.6	10.4	10.9	68.0
68.5	6.7	6.9	7.2	7.5	7.7	7.9	8.1	8.3	8.6	8.8	9.2	9.5	9.7	5.9	6.6	7.4	8.1	8.9	9.8	10.6	11.1	68.5
69.0	6.9	7.0	7.3	7.6	7.9	8.1	8.3	8.5	8.7	9.1	9.3	9.6	9.8	6.0	6.8	7.5	8.3	9.1	9.9	10.7	11.2	69.0
69.5	7.0	7.2	7.4	7.8	8.0	8.2	8.4	8.6	8.9	9.1	9.5	9.8	10.0	6.2	6.9	7.7	8.4	9.2	10.1	10.9	11.4	69.5

TABLE 26. WEIGHT BY LENGTH: BOYS

TABLE 26. WEIGHT (KG) BY LENGTH OF BOYS 49-103 CM IN HEIGHT (continued)

LENGTH CM	CENTILES																LENGTH CM					
	3RD	5TH	10TH	20TH	30TH	40TH	50TH	60TH	70TH	80TH	90TH	95TH	97TH	-3S.D.	-2S.D.	-1S.D.		MEDIAN	+1S.D.	+2S.D.	+3S.D.	
70.0	7.1	7.3	7.6	7.9	8.2	8.4	8.5	8.7	8.9	9.0	9.3	9.6	9.9	10.1	6.3	7.0	7.8	8.5	9.4	10.2	11.1	70.0
70.5	7.3	7.4	7.7	8.0	8.3	8.5	8.6	8.7	8.9	9.1	9.4	9.8	10.1	10.3	6.4	7.2	7.9	8.7	9.5	10.4	11.2	70.5
71.0	7.4	7.6	7.8	8.2	8.4	8.6	8.8	8.9	9.2	9.3	9.5	9.9	10.2	10.4	6.5	7.3	8.1	8.8	9.7	10.5	11.4	71.0
71.5	7.5	7.7	8.0	8.3	8.5	8.8	8.9	9.0	9.4	9.4	9.7	10.1	10.4	10.6	6.7	7.4	8.2	8.9	9.8	10.7	11.5	71.5
72.0	7.6	7.8	8.1	8.4	8.7	8.9	9.1	9.3	9.5	9.5	9.8	10.2	10.5	10.7	6.8	7.6	8.3	9.1	9.9	10.8	11.7	72.0
72.5	7.7	7.9	8.2	8.6	8.8	9.0	9.2	9.4	9.7	9.7	9.9	10.3	10.6	10.9	6.9	7.7	8.4	9.2	10.1	11.0	11.8	72.5
73.0	7.9	8.0	8.3	8.7	8.9	9.1	9.3	9.6	9.8	9.8	10.1	10.5	10.8	11.0	7.0	7.8	8.6	9.3	10.2	11.1	12.0	73.0
73.5	8.0	8.2	8.5	8.8	9.0	9.3	9.5	9.7	9.9	10.2	10.6	10.9	11.1	11.3	7.1	7.9	8.7	9.5	10.3	11.2	12.1	73.5
74.0	8.1	8.3	8.6	8.9	9.2	9.4	9.6	9.8	10.0	10.3	10.7	11.0	11.3	11.5	7.2	8.0	8.8	9.6	10.5	11.4	12.3	74.0
74.5	8.2	8.4	8.7	9.0	9.3	9.5	9.7	9.9	10.2	10.5	10.9	11.2	11.4	11.6	7.3	8.1	8.9	9.7	10.6	11.5	12.4	74.5
75.0	8.3	8.5	8.8	9.1	9.4	9.6	9.8	10.0	10.3	10.6	11.0	11.3	11.5	11.7	7.4	8.2	9.0	9.8	10.7	11.6	12.5	75.0
75.5	8.4	8.6	8.9	9.3	9.5	9.7	9.9	10.2	10.4	10.7	11.1	11.4	11.7	11.9	7.5	8.3	9.1	9.9	10.8	11.6	12.7	75.5
76.0	8.5	8.7	9.0	9.4	9.6	9.8	10.0	10.3	10.5	10.8	11.2	11.6	11.9	12.2	7.6	8.4	9.2	10.0	11.0	11.9	12.8	76.0
76.5	8.6	8.8	9.1	9.5	9.7	10.0	10.2	10.4	10.6	10.9	11.3	11.7	12.0	12.4	7.7	8.5	9.3	10.2	11.1	12.0	12.9	76.5
77.0	8.7	8.9	9.2	9.6	9.8	10.1	10.3	10.5	10.8	11.1	11.5	11.8	12.2	12.6	7.8	8.6	9.4	10.3	11.2	12.1	13.1	77.0
77.5	8.8	9.0	9.3	9.7	9.9	10.2	10.4	10.6	10.9	11.2	11.6	11.9	12.3	12.7	7.9	8.7	9.5	10.4	11.3	12.3	13.2	77.5
78.0	8.9	9.1	9.4	9.8	10.0	10.3	10.5	10.7	11.0	11.3	11.7	12.0	12.3	12.7	8.0	8.8	9.7	10.5	11.4	12.4	13.3	78.0
78.5	9.0	9.2	9.5	9.9	10.2	10.4	10.6	10.8	11.1	11.4	11.8	12.2	12.4	12.8	8.1	8.9	9.8	10.6	11.6	12.5	13.5	78.5
79.0	9.1	9.3	9.6	10.0	10.3	10.5	10.7	10.9	11.2	11.5	11.9	12.3	12.5	12.9	8.2	9.0	9.9	10.7	11.7	12.6	13.6	79.0
79.5	9.2	9.4	9.7	10.1	10.4	10.6	10.8	11.1	11.3	11.6	12.0	12.4	12.6	13.0	8.2	9.1	10.0	10.8	11.8	12.7	13.7	79.5
80.0	9.3	9.5	9.8	10.2	10.5	10.7	10.9	11.2	11.4	11.7	12.1	12.5	12.7	13.1	8.3	9.2	10.1	10.9	11.9	12.9	13.8	80.0
80.5	9.4	9.6	9.9	10.3	10.6	10.8	11.0	11.3	11.5	11.8	12.2	12.6	12.9	13.3	8.4	9.3	10.1	11.0	12.0	13.0	14.0	80.5
81.0	9.5	9.7	10.0	10.4	10.7	10.9	11.1	11.4	11.6	11.9	12.4	12.7	13.0	13.4	8.5	9.4	10.2	11.1	12.1	13.1	14.1	81.0
81.5	9.6	9.8	10.1	10.5	10.8	11.0	11.2	11.5	11.7	12.1	12.5	12.9	13.1	13.5	8.6	9.5	10.3	11.2	12.2	13.2	14.2	81.5
82.0	9.7	9.9	10.2	10.6	10.9	11.1	11.3	11.6	11.8	12.2	12.6	13.0	13.2	13.6	8.7	9.6	10.4	11.3	12.3	13.3	14.3	82.0
82.5	9.8	10.0	10.3	10.7	11.0	11.2	11.4	11.7	12.0	12.3	12.7	13.1	13.3	13.7	8.8	9.6	10.5	11.4	12.4	13.4	14.4	82.5
83.0	9.8	10.1	10.4	10.8	11.1	11.3	11.5	11.8	12.1	12.4	12.8	13.2	13.4	13.8	8.8	9.7	10.6	11.5	12.5	13.5	14.6	83.0
83.5	9.9	10.1	10.5	10.9	11.2	11.4	11.6	11.9	12.2	12.5	12.9	13.3	13.5	13.9	8.9	9.8	10.7	11.6	12.6	13.7	14.7	83.5
84.0	10.0	10.2	10.6	11.0	11.3	11.5	11.7	12.0	12.3	12.6	13.0	13.4	13.6	14.0	9.0	9.9	10.8	11.7	12.8	13.8	14.8	84.0
84.5	10.1	10.3	10.7	11.1	11.4	11.6	11.8	12.1	12.4	12.7	13.1	13.5	13.8	14.2	9.1	10.0	10.9	11.8	12.9	13.9	14.9	84.5
85.0	10.2	10.4	10.8	11.2	11.4	11.7	11.9	12.2	12.5	12.8	13.3	13.6	13.9	14.3	9.2	10.1	11.0	11.9	13.0	14.0	15.0	85.0
85.5	10.3	10.5	10.9	11.3	11.5	11.8	12.0	12.3	12.6	12.9	13.4	13.7	14.0	14.4	9.3	10.2	11.1	12.0	13.1	14.1	15.1	85.5
86.0	10.4	10.6	11.0	11.4	11.6	11.9	12.1	12.4	12.7	13.0	13.5	13.8	14.1	14.5	9.3	10.3	11.2	12.1	13.2	14.2	15.3	86.0
86.5	10.5	10.7	11.1	11.5	11.7	12.0	12.2	12.5	12.8	13.1	13.6	14.0	14.2	14.6	9.4	10.4	11.3	12.2	13.3	14.3	15.4	86.5
87.0	10.6	10.8	11.1	11.5	11.8	12.1	12.3	12.6	12.9	13.2	13.7	14.1	14.3	14.7	9.5	10.5	11.4	12.3	13.4	14.4	15.5	87.0
87.5	10.7	10.9	11.2	11.6	11.9	12.2	12.4	12.7	13.0	13.3	13.8	14.2	14.4	14.8	9.6	10.5	11.5	12.4	13.5	14.5	15.6	87.5
88.0	10.8	11.0	11.3	11.7	12.0	12.3	12.5	12.8	13.1	13.4	13.9	14.3	14.5	14.9	9.7	10.6	11.6	12.5	13.6	14.6	15.7	88.0
88.5	10.8	11.1	11.4	11.8	12.1	12.4	12.6	12.9	13.2	13.5	14.0	14.4	14.6	15.0	9.8	10.7	11.7	12.6	13.7	14.8	15.8	88.5
89.0	10.9	11.2	11.5	11.9	12.2	12.5	12.8	13.1	13.4	13.7	14.1	14.5	14.8	15.2	9.9	10.8	11.8	12.8	13.8	14.9	16.0	89.0
89.5	11.0	11.3	11.6	12.0	12.3	12.6	12.9	13.2	13.5	13.8	14.2	14.6	14.9	15.3	10.0	10.9	11.9	12.9	13.9	15.0	16.1	89.5
90.0	11.1	11.4	11.7	12.1	12.4	12.7	13.0	13.3	13.6	13.9	14.3	14.7	15.0	15.4	10.0	11.0	12.0	13.0	14.0	15.1	16.2	90.0
90.5	11.2	11.5	11.8	12.2	12.5	12.8	13.1	13.4	13.7	14.0	14.4	14.8	15.1	15.5	10.1	11.1	12.1	13.1	14.2	15.2	16.3	90.5

Annex 6

TABLE 26 WEIGHT BY LENGTH: BOYS

TABLE 26. WEIGHT (KG) BY LENGTH OF BOYS 49-103 CM IN HEIGHT (continued)

LENGTH CM	CENTILES																	STANDARD DEVIATIONS			LENGTH CM
	3RD	5TH	10TH	20TH	30TH	40TH	50TH	60TH	70TH	80TH	90TH	95TH	97TH	-3S.D.	-2S.D.	-1S.D.	MEDIAN	+1S.D.	+2S.D.	+3S.D.	
91.0	11.3	11.6	11.9	12.4	12.7	12.9	13.2	13.5	13.8	14.1	14.6	15.0	15.2	10.2	11.2	12.2	13.2	14.3	15.3	16.4	91.0
91.5	11.4	11.7	12.0	12.5	12.8	13.1	13.3	13.6	13.9	14.2	14.7	15.1	15.3	10.3	11.3	12.3	13.3	14.4	15.5	16.5	91.5
92.0	11.5	11.8	12.1	12.6	12.9	13.2	13.4	13.7	14.0	14.3	14.8	15.2	15.5	10.4	11.4	12.4	13.4	14.5	15.6	16.7	92.0
92.5	11.7	11.9	12.3	12.7	13.0	13.3	13.5	13.8	14.1	14.4	14.9	15.3	15.6	10.5	11.5	12.5	13.5	14.6	15.7	16.8	92.5
93.0	11.8	12.0	12.4	12.8	13.1	13.4	13.7	13.9	14.2	14.6	15.0	15.4	15.7	10.6	11.6	12.6	13.7	14.7	15.8	16.9	93.0
93.5	11.9	12.1	12.5	12.9	13.2	13.5	13.8	14.0	14.3	14.7	15.2	15.6	15.8	10.7	11.7	12.8	13.8	14.9	15.9	17.0	93.5
94.0	12.0	12.2	12.6	13.0	13.4	13.6	13.9	14.2	14.5	14.8	15.3	15.7	15.9	10.8	11.9	12.9	13.9	15.0	16.1	17.1	94.0
94.5	12.1	12.3	12.7	13.2	13.5	13.8	14.0	14.3	14.6	14.9	15.4	15.8	16.1	10.9	12.0	13.0	14.0	15.1	16.2	17.3	94.5
95.0	12.2	12.4	12.8	13.3	13.6	13.9	14.1	14.4	14.7	15.1	15.5	15.9	16.2	11.0	12.1	13.1	14.1	15.2	16.3	17.4	95.0
95.5	12.3	12.6	12.9	13.4	13.7	14.0	14.3	14.5	14.8	15.2	15.7	16.1	16.3	11.2	12.2	13.2	14.3	15.4	16.4	17.5	95.5
96.0	12.4	12.7	13.1	13.5	13.8	14.1	14.4	14.7	15.0	15.3	15.8	16.2	16.4	11.3	12.3	13.3	14.4	15.5	16.6	17.7	96.0
96.5	12.5	12.8	13.2	13.6	14.0	14.3	14.5	14.8	15.1	15.4	15.9	16.3	16.6	11.4	12.4	13.5	14.5	15.6	16.7	17.8	96.5
97.0	12.7	12.9	13.3	13.8	14.1	14.4	14.7	14.9	15.2	15.6	16.1	16.4	16.7	11.5	12.5	13.6	14.7	15.7	16.8	17.9	97.0
97.5	12.8	13.0	13.4	13.9	14.2	14.5	14.8	15.1	15.4	15.7	16.2	16.6	16.8	11.6	12.7	13.7	14.8	15.9	17.0	18.1	97.5
98.0	12.9	13.2	13.5	14.0	14.4	14.7	14.9	15.2	15.5	15.8	16.3	16.7	17.0	11.7	12.8	13.9	14.9	16.0	17.1	18.2	98.0
98.5	13.0	13.3	13.7	14.2	14.5	14.8	15.1	15.3	15.6	16.0	16.5	16.9	17.1	11.8	12.9	14.0	15.1	16.2	17.2	18.3	98.5
99.0	13.1	13.4	13.8	14.3	14.6	14.9	15.2	15.5	15.8	16.1	16.6	17.0	17.3	11.9	13.0	14.1	15.2	16.3	17.4	18.5	99.0
99.5	13.3	13.5	13.9	14.4	14.8	15.1	15.4	15.6	15.9	16.3	16.8	17.1	17.4	12.0	13.1	14.2	15.4	16.4	17.5	18.6	99.5
100.0	13.4	13.7	14.1	14.6	14.9	15.2	15.5	15.8	16.1	16.4	16.9	17.3	17.6	12.1	13.3	14.4	15.5	16.6	17.7	18.8	100.0
100.5	13.5	13.8	14.2	14.7	15.1	15.4	15.7	15.9	16.2	16.6	17.1	17.4	17.7	12.2	13.4	14.5	15.7	16.7	17.8	18.9	100.5
101.0	13.6	13.9	14.3	14.8	15.2	15.5	15.8	16.1	16.4	16.7	17.2	17.6	17.9	12.3	13.5	14.7	15.8	16.9	18.0	19.1	101.0
101.5	13.8	14.0	14.5	15.0	15.4	15.7	16.0	16.2	16.5	16.9	17.4	17.8	18.0	12.5	13.6	14.8	16.0	17.1	18.1	19.2	101.5
102.0	13.9	14.2	14.6	15.1	15.5	15.8	16.1	16.4	16.7	17.0	17.5	17.9	18.2	12.6	13.8	14.9	16.1	17.2	18.3	19.4	102.0
102.5	14.0	14.3	14.7	15.3	15.7	16.0	16.3	16.6	16.9	17.2	17.7	18.1	18.3	12.7	13.9	15.1	16.3	17.4	18.5	19.6	102.5
103.0	14.2	14.4	14.9	15.4	15.8	16.1	16.5	16.7	17.0	17.4	17.8	18.2	18.5	12.8	14.0	15.2	16.5	17.5	18.6	19.7	103.0

TABLE 27. WEIGHT BY STATURE: BOYS

STATURE CM	CENTILES																	STANDARD DEVIATIONS					STATURE CM
	3RD	5TH	10TH	20TH	30TH	40TH	50TH	60TH	70TH	80TH	90TH	95TH	97TH	-3S.D.	-2S.D.	-1S.D.	MEDIAN	+1S.D.	+2S.D.	+3S.D.			
97.0	12.5	13.3	13.9	14.3	14.6	15.0	15.3	15.7	16.1	16.5	17.0	17.3	17.4	17.8	18.0	18.4	18.6	18.9	19.1	19.4	19.4	97.0	
97.5	12.6	13.4	14.0	14.4	14.8	15.1	15.5	15.9	16.3	16.7	17.2	17.5	17.7	18.0	18.3	18.6	18.9	19.1	19.4	19.6	19.6	97.5	
98.0	12.7	13.5	14.1	14.5	14.9	15.2	15.6	16.0	16.4	16.8	17.3	17.6	17.7	18.0	18.3	18.5	18.8	19.0	19.2	19.4	19.7	98.0	
98.5	12.8	13.6	14.2	14.6	15.0	15.4	15.7	16.1	16.5	16.9	17.4	17.7	17.8	18.1	18.3	18.5	18.7	18.9	19.1	19.3	19.5	98.5	
99.0	12.9	13.3	13.8	14.3	14.8	15.1	15.5	15.9	16.3	16.8	17.4	17.6	17.7	18.0	18.2	18.4	18.6	18.8	19.0	19.2	19.4	99.0	
99.5	13.1	13.4	13.9	14.5	14.9	15.3	15.6	16.0	16.4	16.9	17.6	17.8	17.9	18.1	18.3	18.5	18.7	18.9	19.1	19.3	19.5	99.5	
100.0	13.2	13.6	14.0	14.6	15.0	15.4	15.7	16.1	16.5	17.0	17.7	17.9	18.0	18.2	18.4	18.6	18.8	19.0	19.2	19.4	19.6	100.0	
100.5	13.3	13.6	14.1	14.7	15.2	15.5	15.9	16.3	16.7	17.2	17.8	18.0	18.1	18.3	18.5	18.7	18.9	19.1	19.3	19.5	19.7	100.5	
101.0	13.4	13.7	14.2	14.8	15.3	15.7	16.0	16.4	16.8	17.3	18.0	18.2	18.3	18.5	18.7	18.9	19.1	19.3	19.5	19.7	19.9	101.0	
101.5	13.5	13.8	14.3	15.0	15.4	15.8	16.2	16.5	17.0	17.4	18.1	18.3	18.4	18.6	18.8	19.0	19.2	19.4	19.6	19.8	20.0	101.5	
102.0	13.6	14.0	14.5	15.1	15.5	15.9	16.3	16.7	17.1	17.6	18.3	18.5	18.6	18.8	19.0	19.2	19.4	19.6	19.8	20.0	20.2	102.0	
102.5	13.7	14.1	14.6	15.2	15.7	16.1	16.4	16.8	17.2	17.7	18.4	18.6	18.7	18.9	19.1	19.3	19.5	19.7	19.9	20.1	20.3	102.5	
103.0	13.9	14.2	14.7	15.4	15.8	16.2	16.6	17.0	17.4	17.9	18.6	18.8	18.9	19.1	19.3	19.5	19.7	19.9	20.1	20.3	20.5	103.0	
103.5	14.0	14.3	14.8	15.5	15.9	16.3	16.7	17.1	17.5	18.0	18.7	18.9	19.0	19.2	19.4	19.6	19.8	20.0	20.2	20.4	20.6	103.5	
104.0	14.1	14.4	15.0	15.6	16.1	16.5	16.9	17.3	17.7	18.2	18.9	19.1	19.2	19.4	19.6	19.8	20.0	20.2	20.4	20.6	20.8	104.0	
104.5	14.2	14.5	15.1	15.7	16.2	16.6	17.0	17.4	17.8	18.3	19.0	19.2	19.3	19.5	19.7	19.9	20.1	20.3	20.5	20.7	20.9	104.5	
105.0	14.3	14.7	15.2	15.9	16.4	16.8	17.1	17.5	18.0	18.5	19.2	19.4	19.5	19.7	19.9	20.1	20.3	20.5	20.7	20.9	21.1	105.0	
105.5	14.5	14.8	15.4	16.0	16.5	16.9	17.3	17.7	18.1	18.7	19.4	19.6	19.7	19.9	20.1	20.3	20.5	20.7	20.9	21.1	21.3	105.5	
106.0	14.6	14.9	15.5	16.2	16.6	17.0	17.4	17.8	18.3	18.8	19.5	19.7	19.8	20.0	20.2	20.4	20.6	20.8	21.0	21.2	21.4	106.0	
106.5	14.7	15.1	15.6	16.3	16.7	17.1	17.5	17.9	18.4	18.9	19.6	19.8	19.9	20.1	20.3	20.5	20.7	20.9	21.1	21.3	21.5	106.5	
107.0	14.8	15.2	15.8	16.5	16.9	17.3	17.7	18.1	18.6	19.1	19.8	20.0	20.1	20.3	20.5	20.7	20.9	21.1	21.3	21.5	21.7	107.0	
107.5	14.9	15.3	15.9	16.6	17.0	17.4	17.8	18.2	18.7	19.2	19.9	20.1	20.2	20.4	20.6	20.8	21.0	21.2	21.4	21.6	21.8	107.5	
108.0	15.1	15.5	16.0	16.7	17.2	17.6	18.0	18.4	18.9	19.4	20.1	20.3	20.4	20.6	20.8	21.0	21.2	21.4	21.6	21.8	22.0	108.0	
108.5	15.2	15.6	16.2	16.9	17.4	17.8	18.2	18.6	19.1	19.6	20.4	20.6	20.7	20.9	21.1	21.3	21.5	21.7	21.9	22.1	22.3	108.5	
109.0	15.4	15.7	16.3	17.0	17.5	17.9	18.3	18.7	19.2	19.7	20.6	20.8	20.9	21.1	21.3	21.5	21.7	21.9	22.1	22.3	22.5	109.0	
109.5	15.5	15.9	16.5	17.2	17.7	18.1	18.5	18.9	19.4	20.0	20.8	21.0	21.1	21.3	21.5	21.7	21.9	22.1	22.3	22.5	22.7	109.5	
110.0	15.6	16.0	16.6	17.3	17.8	18.2	18.6	19.0	19.5	20.1	20.9	21.1	21.2	21.4	21.6	21.8	22.0	22.2	22.4	22.6	22.8	110.0	
110.5	15.8	16.2	16.7	17.5	18.0	18.4	18.8	19.2	19.7	20.3	21.1	21.3	21.4	21.6	21.8	22.0	22.2	22.4	22.6	22.8	23.0	110.5	
111.0	15.9	16.3	16.9	17.6	18.1	18.5	18.9	19.3	19.8	20.4	21.2	21.4	21.5	21.7	21.9	22.1	22.3	22.5	22.7	22.9	23.1	111.0	
111.5	16.1	16.4	17.0	17.8	18.3	18.7	19.1	19.5	20.0	20.6	21.4	21.6	21.7	21.9	22.1	22.3	22.5	22.7	22.9	23.1	23.3	111.5	
112.0	16.2	16.6	17.2	17.9	18.4	18.8	19.2	19.6	20.1	20.7	21.5	21.7	21.8	22.0	22.2	22.4	22.6	22.8	23.0	23.2	23.4	112.0	
112.5	16.3	16.7	17.3	18.1	18.6	19.0	19.4	19.8	20.3	20.9	21.7	21.9	22.0	22.2	22.4	22.6	22.8	23.0	23.2	23.4	23.6	112.5	
113.0	16.5	16.9	17.5	18.2	18.7	19.1	19.5	20.0	20.5	21.1	21.9	22.1	22.2	22.4	22.6	22.8	23.0	23.2	23.4	23.6	23.8	113.0	
113.5	16.6	17.0	17.7	18.4	18.9	19.3	19.7	20.2	20.7	21.3	22.1	22.3	22.4	22.6	22.8	23.0	23.2	23.4	23.6	23.8	24.0	113.5	
114.0	16.8	17.2	17.8	18.6	19.1	19.5	20.0	20.5	21.0	21.6	22.4	22.6	22.7	22.9	23.1	23.3	23.5	23.7	23.9	24.1	24.3	114.0	
114.5	16.9	17.4	18.0	18.7	19.3	19.7	20.2	20.7	21.2	21.8	22.6	22.8	22.9	23.1	23.3	23.5	23.7	23.9	24.1	24.3	24.5	114.5	
115.0	17.1	17.5	18.1	18.9	19.4	19.9	20.3	20.9	21.4	22.1	23.0	23.2	23.3	23.5	23.7	23.9	24.1	24.3	24.5	24.7	24.9	115.0	
115.5	17.3	17.7	18.3	19.1	19.6	20.1	20.6	21.1	21.6	22.3	23.2	23.4	23.5	23.7	23.9	24.1	24.3	24.5	24.7	24.9	25.1	115.5	
116.0	17.4	17.8	18.5	19.2	19.8	20.2	20.7	21.2	21.7	22.4	23.3	23.5	23.6	23.8	24.0	24.2	24.4	24.6	24.8	25.0	25.2	116.0	
116.5	17.6	18.0	18.6	19.4	20.0	20.4	20.9	21.4	21.9	22.6	23.5	23.7	23.8	24.0	24.2	24.4	24.6	24.8	25.0	25.2	25.4	116.5	
117.0	17.7	18.2	18.8	19.6	20.1	20.6	21.1	21.6	22.1	22.8	23.7	23.9	24.0	24.2	24.4	24.6	24.8	25.0	25.2	25.4	25.6	117.0	
117.5	17.9	18.3	19.0	19.7	20.3	20.8	21.2	21.7	22.2	22.9	23.8	24.0	24.1	24.3	24.5	24.7	24.9	25.1	25.3	25.5	25.7	117.5	

TABLE 28. WEIGHT BY LENGTH: GIRLS

TABLE 28. WEIGHT (KG) BY LENGTH OF GIRLS 49-101 CM IN HEIGHT

LENGTH CM	CENTILES																LENGTH CM				
	3RD	5TH	10TH	20TH	30TH	40TH	50TH	60TH	70TH	80TH	90TH	95TH	97TH	-3S.D.	-2S.D.	+1S.D.		+2S.D.	+3S.D.		
49.0	2.6	2.7	2.8	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.9	3.9	2.2	2.6	2.9	3.3	3.6	4.0	4.3	49.0
49.5	2.6	2.7	2.9	3.0	3.2	3.3	3.4	3.4	3.5	3.6	3.7	3.8	4.0	2.2	2.6	3.0	3.4	3.7	4.1	4.5	49.5
50.0	2.7	2.8	2.9	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	4.0	4.1	2.3	2.6	3.0	3.4	3.8	4.2	4.6	50.0
50.5	2.7	2.8	3.0	3.1	3.3	3.4	3.5	3.6	3.7	3.8	4.0	4.2	4.3	2.3	2.7	3.1	3.5	3.9	4.3	4.7	50.5
51.0	2.8	2.9	3.0	3.2	3.3	3.4	3.5	3.6	3.7	3.8	4.0	4.2	4.4	2.3	2.7	3.1	3.5	4.0	4.4	4.9	51.0
51.5	2.8	2.9	3.1	3.3	3.4	3.5	3.6	3.7	3.9	4.0	4.2	4.4	4.5	2.4	2.8	3.2	3.6	4.1	4.5	5.0	51.5
52.0	2.9	3.0	3.2	3.3	3.5	3.6	3.7	3.8	4.0	4.1	4.3	4.5	4.6	2.4	2.8	3.3	3.7	4.2	4.7	5.1	52.0
52.5	3.0	3.1	3.2	3.4	3.6	3.7	3.8	3.9	4.1	4.2	4.4	4.6	4.7	2.5	2.9	3.4	3.8	4.3	4.8	5.3	52.5
53.0	3.0	3.1	3.3	3.5	3.6	3.8	3.9	4.0	4.2	4.3	4.5	4.7	4.9	2.5	3.0	3.4	3.9	4.4	4.9	5.4	53.0
53.5	3.1	3.2	3.4	3.6	3.7	3.9	4.0	4.1	4.3	4.4	4.6	4.9	5.0	2.6	3.1	3.5	4.0	4.5	5.0	5.6	53.5
54.0	3.2	3.3	3.5	3.7	3.8	4.0	4.1	4.2	4.4	4.5	4.8	5.0	5.1	2.7	3.1	3.6	4.1	4.6	5.2	5.7	54.0
54.5	3.3	3.4	3.6	3.8	3.9	4.1	4.2	4.3	4.5	4.7	4.9	5.1	5.2	2.7	3.2	3.7	4.2	4.7	5.3	5.9	54.5
55.0	3.4	3.5	3.7	3.9	4.0	4.2	4.3	4.4	4.6	4.8	5.0	5.2	5.4	2.8	3.3	3.8	4.3	4.9	5.5	6.0	55.0
55.5	3.4	3.6	3.7	4.0	4.1	4.3	4.4	4.6	4.7	4.9	5.2	5.4	5.5	2.9	3.4	3.9	4.4	5.0	5.6	6.2	55.5
56.0	3.5	3.7	3.8	4.1	4.2	4.4	4.5	4.7	4.8	5.0	5.3	5.5	5.7	3.0	3.5	4.0	4.5	5.1	5.7	6.3	56.0
56.5	3.6	3.8	4.0	4.2	4.4	4.5	4.6	4.8	5.0	5.2	5.4	5.7	5.8	3.0	3.6	4.1	4.6	5.3	5.9	6.5	56.5
57.0	3.7	3.9	4.1	4.3	4.5	4.6	4.8	4.9	5.1	5.3	5.6	5.8	5.9	3.1	3.7	4.2	4.8	5.4	6.0	6.6	57.0
57.5	3.8	4.0	4.2	4.4	4.6	4.7	4.9	5.0	5.2	5.4	5.7	5.9	6.1	3.2	3.8	4.3	4.9	5.5	6.2	6.8	57.5
58.0	3.9	4.1	4.3	4.5	4.7	4.9	5.0	5.2	5.4	5.6	5.8	6.1	6.2	3.3	3.9	4.4	5.0	5.7	6.3	7.0	58.0
58.5	4.1	4.2	4.4	4.7	4.8	5.0	5.1	5.3	5.5	5.7	6.0	6.2	6.4	3.4	4.0	4.6	5.1	5.8	6.5	7.1	58.5
59.0	4.2	4.3	4.5	4.8	5.0	5.1	5.3	5.4	5.6	5.8	6.1	6.4	6.5	3.5	4.1	4.7	5.3	5.9	6.6	7.3	59.0
59.5	4.3	4.4	4.6	4.9	5.1	5.3	5.4	5.6	5.8	6.0	6.3	6.5	6.7	3.6	4.2	4.8	5.4	6.1	6.8	7.4	59.5
60.0	4.4	4.5	4.8	5.0	5.2	5.4	5.5	5.7	5.9	6.1	6.4	6.7	6.8	3.7	4.3	4.9	5.5	6.2	6.9	7.6	60.0
60.5	4.5	4.7	4.9	5.2	5.4	5.5	5.7	5.9	6.0	6.3	6.6	6.8	7.0	3.8	4.4	5.1	5.7	6.4	7.1	7.7	60.5
61.0	4.6	4.8	5.0	5.3	5.5	5.7	5.8	6.0	6.2	6.4	6.7	7.0	7.1	3.9	4.6	5.2	5.8	6.5	7.2	7.9	61.0
61.5	4.7	4.9	5.1	5.4	5.6	5.8	6.0	6.1	6.3	6.6	6.9	7.1	7.3	4.0	4.7	5.3	6.0	6.7	7.4	8.1	61.5
62.0	4.9	5.0	5.3	5.6	5.8	5.9	6.1	6.3	6.5	6.7	7.0	7.3	7.4	4.1	4.8	5.4	6.1	6.8	7.5	8.2	62.0
62.5	5.0	5.2	5.4	5.7	5.9	6.1	6.2	6.4	6.6	6.8	7.2	7.4	7.6	4.2	4.9	5.6	6.2	7.0	7.7	8.4	62.5
63.0	5.1	5.3	5.5	5.8	6.0	6.2	6.4	6.6	6.8	7.0	7.3	7.6	7.7	4.4	5.0	5.7	6.4	7.1	7.8	8.5	63.0
63.5	5.2	5.4	5.7	6.0	6.2	6.4	6.5	6.7	6.9	7.1	7.5	7.7	7.9	4.5	5.2	5.8	6.5	7.3	8.0	8.7	63.5
64.0	5.4	5.5	5.8	6.1	6.3	6.5	6.7	6.9	7.1	7.3	7.6	7.9	8.0	4.6	5.3	6.0	6.7	7.4	8.1	8.9	64.0
64.5	5.5	5.7	5.9	6.2	6.5	6.8	7.0	7.2	7.4	7.6	7.9	8.0	8.2	4.7	5.4	6.1	6.8	7.6	8.3	9.0	64.5
65.0	5.6	5.8	6.1	6.4	6.6	6.9	7.0	7.2	7.5	7.8	7.9	8.2	8.4	4.8	5.5	6.3	7.0	7.7	8.4	9.2	65.0
65.5	5.8	5.9	6.2	6.5	6.7	6.9	7.1	7.3	7.5	7.7	8.1	8.3	8.5	4.9	5.7	6.4	7.1	7.9	8.6	9.3	65.5
66.0	5.9	6.1	6.3	6.6	6.9	7.1	7.3	7.4	7.6	7.9	8.2	8.5	8.7	5.1	5.8	6.5	7.3	8.0	8.7	9.5	66.0
66.5	6.0	6.2	6.5	6.8	7.0	7.2	7.4	7.6	7.8	8.0	8.4	8.6	8.8	5.2	5.9	6.7	7.4	8.1	8.9	9.6	66.5
67.0	6.1	6.3	6.6	6.9	7.2	7.4	7.5	7.7	7.9	8.2	8.5	8.8	9.0	5.3	6.0	6.8	7.5	8.3	9.0	9.8	67.0
67.5	6.3	6.4	6.7	7.0	7.3	7.5	7.7	7.9	8.1	8.3	8.7	8.9	9.1	5.4	6.2	6.9	7.7	8.4	9.2	9.9	67.5
68.0	6.4	6.6	6.8	7.2	7.4	7.6	7.8	8.0	8.2	8.5	8.8	9.1	9.2	5.5	6.3	7.1	7.9	8.6	9.3	10.1	68.0
68.5	6.5	6.7	7.0	7.3	7.6	7.8	8.0	8.2	8.4	8.6	8.9	9.2	9.4	5.6	6.4	7.2	8.0	8.7	9.5	10.2	68.5
69.0	6.6	6.8	7.1	7.4	7.7	7.9	8.1	8.3	8.5	8.7	9.1	9.4	9.5	5.8	6.6	7.3	8.1	8.9	9.6	10.4	69.0
69.5	6.8	6.9	7.2	7.6	7.8	8.0	8.2	8.4	8.5	8.8	9.2	9.5	9.7	5.9	6.7	7.5	8.2	9.0	9.8	10.5	69.5

TABLE 28. WEIGHT BY LENGTH - GIRLS

TABLE 28. WEIGHT (KG) BY LENGTH OF GIRLS 49-101 CM IN HEIGHT (continued)

LENGTH CM	CENTILES																STANDARD DEVIATIONS					LENGTH CM
	3RD	5TH	10TH	20TH	30TH	40TH	50TH	60TH	70TH	80TH	90TH	95TH	97TH	-3S.D.	-2S.D.	-1S.D.	MEDIAN	+1S.D.	+2S.D.	+3S.D.		
70.0	6.9	7.1	7.4	7.7	8.0	8.2	8.4	8.6	8.8	9.0	9.2	9.4	9.6	9.8	6.0	6.8	7.6	8.4	9.1	9.9	10.7	70.0
70.5	7.0	7.2	7.5	7.8	8.1	8.3	8.5	8.7	8.9	9.2	9.5	9.8	10.0	10.2	6.1	6.9	7.7	8.5	9.3	10.1	10.8	70.5
71.0	7.1	7.3	7.6	8.0	8.3	8.4	8.6	8.8	9.0	9.3	9.6	9.9	10.1	10.3	6.2	7.0	7.8	8.6	9.4	10.2	11.0	71.0
71.5	7.2	7.4	7.7	8.1	8.3	8.6	8.8	9.0	9.2	9.4	9.6	9.8	10.0	10.2	6.3	7.1	8.0	8.8	9.5	10.3	11.1	71.5
72.0	7.3	7.5	7.8	8.2	8.5	8.7	8.9	9.1	9.3	9.5	9.7	9.9	10.1	10.3	6.4	7.2	8.1	8.9	9.7	10.5	11.2	72.0
72.5	7.5	7.7	8.0	8.3	8.6	8.8	9.0	9.2	9.4	9.7	10.0	10.3	10.5	10.8	6.5	7.4	8.2	9.0	9.8	10.6	11.4	72.5
73.0	7.6	7.8	8.1	8.4	8.7	8.9	9.1	9.3	9.6	9.8	10.1	10.4	10.6	10.9	6.6	7.5	8.3	9.1	9.9	10.7	11.5	73.0
73.5	7.7	7.9	8.2	8.5	8.8	9.0	9.3	9.5	9.7	9.9	10.2	10.5	10.7	11.0	6.7	7.6	8.4	9.3	10.0	10.8	11.6	73.5
74.0	7.8	8.0	8.3	8.7	8.9	9.2	9.4	9.6	9.8	10.0	10.2	10.4	10.6	10.8	6.8	7.7	8.5	9.4	10.2	11.0	11.8	74.0
74.5	7.9	8.1	8.4	8.8	9.0	9.3	9.5	9.7	9.9	10.1	10.3	10.5	10.7	11.0	6.9	7.8	8.6	9.5	10.3	11.1	11.9	74.5
75.0	8.0	8.2	8.5	8.9	9.1	9.4	9.6	9.8	10.0	10.2	10.4	10.6	10.8	11.1	7.0	7.9	8.7	9.6	10.4	11.2	12.0	75.0
75.5	8.1	8.3	8.6	9.0	9.3	9.5	9.7	9.9	10.1	10.3	10.5	10.7	11.0	11.2	7.1	8.0	8.8	9.7	10.5	11.3	12.1	75.5
76.0	8.2	8.4	8.7	9.1	9.4	9.6	9.8	10.0	10.2	10.4	10.6	10.8	11.1	11.3	7.2	8.1	8.9	9.8	10.6	11.4	12.2	76.0
76.5	8.3	8.5	8.8	9.2	9.5	9.7	9.9	10.1	10.3	10.5	10.7	11.0	11.3	11.5	7.3	8.2	9.0	9.9	10.7	11.6	12.4	76.5
77.0	8.4	8.6	8.9	9.3	9.6	9.8	10.0	10.2	10.4	10.6	10.8	11.1	11.4	11.6	7.4	8.3	9.1	10.0	10.8	11.7	12.5	77.0
77.5	8.5	8.7	9.0	9.4	9.7	9.9	10.1	10.3	10.5	10.7	11.0	11.2	11.5	11.7	7.5	8.4	9.2	10.1	11.0	11.8	12.6	77.5
78.0	8.6	8.8	9.1	9.5	9.8	10.0	10.2	10.4	10.6	10.8	11.1	11.3	11.6	11.8	7.6	8.5	9.3	10.2	11.1	11.9	12.7	78.0
78.5	8.7	8.9	9.2	9.6	9.9	10.1	10.3	10.5	10.7	10.9	11.2	11.4	11.7	11.9	7.7	8.6	9.4	10.3	11.2	12.0	12.9	78.5
79.0	8.8	9.0	9.3	9.7	10.0	10.2	10.4	10.6	10.8	11.1	11.3	11.5	11.8	12.0	7.8	8.7	9.5	10.4	11.3	12.1	13.0	79.0
79.5	8.9	9.1	9.4	9.8	10.1	10.3	10.5	10.7	11.0	11.2	11.4	11.6	11.9	12.1	7.9	8.7	9.6	10.5	11.4	12.2	13.1	79.5
80.0	9.0	9.2	9.5	9.9	10.1	10.4	10.6	10.8	11.1	11.3	11.5	11.7	12.0	12.2	8.0	8.8	9.7	10.6	11.5	12.3	13.2	80.0
80.5	9.1	9.3	9.6	10.0	10.2	10.5	10.7	10.9	11.2	11.4	11.6	11.8	12.1	12.3	8.1	9.0	9.8	10.7	11.6	12.4	13.3	80.5
81.0	9.2	9.4	9.7	10.1	10.3	10.6	10.8	11.0	11.3	11.5	11.7	12.0	12.2	12.4	8.1	9.0	9.9	10.8	11.7	12.6	13.4	81.0
81.5	9.2	9.4	9.8	10.1	10.4	10.7	10.9	11.1	11.4	11.6	11.8	12.0	12.2	12.5	8.2	9.1	10.0	10.9	11.8	12.7	13.5	81.5
82.0	9.3	9.5	9.8	10.2	10.5	10.8	11.0	11.2	11.5	11.7	12.1	12.3	12.5	12.7	8.3	9.2	10.1	11.0	11.9	12.8	13.7	82.0
82.5	9.4	9.6	9.9	10.3	10.6	10.9	11.1	11.3	11.6	11.8	12.2	12.4	12.6	12.8	8.4	9.3	10.2	11.1	12.0	12.9	13.8	82.5
83.0	9.5	9.7	10.0	10.4	10.7	10.9	11.2	11.4	11.7	11.9	12.3	12.5	12.7	12.9	8.5	9.4	10.3	11.2	12.1	13.0	13.9	83.0
83.5	9.6	9.8	10.1	10.5	10.8	11.0	11.3	11.5	11.7	12.0	12.4	12.6	13.0	13.2	8.6	9.5	10.4	11.3	12.2	13.1	14.0	83.5
84.0	9.7	9.9	10.2	10.6	10.9	11.1	11.4	11.6	11.8	12.1	12.5	12.8	13.1	13.4	8.7	9.6	10.5	11.4	12.3	13.2	14.1	84.0
84.5	9.8	10.0	10.3	10.7	11.0	11.2	11.5	11.7	11.9	12.2	12.6	13.0	13.2	13.5	8.7	9.6	10.5	11.5	12.4	13.3	14.2	84.5
85.0	9.8	10.1	10.4	10.8	11.1	11.3	11.6	11.8	12.0	12.3	12.7	13.1	13.3	13.6	8.8	9.7	10.6	11.6	12.5	13.4	14.3	85.0
85.5	9.9	10.2	10.5	10.9	11.2	11.4	11.7	11.9	12.1	12.4	12.8	13.2	13.4	13.7	8.9	9.8	10.7	11.7	12.6	13.5	14.5	85.5
86.0	10.0	10.2	10.6	11.0	11.3	11.5	11.8	12.0	12.2	12.5	13.0	13.3	13.5	13.8	9.0	9.9	10.8	11.8	12.7	13.6	14.6	86.0
86.5	10.1	10.3	10.7	11.1	11.4	11.6	11.8	12.1	12.3	12.6	13.1	13.4	13.6	13.9	9.1	10.0	10.9	11.8	12.8	13.7	14.7	86.5
87.0	10.2	10.4	10.8	11.2	11.5	11.7	11.9	12.2	12.4	12.8	13.2	13.5	13.7	14.0	9.2	10.1	11.0	11.9	12.9	13.9	14.8	87.0
87.5	10.3	10.5	10.9	11.3	11.6	11.8	12.0	12.3	12.6	12.9	13.3	13.6	13.9	14.2	9.3	10.2	11.1	12.0	13.0	14.0	14.9	87.5
88.0	10.4	10.6	11.0	11.4	11.7	11.9	12.2	12.4	12.7	13.0	13.4	13.7	14.0	14.3	9.4	10.3	11.2	12.2	13.1	14.1	15.0	88.0
88.5	10.5	10.7	11.1	11.5	11.8	12.0	12.3	12.5	12.8	13.1	13.5	13.8	14.1	14.4	9.4	10.4	11.3	12.3	13.2	14.2	15.2	88.5
89.0	10.6	10.8	11.2	11.6	11.9	12.1	12.4	12.6	12.9	13.2	13.6	14.0	14.2	14.5	9.5	10.5	11.4	12.4	13.3	14.3	15.3	89.0
89.5	10.7	10.9	11.3	11.7	12.0	12.2	12.5	12.7	13.0	13.3	13.7	14.1	14.3	14.6	9.6	10.6	11.5	12.5	13.4	14.4	15.4	89.5
90.0	10.8	11.0	11.4	11.8	12.1	12.3	12.6	12.8	13.1	13.4	13.8	14.2	14.4	14.7	9.7	10.7	11.6	12.6	13.6	14.5	15.5	90.0
90.5	10.9	11.1	11.5	11.9	12.2	12.4	12.7	12.9	13.2	13.5	14.0	14.3	14.5	14.8	9.8	10.8	11.7	12.7	13.7	14.7	15.7	90.5

Annex 6

TABLE 28. WEIGHT (KG) BY LENGTH OF GIRLS 49-101 CM IN HEIGHT (continued)

LENGTH CM	CENTILES																	STANDARD DEVIATIONS					LENGTH CM
	3RD	5TH	10TH	20TH	30TH	40TH	50TH	60TH	70TH	80TH	90TH	95TH	97TH	-3S.D.	-2S.D.	-1S.D.	MEAN	+1S.D.	+2S.D.	+3S.D.			
91.0	11.0	11.2	11.6	12.0	12.3	12.6	12.8	13.1	13.3	13.6	14.1	14.4	14.7	9.9	10.9	11.8	12.8	13.8	14.8	15.8	91.0		
91.5	11.1	11.3	11.7	12.1	12.4	12.7	12.9	13.2	13.4	13.8	14.2	14.5	14.8	10.0	11.0	11.9	12.9	13.9	14.9	15.9	91.5		
92.0	11.2	11.4	11.8	12.2	12.5	12.8	13.0	13.3	13.6	13.9	14.3	14.7	14.9	10.1	11.1	12.1	13.0	14.0	15.0	16.0	92.0		
92.5	11.3	11.5	11.9	12.3	12.6	12.9	13.1	13.4	13.7	14.0	14.4	14.8	15.1	10.2	11.2	12.2	13.1	14.2	15.2	16.2	92.5		
93.0	11.4	11.7	12.0	12.4	12.8	13.0	13.3	13.5	13.8	14.1	14.6	14.9	15.2	10.3	11.3	12.3	13.3	14.3	15.3	16.3	93.0		
93.5	11.5	11.9	12.1	12.6	12.9	13.1	13.4	13.7	13.9	14.3	14.7	15.1	15.3	10.4	11.4	12.4	13.4	14.4	15.4	16.5	93.5		
94.0	11.6	11.9	12.2	12.7	13.0	13.3	13.5	13.8	14.1	14.4	14.8	15.2	15.5	10.5	11.5	12.5	13.5	14.5	15.6	16.6	94.0		
94.5	11.8	12.0	12.4	12.8	13.1	13.4	13.6	13.9	14.2	14.5	15.0	15.3	15.6	10.5	11.6	12.6	13.6	14.7	15.7	16.7	94.5		
95.0	11.9	12.1	12.5	12.9	13.2	13.5	13.8	14.0	14.3	14.6	15.1	15.5	15.7	10.7	11.8	12.8	13.8	14.8	15.9	16.9	95.0		
95.5	12.0	12.2	12.6	13.0	13.4	13.6	13.9	14.2	14.5	14.8	15.2	15.6	15.9	10.9	11.9	12.9	13.9	15.0	16.0	17.0	95.5		
96.0	12.1	12.4	12.7	13.2	13.5	13.8	14.0	14.3	14.6	14.9	15.4	15.8	16.0	11.0	12.0	13.0	14.0	15.1	16.1	17.2	96.0		
96.5	12.2	12.5	12.9	13.3	13.6	13.9	14.2	14.4	14.7	15.1	15.5	15.9	16.2	11.1	12.1	13.1	14.2	15.2	16.3	17.4	96.5		
97.0	12.4	12.6	13.0	13.4	13.8	14.0	14.3	14.6	14.9	15.2	15.7	16.1	16.3	11.2	12.2	13.3	14.3	15.4	16.5	17.5	97.0		
97.5	12.5	12.7	13.1	13.6	13.9	14.2	14.4	14.7	15.0	15.4	15.8	16.2	16.5	11.3	12.4	13.4	14.4	15.5	16.6	17.7	97.5		
98.0	12.6	12.9	13.3	13.7	14.0	14.3	14.6	14.9	15.2	15.5	16.0	16.4	16.6	11.5	12.5	13.5	14.6	15.7	16.8	17.9	98.0		
98.5	12.8	13.0	13.4	13.8	14.2	14.5	14.7	15.0	15.3	15.7	16.1	16.5	16.8	11.6	12.6	13.7	14.7	15.8	16.9	18.0	98.5		
99.0	12.9	13.1	13.5	14.0	14.3	14.6	14.9	15.2	15.5	15.8	16.3	16.7	17.0	11.7	12.8	13.8	14.9	16.0	17.1	18.2	99.0		
99.5	13.0	13.2	13.7	14.1	14.5	14.7	15.0	15.3	15.6	16.0	16.5	16.9	17.1	11.9	12.9	14.0	15.0	16.1	17.3	18.4	99.5		
100.0	13.2	13.4	13.8	14.3	14.6	14.9	15.2	15.5	15.8	16.1	16.6	17.0	17.3	12.0	13.1	14.1	15.2	16.3	17.4	18.6	100.0		
100.5	13.3	13.6	14.0	14.4	14.8	15.0	15.3	15.6	15.9	16.3	16.8	17.2	17.5	12.1	13.2	14.3	15.3	16.5	17.6	18.8	100.5		
101.0	13.5	13.7	14.1	14.5	14.9	15.2	15.5	15.8	16.1	16.4	17.0	17.4	17.7	12.3	13.3	14.4	15.5	16.6	17.8	19.0	101.0		

TABLE 28. WEIGHT BY LENGTH: GIRLS

Annex 6

TABLE 29. WEIGHT BY STATURE: GIRLS

TABLE 29. WEIGHT (KG) BY STATURE OF GIRLS 55-137 CM IN HEIGHT (continued)

STATURE CM	CENTILES															STANDARD DEVIATIONS					STATURE CM
	3RD	5TH	10TH	20TH	30TH	40TH	50TH	60TH	70TH	80TH	90TH	95TH	97TH	-3S.D.	-2S.D.	-1S.D.	MEDIAN	+1S.D.	+2S.D.	+3S.D.	
97.0	12.2	12.5	13.0	13.5	13.9	14.3	14.6	15.0	15.4	15.9	16.6	17.2	17.6	10.7	12.0	13.3	14.6	16.2	17.8	19.3	97.0
97.5	12.3	12.6	13.1	13.6	14.0	14.4	14.7	15.1	15.6	16.1	16.8	17.3	17.7	10.8	12.1	13.4	14.7	16.3	17.9	19.5	97.5
98.0	12.4	12.7	13.2	13.7	14.2	14.5	14.9	15.3	15.7	16.2	16.9	17.5	17.9	10.9	12.2	13.5	14.9	16.5	18.1	19.7	98.0
98.5	12.5	12.8	13.3	13.9	14.3	14.6	15.0	15.4	15.8	16.3	17.0	17.6	18.0	11.0	12.3	13.7	15.0	16.6	18.2	19.8	98.5
99.0	12.6	12.9	13.4	14.0	14.4	14.8	15.1	15.5	16.0	16.5	17.2	17.8	18.2	11.1	12.4	13.8	15.1	16.7	18.4	20.0	99.0
99.5	12.7	13.0	13.5	14.1	14.5	14.9	15.2	15.6	16.1	16.6	17.3	17.9	18.3	11.2	12.5	13.9	15.2	16.9	18.5	20.1	99.5
100.0	12.8	13.1	13.6	14.2	14.7	15.0	15.4	15.8	16.2	16.8	17.5	18.1	18.5	11.3	12.7	14.0	15.4	17.0	18.7	20.3	100.0
100.5	12.9	13.2	13.7	14.3	14.8	15.2	15.5	15.9	16.4	16.9	17.6	18.2	18.6	11.4	12.8	14.1	15.5	17.2	18.8	20.5	100.5
101.0	13.0	13.3	13.8	14.4	14.9	15.3	15.6	16.1	16.5	17.0	17.8	18.4	18.8	11.5	12.9	14.3	15.6	17.3	19.0	20.7	101.0
101.5	13.1	13.5	14.0	14.6	15.0	15.4	15.8	16.2	16.7	17.2	17.9	18.5	18.9	11.6	13.0	14.4	15.8	17.5	19.1	20.8	101.5
102.0	13.3	13.6	14.1	14.7	15.2	15.5	15.9	16.3	16.8	17.3	18.1	18.7	19.1	11.7	13.1	14.5	15.9	17.6	19.3	21.0	102.0
102.5	13.4	13.7	14.2	14.8	15.3	15.7	16.0	16.5	16.9	17.5	18.2	18.9	19.3	11.8	13.2	14.6	16.0	17.8	19.5	21.2	102.5
103.0	13.5	13.8	14.3	15.0	15.4	15.8	16.2	16.6	17.1	17.6	18.4	19.0	19.4	11.9	13.3	14.7	16.2	17.9	19.6	21.4	103.0
103.5	13.6	13.9	14.5	15.1	15.6	16.0	16.3	16.8	17.2	17.8	18.6	19.2	19.6	12.0	13.4	14.9	16.3	18.1	19.8	21.6	103.5
104.0	13.7	14.1	14.6	15.2	15.7	16.1	16.5	16.9	17.4	17.9	18.7	19.3	19.7	12.1	13.5	15.0	16.5	18.2	20.0	21.7	104.0
104.5	13.8	14.2	14.7	15.4	15.8	16.2	16.6	17.0	17.5	18.1	18.9	19.5	19.9	12.2	13.7	15.1	16.6	18.4	20.1	21.9	104.5
105.0	14.0	14.3	14.8	15.5	16.0	16.4	16.7	17.2	17.7	18.2	19.0	19.7	20.1	12.3	13.8	15.3	16.7	18.5	20.3	22.1	105.0
105.5	14.1	14.4	15.0	15.6	16.1	16.5	16.9	17.3	17.8	18.4	19.2	19.9	20.3	12.4	13.9	15.4	16.9	18.7	20.5	22.3	105.5
106.0	14.2	14.6	15.1	15.8	16.2	16.6	17.0	17.5	18.0	18.6	19.4	20.0	20.5	12.5	14.0	15.5	17.0	18.9	20.7	22.5	106.0
106.5	14.3	14.7	15.2	15.9	16.4	16.8	17.2	17.6	18.1	18.7	19.5	20.2	20.6	12.6	14.1	15.7	17.2	19.0	20.9	22.7	106.5
107.0	14.4	14.8	15.4	16.0	16.5	16.9	17.3	17.8	18.3	18.9	19.7	20.4	20.8	12.7	14.3	15.8	17.3	19.2	21.0	22.9	107.0
107.5	14.6	14.9	15.5	16.2	16.7	17.1	17.5	17.9	18.5	19.0	19.9	20.5	21.0	12.8	14.4	15.9	17.5	19.3	21.2	23.1	107.5
108.0	14.7	15.1	15.6	16.3	16.8	17.2	17.6	18.1	18.6	19.2	20.0	20.7	21.2	13.0	14.5	16.1	17.8	19.5	21.4	23.3	108.0
108.5	14.8	15.2	15.8	16.5	17.0	17.4	17.8	18.3	18.8	19.4	20.2	20.9	21.4	13.1	14.6	16.2	17.8	19.7	21.6	23.5	108.5
109.0	15.0	15.3	15.9	16.6	17.1	17.5	17.9	18.4	18.9	19.5	20.4	21.1	21.5	13.2	14.8	16.4	17.9	19.8	21.8	23.7	109.0
109.5	15.1	15.5	16.0	16.7	17.2	17.6	18.1	18.6	19.1	19.7	20.6	21.3	21.7	13.3	14.9	16.5	18.1	20.0	22.0	23.9	109.5
110.0	15.2	15.6	16.2	16.9	17.4	17.8	18.2	18.7	19.3	19.9	20.7	21.5	21.9	13.4	15.0	16.6	18.2	20.2	22.2	24.1	110.0
110.5	15.4	15.7	16.3	17.0	17.5	18.0	18.4	18.9	19.4	20.0	20.8	21.6	22.1	13.6	15.2	16.8	18.4	20.4	22.4	24.3	110.5
111.0	15.5	15.9	16.5	17.2	17.7	18.1	18.6	19.1	19.6	20.2	21.1	21.8	22.3	13.7	15.3	16.9	18.6	20.6	22.6	24.6	111.0
111.5	15.6	16.0	16.6	17.3	17.9	18.3	18.7	19.2	19.8	20.4	21.3	22.0	22.5	13.8	15.5	17.1	18.7	20.7	22.8	24.8	111.5
112.0	15.8	16.2	16.8	17.5	18.0	18.5	18.9	19.4	19.9	20.6	21.5	22.2	22.7	14.0	15.6	17.2	18.9	20.9	23.0	25.0	112.0
112.5	15.9	16.3	16.9	17.7	18.2	18.6	19.0	19.5	20.1	20.8	21.7	22.4	22.9	14.1	15.7	17.4	19.0	21.1	23.2	25.2	112.5
113.0	16.1	16.5	17.1	17.8	18.3	18.8	19.2	19.7	20.3	21.0	21.9	22.6	23.1	14.2	15.9	17.5	19.2	21.3	23.4	25.5	113.0
113.5	16.2	16.6	17.2	18.0	18.5	19.0	19.4	19.9	20.5	21.2	22.1	22.9	23.4	14.4	16.0	17.7	19.4	21.5	23.6	25.7	113.5
114.0	16.4	16.8	17.4	18.1	18.7	19.1	19.5	20.1	20.7	21.4	22.3	23.1	23.6	14.5	16.2	17.9	19.5	21.7	23.8	26.0	114.0
114.5	16.5	16.9	17.5	18.3	18.8	19.3	19.7	20.3	20.9	21.5	22.5	23.3	23.8	14.5	16.3	18.0	19.7	21.9	24.1	26.2	114.5
115.0	16.7	17.1	17.7	18.5	19.0	19.5	19.9	20.5	21.1	21.7	22.7	23.5	24.0	14.8	16.5	18.2	19.9	22.1	24.3	26.5	115.0
115.5	16.8	17.2	17.9	18.6	19.2	19.6	20.1	20.6	21.2	21.8	22.8	23.6	24.3	14.9	16.6	18.4	20.1	22.3	24.5	26.8	115.5
116.0	17.0	17.4	18.0	18.8	19.3	19.8	20.3	20.8	21.4	22.0	23.0	23.7	24.5	15.0	16.8	18.5	20.3	22.5	24.9	27.0	116.0
116.5	17.1	17.6	18.2	19.0	19.5	20.0	20.4	21.0	21.6	22.2	23.2	24.0	24.8	15.1	16.9	18.7	20.5	22.7	25.0	27.3	116.5
117.0	17.3	17.7	18.4	19.1	19.7	20.2	20.6	21.2	21.9	22.6	23.6	24.5	25.0	15.3	17.1	18.9	20.6	23.0	25.3	27.6	117.0
117.5	17.5	17.9	18.5	19.3	19.9	20.4	20.8	21.4	22.1	22.8	23.9	24.7	25.3	15.5	17.3	19.0	20.8	23.2	25.6	27.9	117.5