ERITREAN MINISTRY OF HEALTH’S
HUMAN RESOURCE DATA.
INITIAL DATA ANALYSIS

Asmara, Eritrea
April 27-May 9, 1997

Judith M. Moore

BASICS Technical Directive No: 017-ER-01-064
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ACKNOWLEDGMENTS

Special thanks to Dr. Andat, Head of the MOH Human Resource Division; Dr. Iyob Tekele, Head of Planning; and Dr. Nosa Orobaton, BASICS Chief of Party, who contributed to the discussions on this topic and without whose help this report could not have been completed. Thanks also to those MOH staff who completed the enormous task of collecting and entering the data and assisting with its preparation, some of whom I did not meet, but those that I did included Brehane Haile and Ezra Kidane.

The very existence of such a data set is a measure of successful health planning, since many other countries have not attempted this task. It must have taken considerable effort to survey and collect information on every member of staff within the government health system and visit every health facility in the country. The Human Resources Division is to be congratulated on taking this first step towards a comprehensive national review of health man/woman power.

Contributions to discussions from Dr. Steve Weirisma, USAID, were helpful, and finally, much appreciation goes to the office staff at BASICS/Asmara for their support during my visit to Eritrea.
## ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASICS</td>
<td>Basic Support to Institutionalizing Child Survival</td>
</tr>
<tr>
<td>CHS</td>
<td>College of Health Sciences</td>
</tr>
<tr>
<td>EPI</td>
<td>Expanded Program on Immunization</td>
</tr>
<tr>
<td>EPLF</td>
<td>Eritrean People's Liberation Front</td>
</tr>
<tr>
<td>HRD</td>
<td>Human Resource Division</td>
</tr>
<tr>
<td>MCH</td>
<td>Maternal and Child Health</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
</tr>
<tr>
<td>PHC</td>
<td>Primary Health Care</td>
</tr>
<tr>
<td>SEATS</td>
<td>Family Planning Service Expansion and Technical Support Project</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Emergency Fund</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

The Human Resources Division of the Eritrean Ministry of Health conducted a survey of all health facilities and staff in 1995. The consultant made a two week visit to Eritrea to assist the MOH staff with the preparation and preliminary analysis of this data. In addition, the consultant, with the BASICS chief of party, and reviewed the current technical activities and the status of project implementation in relation to the BASICS monitoring and evaluation plan.

The results of the preliminary examination of the data showed that nearly 60 percent of the health staff are employed in hospitals. There was much variation between zones, both in provision and coverage of different types of health facility and in staffing levels. Acute shortages were seen in several categories of the health worker, most notably medical specialists, dentists, pharmacists, midwives, and various medical technician groups.

The consultant also reviewed the technical components of the BASICS work plan with the chief of party and worked on the next steps of implementation.
PURPOSE OF VISIT

The purpose of this visit was to initiate the analysis of the human resources survey that was conducted by the MOH in Eritrea in 1995. Working with Dr. Andat and his staff, the data were cleaned and recoded when necessary. A preliminary analysis was conducted and reported on. In addition, more current human resource information from 1996 zonal reports were included in this preliminary report. Suggestions were made on improvements in data collection and preparation methodology for future similar surveys.

This visit also encompassed a review of the current technical activities and the status of project implementation in relation to the BASICS monitoring and evaluation plan. Orobaton and the consultant reviewed these plans and prioritized activities and the technical assistance required from BASICS/Headquarters.

BACKGROUND

As Eritrea rebuilds its health services after achieving independence five years ago, one of its main priorities is to address its human resource needs. This was started by a survey carried out in early 1996, where information on every health facility and every member of staff was collected. Along with zonal reports and training plans, this data is essential to the formation of a new human resource strategy covering the next 5 to 10 years. The preliminary analysis of this data was the basis for this consultancy.

TRIP ACTIVITIES

The majority of the consultant’s time was spent in Asmara working with MOH human resources staff and meeting with representatives of other agencies. (See Appendix A for a list of these activities.) One field trip was undertaken to the town of Barentu, in Gash Barka Zone to meet with the zonal health planning team to discuss sub-zonal planning activities. This follows up on the zonal planning exercises facilitated by BASICS in the three target zones.

RESULTS

For a complete report see Appendix B.

- Human resource data set was cleaned and prepared for analysis.
- Recommendations/suggestions were made on future methods of data collection and entry.
• A preliminary analysis on the data was performed and a summary was written using additional updated information from zones.

• Recommendations were left with the MOH regarding future human resource data needs.

• BASICS chief of party and the consultant reviewed the current technical activities and future needs.

• BASICS chief of party and the consultant reviewed the status of project implementation in relation to BASICS monitoring and evaluation plan.

• The consultant met with various members of the MOH and other technical agencies to familiarize herself with the current activities and plans of the health sector.

RECOMMENDATIONS

See recommendations cited in the full report, Appendix B.

FOLLOW-UP ACTIONS

The BASICS chief of party will follow up with the HRD of the MOH to discuss the initial results of the analysis, and whether further work will be done using this data set, or whether there are plans to repeat the staff survey in the future. The memo applying to improvements in the data management might be helpful if this second path is chosen.
APPENDIXES
APPENDIX A

TRIP ACTIVITIES
TRIP ACTIVITIES - JUDITH M. MOORE.

APRIL 28
Meetings with Dr. Andat, Ezra Kidane and Samuel Gwitom of the Human Resource Division of the Ministry of Health.

APRIL 29
Briefing with Dr. Steve Weirsma, Team Leader, PHN Office, USAID, Asmara.

MAY 2 - 3
Field visit to town of Barentu in Gash Barka zone. Discussions with zonal health planning team led by Dr. Kassete, Regional Medical Officer on sub zonal planning activities.

MAY 6 a.m.
Meetings with:
Ms. Christina Volker-Saad, GTZ
Dr. Afeworki, Director of Health Services, MOH.
Dr. Mismay G/Hiwot, Director of PHC Services, MOH.
Dr. Paul Fife, UNICEF and Mr. Fili Sayed Fili, EPI Division, MOH.
Dr. Assefaw Tekeste, Principal of the College of Health Sciences, Asmara.
Mrs. Brehane Haile, Head of the HMIS, MOH.
Mr. William Brady, Country Program Adviser, UNAIDS.

p.m.
Meeting at USAID
Mr. Glen Anders, USAID Representative
Ms. Judith Robb Mcord, PHN Office, USAID.
Representatives from SEATS, OMNI, USAID, PSI.

MAY 8
Ms. Rebecca Kohler, IEC Resident Adviser, OMNI.

De-briefing with-
Dr. Steve Weirsma, Team Leader, PHN Office, USAID.
APPENDIX B

HRD REPORT
INTRODUCTION

As Eritrea seeks to re-build and increase the capacity of its health services, five years after achieving independence, a key priority is its human resource capacity. Defining the responsibilities of the different categories of health worker, planning future requirements, upgrading the skills of those who were trained or who practiced during the war, and the formation of a cohesive health service structure are the tasks facing the HR division today. Along with an overall shortage of man/woman power, certain categories of health worker are in short supply, their distribution throughout the country less than optimal, and the in-service training offered is often below what would be considered desirable levels.

In February 1996, the MOH carried out a nationwide survey of all health workers currently employed and a listing of all health facilities. Three teams of two staff members from the HMIS department of the MOH, visited all zones and visited all health institutions, down to the health center level. Questionnaires were completed on two topics, details of health staff and information on the facilities. Information from the health stations was gained either from the health center supervising the station or the nearest referral hospital. The survey took one month to complete. This report is the first analysis of the information from that survey. Data from the manpower data set was the primary source of information but in addition was supplemented with the Zonal Health Reports/Profiles for 1996.

METHODOLOGY

The data set had details on 3,945 staff members (all categories of health staff were included) and 3,842 health facilities (MH and private facilities). Seventeen variables were recorded. The data was entered and analyzed in SPSS software and graphics produced by Harvard Graphics package. The data were cleaned and missing data assigned codes of 99 or 999. Since the variable names in the data set did not always match the categories listed on the original data collection form, (Appendix C) a new coding key was written. (Appendix D) Definitions of the variables were verified with the HR division staff and variable labels were entered for all the fields. Some of the practical difficulties with interpreting and presenting the data were resolved with Dr. Andat, Head of the HR division.

During preparation of this data set, some practical suggestions were made regarding continued use of this data, or repetition of the survey. These comments are separately listed in a memo. (Appendix E) The results in this report are descriptive and describe characteristics of the health staff and health facilities. Since there were problems running analysis on some of the zonal and facility type variables, information from Zonal Health Reports submitted to the central level in 1996, was used to supplement this data and is used and sited in some of the results. Projection of
staffing needs for the future will be addressed in the MOH's Human Resources Development Plan, currently in process.

RESULTS

Health workers ages ranged from 18 to 69 years, with an average age of 35 years, and the majority being 26 years old. There were 26 workers listed over the age of 70 years, who had retired but been re-employed on a contract basis. These workers were usually guards, cleaners etc. Those 70 years and over were excluded from the analysis.

Female health workers made up 57% of the total, males the remaining 43%. 31% of workers were single, 56% married and the remaining 13% divorced or widowed. 97.5% were Eritrean nationality, 1.9% Ethiopian and the remainder foreign nationals. 70% were civilian status and 34% were ex fighters.

Of language, 91% of health workers spoke Tigrigna, 2.5% spoke Tigre and the remaining 4.5% was distributed between another 6 languages. 2% of health workers did not record a first language.

Total number of years spent working in the health service ranged from 0 to 56 years with the median highly skewed by a few health workers who were elderly (over 65 years of age) and still included in the official workforce. The largest number of health workers had spent 3 years in the service and 23% had 3 years or less service. 52% had 10 years or less.

Service in the present post ranged from 0 to 50 years. The largest number of workers had 1 year of service in current post, with a mean of 4 years. However, 50% had 2 years or less, and 90% had 10 years or less. Further analysis could examine these average lengths of service by the type of facility and the ratio to urban or rural facilities.

The general educational status of staff is summarized in the following table.
Table 1. General Educational Status of Health Staff in Eritrea, 1996.

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cumulative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate</td>
<td>148</td>
<td>4.1</td>
<td>4.1</td>
</tr>
<tr>
<td>Grades 1 to 11 completed</td>
<td>1617</td>
<td>45.8</td>
<td>49.9</td>
</tr>
<tr>
<td>Grade 12 and 12+1</td>
<td>1172</td>
<td>33.2</td>
<td>83.1</td>
</tr>
<tr>
<td>Diploma</td>
<td>343</td>
<td>9.7</td>
<td>92.8</td>
</tr>
<tr>
<td>First degree</td>
<td>99</td>
<td>2.8</td>
<td>95.6</td>
</tr>
<tr>
<td>Masters degree</td>
<td>35</td>
<td>0.9</td>
<td>96.5</td>
</tr>
<tr>
<td>M.D.</td>
<td>110</td>
<td>3.1</td>
<td>99.6</td>
</tr>
<tr>
<td>PhD</td>
<td>8</td>
<td>0.2</td>
<td>99.8</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>3532</strong></td>
<td><strong>99.8</strong></td>
<td><strong>99.8</strong></td>
</tr>
</tbody>
</table>

Professional qualifications were recorded into 42 categories because staff who were asked to respond used old and new job definitions and some which were taken from the Ethiopian system. To simplify the results, the data has been collapsed into broader categories to assist more global planning, and includes gender.
Table 2. Professional Qualifications and Gender of Health Staff.

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Female</th>
<th>%</th>
<th>Male</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor - General</td>
<td>16</td>
<td>17</td>
<td>78</td>
<td>83</td>
<td>94</td>
<td>2.4</td>
</tr>
<tr>
<td>Medical specialist</td>
<td>11</td>
<td>27</td>
<td>30</td>
<td>73</td>
<td>41</td>
<td>1.1</td>
</tr>
<tr>
<td>Nurse</td>
<td>275</td>
<td>51</td>
<td>260</td>
<td>49</td>
<td>535</td>
<td>13.9</td>
</tr>
<tr>
<td>Midwife or MCH nurse</td>
<td>92</td>
<td>70</td>
<td>39</td>
<td>30</td>
<td>131</td>
<td>3.4</td>
</tr>
<tr>
<td>Dentist</td>
<td>1</td>
<td>20</td>
<td>4</td>
<td>80</td>
<td>5</td>
<td>0.1</td>
</tr>
<tr>
<td>Health Assistant</td>
<td>361</td>
<td>57</td>
<td>276</td>
<td>43</td>
<td>637</td>
<td>16.5</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>2</td>
<td>8</td>
<td>22</td>
<td>92</td>
<td>24</td>
<td>0.6</td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>1</td>
<td>20</td>
<td>4</td>
<td>80</td>
<td>5</td>
<td>0.1</td>
</tr>
<tr>
<td>Sanitarian</td>
<td>2</td>
<td>10</td>
<td>19</td>
<td>90</td>
<td>21</td>
<td>0.5</td>
</tr>
<tr>
<td>Medical Technician*</td>
<td>89</td>
<td>34</td>
<td>175</td>
<td>66</td>
<td>264</td>
<td>6.8</td>
</tr>
<tr>
<td>Barefoot Doctor</td>
<td>490</td>
<td>69</td>
<td>220</td>
<td>31</td>
<td>710</td>
<td>18.4</td>
</tr>
<tr>
<td>Administrative staff</td>
<td>214</td>
<td>46</td>
<td>252</td>
<td>54</td>
<td>466</td>
<td>12.1</td>
</tr>
<tr>
<td>Trade, crafts, manual, etc</td>
<td>531</td>
<td>70</td>
<td>223</td>
<td>30</td>
<td>754</td>
<td>19.5</td>
</tr>
<tr>
<td>Others</td>
<td>118</td>
<td>68</td>
<td>55</td>
<td>32</td>
<td>173</td>
<td>4.5</td>
</tr>
<tr>
<td>Missing</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>85</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>2,203</strong></td>
<td><strong>57</strong></td>
<td><strong>1,657</strong></td>
<td><strong>43</strong></td>
<td><strong>3,945</strong></td>
<td><strong>102.1</strong></td>
</tr>
</tbody>
</table>

*Includes dental, malaria, pharmacy, laboratory, x-ray, opthalmic technicians and drugists.

The distribution of civilian and ex-fighters among the health staff is displayed in Table 3.
Table 3. Civilian/ Ex-Fighter Status of Health Staff by Gender.

<table>
<thead>
<tr>
<th>Status</th>
<th>Female</th>
<th>Male</th>
<th>TOTAL</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civilian</td>
<td>1482</td>
<td>1077</td>
<td>2559</td>
<td>65</td>
</tr>
<tr>
<td>Ex-fighter</td>
<td>735</td>
<td>585</td>
<td>1320</td>
<td>33</td>
</tr>
<tr>
<td>Missing</td>
<td>-</td>
<td>-</td>
<td>66</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2217</td>
<td>1663</td>
<td>3945</td>
<td>100</td>
</tr>
</tbody>
</table>

The total and target populations of each zone can be seen in the following table, and this data comes from each Zonal Health Report or Health Profile which was made in 1996.

Table 4. Zonal Populations.

<table>
<thead>
<tr>
<th>Pop.</th>
<th>S.R. Sea</th>
<th>N.R. Sea</th>
<th>Anseba</th>
<th>G.Barka</th>
<th>Debub</th>
<th>Central</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>244,607</td>
<td>289,000</td>
<td>395,399</td>
<td>516,000</td>
<td>525,000</td>
<td>491,566</td>
<td>2461572</td>
</tr>
<tr>
<td>Children &lt;1yr (4%)</td>
<td>9,732</td>
<td>11,560</td>
<td>15,815</td>
<td>20,640*</td>
<td>21,000</td>
<td>19,663</td>
<td>98411</td>
</tr>
<tr>
<td>Pregnant Women (5%)</td>
<td>12,230</td>
<td>11,560 (4%)</td>
<td>19,769</td>
<td>25,699</td>
<td>26,250</td>
<td>24,578</td>
<td>120086</td>
</tr>
<tr>
<td>Women of repro.age (22%)</td>
<td>53,813 (20%)</td>
<td>57,800 (20%)</td>
<td>79,679 (20%)</td>
<td>113,520*</td>
<td>115,500</td>
<td>98,313</td>
<td>518625</td>
</tr>
</tbody>
</table>

*Figures were not reported by the zone but estimated by the author using the percentages which other zones had used, which are specified in the parentheses.

Source: Zonal health reports/profiles for 1996.

The distribution of categories of staff by the zonal regions can be seen in Table 5.
Table 5. Category of Health Staff by Zone.

<table>
<thead>
<tr>
<th>Category</th>
<th>S.Red Sea</th>
<th>N.Red Sea</th>
<th>Anseba</th>
<th>Gash Barka</th>
<th>Debub</th>
<th>Central</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor-General</td>
<td>5</td>
<td>13</td>
<td>7</td>
<td>12</td>
<td>12</td>
<td>40</td>
<td>89</td>
</tr>
<tr>
<td>Medical Specialist</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>27</td>
<td>41</td>
</tr>
<tr>
<td>Nurse</td>
<td>24</td>
<td>55</td>
<td>40</td>
<td>62</td>
<td>75</td>
<td>261</td>
<td>517</td>
</tr>
<tr>
<td>Midwife or MCH nurse</td>
<td>5</td>
<td>11</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>71</td>
<td>123</td>
</tr>
<tr>
<td>Dentist</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>H.Assistant</td>
<td>39</td>
<td>79</td>
<td>63</td>
<td>77</td>
<td>103</td>
<td>257</td>
<td>618</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>20</td>
<td>24</td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Sanitarian</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Med. Technician</td>
<td>11</td>
<td>21</td>
<td>20</td>
<td>19</td>
<td>31</td>
<td>119</td>
<td>221</td>
</tr>
<tr>
<td>Barefoot Dr</td>
<td>54</td>
<td>157</td>
<td>68</td>
<td>102</td>
<td>145</td>
<td>181</td>
<td>707</td>
</tr>
<tr>
<td>Admin/Clerical</td>
<td>25</td>
<td>88</td>
<td>25</td>
<td>63</td>
<td>73</td>
<td>188</td>
<td>462</td>
</tr>
<tr>
<td>Trade,crafts manual,etc</td>
<td>50</td>
<td>98</td>
<td>73</td>
<td>67</td>
<td>139</td>
<td>279</td>
<td>706</td>
</tr>
<tr>
<td>Others</td>
<td>0</td>
<td>11</td>
<td>7</td>
<td>8</td>
<td>16</td>
<td>166</td>
<td>208</td>
</tr>
<tr>
<td>Missing</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>68</td>
</tr>
<tr>
<td>TOTAL</td>
<td>219</td>
<td>542</td>
<td>315</td>
<td>426</td>
<td>618</td>
<td>1625</td>
<td>3813</td>
</tr>
</tbody>
</table>
The information shown in Chart 1 shows what percentage of staff are employed in each type of health facility.

Information in Chart 2 shows the distribution of different types of health facility in each zone. It should be noted that the 'Non MOH' category includes NGO’s, all private sector clinics, private pharmacies and industrial or factory run health services. Data for these categories was not entered separately.

The next table shows the number and type of health facility by zone and the ratio of health facility type to the population it serves. This information comes from the Zonal Health reports and profiles.

Table 6. Ratio of Population per Health Facility by Zone.

<table>
<thead>
<tr>
<th>Facility*</th>
<th>S.Red Sea</th>
<th>N.Red Sea</th>
<th>Anseba</th>
<th>Gash Barka</th>
<th>Debub</th>
<th>Central</th>
<th>National Recommended Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>1:244,607</td>
<td>1:96,333</td>
<td>1:395,399</td>
<td>1:172,000</td>
<td>1:262,500</td>
<td>1:122,889</td>
<td>1:100,000-300,000</td>
</tr>
<tr>
<td>H/Center</td>
<td>1:122,304</td>
<td>1:28,900</td>
<td>1:65,900</td>
<td>1:34,400</td>
<td>1:75,000</td>
<td>1:61,446</td>
<td>1:40,000-50,000</td>
</tr>
<tr>
<td>H/Station</td>
<td>1:81,536</td>
<td>1:11,560</td>
<td>1:39,540</td>
<td>1:19,111</td>
<td>1:26,250</td>
<td>1:21,372</td>
<td>1:5,000 - 10,000</td>
</tr>
</tbody>
</table>

* Key. 1 Health facility / number of total population.
** This figures are overall ratios, they do not take into account population density, i.e. a zone may appear to have adequate ratios, but if the population is geographically spread out, there may be poor accessibility.

The final table shows staffing ratios to total population and includes the midwife to pregnant women ratio. Ratios expected to be achieved by the MOH, HRD by the Year 2000 are shown in the right hand column. It must be noted that the staffing ratios calculated from the HR DATA SET of 1996, do not always agree with those already reported in the draft HRD plan, using 1995 data.
Table 7. Ratio of Health Staff to Population by Zone.

<table>
<thead>
<tr>
<th>Category</th>
<th>S.Red Sea</th>
<th>N.Red Sea</th>
<th>Anseba</th>
<th>Gash Barka</th>
<th>Debub</th>
<th>Central</th>
<th>Year 2000 Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor</td>
<td>1:34,943</td>
<td>1:17,000</td>
<td>1:43,933</td>
<td>1:39,692</td>
<td>1:30,882</td>
<td>1:7,337</td>
<td>1:15,000</td>
</tr>
<tr>
<td>Nurse</td>
<td>1:13,560</td>
<td>1:5,254</td>
<td>1:9,885</td>
<td>1:8,323</td>
<td>1:7,000</td>
<td>1:1,883</td>
<td>1:3,000</td>
</tr>
<tr>
<td>Midwife I</td>
<td>1:40,768</td>
<td>1:26,272</td>
<td>1:49,425</td>
<td>1:43,000</td>
<td>1:32,813</td>
<td>1:6,923</td>
<td>1:25,180</td>
</tr>
<tr>
<td>MW II Ratio to Pregnant Women</td>
<td>1:2,446</td>
<td>1:2,234</td>
<td>1:2,471</td>
<td>1:2,142</td>
<td>1:1,641</td>
<td>1:346</td>
<td>N/A</td>
</tr>
<tr>
<td>H/Assist.</td>
<td>1:3,445</td>
<td>1:3,658</td>
<td>1:6,276</td>
<td>1:6,701</td>
<td>1:5,097</td>
<td>1:1,913</td>
<td>1:2,000</td>
</tr>
<tr>
<td>Dentist</td>
<td>1:244,607</td>
<td>1:289,000</td>
<td>1:395,399</td>
<td>1:516,000</td>
<td>1:0</td>
<td>1:245,783</td>
<td>1:250,000</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>1:244,607</td>
<td>1:289,000</td>
<td>1:0</td>
<td>1:516,000</td>
<td>1:525,000</td>
<td>1:245,783</td>
<td>1:35,353</td>
</tr>
<tr>
<td>*Med. Technician</td>
<td>1:27,178</td>
<td>1:13,762</td>
<td>1:19,770</td>
<td>1:27,158</td>
<td>1:16,935</td>
<td>1:4,131</td>
<td>1:20,000 - 50,000</td>
</tr>
</tbody>
</table>

* Medical Technician covers all categories, pharmacy, x-ray, lab. etc.

CONCLUSIONS

In order for the MH to plan human resource development, a database of all staff enables tracking of the overall situation as new staff qualify and older staff retire. If it also encompasses non MOH, private and NGO staff, this gives an even more complete picture nationally. This database is the first valuable step in that direction. Many staff had served the health service for considerable lengths of time, some staying in the same facility. Until now, it has not been possible to track staff turnover by facility and region or the ratios of specific categories of staff to type of health facility in a systematic manner. A tracking system will enable more staff to rotate through posts and be promoted, while maintaining a balance of skills and experience. It will also assist with planning in-service training and upgrading courses. Since women make up nearly 60% of the entire health staff but occupy few of the more highly trained professions, encouragement in the form of training and promotional opportunities need to be more accessible to them. The level of general education is reasonable but there are few staff with qualifications at the first degree level and above. More opportunities for higher education, and specialized training, (including medical specialities) need to be created. There are acute shortages among
some very essential categories of staff, especially midwives, dentists, pharmacists and various health technician groups. The geographical distribution of certain categories of staff is uneven. Likewise the numbers of different types of health facility vary by zone. The information from this database can assist in the progress towards standardization which the MOH is already planning. The same thought applies to the ratios of health facility and staffing category to total population. A move towards standardizing minimal ratios is essential. These ratio figures obtained from the HRD database do not match those which have been sited in the draft HRD plan. When examining these ratios, consideration should be given to zonal breakdowns, since there are large differences between zones and between zones and the central level, i.e. ratios may appear to be adequate but if the majority of the staff are either located at the tertiary level facility, or the central zone, then issues of accessibility and adequate coverage arise. The principles of PHC should be the guiding force influencing the distribution of both staff and facilities.

RECOMMENDATIONS

1. That a database of all health staff is continued or a revised version created, and that the movement of staff is tracked. (Perhaps at zonal level).

2. That a mechanism is set up to track the staff requirements for each facility or facility category by the Year 2000 Goal, (see MOH HR report) in comparison to the actual number of staff employed, and some method of prioritizing posts to be filled is organized.

3. That the categories of health worker are defined and that numerous job titles are rationalized.

4. The listing on the database could perhaps be split in to 4 categories - MOH and private sector staff and permanent and contract staff. It would also be helpful to know if staff in the private sector belonged to NGO's, factory clinics, or were operating as true 'private practitioners', since these are all different target groups.

5. Issues surrounding retirement age and conditions of service need to be defined.

6. Issues surrounding staff staying in one position for extremely long periods of time need to be considered.

7. Issues of 'in-service' training with minimum requirements and equity for all grades of staff to be discussed.

8. The minimum qualifications and requirements for promotion should be standardized and made available to all staff.

9. The use of a mapping system, such as EPI MAP or GIS, used in conjunction with this database would provide very valuable information over the coming years.
The author would like to acknowledge the help from all the staff in the Eritrean MOH HRD, whose database was used as the basis for this report. The calculations presented in this report were made using the above database and zonal health reports and profiles from 1996. If questions arise regarding the baseline data, data collection or entry, then the staff of the HRD are without question the experts to be consulted. Zonal medical officers were responsible for the 1996 zonal health reports and profiles.
Chart 1. Percentage of Staff by Type of Facility

Eritrean MOH, Human Resources Division. 1997

Hospital: 57.9%
H/Station: 20.1%
Zonal HQ: 0.8%
H/Center: 16.5%
Non MOH facil.: 1.1%
HQ: 3.5%

Source HRD dataset.
Chart 2. Type of Health Facility by Zone

Eritrean MOH Human Resources Div.

Source: MOH Zonal Health Reports 1996
APPENDIX C

ORIGINAL DATA ENTRY FORM AND CODING
<table>
<thead>
<tr>
<th>NAME OF HEALTH PROFESSIONALS</th>
<th>M/F</th>
<th>AGE</th>
<th>MARITAL STATUS</th>
<th>MOTHER TONGUE</th>
<th>GRADE COMPLETED</th>
<th>NATIONALITY</th>
<th>QUALIFICATION</th>
<th>SERVICE</th>
<th>STATUS</th>
<th>TRA. IN 6-12 MONTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Single</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Married</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Divorced</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Widow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CODES COLUMN 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CODES COLUMN 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CODES COLUMN 11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Sex**: M/F
- **Marital Status**: Single, Married, Divorced, Widow, Other
- **Grade Completed**: Grade 8, Grade 9, Grade 10, Grade 11, Grade 12+1, Grade 12+2, Grade 12+3, Grade 12+4
- **Nationality**: A, B, C, D, E
- **Qualification**: Internist, Surgeon, Paediatrician, OB & Gyn. Ist, Doctor (OMP), ENT, Pathologist, Physio. Ist, Dentalist, Ent, RMO, Malaria Expert, Nurse, Other
- **Service**: Total, In the unit (5 years), In the unit (10 years), X-Ray, Medical, Dental, Other
- **Status**: A, B, C, D
- **Training**: 6-12 months

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43. **Epidemiologist**
2: Health centre
3: Health station
4: Clinics
5: Head Quarter
6: Provincial head of p fica
7: School of medical technology
8: Nursing school
9: Midwifery school
10: Health assistant school
11: Central laboratory
12: Pharmacy

Ownership:
1: Ministry of health
2: Education
3: Agriculture
4: Industry
5: Evangelical
6: CAS
7: Private

Education:
0: illiterate
1: G-1
2: G-2
3: G-3
4: G-4
5: G-5
6: G-6
7: G-7
8: G-8
9: G-9
10: G-10
11: G-11
12: G-12
13: G-12+1
14: Diploma
15: 1st B. A. H. S.
16: Masters
17: M. D.
18: PhD
19: M. Sc.
20: Missing

Training Topics
BF
EPI
HIV/AIDS
Variable Information:

- ID_NO: geographical location
- HEA_INST: NAME OF HEALTH INSTITUTION
- TYPE: type of health institution
- ZONE: geographical location
- SUB_ZONE: sub zone of health institutions
- VILLAGE: village of health institutions
- OWNERSHIP: ownership of the facilities
- NAME: name of health personnel
- SEX: sex of health personnel
- AGE: age of health personnel
- MARITAL: status of health personnel
- TONGUE: mother tongue
- EDU_STAT: educational background
- NAT_LTY: nationality of health personnel
- NAL_LTY: NATIONALITY OF THE HEALTH PERSONNEL
- QUALIFIC: QUALIFICATION
- TOT_A: total service
- SERVIC_B: SERVICE OF HEALTH PERSONNEL
- SERVC_B: number of years served in the present unit
- STATUS: status of health personnel
- TRAINING: human resource development

Topic: Training Given On
APPENDIX D
CODING SUMMARY
Coding Summary

Key to Codes used for Data Entry.

NOTE: Where data is missing or unavailable, the entry 99, 999 or 9999 will be entered.

ID No. This is the numbered name of the health institution combined with the staff number.

Health.Inst This is a discrete number allocated to each health institution. A listing of all the institutions is available.

Type This is the type of institution by function. Coded as follows:-
1. Hospital
2. Health center
3. Health station
4. Clinics
5. Head quarters
6. Provincial health office
7. School of medical technology
8. Nursing school
9. Midwifery school
10. Health Assistants school
11. Central laboratory
12. Pharmacy
13. Factory

Zone This covers the space allocated on the data collection form to ‘Province’.

Sub_zone This covers the space allocated on the data collection form to ‘S/province’.

Village This covers the space allocated on the data collection form to ‘Town/village’.

Ownership This is used to categorize which Government department or private agent runs the health facilities.
Categorized as follows:-
1. Ministry of Health
2. Ministry of Education
3. Ministry of Agriculture
4. Ministry of Industry
5. Evangelical
6. CRS - Catholic Relief Services
7. Private

Name (Col.6 on data collection form) Full name of each staff member is entered.
Sex  (Col. 7 on data collection form) Coded as:-
1. Male
2. Female

Age  (Col. 8 on data collection form) Age is entered in whole years.

Marital  (Col. 9 on data collection form) Marital status is entered as:-
1. Single
2. Married
3. Divorced
4. Widowed

Tongue  (Col. 10 on data collection form) Refers to mother tongue or language of birth. Coded as follows:-
1. Afar
2. Bilen
3. Hidareb
4. Kunama
5. Tigre
6. Rashaida
7. Safo
8. Tigrigna
9. Nara
10. Other

Educ_stat  (Col. 11 on data collection form) Refers to general educational status and the school grade completed. Coded as follows:-
0 = Illiterate
1 = Grade
2 = Grade 2 etc until
13. Grade 12 +1
14. Diploma
15. First degree
16. Masters degree
17. M.D.
18. PhD

Nat_lty  Refers to nationality. Coded as follows:-
1. Eritrean
2. Ethiopian
3. Foreigner

Qualific  (Col. 12 on data collection form. This refers to professional health qualifications. Coded as follows:-
1. Internist
2. Surgeon
3. Paediatrician
4. Obstetrician and Gynaecologist
5. Doctor (GMP)
6. Ear, nose and throat specialist
7. Ophthalmologist
8. Psychiatrist
9. Pathologist
10. Dentist
11. Radiologist
12. Physiotherapist
13. Dental technician
14. Malaria technician
15. Malaria co-ordinator/technician
16. Pharmacist
17. H. officer
18. H. Nurse
19. Assistant nurse-midwife
20. Sanitarian
21. R/N
22. M.W nurse
23. MCH-nurse
24. Anaesthetic nurse
25. Drugist
26. Pharmacy technician
27. Lab.technician
28. X-ray technician
29. Ophthalmic technician
30. Malaria expert
31. H.assistant
32. Bare foot doctors
33. H. Information officer
34. Others
35. Administrative, clerical and fiscal
36. Trade and crafts
37. Custodial and manual
38. Other - specify
39. Practical dresser
40. Psychiatric nurse
41. Assistant doctor
42. Assistant malaria expert
43. Assistant epidemiologist

**Tot_a**  
(Col.13 A on data collection form) Refers to the total number of years spent by the member of staff in the health service.
Servic_B (Col.13 on data collection form) Refers to the total number of years spent in that specific health institution.

Status (Col.14 on data collection form) Refers to civilian or ex-fighter. Coded as follows:-
1. Civilian
2. Ex fighter

Training (Col.15 on data collection form) This refers to any ‘in-service’ training which the staff member has received during the previous 6 to 12 months. Coded as :-
1. Yes
2. No
99 will indicate no information available, or not known.

Topic (Col.16 on data collection form) Data still to be entered. Coding for subjects (on which above training was received) is as follows:-
1. EPI- Expanded program of immunization
2. Nutrition
3. HIV/AIDS
4. Breast feeding
5. Family planning
6. Management
7. Malaria
8. Other
APPENDIX E

RECOMMENDATIONS FOR FUTURE USE OF HR DATABASE
Recommendations for Future Use of HR Database

These suggestions are made by the consultant after working with staff in the Human Resources division of the Eritrean Ministry of Health, on the database of health service staff, which was created in 1995. They are made with a view to further develop and refine this tool, which plays an invaluable part in the health planning process, both at national and zonal level.

With reference to Appendices 1 and 2, the coding plan would need to be updated if the survey is to be repeated at some future date. It is also important to maintain it in a current format, so that the data which is entered and the fields which are defined in the computer database are easily understood and correlate to the coding list.

If the survey is repeated, it would be very useful to use ‘Data value restrictions’, so that incorrect information cannot be entered accidentally. This is a tool frequently used on datasets and it would reduce the cleaning and cross checking workload after the data entry is completed.

The ID numbers of the staff should be checked to see that they are sequential and that they match the raw data. Since the HR division would like to use the staff listing for things such as tracking the movement of staff, in-service and post-graduate training etc. where personal identifying information will be necessary, it is essential that the ID numbers are correct and match individual names.

The age variable needed recoding. Some staff who had retired were still included in the data as they were employed on a contractual basis. This resulted in 26 staff members who were 70 years or older and this moves the measures of central tendency, such as the mean or average, to unrealistically high numbers. This factor should be considered when collecting future data and the whole question concerning retirement ages and who to include needs to be addressed.

The Health Professionals formal qualifications coding shows some repetition of categories. The list is also very long and some merging might be beneficial in demonstrating correlation and ratios of the major professional groups, e.g. medical doctors and medical specialists could form one group, nurses and midwives could form another, medical technicians another, etc.

The data on training and the topics for this training (presumably in-service) had not been entered at the time of the consultants visit. It would have indicated to some degree the level of short term in-service training and the topics of the training which had been carried out.

If a future survey takes place, careful consultative planning to standardize all the information which is of interest to different parties within the ministry of health would be advisable.

When variables are entered using SPSS software, the variable names should be listed with a description of the variable and any sub coding labeled too. For example, the variable named Status should be described as ‘Marital status’ and the numerical values labeled, e.g. 1=Single, 2=Married etc.
All details of the coding and how the data was entered should be explained in a separate document which is updated when any changes are made.

The **major problem** with the dataset occurred when ‘Type’ of facility was cross tabulated with other variables such as zone or qualification. There is no individual identifier attached to each type of facility, therefore when the cross tabulation is run, the computer counts the type of facility which is attached to an individual staff record. i.e. giving you the number of staff who work in that type of facility. This is the most difficult problem with the dataset, since it makes getting vital information such as, the qualifications of staff at different facility types and the number of different facility types by zone impossible without recoding.

All data on private facilities were combined. As the private sector comprises of diverse groups, such as NGO’s, missions, factory clinics and true ‘private providers’, it would be useful to be able to look at these groups individually. In the future, such groups could be entered under different variable labels under 1 variable heading.