I have compared 100 consecutive recordings from the PC with simultaneous recordings from a Shiller AT-6 electrocardiograph. All 12 leads were compared. Recordings with pacemaker complexes, atrial fibrillation, atrial fluttering, and second and third degree atrioventricular block were excluded. The recordings were made at 50 m/s and 10 mm/mV, and I measured amplitudes and durations on averaged complexes with magnifying glass and comparators. I did not find any important differences (table). Some of the deviations are probably due to limitations in the methods of measuring.

The PC and printer that we use cost about £600 each in Sweden. The converter and the cables will cost about £200. A traditional electrocardiograph costs about £500. The program can acquire and cost 4500 electrocardiographs in use, this could lead to a saving of around £10 million over ten years.

Department of Clinical Physiology, Central Hospital, S-651 86 Karlstad, Sweden

BIRGER WANDT

Surface coil magnetic resonance imaging of the fetal brain

Sir,—Magnetic resonance imaging (MRI) of the fetus has been of limited use because of artifacts created by fetal movements. Attempts to sedate the fetus with maternal morphine injections led to differing results.1 Pancuronium bromide injections in the fetus either intraamnioscally or into the umbilical vein resulted in temporary arrest of fetal movements and allowed conventional sequences of 3-6 min.2 Another approach is fast imaging, which only requires several groups of 10 s, although details of brain anatomy are less consistently visualised than with classic MRI.3

Due to the superficial situation of the fetal head at the end of pregnancy, we thought that surface coils could be used for imaging the fetal brain.4 Such coils give better resolution than classic body coils. Variables that are usually necessary to obtain good images, such as the number of measurements or the data acquisition matrix, may be reduced in number. The acquisition time we use of 1 min 36 s (TR 300 ms, TE 12 ms, acquisition matrix 160 x 160, two measurements) is brief enough to avoid most artifact motions. The heterogeneity of the received signal, which is higher on the anterior side of the fetal head near the maternal abdominal surface, is resolved by the use of two surface coils that are connected; one is placed ventrally, the other on the corresponding dorsal area.

The images we obtain are not very different from postnatal studies and allow study of grey-white matter differentiation and myelination (figure). We have done 19 studies with this technique at a mean gestational age of 32-2 weeks. The quality of the MRI was good in 16 cases, especially for fetal brain study: size of the ventricles and the state of myelination could be assessed in all cases.

In our experience with surface coils and short gradient-echo T1 sequences, images can be obtained without any curarisation of the fetus. Sandwich surface coils allow study of fetal brain anatomy. This method could help in prenatal diagnosis to determine fetal prognosis related to brain evaluation.

MARTIN PERE RIEVE
JEAN CLAUDE PONS
CHRISTOPHE LEBAILLIER
MICHELE VIAL
RENÉ FREYDMAN
DOMINIQUE MARBERT
MADISELIN LARBIIS

Hôpital Antoine Beclère, 92141 Clamart, France


Public health consequences of the civil war in Somalia, April 1992

Sir,—In April, 1992, to plan a targeted intervention, Médecins Sans Frontières requested Epicentre to assess the health status of the displaced population in Merca and Qoryol, south of Mogadishu, Somalia, where a civil war has taken place since January, 1991.1

600 households (4169 individuals) were surveyed between April 18 and 28. The estimated population of the area is 103 000 (73 000 residents, 23 000 displaced in towns, 7000 displaced in camps). In the 12 months before interview, 497 deaths occurred. The adjusted crude mortality rate (ACMR) was 67/1 per 1000 population. The ACMR was higher among children under 5 and among the displaced population living in camps. In this population, 1 child under 5 out of 4 died during the 12 months preceding the survey. Of 497 deaths, 279 (56%) occurred between January and April, 1992. Malnutrition was the leading cause of death in each group, being responsible for 41-6% of the total deaths among the displaced living in camps. The second most common cause of death, in each group, was war casualties (9-5-13-5%).

The adjusted prevalence of children aged 6-59 months surveyed who had a middle upper arm circumference (MUAC) below 12.5 cm was 46-4% (95% CI, 43-4—49-4), 42-7% (38-3—47-1) among the 487 residents, 47-2% (41-2—53-1) among the 267 displaced in towns, and 75-6% (71-9—79-3) for 512 children displaced in camps. Of these 1266 children, 22% had a MUAC under 11 cm (adjusted prevalence 14-4% (12-5—16-3); 12-3% (9-4—15-2) in residents; 13-5% (9-4—17-5) in towns; and 35-7% (31-5—39-9) in camps. 24 h food consumption recall showed that 14-2% (12-3—16-1) of the population ate nothing the day before survey (22% in the camps). 31-3% (28-8—33-9) ate only "garans", a local wild fruit. Only 43-6% (40-8—46-3) had eaten either rice, meat, or maize the day before.

Very small portions were eaten. On average, 8.3 litres water were available per person per day (11-6 litres for residents and 4.5 litres in camps).

More than 100 000 Somalis are now living in severely poor health and sanitary conditions. The CMR identifies the displaced population as a major focus for intervention. The CMRs are higher than those in Ethiopia and Sudan in 1985,2,3 Mozambique in 1985,4 Angola in 1990,5 Liberia in 1990,6 and the Touareg population in...
MORTALITY RATES AMONG SOMALIAN POPULATION, MERCA AND OBOISHE, APRIL, 1991, TO APRIL, 1992

<table>
<thead>
<tr>
<th>Setting, age (yr)</th>
<th>Sample</th>
<th>Deaths</th>
<th>CMR/1000 (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 5</td>
<td>442</td>
<td>51</td>
<td>115.4 (95.6–145.2)</td>
</tr>
<tr>
<td>5-14</td>
<td>571</td>
<td>33</td>
<td>57.8 (38.7–76.9)</td>
</tr>
<tr>
<td>≥15</td>
<td>817</td>
<td>21</td>
<td>25.7 (15.6–37.8)</td>
</tr>
<tr>
<td>Total</td>
<td>1830</td>
<td>105</td>
<td>57.4 (46.7–68.0)</td>
</tr>
<tr>
<td>Displaced in towns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 5</td>
<td>232</td>
<td>20</td>
<td>86.2 (50.1–122.3)</td>
</tr>
<tr>
<td>5-14</td>
<td>223</td>
<td>20</td>
<td>89.2 (52.2–127.2)</td>
</tr>
<tr>
<td>≥15</td>
<td>332</td>
<td>15</td>
<td>39.2 (18.9–60.0)</td>
</tr>
<tr>
<td>Total</td>
<td>787</td>
<td>53</td>
<td>67.3 (49.8–86.9)</td>
</tr>
<tr>
<td>Displaced in camps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 5</td>
<td>586</td>
<td>141</td>
<td>240.6 (205.0–275.2)</td>
</tr>
<tr>
<td>5-14</td>
<td>754</td>
<td>126</td>
<td>167.1 (140.5–193.7)</td>
</tr>
<tr>
<td>≥15</td>
<td>709</td>
<td>72</td>
<td>101.6 (79.3–123.8)</td>
</tr>
<tr>
<td>Total</td>
<td>2094</td>
<td>339</td>
<td>160.4 (149.4–171.4)</td>
</tr>
<tr>
<td>Total*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 5</td>
<td>1200</td>
<td>212</td>
<td>115.7 (99.7–131.3)</td>
</tr>
<tr>
<td>5-14</td>
<td>1546</td>
<td>177</td>
<td>73.3 (60.3–86.3)</td>
</tr>
<tr>
<td>≥15</td>
<td>1860</td>
<td>108</td>
<td>32.9 (24.7–40.8)</td>
</tr>
<tr>
<td>Total</td>
<td>4666</td>
<td>497</td>
<td>61.7 (50.9–74.3)</td>
</tr>
</tbody>
</table>

*CMRs adjusted for population distribution characteristics (residents, displaced in towns and displaced in camps).

Mauritania in 1992. The increasing death rate during the past three months indicates a worsening of the situation. Food supply was insufficient and irregular until the end of April and the ration is obviously lower than the recommended 1000 kcal per person per day.

SEJIGE MAKONCOURT
BRIGITTE DOPPLER
FRANCOIS ENTEN
ABBADUH ELMI NUR
ABDULAH AL HAMMED
PATRICK K
ALAIN MOREN

Emergence in Ontario, Canada, of multiresistant Salmonella typhi from South Asia

SJR.—Multiple antimicrobial resistance in Salmonella typhi is uncommon in Ontario, Canada. During the past 6 months, however, we have isolated strains from travellers to India and Bangladesh and from contacts of individuals with resistance to ampicillin, chloramphenicol, trimethoprim, streptomycin, sulphonamides, cotrimoxazole, tetracycline, tetracyclines, and piperacillin. The minimum inhibitory concentrations (MICs) of trimethoprim and sulphonamethoxazole were over 1000 and over 1024 mg/l, respectively, and over 20/380 mg/l for cotrimoxazole. Ampicillin, chloramphenicol, streptomycin, tetracycline, tetracycline, ticarcillin, and piperacillin had all MICs above 128 mg/l.

All resistance determinants were transferred by conjugation on plasmid to recipient Escherichia coli K-12 strain W3/110, indicating plasmid-mediated antimicrobial resistances. Resistance to these isolates is mediated by plasmids belonging to the H1 incompatibility group. The size of the plasmid in the transconjugant strains was about 80 kilobases. A similar type of plasmid was reported by Rowe et al from travellers to India and Pakistan, and multiresistant isolates have also been found in Bahrain, linked to expatriate workers from India. Clearly, these resistant S typhi strains are spreading.

Chloramphenicol was the first drug shown to be effective in typhoid fever and remains the drug of choice in many parts of the world. Ampicillin was used as an alternative, but later, with the emergence of isolates of S typhi resistant to both chloramphenicol and ampicillin, cotrimoxazole became the drug of choice. R factors coding for resistance to chloramphenicol, ampicillin, and cotrimoxazole therefore pose a definite treatment challenge and alternative forms of antimicrobial therapy become necessary.

All our Ontario isolates were susceptible to the fluoroquinolones norfloxacin and ciprofloxacin, and to the cephalosporins cephalothin, cefamandole, cefotaxime, and cefoxitin. The quinolones are effective for typhoid fever, except in children in whom adverse effects on developing bones may occur. Third-generation cephalosporins are also effective in treating multiresistant salmonellae, especially in children where quinolones are contraindicated.

Department of Clinical Bacteriology, Central Public Health Laboratory, Ontario Ministry of Health, Toronto, Ontario, Canada

N. HARRIST
S. MCLERO
Y. AUYONG
S. BROWN
C. KRISHAN

Vitamin A deficiency and childhood mortality

SJR.—Dr Sommer’s report of the Bellagio meeting may give readers the impression that the controversy over vitamin A administration and child-mortality reduction is now settled. It practically dismisses the controversy and argues that in the studies conducted at the National Institute of Nutrition, India, and by the Sudan-Harvard group. Scientists and health administrators of developing countries, grappling with problems of poverty and undernutrition among their peoples, should not be misled into believing that the Bellagio statement represents a globally accepted view.

That vitamin A is a key nutrient and that vitamin A deficiency is an important public-health issue in several developing countries is not in doubt. The case for improving vitamin A nutrition via development programmes of population groups rests on solid grounds; and bad arguments should not be allowed to spoil that good case. The logical way to ensure vitamin A nutrition is through dietary improvement, and fortunately the countries afflicted with vitamin A deficiency have an abundance of natural food resources to combat it. These countries must be helped to harness their food resources for this purpose; and they should not be misled, through exaggerated claims, into relying perpetually on periodic medication with massive doses of synthetic vitamin A—an approach that was initially adopted purely as a short-term measure.

According to Sommer’s report, “a meta-analysis of the pooled data from several studies has shown an overall reduction in...