Nelago Amadhila

NUTRITION

Government of the Republic of Namibia
Ministry of Health and Social Services

Iodine Deficiency Disorders

and

Data on the Status of Vitamin A and Iron

ICCIDD

with support of UNICEF and International Council for Control of Iodine Deficiency Disorders

FOREWORD

In September 1990 seventy-one Heads of State and Governments and senior representatives of a further 88 nations met at the United Nations to talk about the future of the children. One of the many goals that The World Summit for Children endorsed was the virtual elimination of iodine deficiency disorders (IDD) by the end of the decade. The Plan of Action committed governments to prepare national programmes to implement the summit's decisions. In this context UNICEF, the WHO and the ICCIDD investigate IDD and its elimination. This commitment has been reaffirmed at the Policy Conference on Micronutrient Malnutrition in Montreal 1991 and is included in the World Declaration On Nutrition, held in Rome, December 1992.

It is a great pleasure for me to experience the enthusiasm and sincerity in which the GOVERNMENT of NAMIBIA pursues this commitment. I am grateful for the invitation and confidence of UNICEF to let me participate in this process. The chances to control IDD in Namibia even before the year 2000 are more than excellent.

I am grateful to Dr. Peter Greaves, Senior Advisor on Micronutrients, UNICEF, New York for his continuous guidance, critical supervision and generous support.

Despite the magnitude of the task, the field work went smoothly and according to plan. The full credit goes to Ms. Ella Shihepo and her collaborators from the Ministry of Health and Social Services, and Dr. Vincent Orinda and his staff from UNICEF, Namibia.
I am grateful for the help with the chemical analysis to Dr. Ekkehard Kraas and Dr. Uwe Wulff, Laboratory Plön, Germany, the support in statistical analysis received from Dr. Hans-Martin Teichert, University Lübeck, Germany and the advice of Dr. Barbara Underwood, WHO Geneva and Dr. Mannar Vankatesh, Toronto, Canada.

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Rainer Gutekunst, M. D.
ICCIDD, UNICEF Consultant
Im Felde 10
W-2430 Neustadt, Germany
Fax 49-4561-7078, Tel 49-4561-7077

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Furthermore, we would also like to express our profound thanks and gratitude to UNICEF for financial, technical and material contribution they made towards the realisation of this survey.

Our thanks also goes to Dr Rainer Gutekunst for the professional manner in which he facilitated the survey, the national feedback Workshop and the preparation of the report. Further, the Ministry of Health and Social Services wishes to thank the International Council for Control of Iodine Deficiency Disorders (ICCIDD) for their collaboration and support for the survey.

Last but not least, we would like to thank Professor F. Amaambo who has prominently stood out amongst the Professionals in the field and worked tirelessly to get the programme getting off the ground.

DR NICKEY IYAMBO ------------------------------------
MINISTER OF HEALTH AND SOCIAL SERVICES

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SUMMARY

A nation-wide study on the prevalence of Iodine Deficiency Disorders (IDD) was carried out among 1830 school children aged 8 - 12 years from 19 randomly selected villages in Namibia. Thyroid size was determined by ultrasonography, and iodine concentration measured in urine.

IDD in the Caprivi region was found to be severe (goiter rate 55%; urinary iodine excretion 2.5 µg/dl), with a critical need for correction.
More than two thirds of the total population lives in North Namibia. This population is moderately affected by IDD (goiter rate 15-25%; urinary iodine excretion 4.6 µg/dl). The need for correction is urgent.
The population of the Central and South Parts are mildly to marginally affected (goiter rate 0-7.%, urinary iodine excretion 7.7 -13.7). Here the need for correction is important.

Height and weight for age showed that more than 40% of the children are below the 3rd percentile of the WHO reference distribution. The correlation weight by height indicates that more than 30% of the children suffer from under nutrition. Comparing these findings with the goiter rates calculated, the true goiter prevalence could be even higher.

More than 90% of the salt consumed in Namibia is produced in Swakopmund. The company will be able to iodize salt as soon as respective legislation is originated. In Caprivi IDD is critical. In this region iodized oil should be administered orally until the time the iodized salt becomes effective.

The investigation was extended to determine serum levels of vitamin A, C-reactive protein (CRP) and ferritin of 290 children aged 2-6 years from 17 of the sites visited. Depending on the cut-off range used, 21% to more than 50% of the children have unsatisfactory Vitamin A serum levels. CRP revealed chronic infectious diseases in 25% of the children, which is significantly correlated to the Vitamin A status (r 0.70, $p<0.01$). Vitamin A experts should be consulted to discuss further steps. The ferritin serum levels found are satisfactory.

ABBREVIATIONS

CRP	C-reactive PROTEIN
HT	HEIGHT
ICCIDD	INTERNATIONAL COUNCIL FOR CONTROL OF IODINE DEFICIENCY DISORDERS
IDD	IODINE DEFICIENCY DISORDERS
MAX	MAXIMUM
MD	MEDIAN
MIN	MINIMUM
MN	MEAN
N	NUMBER
PPM	PARTS PER MILLION
SD	STANDARD DEVIATION
UNICEF	UNITED NATIONS CHILDREN FUND
VITAMIN A	RETINOL
WHO	WORLD HEALTH ORGANISATION
P	LEVEL OF SIGNIFICANCE
N	NUMBER
WT	WEIGHT

1. INTRODUCTION

1.1 FEATURES OF IDD

Iodine is a prerequisite for thyroid hormones synthesis. Thyroid hormones are essential for normal brain development and the control of organ functions. When the daily iodine intake drops below 150 µg goiter, hypothyroidism and ultimately cretinism will occur, table 1 (1).

Goiter causes obstruction of the trachea and subsequently right heart failure. Due to the inhomogeneous growth of the thyroid, nodules will develop, which eventually will induce hyperthyroidism in 30% of these individuals. Finally, multinodular goiter masks thyroid malignancy and so delays diagnosis and treatment.

The lack of thyroid hormones produces sluggishness and, in the worst case, mental and growth retardation. In most new-borns the damage of the brain and the nervous system cannot be corrected; this condition is called cretinism. Childhood mortality is enhanced due to diminished resistance to infections. Iodine deficient women suffer from reproductive failure and complications during pregnancy. Iodine deficiency retards socio-economic development, since the affected individuals are less productive and more handicapped individuals have to be taken care of (for further reading see references 1 and 2).

Table 1. Stages of IDD

STAGE	GOITER	HYPO-THYROI-DISM	CRETINISM	GOITER PREVA-LENCE	MEDIAN URINARY IODINE	NEED FOR CORRECTION
MILD	x	0	0	10-30%	5.0-10.0	IMPORTANT
MODERATE	x x	x	0	20-50%	2.0.-5.0	URGENT
SEVERE	xxx	xxx	xx	30-100%	<2.0	CRITICAL

Iodine excretion µg/dl urine
0 = absent; x, xx and xxx present, with xxx being most severe

1.2 EXISTING DATA ON IDD FOR NAMIBIA

Reports from the 1940s indicated endemic goiter especially in Northern Namibia. A study performed by the South African Research Institute for Nutritional Diseases in 1991 showed a goiter prevalence of 34.5 % in the Caprivi region (3 and 3a).

1.3 TARGET OF THE PROJECT

The Ministry of Health and Social Services with the support of UNICEF performed a comprehensive project in three phases during March, June and October 1992 as follows:

Phase I

- Review the status of iodine deficiency disorders (IDD) in all parts of Namibia including the design of a study.
- Although less than one third of the population lives in the South and no severe IDD was expected, it was decided to produce a full map for Namibia to conclude, whether the same (iodized) salt can be used nation wide.
- Assess means of iodine supplementation and the feasibility of salt as a carrier for iodine.
- During the preparatory meetings with the regional health authorities common night blindness of children was reported. Following contacts with the Vitamin A experts Dr. B. Underwood WHO, Geneva and Dr. A. Tomkins Institute of Child Health, London, the suggestion was ensued to extend the study to assess the other two micronutrients.

Phase II

- Training of survey team and subsequent survey of schoolchildren from 21 villages for IDD.
- Attempt to simultaneously assess the status of Vitamin A and iron in pre-school children

Phase III

Data analysis, report writing, feedback (workshop) and input into the development of a national IDD control programme.

2. SUBJECTS STUDIED

2.1 IDD

The populations from the four geographically different sites were studied: Liambezi, the Northeast, the Northwest and the South-central. More than two thirds of the population live in the North. Since the geographical regions also reflect the differences in diets and ethnic groups, there was no need for further information on the major ethnic groups (4).
As a result of the migration during the recent decades of civil war even young adults unreliably reflect the iodine status due to potential nodules or goiters from childhood or early adolescence. Therefore, 1830 children of the same age, independent of sex, or, if not accessible, from adjacent ages from 19 randomly selected schools (4-6 from each region) were investigated to meet statistical requirements. For practical reasons children between 8 to 12 years old were chosen.

2.2 SALT INTAKE

Twenty-four hour urine samples were collected from 46 adults from 5 sites. Sodium excretion was estimated to calculate the approximate salt consumption and thereby the necessary supplementary iodine concentration.

2.3 VITAMIN A AND IRON

According to the recommendations of the Vitamin A experts Drs. Underwood and Tomkins blood was drawn from 290 randomly selected pre-school children aged 2-6 (median 2 yrs) years at 17 of the villages visited. The serum Vitamin A concentration in pre-school children - the younger the better - in contrast to school-aged children or adults is a good indicator for the liver stores.

3. METHODS

3.1 IDD

Estimation of thyroid size and urinary iodine are currently the two most useful indicators of iodine deficiency. Since each has its limitations both are needed. These measures permit assignment of the iodine deficiency to a particular stage of severity and define the relative urgency of this correction (Table 1, page 7).

3.1.1 THYROID SIZE

Most surveys have used the WHO classification of goiter size which is associated with a significant error rate just in the most frequent grades 0 - Ib, when compared to ultrasonographic measurement of thyroid volume. Furthermore, the more accurate the method used for thyroid size assessment, the less subjects have to be examined (5).
All children were investigated with ultrasound using a linear 5 MHz transducer. Thyroid volume above the 97 percentile of reference populations with sufficient iodine intake were considered as enlarged (goiterous); Table 2.

Table 2. Reference values for thyroid size

UPPER LIMITS OF NORMAL (ml)

women	18.0
men	25.0
17 age	16.0
16	14.0
15	12.0
14	10.5
13	9.0
12	8.0
11	7.0
10	6.0
9	5.0
8	4.5
7	4.0
6	3.5

3.1.2 IODINE

The iodine concentration in spot urine samples is a satisfactory index of iodine intake. It has been shown by several groups that the iodine/creatinine ratio does not improve the epidemiological accuracy. Beside other limitations such as age and nutritional status, urinary creatinine becomes distorted after 3 days, unless the sample is kept frozen, whereas urinary iodine remains stable for months. Therefore in epidemiological studies the iodine concentration should be given in μg/dl urine alone. Iodine was determined by wet digestion method at Dr. Gutekunst' laboratory as described in detail below (2, 6).

3.1.3 SODIUM AND CREATININE

sodium and creatinine were determined by routine commercial kits in Germany.

3.1.4 HEIGHT AND WEIGHT

Local reference values for thyroid volume, body height and weight for the population studied were not available. To exclude significant differences to the standard reference data used, weight and height of each child was recorded (7, 8).

3.2 VITAMIN A

Vitamin A was determined using the HPLC (High Performance Liquid Chromatography) method. Further details are found in appendix 1.

3.3 CRP

C-Reactive Protein was determined on the suggestion of Dr Underwood and Dr. Tomkins to correlate infection rates with Vitamin A levels. CRP was determined by a commercial kit from Behring; appendix 2

3.4 FERRITIN

Ferritin is the best parameter to determine the iron stores. Ferritin was determined with a commercial kit using chemiluminescence, appendix 3.

3.5 STATISTICS

Since the frequency distribution of values obtained was not normal, the medians, means, standard deviations, minimum and maximum values are given, the median being the best parameter. The comparisons between the different groups and regions were performed using the one way analysis of variance (Kruskal Wallis) and the multiple post-hoc tests (Nemenyi).

4. RESULTS

4.1 IDD

All data obtained are listed in appendix

4.1.1 GOITER PREVALENCE

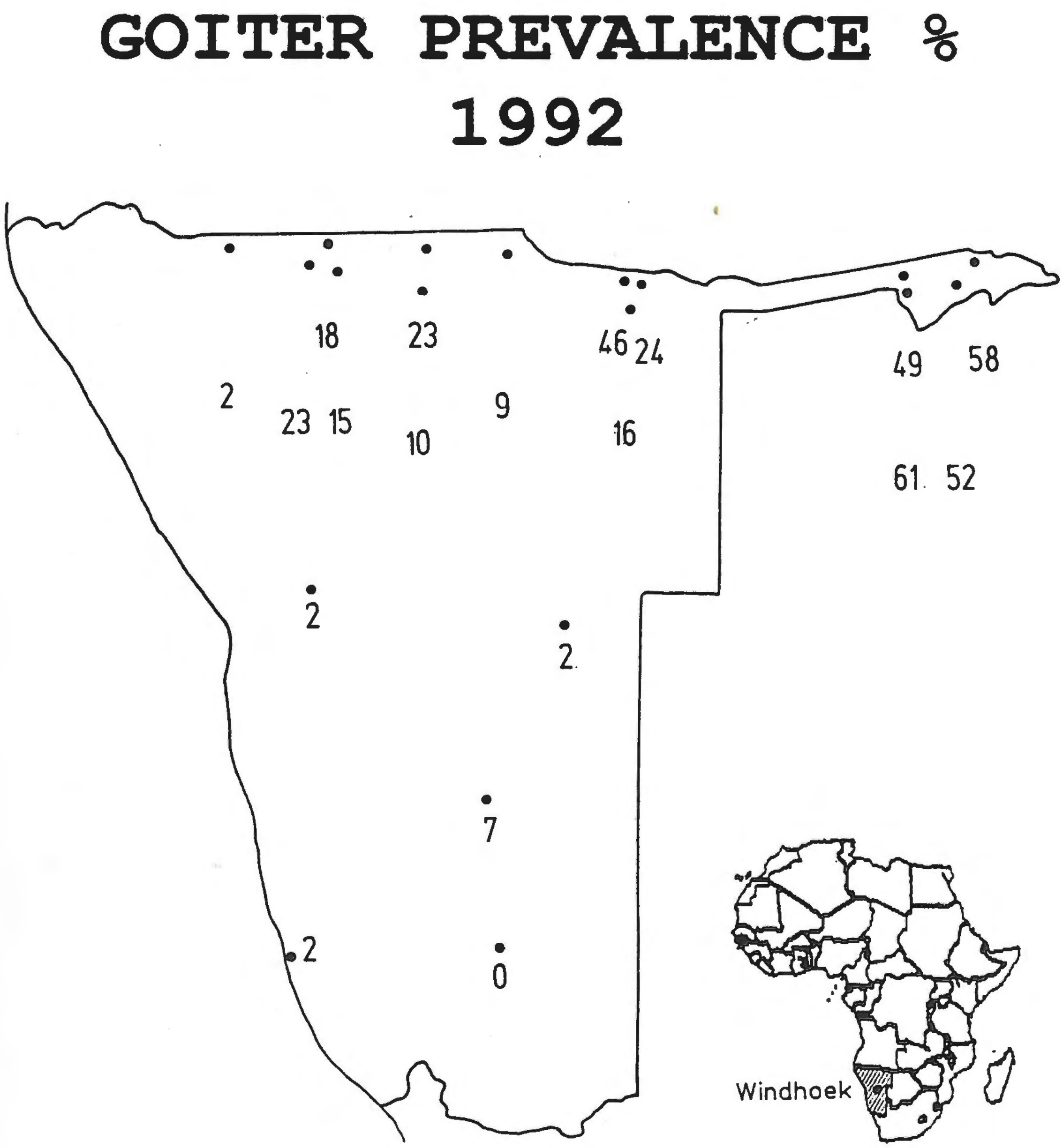
The goiter prevalence ranged from 0% in the South to 61.4% in the North. The data for each school are given in table 3 and figure 1, the detailed evaluation can be found in appendices 4 and 5.

Table 3 Goiter prevalence and urinary iodine excretion.

ID	SCHOOL	N	AGE (years)		GOITER	IODINE
			range	median	%	µg/dl urine
1	**Katima**	101	8-12	10	**58.4**	**2.0**
2	**Masokotwani**	100	7-13	11	**52.0**	**3.6**
3	**Choi**	89	7-13	11	**61.4**	**1.8**
4	**Kongola**	99	8-12	12	**48.5**	**2.5**
5	**Rundu**	100	7-12	10	**46.0**	**2.7**
6	**Mpungu**	75	3-16	9	**9.3**	**7.3**
7	**Makandina, Hamwiyi, Ncaute**	102	5-12	9	**15.7**	**5.9**
8	**Kehemu**	98	10+12	12	**23.5**	**4.7**
9	**Ondangwa**	100	10-12	10	**15.0**	**4.2**
10	**Oshakati**	97	9-12	10	**22.7**	**5.5**
11	**Eunda**	100	9-12	11	**2.0**	**5.5**
12	**Okongo**	84	9-12	10	**22.6**	**3.8**
13	**Amilema**	100	9-12	11	**10.0**	**8.5**
14	**Engela**	101	10+12	10	**17.8**	**3.7**
15	**Lüderitz**	100	9+12	9	**2.0**	**7.6**
16	**Keetmanshoop**	107	9+11	9	**0.0**	**7.7**
17	**Mariental**	83	9-11	10	**7.2**	**10.0**
18	**Gobabis**	112	9-12	10	**1.8**	**9.6**
19	**Usakos**	83	9-12	10	**2.4**	**13.7**
	TOTAL	**1830**				

No of children with goitre of any grade : 403

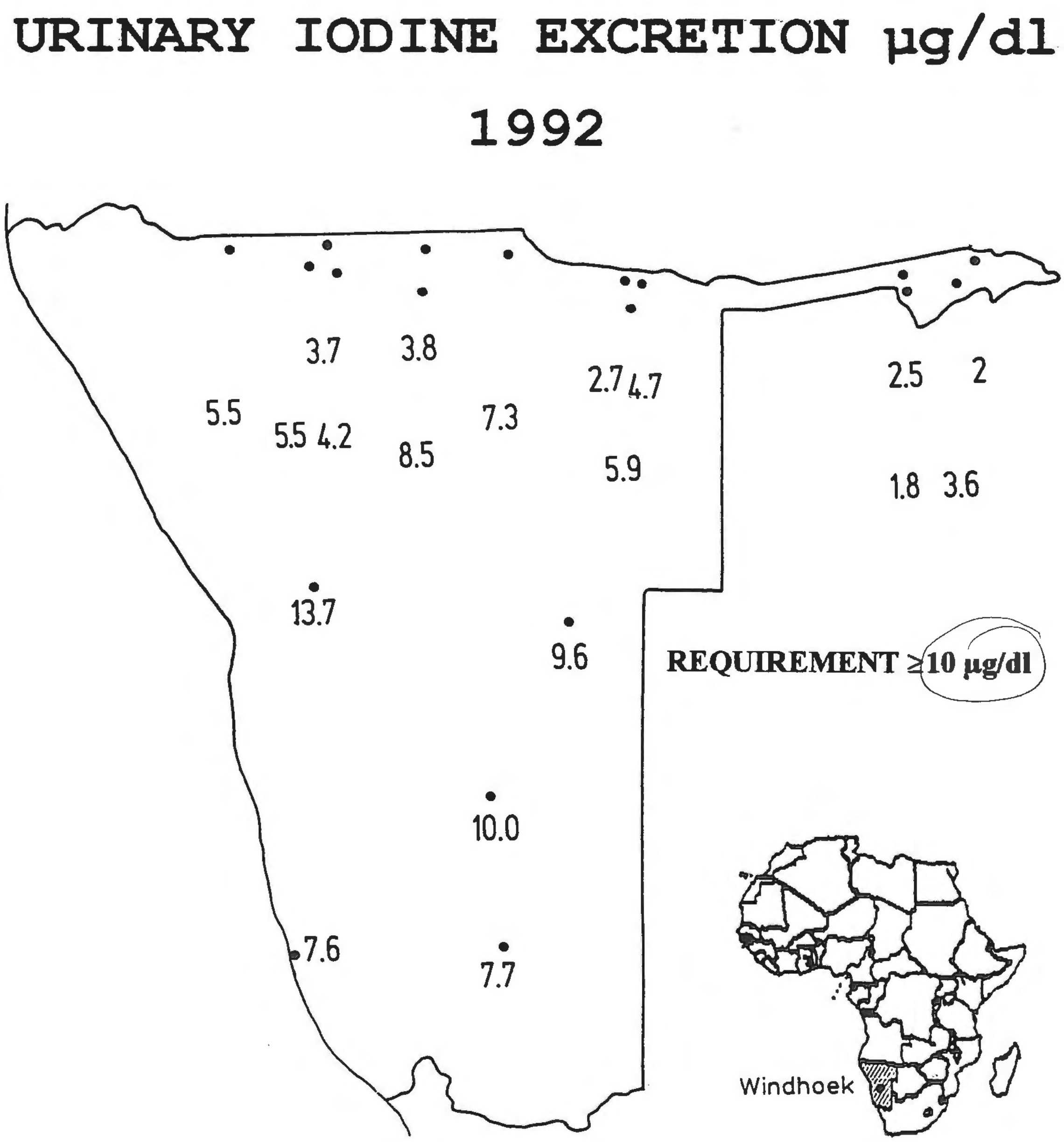
Figure 1 Goiter prevalence given in percent (rounded)



4.1.2 IODINE EXCRETION

The urinary iodine excretion ranged from 13.7 µg/dl in the South to 1.8 µg/dl in the North (see appendices 3 and 4). The summarized figures for each school are given in table 3 and figure 2.

Figure 2 Urinary iodine excretion (µg/l)



4.1.3 COMPARISON OF IDD BETWEEN REGIONS

In the Liambezi region severe IDD was found. The Northeast and West region do not differ and suffer from moderate IDD. The South and Central Region show none to mild IDD, table 4 and figure 4. Since the majority of Namibia's population lives in the North, more than two thirds of the population have moderate to severe IDD, figure 3.

Table 4 Comparison of IDD in different regions. The numbers of villages that belong to the respective region are given in brackets.

REGIONS	N	Differences (p)	GOITER %	IODINE μg/l urine
CAPRIVI (1 - 4)	389		**55**	**2.5**
		<0.01		
NORTH EAST (5 - 8)	374		**25**	**4.6**
		N. S.		
NORTH WEST (9 - 14)	582		**15**	**4.6**
		<0.01		
SOUTH & CENTRAL (15 - 19)	485		**2**	**9.5**

Figure 3 Degrees of IDD in the total population.: 37% of the population has marginal to mild IDD, 57% are moderately, 6% severely affected.

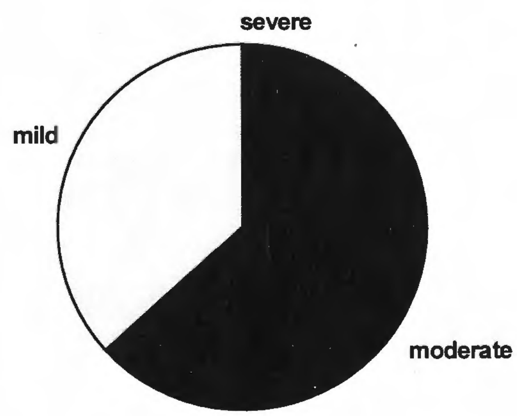
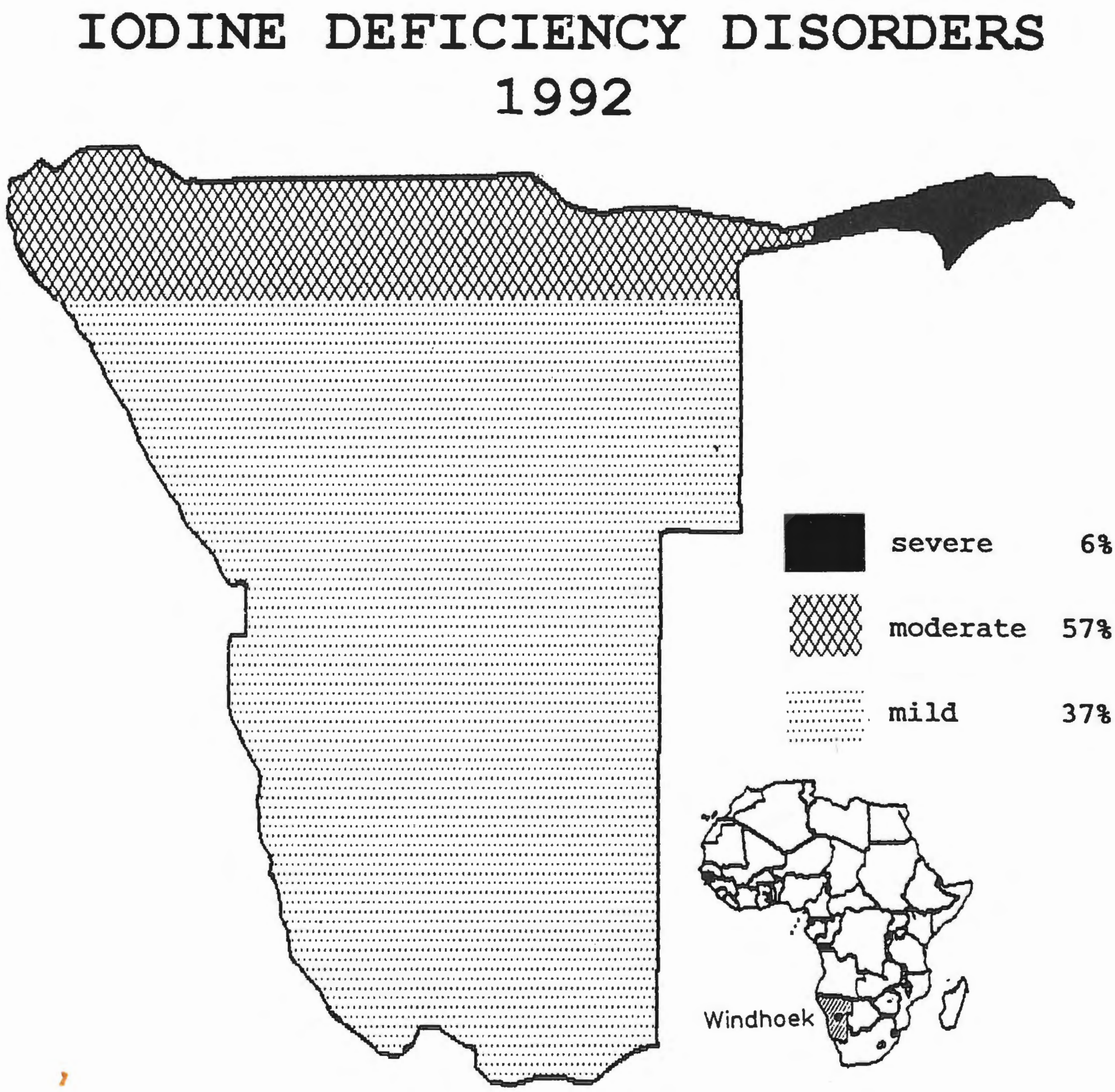
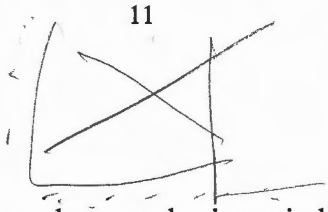


Figure 4 Stages of IDD severity in different regions





4.1.4 Goitrogens

The correlation between goiter prevalence and urinary iodine excretion is high (r=0.86; p<0.01) and consistent, thus excluding relevant goitrogens.

4.1.5 WEIGHT AND HEIGHT

Weight and height by age were both significantly lower when compared with the WHO reference values, tables 6 and 7 (for details see appendices 3 and 4). The frequency distributions of weight and height are almost parallel shifted to the smaller values, figure 5. Since height by weight does not differ between races (8) or ethnic groups, this index was compared with the WHO standards (7) to gain data on the nutritional status of the children, table 8. The frequency distribution showed that 30% of the children are severely undernourished and 14% are below average, figure. No regional differences were found.

Correlating these findings with the goiter prevalence figures given, the real goiter rate is presumably even higher.

Figure 5 Frequency distribution of Ht/Age, WT/Age, HT/WT.

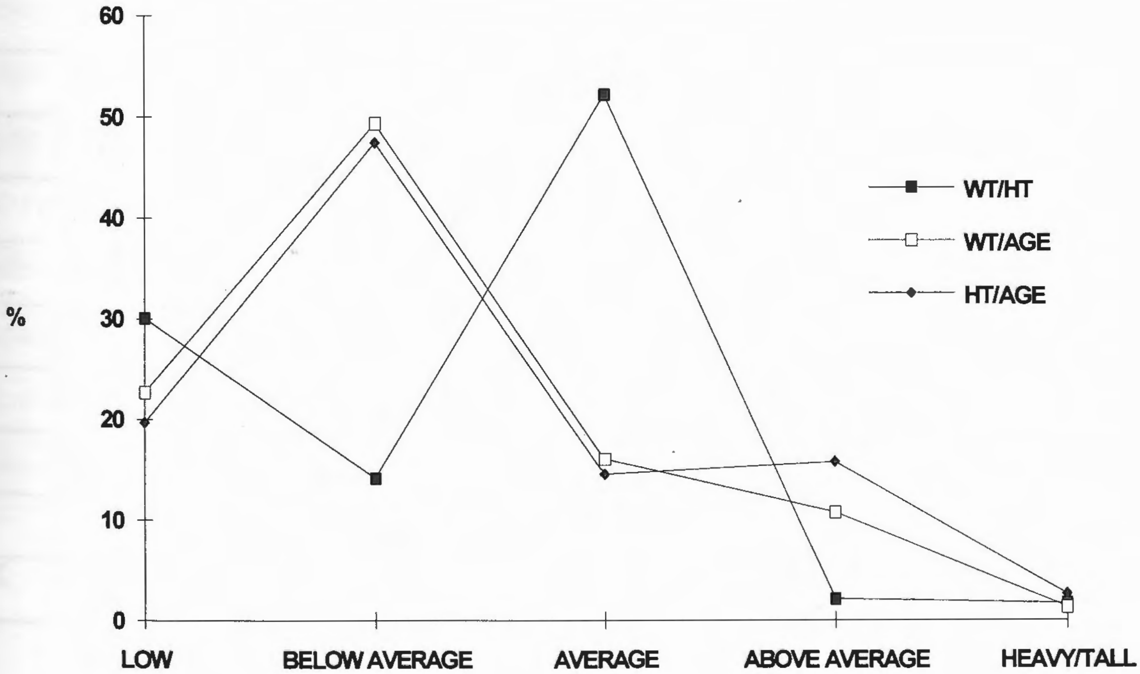


Table. 6 HEIGHT by AGE

Percentages of children belonging to different categories

PERCENTILE	≤3	>3-≤25	>25-≤50	>50-<97	≥97
SCHOOL	short	below average	average	above average	tall
Katima	15.8	58.4	15.8	8.9	
Masokotwani	11.0	45.0	15.0	29.0	
Choi	33.7	53.9	9.0	3.4	
Kongola	15.2	56.6	13.1	14.1	
Rundu	27.5	45.1	16.5	8.8	
Mpungu	26.5	47.1	16.2	8.8	
Makandina,Hamwiyi,Ncaute	18.8	58.4	11.9	7.9	
Kehemu	35.7	57.1	6.1	1.0	
Ondangwa	1.0	0	1.0	69.0	2[illegible]
Oshakati	16.5	48.5	20.6	14.4	
Eunda	27.0	49.0	11.0	3.0	
Okongo	27.7	44.6	15.7	9.6	
Amilema	21.0	58.0	15.0	6.0	
Engela	17.8	55.4	12.9	13.9	
Lüderitz	12.0	42.0	21.0	25.0	
Keetmanshoop	29.0	49.5	12.1	8.4	
Mariental	0	26.5	31.3	38.6	
Gobabis	20.5	46.4	16.1	15.2	
Usakos	19.3	45.8	19.3	12.0	
TOTAL	19.7	47.4	14.5	15.7	2.6

Table 7 WEIGHT by AGE

Percentages of children belonging to different categories

PERCENTILE	≤3	>3-≤25	>25-≤50	>50-<97	≥97
SCHOOL	**low weight**	**below average**	**average**	**above average**	**heavy weight**
Katima	**8.9**	**50.5**	**25.7**	**13.9**	**1.0**
Masokotwani	**7.0**	**53.0**	**27.0**	**13.0**	**0**
Choi	**16.9**	**50.6**	**19.1**	**12.4**	**1.1**
Kongola	**13.1**	**49.5**	**18.2**	**18.2**	**1.0**
Rundu	**20.7**	**43.5**	**22.8**	**13.0**	**0**
Mpungu	**30.9**	**54.4**	**8.8**	**4.4**	**1.5**
Makandina, Hamwiyi, Ncaute	**35.6**	**44.6**	**13.9**	**5.9**	**0**
Kehemu	**29.6**	**56.1**	**10.2**	**4.1**	**0**
Ondangwa	**40.0**	**39.0**	**13.0**	**8.0**	**0**
Oshakati	**36.1**	**44.3**	**11.3**	**8.2**	**0**
Eunda	**18.0**	**58.0**	**20.0**	**4.0**	**0**
Okongo	**22.9**	**56.6**	**10.8**	**9.6**	**0**
Amilema	**32.0**	**58.0**	**5.0**	**5.0**	**0**
Engela	**27.7**	**64.4**	**6.9**	**1.0**	**0**
Lüderitz	**9.0**	**48.0**	**24.0**	**16.0**	**3.0**
Keetmanshoop	**35.5**	**53.3**	**8.4**	**0.9**	**1.9**
Mariental	**0**	**15.7**	**26.5**	**48.2**	**9.6**
Gobabis	**23.2**	**56.3**	**11.6**	**8.9**	**0**
Usakos	**21.7**	**33.7**	**22.9**	**14.5**	**7.2**
TOTAL	22.7	49.3	16	10.7	1.3

Table 8. WEIGHT BY HEIGHT

Percentages of children belonging to different categories

PERCENTILE	≤5	>5-≤15	>15-≤85	>85-<95	≥95
SCHOOL	LOW WEIGHT	BELOW AVERAG E	AVERAG E	ABOVE AVERAG E	HEAVY WEIGHT
Katima	5.9	13.9	78.2	2.0	0
Masokotwani	28.3	18.2	52.5	1.0	0
Choi	6.7	11.2	64.0	9.0	9.0
Kongola	11.1	8.1	77.8	1.0	2.0
Rundu	17.6	8.8	67.0	4.4	2.2
Mpungu	30.7	14.7	53.3	1.3	0
Makandina, Hamwiyi, Ncaute	43.6	15.8	39.6	1.0	0
Kehemu	18.6	12.4	67.0	2.1	0
Ondangwa	100.0	0	0	0	0
Oshakati	51.5	19.6	27.8	0	1.0
Eunda	11.0	14.0	73.0	1.0	1.0
Okongo	25.3	16.9	56.6	1.2	0
Amilema	37.0	23.0	40.0	0	0
Engela	46.5	17.8	35.6	0	0
Lüderitz	18.0	19.0	58.0	3.0	2.0
Keetmanshoop	41.1	17.8	36.4	1.9	2.8
Mariental	2.5	9.9	74.1	7.4	6.2
Gobabis	46.8	15.3	35.1	0.9	1.8
Usakos	15.7	8.4	66.3	4.8	4.8
TOTAL	30.1	14.1	52.1	2.1	1.7

4.1.6 SALT INTAKE

Although most urines collected were not full 24 hours specimen, the sodium concentration indicates an approximate salt intake close to 5 g per day, considering a minimum urine excretion of 1.5 l and a maximum of 2.5 l; table 9. Since the collection took place during winter negligible amounts of sodium will be lost by sweat. Creatinine was determined to check the dilution of the urine and the correct collection. No difference was found between the regions.

4.1.7 VISIT OF THE SALT COMPANY

The salt company of Swakopmund produces 90% of the salt consumed in Namibia. Huge amounts of salt are exported to neighbouring countries. The salt is of high quality with a purity of 99%. The packaging in plastic bags and plastic bottles is excellent. The technique for iodization is available and technically sufficient. Iodination has been performed on request for export without extra cost. The owner of the company Mr. Klein is willing to iodize all salt with iodate, according to the government's request. Further salts found in supermarkets are imported from South Africa. Half of these salts are iodized. The iodine content is not declared. The price per kg is approximately R 1.10 (US $ 0.35) for iodized as well as for non iodized salt.

During a revisit in October it was reconfirmed that all salt can be iodized as soon as the government decides upon the respective regulations. The salt company's laboratory is fully capable to control and monitor the iodine content of the salt.

The neighbouring countries, especially Zimbabwe and probably have similar IDD endemias. The iodized salt from Swakopmund could be easily transported to these areas and contribute to the elimination of IDD also in these regions

Table 9. Urinary sodium excretion from 24 hours urine specimen.

SCHOOL	SEX	URINE	SODIUM	SODIUM g/day				CREA-TININE
		ml	mmol/l	1 l	2 l	1.5l	2.5l	mg/dl
OSHAKATI	f	540	120	2.8	5.5	4.1	6.9	202.0
	f	1050	120	2.8	5.5	4.1	6.9	145.6
	f	870	144	3.3	6.6	5.0	8.3	215.8
	f	640	97	2.2	4.5	3.3	5.6	106.6
	f	1220	109	2.5	5.0	3.8	6.3	80.6
	f	740	125	2.9	5.8	4.3	7.2	145.6
	f	1650	47					
	f	820	121	2.8	5.6	4.2	7.0	54.6
	f	1180	139	3.2	6.4	4.8	8.0	114.4
	f	1640	76	1.7	3.5	2.6	4.4	140.4
LÜDERITZ	f	480	52	1.2	2.4	1.8	3.0	83.2
	f	450	186	4.3	8.6	6.4	11	132.6
	f		42					
	f	370	86	2.0	4.0	3.0	4.9	44.2
	m	355	67	1.5	3.1	2.3	3.9	106.6
	m	423	85	2.0	3.9	2.9	4.9	65.0
	f	450	106	2.4	4.9	3.7	6.1	153.4
	f	450	107	2.5	4.9	3.7	6.2	135.2
	f	400	68	1.6	3.1	2.3	3.9	145.6
	m	500	68	1.6	3.1	2.3	3.9	62.4
	m	420	54	1.2	2.5	1.9	3.1	119.6
KEETMANNSHOOP	m	720	73	1.7	3.4	2.5	4.2	267.8
	f	650	81	1.9	3.7	2.8	4.7	28.6
	m	810	110	2.5	5.1	3.8	6.3	20.8
	m	810	54	1.2	2.5	1.9	3.1	117
	f	520	73	1.7	3.4	2.5	4.2	65
	m	826	77	1.8	3.5	2.7	4.4	67.6
	f	730	112	2.6	5.2	3.9	6.4	31.2
	m	910	171	3.9	7.9	5.9	9.8	132.6
			35		4.5	3.3	5.6	
			35					
MARIENTAL	f		155	3.6	7.1	5.3	8.9	132.6
	m		118	2.7	5.4	4.1	6.8	195.6
	f		58	1.3	2.7	2.0	3.3	46.8
	m		34					
	m		29					
RUNDU	f	2100	96	2.2	4.4	3.3	5.5	202.8
	m	640	104	2.4	4.8	3.6	6.0	80.6
	f	580	91	2.1	4.2	3.1	5.2	70.2
	f	920	63	1.4	2.9	2.2	3.6	109.2
	m	1120	163	3.7	7.5	5.6	9.4	52.0

4.1.8. MEETING WITH THE PERMANENT SECRETARY, MINISTRY OF TRADE AND INDUSTRY

Mr. T. Gurirab agreed to investigate the different sources of salt. He promised to support the necessary legislation to iodize the salt depending on the outcome of the survey.

4.1.9. MEETING WITH THE PERMANENT SECRETARY, MINISTRY OF HEALTH AND SOCIAL SERVICES

Dr. Amadhila expressed his satisfaction with the manner in which the national IDD survey has been conducted and added that the results and recommendation of the survey will be utilized in developing a national IDD control program. He emphasised that:

- all salts used in Namibia have to be iodized
- relevant laws have to be enacted to force the private sector to adhere to expected standards
- supplementation with iodized oil in Caprivi area will have to be undertaken

It was observed at the meeting that inter-sectoral collaboration will be needed to achieve the desired results.

The meeting was attended by:

- Mrs. N. Amadhila, Nutrition Unit, MOHSS
- Ms. L. Dodds, Laboratory Services
- Ms. A. Kaura, Ministry of Trade and Industry
- Ms. D. Museler, Ministry of Agriculture,m Water and Rural Development
- Dr. V. Orinda, UNICEF, PHC
- Mrs. E. Shihepo, Head Nutrition Unit, MOHSS
- Dr. N. Shivute, Director, PHC

4.1.11 IODINE LABORATORY

The laboratories of Windhoek, Rundu, Caprivi, Keetmanshoop and Mariental hav been visited. All laboratories are capable to perform the determination of iodine i urine and salt.

Ms. Christine Weiss, Ms. Mirjan Dumeni and Mr. Ebert Ostehuyen from the Stat Hospital, P.O.Box 277, Windhoek (Tel 061-2032616; Fax 061-33285) were trained i October 1992. The necessary equipment has been purchased and donated by UNICEF The laboratory is capable to run up to 200 urine samples a day. The intra and inte assay precision achieved (cv <10%) meets international standards. The laboratory wil participate in the quality control program of ICCIDD at our laboratory. Respectiv samples will be provided. The laboratory can offer to determine samples fo neighbouring countries.

The equipment and chemicals [amount for 1000 determinations] necessary as well a the detailed procedure is given below:

REAGENTS

1. $KI0_3$ dry powder [1 g]

KIO3 is usually preferred over KI for a standard because it is more stable; K solutions should be renewed every 3 months.

Generate standards
Stock Standard A 16.85 mg $KI0_3$ in 100 ml H_20
Stock Standard B = 1ml Std A in 100 ml H_20
(= 100 μg I/100ml)

To generate standard curve make sequential dilutions of standard B as follows:

Std 20	μg I/100ml =	20	ml Std B +	80	ml H_20
Std 15	μg I/100ml =	15	ml Std B +	85	ml H_20
Std 10	μg I/100ml =	10	ml Std B +	90	ml H_20
Std 5	μg I/100ml =	5	ml Std B +	95	ml H_20
Std 2	μg I/100ml =	2	ml Std B +	95	ml H_20

Keep the stock standards in <u>plastic bottles</u> in the refrigerator. <u>Renew</u> stoc standards at six monthly intervals. <u>Do not use glass bottles</u>, since iodine can b lost by absorption to glass!

2. Chloric acid / Perchloride acid solution. Carefully add 100 ml HCIO4 to 500 ml KCIO3. Mix by gentle inversion. Discard the resulting precipitate. It should be stored at 4°C.
   - $KCIO_3$ liquid solution 20% [500 ml] or dry powder 500g KCIO3 is dissolved with heating in 910mL H2O over several hours.
   - $HCIO_4$ liquid solution 70%, [100ml].

3. $Ce(NH_4)_4(S0_4)_4\ {}_2H_20$ (ceric ammonium sulphate) liquid solution (14 g/l), 0.1 mol/l
   or as dry powder [300 ml], 48g ceric ammonium sulphate is dissolved in 1L 3.5 NH2SO4 and stored in a dark bottle at room temperature.

4. As_20_3 (Arsenic-trioxide) liquid solution 0.05 mol/l
   or Na-Meta-Arsenate powder [5 l] - 20g As2O3 and 50g NaCI are dissolved in 1L 2N H2SO4 with heating, and after cooling, diluted with water to 2L, filtered, and stored in a dark bottle at room temperature.

5. NaCl (sodium chloride) dry powder [100g]

6. H_2S0_4 40% (sulphuric acid) liquid [500 ml]
   or concentrated 100%, 36 N, liquid

7. H_20 (deionized water)[10 l]

HARDWARE

1. Heating block (thermoblock) with 50 - 100 holes to insert the glass test tubes, capable of achieving a temperature of at least 120°.
2. Spectrophotometer 405nm connected with a water pump vacuum suction.
3. Fume cupboard with extraction fan.
4. Glassware: 200 Test tubes of 10 preferably 20 ml capacity; diameter less than 16 mm
5. Program for evaluation, which is supplied by ICCIDD on a diskette.

PROCEDURE

1. 0.250 ml Urine or KIO_3 standard. Mix the urine sample to suspend any sediment evenly.

2. Add 750uL of chloric acid solution, mix, and heat each tube for 50-60 minutes in a heating block at 110-115 °C, in a fume hood with trap (for this an inverted glass funnel attached through a water trap to an aspirator suction can be used).

There is little or no change in volume during the heating. If the volume has decreased, reconstitute to 1 ml with H_20. Some samples may become faintly yellow.

3. Cool the tubes to room temperature, then add 3.5 mL arsenious acid solution to each, followed by mixing and standing for about 15 minutes.

4. Add 350 µL of ceric ammonium sulphate solution to each tube and quickly mix by vortex or other means. A timer should be used to keep a constant interval, usually 15-30 seconds, between additional to successive tubes.

   If the sample rapidly loses its yellow colour, remove from the current assay and process separately after dilution (rapid loss of colour indicates high iodine concentration / contamination!).

5. Exactly 20 minutes after addition of ceric ammonium sulphate to the first tube, read its absorbency at 405 nm in a spectrophotometer, and read successive tubes at the same interval as that used for additional of the ceric ammonium sulphate (i.e., 10-20 seconds) so that the time between addition of ceric ammonium sulphate and reading is exactly 20 minutes for each tube.

6. After reading the extinction, empty the cuvette by suction at the water pump.

7. Pour the next sample into the cuvette and repeat measurements.

8. Plot OD_{405} against iodine concentration for each standard and read values for the urine samples from it.

CALCULATION

Plot values obtained for the extinction of each standard point against the corresponding iodine concentration. The extinction decreases in a curvilinear manner with increasing iodine concentration.

Read the iodine content of urine samples from the standard curve.

Results are expressed as µg iodine/dl urine.

REPRODUCIBILITY

Overall intra- and interassay variation has to be less than 10%. If the procedures are reliably established, it will not be necessary to process samples in duplicate with the exception of controls and standards.

Using this procedure, 150 to 300 urine samples can be processed in one day.

NOTE

1. All reagents should be prepared in deionized iodine-free water!
2. The exact temperature, heating time, and cooling time can vary, however, within each assay, the interval between the time of addition of ammonium Sulphate and the time of the reading must be the same for all samples, standards, and blank.
3. Perchloric acid is corrosive; its fumes are toxic, particularly if allowed to dry in a ventilation system in the latter case it can be explosive.

DETERMINATION OF IODINE IN SALT

Titration

20g salt + 200 ml H2O + 1ml HCl + 2ml 10%KI+ 5ml Amidon + Na2S2O3 until the dark-blue solution is clear.

4.2 VITAMIN A

The evaluation for each village is listed in table 10, the full data are given in appendix 6. The cut-off ranges used for serum retinol vary. The familiar or traditional evaluation is given in table 11 and figure 6. Within in the next several months WHO will be revisiting the appropriate ranges to be considered deficient, low and adequate with respect to likely implications for public health. The personal view of Dr. Underwood is that the cut-off ranges given in table 12 and figure 7 should be considered.

At least 12 of the 19 villages examined have a Vitamin A deficiency problem. Dr. Underwood categorizes the villages as follows:

High risk	1, 3, 4, 7, 8, 14, 18, 19
Moderate risk	2, 10, 15, 16
Risk/adequate	6, 9, 12, 17

Table 10 Retinol serum concentrations

			RETINOL µg/l				
	SCHOOL	N	MN	MD	SD	MIN	MAX
1	**Katima**	33	194.5	158.1	107.1	31.7	508.7
2	**Masokotwani**	20	266.8	263.2	62.4	121.5	370.5
3	**Choi**	10	210.2	210.7	51.9	121.9	283.5
4	**Kongola**	15	201.2	265.7	98.5	79.0	375.0
6	**Mpungu**	10	272.1	281.6	27.2	217.7	303.1
7	**Makandina, Hamwiyi, Ncaute**	21	238.8	227.8	67.8	119.6	369.9
8	**Kehemu**	20	223.8	219.8	62.5	140.5	374.8
9	**Ondangwa**	20	296.9	300.1	76.7	168.1	447.2
10	**Oshakati**	22	296.6	298.2	75.5	153.9	394.6
12	**Okongo**	20	291.2	287.6	37.8	220.6	364.8
13	**Amilema**	11	295.0	270.3	60.7	220.0	419.8
14	**Engela**	6	187.5	190.9	32.8	145.0	222.3
15	**Lüderitz**	20	281.4	285.1	73.8	153.7	431.0
16	**Keetmanshoop**	16	251.4	240.9	50.9	187.6	326.1
17	**Mariental**	20	295.8	283.9	73.9	154.3	434.1
18	**Gobabis**	6	282.2	266.1	93.6	150.5	433.2
19	**Usakos**	20	257.3	241.9	65.0	125.6	408.8
	ALL	**290**	**255.6**	**257.3**	**80.3**	**31.7**	**508.7**

Table. 11 Frequency distribution of retinol (traditional cut-off ranges)

µg Retinol/dl serum	DEFICIENT	LOW	ADEQUATE	% of all
	<10	<20	>20	children
Katima	6	13	14	11.4
Masokotwani		2	18	6.9
Choi	3	5	5	3.5
Kongola		7	5	5.2
Mpungu			9	3.1
Makandina, Hamwiyi, Ncaute		6	15	7.3
Kehemu		8	12	6.9
Ondangwa		1	19	6.9
Oshakati		3	19	7.6
Okongo			20	6.9
Amilema			11	3.8
Engela		3	3	2.1
Lüderitz		2	18	6.9
Keetmanshoop		3	13	5.5
Mariental		2	18	6.9
Gobabis		1	5	2.1
Usakos		3	17	6.9
TOTAL	9	59	221	289
PERCENTAGE	3.1	20.4	76.5	100

Figure 6 Frequency distribution of retinol (traditional cut-off ranges); deficient 0%, low 21% and 79% adequate.

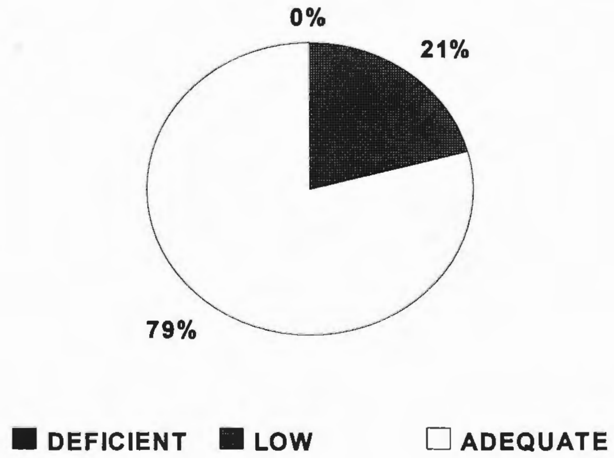
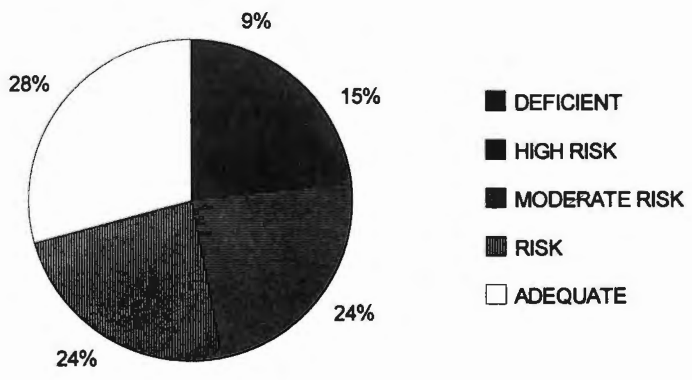


Table 12 Frequency distribution of retinol, cut-off ranges (recommendations Dr. Underwood, WHO)

	DEFICIENT	HIGH RISK	MOD RISK	RISK	ADEQUATE
µg Retinol/dl	**<15**	**15-19.9**	**20-24.9**	**25-30**	**>30**
Katima	14	5	5	4	5
Masokotwani	1	1	5	8	5
Choi	2	3	3	2	
Kongola	4	6	1		4
Mpungu			2	6	1
Makandina, Hamwiyi, Ncaute	2	4	7	4	4
Kehemu	1	7	7	3	2
Ondangwa		1	5	4	10
Oshakati		3	3	5	11
Okongo			2	10	8
Amilema			3	3	5
Engela	1	2	3		
Lüderitz		2	6	3	9
Keetmanshoop		3	6	3	4
Mariental		2	2	7	9
Gobabis		1		3	2
Usakos	1	2	8	4	5
TOTAL	**26**	**42**	**68**	**69**	**84**
PERCENTAGE	**9.0**	**14.5**	**23.5**	**23.9**	**29.1**

Figure 7 Frequency distribution of serum retinol



4.3 CRP

CRP indicated infectious diseases in 25.5% of the children without marked regional differences, table 10. The reverse correlation between Vitamin A intake and CRP is significant, $p<0.001$, $r = 0.71$; table 11.

Table 13 Correlation low Vitamin A and elevated CRP.

		PERCENTAGES	
NO	**VILLAGE**	**insufficient**	**CRP**
		Vitamin A	**< 5mg /l**
1	**Katima**	72.7	69.7
2	**Masokotwani**	40.0	5.0
3	**Choi**	35.0	40.0
4	**Kongola**	73.3	60.0
6	**Mpungu**	28.5	50.0
7	**Makandina, HN**	61.9	28.6
8	**Kehemu**	75.0	25.0
9	**Ondangwa**	30.0	5.0
10	**Oshakati**	27.3	13.6
12	**Okongo**	10.0	10.0
13	**Amilema**	27.3	0.0
14	**Engela**	100	66.7
15	**Lüderitz**	40.0	10.0
16	**Keetmanshoop**	43.8	18.8
17	**Mariental**	20.0	15.0
18	**Gobabis**	16.7	16.7
19	**Usakos**	55	10.0

4.4 IRON STATUS

Regardless to school and region, the ferritin levels in all children were sufficient, table 14 and appendix 5. This fits to the high creatinine values found in the urines for sodium determination, figure . The high creatinine excretion suggests a high protein diet, which contains iron. A second explanation for the sufficient iron stores might be the wide spread usage for cooking iron pots for cooking, which releases continuously iron into the food.

Table 14 Ferritin serum values; reference range 10 -200 µg/l

NO	SCHOOL	N	MN	MD	SD	MIN	MAX
1	**Katima**	33	81.8	41.7	77.9	6.7	351.6
2	**Masokotwani**	20	32.1	31.3	16.1	5.5	57.0
3	**Choi**	10	39.9	29.2	27.3	11.7	96.1
4	**Kongola**	15	80.6	40.3	95.0	8.3	332.5
6	**Mpungu**	10	86.4	63.1	37.7	30.6	153.1
7	**Makandina, Hamwiyi, Ncaute**	.21	83.7	50.1	132.5	19.9	647.4
8	**Kehemu**	20	47.0	43.6	25.1	8.6	123.3
9	**Ondangwa**	20	36.9	32.7	17.4	11.8	78.8
10	**Oshakati**	22	43.2	41.7	23.2	8.2	100.5
12	**Okongo**	20	59.5	50.0	32.9	19.1	133.5
13	**Amilema**	11	43.9	49.9	15.3	18.4	63.3
14	**Engela**	6	38.7	30.1	25.4	14.9	84.6
15	**Lüderitz**	20	31.3	29.8	15.2	10.4	69.7
16	**Keetmanshoop**	16	40.2	22.8	30.7	14.0	102.3
17	**Mariental**	20	34.3	32.9	15.7	14.9	67.8
18	**Gobabis**	6	33.6	32.9	11.3	19.8	51.5
19	**Usakos**	20	44.5	30.8	37.7	10.8	147.9
TOTAL		**290**	**51.6**	**38.2**	**56.0**	**5.5**	**647.4**

5. CONCLUSIONS

The data found for goiter prevalence and urinary iodine vary only marginally and remain locally within the same IDD score. Therefore the data obtained have sufficient precision. Further investigations are not necessary and will not improve the epidemiological results. Since the correlation between iodine concentration and goiter prevalence is consistent, relevant goitrogens can be excluded and need not be investigated now.

6. RECOMMENDATIONS

Prevention is the only cost-effective approach to IDD.

6.1 IODIZATION OF SALT

All salt consumed in Namibia including salt ingested by livestock should be iodized. Since iodide is more unstable only iodate should be used (.1, 2). The amount of iodate added to salt has to be compromised between the minimal needs in Liambezi and the upper limit that can be given in the South Central Region. The optimum daily iodine intake according to WHO recommendations ranges from 150 - 300 µg, up to 1000 µg/day being considered as safe (1, 2). Due to the excellent packaging of the Swakommund salt, the loss of iodate between production and consumption will presumably not exceed 40% (Dr. Mannar, salt expert of ICCIDD and UNICEF consultant). Since the daily salt consumption is closer to 5g than to 10 g 50 ppm iodine will be sufficient for the population in Caprivi and hardly exceed the WHO optimum in the South and Central Region, table 15.

Until respective legislation (see chapter 6.2) has been amended, regulations should be made by the Ministry of Health to allow the sale and the promote the advertisement of iodized salt.

Table 15 Iodine Concentrations in salt necessary to meet the requirements depending on the salt consumption and the baseline iodine intake.

SALT CONSUMPTION g/day	5	10	5	10	5	10
µg IODINE added per g salt (ppm)	50	50	40	40	30	30
EXPECTED CONCENTRATION AT CONSUMPTION	30	30	25	25	20	20
EXPECTED TOTAL IODINE INGESTION IN EACH REGION						
LIAMBEZI	170-180	320-330	145-155	280-310	120-130	220-230
NORTH	190-210	340-360	165-185	290-310	140-160	240-260
SOUTH & CENTRAL	250-270	400-420	225-245	350-370	200-220	300-320

6.2. LEGISLATION

Enabling legislation to make salt iodination mandatory for all salts used for human and animal consumption should be originated. All imported salts should meet the same requirements.

Does the country already have a food law? If so, does it address fortification/supplementation. Since lawmaking/regulation is a political process, advocacy is necessary and desirable. To the extent possible, factions for and against the project should be determined to address their concerns. Try to turn opponents into allies.

Ms. Rose Nathan, Attorney at Law
843 Virgil Street, N.E.
Atlanta, Georgia 30307; U.S.A
Tel (404) 525-7929; Fax (404) 525-5710

has kindly provided, based on sources from WHO, International Digest of Health Legislation; FAO, Food and Agriculture Legislation; FAO/WHO, Guidelines for Developing an Effective National Food Control System a

DESCRIPTION OF KEY PROVISIONS OF LEGISLATION TO AUTHORIZE THE NUTRITIONAL FORTIFICATION AND SUPPLEMENTATION OF FOOD.

SECTION 1: PURPOSE AND SCOPE

Include a statement describing the effects of preventable micronutrient malnutrition on individuals and on the productivity of the population. Mention the effectiveness (medical and cost-effectiveness) of undertaking fortification to combat micronutrient malnutrition.

Provide that the purpose of the law is to authorize and regulate the nutritional fortification of food to address and alleviate nutritional deficiencies and to otherwise promote the nutritional status and health of the people.

Provide that to accomplish the law's purpose, Ministry/Ministries are given power and discretion to determine what foods are required to be or may be fortified and to set appropriate standards.

SECTION 2: DEFINITIONS

Define all key terms, "food" being among the most important (include in definition of food the concept of being intended for human and animal consumption).

Give words their ordinary and customary meanings.

SECTION 3: APPLICABILITY

Provide that the law applies to all food imported, manufactured, packaged, distributed, delivered, sold, stored, displayed, or exported in the country.

SECTION 4: ADMINISTRATION AND ENFORCEMENT

Give the Ministry Authority and power to carry out the administration and enforcement of the law and to make rules and regulations to implement its provisions.

Provide that such rules and regulations may include provisions for:

Nutritional standards for foods (which may reference a list of additives and their concentrations published by a multilateral health agency, e.g., WHO);
- Determining which foods must or may be fortified;
- Levels of nutrients or ingredients to be added to foods;
- Methods of manufacturing, preparing, preserving, packing, storing, transporting, and distributing fortified food;
- Labelling and packaging of fortified food;
- Record keeping requirements;
- Quality control requirements;
- Procedures for inspection, investigation, sample analysis, and enforcement;
- Provisions for petitions for exemption or variation; and
- Any other matter necessary or desirable for the efficient and effective implementation of the law and its purpose.

SECTION 5: ESTABLISHMENT OF ADVISORY BOARD OR COMMISSION

Require or authorize the Ministry to establish a board or commission to serve in an advisory capacity with respect to establishing technical and other requirements. Provide that the board shall be composed of representatives of affected or interested governmental units, industries, and the scientific and consumer communities. Authorize the Minister to establish the numbers, qualifications, terms, compensation (if any), and functions of members. Require the Ministry to consider the consensus of the board's advice and justify any deviations from consensus advice rendered.

SECTION 6: GENERAL PROVISIONS

(a) Prohibitions. Prohibit the importation, manufacture, storage, display, packaging, sale, delivery, distribution, or exportation of any covered food that does not comply with regulatory requirements. Make violators subject to penalty.

(b) Registration. Allow the Ministry to establish a registry system for any person involved in the manufacture or production of food.

(c) Warranties. Require every manufacturer, distributor, dealer, and seller to provide a written warranty to the purchaser that the food complies with applicable regulatory requirements and may be sold or distributed lawfully under the provisions of this law. Provide that a warranty from each person in the chain to the ultimate individual consumer shall be implied without the need for demand for the same.

(d) Defences. Allow defence for any person in the manufacture-sale-distribution chain

1 purchased the food or food product from another providing a written warranty;

2 handled it in a manner in compliance with regulatory provisions

3 sold the food in the same condition it was in at the time of purchase

4 who could not have ascertained, through the exercise of reasonable diligence, that the food or product did not conform with regulatory requirements. Place burden of proof on the defendant.

INSPECTION 7: INSPECTION, INVESTIGATION, AND ENFORCEMENT

(a) Inspection and Investigative Powers.

Provide appropriate Ministry with the right of inspection and investigation at any place or sit (whether mobile or fixed) where covered food is located in the country. Give authorized officers or delegates of the Ministry access to any site or premises and any contents found inside, including but not limited to: food, food products, ingredients, equipment, records, and employees. Give authorized officers/delegates the authority to examine, take samples, seize and have analysed any covered food. Authorize the destruction of any food found not be in compliance with regulatory requirements.

Provide authorized officers/delegates with the authority to stop, search, and detain any aircraft, ship, vehicle, or other means of transport or storage in order to conduct an inspection or investigation. Require all persons to cooperate with any such inspection or investigation and provide truthful, accurate, and complete information if reasonable requested and necessary to determine compliance with regulatory requirements.

(b) Establishment of Central Laboratory.

Authorize or require the establishment of a central laboratory for the purpose of examining and analyzing samples. Allow the Ministry to establish procedures for laboratory's operation, including sample analysis and preservation of evidence.

(c) Enforcement.

Authorize Ministry to enforce the requirements of the law and implementing regulations through the imposition of fines, cease and desist orders, license/permit withdrawal (if applicable), adverse publicity, and/or imprisonment upon conviction of a crime. Establish minimum and maximum fines and prison terms, but allow the Ministry to exercise discretion in setting the actual amount in any given case, with incrementally more severe penalties for subsequent offences.

(d) Legal Proceedings. Allow the accused the right to a hearing before a penalty is imposed. Authorize Ministry to establish applicable hearing procedures in compliance with any legal safeguards already established by the country's laws.

SECTION 8: INITIAL PRICE REGULATION, TAX TREATMENT, ETC.

Establish initial price regulation, favourable tax treatment, or other incentives, if appropriate.

SECTION 9: SEVERABILITY

Provide that if any provision of the law is determined to be illegal or unconstitutional, all remaining provisions shall remain in full force and effect.

6.3. IODIZED OIL

Salt is the ideal vehicle for the supplementation of iodine. The supplementation by salt will hardly be effective before 1994 .

Since the Caprivi region is most severely affected of IDD, I revisited Dr. Saidi from the regional hospital in Katima Mulilo to discuss the distribution of iodized oil. Dr. Saidi keeps an excellent record on children of all age groups and women in child bearing age in connection with the ongoing EPI and growth monitoring programmes. With the help of this data bank it will be easy and efficient to reach the respective persons. Th regiments of iodine supplementation were discussed. Iodized oil should be given in the priority as listed in table 16. Dr. Saidi is now waiting for the advice of the Ministry of Health and Social Services.

Table 16 . Recommendations for the administration of iodized oil. WHO/UNICEF/ICCIDD Consultation of IDD prevalence and programme indicators and iodized oil. WHO, Geneva, 3 - 5 November 1992

	DURATION OF EFFECT			
	oral administration			intramuscular
	3 months	**6 months**	**12 months**	**> 1 year**
WOMEN OF CHILD BEARING AGE	100 - 200 mg	200 - 480 mg	400 - 960 mg	1 ml
PREGNANT WOMEN	50 - 100 mg	100 - 300 mg	300 - 480 mg	1 ml
INFANTS	20 - 40 mg	50 - 100 mg	100 - 300 mg	0.5 ml
CHILDREN 1 -5 years	40 - 100 mg	100 - 300 mg	300 - 480 mg	1 ml
CHILDREN 6 - 15 years	100 - 200 mg	200 - 480 mg	400 - 960 mg	1 ml
MALES	100 - 200 mg	200 - 480 mg	400 - 960 mg	1 ml

Iodized oil should always be administered orally, if contacts can be made with recipients at least every year. if this is not the case iodine injection should be given every 2 years.

1 capsule Lipiodol contains about 200 mg iodine
1 ml Lipiodol contains about 480 mg iodine
1 dose (dispenser) Oriodol contains about 300 mg iodine

6.4 SURVEILLANCE

check daily after the implementation of iodized salt

iodine content of salt at factories

check every two to three month after the implementation of iodized salt the iodine content of

3 salt samples at 30 randomly selected:

- purchasing sites
- households

If the iodine concentration is inappropriate extend your sample size and identify the source and cause of the insufficient samples.

monitor one to two years after the implementation of iodized salt:

- the iodine content of 75 spot urine samples from 20 randomly selected sites each.
- the thyroid size preferably by ultrasonography at the sites where urine is collected.

when goiter prevalence has fallen below 5% and urinary iodine excretion is sufficient, controls of iodine excretion and iodine concentration in salt are sufficient, but must be maintained.

6.5 IDD COMMISSION

A National IDD Control Interministerial Committee should be founded including representatives from medicine, nutrition, legislation, public health, and the salt industry to coordinate the introduction, surveillance and maintenance of iodine supplementation. A named manager for this committee and each for region should be appointed.

6.6 SUPPLEMENTATION OF VITAMIN A

The need and performance of Vitamin A supplementation should be discussed with respective experts. Efforts should be made to combine oral oil distribution with Vitamin A supplementation and/or other public health actions.

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APPENDIX 8.1

Vitamin A Dertermination Method

Procedure for the Determination of Vitamin A (all-trans-Retinol) in human serum by HPLC (High Performance Liquid Chromatography) with fluorimetric detection

Principle :
In human serum "all-trans-Retinol" is known to be the main vitamer of the Vitamin A group. The following working procedure for the quantitative determination of all-trans-Retinol by HPLC follows published methods (1 - 6).
Principally, serum samples are mixed with an organic solvent; hereby proteins and lipoproteins are precipitated, whereas liphophilic compounds as e.g. the fat soluble vitamins (Vitamin A, E and K) are extracted into the supernatant.
After centrifugation the clear supernatant is subjected to separation on a reversed-phase HPLC column coupled with a fluorescence HPLC detector.
The area of the all-trans-Retinol peak is measured by an electronic integrator and the Retinol-concentration calculated by comparison with the peak area of an authentic all-trans-Retinol standard of known concentration.
Materials and Methods :
*Apparatus.*The chromatographic instrumentation is an HPLC pump (Merck-Hitachi Model 655A-12), an HPLC controller (Merck-Hitachi Model L-500), an autosampler (Merck-Hitachi Model 655A-40), a fluorescence HPLC monitor (Shimadzu Model RF-535), an electronic integrator (Merck-Hitachi Integrator Model D-2000) and a C-18-reversed-phase HPLC separation column (250 x 4.6 mm; filled with Spherisorb ODS-2; 5 µm). The mobile phase is methanol with 1 % water; the flow rate is 1.0 ml/min.The fluorescence monitor is set to an excitation wavelength of 325 nm and an emission wave-length of 495 nm.
Reagents. Methanol (HPLC grade, J.T.Baker Chem., Cat.No. 8402); Acetonitrile (Lichrosolv Gradient grade, Merck, Cat.No. 30); Water (HPLC grade, J.T.Baker Chem., Cat.No. 4218); BHT (Butylated Hydroxytoluene, Sigma Chem., Cat.No. B-1378); Vitamin-A-alcohol (all-trans-Retinol, purity > 98 %, Merck, Cat.No. 24769).
The mobile phase is prepared by mixing 99 ml of methanol with 1 ml water; the mixture is degassed by ultrasonification for 30 min.
Retinol standard solutions are prepared freshly by dissolving 20 mg of authentic all-trans-Retinol in 100 ml ethanol (containing 50 mg BHT/l) in a calibrated brown glass flask ; for calibration of HPLC this standard is diluted further with methanol (containing 50 mg BHT/l) to obtain a working calibrator with a final retinol concentration of 0.5 µg/ml.
*Procedures.*All procedures are carried out in a laboratory equipped with subdued, yellow lights in order to minimize light-induced degradation of the vitamins. After thawing and thorough mixing of the serum specimens 250 µl of serum is pipetted off into a polypropylene micro tube; 375 µl of cold acetonitrile (containing 50 mg BHT /l as an antioxidant) is added followed by thorough vortex-mixing. The mixture is left for 30 min. at 4 °C in a refrigerator and vortex-mixed again; after centrifugation (10 min; 10.000 x g) an aliquot of the clear supernatant is pipetted into a brown glass vial; the vial is placed into the HPLC autosampler and 50 µl are injected into the HPLC apparatus.
Peak areas of the all-trans-Retinol peak of serum samples eluting after ca. 3.7 min are integrated electronically; for calculation of serum retinol concentrations these peak areas are compared to the areas obtained from retinol working calibrators with known concentrations.
The *precision* of this HPLC method is characterized by a CV_s of < 3 % and a CV_d of < 5 %; the *limit of detection* is estimated as 10 µg/l by calculating the Retinol-concentration equivalent to the threefold baseline noise. The extraction recovery for Retinol is found to be > 95 %.
An example of an HPLC chromatogram of a serum sample containing 913 µg/l Retinol is enclosed.

Reference intervals : 200 - 1500 µg / l

References :

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APPENDIX 8.2

CRP Dertermination Method

NA Latex CRP Reagents

Intended Use and Application

In vitro diagnostic rongont for quantitative dotermination of CRP in human serum or plasma by particle-enhanced nephelometry.

Diagnostic Relevance

C-Reactive Protein (CRP) belongs to the so-called acute-phase proteins the serum concentration of which increases in the course of a general, non-specific response to infectious and non-infectious inflammatory processes, cellular necroses, and malignant neoplasias. CRP contributes to non-specific defense in various ways, such as complement activation and acceleration of phagocytosis.[1,2,3]

While the CRP concentration is below 5 mg/l in serum of healthy persons, in various diseases, this value is often exceeded within 4 to 8 hours after an acute insult and CRP levels from approximately 20 to 500 mg/l attained.[3] Since an elevated CRP level is always associated with pathological changes, CRP determinations have considerable power in diagnosis, therapy, and monitoring of inflammatory diseases.[4,5,6] CRP determinations are more sensitive and reliable indicators of acute inflammatory processes than the erythrocyte sedimentation rate or the leukocyte count. Elevation of CRP concentration in serum occurs more quickly than that of the sedimentation rate and, when the disease resolves, CRP values decline very quickly and reach normal levels often days before the sedimentation rate has normalized.

Quantitative CRP determinations are especially useful in the following situations:[1,2,5]

1. Screening test for inflammatory/necrotic processes.
2. Diagnosis/monitoring during therapy for infections and inflammatory diseases, as, for example
   - neonatal septicemia, meningitis
   - pneumonia
   - pyelonophritis
   - post-operative complications
   - malignant diseases, particularly in conjuction with other acute-phase proteins and tumor markers
3. Evaluation of inflammatory disease progress
   - e.g. of rheumatic diseases
   - in acute phase or intermittant infections
4. Differential diagnosis of inflammatory diseases
   - Systemic lupus erythematosus (SLE)/rheumatic and similar arthritises
   - morbus Crohn/colitis ulcerosa
   - acute cystitis/pyelonephritis

Principle of the Method

Polystyrene particles coated with antibodies to CRP are agglutinated when mixed with samples containing CRP. The intensity of the resulting scattered light in the Nephelometer is dependent upon the CRP content of the sample so that, by comparison to standards of known concentration, the CRP content of a sample can be determined.

Reagents

Materials provided

	3 x 40 tests Cat. No. OUSV 04/05	4 x 75 tests Cat. No. OUSV 10/11
NA Latex CRP Kit		
N CRP Reagent	3 x 2 ml	4 x 3 ml
N CRP Standard (human)	3 x 1 ml	4 x 1 ml
N ASL/CRP Accelerator	1 x 4 ml	2 x 4 ml

Composition:

N CRP Reagent consists of a lyophilisate of polystyrene particles which are coated with antibodies of the γ-globulin fraction from a specific rabbit anti-human-CRP serum. When the reagent is reconstituted as directed, the concentration of polystyrene particles is optimal for nephelometric agglutination measurements.

N CRP Standard (human) consists of a mixture of human sera with high CRP concentrations which were lyophilized after removal of labile serum components. When reconstituted according to instructions, the standard contains the concentration of CRP in mg/l listed on the label.

N ASL/CRP Accelerator consists of a phosphate-buffered sodium chloride solution containing a detergent.

Preservative in all reagents: sodium azide

N CRP Reagent after reconstitution	max. 0.75	g/l
N CRP Standard after reconstitution	max. 1	g/l
N ASL/CRP Accelerator	1	g/l

Warnings and Precautions

1. For In Vitro Diagnostic Use. Keep out of the reach of children!
2. When using *in vitro* diagnostics containing sodium azide, consider the following: Avoid swallowing or contact with skin or mucous membranes! Sodium azide can form explosive azides with heavy metal ions such as copper or lead.
3. Each individual blood donation for use in manufacture of N CRP Standard is tested for hepatitis B surface antigen and anti-HIV by FDA required test. Only donations with negative findings are used for manufacture.

Nevertheless all samples (e.g. patient sera) and products (e.g. standard and control sera) obtained from human blood should be regarded as potentially infectious since absence of infectious agents cannot be proven and should be handled with appropriate care. Follow recommended procedures for biohazardous materials.[9]

Preparation of Reagents

N CRP Reagent: The lyophilized contents of a vial are resuspended in the volume of distilled water listed on the label. The reagent may be used 15 minutes after reconstitution. It should be carefully mixed before use each day.

N CRP Standard: The lyophilized contents of a vial are dissolved in 1.0 ml of distilled water. The solution is mixed by gentle shaking. The standard is ready-for-use 15 minutes after dissolution.

N ASL/CRP Accelerator is ready for use.

Storage and Stability

All components of the test kits are stable until the expiration date on the label when stored at +2 to +8 °C. After reconstitution of the lyophilisate, N CRP Reagent and N CRP Standard can be used for 1 week when the solutions are stored after use, tightly sealed, at +2 to +8 °C. Avoid freezing.

Standard solutions which become turbid should not be used for calibration.

Materials required but not provided

Behring Nephelometer or Behring Nephelometer 100
N Reaction Buffer, Cat. No. OUMS
N Diluent, Cat. No. OUMT
For internal quality control, use:
N CRP Control (human), Cat. No. OUKU
Other materials as described in the instruction manual for the Nephelometer

Specimens

Fresh (maximum storage, 8 days at +2 to +8 °C) or frozen human serum or plasma samples are suitable. The samples can be stored frozen (−25 °C) for up to 3 months when frozen within 24 hours of collection and repeated freezing and thawing is prevented.

Serum samples should have clotted completely and, after centrifugation, contain no particulate matter or traces of fibrin.

Very lipemic samples or frozen samples which become turbid after thawing should be clarified by centrifugation (10 minutes at 15 000 x g) before assay.

Heat inactivation can lead to reduced CRP values. Complement components do not interfere with the test.

Method

Procedure

Notes:

1. Consult the instrument manual for detailed instructions.
2. Do not use reagents after their expiration date.
3. Only those component reagents from kits with the same lot number may be combined.
4. It is important that sufficient reconstitution time (at least 15 minutes after addition of distille water) is provided for the lyophilized reagents.
5. Reagents and samples must warm to room temperature before use.
6. Ambient temperature during assay of the reference curve and of the samples should not diff by more than 3 °C.

Assay Protocol for the Behring Nephelometer (Assay No. 56)

All steps are performed automatically by the instrument.

40 µl	N CRP Reagent
50 µl	sample, standard, or control dilution
60 µl	N Reaction Buffer
–	Pipette into cuvette
10 µl	N ASL/CRP Accelerator
60 µl	N Reaction Buffer
–	Pipette into cuvette, stir
–	Measure signal after 6 minutes

The test should be performed at room temperature.

Establishment of Reference Curve

The CRP concentration of N CRP Standard is obtained from the vial label.

The Behring Nephelometer automatically prepares the following dilutions of N CRP Standard wi N Diluent:

1:40, 1:80, 1:160, 1:320, 1:640, 1:1280, 1:2560

The standard dilutions must be assayed within 4 hours. The reference curve must be redetermine each day.

Assay of Specimens

Patient samples are automatically diluted 1:400 with N Diluent by the Behring Nephelometer an must be assayed within 4 hours.

Note:

Occasional samples with high CRP concentrations are encountered for which the measured sign is above the reference curve. If further quantification is desired, repeat the test with a 1:200 sample dilution (integrated into the software).

Internal Quality Control

For the accuracy and precision control of the quantitative CRP determination on the Behring Ne phelometer, N CRP Control should be assayed with each series of unknown specimens.

The control should be handled like a patient sample during assay and evaluation.

The assigned value is obtained from the label. The confidence range is the assigned value ± 15%.

Results

Assay results are calculated automatically by means of a logit-log function.

Limitations and Interferences

Turbidity and particulates in the sample can interfere with the test. Therefore, particulates whic have developed from incomplete clotting of the serum or through protein denaturation should b removed before assay by centrifugation. Very lipemic samples should be clarified by centrifugatio (10 minutes at approximately 15 000 x g).

Reference Interval

The upper limit of the reference range for CRP in serum of healthy adults is 5 mg/l.[7]

Since CRP is a non-specific indicator of various diseases and since reference intervals can b affected by many factors which can be different for each population studied, each laborato should establish its own upper limit of the reference range.

Specific Performance Characteristics

Sensitivity and Measuring Renge

NA Latex CRP Kit is designed to measure CRP concentrations within a measuring range of appr imately 2.5 to 160 mg/l with a sample dilution of 1:400.

The sensitivity is determined by the lower limit of the reference curve which varies with the CR concentration of the standard. A typical detection limit is 2.5 mg/l.

Specificity

The test is specific for CRP.

Reproducibility and Precision

The coefficients of variation (CV) obtained for determinations of 3 different CRP concentratio (about 19, 37, and 75 mg/l) with the NA Latex CRP kit in 8 different series of triplicate assays w 2.2 %, 2.4 % end 2.2 % for within-series precision and 10.8 %, 9.8 %, and 9.4 % for reproducibili

Method Comparison (Accuracy)

A panel of 82 sera (CRP concentrations from 4 to 322 mg/l) were assayed with the NA Latex CRP (y) and, for comparison, with radial immunodiffusion (x). Comparison of the results by regres analysis[8] yielded the following line: $y = 1.00x - 4.0$.

Comparison of measured results for a panel of 50 sera (CRP concentrations from 8.6 to 287 mg which were obtained with the NA Latex CRP Kit (y) and a nephelometric method without part enhancement (x) gave the following regression line: $y = 1.09x - 0.59$.

Note:

The values cited for various parameters of test performance represent typical results and are n be considered performance specifications.

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Manufactured by:

Behringwerke AG
Marburg

Made in Germany

Distributed in USA by:
Behring Diagnostics Inc.
17 Chubb Way
Somerville, N. J. 08876

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BEHRING

APPENDIX 8.3

Ferritin Dertermination Method

CIBA·CORNING

ACS™ | Ferritin +C

Contents

Catalog Number	Contents	Number of Tests
672225	six vials of Ferritin Lite Reagent six vials of Ferritin Solid Phase one Master Curve Card	300
or		
672226	one vial of Ferritin Lite Reagent one vial of Ferritin Solid Phase one Master Curve Card	50

102200001 Rev. B, 9/91

Materials Required but not Provided

Catalog Number	Description
672182	ACS Calibrator C (six vials each low and high)
or	
672172	ACS Calibrator C (two vials each low and high)
672013	ACS Septum Caps (100/package)

Optional Reagents and Supplies

Catalog Number	Description
672177	ACS Multi-Diluent 1 (50 mL/vial)
9760	Tri-Level Ligand Control

Intended Use

For the quantitative determination of ferritin in serum using the Ciba Corning Automated Chemiluminescence System (ACS), to aid in the diagnosis of iron deficiency anemia, and iron overload.

Summary of Clinical Applications

Ferritin is a compound composed of iron molecules bound to apoferritin, a protein shell. Stored iron represents about 25% of total iron in the body, and most of this iron is stored as ferritin.[1] Ferritin is found in many body cells, but especially those in the liver, spleen, bone marrow, and in reticuloendothelial cells.[2]

Ferritin plays a significant role in the absorption, storage, and release of iron. As the storage form of iron, ferritin remains in the body tissues until it is needed for erythropoiesis. When needed, the iron molecules are released from the apoferritin shell and bind to transferrin, the circulating plasme protein that transports iron to the erythropoietic cells.[3]

Although dietary iron is poorly absorbed, the body conserves its iron stores carefully, reabsorbing most of the iron released from the breakdown of red blood cells. As a result, the body normally loses only 1 to 2 mg of iron per day, which is generally restored by the iron absorbed in the small intestine from dietary sources.[1]

Ferritin is found in serum in low concentrations and is directly proportional to the body's iron stores.[1] Serum ferritin concentration, when analyzed with other factors such as serum iron, iron-binding capacity, and tissue iron stores, is valuable in the diagnosis of iron-deficiency anemias, anemias of chronic infection, and conditions such as thalassemia and hemochromatosis that are associated with iron overload. Measurement of serum ferritin is particularly valuable in distinguishing iron-deficiency anemias caused by low iron stores from those resulting from inadequate iron utilization.[1]

Assay Principle

The Ciba Corning ACS Ferritin assay is a two-site chemiluminometric (sandwich) immunoassay, which uses constant amounts of two anti-ferritin antibodies. The first antibody or Lite Reagent is a polyclonal goat anti-ferritin antibody labeled with acridinium ester. The second antibody or Solid Phase is a monoclonal mouse anti-ferritin antibody covalently coupled to paramagnetic particles.

A direct relationship exists between the ferritin in the sample and the relative light units (RLUs) detected by the ACS:180™.

Standardization

The ACS Ferritin assay is standardized against the World Health Organization (WHO) IRP 80/602 reference material.

Specimen Collection and Handling

Serum is the recommended sample type for this assay. Cap and refrigerate specimens if testing is not done immediately, or freeze the specimens if testing is not done within 24 hours. Freeze specimens only once and mix thoroughly after thawing.

Assay Reagents

For In Vitro Diagnostic Use.

Caution: Discard opened assay reagents that are at room temperature for a total of 40 hours; do not use these reagents to calibrate the ACS:180 or assay samples.

Reagent	Volume	Ingredients	Storage	Stability
Ferritin Lite Reagent	5 mL/ vial	polyclonal goat anti-ferritin antibody (~3.18 µg/vial) labeled with acridinium ester in sodium barbital buffer, protein stabilizers, sodium azide, preservatives, and microbicides	2–8 °C	until the expiration date on the vial label or cumulative 40 hours at room temperature
Ferritin Solid Phase	22.5 mL/ vial	monoclonal mouse anti-ferritin antibody (~7.75 mg/vial) covalently coupled to paramagnetic particles in sodium barbital buffer, protein stabilizers, sodium azide, preservatives, and microbicides	2–8 °C	until the expiration date on the vial label or cumulative 40 hours at room temperature

Sodium azide can react with copper and lead plumbing to form explosive metal azides. On disposal, flush with a large volume of water to prevent the buildup of azides.

Preparing the Assay Reagents

Mix the Solid Phese the first time you use it. If foaming occurs, rim the top of the vial with applicator sticks to remove the foam. Mixing is not required after the initial use.

Place a septum cap on the Lite Reagent and on the Solid Phase vials.

Prewarming or bringing the reagents to room temperature is not required.

Do not mix different lot numbers of reagents.

Calibrating the Assay

For detailed information about entering calibration information, refer to Section 7, *Calibration and Quality Control*, in your *ACS:180 Reference Manual.*

Master Curve calibration

The ACS Ferritin assay requires a Master Curve calibration when you use a new lot number of Lite Reagent and Solid Phase. For each new lot of Lite Reagent and Solid Phase, use the Master Curve card to enter the Master Curve information at the System Management/Definitions/Master Curve screen.

Two-point calibration interval

The ACS Ferritin assay requires a two-point calibration every 15 days.

Also, perform a two-point calibration when you change lot numbers of Lite Reagent and Solid Phase or when your controls are repeatedly out of range.

Performing Quality Control

For detailed information about entering quality control information, refer to Section 7, *Calibration and Quality Control*, in your *ACS:180 Reference Manual.* Enter quality control information at the System Management/Definitions/Control screen.

To monitor system performance and chart trends, Ciba Corning recommends that you run quality control materials in a way that is consistent with your established quality control program. For the ACS Ferritin assay, Ciba Corning recommends using the Ciba Corning Tri-Level Ligand Control.

Assay Procedure

For detailed information about operating the ACS, refer to Section 6, *Operating the ACS:180*, in your *ACS:180 Reference Manual.*

1. Schedule the requested tests or profiles for each sample.
2. Prepare the primary tubes or sample cups and place them on the sample tray.

   This assay requires 25 µL of sample for a single determination. This volume does not include the dead volume in the sample cup or the additional volume required when performing duplicates or other tests on one sample.
3. Load the Lite Reagent and Solid Phase in adjacent positions on the reagent tray.
4. If dilution is anticipated, dispense ACS Multi-Diluent 1 into a sample cup labeled with the appropriate barcode label and load the sample cup on the sample tray.
5. Press *START*. The ACS:180
   a. dispenses 25 µL of sample into a cuvette,
   b. dispenses 100 µL of Lite Reagent and 450 µL Solid Phase,
   c. incubates for 7.5 minutes at 37 °C,
   d. separates, aspirates, and washes the cuvette with deionized water,
   e. dispenses 300 µL each of Reagent 1 and Reagent 2 to initiate the chemiluminescent reaction.
   f. prints results according to the print options described in Section 5, *Defining System Parameters*, in your *ACS:180 Reference Manual.*

lating Results

ailed information about how the ACS:180 calcu-
sults, refer to Section 2, *Understanding the*
0, in your *ACS:180 Reference Manual*.

dural Notes

se of hazardous and biologically contaminated
rials according to your institution's practices.
rd all materials in a safe and acceptable man-
nd in compliance with all federal, state, and
requirements.

tion is required, use the ACS Multi-Diluent 1 to
all samples. For information about onboard
ns, refer to Section 3, *Features and*
bilities, in your *ACS:180 Reference Manual*.

nvert ng/mL (mass units) to pmol/L (SI units),
e factor, 2.20, in the following equation:

. x 2.20 = pmol/L

tions

erritin values are elevated in the presence of
wing conditions and do not reflect actual body
res:[1,4]

mation
icant tissue destruction
lisease
nancies such as acute leukemia and Hodgkin's
se
py with iron supplements

samples with high levels of ferritin can cause a
ical decrease in the RLUs (high dose hook
In this assay, patient samples with ferritin
s high as 80,000 ng/mL will assay greater than
/mL.

l known that heterophilic antibodies in human
an react with reagent immunoglobulins, inter-
ith *in vitro* immunoassays. Patients routinely
l to animals or to animal serum products can
e to this interference and anomalous high
an be observed. Additional information may
ired for diagnosis.

ns that are ...	have an insignificant effect on the assay up to ...
id*	150 mg/dL of hemoglobin
	1000 mg/dL of triglycerides
	20 mg/dL of bilirubin

assaying grossly hemolyzed samples because
lease of intracellular ferritin can cause
ed results.

ted Values

all diagnostic tests, each laboratory should
its own reference ranges for the diagnostic
on of patient results.

for healthy males and females, and for
ls with diagnosed clinical conditions are
d in the table below.

	N	Mean	Observed Range (ng/mL)
	88	60.8	11.5 - 282.1
	88	60.7	10.3 - 218.8
iency	60	11.6	0.68 - 34.5
mias	7	610.8	13.0 - 1390.8
oad	44	1899.6	334.6 - 8573.0
ysis	31	312.3	31.3 - 1321.2
ver Disease	34	1967.1	7.9 - 12826.0

Performance Characteristics

Specificity

The cross-reactivity of the ACS Ferritin assay with human liver ferritin was determined by adding different levels of crystalline liver ferritin to samples containing endogenous ferritin. The ferritin level in the samples was then determined.

Sample	1	2	3	4
Endogenous Ferritin Value (ng/mL)	55.3	116.3	431.8	747.3
Liver Ferritin Added (ng/mL)	262.0	262.0	262.0	262.0
Expected Value (ng/mL)	317.3	378.3	693.8	1009.3
Observed Value (ng/mL)	319.0	375.2	731.4	1034.9
% Recovery	101	99	114	109

Mean % recovery or cross-reactivity is 105.8%.

Sensitivity

The ACS Ferritin assay measures ferritin concentrations up to 1650 ng/mL with a minimum detectable concentration of 0.5 ng/mL.

Accuracy and Recovery

For 326 samples in the range of 0.7 to 1552 ng/mL, the correlation between the ACS Ferritin assay and the Magic® Lite Ferritin assay is described by the equation:

ACS Ferritin = 0.95 (Magic Lite Ferritin) + 5.2

Correlation coefficient (r) = 0.99

To further assess the accuracy of the ACS Ferritin assay, five human serum samples in the range of 523 to 962 ng/mL were diluted 1:2, 1:4, 1:8, and 1:16 with ACS Multi-Diluent 1 and assayed for ferritin. The recoveries ranged from 93.1% to 112.2% with a mean of 100.9%.

Precision

Four samples were assayed three times in each of eight assays and the following results were obtained.

Sample	Mean Ferritin (ng/mL)	Within-run %CV	Total %CV
1	13.1	2.76	4.98
2	54.8	2.64	6.07
3	162.7	2.73	4.68
4	359.5	3.62	5.08

Technical Assistance

For technical assistance, call the Ciba Corning Diagnostics Corp. Technical Information Hotline at 800-255-2121 or fax your questions to the Technical Assistance Center at 508-668-4591.

For customer service, additional information, or to contact your Ciba Corning Account Representative, call 800-255-3232.

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Ciba Corning Diagnostics Corp.
63 North Street
Medfield, MA 02052

APPENDIX 8.4

Statistical Evaluation of

All IDD Data by School

NAMIBIA 1992

CAPRIVI

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
8	5	4	4,5	5,4														
9	25	18	5,0	6,0	6,3	2,2	29,0	25,0	26,6	3,8	135,0	129,0	129,7	5,9				
10	32	19	6,0	6,2	7,0	3,7	32,0	28,5	28,7	4,5	140,0	133,5	133,2	5,5				
11	34	14	7,0	6,2	7,0	3,3	35,0	30,0	29,8	4,2	144,0	137,5	136,5	6,2				
12	5	4	8,0	11,0														
ALL	101	59	(Boys 49; Girls 52; Age MD 10, MN 10.1, SD 1.0)												2,0	2,7	2,6	0.2-16.7

GOITER PREVALENCE 58.4 %

Masokotwani

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
7	6	5	4,0	5,2	6,3	2,7	24,0	22,5	22,2	1,0	123,0	122,5	123,5	4,3				
8	16	6	4,5	4,3	4,8	2,2	26,0	22,5	22,8	2,6	129,0	125,0	125,3	5,7				
9	19	10	5,0	6,9	7,1	3,9	29,0	24,0	24,7	3,1	135,0	129,0	130,1	4,0				
10	7	5	6,0	8,0	9,5	5,1	32,0	32,0	30,4	3,3	140,0	140,0	138,4	5,4				
11	12	8	7,0	8,0	7,9	3,2	35,0	28,0	28,4	3,8	144,0	136,5	135,9	5,7				
12	40	18	8,0	8,1	10,0	6,1	39,0	34,5	34,5	4,7	150,0	146,5	146,0	7,6				
ALL	100	52	(Boys 43; Girls 47; AGE MD 11; MN 10.2; SD 1.8)												3,6	4,5	3,5	0.1-15.9

GOITER PREVALENCE 52 %

NAMIBIA 1992

Choi

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
7	2	2	4,0	9,2				24,0		1,0	123,0	116,0						
8	7	7	4,5	9,7	9,1	5,0		30,0	29,4	2,6	129,0	124,0	124,4	7,2				
9	10	5	5,0	6,1	8,0	5,1	29,0	25,5	25,3	3,1	135,0	123,0	123,3	4,8				
10	13	11	6,0	8,8	11,2	8,8	32,0	26,0	27,4	3,3	140,0	130,0	130,8	5,8				
11	25	19	7,0	9,5	11,6	7,5	35,0	29,0	30,3	3,8	144,0	133,0	134,0	5,8				
12	31	10	8,0	6,4	7,6	3,4		31,0	31,0	4,7	150,0	139,0	137,4	6,5				
13	1	0	10,5	5,1				29,0				129,0						
ALL	88	54	(Boys 41; Girls 48; Age MD 11, MN 10.7, SD 1.4)												1,8	2,7	2,8	0.1-11.5

GOITER PREVALENCE 61.4 %

Kongola

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
8	3	3	4,5	7,5				25,0			129,0	125,0						
9	1	1	5,0	17,9			29,0	36,0			135,0	141,0						
10	21	11	6,0	6,3	7,6	6,1	32,0	27,0	28,1	4,1	140,0	131,0	132,5	6,0				
11	18	7	7,0	6,7	7,8	4,1	35,0	29,0	31,5	7,7	144,0	135,0	136,6	6,0				
12	56	26	8,0	7,4	9,5	7,4		34,0	34,2	5,7	150,0	142,0	142,9	7,3				
ALL	99	48	(Boys 45; Girls 54; Age MD 12, MN 11.2, SD 1.0)												2,5	2,9	2,2	0.1-8.7

GOITER PREVALENCE 48.5 %

RUNDU

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
7	1	0					24,0				123,0							
8	3	2	4,5				26,0				129,0							
9	43	21	5,0	4,9	5,8	3,4	29,0	25,0	25,1	3,4	135,0	128,0	129,2	6,9				
10	33	12	6,0	5,2	6,0	3,2	32,0	28,0	28,1	4,4	140,0	132,0	131,5	5,7				
11	19	10	7,0	6,9	7,4	2,8	35,0	27,5	27,9	5,0	144,0	128,5	130,1	9,5				
12	1	1	8,0				39,0				150,0				2,5	2,9	2,2	0.1-8.7
All	100	46	(Boys 41, Girls 49; Age MD 10, MN 9.7, SD 0.9)															

GOITER PREVALENCE 46 %

Mpungu

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
3+4	7			1,6				14,0				100						
5+6	14			1,8			20,0	17,0			114,0	108						
7+8	14			2,7			25,0	20,0			126 0	119						
9+10	15			3,3			31,0	25,0			138,0	132						
1+12	19			3,6			37,0	28,0			147,0	136						
13to1	6			4,9			48,0	38,0			162,0	143						
ALL	75	7	(Boys 37, Girls 38; AGE MD 9, MN 8.6, SD 3.1)												7,3	9,2	8,0	0.1-50.6

GOITER PREVALENCE 9.3%

NAMIBIA 1992

Makandina, Hamwiyi, Ncaute

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
5 to 7	12	1																
8	31	5	4,5	3,3	3,3	1,4	26,0	20,0	20,6	3,6	129,0	122,0	123,0	7,7				
9	25	6	5,0	3,6	4,0	1,2	29,0	24,0	24,2	3,6	135,0	128,0	129,4	5,1				
10	20	2	6,0	3,6	4,3	2,6	32,0	26,0	25,9	3,5	140,0	132,0	132,5	2,3				
11	6	1	7,0	4,0			35,0	27,0			144,0	133,0						
12	8	1	8,0	4,9			39,0	32,0			150,0	132,0						
	102	16	(Boys 70, Girls 32; AGE MD 9, MN 8.9, SD 1.5)												5,9	6,6	4,2	0.1-17.5

GOITER PREVELANCE 15.7 % (Makandina N=24; Hamwiyi N=31; Ncaute N= 46)

Kehemu

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
10	22	4	6,0	4,4	4,7	1,9	32,0	24,0	23,5	3,0		127,0	126,2	5,7				
12	76	19	8,0	6,8	7,0	2,7	39,0	31,0	31,2	4,6		140,0	137,4	16,1				
	98	23	Boys 59, Girls 39; AGE MD 12, MN 11.6, SD 0.8)												4,7	5,0	3,9	0.1-18.2

GOITER PREVELANCE 23.5 %

Ondangwa

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
9	29	5	5,0	3,6	3,8	1,6	29,0	22,0	22,5	3,1		149,0	149,4	1,8				
10	37	9	6,0	4,8	4,2	2,4	32,0	29,0	27,2	3,7		153,0	149,7	16,5				
12	34	1	8,0	4,3	4,6	1,8	39,0	29,0	29,0	4,8		154,0	154,3	2,5				
All	100	15	(Boys 51, Girls 49; Age MD 10, MN 10.4, SD 1.2)												4,2	3,9	2,9	0.1-16.6

GOITER PREVALENCE 15 %

Oshakati

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
9	39	1	5,0	3,1	3,2	1,0	29,0	22,0	23,0	3,5	135,0	127,0	126,8	6,0				
10	37	13	6,0	4,3	5,3	2,6	32,0	25,0	25,9	5,1	140,0	134,0	134,5	7,2				
11	13	6	7,0	6,8	7,0	1,8	35,0	29,0	27,3	4,7	144,0	136,0	138,0	6,8				
12	8	2	8,0	6,4	7,8	3,7	39,0	30,0	29,9	3,8	150,0	144,5	143,6	4,5				
All	97	22	(Boys 42, Girls 55; Age MD 10, MN 9.9, SD 0.9)												5,5	6,9	5,1	0.1-31.1

GOITER PREVALENCE 22.7 %

NAMIBIA 1992

Eunda

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
9	25	0	5,0	1,9	2,1	0,7	29,0	25,0	25,0	2,9	135,0	125,0	125,5	6,0				
10	15	1	6,0	3,1	3,1	1,1	32,0	25,0	27,2	3,3	140,0	129,0	129,4	5,5				
11	35	1	7,0	3,7	3,8	1,3	35,0	30,0	29,1	3,6	144,0	135,0	135,5	5,1				
12	25	0	8,0	3,5	3,8	1,7	39,0	30,0	30,3	4,0	150,0	140,0	139	6,4				
	100	2	(Boys 45, Girls 55; Age MD 11, MN 10.6, SD 1.1)												5,5	7,0	10,7	0.1-87.3

GOITER PREVALENCE 2 %

Okongo

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
9	23	4	5,0	3,6	4,3	2,1	29,0	25,0	24,6	2,7	135,0	130,0	128,7	7,2				
10	27	5	6,0	4,1	4,5	2,1	32,0	25,0	25,8	5,0	140,0	131,0	130,4	6,3				
11	18	5	7,0	5,8	6,1	2,7	35,0	29,0	29,4	4,4	144,0	137,0	138,1	8,1				
12	16	5	8,0	6,7	9,1	9,0	39,0	29,0	30,9	4,5	150,0	139,5	140,2	6,5				
	84	19	(Boys 31, Girls 53; Age MD 10, MN 10.3, SD 1.1)												3,8	4,7	3,3	0.1-12.8

GOITER PREVALENCE 2 2.6 %

Amilema

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
9	25	5	5,0	1,9	3,8	3,0	29,0	23,0	23,4	1,5	135,0	129,0	128,5	5,1				
10	16	1	6,0	4,0	3,8	1,5	32,0	26,0	26,7	4,2	140,0	131,0	130,4	6,3				
11	18	1	7,0	3,9	3,9	1,8	35,0	25,5	26,2	2,4	144,0	136,0	134,7	4,9				
12	41	3	8,0	4,4	5,3	5,7	39,0	30,0	30,8	4,3	150,0	143,0	142,6	5,3				
	100	10	(Boys 48, Girls 52; Age MD 11, MN 10.8, SD 1.2)												8,5	10,4	8,4	0.1-48.5

GOITER PREVALENCE 10.0 %

Engela

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
10	56	11	6,0	4,2	4,0	2,4	32,0	25,0	25,3	2,8	140,0	134,0	133,4	6,3				
12	45	7	8,0	5,5	5,8	2,3	39,0	30,0	30,2	3,1	150,0	141,0	141,4	5,5				
	101	18	(Boys 31, Girls 70; Age MD 10, MN 10.9, SD 1.0)												3,7	4,2	3,8	0.1-16.7

GOITER PREVALENCE 17.8 %

Lüderitz

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
9	50	2	5,0	2,9	3,1	1,3	29,0	27,0	27,2	4,8	135,0	130,5	131,4	6,2				
12	50	0	8,0	3,8	3,9	1,4	39,0	34,0	34,8	6,8	150,0	145,0	144,6	6,2				
			(Boys 51, Girls 49; Age MD 10.5, MN 10.5, SD 1.5)												7,6	9,8	10,5	1.9-97.6

GOITER PREVALENCE 2 %

Keetmanshoop

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
9	55	0	5,0	1,9	2,0	0,7	29,0	22,0	22,6	3,4	135,0	126,0	126,3	6,7				
11	52	0	7,0	2,6	2,7	0,9	35,0	27,0	28,0	7,4	144,0	135,5	135,5	7,1				
	107	0	(Boys 40, Girls 67; Age MD 9, MN 10.0, SD 1.0)												7,7	9,7	9,4	1.0-64.0

GOITER PREVALENCE 0 %

Mariental

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
9	31	3	5,0	3,9	3,7	1,2	29,0	29,0	31,8	7,6	135,0	134,0	134,7	5,9				
10	22	1	6,0	3,4	3,6	1,2	32,0	33,5	35,3	7,4	140,0	138,0	140,0	6,2				
11	30	2	7,0	4,5	4,6	1,7	35,0	38,0	37,9	6,1	144,0	144,5	144,4	5,9				
	83	6	(Boys 40, Girls 43; Age MD 10, MN 10.0 SD 0.9)												10,0	11,1	6,4	2.1-48.4

GOITER PREVALENCE 7.2 %

Gobabis

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
9	26	1	5,0	3,0	3,0	1,0	29,0	24,0	23,6	3,6	135,0	127,0	128,1	7,1				
10	46	1	6,0	2,8	2,9	1,1	32,0	26,0	26,0	4,4	140,0	134,5	133,5	8,4				
11	28	0	7,0	3,0	3,2	1,1	35,0	27,5	29,0	5,5	144,0	137,5	138,1	7,2				
12	12	0	8,0	3,7	3,5	1,3	39,0	31,0	30,8	4,0	150,0	138,0	138,7	5,0				
	112	2	(Boys 45, Girls 67; Age MD 10, MN 10.2, SD 0.9)												9,6	11,5	7,6	1.3-40.9

GOITER PREVALENCE 1.8 %

Usakos

AGE	N	GOITER	THYROID VOLUME ml				WEIGHT kg				HEIGHT cm				µg IODINE/dl URINE			
			RF	MD	MN	SD	RF	MD	MN	SD	RF	MD	MN	SD	MD	MN	SD	RANGE
9	38	0	5,0	2,3	2,3	0,8	29,0	24,5	25,8	7,6	135,0	126,5	127,0	8,2				
10	12	1	6,0	2,8	3,8	2,8	32,0	27,0	29,3	7,9	140,0	132,0	134,6	9,8				
11	23	1	7,0	3,8	4,0	1,8	35,0	33,0	35,5	10,7	144,0	142,5	141,1	8,6				
12	10	0	8,0	5,1	4,9	1,4	39,0	35,0	36,4	7,3	150,0	145,5	143,7	8,1				
	83	2	(Boys 31, Girls 52; Age MD 10, MN 10.3, SD 1.1)												13,7	15,8	9,0	4.2-60.2

GOITER PREVALENCE 2 .4 %

APPENDIX 8.5

Individual Data on IDD

VL	ID	AGE	SEX	WT	HT	US	IO
1	1	9	1	27	125	6,3	3,2
1	2	9	1	28	131	5,0	4,2
1	3	11	1	30	134	5,6	0,9
1	4	10	1	28	135	5,1	1,1
1	5	11	1	20	134	13,0	1,0
1	6	11	2	29	134	7,5	2,3
1	7	9	1	29	136	3,5	1,5
1	8	11	2	25	131	9,1	0,3
1	9	11	2	31	138	4,7	1,0
1	10	10	2	29	135	6,6	1,0
1	11	10	2	21	123	5,1	2,0
1	12	10	1	27	135	2,8	4,9
1	13	11	1	27	136	4,8	4,5
1	14	10	1	27	132	6,2	2,6
1	15	8	1	26	127	9,7	4,7
1	16	11	1	32	136	4,0	0,8
1	17	8	1	27	125	7,8	2,0
1	18	9	2	27	125	5,8	0,4
1	19	10	2	31	140	8,2	16,7
1	20	9	2	22	122	4,0	2,3
1	21	9	2	28	134	8,7	0,5
1	22	9	2	36	142	10,7	0,8
1	23	9	2	25	132	6,8	1,5
1	24	9	2	25	129	5,5	1,8
1	25	12	1	32	143	12,9	2,2
1	26	10	1	30	138	6,6	0,4
1	27	11	1	27	137	5,2	3,6
1	28	11	1	31	139	6,1	2,6
1	29	11	1	33	139	8,6	2,6
1	30	11	1	31	143	10,3	1,0
1	31	10	1	30	134	3,6	1,3
1	32	10	1	27	130	3,1	1,6
1	33	10	2	29	131	8,2	1,0
1	34	10	2	34	135	3,9	0,5
1	35	10	1	32	139	14,5	4,2
1	36	10	2	31	136	19,4	1,8
1	37	10	2	24	124	6,2	0,5
1	38	11	1	29	135	2,4	1,6
1	39	8	1	21	122	4,2	1,6
1	40	9	1	27	135	2,8	13,8
1	41	11	1	28	127	6,9	4,2
1	42	9	1	24	124	4,7	4,2
1	43	11	2	36	149	8,7	1,4
1	44	9	2	32	133	7,7	2,0
1	45	11	2	33	133	9,4	4,6
1	46	9	2	27	128	6,6	0,6
1	47	11	2	36	147	4,4	1,6
1	48	11	2	36	147	7,6	3,5
1	49	10	2	33	139	10,8	6,8
1	50	10	2	33	140	6,6	0,8
1	51	10	2	46	145	14,7	4,7
1	52	10	2	23	126	7,0	7,2

VL	ID	AGE	SEX	WT	HT	US	IO
1	53	12	2	35	137	13,8	9,5
1	54	12	1	31	139	9,0	5,7
1	55	10	1	33	133	6,9	6,0
1	56	9	1	25	128	6,7	0,3
1	57	10	1	25	124	3,8	0,3
1	58	10	1	31	132	5,2	3,4
1	59	10	1	25	124	5,8	1,4
1	60	10	2	28	137	5,4	1,4
1	61	11	2	34	138	10,3	2,6
1	62	9	2	36	145	7,2	2,3
1	63	11	2	30	141	2,5	0,8
1	64	10	1	26	127	6,2	5,6
1	65	11	2	32	140	10,3	2,1
1	66	10	2	27	133	6,2	0,3
1	67	10	2	30	139	7,2	0,7
1	68	9	2	22	126	12,1	1,7
1	69	11	2	26	134	4,7	1,2
1	70	11	1	35	138	10,3	1,0
1	71	12	1	35	143	11,0	2,4
1	72	9	1	25	131	8,7	7,0
1	73	10	2	26	133	3,1	4,1
1	74	11	1	31	138	14,8	0,7
1	75	10	2	30	138	9,7	2,1
1	76	11	2	31	138	13,6	5,1
1	77	10	2	29	133	3,6	1,8
1	78	10	2	26	134	9,1	2,0
1	79	9	2	25	126	6,0	0,6
1	80	9	1	25	128	4,8	0,4
1	81	11	1	28	132	4,8	2,8
1	82	9	1	31	135	7,5	2,7
1	83	10	1	24	126	8,8	2,7
1	84	11	2	22	122	4,2	4,3
1	85	11	2	23	127	6,2	3,6
1	86	8	2	21	120	5,4	1,1
1	87	11	2	30	141	6,3	7,0
1	88	9	2	26	129	5,9	1,7
1	89	8	2	20	119	4,9	1,8
1	90	11	2	38	148	4,5	4,0
1	91	11	1	29	135	10,0	0,2
1	92	12	1	43	144	6,0	2,2
1	93	9	1	22	124	6,9	3,4
1	94	9	1	23	125	4,5	2,3
1	95	11	1	25	128	4,4	0,4
1	96	11	1	30	138	5,5	1,5
1	97	9	1	24	121	2,6	2,6
1	98	11	1	31	138	3,5	0,5
1	99	11	2	25	127	1,9	4,4
1	100	10	2	24	132	4,4	4,0
1	101	9	2	23	129	5,5	3,5
2	1	9	2	21	129	3,1	2,2
2	2	9	1	20	125	3,4	2,9
2	3	8	2	21	135	8,8	8,3

VL	ID	AGE	SEX	WT	HT	US	IO
2	4	9	2	22	126	9,5	5,4
2	5	10	1	26	136	8,0	8,5
2	6	7	2	23	129	9,8	1,3
2	7	7	1	22	128	9,5	0,1
2	8	8	2	29	132	4,4	2,8
2	9	7	2	23	124	4,0	7,2
2	10	9	2	29	136	8,1	3,0
2	11	9	1	27	128	10,8	3,2
2	12	10	2	32	136	7,4	4,4
2	13	11	1	28	133	2,7	3,0
2	14	9	2	22	129	7,1	5,5
2	15	9	2	24	126	7,0	0,1
2	16	9	2	22	135	6,9	0,1
2	17	8	1	21	118	2,8	0,1
2	18	12	1	31	136	17,8	2,1
2	19	9	1	27	132	3,7	14,2
2	20	9	2	22	124	3,4	11,8
2	21	12	1	29	135	7,5	1,7
2	22	11	1	23	125	4,2	0,9
2	23	9	2	24	129	3,9	5,6
2	24	11	1	30	134	8,6	1,7
2	25	12	1	30	126	12,7	1,5
2	26	12	2	33	145	4,5	0,4
2	27	11	1	30	138	5,1	3,5
2	28	11	1	28	135	5,4	0,9
2	29	11	2	28	139	10,7	2,0
2	30	12	2	30	147	10,0	3,1
2	31	12	2	31	152	8,4	1,1
2	32	11	2	31	147	8,6	0,1
2	33	11	2	35	141	7,3	4,3
2	34	10	2	34	140	13,3	0,6
2	35	11	2	21	129	10,9	2,0
2	36	12	2	24	128	14,7	5,3
2	37	12	2	30	140	7,5	1,1
2	38	11	1	27	134	13,7	4,4
2	39	10	1	33	142	16,2	5,2
2	40	9	1	28	129	15,9	1,2
2	41	10	1	30	140	14,1	12,9
2	42	10	1	32	146	5,0	2,7
2	43	11	2	32	138	10,2	6,1
2	44	9	2	26	136	14,0	11,4
2	45	12	2	36	147	6,8	4,5
2	46	9	2	28	136	4,1	10,2
2	47	8	1	23	127	4,0	3,5
2	48	8	1	21	120	3,1	4,4
2	49	9	1	24	129	4,8	2,4
2	50	9	1	21	126	3,7	12,0
2	51	8	2	21	120	5,4	4,0
2	52	9	2	30	133	8,5	8,3
2	53	8	2	18	118	4,2	4,7
2	54	12	2	37	149	6,2	4,8
2	55	12	2	37	141	7,4	2,5

VL	ID	AGE	SEX	WT	HT	US	IO
2	56	12	1	35	144	3,3	8,0
2	57	12	1	35	145	11,8	3,6
2	58	12	1	26	137	6,1	1,7
2	59	12	1	29	141	17,2	8,1
2	60	8	2	23	123	3,6	3,2
2	61	9	2	26	128	4,9	4,9
2	62	8	2	26	126	4,7	7,3
2	63	8	1	21	117	2,7	0,6
2	64	8	1	25	133	5,3	8,5
2	65	8	1	23	131	4,4	6,7
2	66	8	1	22	123	9,6	0,5
2	67	8	1	23	127	2,8	4,1
2	68	7	1	23	121	4,1	6,8
2	69	8	1	26	126	2,4	3,0
2	70	9	1	27	135	12,1	8,2
2	71	7	2	21	118	5,0	7,1
2	72	8	2	22	129	8,0	8,1
2	73	7	2	21	121	5,5	6,8
2	74	11	1	28	138	7,4	6,1
2	75	12	1	38	150	5,9	1,5
2	76	12	1	33	142	10,6	3,2
2	77	12	1	32	137	7,8	3,4
2	78	12	2	40	155	16,1	0,4
2	79	12	2	32	145	5,9	0,1
2	80	12	2	40	150	16,3	1,1
2	81	12	2	41	157	7,7	2,9
2	82	12	2	34	146	3,2	8,7
2	83	12	2	36	154	4,9	1,6
2	84	12	2	29	147	4,7	8,7
2	85	12	2	37	154	14,1	2,3
2	86	12	2	33	143	8,0	5,7
2	87	12	2	30	144	8,1	10,9
2	88	12	2	38	152	12,0	7,7
2	89	12	2	39	154	36,5	5,4
2	90	12	2	39	157	20,0	5,0
2	91	12	2	36	145	12,1	8,4
2	92	12	2	44	152	8,3	4,1
2	93	12	2	33	149	6,7	5,8
2	94	12	2	34	151	9,7	6,5
2	95	12	2	43	160	8,1	2,8
2	96	12	1	36	149	6,3	1,3
2	97	10	2	26	129	2,8	0,1
2	98	12	1	30	143	3,9	2,0
2	99	12	1	44	156	14,4	3,3
2	100	12	1	35	144	6,9	15,9
3	1	11	1	25	124	5,7	2,7
3	2	13	1	29	129	5,1	1,9
3	3	12	1	28	140	2,9	3,1
3	4	11	1	28	132	16,2	0,1
3	5	12	1	24	122	5,7	2,1
3	6	12	1	25	132	7,8	0,1
3	7	9	1	23	122	2,7	4,0

VL	ID	AGE	SEX	WT	HT	US	IO
3	8	11	1	31	138	7,3	1,8
3	9	11	1	31	141	19,2	0,3
3	10	12	1	33	137	8,5	2,2
3	11	11	1	33	142	9,5	3,8
3	12	11	2	31	135	4,7	0,1
3	13	9	1	27	132	4,6	0,2
3	14	12	1	31	141	4,7	1,8
3	15	12	1	28	134	4,8	3,4
3	16	12	1	36	141	12,0	2,7
3	17	12	2	33	139	5,1	1,7
3	18	12	2	33	147	6,3	0,5
3	19	10	1	26	131	10,1	3,7
3	20	9	2	25	123	5,7	0,8
3	21	10	2	26	130	3,8	9,2
3	22	11	2	29	136	12,9	4,3
3	23	10	2	22	129	9,4	2,9
3	24	12	2	34	147	15,6	2,8
3	25	12	2	38	150	6,3	0,1
3	26	12	2	32	141	7,1	2,9
3	27	11	2	35	135	12,5	2,9
3	28	12	2	28	129	6,1	4,0
3	29	12	2	26	132	6,9	6,9
3	30	11	2	26	129	15,7	0,6
3	31	11	1	26	130	5,6	2,3
3	32	11	1	27	133	4,2	6,4
3	33	10	2	18	120	2,4	0,2
3	34	11	2	26	128	2,2	1,5
3	35	11	2	26	132	35,7	7,3
3	36	11	2	26	133	7,7	1,8
3	37	12	2	29	137	4,9	1,8
3	38	12	2	39	136	13,1	6,4
3	39	12	2	28	140	15,0	1,4
3	40	9	2	26	124	3,6	0,1
3	41	11	2	27	127	13,8	0,6
3	42	9	2	24	125	19,4	6,0
3	43	9	2	27	122	10,6	1,1
3	44	11	2	35	141	12,2	0,1
3	45	9	2	26	129	6,4	6,7
3	46	10	2	24	130	6,4	1,3
3	47	12	2	30	144	9,2	1,4
3	48	11	2	37	136	12,0	2,4
3	49	11	2	39	133	5,5	3,3
3	50	11	1	26	131	12,8	4,7
3	51	10	1	34	131	9,5	4,9
3	52	12	2	31	143	3,9	0,1
3	53	12	1	30	131	6,0	0,1
3	54	12	1	35	144	6,9	0,1
3	55	12	2	33	141	6,1	0,1
3	56	12	2	34	139	6,4	1,6
3	57	11	2	29	139	9,2	5,7
3	58	11	1	38	142	8,3	0,1
3	59	12	1	31	138	12,1	0,1

VL	ID	AGE	SEX	WT	HT	US	IO
3	61	12	1	32	139	4,5	0,1
3	62	12	1	33	142	6,8	0,1
3	63	11	1	31	138	11,6	5,8
3	64	10	1	30	132	24,6	0,1
3	66	12	2	31	133	9,3	4,2
3	67	8	2	29	112	4,9	0,1
3	68	10	1	26	128	14,5	0,1
3	69	8	1	35	132	16,3	5,7
3	71	8	1	30	122	14,6	4,6
3	72	10	2	30	131	8,4	7,2
3	74	10	2	35	142	7,0	1,8
3	75	12	2	33	128	3,5	4,4
3	76	10	1	25	130	34,2	11,5
3	77	11	2	29	129	28,0	6,1
3	80	12	2	30	136	10,8	3,7
3	81	12	2	22	127	5,1	5,8
3	82	10	1	29	137	7,1	0,1
3	85	11	1	35	144	9,0	0,1
3	86	8	1	34	133	9,9	0,1
3	87	10	2	31	120	8,8	10,7
3	88	12	1	32	130	11,9	0,1
3	89	11	1	32	122	7,3	0,1
3	90	9	1	30	123	12,8	3,3
3	91	8	1	30	127	4,1	0,1
3	92	8	2	23	124	4,2	0,1
3	94	8	2	25	121	9,7	9,6
3	96	9	1	22	116	9,2	7,4
3	97	7	2	23	118	9,6	0,1
3	99	9	1	23	117	5,2	0,1
3	100	7	2	25	113	8,8	2,2
4	1	12	1	23	130	3,3	0,6
4	2	10	2	31	135	3,8	7,1
4	3	10	2	26	131	4,9	2,3
4	4	11	1	26	126	18,3	2,1
4	5	10	2	32	135	4,2	3,6
4	6	12	2	35	142	5,2	1,5
4	7	8	2	25	125	7,5	1,4
4	8	12	2	41	148	13,3	2,2
4	9	12	1	37	142	5,1	3,7
4	10	12	1	31	144	11,1	4,4
4	11	12	1	34	147	5,1	1,8
4	12	11	1	29	135	6,9	1,0
4	13	11	1	32	135	6,9	1,7
4	14	12	1	40	145	8,9	3,8
4	15	10	1	24	129	7,9	3,7
4	16	12	1	34	146	6,8	3,2
4	17	12	1	35	146	4,0	6,0
4	18	12	2	31	139	3,0	7,8
4	19	12	2	25	128	3,0	0,1
4	20	12	2	29	142	15,3	2,1
4	21	11	2	25	133	3,9	3,5
4	22	11	2	58	135	5,2	0,9

VL	ID	AGE	SEX	WT	HT	US	IO
4	23	10	2	25	125	3,6	1,6
4	24	12	1	37	143	10,2	1,9
4	25	12	1	29	132	7,8	2,7
4	26	12	1	28	136	5,2	3,3
4	27	10	1	25	128	3,1	2,2
4	28	8	2	23	125	7,1	2,2
4	29	10	2	25	131	3,6	2,1
4	30	10	2	28	137	5,6	7,4
4	31	11	2	27	133	6,5	1,4
4	32	12	2	32	138	12,9	1,2
4	33	12	2	43	153	5,4	2,1
4	34	8	1	26	130	14,9	2,5
4	35	12	2	34	145	6,7	1,3
4	36	12	2	31	140	3,0	4,0
4	37	11	2	39	144	5,8	1,3
4	38	11	2	24	132	3,7	2,3
4	39	11	1	27	135	5,1	5,2
4	40	11	1	28	133	11,0	3,5
4	41	11	1	34	143	3,3	2,7
4	42	11	1	37	149	5,8	2,1
4	44	12	1	28	137	5,4	5,9
4	45	12	1	37	148	7,5	7,8
4	46	11	1	28	134	11,6	2,5
4	47	12	1	27	127	2,4	8,4
4	48	10	1	34	147	7,8	3,1
4	49	12	1	45	159	7,4	2,5
4	50	11	2	29	133	15,3	5,8
4	51	12	2	33	145	4,0	8,7
4	52	10	2	25	128	10,7	4,7
4	53	12	2	31	139	15,9	0,4
4	54	10	2	29	129	6,3	0,5
4	55	10	2	28	132	11,0	7,2
4	56	12	2	30	137	13,3	1,0
4	57	12	2	21	131	9,8	8,3
4	58	10	1	34	130	3,5	0,1
4	59	12	1	32	142	6,8	3,3
4	60	10	2	25	130	7,9	2,8
4	61	11	1	29	132	10,9	1,2
4	62	10	1	38	146	12,5	3,0
4	63	10	1	27	131	6,3	3,1
4	64	10	2	24	124	5,6	0,1
4	65	10	2	22	131	7,2	0,2
4	66	12	2	31	136	8,2	4,7
4	67	12	1	35	146	7,4	4,8
4	68	12	1	31	137	12,0	7,5
4	69	12	1	35	152	13,1	4,9
4	70	12	1	33	141	9,1	3,1
4	71	10	1	29	132	31,3	2,3
4	72	12	1	31	140	18,3	1,5
4	73	12	1	36	141	7,3	1,4
4	74	12	1	44	153	51,3	0,1
4	75	12	1	31	135	17,7	1,6

VL	ID	AGE	SEX	WT	HT	US	IO
4	76	9	2	36	141	17,9	1,8
4	77	12	1	32	140	14,5	0,6
4	78	12	1	34	142	8,3	3,6
4	79	12	1	32	145	3,2	7,6
4	80	12	1	27	139	6,7	0,1
4	81	11	2	30	137	4,0	4,3
4	82	12	2	40	150	6,8	3,0
4	83	12	2	36	147	7,0	0,4
4	84	11	2	32	142	7,1	0,2
4	85	12	2	32	142	3,9	5,5
4	86	10	2	27	131	3,2	3,0
4	87	12	2	27	140	6,2	2,0
4	88	10	1	33	141	8,8	0,7
4	89	12	2	43	147	5,1	1,6
4	90	12	2	31	138	9,6	3,4
4	91	12	2	38	149	20,4	2,8
4	92	11	2	33	148	8,9	0,7
4	93	12	2	38	139	19,7	3,0
4	94	12	2	39	152	4,2	0,9
4	95	12	2	37	150	19,8	3,0
4	96	12	2	43	163	12,3	6,4
4	97	12	2	38	156	11,8	3,0
4	98	12	2	48	152	5,8	0,1
4	99	12	2	35	136	5,4	3,6
4	100	12	2	46	143	9,9	0,7
5	1	9	2	20	115	2,3	6,8
5	2	9	2	21	126	4,6	3,2
5	3	9	2	34	129	1,4	4,1
5	4	10	1	27	132	6,0	3,1
5	5	11	1	23	122	2,9	3,5
5	6	9	1	28	128	1,8	1,0
5	7	10	2	25	126	3,7	4,2
5	8	9	2	23	126	4,4	1,0
5	9	9	1	22	125	2,8	0,7
5	10	11	1	20	115	3,6	2,7
5	11	7	1	999	999	5,4	0,2
5	12	9	1	22	126	6,7	1,9
5	13	9	2	999	999	4,1	1,8
5	14	9	2	26	129	2,9	2,1
5	15	9	2	20	120	4,1	4,0
5	16	10	1	30	129	10,3	2,3
5	17	10	2	22	126	3,9	2,8
5	18	10	1	28	126	4,0	18,7
5	19	9	2	25	127	38,3	0,5
5	20	9	2	24	128	5,7	3,9
5	21	8	2	27	129	3,9	1,1
5	22	10	1	28	129	3,5	1,1
5	23	9	1	999	999	3,3	5,1
5	24	9	1	26	129	7,9	1,4
5	25	9	1	21	122	4,3	2,6
5	26	9	1	24	122	3,1	3,0
5	27	9	1	23	119	8,9	3,0

VL	ID	AGE	SEX	WT	HT	US	IO
5	28	9	2	26	129	6,9	1,4
5	29	11	2	26	127	14,5	1,8
5	30	11	2	30	127	6,4	0,5
5	31	10	1	25	129	2,0	2,4
5	32	9	1	28	129	5,7	0,2
5	33	10	1	25	125	4,9	4,5
5	34	11	2	31	143	7,5	9,8
5	35	10	2	29	132	6,6	3,3
5	36	10	2	32	138	4,5	3,3
5	37	9	1	31	130	4,1	14,8
5	38	11	1	29	138	7,3	2,4
5	39	9	1	29	137	8,3	4,4
5	40	10	2	38	138	6,9	3,1
5	41	10	2	36	142	17,5	1,7
5	42	11	2	29	132	10,0	2,7
5	43	9	1	999	999	6,0	0,8
5	44	9	1	25	132	2,7	4,8
5	45	10	1	29	137	13,8	4,4
5	46	12	2	27	143	8,6	0,8
5	47	10	2	30	135	14,5	0,4
5	48	9	2	25	125	6,1	0,4
5	49	9	1	30	132	7,8	5,0
5	50	10	1	30	140	4,4	3,0
5	51	9	1	22	124	3,7	4,6
5	52	9	2	27	128	4,9	4,3
5	53	9	2	25	133	5,9	0,6
5	54	9	2	19	122	3,0	3,9
5	55	11	1	28	135	5,8	1,2
5	56	10	1	999	999	4,0	1,0
5	57	10	2	27	131	4,0	1,6
5	58	10	2	27	134	5,2	1,1
5	59	10	2	30	133	3,0	2,0
5	60	9	1	28	136	5,6	0,6
5	61	10	1	999	999	10,2	1,2
5	62	10	1	27	135	6,5	3,6
5	63	10	1	29	137	5,1	2,2
5	64	11	2	999	999	7,1	2,8
5	65	9	2	23	132	4,3	5,3
5	66	10	2	31	137	5,2	0,9
5	67	9	1	999	999	1,7	2,4
5	68	10	1	21	999	5,3	1,2
5	69	10	1	21	126	4,4	1,5
5	70	11	2	41	116	12,2	4,5
5	71	9	2	26	149	4,7	6,9
5	72	9	2	26	128	9,2	2,2
5	73	11	1	28	124	6,5	3,4
5	74	9	1	24	140	7,5	4,8
5	75	9	1	24	127	5,1	3,8
5	76	9	2	28	134	6,4	7,7
5	77	10	2	23	133	5,3	7,4
5	78	10	2	26	124	5,6	1,1
5	79	11	1	26	130	5,9	2,6

VL	ID	AGE	SEX	WT	HT	US	IO
5	80	9	1	20	133	6,3	0,9
5	81	10	1	38	121	6,4	1,9
5	82	9	2	25	146	7,5	7,9
5	83	11	2	25	127	7,9	0,2
5	84	8	2	29	127	6,5	6,1
5	85	11	2	23	126	6,1	1,6
5	86	9	2	31	141	3,8	6,1
5	87	9	2	24	127	4,5	0,2
5	88	9	2	24	126	7,6	4,4
5	89	10	2	26	131	8,0	2,8
5	90	10	2	23	121	5,3	1,1
5	91	9	2	28	129	4,9	3,1
5	92	11	2	29	134	6,9	5,1
5	93	8	2	24	125	8,0	2,6
5	94	10	2	24	125	5,3	2,5
5	95	11	2	33	147	5,8	6,5
5	96	11	2	35	147	6,0	3,8
5	97	10	2	34	135	7,6	4,5
5	98	10	2	29	137	2,9	4,9
5	99	11	2	23	119	9,5	2,7
5	100	11	2	24	133	9,5	2,3
6	1	5	2	10	102	1,8	6,3
6	2	6	2	13	106	2,5	5,9
6	3	5	2	17	110	1,8	11,2
6	4	8	2	16	116	3,4	2,8
6	5	8	2	19	112	2,7	16,8
6	6	7	2	18	116	2,4	50,6
6	7	6	2	22	120	1,9	0,1
6	8	7	2	22	122	5,9	7,3
6	9	9	2	22	124	2,8	1,7
6	10	4	1	17	104	1,6	0,9
6	11	5	1	18	110	1,3	19,7
6	12	7	1	18	112	1,0	9,6
6	13	5	1	20	114	2,9	4,9
6	14	7	1	19	120	1,3	13,3
6	15	10	1	22	125	3,1	3,3
6	16	7	1	25	132	2,1	12,9
6	17	8	1	23	130	2,6	11,6
6	18	5	1	26	124	1,8	3,8
6	19	10	1	11	125	1,0	16,6
6	20	9	1	20	126	1,8	6,4
6	21	10	1	29	136	6,3	4,2
6	22	12	2	21	144	2,9	4,6
6	23	7	2	20	126	5,3	6,6
6	24	11	2	26	136	6,2	5,7
6	25	11	2	30	140	5,4	2,2
6	26	11	2	23	142	2,9	10,4
6	27	11	2	27	140	5,4	2,6
6	28	12	2	29	134	5,4	3,8
6	29	12	2	31	140	1,6	25,8
6	30	13	2	39	148	4,2	1,4
6	31	16	2	45	148	9,5	0,9

VL	ID	AGE	SEX	WT	HT	US	IO
6	32	12	2	39	146	5,7	13,1
6	33	10	2	28	136	3,3	5,6
6	34	5	1	15	98	1,9	20,1
6	35	4	2	15	102	1,2	2,4
6	36	7	1	21	118	4,8	6,0
6	37	10	1	25	134	3,8	16,8
6	38	11	1	26	136	12,1	12,1
6	39	12	1	25	130	2,1	9,6
6	40	11	1	29	132	3,4	20,5
6	41	12	1	26	136	3,4	7,3
6	42	10	1	29	132	3,3	11,5
6	43	10	1	26	136	2,5	0,1
6	44	12	1	32	136	3,4	1,8
6	45	3	1	15	100	1,0	4,7
6	46	7	1	20	118	3,4	22,2
6	47	3	2	13	88	1,0	3,7
6	48	3	1	13	88	1,7	1,2
6	49	5	2	14	100	2,1	14,7
6	50	5	2	17	106	1,0	3,0
6	51	12	2	35	140	6,4	12,8
6	52	9	2	23	134	4,8	14,0
6	53	9	2	20	124	2,7	7,0
6	54	13	2	30	136	2,1	7,9
6	55	12	2	28	136	3,6	10,4
6	56	12	2	32	136	7,4	9,1
6	57	14	2	37	137	8,2	24,0
6	58	5	1	18	110	1,3	2,1
6	59	11	1	26	134	2,9	3,8
6	60	7	1	19	114	1,7	8,5
6	61	9	1	22	129	2,1	6,8
6	62	9	1	28	132	3,5	3,2
6	64	3	1	14	98	1,8	8,1
6	65	10	1	31	134	5,2	9,9
6	66	5	2	16	102	1,6	6,9
6	67	13	1	25	132	5,6	11,8
6	68	4	2	14	100	1,8	10,2
6	69	5	2	15	105	1,5	2,0
6	70	14	2	39	148	3,8	6,0
6	71	11	2	28	136	3,6	11,7
6	72	6	2	18	120	3,0	0,9
6	73	8	1	20	120	2,7	18,1
6	74	11	1	22	126	3,0	26,5
6	75	7	2	22	122	7,5	8,5
6	76	10	2	30	132	10,5	13,0
7	1	7	2	20	112	4,2	3,3
7	2	7	2	18	110	3,8	8,1
7	3	8	2	17	108	6,0	5,0
7	4	9	2	27	128	5,7	6,2
7	5	7	2	16	110	3,0	7,9
7	6	8	2	22	120	5,5	2,1
7	7	9	2	24	128	3,0	2,9
7	8	9	2	26	132	4,3	15,4

VL	ID	AGE	SEX	WT	HT	US	IO
7	9	8	2	17	112	3,6	3,3
7	10	9	1	21	122	1,7	5,0
7	11	8	1	16	114	2,1	4,7
7	12	7	1	16	114	0,4	4,5
7	13	9	1	20	122	6,1	6,2
7	14	9	1	24	128	3,5	8,8
7	15	9	1	23	128	3,5	12,6
7	16	10	1	25	132	2,5	8,2
7	17	10	1	21	134	3,6	8,7
7	18	10	2	28	136	3,5	8,9
7	19	8	1	18	116	3,3	3,8
7	20	9	1	21	124	2,9	4,0
7	21	8	1	20	126	5,0	3,7
7	22	10	1	27	132	4,7	9,4
7	23	10	1	29	136	5,6	4,2
7	24	10	1	20	132	11,3	9,7
7	25	8	2	19	122	2,9	5,9
7	26	8	1	20	122	3,2	2,3
7	27	8	1	21	120	2,0	4,3
7	28	8	2	17	120	3,5	5,6
7	29	8	2	21	124	2,9	1,1
7	30	8	1	16	124	4,0	5,2
7	31	8	2	18	116	4,5	3,4
7	32	8	1	26	136	3,0	1,4
7	33	8	1	18	122	1,4	4,2
7	34	8	1	29	132	2,1	1,6
7	35	8	1	27	136	4,5	1,3
7	36	8	1	17	120	1,7	0,9
7	37	8	2	17	120	1,4	1,0
7	38	8	2	23	126	0,9	9,7
7	39	9	2	20	126	3,6	14,9
7	40	9	2	21	128	3,0	9,2
7	41	9	1	19	132	2,9	3,0
7	42	9	2	30	136	6,0	13,1
7	43	9	2	20	124	3,1	10,7
7	44	9	1	29	132	4,3	9,9
7	45	9	2	23	130	6,1	5,5
7	46	9	1	23	136	4,7	10,2
7	47	9	1	28	132	3,2	0,1
7	48	9	1	19	126	3,3	17,1
7	49	9	1	23	136	5,4	5,8
7	50	10	1	23	132	3,6	9,1
7	51	10	1	27	136	2,3	11,5
7	52	10	1	20	128	3,7	6,6
7	53	10	2	30	134	3,1	7,3
7	54	10	1	23	132	11,0	6,4
7	55	10	1	24	130	2,2	0,1
7	56	10	1	24	132	3,4	7,4
7	57	10	2	25	132	1,9	15,3
7	58	11	2	26	132	3,0	5,6
7	59	11	1	28	132	1,9	10,5
7	60	11	1	28	132	6,7	11,7

VL	ID	AGE	SEX	WT	HT	US	IO
7	61	11	1	21	128	1,9	12,1
7	62	11	2	25	132	5,1	6,0
7	63	11	2	28	138	14,8	13,2
7	64	12	1	32	138	3,6	9,4
7	65	12	2	32	138	6,2	5,0
7	66	12	2	30	132	2,5	10,5
7	67	12	2	30	132	4,9	11,4
7	68	12	2	30	132	10,3	5,0
7	69	12	2	32	140	3,4	12,6
7	70	12	2	33	132	5,3	8,9
7	71	8	2	18	120	4,1	5,5
7	72	8	2	19	118	3,9	1,3
7	73	8	2	18	140	4,6	0,4
7	74	8	2	26	140	4,4	1,5
7	75	8	2	18	120	1,3	12,3
7	76	8	2	24	130	1,9	17,5
7	77	8	2	24	126	2,7	1,4
7	78	8	2	23	114	4,3	11,4
7	79	8	1	23	124	3,1	1,4
7	80	8	1	24	126	5,4	2,0
7	81	8	1	22	120	4,1	9,4
7	82	9	2	28	128	4,7	7,7
7	83	9	2	29	128	2,9	3,8
7	84	9	1	28	130	4,0	5,4
7	85	9	1	24	127	3,0	1,4
7	86	9	2	25	128	3,7	7,1
7	87	9	2	30	145	5,2	5,3
7	88	10	1	28	130	5,5	7,3
7	89	10	1	30	132	4,4	0,1
7	90	10	2	25	130	3,6	6,2
7	91	10	1	32	134	4,3	11,9
7	92	10	1	27	130	3,7	1,6
7	93	10	1	30	136	1,9	8,7
7	94	5	1	18	116	2,7	1,8
7	95	6	2	16	114	2,5	12,5
7	96	6	1	14	112	1,4	3,3
7	97	6	2	19	112	2,1	4,4
7	98	6	1	17	114	3,0	6,1
7	99	6	1	18	116	2,4	3,7
7	100	6	1	17	114	1,6	8,2
7	101	6	1	18	114	2,3	5,0
8	1	12	2	25	127	7,6	0,1
8	1	12	2	37	140	12,4	2,7
8	2	12	2	30	138	6,0	2,2
8	3	12	2	30	150	6,2	7,3
8	4	12	2	35	140	4,3	0,9
8	5	12	2	30	140	6,8	1,7
8	6	12	2	34	141	4,9	3,0
8	7	12	2	31	142	7,5	6,5
8	8	12	2	35	140	8,2	2,2
8	9	12	2	31	138	8,5	0,1
8	10	12	2	39	150	6,0	0,1

VL	ID	AGE	SEX	WT	HT	US	IO
8	12	12	2	30	138	5,1	5,0
8	13	12	2	27	136	9,8	6,2
8	14	12	2	36	146	5,9	0,7
8	15	12	2	31	145	16,8	11,3
8	16	12	2	30	145	11,4	4,6
8	17	12	2	21	136	7,1	4,1
8	18	12	1	31	136	6,8	4,7
8	19	12	1	29	139	4,9	5,1
8	20	12	1	32	140	8,0	0,1
8	21	12	1	28	133	8,6	0,1
8	23	12	1	30	138	9,3	0,1
8	24	12	1	34	138	4,1	2,4
8	25	12	1	35	133	5,0	0,1
8	26	12	1	35	142	10,2	11,1
8	27	12	1	31	139	3,5	7,6
8	28	12	1	31	136	4,2	2,0
8	29	12	1	30	144	6,4	14,4
8	31	12	1	35	140	7,8	8,0
8	32	12	1	29	136	6,1	9,2
8	33	12	1	29	141	8,3	7,3
8	34	12	1	28	143	8,6	5,3
8	35	12	1	37	145	5,8	0,1
8	36	12	1	32	140	3,9	3,6
8	37	12	1	35	143	6,9	3,4
8	38	12	1	27	138	6,7	15,6
8	39	12	1	40	148	4,4	2,3
8	40	12	1	36	143	7,6	0,1
8	41	12	2	26	132	4,3	8,7
8	42	12	2	30	132	6,7	0,1
8	43	12	2	26	130	6,6	3,0
8	44	12	2	28	10	5,7	0,1
8	45	12	2	29	140	7,3	7,8
8	46	12	2	38	140	10,6	10,0
8	47	12	2	34	144	7,0	5,8
8	48	12	2	29	142	6,6	5,0
8	49	12	2	36	148	7,6	3,4
8	50	12	2	40	148	8,6	0,1
8	51	12	2	36	143	8,7	7,2
8	52	12	2	38	144	5,9	1,3
8	53	12	2	33	150	4,5	5,3
8	54	12	1	26	131	5,9	10,1
8	55	12	1	26	132	3,0	6,0
8	56	12	1	39	142	4,1	2,6
8	57	12	1	26	130	5,3	5,5
8	58	12	1	35	140	10,9	9,6
8	59	12	1	32	135	19,0	11,8
8	60	12	1	36	142	8,9	0,1
8	61	12	1	34	138	6,9	4,6
8	62	12	1	32	130	4,8	6,8
8	63	12	1	31	144	4,7	9,3
8	64	12	1	26	132	7,2	2,3
8	65	12	1	29	135	7,8	8,9

VL	ID	AGE	SEX	WT	HT	US	IO
8	66	10	2	24	127	4,7	1,4
8	67	10	2	24	128	2,5	10,8
8	68	10	1	28	134	6,9	12,1
8	69	12	1	22	124	3,0	8,9
8	70	12	1	23	128	10,3	2,7
8	71	12	1	26	126	4,6	5,8
8	72	12	1	30	142	7,1	7,3
8	73	12	1	35	140	3,9	18,2
8	74	12	1	30	132	6,4	6,1
8	75	12	1	30	162	7,4	0,9
8	76	12	1	21	132	6,8	1,8
8	77	10	1	21	132	4,6	7,5
8	78	12	1	42	145	10,1	5,0
8	79	10	1	21	122	7,8	2,0
8	80	10	2	25	125	2,8	10,0
8	81	10	2	25	128	4,1	3,8
8	82	12	1	31	136	7,9	3,4
8	83	12	2	31	138	7,4	7,2
8	84	12	1	27	136	4,9	0,2
8	85	10	2	19	124	6,1	4,1
8	86	10	1	29	135	6,0	8,3
8	87	12	1	24	138	5,0	0,1
8	88	10	1	26	134	4,4	4,6
8	89	10	1	26	126	4,6	5,5
8	90	10	1	25	130	6,0	5,3
8	91	10	1	28	131	10,2	3,0
8	92	10	1	21	120	4,0	10,7
8	93	10	1	21	128	3,2	5,9
8	94	10	1	21	118	2,9	9,2
8	95	10	1	21	112	3,7	4,3
8	96	10	1	21	121	5,2	5,1
8	97	10	1	20	121	2,4	0,1
8	98	10	2	24	125	2,3	2,6
8	99	10	2	20	127	4,4	3,7
8	100	10	2	26	128	4,4	6,3
9	1	10	2	25	148	4,1	4,3
9	2	10	2	23	147	1,0	1,6
9	3	10	2	30	150	6,0	2,9
9	4	10	2	24	155	6,3	3,1
9	5	10	2	31	154	6,3	3,0
9	6	10	2	22	150	4,1	2,3
9	7	10	2	30	157	3,2	4,5
9	8	10	2	32	158	15,2	3,6
9	9	10	2	29	154	4,1	4,0
9	10	10	2	29	155	7,0	3,1
9	11	10	2	30	153	3,5	3,9
9	12	10	2	28	157	7,6	3,5
9	13	10	2	22	157	6,4	3,1
9	14	10	2	30	54	5,3	2,9
9	15	10	1	24	148	5,0	2,8
9	16	10	1	23	146	3,5	2,1
9	17	10	1	30	154	4,1	2,2

VL	ID	AGE	SEX	WT	HT	US	IO
9	18	10	1	30	153	3,4	3,6
9	19	10	1	29	153	5,0	4,2
9	20	10	1	29	152	3,5	2,0
9	21	10	1	29	153	7,1	3,3
9	22	10	1	20	149	1,9	1,7
9	23	10	1	22	149	3,7	2,1
9	24	10	1	29	150	4,6	4,0
9	25	10	1	20	148	4,0	4,8
9	26	10	2	32	153	8,1	3,5
9	27	10	2	33	157	7,1	3,2
9	28	10	2	30	153	4,5	2,5
9	29	10	2	30	156	5,3	2,9
9	30	10	2	29	153	4,8	2,7
9	31	10	1	26	153	1,5	1,7
9	32	12	2	21	152	1,8	3,6
9	33	12	2	29	152	4,8	5,8
9	34	12	2	25	153	2,0	3,7
9	35	12	2	20	157	4,7	5,6
9	36	12	2	30	154	3,9	5,0
9	37	12	2	25	152	3,7	4,5
9	38	12	2	33	157	7,2	10,2
9	39	12	2	30	158	6,0	7,9
9	40	12	2	21	149	3,6	4,2
9	41	12	2	26	153	2,6	3,7
9	42	12	2	37	154	4,7	5,6
9	43	12	1	24	152	3,6	4,2
9	44	12	1	29	157	5,7	7,5
9	45	12	1	30	151	3,8	4,9
9	46	12	1	32	156	5,7	7,9
9	47	12	1	29	154	3,2	4,1
9	48	12	1	32	154	7,5	10,5
9	49	12	1	28	154	4,1	5,3
9	50	12	1	34	156	2,8	3,8
9	51	12	1	28	153	3,6	4,3
9	52	12	1	28	152	5,1	6,8
9	53	12	1	28	153	4,5	5,3
9	54	12	1	26	153	3,3	4,1
9	55	12	1	26	151	4,9	6,0
9	56	12	1	35	158	4,6	5,5
9	57	12	1	39	160	3,7	4,4
9	58	12	1	35	157	10,4	16,6
9	59	12	1	31	155	4,7	5,8
9	60	12	1	23	154	3,1	4,0
9	61	12	1	39	159	7,5	11,0
9	62	12	2	29	153	7,1	9,8
9	63	12	2	26	155	3,0	3,9
9	64	10	2	23	151	4,3	4,0
9	65	12	2	32	155	6,1	9,1
9	66	12	2	26	152	2,6	3,7
9	67	10	2	22	149	2,6	3,6
9	68	10	1	28	152	2,6	1,7
9	69	10	1	26	153	3,3	4,9

VL	ID	AGE	SEX	WT	HT	US	IO
9	70	10	1	29	153	3,1	1,8
9	71	10	1	29	153	4,2	2,4
9	72	9	1	25	149	2,7	9,1
9	73	9	1	20	148	3,6	3,2
9	74	9	1	25	152	1,8	6,2
9	75	9	1	23	148	2,8	0,1
9	76	9	1	22	148	4,7	0,9
9	77	9	1	23	149	5,1	1,0
9	78	9	1	23	151	2,2	9,3
9	79	9	1	19	148	1,9	4,5
9	80	9	1	20	147	5,0	1,0
9	81	9	1	30	151	9,4	1,5
9	82	9	1	22	149	2,0	7,8
9	83	9	1	20	149	3,7	2,3
9	84	9	1	23	149	3,7	6,8
9	85	9	1	22	148	6,2	1,4
9	86	9	1	30	154	3,7	3,2
9	87	9	1	22	149	3,1	5,6
9	88	9	2	19	147	2,5	6,1
9	89	9	2	20	149	2,6	4,2
9	90	9	2	29	150	4,6	4,3
9	91	9	2	20	150	3,9	1,8
9	92	9	2	20	148	4,5	2,1
9	93	9	2	20	147	2,7	6,2
9	94	9	2	20	149	2,9	5,9
9	95	9	2	25	152	5,9	1,4
9	96	9	2	20	149	4,8	1,0
9	97	9	2	22	150	3,5	5,4
9	98	9	2	23	150	3,4	3,4
9	99	9	2	20	148	3,2	3,2
9	100	9	2	25	154	5,6	1,3
10	1	9	2	22	119	3,7	2,9
10	2	9	2	21	126	3,5	4,5
10	3	9	2	19	120	1,5	2,3
10	4	9	2	30	130	6,0	25,9
10	5	9	2	22	128	3,6	5,2
10	6	9	2	24	131	1,7	12,5
10	7	9	2	29	132	2,4	3,2
10	8	9	2	20	119	3,0	11,0
10	9	9	2	24	128	4,4	6,8
10	10	9	2	19	118	3,6	0,6
10	11	9	1	26	132	3,4	8,5
10	12	9	1	19	127	2,0	4,3
10	13	9	1	20	117	2,2	5,7
10	14	9	1	25	128	2,4	0,1
10	15	9	1	20	125	2,8	9,8
10	16	9	2	23	128	3,9	8,0
10	17	9	2	22	124	3,1	3,2
10	18	9	2	20	124	1,6	5,6
10	19	9	2	22	125	2,7	3,2
10	20	9	2	21	131	2,8	4,6
10	21	9	1	22	126	3,2	3,4

VL	ID	AGE	SEX	WT	HT	US	IO
10	22	9	1	22	126	1,7	9,0
10	23	9	1	20	116	2,4	7,2
10	24	9	1	24	125	3,6	0,9
10	25	9	1	28	132	3,9	10,0
10	26	9	2	22	129	2,9	3,2
10	27	9	2	25	135	3,1	6,0
10	28	9	2	20	127	2,7	10,2
10	29	9	2	24	131	3,9	12,2
10	30	9	2	21	123	2,6	6,1
10	31	9	2	25	127	3,6	2,8
10	32	9	2	26	132	4,1	4,1
10	33	9	2	22	122	4,4	3,7
10	34	9	2	20	122	1,8	10,3
10	35	9	2	19	127	3,5	4,4
10	36	9	1	33	139	4,6	4,7
10	37	9	1	21	120	2,7	4,1
10	38	9	1	32	146	4,3	0,5
10	39	9	1	22	127	3,7	9,9
10	40	10	1	35	119	2,7	10,6
10	41	10	1	29	128	2,7	3,8
10	42	10	1	26	129	2,5	10,1
10	43	10	1	25	129	3,4	10,5
10	44	10	1	25	135	1,8	5,6
10	45	10	1	20	128	3,8	3,1
10	46	10	2	27	134	5,0	12,4
10	47	10	2	20	127	3,3	5,0
10	48	10	1	21	130	2,7	13,8
10	49	10	1	20	128	2,9	3,3
10	50	10	1	21	126	4,2	2,7
10	51	10	1	21	140	3,4	8,1
10	52	10	1	29	141	3,6	11,9
10	53	10	1	21	136	3,6	2,4
10	54	10	1	29	139	3,3	8,5
10	55	10	2	25	137	10,0	3,5
10	56	10	2	35	149	6,4	3,9
10	57	10	2	29	152	6,7	5,8
10	58	10	2	30	133	3,9	3,3
10	59	10	2	30	141	9,0	10,5
10	60	10	2	20	129	3,3	11,2
10	61	10	2	25	134	7,1	11,1
10	62	10	2	30	141	8,2	16,4
10	62	10	2	30	142	13,4	8,9
10	63	10	2	40	139	7,2	4,1
10	65	10	2	30	138	9,1	5,5
10	66	10	2	22	124	4,6	2,0
10	67	10	2	20	126	4,0	3,5
10	68	10	2	20	127	4,3	12,8
10	69	10	1	30	142	6,7	4,8
10	70	10	1	26	133	5,8	14,6
10	71	10	1	21	130	5,4	2,0
10	72	11	1	21	134	5,8	9,3
10	73	10	1	25	136	3,5	0,6

VL	ID	AGE	SEX	WT	HT	US	IO
10	74	10	1	30	146	7,7	4,3
10	75	11	1	30	148	8,2	4,6
10	76	11	2	30	136	6,8	0,1
10	77	11	2	20	132	9,8	5,0
10	78	11	2	29	138	4,6	10,7
10	79	11	2	27	135	7,4	0,7
10	80	11	2	27	132	5,1	10,7
10	81	11	2	30	144	8,6	3,7
10	82	11	2	36	147	6,6	8,1
10	83	11	2	20	128	6,5	7,2
10	84	11	2	30	149	7,3	3,9
10	85	11	2	25	137	4,5	11,5
10	86	12	1	25	135	5,3	31,1
10	87	12	1	35	147	7,5	18,6
10	88	12	1	30	142	16,0	2,8
10	89	12	1	35	147	6,3	8,4
10	90	12	1	29	139	5,7	3,0
10	91	12	1	30	147	5,3	4,7
10	92	12	2	25	146	6,4	7,9
10	93	12	2	30	146	10,1	10,8
10	94	10	2	30	138	8,0	6,7
10	95	10	2	20	138	7,9	3,4
10	96	10	1	23	133	4,5	4,3
10	97	11	1	30	134	9,9	15,2
11	1	12	2	37	149	7,8	2,3
11	2	12	2	32	142	3,5	8,2
11	3	12	2	25	137	6,3	9,0
11	4	12	2	30	136	6,1	5,3
11	5	12	2	30	140	6,2	2,1
11	6	12	2	21	123	2,2	8,2
11	7	12	2	25	124	2,4	11,8
11	8	12	1	34	141	2,2	8,6
11	9	12	1	31	143	3,3	11,9
11	10	12	1	28	132	2,8	3,2
11	11	12	1	30	133	2,3	9,4
11	12	12	1	30	145	3,3	12,2
11	13	12	2	25	135	3,7	9,8
11	14	12	1	35	147	4,5	0,1
11	15	12	2	35	144	4,2	0,1
11	16	12	2	39	148	6,2	0,1
11	17	12	1	33	142	1,8	21,9
11	18	12	1	32	142	3,9	0,1
11	19	12	2	30	143	3,9	10,6
11	20	12	2	29	138	2,0	0,1
11	21	12	1	28	134	4,2	0,1
11	22	12	1	31	140	2,3	0,1
11	23	11	2	25	128	3,6	5,2
11	24	12	2	30	141	2,8	0,1
11	25	12	2	30	138	5,4	6,1
11	26	11	1	32	144	3,6	6,2
11	27	11	1	32	145	3,4	0,1
11	28	11	2	32	141	4,9	3,5

VL	ID	AGE	SEX	WT	HT	US	IO
11	29	11	2	32	140	4,1	2,7
11	30	11	2	29	137	3,6	0,1
11	31	11	2	26	141	3,2	6,0
11	32	11	2	30	138	5,2	1,2
11	33	11	2	29	140	4,2	13,0
11	34	11	2	24	133	2,4	6,9
11	35	11	2	25	129	3,5	1,1
11	36	11	2	24	135	2,3	8,1
11	37	11	2	31	142	3,5	3,1
11	38	11	2	30	139	3,8	19,3
11	39	11	2	29	137	4,0	0,1
11	40	11	2	21	131	3,9	5,5
11	41	11	2	32	135	3,2	11,6
11	42	11	1	29	135	4,2	12,1
11	43	11	2	23	134	1,8	8,6
11	44	11	2	30	132	5,2	0,1
11	45	11	1	40	146	5,0	8,5
11	46	11	1	30	139	8,5	4,6
11	47	11	1	30	135	4,2	12,0
11	48	11	1	32	130	3,8	5,8
11	49	11	1	25	125	2,5	7,6
11	50	11	1	29	136	2,7	11,5
11	51	11	1	30	138	4,5	10,8
11	52	11	1	32	135	2,5	13,2
11	53	11	1	32	136	5,5	5,5
11	54	11	1	33	137	2,5	0,1
11	55	11	2	30	133	2,7	4,2
11	56	11	2	26	131	3,8	0,1
11	57	11	2	32	135	4,2	9,3
11	58	11	1	26	129	2,7	1,2
11	59	10	2	23	126	2,4	0,1
11	60	10	2	24	126	3,0	1,4
11	61	10	2	33	138	3,0	1,3
11	62	10	1	23	121	1,6	3,9
11	63	10	2	25	126	4,4	16,5
11	64	10	2	25	132	3,7	9,6
11	65	10	1	29	131	3,0	9,3
11	66	10	1	29	131	3,1	4,4
11	67	10	1	30	134	3,1	7,7
11	68	10	1	25	124	2,2	7,1
11	69	9	2	23	124	2,6	57,1
11	70	10	1	30	140	3,1	4,5
11	71	10	1	30	129	6,1	87,3
11	72	10	1	32	134	3,8	0,1
11	73	9	2	23	124	2,8	0,1
11	74	9	2	25	125	1,4	1,9
11	75	9	2	22	124	2,8	2,0
11	76	9	2	23	127	3,5	8,8
11	77	9	2	26	133	2,7	1,5
11	78	9	2	25	125	1,7	8,9
11	79	9	1	23	126	2,1	4,1
11	80	10	2	25	123	3,2	0,1

VL	ID	AGE	SEX	WT	HT	US	IO
11	81	9	2	25	129	1,8	6,3
11	82	9	1	24	123	1,6	11,1
11	83	9	1	25	124	1,6	12,8
11	84	9	2	32	140	2,9	5,5
11	85	9	1	26	131	2,7	4,4
11	86	9	1	32	135	2,6	3,5
11	87	9	1	24	122	0,9	7,2
11	88	9	1	28	112	3,6	9,6
11	89	9	2	28	126	1,4	5,2
11	90	10	2	25	126	1,6	4,1
11	91	9	1	25	125	1,8	3,6
11	92	12	1	28	139	1,3	5,8
11	93	11	1	27	128	2,1	6,0
11	94	9	1	22	119	1,6	0,1
11	95	9	2	22	120	1,3	1,5
11	96	9	2	22	123	1,9	1,1
11	97	9	2	23	119	2,2	1,0
11	98	9	1	22	118	1,7	9,2
11	99	9	2	25	129	1,4	7,3
11	100	9	1	29	134	2,2	6,7
12	1	11	2	28	132	5,6	2,0
12	2	11	2	30	138	3,1	0,4
12	3	11	2	32	138	3,6	8,3
12	4	11	2	36	147	5,9	0,6
12	5	11	2	32	143	8,9	2,6
12	6	11	2	30	133	6,3	7,6
12	7	11	2	29	138	9,2	7,2
12	8	11	2	29	136	6,6	2,9
12	9	11	2	22	127	4,3	1,8
12	10	11	2	41	160	6,3	0,9
12	11	11	1	28	131	1,7	1,6
12	12	11	1	25	129	3,6	8,9
12	13	11	1	24	131	9,8	6,8
12	14	11	1	28	135	10,3	3,0
12	15	11	1	25	136	3,8	4,1
12	16	11	1	31	149	4,3	5,4
12	17	10	2	31	141	7,8	1,9
12	18	10	2	30	131	5,3	1,2
12	19	10	2	20	126	1,5	4,5
12	20	10	2	24	122	2,0	0,6
12	21	10	2	25	132	3,7	3,2
12	22	10	2	24	128	2,6	5,2
12	23	10	2	36	141	4,6	11,1
12	24	10	1	20	125	4,5	1,8
12	25	10	1	27	132	2,7	0,9
12	26	10	1	34	134	4,0	0,1
12	27	10	1	29	137	4,2	2,8
12	28	10	2	18	119	5,5	2,2
12	29	10	2	26	127	5,7	4,1
12	30	10	2	38	138	6,5	6,4
12	31	10	2	26	136	3,1	1,8
12	32	10	2	23	128	4,5	5,3

VL	ID	AGE	SEX	WT	HT	US	IO
12	33	10	2	24	131	4,7	3,5
12	34	10	2	19	118	2,0	2,8
12	35	10	2	23	129	2,8	2,7
12	36	10	1	20	120	3,3	9,9
12	37	10	1	27	131	8,8	1,9
12	38	10	1	25	131	9,5	4,6
12	39	10	1	30	140	7,8	5,0
12	40	10	1	24	134	3,3	9,1
12	41	10	1	24	127	3,5	1,7
12	42	10	2	25	130	4,1	1,5
12	43	10	2	25	132	3,4	3,5
12	44	9	1	20	117	4,4	3,2
12	45	9	1	25	135	3,6	3,2
12	46	9	1	25	131	3,6	4,1
12	47	9	1	25	124	5,0	3,2
12	48	9	1	25	131	11,6	4,4
12	49	9	1	21	119	2,9	9,0
12	50	9	1	22	122	5,0	11,0
12	51	9	1	20	119	3,4	0,1
12	52	9	1	25	124	2,3	5,6
12	53	9	1	26	138	3,2	4,3
12	54	9	2	25	133	4,1	4,6
12	55	9	2	25	127	7,3	8,5
12	56	9	2	24	125	4,0	9,8
12	57	9	2	28	137	3,4	5,7
12	58	9	2	25	126	6,9	3,4
12	59	9	2	23	124	2,2	2,3
12	60	9	2	29	130	3,6	6,1
12	61	9	2	22	120	3,0	10,3
12	62	9	2	27	133	3,9	3,2
12	63	9	2	28	138	3,5	7,2
12	64	9	2	26	134	5,9	6,0
12	65	9	2	29	144	3,6	10,2
12	66	9	1	21	130	2,4	12,5
12	67	12	2	29	138	3,6	2,3
12	68	12	2	30	135	11,9	8,7
12	69	12	2	29	133	11,4	0,1
12	70	12	2	26	131	5,8	2,5
12	71	11	2	29	144	5,5	3,5
12	72	12	2	25	134	6,4	2,4
12	73	12	2	34	141	9,1	11,6
12	74	12	12	1	27	41,0	10,4
12	75	12	1	29	140	4,4	5,8
12	76	12	1	29	140	7,0	1,5
12	77	12	1	29	145	3,5	0,2
12	78	12	2	35	150	5,9	6,6
12	79	11	2	30	139	10,7	3,4
12	80	12	2	28	133	7,5	12,8
12	81	12	2	31	146	6,4	6,4
12	82	12	2	35	144	2,5	8,2
12	83	12	2	35	145	7,5	6,2
12	84	12	2	43	153	11,8	1,1

VL	ID	AGE	SEX	WT	HT	US	IO
13	1	12	2	29	138	2,7	9,1
13	2	12	2	29	144	4,7	6,1
13	3	12	1	26	132	6,3	9,0
13	4	12	1	28	136	4,6	0,1
13	5	12	2	28	139	4,1	5,4
13	6	12	2	30	146	3,4	5,0
13	7	12	1	30	137	4,1	18,2
13	8	12	1	30	147	5,0	8,0
13	9	12	2	25	137	2,2	9,2
13	10	12	2	27	142	2,7	0,1
13	11	12	1	36	143	2,8	7,1
13	12	12	1	34	156	6,6	10,8
13	13	12	2	30	141	5,4	15,2
13	14	12	1	30	141	4,9	20,8
13	15	12	2	35	146	8,6	0,1
13	16	12	2	30	145	5,0	0,1
13	17	12	1	32	142	3,5	48,5
13	18	12	2	27	148	39,6	8,5
13	19	12	1	27	136	2,8	10,9
13	20	12	2	33	143	3,6	10,7
13	21	12	1	27	139	3,4	12,7
13	22	12	2	29	143	3,8	0,1
13	23	12	2	35	148	3,0	20,8
13	24	12	2	34	146	6,2	5,3
13	25	12	1	32	144	6,0	7,6
13	26	12	2	34	145	2,7	18,0
13	27	12	1	31	143	3,2	8,2
13	28	12	2	30	143	4,6	4,6
13	29	12	2	30	145	4,6	0,1
13	30	12	1	35	143	5,1	2,7
13	31	12	2	42	155	5,5	0,1
13	32	12	1	29	135	2,6	2,4
13	33	12	2	35	148	4,1	6,1
13	34	12	1	32	145	5,2	11,2
13	35	12	2	32	142	4,3	3,1
13	36	12	1	23	133	2,3	10,3
13	37	12	2	45	153	6,2	11,5
13	38	12	2	31	140	8,6	7,6
13	39	12	2	27	139	4,2	5,2
13	40	12	2	25	139	4,4	3,2
13	41	10	2	25	122	1,9	1,8
13	42	10	1	23	125	2,9	0,6
13	43	10	1	21	123	2,5	1,8
13	44	10	2	23	124	5,1	2,2
13	45	10	1	26	132	3,7	27,5
13	46	12	2	28	140	5,2	8,2
13	47	10	2	26	134	4,1	5,3
13	48	10	1	28	130	4,7	15,0
13	49	10	2	30	132	4,1	11,1
13	50	10	1	27	132	4,6	6,5
13	51	10	2	29	139	7,4	4,7
13	52	10	1	40	145	3,9	12,3

VL	ID	AGE	SEX	WT	HT	US	IO
13	53	10	1	25	130	4,0	14,1
13	54	10	2	25	122	1,8	17,3
13	55	10	2	25	130	2,4	1,6
13	56	10	2	26	132	1,9	6,3
13	57	10	2	28	134	5,0	25,8
13	58	9	1	24	131	3,4	16,6
13	59	9	1	25	128	2,5	18,8
13	60	9	1	20	117	1,8	28,9
13	61	9	2	26	123	5,5	5,5
13	62	9	1	20	124	4,5	16,8
13	63	9	2	25	134	3,8	21,2
13	64	9	1	20	122	5,4	9,9
13	65	9	1	19	121	4,4	6,9
13	66	9	1	21	126	2,6	9,8
13	67	9	1	20	124	1,6	3,0
13	68	9	2	27	133	7,1	9,0
13	69	9	1	25	132	6,6	34,5
13	70	9	1	21	129	4,0	5,7
13	71	9	2	20	123	2,2	11,1
13	72	9	2	21	129	2,0	20,6
13	73	9	1	23	130	3,4	8,5
13	74	9	1	25	130	3,2	18,2
13	75	9	2	25	137	4,1	22,3
13	76	9	2	30	136	3,8	5,3
13	77	9	1	30	134	6,5	28,2
13	78	9	2	24	132	4,9	12,7
13	79	9	2	24	132	3,2	13,9
13	80	9	1	23	127	4,0	11,3
13	81	9	2	23	133	1,8	3,6
13	82	9	1	23	126	2,9	25,7
13	83	11	2	25	130	4,9	8,7
13	84	11	2	24	129	3,8	7,2
13	85	11	1	27	135	5,0	4,3
13	86	11	2	28	136	3,9	4,0
13	87	11	1	24	125	2,6	7,7
13	88	11	2	27	136	9,1	12,9
13	89	11	1	25	127	4,6	13,0
13	90	11	1	27	136	2,0	7,1
13	91	11	1	30	144	6,1	9,7
13	92	11	1	26	136	2,1	13,7
13	93	11	2	22	136	2,2	4,0
13	94	11	2	25	138	4,7	6,2
13	95	11	1	30	138	3,3	26,1
13	96	11	1	28	138	4,0	11,4
13	97	11	2	25	134	2,1	1,4
13	98	11	2	24	134	4,6	16,9
13	99	11	1	30	142	3,8	7,3
13	100	11	1	24	131	2,1	8,4
14	1	10	2	25	127	5,6	8,5
14	2	10	2	21	126	3,4	6,3
14	3	10	2	23	127	5,3	2,5
14	4	10	2	27	138	4,5	10,0

VL	ID	AGE	SEX	WT	HT	US	IO
14	5	10	2	27	136	4,5	11,9
14	6	10	2	25	135	6,3	7,9
14	7	10	2	27	134	12,7	3,1
14	8	10	2	24	126	5,6	0,1
14	9	10	2	24	134	3,6	3,3
14	10	10	2	24	127	5,5	4,3
14	11	10	2	23	134	3,9	8,5
14	12	10	2	25	131	3,6	0,1
14	13	10	2	22	126	4,1	0,1
14	14	10	2	26	134	6,9	0,1
14	15	10	2	27	127	3,9	0,1
14	16	10	2	27	142	12,3	3,7
14	17	10	2	28	144	3,7	5,9
14	18	10	1	21	130	3,6	3,3
14	19	10	2	31	135	11,0	1,4
14	20	10	2	26	143	4,7	2,9
14	21	10	2	27	143	3,9	0,1
14	22	10	2	20	121	2,7	4,3
14	23	10	2	25	135	4,2	6,6
14	24	10	1	24	129	3,4	2,8
14	25	10	1	23	133	3,5	2,5
14	26	10	1	24	135	6,3	2,9
14	27	10	1	30	138	6,5	0,1
14	28	10	1	25	132	3,3	0,1
14	29	10	1	24	125	2,9	6,7
14	30	10	2	29	142	6,1	5,9
14	31	10	1	30	141	8,5	3,9
14	32	10	1	23	125	4,2	0,1
14	33	10	1	28	134	5,4	0,1
14	34	10	1	27	138	4,0	0,1
14	35	10	1	33	135	4,7	1,8
14	36	10	1	25	141	3,0	0,1
14	37	10	2	27	141	3,2	0,1
14	38	10	2	27	139	5,4	9,9
14	39	10	2	31	145	12,8	12,7
14	40	10	2	28	141	4,6	3,5
14	41	10	2	24	127	1,9	0,1
14	42	10	2	21	127	3,6	4,6
14	43	10	2	21	126	3,1	2,6
14	44	10	1	28	144	5,7	0,1
14	45	10	2	26	136	5,6	5,0
14	46	10	2	21	129	3,6	3,7
14	47	10	2	25	130	4,7	0,1
14	48	10	2	23	130	3,7	0,1
14	49	10	2	27	136	6,4	12,1
14	50	10	2	22	137	3,2	0,1
14	51	10	2	24	123	3,5	0,1
14	52	10	2	24	127	3,7	0,1
14	53	10	2	22	130	3,3	4,0
14	54	10	2	27	140	4,8	6,9
14	55	10	1	26	130	5,4	0,1
14	56	10	1	25	128	4,1	0,1

VL	ID	AGE	SEX	WT	HT	US	IO
14	57	12	2	32	151	6,1	7,2
14	58	12	2	35	146	6,6	2,4
14	59	12	2	34	147	10,1	0,6
14	60	12	2	39	149	6,5	11,4
14	61	12	2	30	138	6,3	3,9
14	62	12	2	28	136	3,6	4,0
14	63	12	2	31	141	6,2	4,4
14	64	12	2	28	143	4,0	4,5
14	65	12	2	27	141	4,6	4,5
14	66	12	2	33	143	5,5	5,7
14	67	12	1	29	136	8,3	2,8
14	68	12	2	26	141	8,2	3,7
14	69	12	1	28	134	3,8	1,9
14	70	12	2	27	144	2,9	1,6
14	71	12	1	29	142	5,5	2,2
14	72	12	2	26	135	4,0	3,9
14	73	12	1	33	147	5,2	9,6
14	74	12	2	29	140	3,3	4,5
14	75	12	1	31	143	8,5	11,5
14	76	12	2	27	140	4,1	2,6
14	77	12	1	31	141	5,3	8,8
14	78	12	1	28	141	4,0	2,2
14	79	12	2	33	149	5,9	13,2
14	80	12	2	30	141	4,4	4,3
14	81	12	1	27	141	6,5	16,7
14	82	12	2	35	149	14,0	2,5
14	83	12	1	26	129	5,7	1,9
14	84	12	2	32	146	7,6	1,2
14	85	12	2	26	136	4,9	9,2
14	86	12	1	30	137	3,2	4,3
14	87	12	2	31	148	10,6	10,3
14	88	12	1	29	141	6,5	4,7
14	89	12	2	29	132	5,0	2,2
14	90	12	1	28	135	3,4	2,8
14	91	12	2	30	141	6,2	0,1
14	92	12	1	34	143	6,2	9,5
14	93	12	2	29	136	4,2	7,2
14	94	12	1	29	144	4,0	7,0
14	95	12	2	29	142	8,0	1,4
14	96	12	1	30	137	2,7	4,3
14	97	12	2	33	145	5,5	10,6
14	98	12	2	28	141	6,8	5,9
14	99	12	2	30	132	3,3	5,5
14	100	12	2	30	144	5,0	9,2
14	101	12	2	39	156	9,6	0,1
15	1	9	1	27	134	1,7	16,1
15	2	9	1	29	135	1,8	14,6
15	3	9	1	38	140	5,4	3,4
15	4	9	1	23	128	1,5	1,9
15	5	9	1	25	130	3,9	6,3
15	6	9	1	27	124	4,0	7,3
15	7	9	2	28	135	2,8	3,6

VL	ID	AGE	SEX	WT	HT	US	IO
15	8	9	2	25	130	4,4	13,3
15	9	9	2	23	119	2,3	11,9
15	10	9	2	27	130	4,7	7,6
15	11	9	2	28	135	2,1	13,3
15	12	9	2	20	117	3,1	8,6
15	13	9	2	41	143	1,7	97,6
15	14	9	1	30	130	4,3	7,6
15	15	9	2	43	141	3,7	12,4
15	16	9	1	27	133	3,9	7,5
15	17	9	2	28	136	3,8	10,7
15	18	9	2	29	141	4,3	6,0
15	19	9	2	24	137	4,0	3,5
15	20	9	1	29	135	3,4	14,9
15	21	9	2	25	128	3,5	8,3
15	22	9	1	27	130	2,8	9,9
15	23	9	1	32	136	3,8	3,0
15	24	9	1	30	140	2,9	5,7
15	25	9	2	25	134	3,7	4,1
15	26	9	2	22	123	2,5	9,9
15	27	9	2	27	135	3,1	11,6
15	28	9	2	28	130	2,7	9,2
15	29	9	2	31	137	3,3	8,1
15	30	9	1	21	125	1,3	3,2
15	31	9	1	29	131	2,9	6,7
15	32	9	2	21	119	2,8	7,0
15	33	9	1	34	136	3,0	14,6
15	34	9	2	30	129	8,7	14,2
15	35	9	2	25	133	2,5	4,9
15	36	9	2	35	143	4,7	10,8
15	37	9	1	25	129	2,1	21,3
15	38	9	1	22	131	2,2	11,1
15	39	9	1	22	128	2,1	8,3
15	40	9	2	25	127	3,4	8,2
15	41	9	2	27	137	3,1	3,2
15	42	9	2	22	122	1,9	4,3
15	43	9	2	28	128	2,4	5,9
15	44	9	1	24	128	2,4	5,2
15	45	9	1	26	128	1,3	4,0
15	46	9	1	31	136	4,6	9,0
15	47	9	1	24	129	2,0	4,5
15	48	9	1	23	122	1,6	4,0
15	49	9	1	27	137	4,4	8,1
15	50	9	1	23	126	2,3	13,9
15	51	12	1	35	153	3,8	9,6
15	52	12	2	33	146	3,0	2,8
15	53	12	1	31	145	3,1	8,3
15	54	12	1	31	141	4,0	9,1
15	55	12	1	31	149	4,1	11,5
15	56	12	2	42	150	5,9	34,8
15	57	12	1	32	145	3,5	5,6
15	58	12	2	39	148	5,2	22,0
15	59	12	2	38	148	4,7	7,3

Appendix 8.5

VL	ID	AGE	SEX	WT	HT	US	IO
15	60	12	1	29	133	3,9	7,1
15	61	12	1	35	142	2,5	10,6
15	62	12	1	35	143	3,0	11,0
15	63	12	2	35	150	7,2	5,5
15	64	12	1	34	146	2,8	9,4
15	65	12	2	60	162	4,4	6,5
15	66	12	2	38	146	3,8	8,0
15	67	12	2	51	139	5,1	4,1
15	68	12	1	28	138	2,2	9,1
15	69	12	2	37	145	4,3	10,2
15	70	12	2	40	154	4,0	2,4
15	71	12	1	30	140	3,1	7,2
15	72	12	2	35	155	4,3	7,0
15	73	12	2	39	150	3,7	5,5
15	74	12	2	33	147	1,2	8,1
15	75	12	2	30	138	7,1	3,5
15	76	12	1	29	144	4,8	8,0
15	77	12	2	34	149	6,6	6,4
15	78	12	1	34	150	5,3	31,2
15	79	12	1	29	134	2,7	5,4
15	80	12	2	22	141	2,7	7,0
15	81	12	1	33	146	2,4	3,7
15	82	12	2	30	145	5,3	11,8
15	83	12	1	52	146	2,6	5,6
15	84	12	1	32	137	3,1	13,5
15	85	12	2	48	149	5,2	7,6
15	86	12	1	30	142	3,9	15,6
15	87	12	1	40	151	4,0	3,4
15	88	12	1	28	138	1,5	5,9
15	89	12	1	26	137	2,3	6,1
15	90	12	1	37	135	3,2	6,0
15	91	12	2	35	141	5,2	7,5
15	92	12	2	28	133	3,6	13,2
15	93	12	1	32	144	3,0	4,2
15	94	12	1	30	137	1,3	4,3
15	95	12	1	30	140	2,5	18,2
15	96	12	1	34	147	3,3	5,0
15	97	12	2	39	154	5,0	4,3
15	98	12	2	32	139	2,5	14,6
15	99	12	2	34	148	6,4	25,7
15	100	12	2	39	151	6,1	5,9
16	1	11	2	22	137	2,0	8,5
16	2	11	2	27	134	3,5	12,4
16	3	11	2	24	131	3,7	14,2
16	4	11	2	24	134	2,7	9,4
16	5	11	2	23	127	2,2	14,9
16	6	11	2	27	134	3,4	3,9
16	7	11	2	29	149	1,2	5,8
16	8	11	2	28	133	3,0	8,9
16	9	11	2	26	131	2,3	3,0
16	10	11	2	27	133	1,9	3,9
16	11	11	2	23	134	2,2	9,7

VL	ID	AGE	SEX	WT	HT	US	IO
16	12	11	2	28	137	2,3	9,2
16	13	11	2	27	138	3,2	12,0
16	14	11	2	25	132	2,2	10,3
16	15	11	2	37	145	2,4	14,7
16	16	11	2	26	130	2,8	22,3
16	17	11	1	22	124	1,4	10,9
16	18	11	1	27	132	2,9	2,6
16	19	11	1	28	137	3,2	3,4
16	20	11	1	22	127	2,5	9,0
16	21	11	1	26	139	2,4	10,2
16	22	11	1	24	131	2,6	3,7
16	23	11	2	35	147	5,1	2,8
16	24	11	1	25	130	3,6	5,2
16	25	11	2	25	140	2,2	13,0
16	26	11	1	25	131	1,5	7,2
16	27	11	2	28	137	4,0	7,1
16	28	11	1	24	125	2,4	5,7
16	29	11	2	75	152	4,4	14,8
16	30	11	1	25	135	2,6	7,6
16	31	11	1	29	137	3,2	11,4
16	32	11	2	23	131	1,5	7,9
16	33	11	2	27	138	2,2	5,8
16	34	11	2	23	136	1,7	11,9
16	35	11	2	28	141	3,0	6,4
16	36	11	2	32	144	3,4	4,2
16	37	11	2	25	138	1,7	9,4
16	38	11	2	31	140	4,5	8,3
16	39	11	2	32	149	1,1	5,8
16	40	11	2	30	146	3,7	6,0
16	41	11	2	24	130	2,6	9,8
16	42	11	2	32	140	3,0	22,6
16	43	11	2	30	136	1,3	4,0
16	44	11	2	31	136	4,0	8,7
16	45	11	2	30	147	2,0	8,6
16	46	11	1	30	123	2,1	7,2
16	47	11	1	28	143	3,8	14,7
16	48	11	1	32	143	4,5	7,2
16	49	11	1	27	123	3,1	17,3
16	50	11	1	25	126	2,2	1,8
16	51	11	1	24	130	3,1	13,2
16	52	11	1	28	125	1,3	64,0
16	53	9	1	20	123	2,0	2,7
16	54	9	2	38	133	1,7	10,7
16	55	9	2	20	125	1,9	10,4
16	56	9	2	25	148	2,2	4,1
16	57	9	2	21	143	4,1	3,5
16	58	9	1	24	130	1,9	10,7
16	59	9	1	27	132	1,6	14,5
16	60	9	1	25	129	1,6	1,7
16	61	9	1	20	124	1,2	7,6
16	62	9	2	18	120	0,8	10,3
16	63	9	2	23	128	2,6	3,0

VL	ID	AGE	SEX	WT	HT	US	IO
16	64	9	2	25	131	1,7	4,8
16	65	9	2	21	123	2,4	13,0
16	66	9	1	26	132	2,5	2,5
16	67	9	1	18	113	1,4	1,0
16	68	9	2	19	117	1,6	4,7
16	69	9	2	25	126	2,7	9,5
16	70	9	2	21	125	1,6	9,9
16	70	9	1	21	125	1,6	4,9
16	71	9	1	28	136	2,6	7,2
16	72	9	1	23	126	1,9	5,9
16	73	9	2	22	120	2,0	12,3
16	74	9	2	19	117	1,8	9,9
16	75	9	2	22	125	3,1	6,9
16	76	9	1	17	116	2,3	6,7
16	77	9	1	27	135	1,8	26,0
16	78	9	1	25	133	2,4	5,7
16	79	9	2	20	116	0,9	52,2
16	80	9	2	25	129	2,2	3,3
16	81	9	2	26	131	2,9	6,3
16	82	9	2	25	126	1,3	6,5
16	83	9	1	23	126	1,6	13,4
16	84	9	1	21	121	1,5	16,3
16	85	9	2	20	126	1,7	3,7
16	86	9	2	19	121	1,8	7,7
16	87	9	2	22	129	2,4	12,3
16	88	9	2	24	126	4,2	7,3
16	89	9	2	21	130	2,9	10,3
16	90	9	2	21	123	2,2	3,9
16	91	9	2	23	124	1,5	11,2
16	92	9	2	22	128	2,7	2,3
16	93	9	2	21	119	1,3	3,8
16	94	9	2	21	133	1,5	15,8
16	95	9	2	23	131	2,3	9,7
16	96	9	1	26	113	1,9	1,5
16	97	9	1	24	131	1,2	5,1
16	98	9	1	25	130	2,7	1,2
16	99	9	1	25	129	2,6	4,1
16	100	9	1	20	123	1,2	11,2
16	101	9	1	20	119	1,4	7,5
16	102	9	2	17	117	1,2	6,7
16	103	9	2	23	126	1,4	54,8
16	104	9	2	21	125	1,5	17,4
16	105	9	2	24	130	2,3	1,8
16	107	9	1	22	127	2,3	8,1
17	1	9	1	28	132	2,2	11,8
17	2	9	1	26	132	3,4	3,1
17	3	9	1	30	134	4,0	11,6
17	4	9	2	24	129	1,9	10,8
17	5	9	1	29	134	2,4	7,9
17	6	9	1	36	134	2,9	10,7
17	7	9	2	27	134	4,0	24,3
17	8	9	1	29	138	4,4	8,9

VL	ID	AGE	SEX	WT	HT	US	IO
17	9	9	2	25	126	1,7	4,7
17	10	9	1	28	132	4,0	13,6
17	11	9	1	25	130	2,6	6,6
17	12	9	1	54	148	6,8	9,6
17	13	9	1	35	143	3,1	13,9
17	14	9	2	35	143	2,9	12,7
17	15	9	2	37	137	4,1	12,8
17	16	9	2	28	131	3,4	2,1
17	17	9	2	28	138	4,3	12,4
17	18	9	2	35	144	3,5	9,9
17	19	9	2	43	142	5,5	17,9
17	20	9	2	23	129	4,2	10,8
17	21	9	1	29	131	2,8	10,0
17	22	9	1	36	144	4,7	5,0
17	23	9	1	39	143	4,8	6,3
17	24	9	1	25	130	3,9	12,5
17	25	9	2	31	131	2,4	8,6
17	26	9	2	29	130	4,9	18,3
17	27	9	2	27	127	3,9	14,1
17	28	9	2	40	135	5,2	15,8
17	29	9	2	29	126	1,9	5,7
17	30	9	2	52	134	3,7	9,0
17	31	9	1	25	133	3,9	21,4
17	32	10	1	41	144	4,7	7,7
17	33	10	1	35	149	3,2	20,5
17	34	11	1	38	147	5,6	11,4
17	35	10	1	35	142	1,7	13,4
17	36	10	1	30	138	3,6	11,8
17	37	10	1	27	134	3,0	13,3
17	38	10	1	31	138	3,1	8,5
17	39	10	1	58	151	5,3	10,9
17	40	10	1	30	137	3,5	8,7
17	41	11	2	45	157	6,8	4,3
17	42	10	2	40	144	3,0	11,6
17	43	10	2	30	135	3,7	5,2
17	44	10	2	38	132	3,9	5,0
17	45	10	2	27	134	3,2	21,2
17	46	11	2	45	152	10,2	11,5
17	47	10	2	38	139	4,8	15,9
17	48	10	2	32	137	3,3	7,4
17	49	10	2	35	142	5,2	8,1
17	50	11	2	42	144	4,8	20,0
17	51	11	2	38	145	8,2	11,5
17	52	10	2	50	156	6,8	4,6
17	53	11	1	32	142	4,8	22,1
17	54	11	2	38	143	4,4	6,5
17	55	11	2	40	150	4,7	11,0
17	56	11	1	40	147	3,0	48,4
17	56	11	1	34	141	4,8	8,9
17	58	10	1	32	134	3,6	9,8
17	59	11	1	59	152	2,1	13,0
17	60	11	1	39	151	3,3	11,7

VL	ID	AGE	SEX	WT	HT	US	IO
17	61	11	1	38	145	3,3	11,1
17	62	11	1	35	135	5,0	7,4
17	63	11	2	29	139	3,9	4,3
17	64	11	2	38	145	4,8	7,7
17	65	11	2	39	141	6,0	11,1
17	66	10	1	29	138	2,7	7,1
17	67	11	1	40	141	4,0	8,9
17	68	11	2	36	149	5,8	15,5
17	69	11	2	45	150	5,9	5,6
17	70	11	2	33	136	3,1	6,1
17	71	11	2	30	138	2,8	7,9
17	72	11	2	26	132	2,2	4,9
17	73	11	2	36	142	2,5	9,1
17	74	11	1	39	142	3,8	8,5
17	75	11	1	42	148	4,3	9,5
17	76	11	1	32	143	3,6	8,6
17	77	11	1	38	147	5,6	11,7
17	78	10	1	39	133	1,8	6,1
17	79	11	2	33	140	3,6	14,1
17	80	11	2	38	148	4,7	7,3
17	81	10	2	38	142	3,0	23,8
17	82	10	2	30	135	3,5	13,2
17	83	10	1	32	144	3,1	4,4
18	1	9	2	18	117	3,5	4,5
18	2	9	2	18	120	2,2	10,2
18	3	9	2	24	127	3,6	20,7
18	4	9	2	23	135	2,0	4,0
18	5	9	1	23	129	2,3	19,1
18	6	9	1	25	126	1,7	24,3
18	7	9	1	34	145	3,2	1,3
18	8	9	2	23	127	4,1	14,8
18	9	9	2	24	133	2,9	3,3
18	10	9	2	25	141	3,8	10,5
18	11	9	1	27	132	3,1	15,7
18	12	9	1	24	126	2,9	6,4
18	13	9	1	24	124	3,4	12,9
18	14	9	1	22	125	3,5	7,8
18	15	9	2	25	132	3,1	2,7
18	16	9	2	24	126	4,8	18,3
18	17	9	2	18	113	1,3	7,5
18	18	9	2	29	133	2,9	5,7
18	19	9	2	25	132	2,3	5,3
18	20	9	2	27	136	4,3	7,0
18	21	9	1	27	132	5,8	37,2
18	22	9	1	21	127	3,1	5,2
18	23	9	2	22	123	2,6	4,7
18	24	9	2	18	119	2,9	10,4
18	25	9	2	21	124	1,5	9,3
18	26	9	1	22	126	2,0	7,5
18	27	10	1	20	125	1,6	9,5
18	28	10	1	25	128	3,7	11,8
18	29	10	1	27	136	2,7	15,5

VL	ID	AGE	SEX	WT	HT	US	IO
18	30	10	1	27	133	2,7	11,1
18	31	10	1	29	140	3,5	7,7
18	32	10	1	23	125	2,5	4,6
18	33	10	2	25	139	2,8	22,9
18	34	10	2	30	144	4,4	26,7
18	35	10	2	35	140	2,9	7,3
18	36	10	2	23	112	3,2	9,5
18	37	10	2	20	126	2,1	7,7
18	38	10	2	35	145	6,4	8,4
18	39	10	2	32	141	3,5	9,6
18	40	10	1	24	126	4,9	2,6
18	41	10	1	22	129	1,4	7,9
18	42	10	1	27	137	3,2	13,3
18	43	10	1	31	131	3,8	8,9
18	44	10	2	21	128	4,4	12,8
18	45	10	2	29	114	1,1	6,3
18	46	10	2	30	144	4,4	15,6
18	47	10	2	24	133	2,4	7,4
18	48	10	2	25	132	2,0	2,1
18	49	10	2	23	134	3,0	10,5
18	50	10	2	20	121	2,0	7,3
18	51	10	2	23	132	2,0	7,1
18	52	10	2	22	130	2,6	9,3
18	53	10	2	26	132	1,4	6,3
18	54	10	2	28	139	3,1	16,5
18	55	10	2	26	144	3,0	11,6
18	56	10	2	29	142	2,8	7,4
18	57	10	2	25	136	2,2	8,7
18	58	10	2	28	148	4,7	6,5
18	59	10	1	26	135	2,6	14,5
18	60	10	1	26	131	3,2	10,2
18	61	10	1	30	143	2,0	6,8
18	62	10	1	25	136	2,4	29,3
18	63	10	1	31	144	3,4	13,7
18	64	10	1	25	138	3,1	8,0
18	65	10	2	20	121	2,1	10,2
18	66	10	2	30	136	3,8	9,8
18	67	10	2	26	129	1,6	17,7
18	68	10	2	27	132	2,6	17,4
18	69	10	2	25	138	2,7	6,9
18	70	10	2	35	141	2,1	8,0
18	71	10	2	24	135	3,1	21,1
18	72	10	2	13	115	0,7	8,3
18	73	11	2	38	149	5,6	5,8
18	74	11	2	26	141	3,7	12,6
18	75	11	2	25	133	2,2	6,1
18	76	11	2	28	145	4,5	17,8
18	77	11	2	48	156	4,1	6,5
18	78	11	2	27	141	3,2	28,7
18	79	11	2	39	156	3,0	5,7
18	80	11	2	27	140	2,6	8,5
18	81	11	2	26	133	2,4	13,6

VL	ID	AGE	SEX	WT	HT	US	IO
18	82	11	1	25	135	2,8	5,9
18	83	11	2	24	126	3,0	9,7
18	84	11	2	32	134	3,4	20,6
18	85	11	2	26	132	2,1	14,4
18	86	11	1	25	129	2,7	9,0
18	87	11	1	31	138	2,6	15,1
18	88	11	1	21	126	1,7	17,1
18	89	11	1	28	138	1,7	9,6
18	90	11	1	27	139	4,8	6,0
18	91	11	1	28	138	3,0	8,5
18	92	11	1	36	140	1,5	10,8
18	93	11	1	31	140	3,7	19,5
18	94	11	1	27	136	5,1	10,1
18	95	11	1	30	135	2,4	10,9
18	96	11	1	25	133	2,2	6,6
18	97	11	1	30	142	5,3	9,6
18	98	11	2	28	138	2,0	24,7
18	99	11	2	27	133	3,3	7,4
18	100	11	2	28	141	4,1	11,9
18	101	12	2	31	139	4,8	11,2
18	102	12	2	35	140	4,5	12,5
18	103	12	2	31	141	5,2	9,3
18	104	12	2	38	150	3,5	12,1
18	105	12	1	29	139	3,9	8,4
18	106	12	1	34	141	4,7	5,6
18	107	12	1	32	143	1,8	20,9
18	108	12	1	30	135	1,4	6,1
18	109	12	1	27	135	2,2	25,9
18	110	12	1	32	132	4,3	20,5
18	111	12	2	27	136	2,7	7,5
18	112	12	2	23	133	2,5	40,9
19	1	10	2	50	161	12,1	12,1
19	2	11	1	33	142	3,9	7,6
19	3	11	1	34	143	3,5	29,8
19	4	11	1	34	142	4,0	35,6
19	5	11	1	30	137	2,6	27,4
19	6	11	2	27	136	1,2	31,0
19	7	10	2	20	129	2,4	13,2
19	8	11	2	25	135	1,6	8,3
19	9	11	1	25	124	3,3	24,5
19	10	11	1	33	143	2,8	5,2
19	11	11	2	33	146	5,0	18,6
19	12	11	1	33	139	3,6	10,0
19	13	11	2	63	155	7,2	7,1
19	14	11	2	58	152	6,2	14,9
19	15	11	2	25	134	2,4	15,4
19	16	11	2	35	150	6,1	18,1
19	17	11	1	27	133	3,2	9,7
19	18	11	1	45	142	5,4	25,7
19	19	11	1	45	149	5,5	5,3
19	20	11	1	32	143	2,4	4,2
19	21	11	2	48	147	7,0	5,4

VL	ID	AGE	SEX	WT	HT	US	IO
19	22	11	2	49	159	4,9	21,0
19	23	11	2	27	133	6,4	12,6
19	24	9	1	27	130	2,6	4,2
19	25	10	1	24	123	2,3	21,5
19	26	10	1	24	133	2,8	9,0
19	27	9	1	46	155	4,0	7,1
19	28	10	2	31	135	4,2	11,1
19	29	9	2	27	134	2,4	13,2
19	30	9	2	57	143	4,5	16,7
19	31	10	2	35	143	2,8	12,0
19	32	9	2	23	122	2,4	12,2
19	33	9	2	28	134	3,1	7,9
19	34	11	1	27	135	2,3	15,2
19	35	10	1	25	130	2,3	9,4
19	36	9	1	30	133	3,9	8,5
19	37	9	2	23	127	2,5	10,2
19	38	9	1	20	123	1,1	15,2
19	39	9	1	25	128	1,2	15,3
19	40	9	2	26	129	2,0	18,1
19	41	9	2	22	126	2,1	17,0
19	42	9	1	21	123	1,5	9,7
19	43	9	1	21	121	1,3	12,4
19	44	9	1	26	125	2,2	26,2
19	45	9	1	24	126	2,5	12,3
19	47	9	1	22	121	2,1	13,2
19	48	9	2	24	124	2,2	10,4
19	49	9	2	25	130	2,6	6,4
19	50	9	2	24	128	3,0	7,3
19	51	9	2	30	126	2,4	18,0
19	52	9	2	20	123	2,8	13,3
19	53	9	1	18	116	1,1	7,2
19	54	9	2	35	143	3,5	9,8
19	55	9	2	25	130	2,0	9,5
19	56	9	2	27	129	2,4	10,9
19	57	9	2	23	124	2,2	20,8
19	58	9	2	38	129	1,6	13,8
19	59	9	2	20	123	1,3	9,0
19	60	9	2	19	117	2,4	11,5
19	61	9	2	17	107	1,5	17,5
19	62	9	1	27	132	2,2	10,2
19	63	9	1	20	117	2,3	19,0
19	64	9	1	25	127	1,4	14,1
19	65	9	1	24	123	1,8	21,3
19	66	9	1	20	120	1,6	28,3
19	67	9	1	26	131	2,9	9,7
19	68	9	1	26	128	3,0	19,1
19	69	11	1	29	127	1,8	20,6
19	70	12	1	47	154	5,0	60,2
19	71	12	2	34	144	5,3	12,5
19	72	12	1	42	145	5,5	19,2
19	73	12	1	30	136	3,8	6,4
19	74	12	2	36	149	4,9	21,6

VL	ID	AGE	SEX	WT	HT	US	IO
19	75	12	2	32	148	2,2	38,1
19	76	12	1	48	148	5,2	15,6
19	77	12	1	34	142	5,5	14,7
19	78	12	1	36	146	7,5	22,6
19	79	12	1	25	125	3,9	37,9
19	80	10	2	31	138	5,4	22,2
19	81	10	2	29	133	3,7	23,3
19	82	10	2	24	128	2,4	15,1
19	83	10	2	33	128	3,3	17,5
19	84	10	1	25	134	2,3	13,7

APPENDIX 8.6

All Data on Retinol, CRP and Ferritin

UNICEF-Code	CRP (mg / l)	Ferritin (ug / l)	Vitamin A (ug / l)	Grade of Hemolysis
Q 1	< 5,0	38,9	240,8	
Q 2	< 5,0	26,6	238,7	
Q 3	< 5,0	54,2	292,1	
Q 4	< 5,0	140,8	160,3	
Q 5	< 5,0	50,7	205,6	
Q 6	< 5,0	31,1	316,3	
Q 7	9,2	30,5	230,5	**
Q 8	< 5,0	19,0	311,7	
Q 9	< 5,0	13,9	275,9	
Q 10	< 5,0	59,7	243,0	
Q 11	< 5,0	63,1	177,4	
Q 12	< 5,0	28,0	297,1	
Q 13	< 5,0	26,7	302,1	
Q 14	< 5,0	23,8	229,0	
Q 15	< 5,0	41,6	239,9	
Q 16	< 5,0	44,9	230,5	
Q 17	< 5,0	15,3	289,7	
Q 18	< 5,0	10,8	330,9	
Q 19	152,0	147,9	125,6	
Q 20	< 5,0	21,5	408,8	
B 1	32,1	75,3	121,9	
B 2	8,2	17,3	140,7	
B 3	< 5,0	23,8	267,2	
B 4	< 5,0	11,7	244,4	
B 5	< 5,0	31,3	224,6	
B 6	9,6	96,1	189,9	
B 7	< 5,0	44,5	238,8	
B 8	< 5,0	27,1	196,7	
B 9	< 5,0	51,0	283,5	
B 10	8,2	21,3	194,7	
C 1	10,5	10,2	185,1	
C 2	< 5,0	78,3	129,6	***
C 3	< 5,0	27,9	340,9	
C 4	< 5,0	26,9	164,3	
C 5	< 5,0	40,3	218,6	
S 12	12,9	56,9	323,0	***
S 13	45,6	153,6	121,8	***
S 14	14,3	36,2	287,4	
S 15	< 5,0	200,2	508,7	
S 16	25,0	86,2	80,6	
S 17	< 5,0	11,7	372,0	
S 18	121,0	26,5	72,9	
S 19	73,9	59,8	217,3	
S 20	< 5,0	92,6	158,1	
S 21	< 5,0	26,9	350,8	
S 22	< 5,0	34,8	340,0	
S 23	23,7	35,9	155,3	
S 24	109,0	351,6	115,0	
S 25	< 5,0	98,4	138,4	
S 26	22,1	27,2	146,2	
S 27	150,0	125,1	31,7	

APPENDIX 8.6

UNICEF-Code	CRP (mg / l)	Ferritin (ug / l)	Vitamin A (ug / l)	Grade of Hemolysis
S 28	27,4	112,4	251,5	
S 29	97,0	30,5	81,6	
S 30	111,0	126,6	122,5	
S 31	35,3	37,6	159,1	
S 32	< 5,0	37,8	297,6	
S 33	< 5,0	19,0	152,1	
S 34	11,0	143,8	284,1	
S 35	135,0	146,7	85,2	
S 36	< 5,0	6,7	218,5	
S 37	11,8	41,7	137,1	
S 38	48,4	15,6	249,4	
S 39	57,8	65,1	194,8	
S 40	71,4	239,6	113,8	
S 41	9,6	28,8	249,9	
S 42	21,6	22,4	202,3	
S 43	< 5,0	19,8	134,5	
S 44	57,9	182,3	66,4	
C 1	8,2	63,0	313,7	
C 2	10,9	12,1	153,7	
C 3	< 5,0	109,8	375,0	
C 5	37,8	9,5	184,7	
C 6	5,4	8,3	165,7	
C 7	51,6	101,0	99,1	
C 8	69,1	116,3	79,0	
C 9	< 5,0	21,4	354,7	
C 10	97,6	252,0	163,8	
C11	309,0	332,5	90,7	
H 1	< 5,0	40,6	292,6	
H 2	< 5,0	12,5	275,1	
H 3	< 5,0	53,1	303,8	
H 4	< 5,0	15,8	343,8	
H 5	< 5,0	25,4	394,6	
H 6	< 5,0	53,9	226,7	
H 7	< 5,0	57,2	354,1	
H 8	< 5,0	34,1	367,9	
H 9	63,6	100,5	257,3	
H 10	< 5,0	42,6	291,4	
H 11	< 5,0	47,6	388,1	
H 12	< 5,0	27,5	206,5	
H 13	< 5,0	8,2	175,4	
H 14	31,8	79,0	153,9	
H 15	< 5,0	41,2	232,1	
H 16	< 5,0	42,1	365,3	
H 17	6,0	80,3	379,8	
H 18	< 5,0	23,7	355,3	
H 19	< 5,0	36,3	250,7	
H 20	< 5,0	64,9	360,2	
H 21	< 5,0	20,9	360,9	
H 22	< 5,0	43,7	189,8	
N 1	< 5,0	15,3	265,5	
N 2	< 5,0	22,9	326,1	

UNICEF-Code	CRP (mg / l)	Ferritin (ug / l)	Vitamin A (ug / l)	Grade of Hemolysis
N 3	< 5,0	18,5	317,6	
N 4	14,2	102,3	208,5	
N 5	< 5,0	21,6	315,8	
N 6	< 5,0	21,7	244,1	
N 7	< 5,0	15,3	207,7	**
N 8	< 5,0	22,7	199,6	**
N 9	8,9	84,2	207,7	
N10	< 5,0	77,4	288,9	
N 11	< 5,0	16,6	187,6	
N 12	< 5,0	27,1	293,9	
N 13	< 5,0	42,1	313,0	
N 14	13,8	51,9	219,4	
N 15	< 5,0	14,0	189,2	
N 16	< 5,0	89,4	237,7	
K 1	< 5,0	25,5	241,3	
K 2	< 5,0	51,0	260,2	**
K 3	< 5,0	63,3	310,9	
K 4	< 5,0	56,7	360,0	
K 5	< 5,0	18,4	419,8	
K 6	< 5,0	40,7	241,1	
K 7	< 5,0	29,3	328,6	
K 8	< 5,0	61,2	330,8	
K 9	< 5,0	49,9	270,3	**
K 10	< 5,0	32,9	n.d.	***
K 11	< 5,0	53,7	261,7	
P 1	< 5,0	19,8	327,4	
P 2	< 5,0	39,1	433,2	
P 3	6,5	51,5	150,5	
P 5	< 5,0	29,5	271,7	
P 6	< 5,0	25,2	250,2	*
P 7	< 5,0	36,2	260,4	
A 1	< 5,0	46,7	293,7	
A 2	< 5,0	17,6	205,2	
A 3	< 5,0	12,1	258,3	
A 4	< 5,0	20,4	281,8	
A 5	< 5,0	53,9	121,5	
A 7	< 5,0	15,7	263,9	
A 8	< 5,0	35,5	245,4	
A 9	< 5,0	46,4	331,7	
A 10	< 5,0	42,3	337,6	
A 11	< 5,0	32,8	280,6	
A 12	< 5,0	55,4	262,4	
A 13	< 5,0	11,3	281,3	
A 14	< 5,0	24,5	250,1	
A 15	< 5,0	42,4	362,5	
A 16	17,5	57,0	180,2	
A 17	< 5,0	5,5	229,2	
A 18	< 5,0	28,7	332,1	
A 22	< 5,0	46,2	202,6	
A 23	< 5,0	29,8	370,5	
A 24	< 5,0	17,4	246,0	

APPENDIX 8.6

UNICEF-Code	CRP (mg / l)	Ferritin (ug / l)	Vitamin A (ug / l)	Grade of Hemolysis
O 1	< 5,0	28,2	271,3	
O 2	< 5,0	26,5	274,3	
O 3	< 5,0	33,5	293,5	
O 4	< 5,0	67,8	365,1	
O 5	14,1	33,0	162,5	
O 6	< 5,0	37,0	413,9	
O 7	63,5	50,1	154,3	
O 8	< 5,0	15,4	337,4	
O 9	< 5,0	36,6	255,2	
O 10	< 5,0	14,9	266,6	
O 11	< 5,0	45,9	313,1	
O 12	< 5,0	24,7	434,1	**
O 13	< 5,0	32,8	302,0	
O 14	< 5,0	25,4	269,3	
O 15	< 5,0	28,5	345,6	
O 16	15,9	66,3	247,1	**
O 17	< 5,0	14,9	256,6	
O 18	< 5,0	54,6	407,1	
O 19	< 5,0	16,0	305,1	
O 20	< 5,0	33,1	242,3	
F 1	14,3	43,8	160,0	
F 2	< 5,0	123,3	170,4	
F 3	11,4	44,1	171,2	
F 4	< 5,0	35,4	224,0	
F 5	< 5,0	24,3	294,4	
F 6	< 5,0	55,7	215,6	
F 7	< 5,0	18,9	289,1	
F 8	< 5,0	43,4	329,5	
F 9	6,3	59,8	174,4	
F 10	< 5,0	41,0	229,6	
F 11	< 5,0	66,0	374,8	
F 12	< 5,0	30,6	140,5	
F 13	< 5,0	16,9	170,5	
F 14	< 5,0	57,4	205,2	
F 15	< 5,0	8,6	186,7	
F 16	5,6	30,0	228,3	
F 17	< 5,0	67,8	280,9	
F 18	< 5,0	70,4	243,2	
F 19	8,7	50,9	224,6	
F 20	< 5,0	52,6	163,0	
L 1	5,1	32,8	219,8	***
L 4	< 5,0	27,3	222,3	
L 5	< 5,0	14,9	156,2	**
L 6	35,2	84,6	178,7	
L 7	5,8	49,8	203,2	
L 8	5,4	22,7	145,0	
G 1	< 5,0	26,0	296,4	
G 2	< 5,0	38,9	213,3	
G 3	< 5,0	47,2	307,0	
G 4	< 5,0	50,9	168,1	
G 5	< 5,0	41,0	211,8	

UNICEF-Code	CRP (mg / l)	Ferritin (ug / l)	Vitamin A (ug / l)	Grade of Hemolysis
G 6	< 5,0	38,5	292,9	
G 7	< 5,0	34,9	342,2	
G 8	< 5,0	23,1	206,1	
G 9	< 5,0	32,0	303,8	
G 10	< 5,0	78,8	207,2	
G 11	< 5,0	73,5	447,2	
G 12	< 5,0	30,8	270,5	
G 13	< 5,0	30,5	345,5	
G 14	< 5,0	56,6	414,0	
G 15	8,7	28,0	301,1	
G 16	< 5,0	33,3	302,1	*
G 17	< 5,0	16,3	299,1	
G 18	< 5,0	21,8	355,5	
G 19	< 5,0	11,8	233,0	
G 20	< 5,0	24,2	421,1	
D 1	9,3	72,2	303,1	
D 2	< 5,0	32,3	298,0	
D 3	10,5	83,8	270,7	
D 4	< 5,0	34,5	247,6	
D 5	10,5	97,9	217,7	
D 6	34,6	75,9	n.d.	***
D 7	9,6	153,1	290,5	
D 8	< 5,0	53,9	258,5	**
D 9	< 5,0	30,6	281,6	
D 10	< 5,0	50,1	281,6	
E 1	< 5,0	21,5	350,7	
E 2	7,8	49,6	227,8	
E 3	< 5,0	67,7	231,2	
E 4	< 5,0	647,4	147,7	ict.
E 5	< 5,0	32,3	247,7	
E 6	< 5,0	40,6	214,2	
E 7	< 5,0	44,1	176,9	
E 8	< 5,0	65,8	204,0	
E 9	< 5,0	42,9	251,6	***
E 10	6,1	54,5	273,1	
E 11	< 5,0	19,9	369,9	
E 12	< 5,0	50,1	334,3	
E 13	63,6	70,5	172,3	
E 14	< 5,0	31,9	197,2	
E 15	< 5,0	53,6	201,3	*
E 17	14,7	161,9	345,9	
E 18	< 5,0	50,4	272,8	**
E 19	8,4	80,3	119,6	***
E 20	< 5,0	42,5	223,9	
E 21	6,5	84,5	189,6	
E 22	< 5,0	46,2	262,7	
M 1	< 5,0	10,4	334,6	
M 2	< 5,0	30,6	283,4	
M 3	23,0	51,8	153,7	**
M 4	< 5,0	49,6	300,4	
M 5	< 5,0	19,1	286,9	

UNICEF-Code	CRP (mg / l)	Ferritin (ug / l)	Vitamin A (ug / l)	Grade of Hemolysis
M 6	< 5,0	39,0	359,2	
M 7	< 5,0	28,9	431,0	
M 8	< 5,0	12,1	334,7	
M 9	9,9	36,1	223,8	
M 10	< 5,0	22,7	216,7	*
M 11	< 5,0	34,0	320,2	
M 12	< 5,0	13,2	194,9	
M 13	< 5,0	16,0	211,2	
M 14	< 5,0	69,7	384,7	**
M 15	< 5,0	34,3	230,8	
M 16	< 5,0	28,5	260,2	
M 17	< 5,0	21,6	345,6	
M 18	< 5,0	26,2	207,9	
M 19	< 5,0	32,3	211,1	
M 20	< 5,0	49,4	337,8	*
J 1	< 5,0	54,0	220,6	
J 2	< 5,0	19,1	324,0	
J 3	< 5,0	66,0	257,7	
J 4	< 5,0	133,5	266,7	
J 5	< 5,0	31,8	299,2	
J 6	< 5,0	42,6	261,5	
J 7	6,8	73,0	289,0	
J 8	< 5,0	46,0	317,0	
J 9	< 5,0	96,9	n.d.	***
J 10	< 5,0	36,2	320,5	
J 11	< 5,0	80,5	n.d.	***
J 12	< 5,0	25,9	364,8	
J 13	< 5,0	109,4	286,1	
J 14	< 5,0	63,6	304,6	
J 15	5,5	103,8	258,7	**
J 16	< 5,0	19,2	249,9	
J 17	< 5,0	81,5	346,4	
J 18	< 5,0	38,7	254,7	
J 19	< 5,0	25,3	259,5	
J 20	< 5,0	43,5	336,1	
		38,2	257,0	
Reference intervals :		**Abbreviations :**		
CRP	**< 5,0 mg / l**		**n.d.**	**not detectable**
			*****	**strongly hemolytic**
Ferritin	**11,5 - 282,1 ug / l for males**		****	**hemolytic**
	10,3 - 218,8 ug / l for females		***	**slightly hemolytic**
			ict.	**icteric**
Vitamin A	**200 - 1500 ug / !**			

APPENDIX 8.7

Program for Workshop October 1992

THE ELIMINATION OF IODINE DEFICIENCY

WORKSHOP WINDHOEK STATE HOSPITAL CHAPEL 19-20 OCTOBER 1992

Monday, October 19, 1992

08h00	Registration/Chairperson Ms. K. Mutiru
	Deputy Director of Primary Health Care
09h00	Welcoming Remarks Dr. N. Shivute
	Director of Primary Health Care
09h10	Results from the 1992 Namibia Survey
	Dr. R. Gutekunst (Epidemiology of IDD in Namibia, Vitamin A and Iron Intake)
09h30	Brief Remarks by WHO Representative
09h40	Brief Remarks by UNICEF Representative
09h50	Opening Address by Hon. Deputy Minister Dr. I. Indongo
10h10	Tea/Coffee
11h00	Chairperson Dr. Shivute
11h30	Pathophysiological and Social Effects of IDD
	Dr. Amaambo
12h30	Techniques and their interrelation for the assessment IDD
	Dr. R. Gutekunst
13h00	LUNCH
	Chairperson Ms. K. Mutirua
14h00	Selection of population, Statistical requirements
	Discussion
14h30	Thyroid size determination
	Discussion
15h00	Iodine measurement in urine and salt
	Discussion
15h30	Tea/Coffee
16h00	TSH and other metabolites in blood
	Discussion
16h30	Evaluation

Tuesday, October 20, 1992

8h30	Brief discussion on the Nutrition Unit its function and programmes
	Ms. E. Shihepo
9h00	Requirements and food aspects
	Dr. R. Gutekunst
	Discussion
9h30	Significance of increased iodine intake
	Dr. R. Gutekunst
	Discussion
10h00	Different Forms of Iodine Supplementation
	Dr. R. Gutekunst
	Discussion
10h30	Tea/Coffee
11h00	Salt iodization, control, storage, packaging and use
	Mr. Klein
11h30	Roundtable, chairperson Dr. Amaambo
	Combination of Iodine and Vitamin A supplementation into PHC and other development programmes
12h30	Lunch

NATIONAL IDD CONTROL PROGRAMME

	Chairperson Dr. Vincent Orinda	
14h00	Monitoring	
14h30	Roundtable	National IDD Control Committee
15h30	Tea/Coffee	
15h50	Recommendations	
16h00	Closing remarks Dr. Shivute	

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